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Data Manager System Guide

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Preface

Thank you for purchasing Application Storage Manager™ (ASM) Data Manager, the most flexible storage management system for Microsoft® Windows®. Data Manager allows you to extend the capacity of NTFS volumes by automating migration of files to storage media. Data Manager 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 ASM MediaStor). This enables Data Manager to focus specifically on the management of files, and allows clients to simply save and retrieve files on any extended NTFS volume.

With Data Manager, 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. Data Manager 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, DVD-R, DVD-RAM, DVD-ROM, magneto-optical, Network Attached Storage (NAS), tape, Tivoli® Storage Manager (TSM), EMC Centera™ (EMC), WORM, and WORM-tape media can all be managed easily and effectively using a variety of file systems.

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

Data Manager provides a rule-based system for file storage management. Rather than simply migrating all files to media without distinction between files, Data Manager allows you to set criteria that govern which files will be stored where. Using the rules you create, Data Manager 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 Data Manager.

Data Manager 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. Data Manager 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 Data Manager to most effectively manage your file migration system. It contains all the

necessary information to achieve the best results for implementing and customizing your automated data storage solution.

Chapter Summary

The following table summarizes each chapter of this document:

Table 1. Chapter Summary

Chapter	Description
Chapter 1: Introduction on page 1	This chapter provides a brief overview of the system, including its concepts and components.
Chapter 2: Managing Storage Media on page 13	This chapter discusses the types of storage media that you can use with Data Manager, as well as how to manage and back up media.
Chapter 3: Managing File Migration on page 117	This chapter discusses how to manage media folders, move groups, and move rules, as well as how to manage client requests for files on media (“fetches”).
Chapter 4: Managing the Extended Drive on page 163	This chapter discusses how to manage space on the extended drive by purging and deleting files. It also discusses modifying extended drive properties, deleting the extended drive, and running drive scans.
Chapter 5: Managing the Data Manager Computer on page 207	This chapter discusses how to manage the Data Manager service and Data Manager computer properties, as well as how to troubleshoot using logs and event viewing.
Chapter 6: Running Data Manager Reports on page 245	This chapter discusses how to run Data Manager reports, what information is contained in them, and how to set up and save custom layouts for your Data Manager reports.
Chapter 7: Data Manager Backup and Recovery on page 267	This chapter discusses the functions available in Data Manager to allow you to effectively back up your Data Manager system, as well as procedures for restoring your Data Manager system in the event of disaster or failure.
Chapter 8: Remotely Administering Data Manager on page 289	This chapter describes how to install the Remote Administrator component that allows you to administer Data Manager from a computer that does not contain a Data Manager extended drive.

Table 1. Chapter Summary (Continued)

Chapter	Description
Using RtfPad on page 303	This chapter discusses how to save, print, and e-mail the Data Manager logs and reports using RtfPad. It also contains information on looking up errors that appear in logs in RtfPad.
Using Explorer Add-ons on page 309	This chapter discusses the functions available through the Explorer Add-ons.
Removing Data Manager and Its Components on page 311	This chapter provides detailed instructions for uninstalling Data Manager, the Remote Administrator, and the Explorer Add-ons.

Related Documentation

Refer to the following additional documentation:

- ASM Data Manager Getting Started Guide
- *ASM MediaStor System Guide* if using ASM MediaStor as a media service
- StorageTek ACSLS™ documentation if using ACSLS as a media service
- Tivoli Storage Management documentation if using TSM as a media service
- EMC Centera documentation if using EMC as a media service
- Microsoft Cluster Server documentation if using ASM in a clustered environment
- Windows documentation if you plan to install ASM on a Windows server while using the Windows Server Active Directory® service on your network
- *StorageTek Co-StandbyServer User's Guide* if using ASM in a Co-StandbyServer™ environment

Online Help

Help is available online from any Data Manager 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 knowledge base help file with error descriptions, tech notes, software notes, fixed/known bugs is also available on the StorageTek® website at http://www.StorageTek.com/.

All ASM guides, including this one, are available in PDF format on the installation CD.

Documentation Conventions

Consistent formatting is used throughout all ASM guides to represent certain information.

Table 2. Documentation Conventions

This Cue	Represents
monospaced text	Characters that must be typed on your screen exactly as they appear in this document.
<ALL 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.
Note Explanatory note between two lines.	Additional information needed as you follow the step-by-step operations in this manual.

Introduction

1

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

Data Manager allows you to extend the storage capabilities of NTFS volumes by using Data Manager file migration services to move files from the NTFS volume to other, less-expensive storage media. Users on your network may typically save data to a drive on your Windows file server. As long as the drive is an NTFS volume, you can significantly expand file storage capabilities without changing anything from the user point of view by extending that drive with Data Manager. File data on a drive extended by Data Manager can be moved to media through a media service (for example, to tape in a library managed by ASM's MediaStor) without affecting the file listing seen by the end user.

You are the architect of the Data Manager system. Data Manager allows you to leverage your existing hardware configuration or create a new one. The powerful features of Data Manager, combined with an easy-to-use graphical user interface, allow you to fine-tune a file storage strategy for any type of application requirement. Before you update the storage strategy you created, however, you should be comfortable with Data Manager terminology and concepts. Take the time to read all sections, as this will help you attain the best performance, functionality, and organization for your storage solution.

This chapter identifies key terminology and concepts that are vital for you to understand. For more information, see the following sections:

- "A Data Manager Glossary, " which follows
- “Data Manager Concepts” on page 7

A Data Manager Glossary

To make it easier for you to follow the discussion of Data Manager concepts in this chapter, here are brief descriptions of key terms used in the concepts section and throughout this guide. You can either read this glossary first, or refer to it as needed while you read about Data Manager.

Table 1. Data Manager Glossary

Term	Definition
ACSLS	A device management software product that runs on a UNIX platform. Data Manager can use an ACSLS installation as a media service. ACSLS has the ability to manage retrieval of media in some StorageTek tape libraries.
Active Server	A cluster server that is always running and processing user requests.
Cluster	A processing environment consisting of two or more server computers and other resources that act as a single system and enable high availability.
Compaction	The process of reclaiming used storage media by eliminating wasted space taken up by outdated copies of files or files marked for deletion. Compacting media copies all active (non-deleted and current versions of) files from media back to the extended drive, and then removes the media from the media folder so that it can be reformatted and used again. The files that are copied to the extended drive are ultimately moved back to media based on the move rules for the media folder.
Data Management	Control of the location of file data for Data Manager files. Data Manager can manage the contents of a file separately from the file tag for that file. The file tag for a Data Manager file is always displayed on the extended drive. In the background, transparent to the user, Data Manager controls the location of the file data for each file it manages.
De-migration	The process of leaving migrated files on the extended drive and marking them as not migrated when you remove a piece of media from its media folder. This allows the files to be written to another piece of media.
Direct Read	A way of marking files that have been migrated to media so that they are opened directly from the media when requested rather than being copied back to the extended drive.
Drive	A hardware device through which media can be read or written to.

Table 1. Data Manager Glossary (Continued)

Term	Definition
EMC Centera	A line of disk-based storage devices deployed on a Redundant Array of Independent Nodes (RAIN). EMC Centera devices use unique, permanent content addresses to store and retrieve data. Data Manager can use an EMC Centera installation as a media service.
Extended Drives	An NTFS volume (such as a hard drive) or partitioned part of a hard drive for which Data Manager provides file migration services by moving files to media and fetching files from media according to the parameters you set.
Fail-over	The act of transferring functions from one server in a cluster to another server in the cluster when the first server fails.
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	The contents of a file.
File Migration	The movement of files and file data from one type of media (a hard drive) to other types of media (removable media, such as optical or tape media, or logical media, such as a network share or NAS device).
File Share Resource	An entity defined in Cluster Administrator that represents a standard shared directory offered to users by the cluster.
File System	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.
File Tag	The identifying information for a file. The file tag includes such information as file location, file attributes, file size, and file age.
Finalization	The process of “closing” a piece of DVD-R media when you are finished writing to it. `Finalizing DVD-R media` makes the media read-only, effectively closing the media from receiving any more data. Finalization also stabilizes the media, better protecting the data written to it. Finalized DVD-R media can be removed from the ASM system and read on a computer with the Windows XP operating system.

Table 1. Data Manager Glossary (Continued)

Term	Definition
Hard Drive	A computer hardware drive with non-removable media. Often, large hard drives are partitioned into multiple drives or “volumes.” These multiple volumes are also sometimes referred to as “hard drives” or just “drives.”
Hardware Device	A device that contains drives where media can be accessed.
Jukebox/ Library	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 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 Data Manager. In contrast, a RAID device, which has multiple drives, could also be treated as a single piece of media if the entire device was shared as a single network share.
Managed Files	Files for which Data Manager has moved the file’s data to media. Even if a file is saved to a media folder on an extended drive, Data Manager does not assume responsibility for management of the file data until it has moved the file’s data to external storage media.
Media	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 guide, the term “media” refers to the storage media to which Data Manager files are migrated.
Media Pool	A reserve of pieces of media available for use with a particular extended drive.

Table 1. Data Manager Glossary (Continued)

Term	Definition
Media Service	An access provider to media to which Data Manager migrates files. In some cases, the media service is a connection to a network share. In other cases, a media service is a device management service that retrieves a specific piece of media and mounts the media in a device such as a library when requested.
Media Type	The type of a piece of media, which is determined by the composition of the media and the method used to record information on that media. Some examples of media types are magneto-optical, CD-ROM, DVD-RAM, and tape.
MediaStor	A device management package that can be used as a media service by Data Manager. ASM MediaStor has the ability to manage retrieval of media in a wide variety of hardware devices.
Network Attached Storage (NAS)	Logical media that has been shared to the network to allow network users to access the media. Data Manager can point to any network share through a configured Network Attached Storage media service.
Network Name Resource	An entity defined in Cluster Administrator that represents an alphanumeric string associated with a specific network (IP) address.
Node	A server computer that is part of a cluster. Also called a *system*.
NTFS Volume	A piece of stationary media or a partition on a piece of stationary media that has been formatted with the NTFS file system.
Overwritable	Describes media that allows files to be written to any available location on the media. For Data Manager, this pertains specifically to how the UDF file system will write files to some types of media.
Passive Server	A cluster server that is idle and does not process user requests until an active node fails.
Physical Disk Resource	An entity defined in Cluster Administrator that represents a fiber- or SCSI-attached disk used for storage.
Removable Media Drive	A drive where different pieces can be inserted and removed as needed, such as a CD-ROM drive.

Table 1. Data Manager Glossary (Continued)

Term	Definition
Removable Media	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.
Resource	A physical or logical entity defined in Cluster Administrator and managed by a cluster node.
Resource Group	A logical collection of resources, defined in Cluster Administrator, that fails over from one node to another in a cluster. Note that resource groups fail over, not individual resources.
Retention	The act of restricting modification to and/or deletion of files. Retention is available for the EMC media service and for the NAS media service. Data Manager only enforces retention after files have been moved to media.
Retention Period	The period of time (number of days) for which retention is enforced. The retention period is calculated from the time the file is migrated to media. Retention period configuration is only available for the EMC media service.
Sequential	Describes media that requires files to be written in sequential order (one right after another) on the media. For Data Manager, this pertains specifically to how the UDF file system will write files to some types of media.
Stationary Drive	A drive where the same piece of media is always mounted, such as the hard drive on your computer.
Stationary Media	Media that is always mounted in a drive and cannot be removed without removing the entire drive.
System	A server computer that is part of a cluster. Also called a *node*.
Tivoli Storage Manager (TSM)	A storage product that Data Manager can use as a media service. Similar to NAS, TSM uses “virtual” media.
Virtual Server	A group defined in Microsoft’s Cluster Administrator in an active/active cluster environment that contains the elements that are to transfer over to an active node when the other active node fails.

Data Manager Concepts

The following concepts are integral to understanding Data Manager:

- "Storage Media and Media Services, " which follows
- “Extended Drives” on page 8
- “Data Manager System Management” on page 9

Storage Media and Media Services

Data Manager supports many types of high-capacity storage media for the migration of files. The functionality accessible through a media service depends on the type of media used in the device for that media service. The following table defines all media types Data Manager currently supports:

Table 2. Currently Supported Media Types

Media Types	Support Types
CD-ROM	Read Only
DVD-R	Read/Write
DVD-RAM	Read/Write
DVD-ROM	Read Only
EMC Centera (EMC)	Read/Write
Magneto-optical	Read/Write
NAS (Network attached storage available through network shares)	Read/Write
Tape (DLT, AIT, 9840, Magstar, 8mm DAT)	Read/Write
Tivoli Storage Manager (TSM)	Read/Write
WORM	Read/Write
WORM-Tape	Read/Write

Data Manager manages all functions relating to the transfer of information to and from media. Data Manager performs all movement and fetching of files and all media tasks through direct communication with the media service. The media service communicates with the device and drives to write files to the media and retrieve files from media when Data Manager makes those requests. For more information on media services, refer to the *Setting Up Media Services* chapter of the *ASM/DMS Getting Started Guide*.

Once you configure media services and add media to your ASM system, there are several steps you can take to efficiently manage the media in your system. Media tasks and media managers such as the Media Prepare Manager and Copy Media Manager allow you to prepare media for use in Data Manager,

add it to media folders and move groups, remove it if necessary, and back it up so that you can restore it in the event of system failure.

You can also schedule various media activities to occur at off-peak hours to ease the wear-and-tear effect that occurs from the frequent mounting and dismounting of media in library devices, or to avoid problems that can arise when there are requests pending to mount more pieces of media than there are drives available.

For more information, see “Managing Storage Media” on page 13.

Extended Drives

An extended drive is an NTFS volume (such as a hard drive) for which Data Manager provides file migration services by 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 configuration of the storage media through Data Manager 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 Data Manager, 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 that you configure, Data Manager moves files to media and then purges the file data from the extended drive. When the file data is purged, Data Manager leaves a file “tag” on the extended drive containing file information, such as the size and time and date of creation or modification. When viewing the extended drive through Windows Explorer, the entire file appears to still be stored on the drive, even if the file data has actually been purged.

For more information, see the following sections:

- "File Migration, " which follows
- “Space Management” on page 9

File Migration

All files that are written to Data Manager 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 can also be retrieved from media and stored on the NTFS volume automatically by Data Manager. The movement of a file to media is referred to as file migration, and the retrieval of a file from media is referred to as a fetch.

One of Data Manager’s main performance advantages is that you can configure it so that frequently used files are maintained on the faster access, fixed media (hard drive) whenever possible.

Once you configure file migration when setting up your Data Manager system, you can manage the media folders, move groups, and move rules to control which files are moved to which groups of media, and which files should *not* be moved to media, to address your changing storage needs.

You can also manage client requests for files that have been purged from the extended drive (“fetches”) so that you can avoid a critical strain on system resources and media mounting conflicts resulting from multiple client requests for purged files. Enabling direct read and retrieving frequently used files from storage media in advance of their being requested by a client (“prefetching”) are two ways to manage fetch requests.

For more information, see “Managing File Migration” on page 117.

Space Management

Part of managing an extended drive involves managing space on the extended drive. Ideally, files that are retrieved frequently should remain in their original format on the drive, whereas files that are not retrieved as often 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 actually be 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 Data Manager 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, and which files should *not* be purged from the extended drive.
- Delete rules control when files are deleted from the extended drive and from any storage media to which they have been moved, and when they should *not* be deleted by Data Manager.

A regular drive scan is required to write files that qualify against purge rules to the purge list, and to process delete rules.

For more information, see “Managing the Extended Drive” on page 163.

Data Manager System Management

Data Manager contains several features that allow you to administer, diagnose, and troubleshoot the system, as well as utilities to back up the

system and restore it in the event of a system failure. In addition, because the Data Manager program functions as a Windows service, part of administering the Data Manager computer includes administering the Data Manager service.

Data Manager as a Service

Data Manager functions as a Windows service rather than as a user-mode application. As a Windows service, Data Manager can continue to be active even after you log off Windows, as long as the computer is still running.

You can start, pause, and stop Data Manager, as well as configure it for various startup settings, including automatic startup, which starts Data Manager upon Windows system startup, and manual startup, which allows you to start the service manually. You can manage the service either through the Data Manager Administrator or through Windows.

For more information, see “Managing the Data Manager Computer” on page 207.

Logs and Reports

Data Manager has built-in utilities for monitoring events, errors, and warnings on the extended drive. The Event Viewer contains a listing of all Data Manager events, errors, and warnings. This information is also logged to event logs. The Event Viewer and event logs can help identify and solve potential problems during runtime that might otherwise become critical problems if ignored. For more information on the Event Viewer and event logs, see “Tracking Data Manager Events, Errors, and Warnings” on page 237.

The Data Manager reporting feature is a useful tool for tracking system statistics. Using the Report Generator Wizard, you can create various reports of system activities, including extended drive information, media information, media services, and Data Manager registry settings. 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 is run. For more information on reports, see “Running Data Manager Reports” on page 245.

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. Data Manager contains several functions that can make creation and/or maintenance of your recovery plan easier.

- Meta-data exports should be performed periodically in order to export Data Manager-managed files and file tags for backup.
- Copy media are media that are being used as copies, or backups, of original media on the Data Manager extended drive.

- You can create a backup of your Data Manager system configuration, which is stored in registry settings, when needed using the repair disk utility.

In the event of system failure, you can restore the meta-data export and the Data Manager system configuration. You can also promote copies of media to original pieces of media if an original piece of media becomes unreadable. For more information, see “Data Manager Backup and Recovery” on page 267.

In addition, if you use a clustered environment to manage fault-tolerance for your system, Data Manager can be installed and run on a clustered environment, allowing for automatic fail-safe of your Data Manager system. For more information, refer to *Appendix A: Clustering* of the *ASM Data Manager Getting Started Guide*.

Managing Storage Media

2

By adding media services for the ASM Data Manager computer, you create a supply of storage media that you can use to “extend” NTFS volumes on Data Manager computers. Media are listed in the Data Manager system as soon as they are inserted in the device used by the media service, inventoried if necessary, and added to the media pool for an extended drive. For more information on configuring a media service and adding media to the extended drive, refer to the *Setting Up Media Services* chapter in the *ASM Data Manager Getting Started Guide*.

Media that have been allocated to the extended drive but are not yet in use by a media folder appear under the Available Media tree for each extended drive. Media that have been added to a media folder can be found under the Media node for the media folder.

When a piece of media is initially added to a media device, the system evaluates the media, then places the media in one of the eight nodes in the media tree, depending on whether the media is formatted, labeled, or contains a recognized file system. Once media attributes are determined, the media can then be formatted, labeled, added to a media folder, or used to copy a piece of already existing media.

Although Application Pool media (media assigned to the extended drive) are listed in a separate place from media folder media, the media management interface is common to all Data Manager media. For example, while different media tasks are available depending on the current use and status of the media, the interface for adding, editing, and deleting the tasks is the same.

A discussion of media and available media activities is provided here, as well as steps for accessing media commands and information. For more information, see the following sections:

Types of Storage Media

ASM Data Manager supports many high-capacity storage media types. Once added to the Data Manager system, these media are the storage to which your Data Manager files are migrated. The functionality accessible through a media service depends on the type of media used in the device for that media service. The following table defines all media types currently supported:

Table 3. Currently Supported Media Types

Media Type	Support Type	For More Information, See...
CD-ROM	Read Only	"CD-ROM Media, " which follows
DVD-R	Read/Write	“DVD-R Media” on page 15
DVD-RAM	Read/Write	“DVD-RAM Media” on page 15
DVD-ROM	Read Only	“DVD-ROM Media” on page 15
EMC Centera (EMC)	Read/Write	“EMC Centera Media” on page 15
Magneto-optical	Read/Write	“Magneto-Optical Media” on page 16
NAS (network attached storage available through network shares)	Read/Write	“NAS Media” on page 16
Tape (DLT, AIT, 9840, Magstar, 8mm DAT)	Read/Write	“Tape Media” on page 17
Tivoli Storage Manager (TSM)	Read/Write	“Tivoli Storage Manager Media” on page 17
WORM	Read/Write	“WORM Media” on page 18
WORM-Tape	Read/Write	“WORM-Tape Media” on page 18

Note: ASM does *not* currently support CD-R, CD-RW, or DVD-RW media.

CD-ROM Media

CD-ROM stands for Compact Disc – Read Only Memory. As its name indicates, CD-ROM media is read only and cannot be written to. The data is stamped onto the CD by the vendor and cannot be erased. CD-ROM can use the ISO-9660, High Sierra or Joliet file systems. Each of these are most effectively recognized and readable through ASM using the NTFS file system, although CSS, the ASM CD file system, can also read CD-ROM media.

DVD-R Media

DVD-R (DVD - Recordable) media is both readable and writable; however, you can write data to it only once (although in multiple sessions). Once DVD-R media is full, you can finalize the media, at which point it becomes read-only. Because of the potential instability of DVD-R media before it is finalized, DVD-R media is treated differently in Data Manager than other media; files written to DVD-R cannot be purged from the extended drive until the media is finalized. For more information on finalizing media, see “Finalizing Media” on page 82.

Note: Depending on the type of DVD-R media you are using, as well as the type of drive you are using to read from and write to the media, a piece of media may appear full before all of the space on the media has been used. This is because there is a limit on the number of write calibrations that can be performed on a piece of media. If the maximum number of write calibrations is reached, Data Manager can no longer write files to the piece of media - even if free space remains on the media.

DVD-RAM Media

DVD-RAM is a rewritable, high-density optical disc media. DVD originally stood for Digital Versatile Disc or Digital Video Disc, but is now simply referred to as DVD. RAM, or Random Access Memory, refers to the way data is written to and read from the disk. RAM media can be written to and read from randomly, as opposed to sequentially, accessing files and space wherever necessary.

DVD-ROM Media

DVD-ROM stands for DVD – Read Only Memory. As its name indicates, DVD-ROM media is read only and cannot be written to. Like CD-ROM, DVD-ROM media is pre-manufactured, meaning the data is stamped onto the media and cannot be erased. Most manufactured DVD-ROMs use the ISO-9660 file system format, which, like CD-ROM is recognized by ASM using the NTFS file system. Be advised however, that the ASM interface will identify DVD-ROM media as CD-ROM, because the file system drivers cannot distinguish between the two types of media and only recognize the ISO-9660 file system format.

EMC Centera Media

EMC Centera (EMC) media is media that is created through the EMC Centera media service in Data Manager. The EMC media service provides access to an EMC Centera Content Network Repository, which is a line of disk-based storage devices deployed on a Redundant Array of Independent Nodes (RAIN).

In Data Manager, media is “virtual”, meaning that a piece of media defined in Data Manager does not specifically correspond to a physical piece of media (like a tape cartridge). Instead, the virtual media is designed to simulate divisions of the larger repository, allowing you to take advantage of the flexible file migration features available in Data Manager (media folders, move groups, and move, purge, and delete rules). Each piece of virtual media contains more than 256 GB of space, and can hold approximately 65,000 files.

For more information on configuring a media service in Data Manager, refer to the *Setting up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

Magneto-Optical Media

Optical media refers to removable media that is written to by lasers. Magneto-optical media (also often called erasable-optical) are optical disks that can be written to, erased, and loaded with new data.

NAS Media

Network Attached Storage (NAS) is a type of media that is directly accessible through the network as opposed to being accessed through a removable media device. NAS media is considered “virtual” media, and represents a connection to a share on the network. That share can be located on a NAS device or a RAID, or it could even be a shared media folder on another Data Manager extended drive.

You can create NAS media in Data Manager to correspond to any network share, including a network share resident on the local Data Manager computer, as long as the share is not on the local extended drive.

For more information, see the following sections:

- "RAID Devices, " which follows
- “NAS Devices” on page 17

RAID Devices

A RAID (Redundant Array of Independent Disks) is a device that contains a group of disks. In some cases, part of the physical storage capacity is used to store redundant information about data stored on the remainder of the storage capacity. The redundant information allows for regeneration of data in the event that one of the member disks or the access path to it fails. In other cases, the disks are set to all run independently, allowing for much faster read/write speeds.

NAS Devices

NAS (Network Attached Storage) devices are storage devices that contain several high-capacity magnetic drives and manage storage of data to those drives in a way that is seamless to the user. NAS devices have a built-in controller that tracks the location of files within the NAS device.

Some NAS devices allow you to configure one or more volumes as WORM volumes, meaning that once data is written to the volume, it cannot be modified or deleted (like any other kind of WORM media).

Tape Media

Tape media are electromagnetic data storage devices that are typically both readable and writable; however, you can write data to each sector on a piece of tape only once unless you reformat the media in order to reuse it. Tape media are read by tape drives that mount, write to, and read from the tape. Tape media is often encased in a tape cartridge that protects the magnetic tape itself and makes it easily portable.

Data Manager supports the following types of tape media: 8mm DAT, AIT, 9840, Magstar, and DLT. Tape media is accessible to Data Manager through either the ASM MediaStor or StorageTek ACSLS media services. (See the *ReadMe* file for configuring an ACSLS 6.1.1 environment.) For more information, refer to the *Setting up Media Services* chapter of the *ASM Data Manager Getting Started Guide*.

Tivoli Storage Manager Media

Tivoli Storage Manager (TSM) media is media that is created through the TSM media service in Data Manager. The TSM media service provides a repository for Data Manager files, which TSM can subsequently move to other storage devices managed by the TSM server.

In Data Manager, TSM media is “virtual”, meaning that a piece of media in Data Manager does not necessarily correspond to a physical piece of media in the TSM system (like a tape cartridge). Instead, the virtual media is designed to simulate divisions of the larger repository, allowing you to take advantage of the flexible file migration features available in Data Manager (media folders, move groups, and move, purge, and delete rules).

Data Manager manages TSM media similarly to NAS media, particularly with respect to the functional restrictions for formatting, labeling, and copying. The TSM server manages the actual physical removable media, so that tasks like formatting, labeling, and copying media are performed by TSM rather than by Data Manager.

For more information on configuring a TSM media service in Data Manager, refer to the *Setting up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

WORM Media

Write Once Read Many (WORM) media is an optical disk technology that allows you to write data to each sector on a disk only once, although in multiple sessions, but read that data back as often as needed. Once written to, WORM media acts just like CD-ROM media in that the data on the media is permanent.

WORM-Tape Media

WORM-tape media are identical to tape media, in that they are electromagnetic data storage devices that are typically both readable and writable. However, you can write to a piece of WORM-tape only once, and unlike standard tape, the media cannot be reformatted for reuse. Once written to, WORM-tape media acts just like CD-ROM media in that the data on the media is permanent and cannot be altered. WORM-tape media are supported by drives that have firmware loaded that support WORM media. Please contact the specific vendor to verify that they support WORM media in their drives, and to acquire the firmware version that supports the WORM media.

Types of Media File Systems

When a piece of media is formatted, a file system must be selected for that piece of media: either a Windows Native file system, an ASM file system, or a Universal Disk Format (UDF) 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. Media can be formatted for file systems that are supported by both the media itself and the device (used by the media service) in which the media resides.

Windows NT/2000 installs the Windows Native file system drivers, and ASM MediaStor installs the ASM and UDF file system drivers. There are three Windows Native file systems (NTFS, CDFS, and FAT), three ASM file systems (OSS, TSS, and CSS), and two types of UDF file systems (overwritable and sequential).

Note: The Tivoli Storage Manager (TSM) and EMC Centera (EMC) media services use proprietary file systems. Since TSM and EMC media cannot be formatted through Data Manager, those file systems are not discussed here.

The following table lists ASM Data Manager file system support by media type:

Table 4. Data Manager File System Support by Media Type

Media Type	Supported File Systems
CD-ROM	CDFS (Windows Native file system)
	CSS (ASM file system)
DVD-R	UDF file system (sequential)
DVD-RAM	OSS (ASM file system)
	UDF file system (overwritable)
DVD-ROM	CDFS (Windows Native file system)
Magneto-Optical	OSS (ASM file system)
	UDF file system (overwritable)
	NTFS (Windows Native file system)
	FAT (Windows Native file system, read-only)
NAS	NTFS (Windows Native file system)
Tape	TSS (ASM file system)
WORM	OSS (ASM file system)
WORM-Tape	TSS (ASM file system)

Note: The Data Manager interface only refers to “ASM File System”, “UDF”, and “NTFS” where media file systems are noted. The media type determines which specific subsystem of the file system is applied.

Each file system has benefits and limitations relating to the features and performance of the media to which it is applied. In most cases, you do not have a choice as to which file system to use: NAS and DVD-ROM can only use a Windows Native file system; WORM, WORM-tape, and tape can only use an ASM file system; and DVD-R can only use the UDF file system. For magneto-optical and DVD-RAM media, however, you must choose a file system that best suits your needs. There are two factors to consider: media portability and media performance.

Media portability refers to the ability to read and write to media on Windows devices outside of Data Manager. If, for example, media used to archive files through Data Manager will be distributed to locations that do not have a Data Manager installation, media portability is a concern and should be considered when determining what file system and type of storage media you will use.

Media performance refers to the speed with which Data Manager can write to and read from storage media.

As a general rule, if portability of optical media is a concern, choose Windows Native file systems. Windows Native file systems are overwritable, meaning that files are written to any available location on the media. While these file systems have a performance disadvantage for optical media in comparison to ASM file systems, they are 100% portable (media written in these formats can be read on any Windows system, with or without Data Manager).

ASM file systems are optimized for Data Manager media performance. Unlike Windows Native file systems, which are more generic and feature-rich, ASM “storage subsystems” implement the minimum set of features required to store and retrieve data. For example, ASM file systems are sequential, meaning that files are written in sequential order on the media. As a result, runtime overhead is very low and data is contiguously organized, enhancing overall performance. If portability of storage media is not a concern, choose ASM file systems to provide the best overall system performance.

Data Manager supports UDF file systems in order to support the use of DVD-R media. Although you can format magneto-optical media using UDF, it does not provide a performance advantage over OSS or a portability advantage over NTFS. (Use FAT for magneto-optical media only if you want to provide access to files on media that has already been formatted using FAT.) Similarly, for DVD-RAM media, UDF does not provide a significant performance advantage over OSS, and media using UDF is only portable to the few systems that support UDF, such as Windows XP.

Note: For optical media, NTFS is not recommended unless media portability is essential. Windows Native file systems are not designed for use with optical media.

For more information on file systems, see the following sections:

- "Windows Native File Systems, " which follows
- “ASM File Systems” on page 22
- “UDF File Systems” on page 23

Windows Native File Systems

Windows Native file systems are provided with Windows NT/2000 and are loaded onto the system at the time of the operating system installation. These are feature-rich file systems meant for hard drives, but may be desirable for storage media if you have portability concerns.

ASM supports three Windows Native file systems:

- "NTFS - New Technology File System, " which follows
- “FAT - File Allocation Table” on page 21
- “CDFS - CD-ROM File System” on page 21

NTFS - New Technology File System

This Windows Native file system is supported only by Windows and provides an optimized file system for large volume media. It is specially designed to provide fast access and management of very large volumes of information (gigabytes or even terabytes) and is used primarily for magnetic disks (like hard drives).

NAS media *must* use NTFS, and you can choose NTFS for magneto-optical media.

Note: Be advised that there are differences between the Windows NT NTFS file system and the Windows 2000 NTFS file system. Though the differences are not significant, this does mean that some functions (for example, check disk) may not run properly when executed from a Data Manager installation on one platform and performed on NTFS media formatted on the other platform. The differences do not, however, affect Data Manager's read and write capabilities for NTFS media between operating systems.

FAT - File Allocation Table

This Windows Native file system is supported by many different operating systems, including DOS, Windows 95/98, and Windows NT/2000. It is an older file system that was designed for small-volume (less than 4 GB) management, and is not widely used in Windows NT/2000 server environments.

FAT is not recommended for optical storage management. It is based on older file system technology and does not handle the large volume sizes that today's media capacities require. In addition, the data storage strategy is prone to fragmentation and, over time, deteriorates Data Manager performance.

The FAT file system is supported by ASM as a read-only file system. This means that Data Manager cannot write (migrate files) to media formatted using FAT.

You can use the FAT file system with magneto-optical media; however, you should only use FAT if you want to provide access to files on media that has already been formatted using FAT.

CDFS - CD-ROM File System

This Windows Native file system reads three types of CD-ROM and DVD-ROM formats: ISO-9660, High Sierra, and Joliet. These formats are supported by many different operating systems, and are supported natively by Windows. Most manufactured DVD-ROM media use the ISO-9660 format, and are readable by Data Manager using this Windows native file system.

ASM File Systems

ASM file systems are installed with ASM MediaStor and are optimized for ASM media performance. Unlike Windows Native file systems, which are more generic and feature-rich, ASM “storage subsystems” implement the minimum set of features required to store and retrieve data. For example, ASM file systems are sequential, meaning that files are written in sequential order on the media. As a result, runtime overhead is very low and data is contiguously organized, enhancing overall performance.

There are three ASM file systems:

- "OSS - Optical Storage Subsystem, " which follows
- “TSS - Tape Storage Subsystem” on page 22
- “CSS - CD-ROM Storage Subsystem” on page 23

OSS - Optical Storage Subsystem

This ASM file system supports WORM, DVD-RAM, and magneto-optical media. Files are stored contiguously from the beginning to the end of each piece of media, with single-seek read and write access. This file system provides the best overall read/write performance of all optical file systems supported by ASM.

OSS-formatted media requires ASM for reading and writing. This type of media may be moved from one ASM service to another, but cannot be read without ASM.

When a Delete command is issued, files residing on OSS-formatted media are not deleted; only the file tags on the extended drive are actually deleted. Deleted file space cannot be reclaimed until the media is compacted (all files with file tags on the extended drive are moved back to the extended drive) and the media is reformatted. In addition, files that reside on media but whose file tags are deleted from the extended drive are restored to the extended drive when media is restored to a media folder, or a file restore media task is run on the media.

If WORM media support is required, the OSS file system *must* be used, as it is the only file system supported by ASM for that type of media.

TSS - Tape Storage Subsystem

TSS is the only file system provided for tape and WORM-tape media management. Specifically, ASM supports Digital Audio Tape (DAT) and Digital Linear Tape (DLT). Files are stored contiguously from the beginning to the end of each tape, as with all tape file systems.

TSS-formatted media requires ASM for reading and writing. This type of media may be moved from one ASM service to another, but cannot be read without ASM.

CSS - CD-ROM Storage Subsystem

This file system supports CD-ROM media and is provided to allow use of certain devices that cannot use the CDFS file system, which is a Windows Native file system. It is recommended that you try to use the CDFS file system for a device and then use CSS if CDFS will not work with the device.

UDF File Systems

ASM meets the specifications (version 2.01) laid out for the UDF (Universal Disk Format) file system by the Optical Storage Technology Association (OSTA), a nonprofit international trade association. For more information on OSTA, refer to the OSTA website, http://www.osta.org.

Support for the UDF file system was added to ASM in order to support the use of DVD-R media, but you can also use UDF with magneto-optical and DVD-RAM media.

UDF is intended to allow file interchange between different operating systems; however, only a few operating systems, such as Windows XP, currently support the 2.01 specification and can read media using UDF.

There are two types of UDF file systems: overwritable and sequential. For more information, see the following sections:

- "Overwritable UDF File System, " which follows
- “Sequential UDF File System” on page 23

Overwritable UDF File System

The overwritable UDF file system supports DVD-RAM and magneto-optical media and allows you to read files from and write files to DVD-RAM and magneto-optical media. Files are written to any available location on the media.

Sequential UDF File System

The sequential UDF file system supports DVD-R media. Files are written in sequential order on the media, and you can write files to media only once, although you can write files in multiple sessions. Once the media is full, you can finalize the media, which makes the media unavailable for any more file writes. In addition, finalizing DVD-R media allows it to be read in a Windows XP environment.

Once media is finalized, it functions as read-only media, and you can no longer write files to it.

The Available Media Tree

The Available Media tree contains all media allocated for an extended drive but not yet assigned to a media folder. There are eight nodes in the Media tree. For more information, see the following sections:

- "Original Media, " which follows
- “Copy Media” on page 24
- “Duplicate Media” on page 25
- “Blank Media” on page 25
- “Foreign Media” on page 25
- “Unknown Media” on page 25
- “Unformatted Media” on page 25
- “Corrupt Media” on page 26

Original Media

All media that have been prepared for use with ASM Data Manager 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:

- Assigned to the extended drive through the media service. For more information on allocating media to an extended drive, refer to the *Setting Up Media Services* chapter of the *ASM Data Manager Getting Started Guide*.
- Formatted for the file system for which the hardware device is configured. For more information on formatting media, see “Formatting Media” on page 56.
- Labeled. For more information on labeling media, see “Labeling Media” on page 64.
- Not currently assigned to a media folder.

Media appearing in this list is ready to be assigned to a media folder when necessary. For instructions, see “Adding Media to a Media Folder” on page 67.

Copy Media

Copy media are media that are being used as copies of Original media on the Data Manager extended drive. 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 can be promoted to

Original status once the damaged original is removed from the system. For information on creating Copy media, see “Creating and Managing Copies of Media” on page 103.

Duplicate Media

Duplicate media is any media with the same serial number as another piece of media on the extended drive. Duplicate media is unusable with Data Manager and must be reformatted (if the media allows it) in order to have another serial number assigned to it.

Blank Media

Blank media are media that have been formatted for use with Data Manager but not yet labeled. Blank media can be labeled, reformatted, or labeled for use as a copy (if the media allows it).

Foreign Media

Any media that has been formatted for a file system other than that of its current device or with a file system not supported for that media type is considered by Data Manager to be “foreign” media and is placed in the Foreign media list. Media in this list can be formatted (if the media is of a type that Data Manager supports). Foreign media must be reformatted with the appropriate file system in order to be used for file migration. For information on formatting media, see “Formatting Media” on page 56.

Note: Unformatted DVD media may appear as Foreign rather than Unformatted if the device in which it resides is configured to use the UDF file system.

Unknown Media

Unknown media encompasses any media in the hardware device that Data Manager does not recognize. The problem could be an unsupported media type or an unsupported file system. For detailed information on what media types are supported by Data Manager, see “Types of Storage Media” on page 14.

Unformatted Media

All unformatted media are listed under the Unformatted media node. This usually encompasses media that was unpackaged and placed in the device and has not yet been formatted for the first time. Media in this list must be formatted before it can be used. For information on formatting media, see “Formatting Media” on page 56.

Note: Unformatted DVD media may appear as Foreign rather than Unformatted if the device in which it resides is configured to use the UDF file system.

Corrupt Media

The Corrupt media classification identifies specifically DVD-R media using the UDF file system. Corrupt media is media that the system recognizes but cannot use due to problems with the media itself. Media corruption most often occurs as a result of a power failure while the media was being written to. Performing a check disk media task on the media may allow you to find and repair the media errors. For more information on running a check disk media task, see “Running Check Disk on a Piece of Media” on page 113.

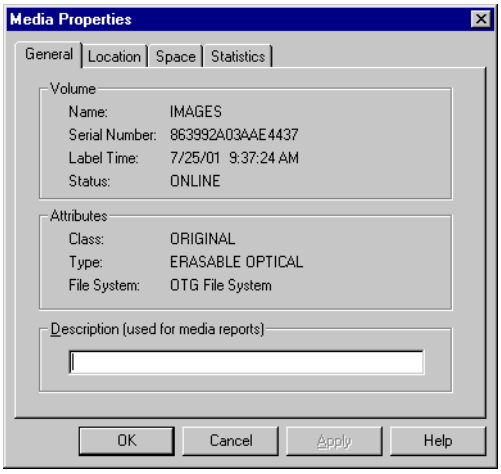
■ Viewing Media Properties

The Media Properties dialog box allows you to view detailed information about a piece of media, including the type, file system, location, number of files, amount of free and used space, number of file reads, writes, and errors, and the status of a media task if one is in progress. The properties command is always available for every piece of media on an extended drive, regardless of the current use, assignment, or status of the media.

To view media properties:

1. Double-click the media whose properties you want to view. The Media Properties dialog box appears.

Figure 1. Media Properties Dialog Box



2. View and modify the settings on each of the tabs as necessary. The tabs that appear depend on the type of media and its status. For example, the Statistics tab only appears for Original and Copy media, and the Progress

tab only appears for media with tasks that are currently processing. For more information, see the following sections:

- "The General Tab, " which follows
- “The Location Tab” on page 29
- “The Space Tab” on page 30
- “The Statistics Tab” on page 31
- “The Progress Tab” on page 33

3. As with most Properties functions in ASM, after making changes you have three options:
   - To save changes and close the Properties dialog box, click OK.
   - To save changes and keep the Properties dialog box open, click Apply.
   - To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

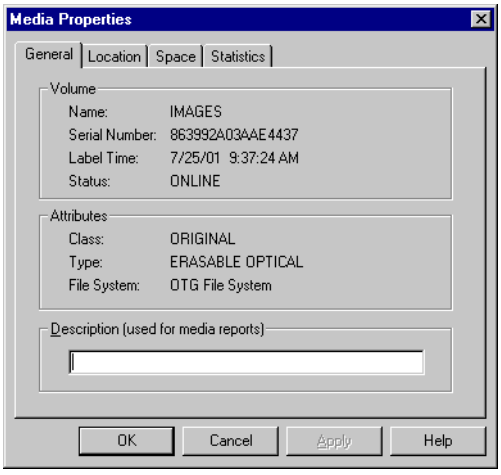
The General Tab

The General tab of the Media Properties dialog box provides identifying information for the selected media. For Original, Copy, and Duplicate media, you can use this tab to enter a brief description of the media. This description is then used for media reports.

To view the General tab:

- Click the General tab.

Figure 2. Media Properties – General Tab



The information on the tab is separated into three sections: Volume, Attributes, and Description. The following table describes each of the items appearing on the General tab:

Table 5. Media Properties – General Tab Items

Item	Description
Name	Name assigned to the media when labeled
Serial Number	Serial number of the media. For more information, see "Media Serial Numbers, " which follows.
Label Time	Date and time the media was labeled
Status	Current status of media (typically online or offline)
Class	Current class of media, corresponding to the media's listing in the Available Media tree. For more information, see "The Available Media Tree" on page 24.
Type	The type of storage media
File System	The media's file system
Description	An editable field where you can enter a media description to be used for media reports. The maximum number of characters that can be entered into the Description text box is 128.

Note: For blank, foreign, unknown, unformatted, and corrupt media, the General tab displays "N/A" in the Name, Serial Number, and Label Time fields, and the Description field is not available for editing. For Tivoli Storage Manager (TSM) and EMC Centera (EMC) media, the Type and File System fields display "TSM" and "EMC" respectively.

Media Serial Numbers

Because media can be taken from one ASM system and imported or placed in another, media name is not sufficient for tracking media. While not recommended, ASM does allow more than one piece of media with the same name. Therefore, ASM must use the serial number of media to track the media and the files migrated to the media.

ASM can support more than one piece of media with the same name on an extended drive, provided they have different serial numbers. If ASM identifies two pieces of media with the same serial number, it classifies one as Duplicate and requires that it be reformatted (which gives the media a new serial number) before it can be used.

Media serial numbers provide a way to track all ASM media uniquely, irrespective of the ASM system in which they were formatted. The serial number is an eight-byte integer, represented as a hexadecimal string in the

following format: *XXXXXXXXYYYYYYYY*. The serial number is broken down as follows:

Table 6. Serial Number Interpretation

Position	Description
(*XXXXXXXX*)	The serial number from the Windows system boot drive (usually drive C:). Windows assigns this number when the hard drive is formatted. This number is unique for all hard disks.
(*YYYYYYYY*)	The encoded date/time that the media was labeled, expressed in seconds elapsed since midnight on January 1, 1970.

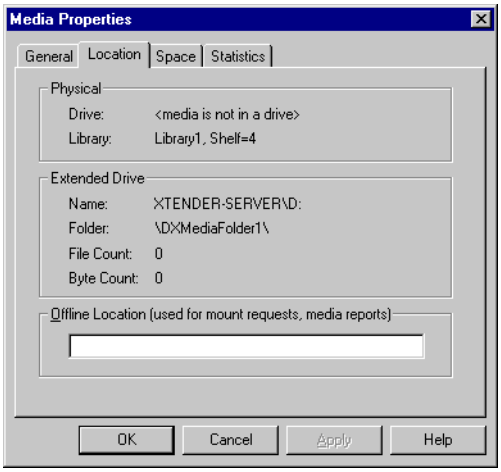
The Location Tab

The Location tab of the Media Properties dialog box provides information about the physical and logical location of the selected media. You can also enter an offline location for the media, which is used for mount requests and media reports. This location is also shown when a MEDIA NOT FOUND error appears.

To view the Location tab:

- Click on the Location tab.

Figure 3. Media Properties – Location Tab



The information on the tab is separated into three sections: Physical, Extended Drive, and Offline Location. The following table describes each of the items appearing on the Location tab:

Table 7. Media Properties – Location Tab Items

Item	Description
Drive	The drive in which the media is mounted
Library	The library in which the media is located, and the media's location in the library (drive and/or shelf number)
Name	Name of the computer and the extended drive to which the media is assigned
Folder	Name of the media folder to which the media is assigned
File Count	Number of files on the media
Byte Count	Number of bytes used on the media
Offline Location	Physical location where offline media are stored. Enter up to 128 characters in the text box (for example, Second Floor Storage Room, Shelf 25D).

Note: If the selected media has not been added to a media folder, the Location tab displays "N/A" for the Folder field. In addition, you can only edit the Offline Location text box for Original and Copy media.

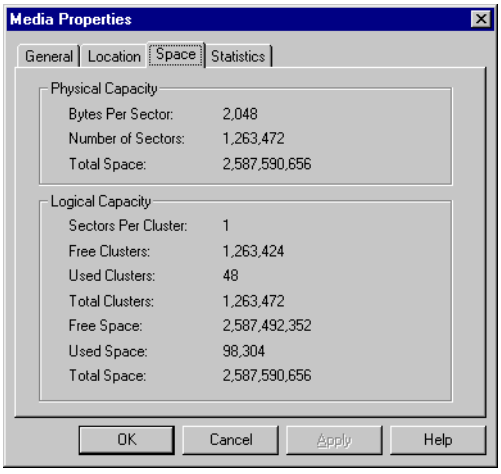
The Space Tab

The Space tab of the Media Properties dialog box provides statistical information on the physical and logical capacity of the selected media.

To view the Space tab:

- Click on the Space tab.

Figure 4. Media Properties – Space Tab



The information on the tab is separated into two sections: Physical Capacity and Logical Capacity. The following table describes each of the items appearing on the Space tab:

Table 8. Media Properties – Space Tab Items

Item	Description
Bytes per Sector	Number of bytes written to the media per sector (determined by media)
Number of Sectors	Total number of sectors on media
Total Space	Total media space, in bytes
Sectors per Cluster	Number of sectors per cluster
Free Clusters	Number of free clusters on the piece of media
Used Clusters	Number of used clusters on the piece of media
Total Clusters	Total number of clusters on the piece of media
Free Space	Free space in bytes on the piece of media
Used Space	Written space in bytes on the piece of media
Total Space	Total space in bytes on the piece of media

Note: For blank, foreign, unknown, unformatted, and corrupt media, the Space tab displays “N/A” for all fields in the Logical Capacity region of the tab. For unformatted media, the Space tab displays “N/A” for all fields in the Physical Capacity region. For blank, unknown, unformatted, and corrupt media, the Total Space is set to zero.

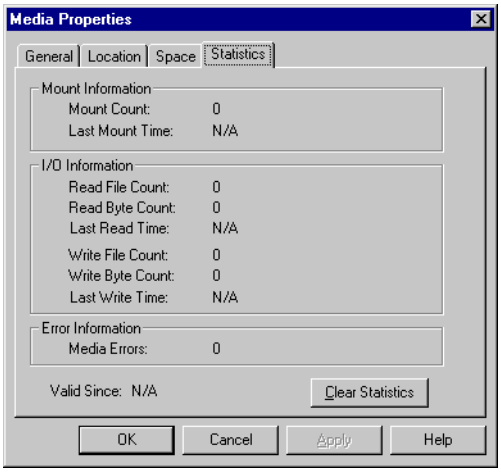
The Statistics Tab

The Statistics tab of the Media Properties dialog box provides statistics relating to mounts, file input and output, and errors for the selected media.

To view the Statistics tab:

- Click on the Statistics tab.

Figure 5. Media Properties – Statistics Tab



The information on the Statistics tab is separated into three sections: Mount Information, I/O Information, and Error Information. It also provides information on the date from which the statistics are calculated.

In addition, the Statistics tab contains a Clear Statistics button which will clear the statistics displayed on the tab and reset the date from which the statistics are calculated. This function may be particularly useful to perform on Copy media, so that Data Manager has an accurate view of the differences between written bytes on the Original as compared to the Copy. This helps ensure that the Copy media is updated as appropriate.

Note: The Statistics tab does not appear for foreign, blank, unknown, unformatted, or corrupt media.

The following table describes each of the items appearing on the Statistics tab:

Table 9. Media Properties – Statistics Tab Items

Item	Description
Mount Count	Number of mounts per current session
Last Mount Time	Time the media was last mounted
Read File Count	Number of read requests during current session
Read Byte Count	Number of bytes of files read during current session
Last Read Time	Time the media was last read
Write File Count	Number of write requests during current session
Write Byte Count	Number of bytes of files written during current session
Last Write Time	Time the media was last written

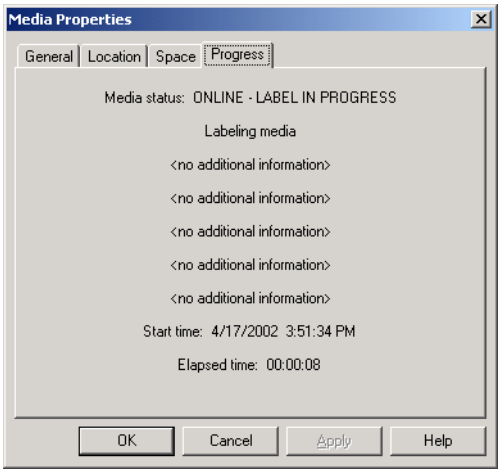
Table 9. Media Properties – Statistics Tab Items

Item	Description
Media Errors	Number of errors encountered per current session
Valid Since	The date from which the statistics on this tab are calculated
Clear Statistics button	To clear the statistics and reset the date from which the statistics on this tab are calculated, click Clear Statistics.

The Progress Tab

During certain system activities, the Media Properties dialog box contains an extra Progress tab, which displays the progress of a current activity. Once the activity has been completed, the Progress tab no longer appears.

Figure 6. Media Properties – Progress Tab



The following table describes each of the items appearing on the Progress tab in addition to the descriptive information that appears about the specific activity in progress:

Table 10. Media Properties – Progress Tab Items

Item	Description
Media status	Current status of media
Start time	Time the activity in progress began
Elapsed time	Total amount of time that has passed since the activity began

Media Tasks

Media tasks are media activities that you can actively assign to specific pieces of media. Media tasks include:

- Add to media folder
- Add to move group
- Check disk
- Compact
- File report
- File restore
- Finalize
- Format
- Label
- Label copy
- Prefetch (all files on a specified piece of media)
- Remove from media folder
- Remove from move group

ASM Data Manager only allows you to set up certain combinations of tasks. Which tasks are available is dependent on the status of that piece of media. For example, if you set a format task for a piece of media, Data Manager allows you to set up a label task to follow it, but does not offer you the option of adding the media to a media folder until it is labeled (or until you assign a label task). Or, if a piece of media already belongs to a move group, the remove from move group task is available, but not the add to move group task. For tasks that cannot be queued in combination, you can set up one set of tasks, allow the tasks to process, and then set up another set of tasks.

When you assign media tasks to a piece of media, you can choose to process the tasks immediately or schedule them to process later. Be advised, however, that since media tasks are assigned specifically to media, *all* tasks assigned to a piece of media must be run together – either ASAP or scheduled. Media that have tasks assigned as “scheduled” are processed during the time when the Process scheduled media tasks schedule is active.

When you choose to assign a task, the media to which the task is assigned is added to the media task queue. Media are processed in the order in which they appear in the media task queue. All tasks for each media are processed before Data Manager moves to the next media in the queue. You can control

the order of media in the queue, thereby controlling when media with assigned tasks are processed.

Note: If you have multiple drives available for media to be mounted, multiple pieces of media may have their assigned tasks processed simultaneously.

The Media Task Queue Manager allows you to view and manage media with pending, suspended, and in progress media tasks. Media can be removed, added, promoted, or demoted using the Media Task Queue Manager. All tasks assigned to media in the Data Manager system can also be managed from the queue.

For more information, see the following sections:

- "Opening the Media Task Queue Manager, " which follows
- “Adding a Media Task” on page 36
- “Monitoring Media Tasks” on page 39
- “Editing Media Tasks” on page 42
- “Reordering Media Tasks in the Queue” on page 44
- “Aborting a Media Task in Progress” on page 45
- “Deleting Media Tasks” on page 46

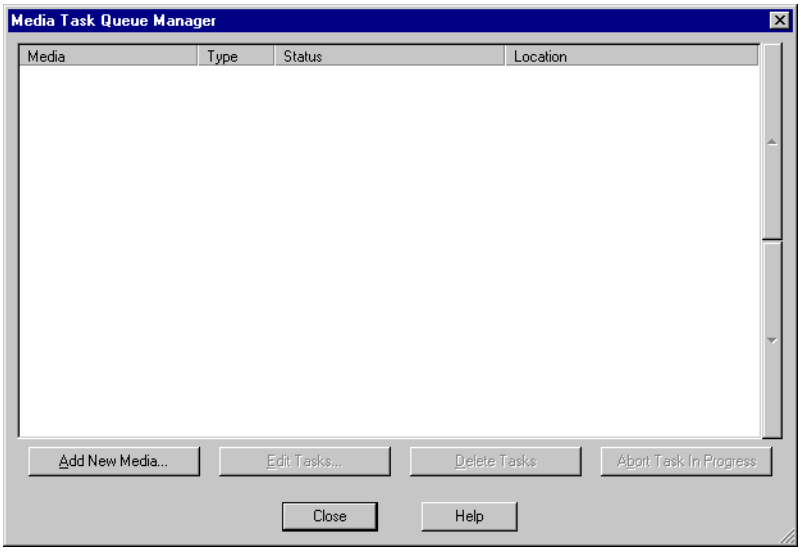
Opening the Media Task Queue Manager

Once you open the Media Task Queue Manager, you can add, edit, remove, abort, and reorder tasks for media listed in the media task queue.

To open the Media Task Queue Manager:

1. In the tree view of the Administrator, select the extended drive for which you want to configure media tasks.
2. Press <CTRL>+T, or, from the Tools menu, select Media Task Manager. The Media Task Queue Manager dialog box appears.

Figure 7. Media Task Queue Manager Dialog Box



Adding a Media Task

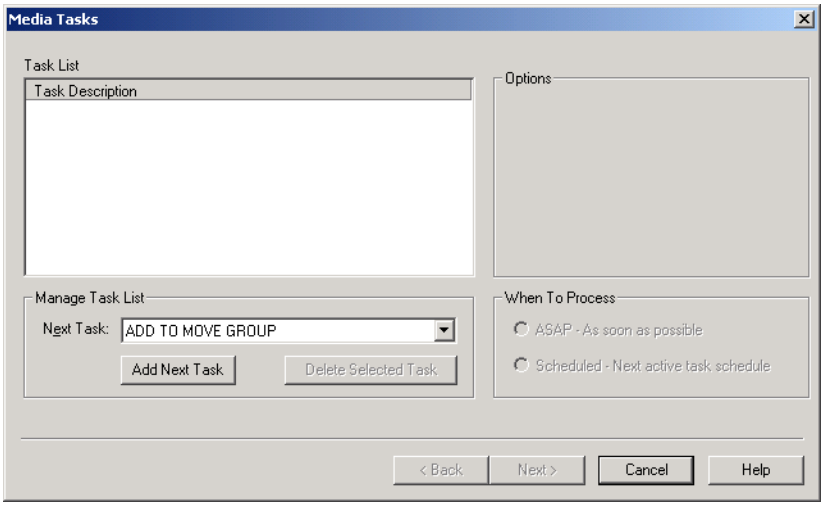
Media is added to the media task queue whenever you assign a task to a piece of media that did not have a task assigned to it before. You can add tasks to media either through the Media Task Queue Manager or using the Edit Tasks option on the shortcut menu for media.

Note: If you want to add a media task to a piece of media that currently has other tasks assigned to it, follow the steps in “Editing Media Tasks” on page 42.

To add a media task:

1. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add a task and then select Edit Tasks from the shortcut menu that appears. The Media Tasks page appears.
   - Open the Media Task Queue Manager and then click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign a media task and then click Next. The Media Tasks page appears.

Figure 8. Media Tasks Page

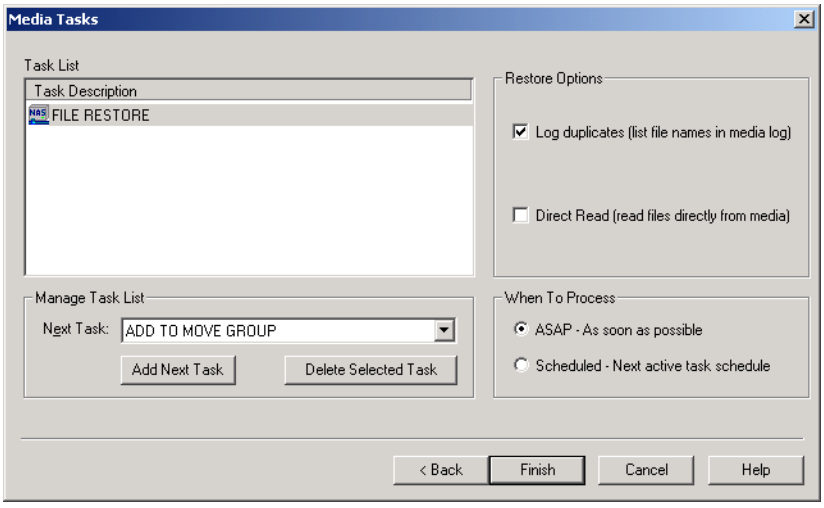


2. From the Next Task drop-down list, select the media task you want to add and then click Add Next Task.

   Note: Remember, the tasks that appear in the Next Task drop-down list are dependent on the status of the selected piece of media. For example, if a piece of media already belongs to a move group, the remove from move group task is available, but not the add to move group task.

   The task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 9. Media Tasks Page with Task Added



3. Enable or disable the options as necessary in the Options region of the Media Tasks page. The options that appear depend on the media task you

selected. The following table contains a list of media tasks and the section in this guide where you can find more information about the task:

Table 11. Media Tasks

Media Task	For More Information, See...
Add to media folder	“Using the Add to Media Folder Media Task” on page 71
Add to move group	“Using the Add to Move Group Media Task” on page 74
Check disk	“Running Check Disk on a Piece of Media” on page 113
Compact	“Using the Compact Media Task” on page 80
File report	“Assigning a File Report Media Task” on page 340
File restore	“Restoring Files from Media” on page 77
Finalize	“Finalizing Media” on page 82
Format	“Using the Format Media Task” on page 57
Label	“Using the Label Media Task” on page 65
Label copy	“Using the Label Copy Media Task” on page 109
Prefetch	“Requesting All Files from a Piece of Media Using a Prefetch Media Task” on page 215
Remove from media folder	“Using the Remove from Media Folder Media Task” on page 92
Remove from move group	“Using the Remove from Move Group Media Task” on page 85

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

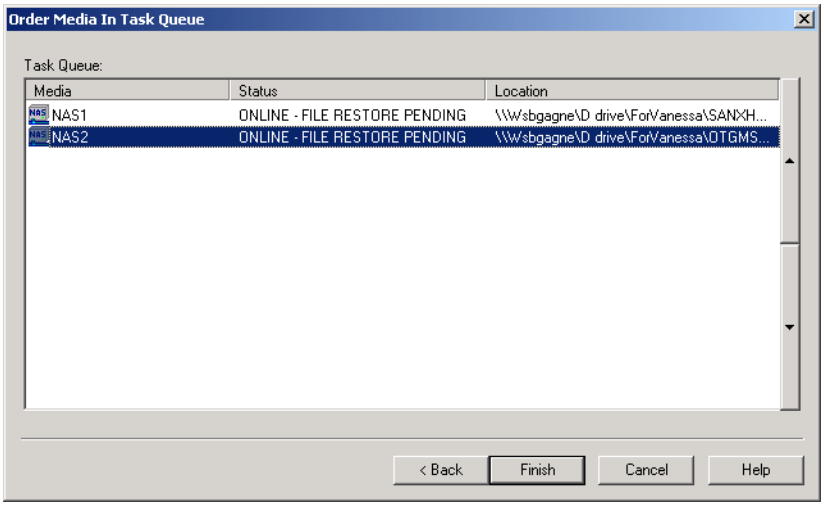
   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed simultaneously. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Repeat steps 2 through 4 for all remaining tasks you want to add to the selected piece of media.

6. After tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

- If you added the task(s) through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the new media listed and the task(s) pending.
- If you added the task(s) using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

Figure 10. Order Media In Task Queue Page



7. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Monitoring Media Tasks

After you have assigned media tasks to a piece of media, you can monitor the media tasks to be sure they complete successfully. You can configure Data Manager to change the color of media items in the tree view of the Administrator depending on task status. You can also view media logs. If an error occurs, you can clear the task error status so that other activities can take place on the media or so that you can attempt to run the media task again.

For more information, see the following sections:

- "Configuring Data Manager to Indicate Media Status by Color, " which follows
- “Viewing Media Logs” on page 40

Configuring Data Manager to Indicate Media Status by Color

You can configure the media items in the tree view of the Administrator to change color depending on their status. This option is enabled by default. The following table lists each color and describes the status indicated by each color:

Table 12. Media Status Indicated by Color

Media Color	Media Status
Black	Online
Green	Online but with a task pending, in progress, or suspended
Red	Error
Yellow	Offline

To configure the tree view to indicate media status by color:

- From the View menu, select Enable Color. A check mark next to the Enable Color option signifies that the option has been enabled. If this option is disabled, all media items are black, regardless of status.

Viewing Media Logs

Data Manager maintains a log of activity for each piece of media in the Data Manager system. These logs are useful for viewing task processing information and error codes/status for failed tasks.

In addition, if a media task is suspended, an entry in the media log will note when the task will be retried.

To open a media log:

- In the tree view of the Administrator, right-click the media whose log you want to view and select View Log from the shortcut menu that appears.

  The media log for the piece of media appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the log. For more information, see “Using RtfPad” on page 303.

Clearing Media Logs

Media logs have a specific size limitation, after which the log is truncated from the beginning of the file. While the log size is regulated through automatic truncation, large logs are often cumbersome and difficult to navigate. Clearing media logs regularly makes it easier to find new information.

Note: You may want to save your log before clearing it. To save a log, open it and then select Save from the File menu in RtfPad.

To clear a media log:

1. In the tree view of the Administrator, right-click the media whose log you want to clear, and then select Clear Log from the shortcut menu that appears.
2. Click Yes on the confirmation message that appears.

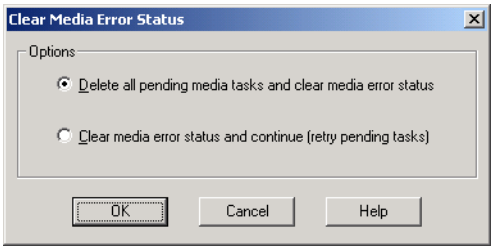
Clearing Task Error Status

If a task for a piece of media fails or an aborted task remains in the task queue as a failed task, you may need to clear the error status for the piece of media before any other activities for that media can take place.

To clear the error status for a piece of media:

1. In the tree view of the Administrator, right-click the media encountering the error and then select Clear Error Status from the shortcut menu that appears. The Clear Media Error Status dialog box appears.

Figure 11. Clear Media Error Status Dialog Box



2. You have the following choices:
   - To cancel all pending tasks and clear the error status, select Delete all pending media tasks and clear media error status.
   - To clear the error status and continue processing assigned tasks, select Clear media error status and continue [retry pending tasks].
3. Click OK.

Editing Media Tasks

You can edit tasks assigned to media already in the media task queue. When editing tasks for a piece of media, you can change what tasks are assigned (add or remove tasks) or change the options configured for existing tasks.

Note: If you attempt to edit the assigned tasks for a piece of media whose tasks are in progress or about to be processed (media has been mounted), you may receive an error message and may be unable to edit the tasks for that media.

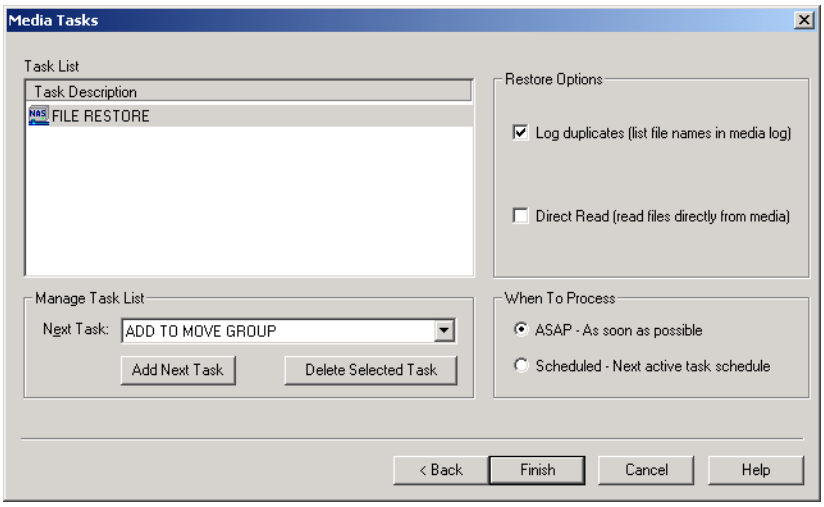
To edit media tasks for a piece of media:

1. You have the following choices:

   - In the tree view of the Administrator, right-click the piece of media for which you want to edit tasks and then select Edit Tasks from the shortcut menu that appears.
   - Open the Media Task Queue Manager and select the piece of media for which you want to edit tasks. Click Edit Tasks.

   The Media Tasks page appears.

Figure 12. Media Tasks Page



2. You have the following choices:

   - Add a new task for the piece of media. For instructions, see “Adding a Media Task” on page 36.
   - To delete a task, select the task from the list and click Delete Selected Task.
   - To edit a media task, select the task from the list. The Options and When To Process regions of the Media Tasks page become available with the settings you selected when you added the task.

3. If you are editing a task, you have the following choices:

   - Enable or disable the options as necessary in the Options region of the Media Task page. The options that appear depend on the media task you selected. The following table contains a list of media tasks and the section in this guide where you can find more information about the task:

Table 13. Media Tasks

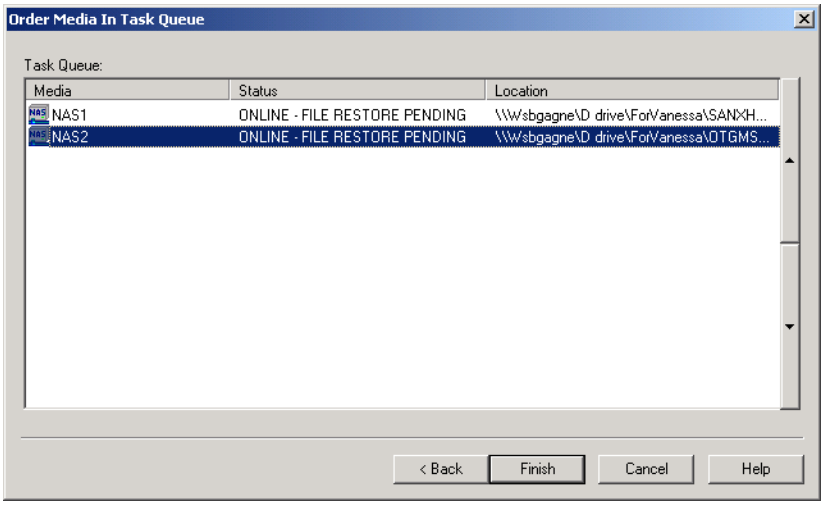
Media Task	For More Information, See...
Add to media folder	“Using the Add to Media Folder Media Task” on page 71
Add to move group	“Using the Add to Move Group Media Task” on page 74
Check disk	“Running Check Disk on a Piece of Media” on page 113
Compact	“Using the Compact Media Task” on page 80
File report	“Assigning a File Report Media Task” on page 340
File restore	“Restoring Files from Media” on page 77
Finalize	“Finalizing Media” on page 82
Format	“Using the Format Media Task” on page 57
Label	“Using the Label Media Task” on page 65
Label copy	“Using the Label Copy Media Task” on page 109
Prefetch	“Requesting All Files from a Piece of Media Using a Prefetch Media Task” on page 215
Remove from media folder	“Using the Remove from Media Folder Media Task” on page 92
Remove from move group	“Using the Remove from Move Group Media Task” on page 85

   - Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed simultaneously. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

4. Repeat steps 2 and 3 for all remaining tasks you want to edit for the selected piece of media.
5. Once tasks have been edited as needed in the Media Tasks page, you have the following choices:
   - If you edited the task(s) through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the new media listed and the task(s) pending.
   - If you edited the task(s) using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the edited media at the bottom of the media task queue list.

Figure 13. Order Media In Task Queue Page

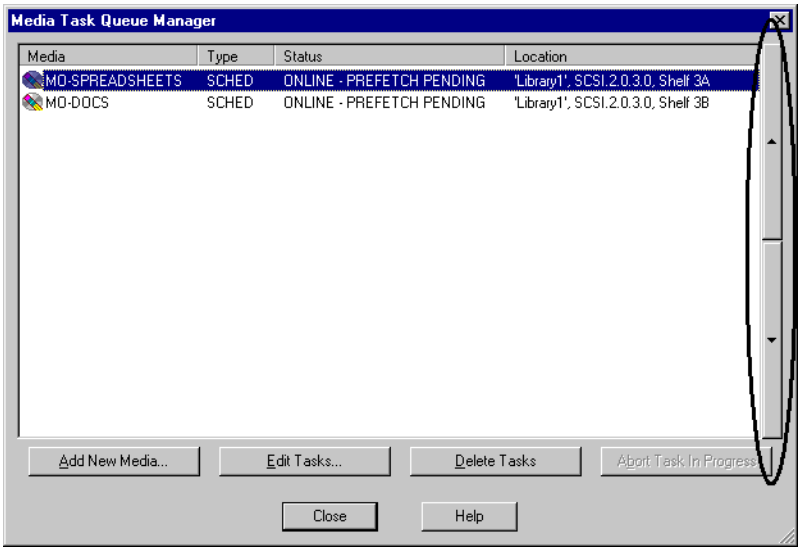


6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

Reordering Media Tasks in the Queue

You can change the processing order of the media in the Media Task Queue Manager using the arrow buttons on the right side of the dialog box.

Figure 14. Promote/Demote Arrow Buttons



Since all assigned tasks for a piece of media are processed simultaneously, moving a piece of media in the queue also moves all tasks assigned to that media.

To promote a piece of media in the queue:

- Select the piece of media and click the up button.

To demote a piece of media in the queue:

- Select the piece of media and click the down button.

Aborting a Media Task in Progress

The Media Task Queue Manager lists the status of media with pending, in progress and suspended tasks. You can choose to stop a task currently in progress. All media tasks with the exception of the format, finalize, label, and label copy tasks can be stopped in progress.

Once you stop a media task in progress, you may have to clear the error status for the media before the next scheduled task begins. For instructions, see “Clearing Task Error Status” on page 41. If there is no error status to be cleared, the next pending media task starts processing automatically.

Note: To abort pending or suspended media tasks, use the Edit Tasks option and delete the appropriate tasks from the media.

To stop a task in progress:

1. You have the following choices:
   - In the tree view of the Administrator, right-click the piece media for which you want to abort the media task currently in progress, and then select Abort Task in Progress from the shortcut menu that appears.

- Open the Media Task Queue Manager and select the piece of media for which you want to abort the media task currently in progress. Click Abort Task in Progress.

2. Click Yes on the confirmation message that appears.
3. If the aborted task remains in the task queue as a “failed” task, clear the error status in order to process the remaining tasks (if any) for that piece of media. For instructions, see “Clearing Task Error Status” on page 41.

Deleting Media Tasks

You can remove pending tasks for a piece of media from the media task queue. When all tasks are deleted from a piece of media, the media is removed from the media task queue.

Note: Since you cannot delete a task if it is already in progress, you must first stop any tasks that are currently processing before deleting them. For more information, see “Aborting a Media Task in Progress” on page 45. For instructions on deleting only a portion of assigned tasks for a piece of media, see “Editing Media Tasks” on page 42.

To delete all tasks for a piece of media in the queue:

1. Open the Media Task Queue Manager.
2. Select the media for which you want to delete all assigned tasks.
3. Click Delete Tasks. A confirmation message appears.
4. Click Yes. The Media Task Queue Manager dialog box reappears, without the media in the queue.

■ Media Activities

A media activity is an activity that requires a piece of media to be online and accessible to ASM Data Manager in order for the activity to take place. There are six types of media activities:

- "Fetching Files from Media, " which follows
- “Moving Files to Media” on page 48
- “Prefetching Files from Media” on page 48
- “Processing Scheduled Media Tasks” on page 49
- “Updating Copy Media” on page 50
- “Flushing Transactions to Media” on page 50

Frequent mounting and dismounting of media can have a wear-and-tear effect on the library devices that move media to and from the drives where the media is mounted. Problems can also arise when there are requests pending to mount more pieces of media than there are drives available.

Data Manager gives you control over media activities by allowing you to schedule four of the six storage media activities: Move files to media, Process scheduled media tasks, Update media copies, and Allow fetches from media. In addition, you can schedule prefetch requests through the Prefetch Request Manager. Scheduling of these media activities lets you ensure efficient management of media mounts and dismounts within a device, and allows you to reduce competition for available drives during peak usage times. For more information, see “Scheduling Media Activities” on page 52.

In addition to the scheduling mechanism, Data Manager has a built-in precedence system that causes particular activities to always take precedence over others. Understanding the priority system allows you to schedule activities in the most efficient way possible in order to avoid conflicts with system resources. For more information, see “Priority of Media Activities” on page 51.

Fetching Files from Media

When a client attempts to open a file on the extended drive, the file data may or may not be present on the extended drive. If the file is present, Data Manager allows Windows to handle the file request. If only the file tag is present on the extended drive (file data has been moved to storage media and purged from the volume), Data Manager retrieves the file from media, copies the file back to the extended drive, and completes the client request. When a file is retrieved, this process is referred to as a “fetch.”

A fetch is a media activity because it requires that media to be mounted, and may use network resources for the transfer of fetched files.

Fetch requests are carried out as soon as the request is issued unless the Allow fetches from media schedule is inactive. Because the retrieval of files is one of the most important Data Manager activities, the Allow fetches from media schedule is always active by default. Some organizations, however, require that fetch access to files on media be restricted at certain times of the day. For instructions on setting the Allow fetches from media schedule, see “Scheduling Media Activities” on page 52.

Note: The Allow fetches from media schedule only pertains to individual client requests for purged Data Manager files from media. It does not apply to or affect prefetch requests.

If you restrict client fetch requests, the Defer fetch requests if fetch is disabled option on the Options tab of the Extended Drive Properties dialog box allows you to queue file requests when the Allow fetches from media schedule is inactive. If this option is enabled, Data Manager queues all file requests made

during an inactive fetch schedule as deferred fetches. Data Manager then processes all deferred fetches when the Allow fetches from media schedule becomes active. For more information on the Defer fetch requests if fetch is disabled option, see “Defer fetch requests if fetch is disabled” on page 273.

You can also configure Data Manager to cancel fetch requests after a certain number of minutes. The Fetch request timeout minutes option on the Options tab of the Extended Drive Properties dialog box 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. For more information, see “Fetch request timeout minutes” on page 268.

Moving Files to Media

When a file becomes eligible for move, the name of the file is added to the move list. Depending on the move rule settings, the file name is added either immediately or during the next drive scan. When a drive scan is run, every potentially eligible file on the drive is checked and a move list created from the results.

When the Move files to media schedule is active, Data Manager copies the files on the move list out to storage media, and purges any moved files that have the Purge files immediately after move option (on the Settings tab of the Move Rule Properties dialog box) configured. The Move files to media schedule applies to all files currently on the move list.

For instructions on setting the Move files to media schedule, see “Scheduling Media Activities” on page 52.

Prefetching Files from Media

Data Manager contains a prefetch capability, which allows you to retrieve frequently used files from storage media in advance of their being requested by a client. This allows you to reduce read requests during high traffic times by anticipating file retrieval needs. A prefetch request is a media activity because it requires media to be mounted. During a prefetch, Data Manager retrieves the specified files (except for files marked for direct read) from storage media and writes the file data to the extended drive.

Data Manager has two different prefetch functions: Prefetch requests, and the Prefetch media task.

Prefetch requests are configured using the Prefetch Request Manager. Prefetch requests allow you to select specific files for prefetching. In addition, the Prefetch Request Manager contains a separate scheduling function, to allow you to prefetch the selected files at a particular time or on a set schedule. For more information on creating and scheduling prefetch requests, see “Requesting Specific Files Using Prefetch Requests” on page 196.

The prefetch media task writes all files from a selected piece of media to the corresponding media folder on the extended drive (ignoring duplicates and files marked for direct read). The prefetch media task (like all media tasks) is governed by the Process scheduled media tasks schedule. For more information on assigning a prefetch media task, see “Requesting All Files from a Piece of Media Using a Prefetch Media Task” on page 215. For more information on scheduling the Process scheduled media tasks activity schedule, see “Scheduling Media Activities” on page 52.

Note: Data Manager does not support direct read of files with streams. For this reason, if you prefetch a streamed file that is marked for direct read, the file data is fetched and the direct read attribute is removed from the file.

Processing Scheduled Media Tasks

Media tasks are activities that you can actively assign to specific pieces of media. Media tasks include:

- Add to media folder
- Add to move group
- Check disk
- Compact
- File report
- File restore
- Finalize
- Format
- Label
- Label copy
- Prefetch (all files on a specified piece of media)
- Remove from media folder
- Remove from move group

When you assign media tasks to a piece of media, you can choose to process the tasks immediately or to schedule them to process later. When you select the immediate processing option, Data Manager starts processing the task right away. When you choose to schedule a task, the activity does not occur until the Process scheduled media tasks schedule is active.

When the Process scheduled media tasks schedule is active, Data Manager processes all scheduled tasks for media listed in the media task queue, in the order in which the media are listed. Once all scheduled tasks for a piece of

media are complete, Data Manager removes the media from the queue and proceeds to the next piece of media.

Note: If you have multiple drives available for media to be mounted, multiple pieces of media may have their assigned tasks processed simultaneously.

For more information on media tasks, see “Media Tasks” on page 34. For instructions on setting the Process scheduled media tasks schedule, see “Scheduling Media Activities” on page 52.

Updating Copy Media

Data Manager automatically updates any piece of copy media that is less than 100% updated during active copy schedule times. When a copy created, it is managed and tracked automatically by Data Manager.

When the Update copy media schedule is active, Data Manager checks each copy against its original to determine whether any updates should be made to the copy. Data Manager searches for the number of sectors written, and knows how much of the media it has left to copy. If updates are required, Data Manager updates the copy.

Note: If the copy media is offline at the time the Update copy media schedule is active, the copy is not updated.

Update status for individual pieces of copy media can be viewed through the Copy Media Manager, which is accessible from the Tools menu in the Data Manager Administrator. For more information on creating and managing copies, see “Creating and Managing Copies of Media” on page 103.

Note: We recommend that you update any DVD-R media copies immediately after finalizing the original, to ensure the copy is complete. Then, finalize the copies to ensure the security of the data on the DVD-R copy.

Note: In some cases, the update status for a copy may appear as 100%, but the written bytes between the Copy and the Original are different. If this happens, open the media properties for the Copy, and clear the statistics. This allows Data Manager to reset the tally for written bytes and update the copy appropriately. See “The Statistics Tab” on page 31 for more information.

Flushing Transactions to Media

When changes are made to file attributes on the extended drive, the piece of media where that file is stored is not always immediately mounted so that the version of the file on the media can be changed. Instead, Data Manager logs the change to the file in a transaction log for the piece of media, and saves that information until the next time the media is mounted. The transaction log

is an area reserved on the Data Manager computer's hard drive to automatically record all changes that are made. When the media is mounted, Data Manager "flushes" the transaction out to media. The file changes are then reflected on the media.

Note: Certain types of transactions are possible on the extended drive but not possible on certain types of media. For more details on transaction logging, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

For currently mounted media in a library drive, Data Manager always flushes transaction logs to media before responding to fetch requests, moving files, or processing media tasks. Transaction logs for media mounted in a standalone drive or tower are flushed automatically every minute (or immediately when a media rename occurs).

In libraries, ASM can use the library robotics to mount and dismount media without requiring manual insertion and removal of media by the administrator. For this reason, ASM mounts media in a library specifically to flush transaction logs to the media and keep the media updated. ASM uses the following rules for dismounting media currently in a library drive and mounting media on shelves in a library to transfer logged information to the media:

- For media currently mounted in the drive for fetch, transactions are flushed when the drive becomes available after the timeslice setting expires. The timeslice setting is configured on the Options tab of the Service Properties dialog box. For more information, see "The Options Tab" on page 299.
- For media currently mounted in the drive for move, transactions are flushed when there is nothing left to move (or when the Move files to media schedule is inactive). The Move files to media schedule is configured from the Settings tab of the Extended Drive Properties dialog box. For more information, see "Scheduling Media Activities" on page 52.
- For media mounted for media tasks, transactions are flushed before the tasks are processed. The Process scheduled media tasks schedule is also configured from the Settings tab of the Extended Drive Properties dialog box. For more information, see "Scheduling Media Activities" on page 52.
- For media mounted for copy, transactions are flushed when there are no copies left to update (or when the Update copy media schedule is inactive). The Update copy media schedule is also configured from the Settings tab of the Extended Drive Properties dialog box. For more information, see "Scheduling Media Activities" on page 52.

Priority of Media Activities

Data Manager has a built-in precedence system that causes particular activities to always take precedence over others. For example, retrieval of requested files from media always takes precedence over all other media activities. If a client requests a file that has to be retrieved from media, the

media activity precedence rules observed by Data Manager ensure that the client does not have to wait for other pending media activities to take place before the piece of media containing the needed file is mounted.

For this reason, we generally recommend that you schedule file migration, media tasks, and media copy updates at a time when client retrieval requests are at a minimum.

The following list outlines the order of precedence for Data Manager activities:

- Fetching files from media (including deferred fetches)
- Moving files to media
- Prefetching files from media
- Processing scheduled media tasks
- Updating copy media
- Flushing transactions to media (library drives only)

When schedules overlap, Data Manager performs activities according to these priorities. For example, file fetches are performed before files are moved to media, if they conflict.

Note: The priority listing above only applies when activity processing happens to occur simultaneously, due to either overlapping schedules or other system requests. In addition, if a piece of library media is mounted and there are transactions waiting to be flushed to that piece of media, the transactions are flushed before the media is dismounted, regardless of the priority of media activities listed above.

Move files to media and Flush media transactions are interruptible events; the others are not. This means that if, for example, a file move is in progress and media restore is scheduled to begin, the file being moved at that time is finished, but no other files are moved, allowing the media restore to begin. Conversely, if files are being fetched and the Move files to media schedule becomes active, the fetches finish before the movement of files begins.

Scheduling Media Activities

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

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

Note: Prefetch requests are scheduled separately from other media activities, during prefetch request configuration in the Prefetch Request Manager. For more information on creating and scheduling prefetch requests, see “Requesting Specific Files Using Prefetch Requests” on page 196.

All of the media activities listed above are specific to the extended drive for which they are configured and must be scheduled and maintained separately for each extended drive in your Data Manager system.

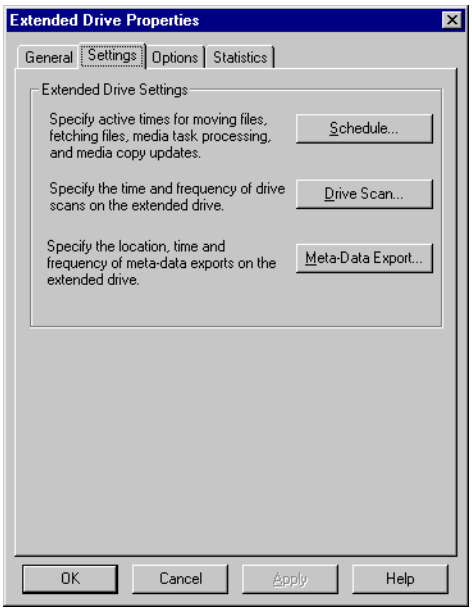
Media activities are scheduled for a time range (for example, 2 a.m. to 4 a.m.). This range provides a “window of opportunity” for the activity(s) to occur. Any time within this range that an activity can begin, it will. If for any reason the activity does not begin during this time, it is not performed until the next time the schedule is active. When these activity schedules overlap, they occur based on the priority system noted in “Priority of Media Activities” on page 51.

You should set media activity schedules based on the needs of the individual system. Issues to consider when setting up your schedule include the importance of specific media activities, the length of time required, and the available resources necessary to complete each activity.

To set up a media activity schedule:

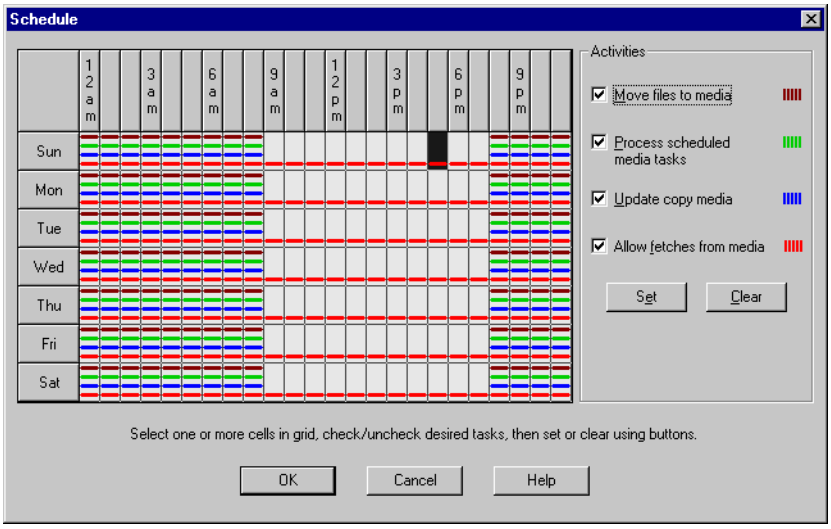
1. Right-click on the extended drive for which you want to configure media activity schedules and then select Properties from the shortcut menu that appears. The Extended Drive Properties dialog box appears.
2. Click the Settings tab.

Figure 15. Extended Drive Properties – Settings Tab



3. Click the Schedule button. The Schedule dialog box appears.

Figure 16. Schedule Dialog Box



Within the scheduler, colored lines represent each activity, allowing you to quickly see which activities are scheduled for what blocks of time. By default, 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).

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 the figure above represents 5 p.m. to 6 p.m. on Sunday.

4. 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.

5. You have the following choices:

   - Click Set to set the activities that are checked and clear the activities that are not checked in the highlighted area of the schedule grid.
   - Click Clear to clear all scheduled activities in the highlighted area of the schedule grid, regardless of which options are checked in the Activities section.

   Note: Any time the Allow fetches from media schedule is *not* active, client fetch requests for purged files (including files marked for direct read) *are not* honored. Changing the schedule for this activity may

prevent clients from having access to necessary files. We recommend that you retain the default setting for fetches (always active), unless your organization requires a time-based restriction of access to purged files. If you have a time-based restriction configured, you may want to enable the Defer fetch requests if fetch is disabled option. For more information, see “Defer fetch requests if fetch is disabled” on page 273.

6. When you finish making changes to the schedule, click OK to save your changes and close the Schedule dialog box. The Extended Drive Properties dialog box appears.

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

7. Click OK to close the Extended Drive Properties dialog box.

Managing Media Use

Media must be prepared and added to the system before ASM can begin migrating files to it. The type of media determines the steps that must be taken to begin migrating files to the media. For example, new magneto-optical media must be formatted, labeled, added to a media folder, and then added to a move group; however, Network Attached Storage (NAS) media need only be added to the media folder and move group.

If you are adding media that already contains files, you can restore those files from the media to the Data Manager extended drive so that users can access the files.

Some types of media also allow you to compact and reformat the media so that you can efficiently reuse pieces of media.

When you are finished with a piece of media, you can remove it from ASM.

For more information, see the following sections:

- "Formatting Media, " which follows
- “Labeling Media” on page 64
- “Adding Media to a Media Folder” on page 67
- “Adding Media to a Move Group” on page 73
- “Renaming Media” on page 76
- “Reformatting Media” on page 76

Formatting Media

Most media must be formatted for use with Data Manager. Formatting verifies the integrity of the media, and makes it available for use with system hardware. It prepares the media for file writes by creating the specified file system on the media. ASM allows you to format media in a standalone drive, one piece of media at a time, or in a library using multiple drives at one time.

Note: ASM does not support formatting of CD-ROM, DVD-ROM, WORM, NAS, EMC Centera (EMC), or Tivoli Storage Manager (TSM) media.

You can perform a format on unformatted media, or reformat media that has previously been formatted for the same or another file system (except for DVD-R and WORM-tape media which can be formatted only once). For more information on reformatting media, see “Reformatting Media” on page 76. Media that has never been formatted appears in the Unformatted media node. Media formatted in a file system other than the one configured for the drive or device it is in appears in the Foreign media node.

Note: Unformatted DVD media may appear as Foreign rather than Unformatted if the device in which it resides is configured to use the UDF file system. Regardless, the media must still be formatted before it can be used.

Media is formatted for a particular file system. Media formatting options differ depending on the file system configured for the hardware device being used as a media service. For example, if a device has been configured for ASM file systems, the format command automatically formats media for this file system; likewise with Windows Native and UDF file systems. Media formatted for one file system cannot be mixed in a hardware device with media formatted for another file system.

It is important to examine system needs before deciding on a file system. For more information, see “Types of Media File Systems” on page 18.

The format media task also allows you to select whether to low-level SCSI format the media. However, some types of media (like DVD-R) do not support low-level SCSI formatting, and for those media, this option is unavailable.

Note: Formatting double-sided optical media in a standalone drive formats only one side of the media. You must dismount, flip, and format the reverse side as well. To avoid confusion, always format both sides of double-sided media at the same time.

There are two ways to format media:

- If you only need to format a single piece of media, assign the format media task. For instructions, see *"Using the Format Media Task, " which follows*.
- If you want to format and/or label multiple pieces of media, use the Media Prepare Manager to assign the format and label media tasks to several pieces of library media at once. For instructions, see “Formatting and Labeling Using Media Prepare Manager” on page 59.

Using the Format Media Task

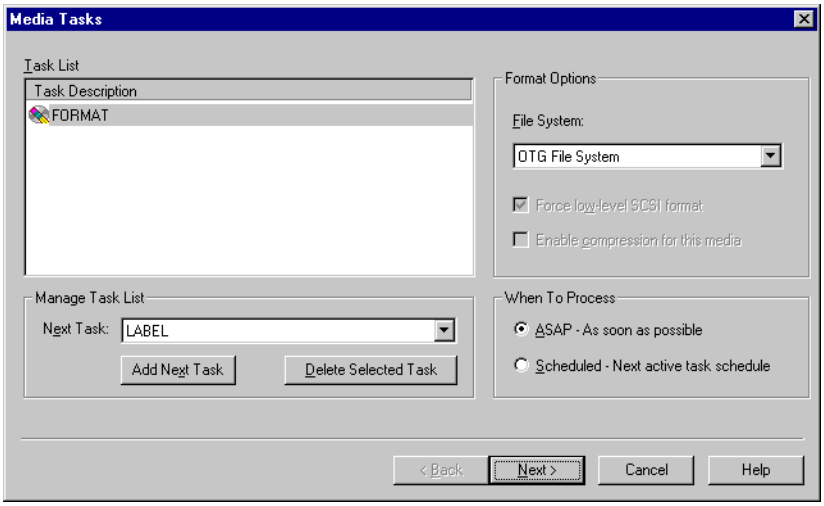
You can assign the format media task to format a single piece of media, or to format only one side of a piece of double-sided media.

Note: If you are formatting a piece of Original or Unformatted DVD-RAM media and you want to assign the label copy task after the format task, you must wait for the format task to complete before you can assign the label copy task; you cannot assign the two tasks consecutively.

To assign a format task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the format media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the format media task and then click Next.
2. From the Next Task drop-down list, select the format media task and then click Add Next Task. The format task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 17. Format Media Task



3. In the Format Options section, select a file system from the File System drop-down list. For more information on file systems, see “Types of Media File Systems” on page 18.

4. Enable or disable the Force low-level SCSI format check box. You have the following choices:

   - To perform a quick format, disable the Force low-level SCSI format check box. Quick format clears the file table of all pointers to files on the media, but not the actual information on the media. A quick format is sufficient if the media is pre-formatted or has been previously low-level formatted in the drive type being used.
   - To perform a low-level SCSI format, enable the Force low-level SCSI format check box. A low-level SCSI format is necessary when media has repeatedly failed due to media errors. Select this option to perform a low-level SCSI format and prepare the media for the current file system and drive type.

   Note: If your unformatted DVD-RAM media is not pre-certified, we recommend performing a low-level SCSI format on it to reduce the possibility of media write errors.

   Note: If a format fails, it is usually an indication that a low-level SCSI format is necessary to prepare the media for the current drive type.

5. Enable or disable the Enable compression (on this media) check box. You have the following choices:

   - Enable the Enable compression check box to enable compression for the selected piece of media. If compression is enabled, files are compressed when they are written to the media, allowing you to, in some cases, conserve storage media space. Whether you can enable

compression depends on which file system is being used and whether the device in which the media resides supports file compression.

- Disable the Enable compression check box to disable compression for the selected piece of media.

6. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

7. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.

   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

8. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Once media has been formatted (and before it is labeled), it appears in the Blank media node of the Available Media list.

Formatting and Labeling Using Media Prepare Manager

Data Manager’ Media Prepare Manager allows you to assign the format and label media tasks to several pieces of library media at once. This is particularly useful if you have a library with a large number of media that need to be formatted and/or labeled for use in Data Manager.

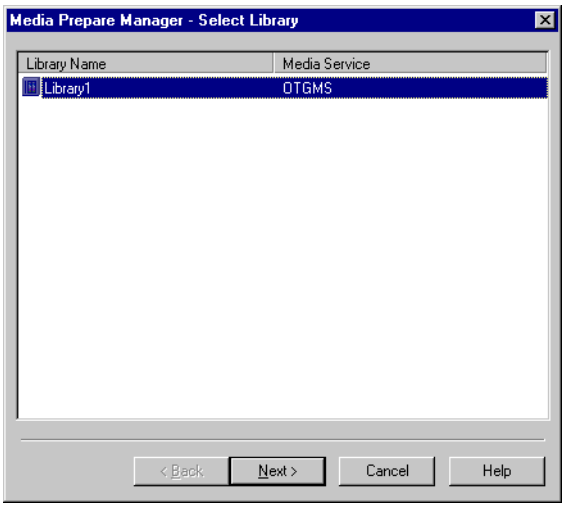
Once you have assigned the format and/or label tasks to media through the Media Prepare Manager, you can view the media and the tasks through the Media Task Queue Manager. For more information, see “Monitoring Media Tasks” on page 39.

Note: The Media Prepare Manager can only be used for media in libraries configured for use with Data Manager.

To use the Media Prepare Manager:

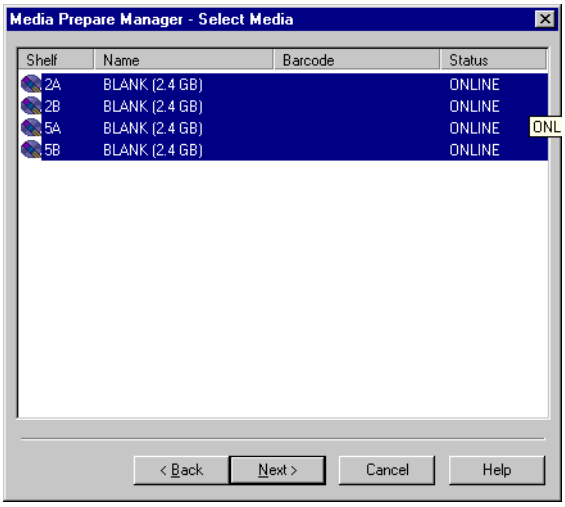
1. From the Tools menu, select Media Prepare Manager; or press <CTRL>+M. The Media Prepare Manager – Select Library page appears.

Figure 18. Media Prepare Manager – Select Library Page



2. Select the library for which you want to format and/or label media and then click Next. The Media Prepare Manager – Select Media page appears.

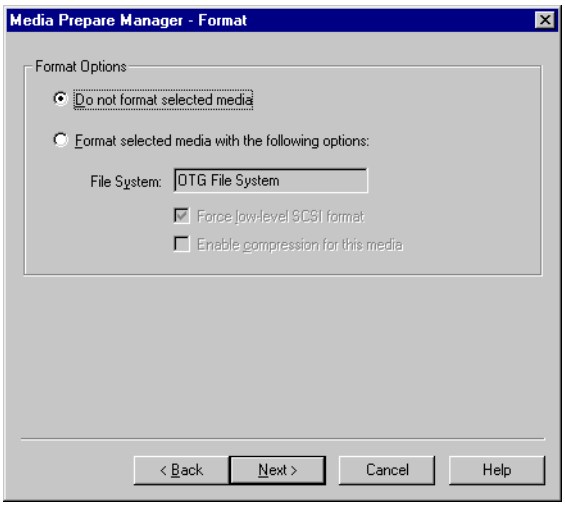
Figure 19. Media Prepare Manager – Select Media Page



Note: Double-sided media do not appear in the list if *either* side of the media is not available for format and/or label (for example, one side is assigned to a media folder, while the other side is not).

3. Select the media you want to format and/or label and then click Next. The Media Prepare Manager – Format page appears.

Figure 20. Media Prepare Manager – Format Page



4. You have the following choices:

   - If you do not want to format the media, choose Do not format selected media. Then skip ahead to step 8.
   - If you want to format the media, choose Format selected media with the following options. The file system assigned to the library through MediaStor appears in the File System field.

5. If available, enable or disable the Force low-level SCSI format check box. You have the following choices:

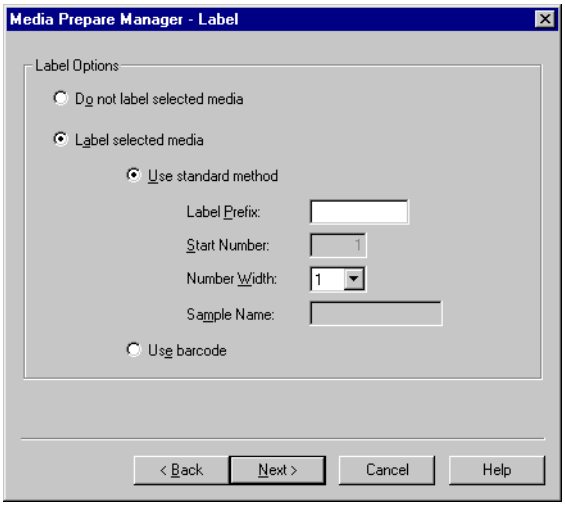
   - To perform a quick format, disable the Force low-level SCSI format check box. Quick format clears the file table of all pointers to files on the media, but not the actual information on the media. A quick format is sufficient if the media is pre-formatted or has been previously low-level formatted in the drive type being used.
   - To perform a low-level SCSI format, enable the Force low-level SCSI format check box. A low-level SCSI format is necessary when media has repeatedly failed due to media errors. Select this option to perform a low-level SCSI format and prepare the media for the current file system and drive type.

   Note: If your unformatted DVD-RAM media is not pre-certified, we recommend performing a low-level SCSI format on it to reduce the possibility of media write errors.

Note: If a format fails, it is usually an indication that a low-level SCSI format is necessary to prepare the media for the current drive type.

6. If available, enable or disable the Enable compression (on this media) check box. You have the following choices:
   - Enable the Enable compression check box to enable compression for the selected piece of media. If compression is enabled, files are compressed when they are written to the media, allowing you to, in some cases, conserve storage media space. Whether you can enable compression depends on which file system is being used and whether the device in which the media resides supports file compression.
   - Disable the Enable compression check box to disable compression for the selected piece of media.
7. Click Next. The Media Prepare Manager – Label page appears.

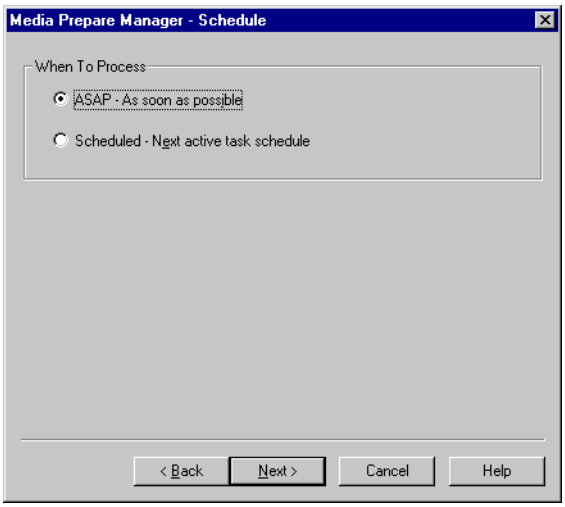
Figure 21. Media Prepare Manager – Label Page



8. You have the following choices:
   - If you do not want to label the selected media, choose Do not label selected media. Skip ahead to step 14.
   - If you do want to label the selected media, select Label selected media.
9. If you choose to label the media, you have the following choices:
   - If barcodes are not available on your system, select Use standard method to label media based on a label prefix and number width.
   - If barcodes are available on your system, and if you want ASM to generate labels for media based on these barcodes, select Use barcode. To determine if the media device supports barcode labeling, refer to your device manual.

10. If you use a standard labeling convention, specify a prefix to be used for naming each added piece of media in the Label Prefix text box.
11. In the Start Number text box, enter the number at which the label should start. For more information on naming media, see “Media Naming Conventions” on page 64.
12. From the Number Width drop-down list, select the number of digits to be used to create the incremental numbering for the media label. ASM adds the number (starting with the value in the Start Number text box) to the prefix to create the name for each added piece of media.
13. The Sample Name text box provides an example of what the media name will look like based on the prefix and number width criteria you set.
14. Once you have selected labeling options, click Next. The Media Prepare Manager – Schedule page appears.

Figure 22. Media Prepare Manager – Schedule Page



15. You have the following choices:
    - If you want to process the format and/or label task immediately, choose ASAP.
    - If you want to process the media task on a scheduled basis, choose Scheduled. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.
16. Click Next. The Summary page appears.
17. Review the information in the summary.
18. If the information in the summary is correct, click Finish.

Labeling Media

When media is inserted in a device, the ASM system evaluates the media to determine if it recognizes the file system format, and reads the media label as well. If the media is formatted but has not been labeled, ASM identifies the media as blank media and adds it to the Available Media list under the Blank media node. Once media has been labeled, the media appears with the new label in the Original media list. Media in the Original media list can be assigned to a media folder.

Labeling assigns a name and serial number to a piece of media so that it can be tracked by ASM. No two pieces of original media should have the same label, because the media label is what allows you to identify the media in the ASM Data Manager (and ASM MediaStor) Administrator(s). For ease of use, the media label should uniquely identify the media.

There are three ways to label media:

- If you want to set up automatic media labeling and compaction for your move group, use the Automation tab of the Move Group Properties dialog box. For more information, see “The Automation Tab” on page 174. This option allows you to simply load and format media, and then let other media maintenance activity be triggered by internal ASM events.
- If you want to label a single piece of media, assign a label media task. For instructions, see “Using the Label Media Task” on page 65.
- If you want to format and label multiple pieces of media, use the Media Prepare Manager to assign the format and label media tasks to several pieces of library media at once. For instructions, see “Formatting and Labeling Using Media Prepare Manager” on page 59.

Media Naming Conventions

Media label names may be alphanumeric (a-z or 0-9) characters. Media names may also include the following special characters: `$ ! - _ %` and `#`.

Certain standards should be applied when naming media. It is best to use a descriptive and consistent naming convention (as opposed to the date and time, or 1,2,3…). This assures easy tracking of all media by name, and reduces confusion if different media are accidentally mixed together.

The recommended approach to naming media is to use a prefix and a sequence number. The prefix should represent the extended drive name, application name, etc. that is writing to the media (for example, CAD, IMAGES, DOCS). The sequence number represents the order of the media in the group and optionally should reflect the side of media (for example, 1,2,3 or 1A, 1B, 2A, 2B, 3A, 3B). Combined, they give an orderly system for naming media (for example, CAD1A, CAD1B, CAD2A, CAD2B, etc.).

Depending upon data organization, all media could be given the same prefix, with the only difference being the number following the prefix. Alternatively, different prefixes could be given to media depending upon file type or location, for example. When labeling media in a standalone drive, one side should be labeled LABEL1A, while the other side should be labeled LABEL1B, where LABEL is the media name.

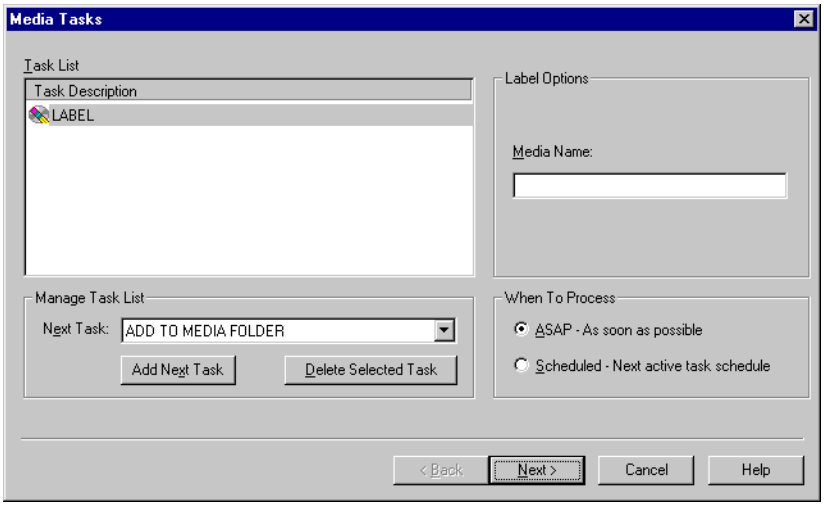
Using the Label Media Task

The label task can be assigned to follow a format task for a piece of media, or blank media can be labeled as needed. For example, you can format all the media in a library, making it ready for use, but wait until a piece of media is needed to label it. This creates a reserve of blank media, available to be used when needed and then labeled accordingly.

To assign a label task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the label media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the label media task and then click Next.
2. From the Next Task drop-down list, select the label media task and then click Add Next Task. The label task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 23. Label Media Task



3. In the Label Options section, enter a label in the Media Name text box. For recommendations on labeling media, see “Media Naming Conventions” on page 64.

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Once media has been labeled, it appears in the Original media node of the Available Media list.

Adding Media to a Media Folder

Adding media to a media folder makes that media available for addition to move groups in that folder and ultimately for storage of files saved to that folder on the extended drive. Only media listed in the Original node can be added to a media folder. You can add both previously unused media and media with existing files to a media folder.

When media with existing files is added to a media folder, those files must be restored in order to make them accessible to clients. File restore makes files on media available for access through Data Manager by placing tags on the extended drive that point to the files on the media. When files and directories are restored to the extended drive, file tags and directory structures are created in the media folder on the extended drive.

Note: When adding non-finalized DVD-R media that contains files to the media folder, the file data (not just the file tags) are copied back to the extended drive. This means that you will have to allow for additional extended drive space to hold those files until they can be purged.

There are five ways you can add media to a media folder:

- Use the Add Media to Media Folders command for an extended drive to launch the Add Media to Media Folders Wizard. This option is best used if you want to add multiple pieces of media to several different media folders.
- Drag the media from the Original node under the extended drive's Available Media node to a media folder (or to the Media node under the media folder). This option is best used if you want to add a single piece of media to a media folder.
- Right-click the Media node under a media folder and select Add Media from the shortcut menu. This option is best used if you want to add multiple pieces of media to a single media folder.
- Set up automatic media labeling and compaction for your move group. This option allows you to simply load and format media, and then let other media maintenance activity be triggered by internal ASM events.
- Assign an add to media folder media task. This option is best used if you want to add a single piece of media to a media folder in conjunction with other media tasks, such as format, label, and add to move group.

The first three options all bring you into the Add Media to Media Folders Wizard. For instructions, see *"Using the Add Media to Media Folders Wizard, " which follows*.

Automatic media labeling and compaction is configured on the Automation tab of the Move Group Properties dialog box. For more information, see “The Automation Tab” on page 174.

For more information on the add to media folder media task, see “Using the Add to Media Folder Media Task” on page 71.

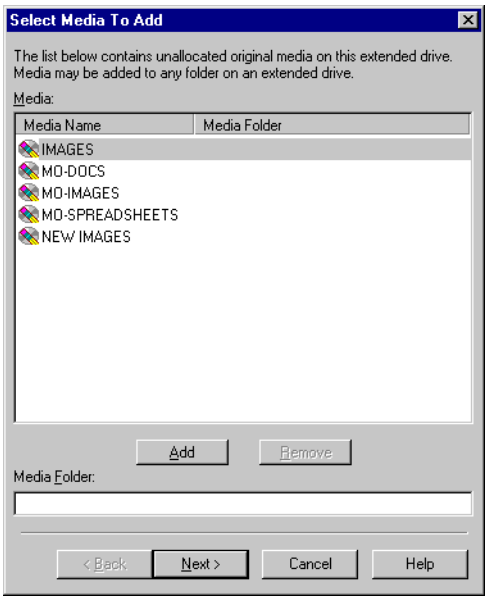
Using the Add Media to Media Folders Wizard

The Add Media to Media Folders Wizard leads you through the steps to add available media to media folders.

To add media to media folders using the wizard:

1. You have the following choices:
   - Drag the media from the Original node under the extended drive’s Available Media node to a media folder (or to the Media node under the media folder). A message appears, prompting you to confirm the addition of the media to the media folder. Click Yes. Since you have already selected the media to add, the Add Media to Media Folders Wizard appears, starting with the Media Restore page. Skip to step 4 to continue.
   - Right-click the extended drive that contains the media folder to which you want to add media and then select Add Media to Media Folders from the shortcut menu that appears. The Add Media to Media Folders Wizard appears, starting with the Select Media to Add page.
   - Right-click the Media node under the media folder to which you want to add media and select Add Media from the shortcut menu. The Add Media to Media Folders Wizard appears, starting with the Select Media to Add page.

Figure 24. Add Media to Media Folders Wizard -- Select Media To Add Page



The Select Media to Add page lists all available media that can be assigned.

2. If you selected the media folder to which you want to add media in the first step, notice that the Media Folder text box at the bottom is grayed out but contains the media folder you selected in the Administrator for adding media. Double-click the piece of media you want to assign to the media folder. To assign multiple pieces of media to the media folder, select the media and then click Add. The media folder appears to the right of the selected media in the Media list. Proceed to step 4.

3. If you did not select a media folder in the first step, you can either create a new media folder for the media or assign the media to an existing media folder. You have the following choices:

   - To create a media folder (or folders) with the same name as the media, select the media and click Add. The media folder name appears to the right of the media.

     Note: If you select two pieces of media that have the same name (regardless of capitalization), only one media folder, with that name, is created and both pieces of media are assigned to that folder.

   - To create a media folder with a different name than the media, type the name of the folder in the Media Folder text box, select the media you want added to that folder, and click Add. The media folder name appears to the right of the media.

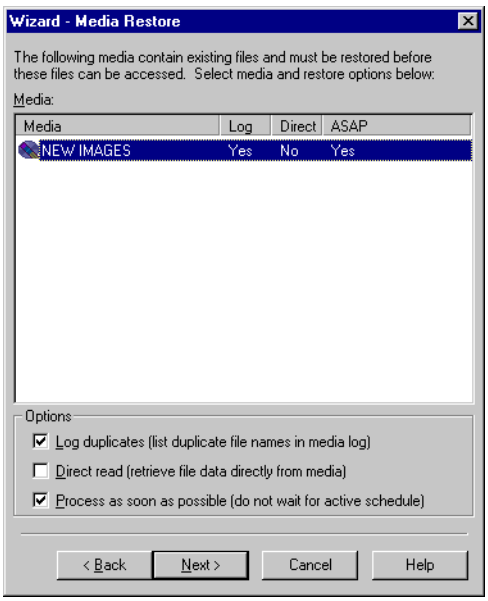
   - To add the media to an existing folder, type the name of the folder in the Media Folder text box, select the media you want added to that

folder, and click Add. The media folder name appears to the right of the media.

The media folder appears to the right of the selected media in the Media list.

4. When you finish assigning media to media folders, click Next. The Media Restore page appears.

Figure 25. Add Media to Media Folders Wizard -- Media Restore Page



Media restore options are only active if the media you are adding to the media folder contains files.

5. Set the appropriate restore options for any media that currently contains files. You have the following choices:

   - Enable the Log duplicates check box to keep a count of files on the media that were already resident on the extended drive when restoring.
   - Enable the Direct read check box to apply the direct read attribute to all restored files. Direct read means that when accessed by a client, the file will be read directly from media rather than fetched to the extended drive and read from there.
   - Enable the Process as soon as possible check box to restore the media immediately, rather than as a scheduled file restore media task (which is processed when the Process scheduled media tasks schedule is active).

6. After you have finished configuring restore options, click Next. The Summary page appears. The Summary page displays the media that will

be added to the media folder and the media restore options selected, if applicable.

7. Review the information in the Summary page.
8. If the Summary page information is correct click Finish. The media is added to the media folder.

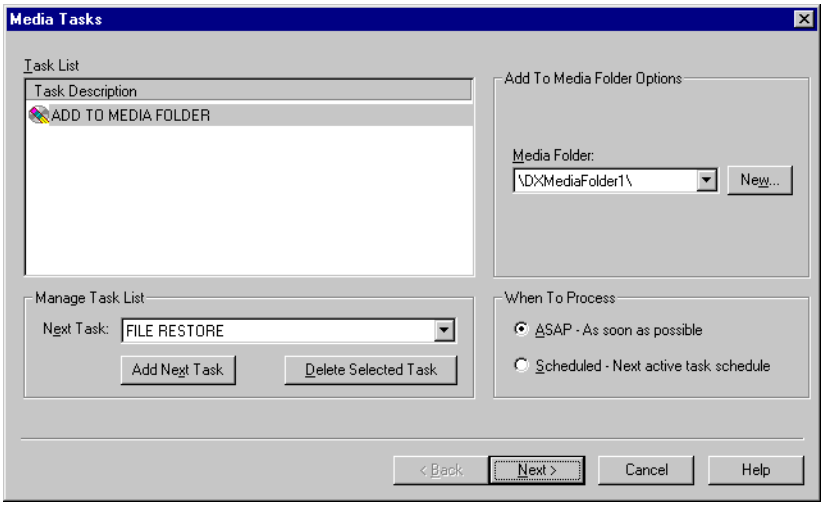
Using the Add to Media Folder Media Task

The add to media folder media task can only be assigned to media that has been formatted and labeled. The task is available for Original media, or for other media that have the format and/or label tasks scheduled. This allows you to add media after other tasks are completed without any need for manual intervention, This task can also be used in conjunction with the add to move group task to automatically add media to a media folder, then to a move group, all within a single process. For more information about adding media to a media group, see “Adding Media to a Move Group” on page 165.

To assign an add to media folder task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the add to media folder media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the add to media folder media task and then click Next.
2. From the Next Task drop-down list, select the add to media folder media task and then click Add Next Task. The add to media folder task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 26. Add to Media Folder Task



3. In the Add To Media Folder Options section, you have two choices:

   - To add the media to an existing media folder, select the media folder to which you want to add the media from the Media Folder drop-down list.
   - To create a new media folder, click New. The Select New Media Folder dialog box appears. Select the folder on the extended drive that you want to designate as a media folder and then click OK. The media folder appears in the Media Folder drop-down list.

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Adding Media to a Move Group

To use media assigned to a media folder for file migration, that media must be assigned to a move group within the media folder. You can subdivide media within a media folder for separate uses by assigning media to different move groups in a media folder.

By assigning media to move groups, you can control which set of media files will be written to and where. This can be useful if segregation of data is necessary. For example, if you wish to separate files from different months onto different pieces of media within a media folder, you can create a move group for each month. Separate media can be assigned to each move group so files for different months are not stored on the same media.

In order to add media to a move group, the media must already be assigned to the media folder. Each piece of media can only be assigned to one move group at a time. For more information on assigning media to the media folder, see “Adding Media to a Media Folder” on page 67.

There are five ways to assign media to a move group:

- Drag the piece of media from the Media node within the media folder and drop it in the node for the move group to which you want to assign the media. A confirmation message appears. Click Yes. This option is best used if you want to add a single piece of media to a move group.
- Add the media to the move group through the Move Group Wizard when you create the move group. For instructions, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*. This option is best used while you are setting up your ASM system.
- Open the Move Group Properties dialog box and add the media on the Media tab. For instructions, see “Modifying a Move Group” on page 161. This option is best used if you have already added multiple pieces of media to a media folder and you want to add them to a single move group.
- Set up automatic media labeling and compaction for your move group. This option allows you to simply load and format media, and then let other media maintenance activity be triggered by internal ASM events. For more information, see “The Automation Tab” on page 174.

- Assign an add to move group media task. For more information, see *"Using the Add to Move Group Media Task, " which follows*. This option is best used if you want to add a single piece of media to a move group in conjunction with other media tasks, such as format, label, and add to media folder.

Using the Add to Move Group Media Task

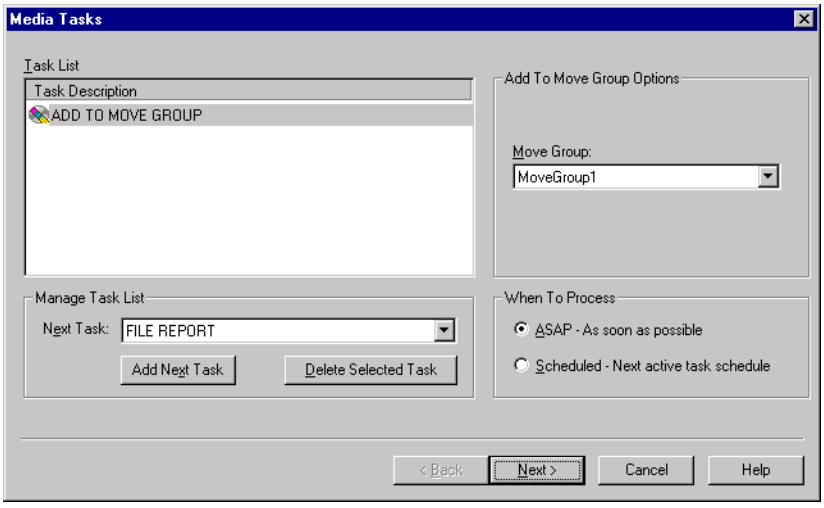
The add to move group media task adds a piece of media to a move group, making it available for ASM to write files to it based on the move rules configured for that move group. The task is available for media already assigned to a media folder, or for other media that have the format and/or label and/or add to media folder tasks scheduled. This allows you to add media after other tasks are completed without any need for manual intervention. Used in conjunction with the add to media folder task, you can automatically add media to a media folder, then to a move group, all within a single process.

You can also add one or more pieces of media to a move group when you create the move group, or through the Move Group Properties dialog box. In addition, you can use the automatic labeling feature for your move groups to label a blank piece of media, add it to the media folder and then to the move group whenever new media is needed for the move group.

To assign an add to move group task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the add to move group media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the add to move group media task and then click Next.
2. From the Next Task drop-down list, select the add to move group media task and then click Add Next Task. The add to move group task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 27. Add To Move Group Media Task



3. From the Move Group drop-down list, select the move group to which you want to add the media.

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Renaming Media

You can rename media through the Administrator without going through the format and label media tasks. Renaming a piece of (writable) media changes the label identifier on that media. Renaming a piece of media does not affect the files or directories on the media.

You can only rename media that has already been formatted and labeled.

Note: While the Rename command is available for non-rewritable media, the renaming is not permanent. The media reverts to its original label the next time the media is inventoried (for non-rewritable media).

Note: Renaming original media will not rename any copy media associated with the original. The copies will be updated, but the media names will no longer match. The rename command is not available for copy media.

To rename a piece of media:

1. Right-click the media and select Rename from the shortcut menu.
2. The media name appears highlighted in the tree view with a cursor. Retype the name as desired.
3. Press <ENTER> or click outside of the media name. The media is listed with its new name.

Reformatting Media

If magneto-optical, DVD-RAM, or tape media has already been formatted and is not currently assigned to a media folder, it can be reformatted. To reformat a piece of media, assign the format media task for that piece of media. (For instructions, see “Formatting Media” on page 56.) The formatting process erases existing data and re-creates the file system on the media.

If you want to reformat a piece of media currently assigned to a media folder, you should first assign the compact media task. (For instructions, see “Compacting Media” on page 79.) Compaction places all of the files currently on the media onto the extended drive and removes the media from the media folder. After assigning the compact task, you can assign the format task to reformat the media.

Restoring Files from Media

File restore makes files on media available for client access by placing file tags in the media folder on the extended drive that point to the files on the media. Whenever media is added to a media folder, the files on that media must be restored (so that the media's files are made available to clients), and therefore the file restore media task is automatically assigned. However, the file restore task can be performed at any time.

The File Restore task is useful for regaining access to files that were inadvertently deleted from the extended drive (as long as the file was not also deleted from the media). Files written to write-once media and/or media formatted with the ASM File System can be restored as long as the media has not been reformatted.

During a file restore, file tags for all files on the media are placed in the media folder on the extended drive. If there are duplicate files, the newest file (tag) is restored and older versions are always replaced. Files from CD-ROM, DVD-ROM, WORM, WORM-tape and finalized DVD-R media are restored with tags that have a read-only attribute.

Note: If you have upgraded your Data Manager installation from version 5.40.050 to the 5.40 Service Release 1, *and* you are using EMC media, you will need to run a File Restore task on all of your EMC media in order to have file retention enforced on the extended drive for any files written to media before the upgrade.

Note: When restoring files from non-finalized DVD-R media, the file data (not just the file tags) are copied back to the extended drive. This means that you will have to allow for additional extended drive space to hold those files until they can be purged (after the media is finalized).

When assigning a file restore task, you can enable or disable the Log Duplicates option, which allows you to keep a count of duplicate files when restoring. If there are duplicate files, the newest file is restored and older versions are always replaced. You can also set the direct read attribute for a piece of media when you restore it. Setting direct read causes files to be read directly from media rather than fetched to the extended drive.

To assign a file restore task:

1. Open the Media Tasks page. You have the following choices:

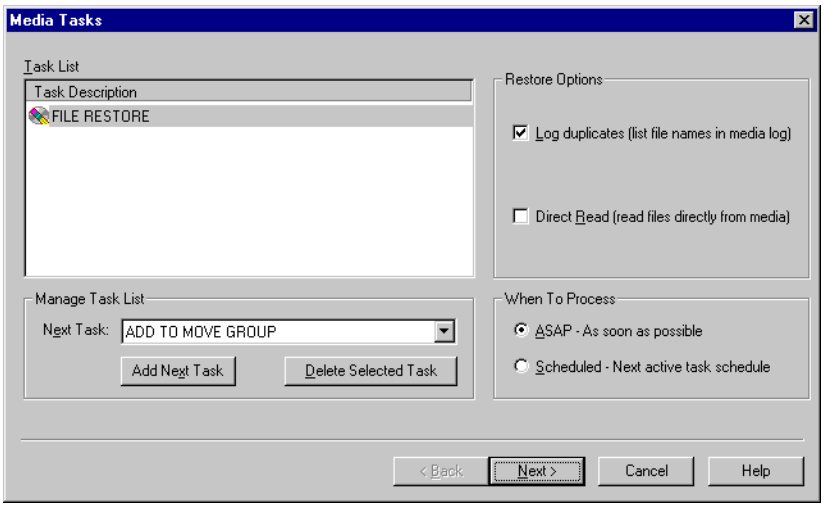
    - In the tree view of the Administrator, right-click the piece of media to which you want to add the file restore media task and then select Edit Tasks from the shortcut menu that appears.

    - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New

Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the file restore media task and then click Next.

2. From the Next Task drop-down list, select the file restore media task and then click Add Next Task. The file restore task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 28. File Restore Media Task



3. Enable or disable the Log duplicates check box. You have the following choices:

   - Enable the check box to keep a count of files on the media that duplicate files already on the extended drive when restoring.
   - Disable the check box if you don't want to keep a count of duplicate files.

4. Enable or disable the Direct Read check box. Direct read means that when accessed by a client, the file is read directly from media rather than fetched to the extended drive and read from there. You have the following choices:

   - Enable the check box to apply the direct read attribute to all restored files.
   - Disable the check box to force restored files to be fetched to the extended drive when requested by a client.

5. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see "Scheduling Media Activities" on page 52.

Note: The restore process can be time-consuming for media with a large number of files; therefore, you may want to configure the file restore task as a scheduled event rather than processing it immediately.

Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

6. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:
   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.
7. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Compacting Media

Media compaction allows you to reclaim deleted file space on media by relocating active (or non-deleted) files from one or more pieces of media to other storage media. Compaction also allows you to migrate files from one type of media to another (for example, CD-ROM to optical or optical to tape).

The compaction process copies all files from a piece of media that have associated file tags on the extended drive, into the media folder on the extended drive to which the media is assigned. Then the media is automatically removed from the media folder. The compacted files (those placed on the extended drive) remain on the extended drive until transferred back to storage media based on the move rules established for the media folder in which they reside.

Because the files being fetched back to the extended drive during the compaction have already been written to media once, they will probably

qualify for movement back to media as soon as they are written to the drive. This means that those files will be re-written out to media as soon as the Move files to media schedule is active.

Once a piece of media has been compacted, it can be reformatted for reuse or removed from the system (depending upon the type of media).

Note: For the best compaction results, you should have *at least* the equivalent of one side of the media available as free space on the extended drive.

Note: If you are planning to use the compaction function to transfer all of your files from one type of media to another, please refer to the *Moving Files from One Media Type to Another* chapter of the *ASM Upgrade Guide* for additional information and other Data Manager settings recommendations.

There are two ways to set up compaction of media:

- Set up automatic media labeling and compaction for your move group. Automatic compaction allows you to automatically compact media in a move group whenever the amount of wasted space on a piece of media exceeds a specified watermark. Automatic media labeling and compaction is configured on the Automation tab of the Move Group Properties dialog box. For more information, see “The Automation Tab” on page 174. This option allows you to simply load and format media, and then let other media maintenance activity be triggered by internal ASM events.
- Assign the compact media task. For instructions, see *"Using the Compact Media Task, " which follows*. This option is best used if you want to compact a single piece of media.

Note: If media compaction fails, some, all, or none of the files from the media may have been moved back to the extended drive. If the cause of the compaction failure can be determined, make the appropriate adjustments and reschedule the compaction. The compaction process will start over, but any files already copied back to the extended drive will not be duplicated. In addition, all files that have been compacted will be re-migrated to media as they qualify for movement.

Using the Compact Media Task

You can assign the compact media task to a single piece of media to manually compact the media when necessary.

If, during the processing of the compaction task for a piece of media, the extended drive becomes so full as to not be able to receive any more files, the compact task for the media goes into a Suspended state for one hour. In addition, if you assigned the compact task to other media, those media are not processed until the original hour (for which the attempted compact task was suspended) has expired. After an hour has passed, Data Manager retries the

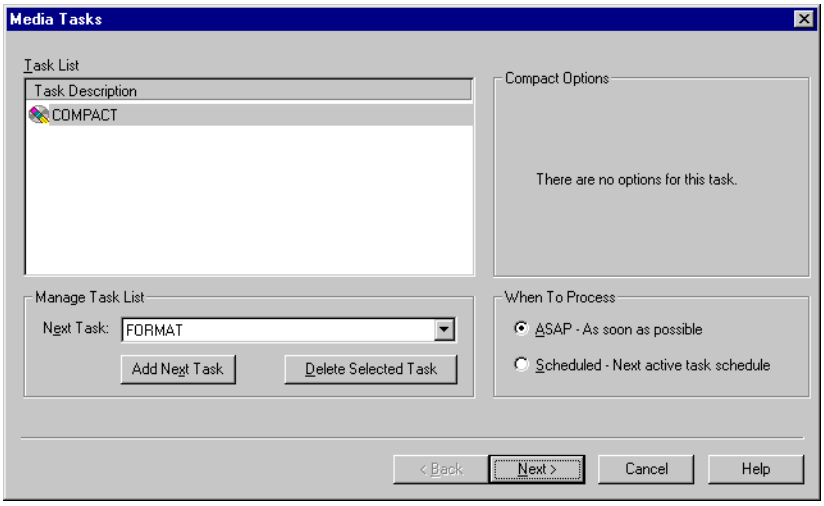
original compaction, and if the task is successful, processes any remaining compaction tasks.

This suspension of all compact tasks accomplishes two things: it allows Data Manager to move and purge files in order to clear needed extended drive space, and it ensures that drives, which may be needed to complete other media functions, are not being used to attempt compact tasks that can not succeed until there is sufficient space on the extended drive.

To assign a compact task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the compact media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the compact media task and then click Next.
2. From the Next Task drop-down list, select the compact media task and then click Add Next Task. The compact task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 29. Compact Media Task



3. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks

schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

4. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:
   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.
5. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Note: If the extended drive fills up before a compact task can complete, the task is stopped, and the media is listed in the queue with a status of “Suspended.” The compact task is retried in one hour. In addition, no other compact tasks are allowed to start until the hour has expired.

Finalizing Media

If you are finished writing files to a piece of DVD-R media, you can finalize the media using the finalize media task. Finalization is a process of “closing” the media, making it read-only and preventing ASM from writing any more files to it. Finalizing media makes the media more stable, better protecting the data on the media. It also allows the media to be taken out of the ASM system and read on a computer with the Windows XP operating system.

Original DVD-R media must be removed from the move group (but must remain in the media folder) before it can be finalized. You can assign the finalize task to copy DVD-R media at any time.

Note: If you are maintaining copies of your DVD-R media, it is highly recommended that you update your copies immediately following finalization of the originals, to ensure the copies are complete. Then, finalize the copies to ensure the security of the data on the DVD-R copy.

For DVD-R media, the finalize media task contains two options: Purge Files and Direct Read. (These options are grayed out if you are finalizing Copy media.)

If you enable the Purge Files option, the file data for the files written to the media is immediately purged from the extended drive. If you do not enable this option, those files remain on the extended drive until they qualify for configured purge rules.

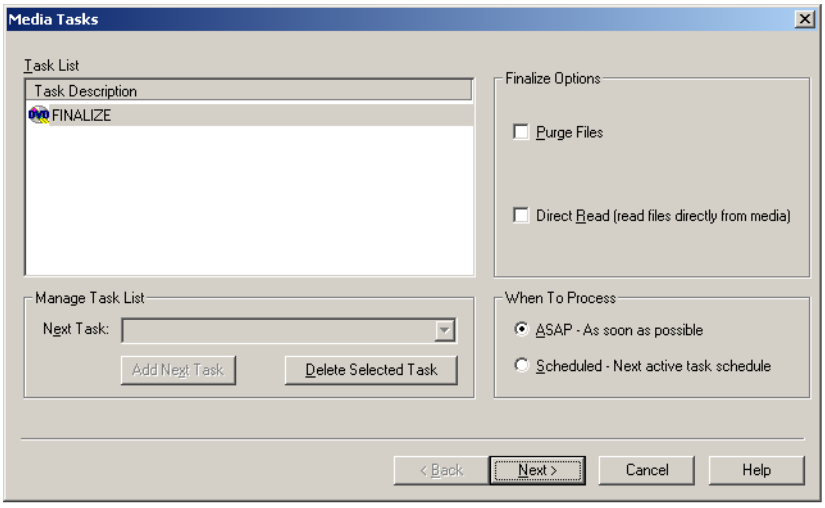
If you enable the Direct Read (read files directly from media) option, the files written to the media are marked for direct read after the files are purged from the extended drive (either as part of the finalize media task or as they qualify for configured purge rules).

Note: If for some reason the finalization task fails, *do not* attempt to re-try the task. Failing finalization may indicate a problem with the media, and because of this you may want to remove the media from your system. Removing media that has failed finalization from a media folder “de-migrates” files, making them eligible for re-migration to other media. When removing this media from its media folder, click Yes to run a drive scan when prompted.

To finalize a piece of media:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the finalize media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the finalize media task and then click Next.
2. From the Next Task drop-down list, select the finalize media task and then click Add Next Task. The finalize task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 30. Finalize Media Task



3. Enable or disable the Purge Files check box. You have the following choices:

   - Enable the check box to purge all files written to the media from the extended drive as soon as the media is finalized.
   - Disable the check box to leave all files written to the media on the extended drive. These files are purged as they qualify for configured purge rules.

4. Enable or disable the Direct Read check box. You have the following choices:

   - Enable the check box to apply the direct read attribute to all purged files. Direct read means that when accessed by a client, the file is read directly from media rather than fetched to the extended drive and read from there.
   - Disable the check box to force purged files to be fetched to the extended drive when requested by a client.

   Note: The Purge Files and Direct Read options are grayed out if you are finalizing Copy media.

5. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

6. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:
   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.
7. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Removing Media from a Move Group

When you remove a piece of media from a move group, the media becomes unavailable for ASM to write files to it based on the move rules configured for that move group. However, the piece of media remains in the media folder, and clients can access files that reside on that media. In addition, DVD-R media *must* be removed from the move group before you can finalize it.

There are two ways to remove a piece of media from a move group:

- Open the Move Group Properties dialog box and remove the media on the Media tab. For instructions, see “Removing Media from a Move Group” on page 167. This option is best used if you want to remove multiple pieces of media from a move group.
- Assign a remove from move group media task. For more information, see "Using the Remove from Move Group Media Task, " which follows. This option is best used if you want to remove a single piece of media from a move group in conjunction with other media tasks, such as prefetch and remove from media folder.

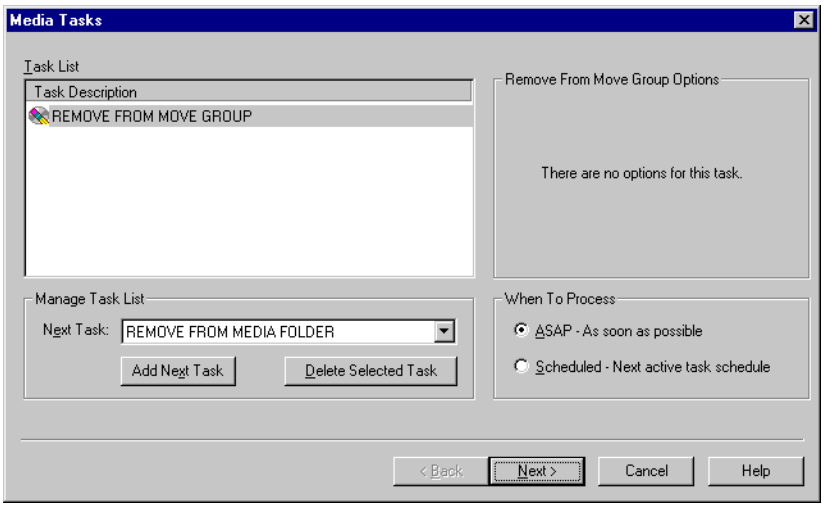
Using the Remove from Move Group Media Task

The remove from move group media task removes a piece of media from a move group making it unavailable for ASM to write files to it based on the move rules configured for that move group.

To assign a remove from move group task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the remove from move group media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the remove from move group media task and then click Next.
2. From the Next Task drop-down list, select the remove from move group media task and then click Add Next Task. The remove from move group task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 31. Remove From Move Group Media Task



3. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

4. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:
   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.
5. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Removing Media from a Media Folder

Removing media from a media folder generally removes all files (and file tags) on that media from the extended drive. Once the media is removed, the files on the media only exist on the media and no longer on the extended drive. Removing media from a media folder *does not* delete the files from media.

When you remove non-finalized DVD-R media, however, you can choose whether you want to remove the files from the extended drive or de-migrate the files, leaving them on the extended drive and marking them as not migrated. Once the media is removed, the files on the media exist on both the media *and* the extended drive. De-migrating files allows you to re-migrate the files to another piece of media. This option is available only for DVD-R media.

When you remove media from a media folder, the media is also automatically removed from the media folder's move group (if the media is still assigned to the move group).

Removing media from a media folder requires an extended drive scan to remove the files from the extended drive or to de-migrate them. You can run a drive scan after each piece of media is removed (when prompted) or run a single drive scan after all of the media is removed.

After the drive scan(s) finish, the media is then placed in the Original Media list until it is moved back into a media folder, deallocated from the extended drive, or reformatted.

Note: To maintain immediate availability of files on media that has been removed from a media folder, compact the media before removing it from the media folder. For instructions, see “Compacting Media” on page 79.

There are four ways you can remove media from a media folder:

- Right-click the piece of media and select Remove from the shortcut menu. For more information, see "Using the Shortcut Menu, " which follows. This option is best used if you want to remove a single piece of media from a media folder.
- Use the Remove Media from Media Folders command for an extended drive to launch the Remove Media from Media Folders Wizard. For more information, see “Using the Remove Media from Media Folders Wizard” on page 90. This option is best used if you want to remove multiple pieces of media from several media folders.
- Right-click the Media node under a media folder and select Remove Media from the shortcut menu. This also launches the Remove Media from Media Folders Wizard. This option is best used if you want to remove multiple pieces of media from a single media folder.
- Assign a remove from media folder media task. For more information, see “Using the Remove from Media Folder Media Task” on page 92. This option is best used if you want to remove a single piece of media from a media folder in conjunction with other media tasks, such as remove from move group.

Note: Before you remove media from media folders, be sure that all pending tasks for the media have been processed or deleted. You cannot remove media from media folders if there are pending tasks for the media. In addition, you may not be able to remove media if it is in an error state. For more information on deleting tasks, see “Deleting Media Tasks” on page 46. For more information on clearing media error states, see “Clearing Task Error Status” on page 41.

Using the Shortcut Menu

You can remove a single piece of media from its assigned media folder using the shortcut menu for the selected piece of media.

To remove media from a media folder using the shortcut menu:

1. Right-click the piece of media you want to remove from the media folder and select Remove from the shortcut menu that appears. One of the following occurs:
   - If you are removing non-finalized DVD-R media, a warning message appears.

Figure 32. Migrated File Options Warning

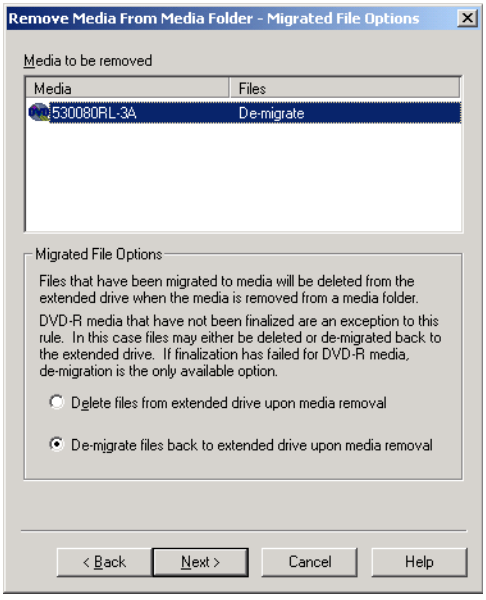
If you do not want to remove the media from the media folder, click No. For more information on finalizing media, see “Finalizing Media” on page 82.

If you want to proceed and remove the media from the media folder, click Yes. The Remove Media from Media Folders Wizard appears, starting with the Migrated File Options page.

Note: We *strongly* recommend that you finalize DVD-R media before removing it from a media folder. Finalizing media before removing it decreases the likelihood of media corruption and increases the likelihood that you will be able to access the files on the media in the event that you choose to add it back to a media folder later.

- If you are removing other media types (besides non-finalized DVD-R media), the Remove Media from Media Folders Wizard appears, starting with the Migrated File Options page.

Figure 33. Remove Media from Media Folders Wizard - Migrated File Options Page



2. If you are removing DVD-R media that has not been finalized, choose whether to delete the files from the extended drive or to de-migrate the files by enabling the corresponding option.

   Note: If you are removing finalized DVD-R media or any other media type, the delete option is selected by default and cannot be

changed. If you are removing DVD-R media that has *failed* finalization, the de-migration option is selected by default and cannot be changed.

3. Click Next. The summary page appears.
4. Review the information in the summary.
5. If the information in the summary is correct, click Finish. A message appears stating that a drive scan must be run to complete removal of the media.
6. Click Yes to run the drive scan immediately, or click No to run the drive scan later. For more information on drive scans, see “Running Drive Scans” on page 276. Once a drive scan is run, the media is removed from the media folder and appears in the Original node of the Available Media tree for the extended drive.

Using the Remove Media from Media Folders Wizard

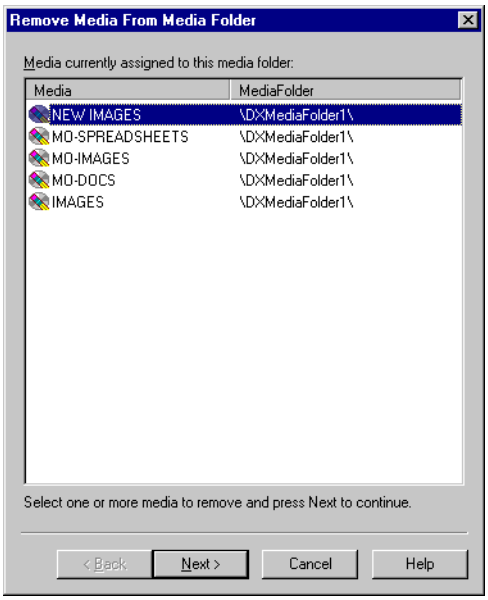
The Remove Media from Media Folders Wizard allows you to remove multiple pieces of media from a media folder at the same time.

To remove media from a media folder using the wizard:

1. You have the following choices:
   - Right-click the extended drive that contains the media folder from which you want to remove media and then select Remove Media from Media Folders from the shortcut menu that appears.
   - Right-click the Media node under the media folder from which you want to remove media and select Remove Media from the shortcut menu.

   The Remove Media from Media Folders Wizard appears.

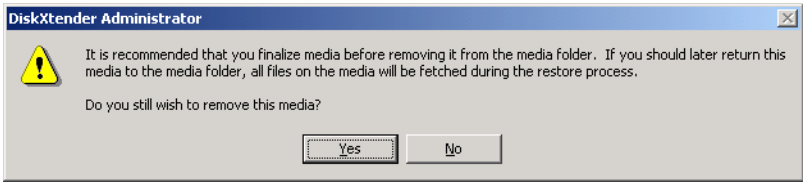
Figure 34. Remove Media from Media Folders Wizard - Select Media Page



2. Select the media you want to remove from the media folder(s) and then click Next. One of the following occurs:

   - If you are removing non-finalized DVD-R media, a warning message appears.

Figure 35. Migrated File Options Warning



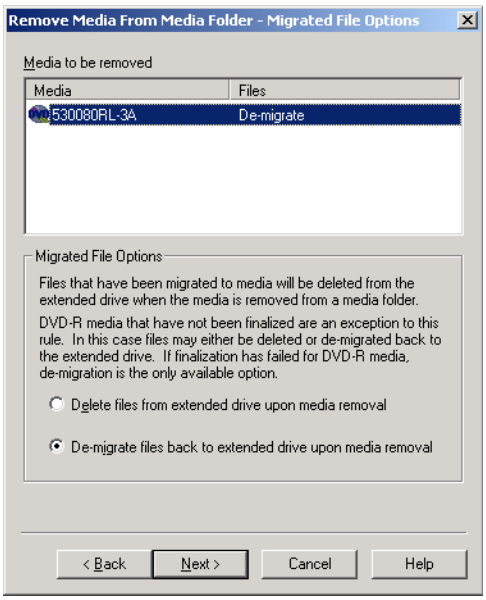
   If you do not want to remove the media from the media folder, click No. For more information on finalizing media, see “Finalizing Media” on page 82.

   If you want to proceed and remove the media from the media folder, click Yes. The Remove Media from Media Folders Wizard appears, starting with the Migration File Options page.

   Note: We *strongly* recommend that you finalize DVD-R media before removing it from a media folder. Finalizing media before removing it decreases the likelihood of media corruption and increases the likelihood that you will be able to access the files on the media in the event that you choose to add it back to a media folder later.

   - If you are removing other media types (besides non-finalized DVD-R media), the Remove Media from Media Folders Wizard appears, starting with the Migrated File Options page.

Figure 36. Remove Media from Media Folders Wizard - Migrated File Options Page



3. If you are removing DVD-R media that has not been finalized, choose whether to delete the files from the extended drive or to de-migrate the files by enabling the corresponding options.

   Note: If you are removing finalized DVD-R media or any other media type, the delete option is selected by default and cannot be changed. If you are removing DVD-R media that has *failed* finalization, the de-migration option is selected by default and cannot be changed.

4. Click Next. The summary page appears.
5. Review the information in the summary.
6. If the information in the summary is correct, click Finish. A message appears stating that a drive scan must be run to complete removal of the media.
7. Click Yes to run the drive scan immediately, or click No to run the drive scan later. For more information on drive scans, see “Running Drive Scans” on page 276. Once a drive scan is run, the media is removed from the media folder and appears in the Original node of the Available Media tree for the extended drive.

Using the Remove from Media Folder Media Task

You can assign the remove from media folder task to automatically remove media from a media folder. Any piece of media in a media folder can be scheduled for removal, but all other pending tasks must have been carried out for the media before the media is removed.

To assign a remove from media folder task:

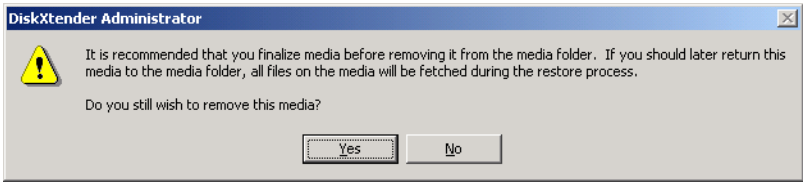
1. Open the Media Tasks page. You have the following choices:

   - In the tree view of the Administrator, right-click the piece of media to which you want to add the remove from media folder media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the remove from media folder media task and then click Next.

   From the Next Task drop-down list, select the remove from media folder media task and then click Add Next Task. One of the following occurs:

   - If you are assigning the task to non-finalized DVD-R media, a warning message appears.

Figure 37. Migrated File Options Warning



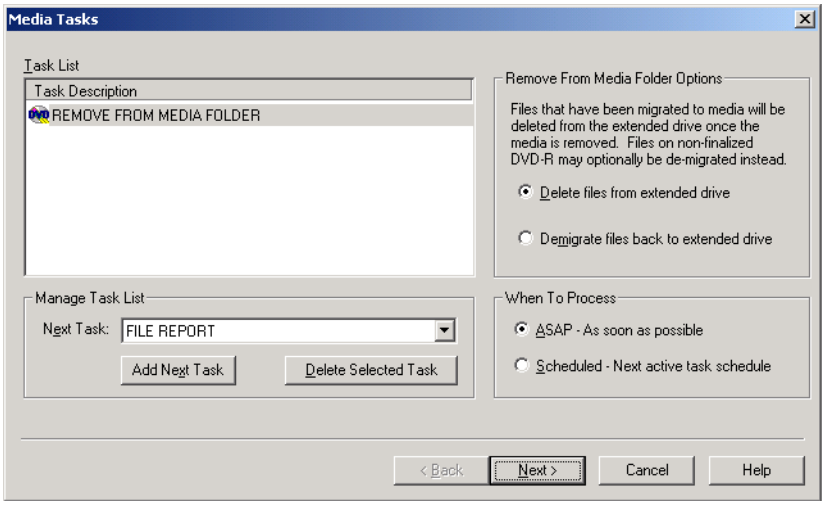
   If you do not want to remove the media from the media folder, click No. For more information on finalizing media, see “Finalizing Media” on page 82.

   If you want to proceed and remove the media from the media folder, click Yes. The remove from media folder task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

   Note: We *strongly* recommend that you finalize DVD-R media before removing it from a media folder. Finalizing media before removing it decreases the likelihood of media corruption and increases the likelihood that you will be able to access the files on the media in the event that you choose to add it back to a media folder later.

   - If you are assigning the task to other media types (besides non-finalized DVD-R media), the remove from media folder task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 38. Remove from Media Folder Media Task



2. If you are removing DVD-R media that has not been finalized, choose whether to delete the files from the extended drive or to de-migrate the files by selecting the corresponding option.

   Note: If you are removing finalized DVD-R media or any other media type, the delete option is selected by default and cannot be changed. If you are removing DVD-R media that has *failed* finalization, the de-migration option is selected by default and cannot be changed.

3. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

4. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

5. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Deallocating Media from the Extended Drive

When you deallocate media from an extended drive, ASM can no longer use the media for file storage. It is completely removed from the system.

You can deallocate ASM MediaStor, Network Attached Storage (NAS), EMC Centera (EMC), and Tivoli Storage Manager (TSM) media using either the shortcut menu or the Media Service Properties dialog box.

To deallocate MediaStor, NAS, EMC, and TSM media, the media service should be online. If you attempt to deallocate media while the media service is offline, the changes might not take effect.

Note: You can also deallocate MediaStor media through the MediaStor Administrator. Once you have deallocated media for the extended drive Application Pool, the corresponding change appears in the Data Manager Administrator. For more information, refer to your *ASM MediaStor System Guide*.

To deallocate StorageTek's Automated Cartridge System Library Software (ACSLS) media, you must remove the media association with the Data Manager extended drive through the UNIX interface.

Note: You cannot deallocate media from an extended drive unless it has been removed from its media folder. For instructions, see “Removing Media from a Media Folder” on page 87. The media then appears in the Original node of the Available Media tree.

For more information, see the following sections:

- "Using the Shortcut Menu, " which follows
- “Using the Media Service Properties Dialog Box” on page 96
- “Deallocating ACSLS Media” on page 96

Using the Shortcut Menu

You can deallocate specific pieces of MediaStor, NAS, EMC, or TSM media using the shortcut menu that appears when you right-click on the media in the Original node of the Available Media tree for the extended drive.

Note: To deallocate MediaStor, NAS, EMC, and TSM media, the media service should be *online*. If you attempt to deallocate media while the media service is offline, the changes may not take effect.

To deallocate media using the shortcut menu:

1. Right-click the media you want to deallocate from the extended drive, and then select Deallocate from the shortcut menu that appears. A confirmation message appears.
2. Click Yes to deallocate the selected media, or click No to cancel the deallocation.

Using the Media Service Properties Dialog Box

You can deallocate multiple pieces of MediaStor, NAS, EMC, or TSM media through the Media Service Properties dialog box.

Note: To deallocate MediaStor, NAS, EMC, and TSM media, the media service should be *online*. If you attempt to deallocate media while the media service is offline, the changes may not take effect.

To deallocate media using the Media Service Properties dialog box:

1. From the Service menu, select Configure Media Services. The Configure Media Services dialog box appears.
2. Select the media service and click Properties, or double-click the media service. The Media Service Properties dialog box appears.
3. Click the Media List tab.
4. Double-click the media you want to deallocate from the extended drive, or select the media you want to deallocate and then click Deallocate. The Media Service Properties dialog box reappears, and the selected media is listed with no assigned extended drive.
5. Click OK to return to the Configure Media Services dialog box.
6. Click Close to close the Configure Media Services dialog box.

Deallocating ACSLS Media

Deallocating ACSLS media from an extended drive is done by reassigning that media back to the system (making the “system” the owner of the media). This section describes how to assign media back to the system, effectively removing it from the Data Manager extended drive (and the ASM system altogether). All commands described in this procedure are entered on the Sun computer where ACSLS is installed.

To assign media back to the system:

1. In the ACSSS Console, change to the appropriate directory. Type the following command and press <Return>:

   ```
   cd /export/home/ACSSS/data/external/volrpt
   ```

2. In the ACSSS Console, request owner information to find the media that you want to deallocate. Type the following command and press <Return>:

   ```
   volrpt –f owner_id.volrpt –a x
   ```

   The placeholder *x* represents the ACS ID. A list will be displayed showing the owner of each media. Refer to the following example:

   VOLUME REPORT UTILITY

   2000-10-05 11:06:52

   TOTAL VOLUMES: 2SEQUENCE: sort by volume identifier

   Volume Volume Owner

   Label: Status: ID:

   000182 VOLUME_HOME **SYSTEM**

   004022 VOLUME_HOME **DX_BENCH_E**

   In this example, the media with volume label 000182 is currently unassigned. The media with volume label 004022 is currently assigned to DX_BENCH_E (the extended drive E on the computer BENCH).

3. In the ACSSA Command Processor Window, assign the media to system. Type the following command and press <Return>:

   set owner “System” VOL *MediaRange*

   In this command, the placeholder *MediaRange* represents the range of numbers for the media that you want to deallocate. The following example assigns the media numbered from 060945 to 060948 to the system, which deallocates it from the extended drive to which it had been allocated:

   set owner “System” VOL 060945-060948

   When the new assignment is completed, the following message appears in the ACSSA Command Processor Window: “`Set: set completed, Success.`”

Removing Media from a Media Service

If you want to remove media from Data Manager entirely, you can delete the media from the media service. For more information, see the following sections:

"Removing Media from the NAS Media Service, " which follows

- “Removing Media from the TSM Media Service” on page 99
- “Removing Media from the EMC Media Service” on page 100
- “Removing a Drive from the ACSLS Media Service” on page 102

Note: If you want to remove media from the MediaStor media service, you must do so through the MediaStor Administrator. For more information, refer to the *Managing MediaStor Media* chapter of the *ASM MediaStor System Guide*.

If you are planning to delete EMC or TSM media, we ***strongly*** recommend that you compact the media so that any migrated files are written back to the extended drive. This is because EMC and TSM media is “virtual” media, and deleting it removes the relationships created between the pointers used by Data Manager and the file data on the media. After deletion, Data Manager will never again be able to access files on the media. For more information on compacting media, see “Using the Compact Media Task” on page 80. For more information on transferring files from one type of media to another, refer to the Moving Files from One Media Type to Another chapter of the ASM Upgrade Guide.

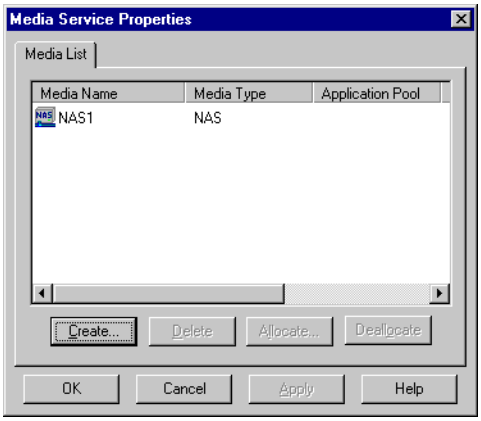
Removing Media from the NAS Media Service

The Media Service Properties dialog box allows you to delete a piece of NAS media. You must be a member of the DXAdministrators group to delete media, and the NAS media service should be online when removing media. If you attempt to delete media while the media service is offline, the changes may not take effect. For more information on the DXAdministrators group, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

To remove a piece of NAS media from the NAS media service:

1. From the Service menu, select Configure Media Services. The Configure Media Services dialog box appears.
2. Make sure that the NAS media service is online. If the media service is not online, select the media service and click Set Online.
3. Select the NAS media service and click Properties, or double-click the media service. The Media Service Properties dialog box appears.

Figure 39. NAS Media Service Properties Dialog Box with Media



4. Make sure that the media you want to remove has been deallocated from the extended drive. For instructions, see “Deallocating Media from the Extended Drive” on page 95.

5. Select the media you want to remove and then click Delete. A confirmation message appears.

6. Click Yes. The Media Service Properties dialog box appears, without the NAS media.

7. Click OK to save your changes and close the Media Service Properties dialog box. The Configure Media Services dialog box appears.

8. Click Close to return to the Administrator window.

Removing Media from the TSM Media Service

The Media Service Properties dialog box allows you to remove a piece of TSM media from the TSM media service. The appropriate delete privileges must be set for the client node in the Tivoli Storage Manager before you can remove TSM media from Data Manager. If the media has the backup attribute, for example, you need to make sure the backup delete option is enabled.

In addition, you must be a member of the DXAdministrators group to remove media, and the TSM media service should be online. If you attempt to remove media while the media service is offline, the changes may not take effect. For more information on the DXAdministrators group, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

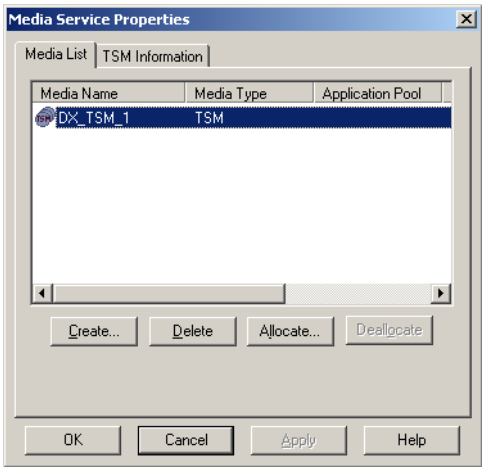
Note: If you are planning to delete TSM media, we ***strongly*** recommend that you compact the media so that any migrated files are written back to the extended drive. This is because TSM media is “virtual” media, and deleting it removes the relationships created between the pointers used by Data Manager and the file data on the media. After deletion, Data Manager will never again be able to access files on the media. For more information on compacting media, see “Using the Compact

Media Task” on page 80. For more information on transferring files from one type of media to another, refer to the *Moving Files from One Media Type to Another* chapter of the *ASM Upgrade Guide*.

To remove a piece of virtual TSM media from the TSM media service:

1. From the Service menu, select Configure Media Services. The Configure Media Services dialog box appears.
2. Make sure that the TSM media service is online. If the media service is not online, select the media service and click Set Online.
3. Select the TSM media service and click Properties, or double-click the media service. The Media Service Properties dialog box appears.

Figure 40. TSM Media Service Properties Dialog Box – Media List Tab with Media



4. Make sure that the media you want to remove has been deallocated from the extended drive. For instructions, see “Deallocating Media from the Extended Drive” on page 95.
5. Select the media you want to remove and then click Delete. A confirmation message appears.
6. Click Yes. The Media Service Properties dialog box appears, without the media.
7. Click OK to save your changes and close the Media Service Properties dialog box. The Configure Media Services dialog box appears.
8. Click Close to return to the Administrator window.

Removing Media from the EMC Media Service

The Media Service Properties dialog box allows you to delete a piece of EMC media. You must be a member of the DXAdministrators group to delete media, and the EMC media service should be online when removing media. If you attempt to delete media while the media service is offline, the changes may

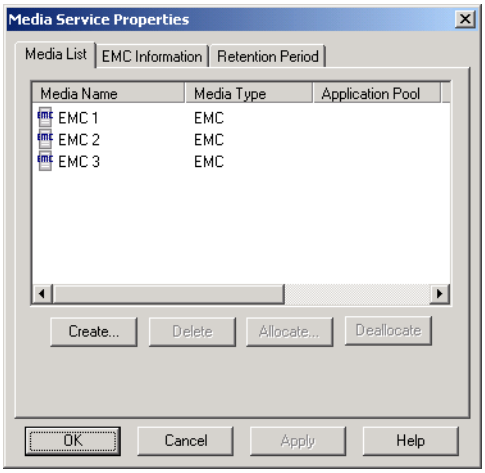
not take effect. For more information on the DXAdministrators group, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

Note: If you are planning to delete EMC media, we ***strongly*** recommend that you compact the media so that any migrated files are written back to the extended drive. This is because EMC media is "virtual" media, and deleting it removes the relationships created between the file pointers used by Data Manager and the file data on the media. After deletion, Data Manager will never again be able to access files on the media. For more information on compacting media, see "Using the Compact Media Task" on page 80. For more information on transferring files from one type of media to another, refer to the *Moving Files from One Media Type to Another* chapter of the *ASM Upgrade Guide*.

To remove a piece of virtual EMC media from the EMC Centera media service:

1. From the Administrator's Service menu, select Configure Media Services. The Configure Media Services dialog box appears.
2. Make sure that the EMC Centera media service is online. If the media service is not online, select the media service and click Set Online.
3. Select the EMC Centera media service and click Properties, or double-click the media service. The Media Service Properties dialog box appears.

Figure 41. EMC Centera Media Service Properties Dialog Box – Media List Tab with Media



4. Select the media you want to remove and then click Delete. A confirmation message appears.
5. Click Yes. The Media Service Properties dialog box appears, without the media.
6. Click OK to save your changes and close the Media Service Properties dialog box. The Configure Media Services dialog box appears.

7. Click Close to return to the Administrator window.

Removing a Drive from the ACSLS Media Service

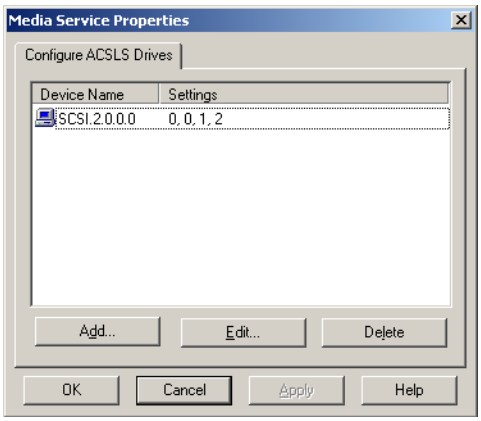
The Media Service Properties dialog box allows you to remove a drive from the ACSLS media service.

Note: To remove a drive, the media service *must* be offline.

To remove a drive from the ACSLS media service:

1. From the Data Manager Administrator's Service menu, select Configure Media Services. The Configure Media Services dialog box appears.
2. Set the ACSLS media service offline by selecting the media service and clicking Set Offline.
3. Select the ACSLS media service and click Properties or double-click the media service. The Media Service Properties dialog box appears.

Figure 42. ACSLS Media Service Properties Dialog Box



4. Select the drive(s) you want to remove and click Delete. A confirmation message appears.
5. Click Yes. The Media Service Properties dialog box appears without the deleted drive.
6. Click OK to close the Media Service Properties dialog box. The Configure Media Services dialog box appears.
7. Click Close to return to the Administrator window.

Removing Media Services

If you are no longer using a media service, you can delete the media service.

To delete a media service:

1. Make sure that all media have been deallocated from extended drives. For instructions, see “Deallocating Media from the Extended Drive” on page 95.
2. From the Service menu of the Administrator, select Configure Media Services, or click the Configure Media Services toolbar button.

Figure 43. Configure Media Services Toolbar Button

The Configure Media Services dialog box appears.

3. Before you delete a media service, it must be offline. Select the media service you want to delete and then click Set Offline. A confirmation message appears. Click Yes.
4. Select the media service you want to delete and then click Delete. A confirmation message appears.
5. Click Yes. The media service is deleted and the Configure Media Services window appears without the deleted media service.
6. Click Close to close the Configure Media Services dialog box.

Maintaining and Backing Up Media

Copy media are media that are being used as copies, or backups, of Original media on the ASM Data Manager extended drive. If an Original piece of media becomes unreadable, the copy of the media can be promoted to an Original piece of media (after the original is removed from the system). You can create copy media of all media types except for NAS, TSM, EMC, CD-ROM, and DVD-ROM media. For NAS media, we recommend that you use a third-party backup system. CD-ROM and DVD-ROM media are read-only.

If a piece of media becomes corrupt, you can run a check disk media task to scan the files on the media and attempt to repair the media.

For more information, see the following sections:

- "Creating and Managing Copies of Media, " which follows
- “Running Check Disk on a Piece of Media” on page 113

Creating and Managing Copies of Media

Copy media is useful as a backup for original media. In the event the original piece of media is lost or damaged, it may become necessary to replace the

original using the copy. Copy media has the same label as the original it corresponds to, but has a unique serial number. However, as soon as the copy is promoted to original, the serial number on the copy is changed to match the serial number that was on the original. For this reason, once promoted, you should leave the promoted copy as the original. If you try to replace the original back into the system, Data Manager will see the media as a duplicate, and will not be able to use it.

Note: Since Data Manager cannot change the serial number on write-once media (DVD-R, WORM, WORM-tape), Data Manager tracks the serial number internally, and equates the copy serial number with the original when copies of these media types are promoted. For this reason, if you promote a piece of write-once copy media, remove it from the ASM system, and then re-add it later, the media will again be seen as a copy, and must be re-promoted.

Copy media can be created for any piece of media that is allocated to an extended drive and is formatted and labeled for use. This media can reside in the Original node of the Available media tree, or be assigned to a media folder. You can create copies of all media types except for NAS, TSM, EMC, DVD-ROM, and CD-ROM media.

There are two ways to create copy media:

- If you want to create copies of multiple pieces of media, use the Copy Media Manager.
- If you want to create a copy of a single piece of media, assign the label copy media task.

ASM updates all copy media according to the Update copy media schedule. For more information, see “Updating Copy Media” on page 50.

Once a copy is created, whether through the Copy Media Manager or assigned as a separate media task, the Copy Media Manager allows you to view the update status of all copy media and when necessary, promote the copy to original, in the event a piece of original media becomes corrupted.

For more information, see the following sections:

- "Choosing Media to Use as a Copy, " which follows
- “Copies from DX 4.x” on page 105
- “Remote Media Copies” on page 105
- “Creating a Copy” on page 106
- “Viewing the Status of Copy Media” on page 111
- “Promoting Copy Media to Original Media” on page 112

Choosing Media to Use as a Copy

The blank media selected for copy must match the original. The following must be identical for the original and the copy media:

- Media type (for example, tape must be used to copy tape, WORM must be used to copy WORM, etc.)
- File system (for example, NTFS media must be copied to NTFS media)
- Block size/sector size (for information on setting block size for tape or WORM-tape media, see “Tape Block Size Default Value” on page 304)
- Total media capacity
- Compression settings (in other words, both must be compressed or both must be uncompressed)

You can create copies of all media types except for NAS, TSM, EMC, DVD-ROM, and CD-ROM media.

Note: For double-sided media in standalone drives, ASM allows you to create a copy of an original piece of media on the flip side of that same piece of media. However, if you use the other side of an original for its copy, ASM is unable to update the copy.

Copies from DX 4.x

ASM 4.x copy media is formatted using unique serial numbers. This is compatible with the ASM copy media format. Once ASM is installed and the media from the DX 4.2 system is added to the ASM system, these media are added to the Copy list under the Available Media tree.

Remote Media Copies

ASM supports remote media copying, meaning that original media and their associated copies can reside in different hardware devices, and even in different geographical locations. This capability allows you to create and maintain off-site copies of original media for disaster recovery.

Data Manager allows you to create remote copies in two ways:

- Assign the label copy media task to a blank piece of media
- Use the Copy Media Manager

Creating remote copies using the label copy task is the same as creating copies on the local device using the label copy task. (For more information on using the label copy task, see “Using the Label Copy Media Task” on page 109.) Just be sure that when you select the media to which you want to assign the task, you select media that is resident in the remote device. To determine which media service the media belongs to, select the media in the tree view of the Administrator. The physical location of the media, as well as

other information about the media, appears in the description view (bottom right pane).

In addition, if you are planning to use the label copy task to create remote copies, you may want to more specifically identify the location of the remote media using the editable Offline Location text box available through the Location tab of the Media Properties dialog box. For more information, see “The Location Tab” on page 29.

Creating remote copies using the Copy Media Manager is a bit more complicated, in that doing so involves bypassing built-in ASM functionality that is designed to enhance performance. The Copy Media Manager does not allow you to specifically select which blank media are used to make copies of the selected originals. By default, Data Manager selects local blank media.This means that to make remote copies of media using the Copy Media Manager (which is more efficient if you plan to make copies of multiple originals), you must not have *any* blank media in the local media service. This forces Data Manager to select blank media from a remote media service.

In addition, if you want all of your remote copies to reside in the same location, you must make sure that the remote media service that is to contain the copies is the only one that contains blank media. For more information on making copies with the Copy Media Manager, see “Using the Copy Media Manager” on page 107.

As with all media, you can determine the location of the media by looking at the Physical Location field in the description view of the Administrator when the media is selected. In addition, as stated above, it may be helpful to use the editable Offline Location text box located on the Location tab of the Media Properties dialog box to more specifically identify the location of all remote media, regardless of the media’s classification or use. For more information, see “The Location Tab” on page 29.

Creating a Copy

You can create a copy of media using either the Copy Media Manager or the label copy media task.

The Copy Media Manager is intended for the following circumstances:

- You need to label multiple pieces of media for use as copies.
- Both sides of the original media are original, and both sides of the blank media are blank and will be used as copies.

The label copy media task is intended primarily to assign the task to individual pieces or sides of media and for circumstances such as:

- You need to label a copy for a single side of an original piece of media.
- You need to copy from a standalone drive to a library drive or vice versa, or between two standalone drives.

- You need to schedule a label copy in conjunction with another task, such as format.

For more information, see the following sections:

- "Using the Copy Media Manager, " which follows
- “Using the Label Copy Media Task” on page 109

Using the Copy Media Manager

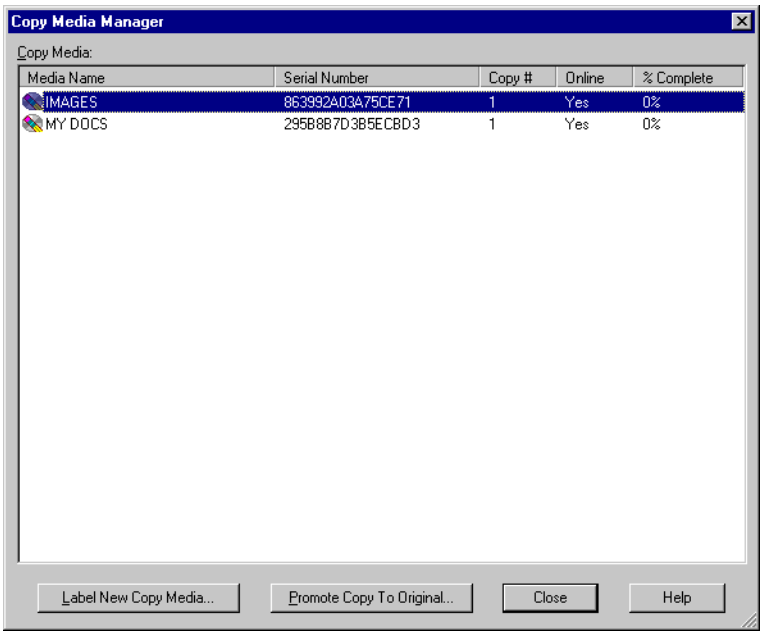
The Copy Media Manager allows you to create copies of multiple pieces of blank media (formatted but not labeled) at once. Essentially, you are assigning the label copy media task to multiple pieces of media. For more information, see “Using the Label Copy Media Task” on page 109. You can also view and edit the task through the Media Task Queue Manager. For more information, see “Media Tasks” on page 34.

Note: When using the Copy Media Manager to create copy media, the task is set to automatically process ASAP – as soon as possible. To change the processing to Scheduled – Next active task schedule, you must change the status using the Edit Tasks function. For instructions, see “Editing Media Tasks” on page 42.

To create a copy using the Copy Media Manager:

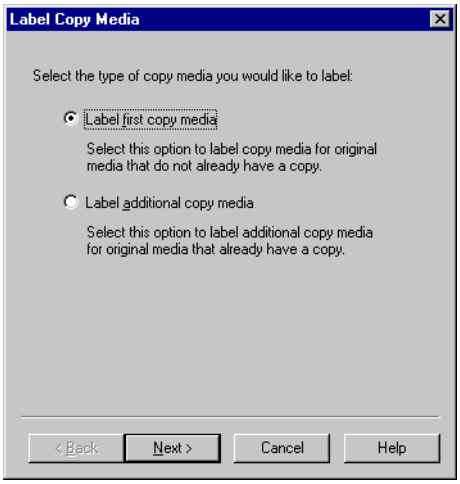
1. Press <CTRL>+C, or, from the Tools menu, select Copy Media Manager. The Copy Media Manager dialog box appears.

Figure 44. Copy Media Manager Dialog Box



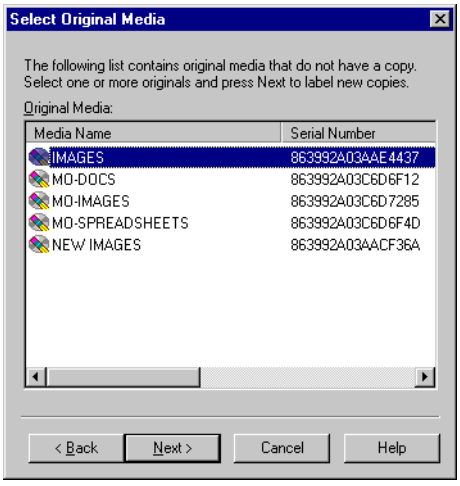
2. Click Label New Copy Media. The Label Copy Media page appears.

Figure 45. Label Copy Media Page



3. You have the following choices:
   - If you are creating a copy of an original piece of media that does not already have a copy, select Label first copy media.
   - If you are making additional copies of original media that already has a copy or copies, select Label additional copy media.
4. Click Next. The Select Original Media page appears.

Figure 46. Select Original Media Page



5. Select the piece(s) of media for which you would like to make copies and then click Next. The Summary page appears.

   Note: You must always select the front *and* back of two-sided media to copy the media in this wizard. To copy a single side of a piece of media, use the label copy media task. For more information, see “Using the Label Copy Media Task” on page 109.

6. Review the information in the summary.

7. If it is correct, click Finish.

   Since you essentially assigned the label copy media task to multiple pieces of media, the task is scheduled to process when the Process scheduled media tasks schedule is active. For more information, see “Scheduling Media Activities” on page 52. You can also view and edit the task through the Media Task Queue Manager. For more information, see “Media Tasks” on page 34.

   After the task completes, the media appears with the new label in the Copy media node of the Available Media list.

Using the Label Copy Media Task

The label copy media task allows you to assign a piece of blank media to be used as a copy of a piece of existing media.

Note: If you want to assign the format task to a piece of Original or Unformatted DVD-RAM media before you assign the label copy task, you must wait for the format task to complete before you can assign the label copy task; you cannot assign the two tasks consecutively.

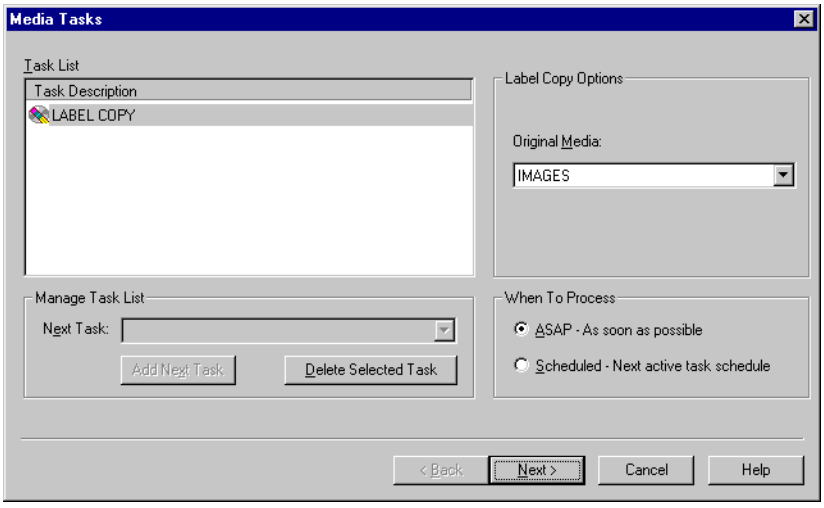
To assign a label copy task:

1. Open the Media Tasks page. You have the following choices:

   - In the tree view of the Administrator, right-click the piece of media to which you want to add the label copy media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the label copy media task and then click Next.

2. From the Next Task drop-down list, select the label copy media task and then click Add Next Task. The label copy task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 47. Label Copy Media Task



3. From the Original Media drop-down list, select the piece of original media from which you want to want to make a copy.

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Once the task has been processed, the media appears with the new label in the Copy media node of the Available Media list.

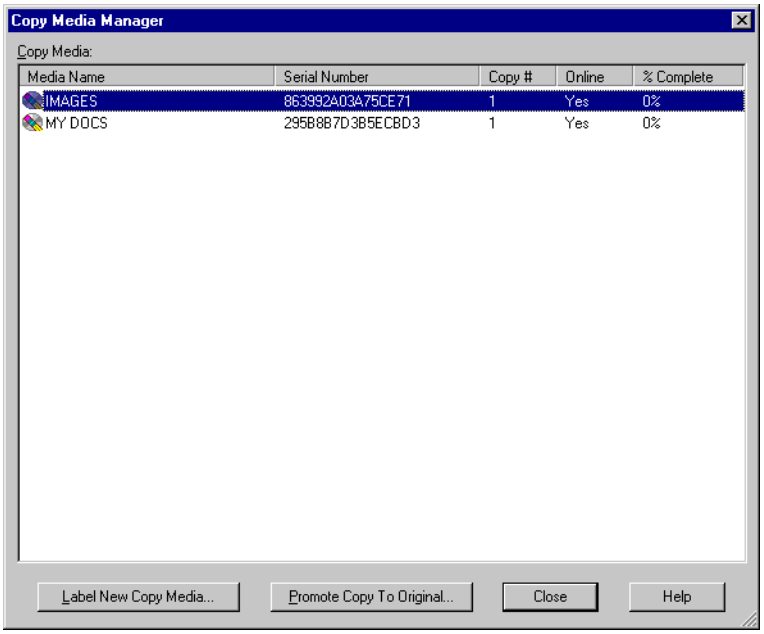
Viewing the Status of Copy Media

Once you have created copy media, you can view the status of the copy in the Copy Media Manager.

To view the status of copy media:

- Press <CTRL>+C, or, from the Tools menu, select Copy Media Manager. The Copy Media Manager dialog box appears.

Figure 48. Copy Media Manager Dialog Box



The following information appears in the Copy Media Manager dialog box:

Table 14. Copy Media Manager Information

Column	Description
Media Name	The media label for the piece of copy media (same as the media label for the original)
Serial Number	The unique serial number for the piece of copy media
Copy Number	The number of the copy (For example, if this was the first copy of an original created, it would be Copy # 1; if another copy already existed when it was created, it would be Copy # 2.)
Online	Whether the piece of copy media is currently online
% Complete	The percentage at which the copy is currently synchronized to the original

Promoting Copy Media to Original Media

If an original piece of media is lost or damaged, it may become necessary to replace the original using the copy. In order to use copy media as original media, the original piece of media must be completely removed from the system (removed from the media folder, deallocated from the extended drive and then removed from the library or drive). The copy may then be promoted to an original.

If you promote a copy that is not 100% updated to an original, any changes not updated on the copy are lost. For this reason we recommend making sure that your copies are updated regularly by setting the Update copy media schedule to be active at regular intervals. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

Note: Promoting copy media is intended only for disaster recovery, in the event an original is lost or damaged beyond repair. Once a copy has been promoted to original, it *must* remain as an original. Attempting to “demote” the copy and return the original back to the system is not supported and may result in data loss.

Note: If you promote a copy that is “write-once” media (DVD-R, WORM or WORM-tape), be advised that Data Manager cannot rewrite the serial number on write-once media, and only tracks that information internally. This means that if you remove a promoted write-once copy from the system, and then return it to the system, Data Manager will again see the media as a copy. If this occurs, you can re-promote the copy to an original.

For more information, see the following sections:

- "Deleting the Original from Data Manager, " which follows

Deleting the Original from Data Manager

The first step in promoting a copy of a piece of media to an original is to delete the original from Data Manager.

To delete the original media from Data Manager:

1. If the piece of media is currently assigned to a media folder, remove it from the media folder. For instructions, see “Removing Media from a Media Folder” on page 87.
2. Once the media has been removed from the media folder, deallocate the media from the extended drive. For instructions, see “Deallocating Media from the Extended Drive” on page 95.
3. If the media is being managed by the MediaStor media service, delete the media from MediaStor. For instructions, refer to the *Managing Storage Media* chapter of the *ASM MediaStor System Guide*.

Promoting the Copy to an Original

Once the original has been deleted from the ASM system, you can promote the copy to replace the original.

Note: Promoting copy media is intended only for disaster recovery, in the event an original is lost or damaged beyond repair. Once a copy has been promoted to original, it *must* remain as an original. Attempting to “demote” the copy and return the original back to the system is not supported and may result in data loss.

To promote the copy media to original media:

1. Press <CTRL>+C, or, from the Tools menu, select Copy Media Manager. The Copy Media Manager dialog box appears.
2. Select the piece of copy media you want to promote to an original.
3. Click Promote Copy to Original. A confirmation message appears.
4. Click Yes. Another confirmation message appears to let you know that the copy has been promoted and is no longer considered a copy. The media can now be added to a media folder, and files can be read from and written to it.

Running Check Disk on a Piece of Media

You can assign the check disk media task to run NT’s CHKDSK.EXE on ASM media formatted with the NTFS file system. For rewritable media formatted with the ASM file system, ASM performs a scan of ASM file tags. For media

formatted with the UDF file system, the check disk task runs a check and repair utility that attempts to repair corrupt media.

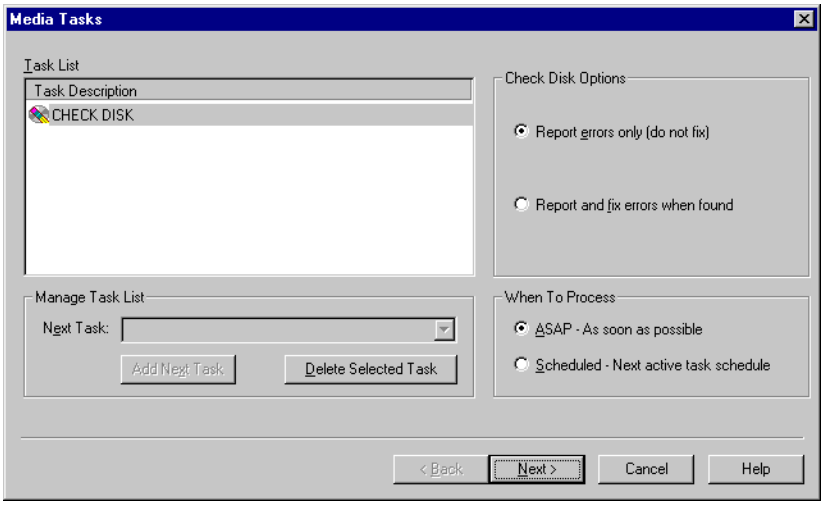
The check disk media task is available for original magneto-optical and DVD-RAM media, as well as original DVD-R media that has not been finalized.

Note: Because of some slight differences between the Windows NT NTFS file system and the Windows 2000 NTFS file system, the check disk task may not run properly when executed from a Data Manager installation on one platform, and performed on NTFS media formatted through a Data Manager installation on the other platform.

To assign a check disk media task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the check disk media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the check disk media task and then click Next.
2. From the Next Task drop-down list, select the check disk media task and then click Add Next Task. The check disk task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 49. Check Disk Media Task



3. In the Check Disk Options section, choose whether to report errors only or to report and fix errors when found. Errors are reported to the media log. For more information, see “Viewing Media Logs” on page 40.

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.

   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

6. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Managing File Migration

3

The extended drive, media folders, move groups and move rules, their creation, and their management are what enable and automate your file migration and data management system.

This chapter focuses on the management of your file migration components: media folders, move groups, and move rules. While you may have done some configuration of these components when you created them, you may have to make changes or updates at some point.

For more information on managing the file migration components of ASM Data Manager, see the following sections:

- "Managing Media Folders, " which follows
- “Managing Move Groups” on page 119
- “Managing Move Rules” on page 134
- “Fetching Files from Media” on page 143

Managing Media Folders

When you create a media folder for an extended drive, you provide a specific folder location on the extended drive for files to be stored. When you create move groups and move, purge, and delete rules for a media folder, you are creating a data management setup for the files saved in that folder. Creating multiple media folders for an extended drive allows you to subdivide and categorize your files in a way that makes it easier to apply separate migration strategies to different types of files. It also allows you be very specific about what files are to be migrated to what pieces or types of media.

Media folders do not contain specific properties as many other components of ASM Data Manager do. Instead, managing media folders involves creating, modifying and deleting move groups and move, purge, and delete rules, and applying them to the appropriate files in each of the media folders on the extended drive.

Media folders are listed under the extended drives for which they are configured. Each media folder has the move group(s) created for it and the media assigned to each move group, along with the move, purge, and delete rules listed in a tree structure below the media folder.

Each section of this chapter provides information about managing the components of media folders, including move groups and move rules. For

information and instructions on creating purge rules and delete rules, see “Creating a Purge Rule” on page 229 and “Creating a Delete Rule” on page 246.

For information on deleting media folders, see *"Deleting Media Folders, " which follows*.

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.

You can delete each media folder individually or you can delete all the media folders at once. For instructions, see the following sections:

- "Deleting a Single Media Folder, " which follows
- “Deleting Multiple Media Folders” on page 118

Deleting a Single Media Folder

To delete a single media folder, you can use the shortcut menu available for each media folder. Before you delete the folder, be sure that you have removed all media from it.

To delete individual media folders:

1. Remove all media from the media folder you plan to delete. For instructions, see “Removing Media from a Media Folder” on page 118.
2. In the tree view of the Administrator, right-click the media folder you want to remove. Select Delete (the only option) from the shortcut menu that appears. A confirmation message appears.
3. Click Yes. Data Manager verifies that the media folder does not contain media, and the media folder is removed from the extended drive.

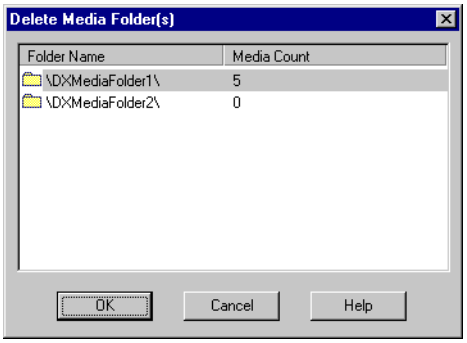
Deleting Multiple Media Folders

You can delete multiple media folders from an 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. Remove all media from the media folders you plan to delete. For instructions, see “Removing Media from a Media Folder” on page 118.
2. In the tree view of the Administrator, right-click the extended drive from which you want to delete media folders. Select Delete Media Folder from the shortcut menu that appears. The Delete Media Folder dialog box appears.

Figure 50. Delete Media Folder Dialog Box



3. Select the folder(s) you want to delete and then click OK. The media folders are removed from the extended drive.

Managing Move Groups

Move groups are specific groupings or pools of media within a media folder. When you set up a move rule for a set of files, you point to the move group of media to which you want those files moved.

To use media assigned to a media folder for file migration, that media must be assigned to a move group within the media folder. Assigning media to different move groups in a media folder allows you to subdivide media within a media folder for separate uses.

By assigning media to move groups, you can control which set of media files will be written to and where. This can be useful if segregation of data is necessary. For example, if you wish to separate files from different months onto different pieces of media within a media folder, you can create a move group for each month. Separate media can be assigned to each move group so that files for different months are not stored on the same media.

Note: Move groups can contain only writable media. CD-ROM, DVD-ROM, and finalized DVD-R media, for example, cannot be assigned to a move group because they are read-only.

Once you have created a move group, you can modify the media assigned to the move group, configure options that allow you to automate management of the media in the move group, and configure automatic labeling and compaction of the move group. You can also view a move group's statistics and delete the move group. For more information, see the following sections:

- "Modifying a Move Group, " which follows
- “Deleting a Move Group” on page 133

Modifying a Move Group

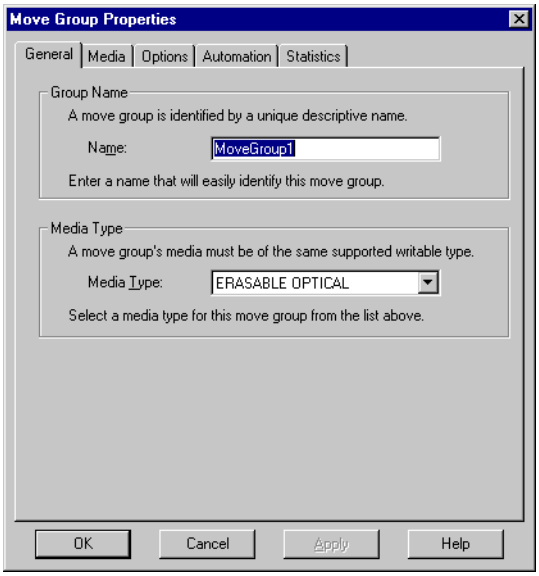
After you create a move group, you can change the group name, add and remove media from the group, and set different media fill options. If the media fill method selected is sequential, promoting and demoting media establishes the order in which media is filled for the move group.

You can also configure Data Manager to automatically manage media for a move group based on media usage. Two of the main administrative activities related to move group maintenance, automatic media labeling and automatic media compaction, can be set to occur.

To modify a move group:

1. Right-click the move group you want to modify and then select Properties from the shortcut menu, or double-click the move group you want to modify. The Move Group Properties dialog box appears with the General tab active by default.

Figure 51. Move Group Properties -- General Tab



2. Modify the settings on each of the tabs as necessary. For more information, see the following sections:
   - "The General Tab, " which follows
   - “The Media Tab” on page 121
   - “The Options Tab” on page 124
   - “The Automation Tab” on page 129
   - “The Statistics Tab” on page 132
3. As with most Properties functions in ASM, after making changes you have three options:

- To save changes and close the Properties dialog box, click OK.
- To save changes and keep the Properties dialog box open, click Apply.
- To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

The General Tab

The General tab appears when you open the Move Group Properties dialog box, and allows you to change the move group's name and the type of media that is assigned to the move group.

Note: You cannot add any media to a move group that is of a different type than what is specified for the group. This attribute must be changed before media of a different type can be added.

Note: If you have media already assigned to the move group, and you attempt to change the media type, a warning box appears informing you that all media in that move group will be removed.

To modify the General tab:

1. To change the name of the move group, type the new name into the Name text box.
2. To change the type of media that can be assigned to the move group, select a different media type from the Media Type drop-down list.

   Note: If you change the media type for the move group, you may also want to change the move group name to reflect the new media type, if applicable.

The Media Tab

The Media tab of the Move Group Properties dialog box lists all media currently assigned to the move group and statistics on the total space and free space on that media. If you did not assign media to the group when you created the move group, you may use this tab to add media after the group is created. You must add media to a move group in order to use that media for file migration.

In order to add media to the move group, the media must already be assigned to the media folder. Each piece of media can only be assigned to one move group at a time. For more information on assigning media to the media folder, see "Adding Media to a Media Folder" on page 90.

The Media tab allows you to remove a piece of media from a move group, which is necessary in order to finalize DVD-R media. Removal from a move group renders media unavailable for Data Manager to write files to it based on the move rules configured for that move group. However, as long as the media

remains in the media folder, clients can access the files that reside on that media.

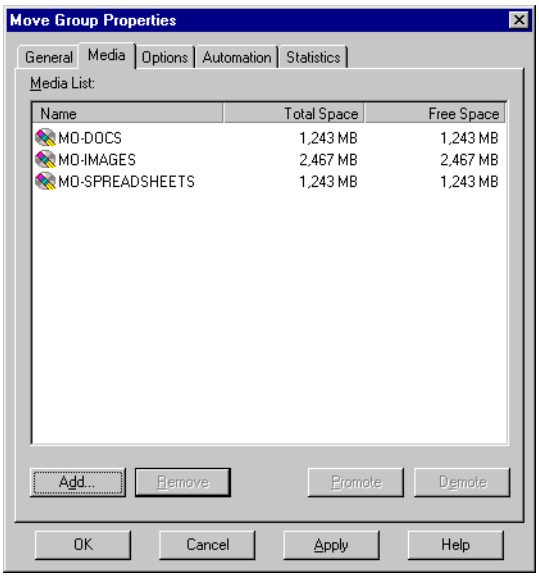
You can also promote and demote media on the Media tab. When there is more than one piece of media assigned to the move group, promoting and demoting media changes the order the media appears in the list. If the media fill method is set to sequential, files are written to media in the order in which the pieces of media appear on the Media tab. For more information, see “Media fill method” on page 126. If the media fill method is set to random, the next available piece of media in the move group is used, regardless of the order set in the list.

Note: You can also add media to the move group by dragging media to the move group in the tree view of the Administrator or by assigning the add to move group media task. Similarly, you can remove media from the move group using the remove from move group media task. For more information, see “Adding Media to a Move Group” on page 98 and “Removing Media from a Move Group” on page 115.

To modify the Media tab:

1. Click the Media tab in the Move Group Properties dialog box.

Figure 52. Move Group Properties -- Media Tab



2. You have the following choices:

   - Add media to the move group. For more information, see "Adding Media to a Move Group, " which follows.
   - Reorder (promote or demote) media in the move group. For more information, see “Reordering Media in a Move Group” on page 123.
   - Remove media from the move group. For more information, see “Removing Media from a Move Group” on page 124.

Adding Media to a Move Group

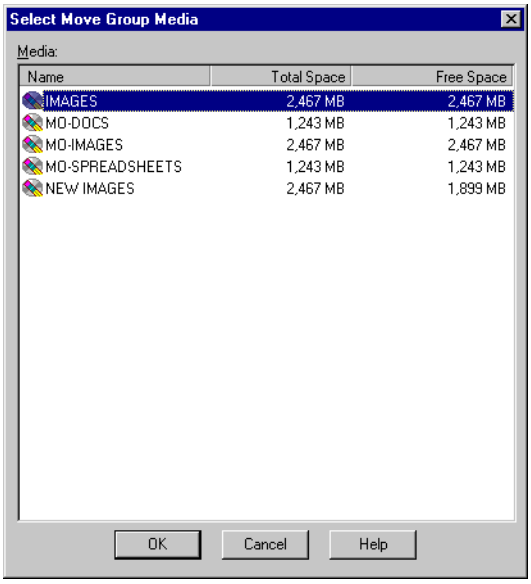
You must add media to a move group in order to use media assigned to a media folder for file migration. In order to add media to the move group, the media must already be assigned to the media folder, and the media cannot be read-only (like CD-ROM, DVD-ROM, or finalized DVD-R). Each piece of media can only be assigned to one move group at a time.

Note: You can also use a media task to add media to a move group. See “Using the Add to Move Group Media Task” on page 100 for more information.

To add media to a move group:

1. On the Media tab, click Add. The Select Move Group Media dialog box appears, listing all media of the specified media type available in the media folder.

Figure 53. Select Move Group Media Dialog Box



2. From the Media list, select the media you want to add and click OK. The selected media appears in the Media tab.

Reordering Media in a Move Group

You can promote and demote media to set the media fill sequence. If the media fill method (configured on the move group Options tab) is set to sequential, media is filled in the order in which it is listed on the Media tab. The piece of media listed first is the first piece of media to which files will be written; when this piece of media is full, files are written to the second piece of media, and so on. A piece of media can be “promoted” to a higher position in the list, or “demoted” to a lower position. (If media fill method is set to random, the next available piece of media in the move group is used, regardless of the order set in this list.)

To promote or demote media in the move group:

1. In the Media tab, select the piece of media whose order in the list you want to change.
2. You have the following choices:
   - To move the media up in the list, click Promote. The media is moved up one position in the list.
   - To move the media down in the list, click Demote. The media is moved down one position in the list.

   The media appears in the new order.

Removing Media from a Move Group

When you remove a piece of media from a move group, Data Manager no longer writes files to it based on the move rules configured for that move group. However, the piece of media remains in the media folder, and clients can access the files that reside on that media. And because move groups cannot contain read-only media, DVD-R media *must* be removed from the move group before it can be finalized, though you will want the media to remain in the media folder so clients can access the files contained on the media.

Note: You can also use a media task to remove media from a move group. See “Using the Remove from Move Group Media Task” on page 115 for more information.

To remove media from the move group:

- On the Media tab, select the media you want to remove and click Remove. The selected media is removed from the move group, but remains assigned to the media folder.

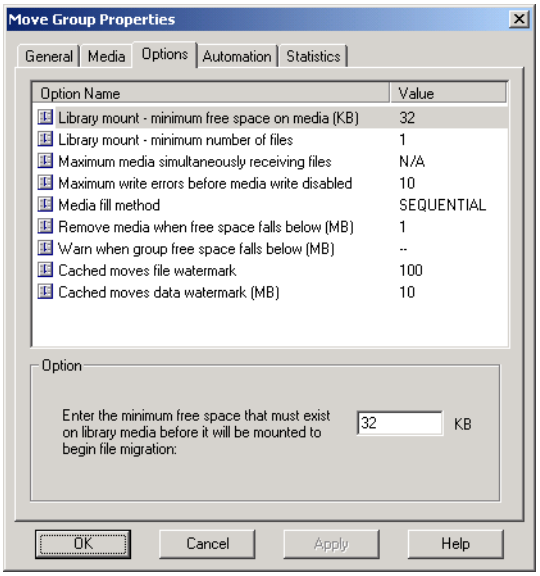
The Options Tab

The Options tab of the Move Group Properties dialog box lists all configurable options available for the move group. 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.

To modify the Options tab:

1. Click the Options tab in the Move Group Properties dialog box.

Figure 54. Move Group Properties -- Options Tab



2. Configure the following options as necessary:
   - "Library mount - minimum free space on media (KB), " which follows
   - “Library mount - minimum number of files” on page 126
   - “Maximum media simultaneously receiving files” on page 126
   - “Maximum write errors before media write disabled” on page 126
   - “Media fill method” on page 126
   - “Remove media when free space falls below (MB)” on page 127
   - “Warn when group free space falls below (MB)” on page 128
   - “Cached moves file watermark” on page 128
   - “Cached moves data watermark (MB)” on page 129

Library mount - minimum free space on media (KB)

Use this move group option to specify the minimum number of kilobytes (KB) of free space that must be available on a piece of media for Data Manager to request that the media service mount that media in order to write files to it. The default value is 32 KB. This setting only controls whether Data Manager requests the media be *mounted* specifically for media writes. If the media is already mounted when the file moves are activated, Data Manager attempts to write to the media regardless of the amount of free space on the media.

Library mount - minimum number of files

Use this move group option to specify the minimum number of files that must be on the move list before the media in this move group is mounted for file writes. The default value is one file. This setting only controls whether Data Manager requests the media be *mounted* specifically for media writes. If the media is already mounted when the file moves are activated, Data Manager attempts to write to the media, regardless of the number of files on the move list.

Maximum media simultaneously receiving files

Use this move group option to specify the maximum number of media from this move group that can be mounted in device drives for file writes at one time.

This option is only available for configuration if the media fill method for this move group is set to Random. For more information, see “Media fill method” on page 126.

Note: If your move group contains virtual media (EMC, TSM or NAS), you may be able to improve file write performance by setting your media fill method to Random, and setting this option to the number of pieces of media in your move group.

Maximum write errors before media write disabled

Use this move group option to configure whether Data Manager stops writing to a piece of media if a specified number of write errors occur when migrating files to that piece of media.

To configure the Maximum write errors before media write is disabled option:

- You have the following choices:
  - If you want Data Manager to stop writing to media if the specified number of write errors have occurred when attempting to write files to the media, select Disable writing to media after write errors occur. Then enter the maximum number of errors in the text box. The default for all media except Tape, is to stop writing to media after 10 errors occur. For Tape, the default is 1.
  - If you want Data Manager to continue to attempt to migrate files to media, regardless of the number of write errors that have occurred on the media, select Do not disable writing to media after write errors occur.

Media fill method

Use this move group option to configure whether to fill media sequentially in the order in which they appear in the media list in the Media tab, or to fill media

randomly, selecting media based on its availability. For information on setting the order media appears in the Media tab, see “The Media Tab” on page 121.

Setting the fill method to Random optimizes file write times, by allowing Data Manager to write to any available move group media. In addition, if the Maximum media simultaneously receiving files option is set to greater than one, Data Manager can request the mounting of multiple pieces of media for file writes.

Setting the fill method to Sequential optimizes file retrieval times. Filling the move group media in order (sequentially) makes it more likely that only one piece of media has to be mounted in order to retrieve file data, instead of several pieces, which slows fulfillment of client requests.

Note: If your move group contains NAS, TSM or EMC media, you may be able to improve file write performance by setting your media fill method to Random, and setting the Maximum media simultaneously receiving files option to the number of pieces of media in your move group. Because NAS, TSM and EMC are “virtual” media and do not need to be mounted, file retrieval times should not be affected.

To configure the Media fill method option:

- You have the following choices:
  - To fill the media in the move group in the order in which they appear in the Media tab, select Sequential – Write to one media at a time (optimize retrieval). This is the default.
  - To fill media based on its availability at the time files are migrated, select Random – Write to any available media (optimized writing).

Remove media when free space falls below (MB)

Use this move group option to specify whether to automatically remove media from the move group when the free space on the piece of media falls below a specified number of megabytes (MB). When you remove a piece of media from the move group, files are no longer migrated to that piece of media. Media removed from a move group remains in the media folder, however, allowing client access to the files contained on that media.

Note: You should leave this option enabled if the move group contains media that cannot be compacted. If the media in the move group *can* be compacted and you use automated media compaction for the media, you may want to disable this option. Compacting media removes the media from the move group and the media folder automatically. For more information on automated media compaction, see “The Automation Tab” on page 129.

Note: Free space on media may fall below the level specified through the Remove media when free space falls below option. This may occur because ASM checks media free space on a timed interval of every 15

minutes, and ASM may continue to write files to the media in between the timed checks. Once the timed verification occurs, the media is removed from the move group; however, the media free space may be less than the amount specified through this option.

To configure the Remove media when free space falls below option:

- You have the following choices:
  - To automatically remove pieces of media when free space on that media falls below a certain number of megabytes, select Remove media when free space falls below __ MB. Then enter the number of megabytes in the text box. This is the default, with a value of 1 MB.
  - To leave media in the move group regardless of its fill level, select Do not automatically remove full media from this group.

Warn when group free space falls below (MB)

Use this move group option to configure whether you want Data Manager to warn you when the free space available on all media in the move group falls below a specified number of megabytes (MB).

To configure the Warn when group free space falls below option:

- You have the following choices:
  - To configure Data Manager to send you a warning when the amount of free space in the move group media falls below the entered number of megabytes, select Warn when group free space fall below __ MB.

    Note: If you leave this option enabled, you can configure these warnings to appear as alerts on a selected computer, domain, email address, or user account. For more information on setting up alerts, see “The Alerts Tab” on page 314.
  - To disable any free space watermark warnings, select Do not warn when group is low on free space. This is the default.

Cached moves file watermark

Caching files allows Data Manager to write files to media in larger groups (rather than writing files to media one at a time), which is more efficient for some types of media. Data Manager queues the list of files to be moved to a move group until either the cached moves file watermark, the cached moves data watermark, (see "Cached moves data watermark (MB), " which follows) or the media drive cache size limit is reached, whichever occurs first. At that point, Data Manager stops queueing files and flushes all of the file data for the queued files out to media in the move group. Once the file data is flushed, Data Manager clears the file list queue and then continues processing the move list, repeating this process until all files have been moved to the media.

Use this move group option to specify the number of files that Data Manager queues before it flushes the file data to the move group media. The default value is 100 files. This setting must be between 1 and 1000 files.

Note: If you do not want Data Manager to cache files before moving them, set this watermark value to 1.

Cached moves data watermark (MB)

Caching files allows Data Manager to write files to media in larger groups (rather than writing files to media one at a time), which is more efficient for some types of media. Data Manager queues the list of files to be moved to a move group until the cached moves data watermark, cached moves file watermark, (see *Cached moves file watermark*, above) or the media drive cache size limit is reached, whichever occurs first. At that point, Data Manager stops queueing files and flushes all of the file data for the queued files out to media in the move group. Once the file data is flushed, Data Manager clears the file list queue and then continues processing the move list, repeating this process until all files have been moved to the media.

Use this move group option to specify the total cumulative size limit (in megabytes) of files that Data Manager queues before it flushes the file data to the move group media. The default value is 10 MB. This setting must be between 1 and 1048576 MB (equal to 1 terabyte).

The Automation Tab

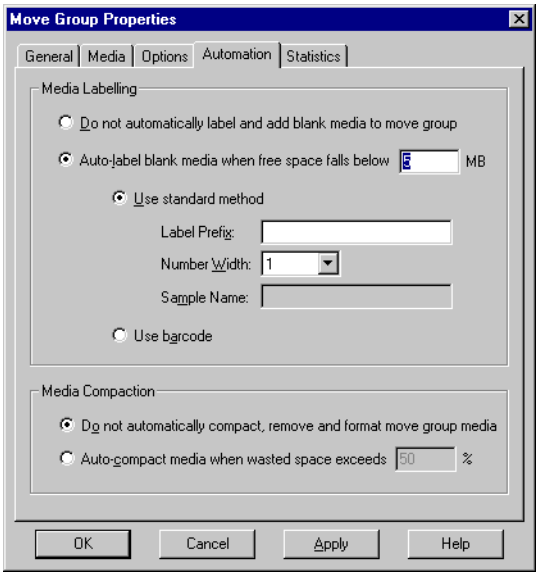
The Automation tab of the Move Group Properties dialog box allows you to set up automatic media labeling and automatic media compaction. These features can be used together to create intelligent move groups that allocate new media and perform compaction as space is needed. This allows the system administrator to simply load and format media, and then let other media maintenance activity be triggered by internal Data Manager events. Automatic labeling and automatic compaction eliminate a time-consuming requirement of system administration: the need to manage move groups and the available space within them by allocating/compacting media where necessary.

Note: If your move group contains a media type that does not support media labeling or media compaction and reformat (for example, NAS, EMC, or TSM media), the Automation tab options are not available. For more information on selecting a media type for a move group, see “The General Tab” on page 121.

To modify the Automation tab:

1. Click the Automation tab in the Move Group Properties dialog box.

Figure 55. Move Group Properties -- Automation Tab



2. You have the following choices:

   - Set up automatic media labeling. For more information, see *"Automatic Media Labeling, " which follows*.
   - Set up automatic media compaction. For more information, see “Automatic Media Compaction” on page 131.

Automatic Media Labeling

The automatic labeling option allows you to configure automatic addition of available blank media to a move group. When enabled, a media prefix and watermark must be defined for use by automatic labeling. For example, the move group named PAYROLL MEDIA might be configured with a media prefix of “PAYROLL” and a watermark of 200MB. This means that when the free space available in the move group falls below 200MB, blank media is automatically labeled with a PAYROLL prefix and added to the move group.

Data Manager also contains a batch formatting and labeling utility. This utility is called the Media Prepare Manager and formats media, and prepares blank media for automatic labeling. For more information, see “Formatting and Labeling Using Media Prepare Manager” on page 81.

Note: Only media in library devices can be used for automatic labeling.

To configure automatic media labeling:

1. On the Automation tab of the Move Group Properties dialog box, you have the following choices:

   - To prevent Data Manager from automatically selecting blank media, labeling it, and adding it to a move group, select the Do not automatically label and add blank media to move group option.

     Note: If you do not enable the automatic labeling function, you may want to activate the Warn when group free space falls below ____ MB option on the Options tab to alert you when move group free space falls below a particular level. For more information, see “Warn when group free space falls below (MB)” on page 128.

   - To configure Data Manager to automatically select blank media, label it, and add it to the move group when the total number of free megabytes on media in the move group falls below a specified number, select the Auto-label blank media when free space falls below option.

2. If you select the automatic labeling option, you have the following choices:

   - If barcodes are not available on your system, select Use standard method to label media based on a label prefix and number width.

   - If barcodes are available on your system, and if you want to generate labels for media based on these barcodes, select Use barcode. To determine if the media device supports barcode labeling, refer to your device manual.

3. If you use a standard labeling convention, specify a prefix to be used for naming each added piece of media in the Label Prefix text box.

4. From the Number Width drop-down list, select the number of digits to be used to create the incremental numbering for the media label. Data Manager adds the number to the prefix to create the name for each added piece of media.

   The Sample Name text box provides an example of what the media name will look like based on the prefix and number width criteria you set.

Automatic Media Compaction

The automatic compaction option for move groups can be used to configure automatic compaction of media in the move group when the amount of wasted space on each piece of media (due to deleted files) exceeds a specified percentage.

Compacting media reclaims lost space by writing all active files from the media (current versions of written files, and files not marked for deletion) back to the media folder on the extended drive, and removing the media from the

move group and the media folder. After media has been auto-compacted, it is reformatted, allowing that media to be used again.

After compaction, the files from the media (that were written back to the extended drive) are re-migrated to move group media based on the move rules for the media folder. Automatic compaction automatically assigns the format task to the media it has compacted. Once formatted, the media is added to the Blank media node and is available for labeling and re-addition to the move group (which can be taken care of by configuring the Automatic Media Labeling option for the move group).

To configure automatic media compaction:

- On the Automation tab of the Move Group Properties dialog box, you have the following choices:
  - To prevent Data Manager from automatically compacting media, select Do not automatically compact, remove and format move group media.
  - To configure Data Manager to automatically compact media when wasted space on the media exceeds a certain percentage, select Auto-compact media when wasted space exceeds ___ %. Then enter the desired percentage in the text box.

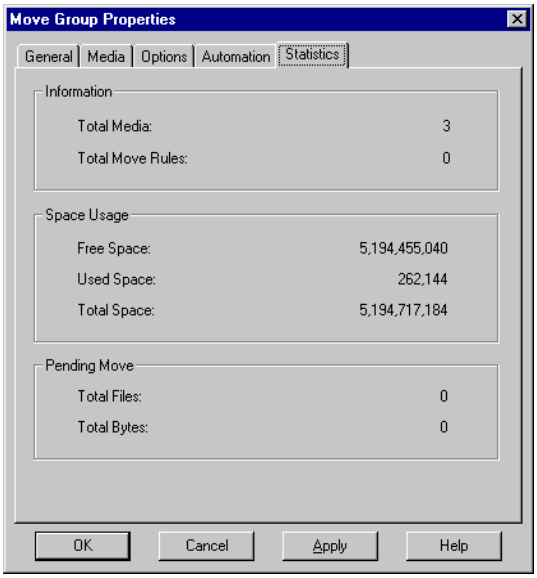
The Statistics Tab

The Statistics tab of the Move Group Properties dialog box contains statistical information about the media in the move group, including the total number of media, the total number of move rules, total space usage, and pending move details. There are no configurable options on this tab.

To view the Statistics tab:

- Click the Statistics tab in the Move Group Properties dialog box. The Statistics tab appears.

Figure 56. Move Group Properties -- Statistics Tab



The following information appears on the Statistics tab:

Table 15. Move Group Properties -- Statistics Tab Information

Group	Item	Description
Information	Total Media	The number of media currently in the move group
	Total Move Rules	The number of move rules currently configured to write to the move group
Space Usage	Free Space	The number of free bytes (total) on move group media
	Used Space	The number of used bytes (total) on move group media
	Total Space	The number of total bytes on move group media
Pending Move	Total Files	The number of files pending move
	Total Bytes	The sum of all bytes in files pending move

Deleting a Move Group

When a move group is deleted, all configurations for that move group, including any move rules currently configured to write to the move group, are also deleted. In addition, the media must be removed from the move group before the group can be deleted (though the media can remain in the media folder). The media removed from the move group is then available to be

added to another move group in the media folder. See “Removing Media from a Move Group” on page 124 for more information.

If you want to delete a move group without deleting the associated move rule(s), create a new move group, then modify your move rule(s) to point to the new move group before you delete the original move group.

To delete a move group:

1. Right-click the move group you want to delete and select Delete from the shortcut menu, or select the move group you want to delete and then press <DELETE>. A confirmation message appears.
2. Click Yes. If there are any move rules configured to write to the move group, a warning message appears informing you that the move rules will be deleted as well.
3. Click OK to continue. The move group and all associated configurations and move rules are deleted.

Managing Move Rules

Move rules are designed to allow you to configure, very specifically, what files in a media folder are moved to what media. A move rule contains the instructions that ASM Data Manager follows when choosing which files to move (or exclude from movement) to a particular piece or group of media, and each move rule points to a target move group of media for migration. For more information on managing move groups, see “Managing Move Groups” on page 119.

Once you have created a move rule, you can modify how the rule selects files to be migrated or excluded from migration based on the file’s location, extension, attributes, and size. You can also change the move group the move rule applies to, as well as configure a time delay for files, excluding them from movement until after a certain specified time period has elapsed since file creation, last file access, or last file write.

If you no longer need a move rule, you can delete it.

For more information, see the following sections:

- "Modifying a Move Rule, " which follows
- “Deleting a Move Rule” on page 143

Modifying a Move Rule

Accessing the Move Rule Properties dialog box and selecting each of the tabs allows you to view and change the settings established when you created the move rule. You can change what files are affected by the move rule by changing or disabling the file size specifications, changing or disabling the

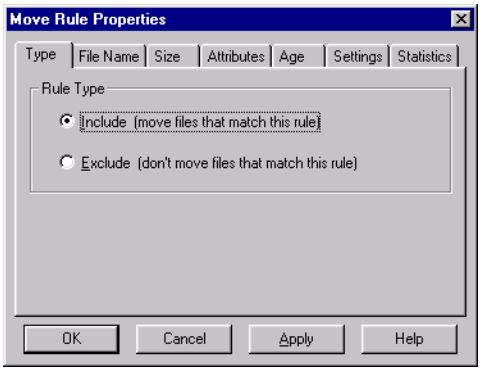
qualification of files based on file attributes, and changing or disabling the age (time delay) specifications for moving files. You can also change which move group's media is to receive the files, and enable or disable the direct read and purge after move options. In addition, you can change whether the rule is an inclusion or exclusion type of move rule.

Note: When files qualify for both an inclusion move rule and an exclusion move rule, the exclusion move rule takes precedence, and the files are excluded from migration.

To modify a move rule:

1. Right-click the move rule you want to modify and then select Properties from the shortcut menu, or double-click the move rule you want to modify. The Move Rule Properties dialog box appears with the Rule Type tab active by default.

Figure 57. Move Rule Properties Dialog Box



2. Modify the settings on each of the tabs as necessary. For more information, see the following sections:
   - "The Rule Type Tab, " which follows
   - “The File Name Tab” on page 136
   - “The Size Tab” on page 138
   - “The Attributes Tab” on page 139
   - “The Age Tab” on page 139
   - “The Settings Tab” on page 141
   - “The Statistics Tab” on page 142
3. As with most Properties functions in Data Manager, after making changes you have three options:
   - To save changes and close the Properties dialog box, click OK.
   - To save changes and keep the Properties dialog box open, click Apply.

- To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

The Rule Type Tab

The Rule Type tab of the Move Rule Properties dialog box allows you to change whether the criteria configured in the rule will qualify files for or exclude files from movement to media.

Note: When files qualify for both an inclusion move rule and an exclusion move rule, the exclusion move rule takes precedence, and the files are excluded from migration.

To modify the Rule Type tab:

1. If necessary, click the Rule Type tab in the Move Rule Properties dialog box to activate it.
2. Select the appropriate Rule Type for this move rule. You have the following choices:
   - Select the Include option if you want to create a move rule that specifies which files should be moved to media.
   - Select the Exclude option if you want to create a move rule that specifies which files should *not* be moved to media.

   For example, if you want to move all the files in a media folder except for text files, configure an inclusion move rule to include all files, and then configure a second exclusion move rule to exclude all “*.txt” files.

   If your media folder has multiple sub-directories that contain files you do not want moved to media, you can set an inclusion move rule to move all files and subdirectories in a media folder, and then set an exclusion move rule to exclude all files (or specific files) in a subdirectory.

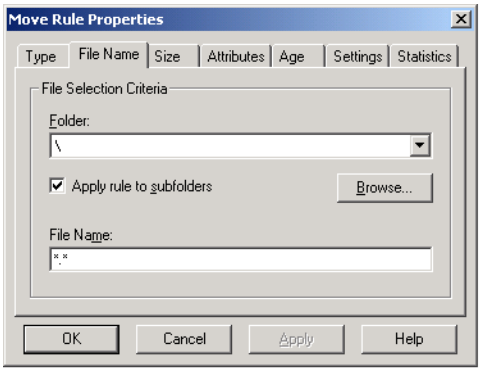
The File Name Tab

The File Name tab of the Move Rule Properties dialog box allows you to view and change the folder and file name specifications for the move rule.

To modify the File Name tab:

1. Click the File Name tab in the Move Rule Properties dialog box.

Figure 58. Move Rule Properties -- File Name Tab



2. Select the folder to which you want the move rule to apply. The active media folder is listed by default. If you want to apply the rule to only the files in a specific subfolder of the media folder, click Browse. The Select Folder dialog box appears. Select the folder and then click OK.

3. Enable or disable the Apply rule to subfolders option. If enabled, all files in the specified folder, and all subfolders and their files are subject to the move rule. If disabled, only the files in the specified directory are subject to the move rule.

   Note: You cannot include more than one select subfolder of the media folder in a single move rule. You can apply the rule to either one or all subfolders only. To apply a move rule to files in a different subfolder, create a second move rule. For information on creating move rules, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

4. Specify the file naming patterns or file extension to which the move rule applies. You can use the standard Windows asterisk (*) wildcard, which represents one or more characters in the name or extension part of the file name. For example:

   - To apply the move rule to all files in the directory, type `*.*` in the File Name text box.
   - To apply the move rule to only files of a particular type, type in an asterisk before the period and the appropriate file extension after the period. For example, to move or exclude only bitmaps type `*.BMP` in the File Name text box.
   - To apply the move rule to files with a certain naming convention use the asterisk as part of the file name. For example, to move or exclude only files indicated as reports, type `*REPORT.*` or `*REPORT*.*` in the File Name text box.
   - To use the wildcard to specify only files of a certain type with a specific naming convention, use the asterisk in the name part of the file name while specifying the file extension. For example, to move or exclude

only text files indicated as reports, type `*REPORT*.TXT` in the File Name text box.

Note: Only one file name specification can be configured per move rule. To move or exclude files of a different specification in the same folder, create a second move rule.

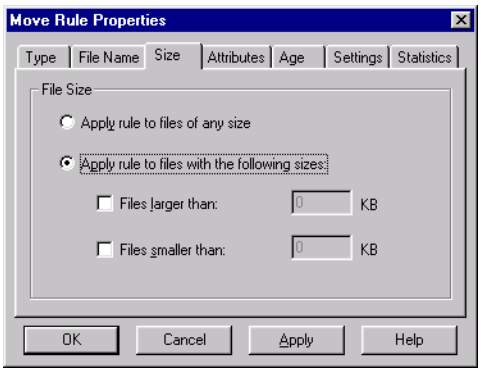
The Size Tab

The Size tab of the Move Rule Properties dialog box allows you to view and change the file size qualifications for the move rule.

To modify the Size tab:

1. Click the Size tab in the Move Rule Properties dialog box.

Figure 59. Move Rule Properties – Size Tab



2. You have the following choices:
   - To qualify files of all sizes, select Apply rule to files of any size. This is the default.
   - To qualify only files of a specified size range, select Apply rule to files with the following sizes.
3. If you choose to qualify files based on their size, you have the following options:
   - Enable the Files larger than __ KB option. In the text box, type in the number of kilobytes (KB) that a file must equal or exceed in order to qualify for this rule.
   - Enable the Files smaller than __ KB option. In the text box, type in the number of kilobytes (KB) that a file must be equal to or smaller than in order to qualify for this rule.

   Note: When both options are enabled, only files whose size falls in between the kilobyte specifications are subject to the move rule.

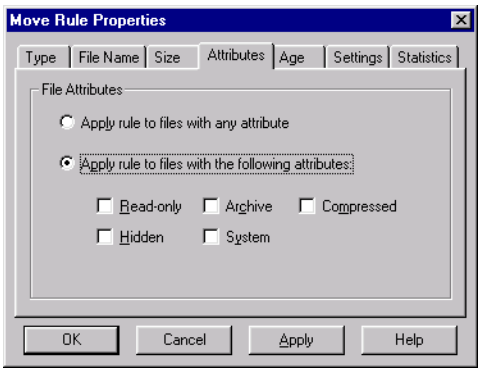
The Attributes Tab

The Attributes tab of the Move Rule Properties dialog box allows you to view and change the specific file attribute qualifications for the move rule.

To modify the Attributes tab:

1. Click the Attributes tab in the Move Rule Properties dialog box.

Figure 60. Move Rule Properties – Attributes Tab



2. You have the following choices:

   - To qualify files regardless of attributes, select Apply rule to files with any attribute. This is the default.
   - To qualify only files with certain attributes for this move rule, select Apply rule to files with the following attributes. Then enable the options for the attributes a file should have if you want the file to qualify for this rule.

   Note: When selecting attributes, be advised that files possessing ***any*** of the checked attributes will qualify for the rule (as opposed to files needing to possess ***all*** of the checked attributes to qualify, or files needing to possess ***only*** the checked attributes to qualify).

   Note: If you have extended a system drive, or if you have application files on an extended drive, be sure to configure an exclude rule that excludes all files with the System attribute, to prevent operating system or application file purge. Extending a system drive with Data Manager is *not recommended* and may cause severe operating system damage. Attributes for existing files can be viewed through Windows Explorer.

The Age Tab

The Age tab of the Move Rule Properties dialog box allows you to qualify files of any age against this move rule or to qualify only files of a particular age.

If there is no age specification configured for the move rule, and if it is an inclusion type move rule, all files that otherwise qualify for movement to media

under this move rule are written to the move list immediately upon being saved to the media folder on the extended drive.

If an age specification is configured for the move rule, and it is an inclusion type move rule, all files that otherwise qualify for movement to media under this move rule are written to the move list when the entered days have elapsed since the selected file action *and* the next drive scan is run. For information on drive scans, see “Running Drive Scans” on page 276.

Note: If you are have configured retention for your EMC media, or set Aggregation or WORM options for your NAS media, keep in mind that restrictions for those files are not enforced until the files are moved to media. Configuring an age-delay in your move rules creates an extended period of time during which files can be deleted from or modified on the extended drive with no copies retained (because the files have not yet been moved to media).

To modify the Age tab:

1. Click the Age tab in the Move Rule Properties dialog box.

Figure 61. Move Rule Properties – Age Tab

2. You have the following choices:
   - To qualify files regardless of age, select Apply rule to files of any age.
   - To qualify only files older than a particular age, enable the Apply rule to files of age greater than option.
3. If you selected the option to qualify files based on their age, in the Days text box, type in the number of days you want to elapse from the file action trigger before the file qualifies for this rule.
4. Select the appropriate file action trigger from the Since drop-down box. You have the following choices:
   - Create time
   - Last access time
   - Last write time

The Settings Tab

The Settings tab of the Move Rule Properties dialog box allows you choose a different move group to receive the files being selected for move by the move rule. You can also enable or disable the direct read and purge files after move options.

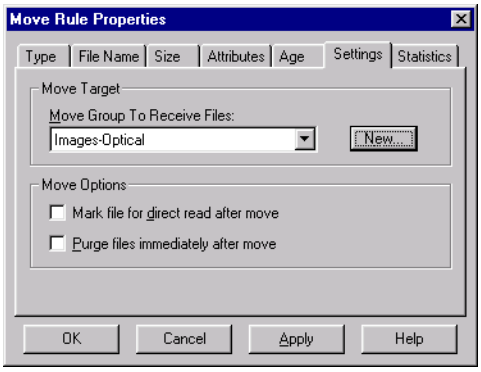
For exclusion type move rules, the Settings tab appears, but the information and options on the page are grayed out.

Note: If you disabled certain time periods on the Allow fetches from media schedule to create a time-based restriction of access to purged files, you may want to take that into consideration when determining whether to purge files immediately after move or to mark files for direct read. For more information on setting the Allow fetches from media schedule, see “Scheduling Media Activities” on page 71.

To view the Settings tab:

1. Click the Settings tab in the Move Rule Properties dialog box.

Figure 62. Move Rule Properties – Settings Tab



2. You have the following options:

   - To choose a different existing move group to receive the files being selected for migration by the move rule, select the new move group from the Move Group To Receive Files drop-down box.
   - To create a new move group to receive migrating files, click New. This opens the Move Group Wizard and leads you through the creation of a new move group. Once the wizard completes, you are returned to the Settings tab and the new move group appears in the Move Group To Receive Files text box. For more information on running the Move Group Wizard, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

3. To determine whether all files moved to media under the move rule should be set for direct read, enable or disable the Mark file for direct read after move option.

Direct Read means that the file data is read directly from media when requested by a client, rather than being fetched to the extended drive first and then read from there.

Note: When files are marked for direct read as a result of checking this box on your move rule, the files are automatically purged from the extended drive when they are moved. For this reason the Purge files immediately after move option is automatically checked and grayed out when the direct read option is selected.

4. To determine whether file data for all files moved to media under this rule is immediately purged after the file is moved, enable or disable the Purge files immediately after move option.

   Note: Be advised that if you enable either the Purge files immediately after move or the Mark files for direct read setting, files qualifying for this move rule are purged, and are *not* subject to any exclusion type purge rules you may have configured.

   Note: If the move group targeted by the move rule contains DVD-R media, the Purge files immediately after move and Mark file for direct read options are unavailable. This is because files moved to DVD-R cannot be purged until the media is finalized. In addition, if you enable either option and later change the move group to one that contains DVD-R media, the option is disabled.

   Note: Purge rules for files can be configured separately if purging after move is not appropriate for all files that qualify for this move rule. For details on creating separate purge rules, see “Creating a Purge Rule” on page 229.

The Statistics Tab

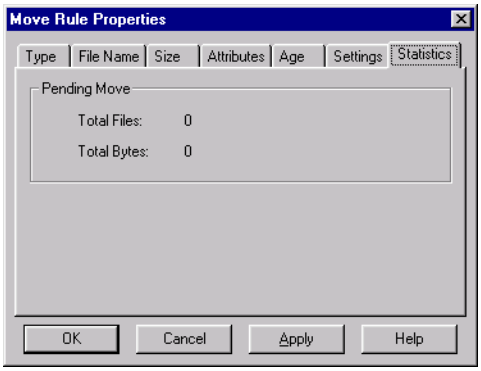
The Statistics tab of the Move Rule Properties dialog box provides pending file migration statistics from the most recent drive scan. The statistics shown pertain only to the files selected for migration by qualifying for this move rule and are valid only until the next extended drive scan.

For exclusion type move rules, the Statistics tab appears, but the information does not apply.

To view the Statistics tab:

- Click the Statistics tab in the Move Rule Properties dialog box. The Statistics tab appears.

Figure 63. Move Rule Properties – Statistics Tab



The following information appears on the Statistics tab:

Table 16. Statistics Tab Pending Move Information

Item	Description
Total Files	The number of files that qualified for migration to media using this move rule at the time of the last drive scan.
Total Bytes	The total size, in bytes, of all files that qualified for migration to media using this move rule at the time of the last drive scan.

Deleting a Move Rule

Deleting a move rule deletes all configured options for that move rule. Remember, however, that you must have at least one inclusion type move rule configured in order to migrate files to media.

To delete a move rule:

1. You have the following choices:

1. Right-click the move rule you want to delete and select Delete from the shortcut menu, or select the move rule you want to delete and then press <DELETE>. A confirmation message appears.

2. Click Yes. The move rule is deleted.

■ Fetching Files from Media

When a client requests a purged file and the file does not have the direct read attribute set, the file data is “fetched”, or copied, back to the extended drive and then opened for the client’s use. (When files are marked for direct read, they are opened directly from the media when requested rather than being copied back to the extended drive.)

Note: Files with streams, and non-read-only files accessed through “write access” applications (e.g., Microsoft Word) are automatically fetched

to the extended drive when requested, even if those files are marked for direct read.

Depending on the type of media the file has been migrated to, it may take some time to retrieve purged file data. In addition, multiple client requests for purged files may put a critical strain on your system resources and cause media mounting conflicts in your media device.

ASM Data Manager contains a prefetch capability, which allows you to retrieve frequently used files from storage media in advance of their being requested by a client. This allows you to reduce read requests during high traffic times by anticipating file retrieval needs. During a prefetch, Data Manager retrieves the specified files from storage media (excluding files marked for direct read) and writes the file data to the extended drive.

Data Manager also allows you to set the Allow fetches from media schedule to specify when clients can fetch files from media. Note that if you disable certain time periods of the Allow fetches from media schedule to create a time-based restriction of access to purged files, you will want to be sure to have all necessary files prefetched to the extended drive in order to maintain access to those files during the times when fetches are prohibited.

Note: The Allow fetches from media schedule only pertains to individual client requests for purged files from media. It does not apply to or affect prefetch requests.

For more information, see the following sections:

- "Managing Client Fetch Requests, " which follows
- “Enabling Direct Read” on page 145
- “Requesting Specific Files Using Prefetch Requests” on page 146
- “Requesting All Files from a Piece of Media Using a Prefetch Media Task” on page 160

Managing Client Fetch Requests

The Allow fetches from media schedule lets you restrict client fetch requests to certain times of the day. If you restrict client fetch requests, the Defer fetch requests if fetch is disabled option on the Options tab of the Extended Drive Properties dialog box allows you to queue file requests when the Allow fetches from media schedule is inactive. If this option is enabled, Data Manager queues all file requests made during an inactive fetch schedule as deferred fetches. Data Manager then processes all deferred fetches when the Allow fetches from media schedule becomes active. For more information, on the Allow fetches from media schedule, see “Fetching Files from Media” on page 64. For more information on the Defer fetch requests if fetch is disabled option, see “Defer fetch requests if fetch is disabled” on page 273.

You can also configure Data Manager to cancel fetch requests after a certain number of minutes. The Fetch request timeout minutes option on the Options tab of the Extended Drive Properties dialog box 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. For more information, see “Fetch request timeout minutes” on page 268.

Enabling Direct Read

When files are marked for direct read, they are opened directly from the media when requested rather than being copied back to the extended drive. This eases the strain on system resources caused by fetching the files back to the extended drive to be read.

Note: When a file marked for direct read (that is *not* read-only) is opened with a “write access” application (e.g., Microsoft Word), the file is fetched to the extended drive, instead of being read directly from the media.

There are six ways you can mark a file for direct read:

- To mark files that qualify for a particular move rule for direct read as soon as Data Manager moves them to media (and purges them), enable the Mark file for direct read after move option on the Settings tab of the Move Rule Properties dialog box. For more information, see “The Settings Tab” on page 141.
- To mark files moved to DVD-R media for direct read, enable the Mark files for direct read option when assigning the finalize media task to the media. For more information, see “Finalizing Media” on page 111.
- To mark *all* files purged from the extended drive for direct read, enable the Force direct read for all files option on the Options tab of the Extended Drive Properties dialog box. For more information, see “Force direct read for all files” on page 268.
- To mark all files on a piece of media for direct read when you are restoring them to the extended drive, enable the Direct Read check box on the Media Tasks page when you are adding a file restore media task. For more information, see “Restoring Files from Media” on page 103.
- To mark all files on selected piece(s) of media for direct read when you are restoring them to the extended drive while adding the media to a media folder, enable the Direct read check box on the Media Restore page of the Add Media to Media Folders Wizard. For more information, see “Using the Add Media to Media Folders Wizard” on page 92.
- To mark only a specific file or directory for direct read, use the Explorer Add-ons.
- If you enable direct read, use the Direct read memory cache option on the Options tab of the Extended Drive Properties dialog box to configure the

amount of memory in megabytes (MB) to be allocated for direct reads from media. For more information, see “Direct read memory cache (MB)” on page 267.

Note: Data Manager cannot read a file with streams directly from the media. For this reason, when a streamed file marked for direct read is requested, the file is fetched, and the direct read attribute is removed from the file.

Requesting Specific Files Using Prefetch Requests

Any files that you know will be needed can be “prefetched” so that they will already be present on the extended drive when they are requested. The Prefetch Request Manager allows you to select files for a prefetch and specify when the prefetch should occur, as well as manage prefetch requests.

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.

There are two types of prefetch requests: indirect and direct.

- An indirect prefetch request allows you to load an existing file list. This option is intended for re-occurring batch prefetches where the list of files being prefetched may change. You designate the name of the file containing the file list, and then rebuild that list if needed. With an indirect request, Data Manager registers only the name of the file that contains the list of files to be prefetched. As long as that list is saved under the specified filename, the contents of the list can change as often as required.
- A direct prefetch allows you to build a prefetch file list by browsing to and selecting certain files and folders. However, you can also add files to the list by selecting a text file that lists specific files. The direct prefetch function also allows you to save the file list you build, in order to use it later.

  Note: If the contents of a file list loaded for a direct request changes, Data Manager does not register those changes for resubmission. For this reason, direct requests should not be used for recurring prefetches where file lists are being regenerated each time. Instead, save the recurring file list for use later in an indirect prefetch request. For more information on saving file lists, see “Saving a Prefetch File List to a File” on page 154.

For more information on prefetch requests, see the following sections:

- "Creating a Prefetch Request, " which follows
- “Modifying a Prefetch Request” on page 155
- “Viewing a Prefetch Request Log” on page 158

Creating a Prefetch Request

The Prefetch Wizard leads you step-by-step through configuring either direct or indirect prefetch requests. Once the requests have been configured, they are added to the list in the Prefetch Request Manager and are processed based on the schedule you set for each prefetch request.

Note: Prefetch is a memory-intensive procedure. When planning to prefetch a large number of files, for optimal performance, we recommend you create several smaller prefetch request lists instead of one large list. You also may want to create separate lists (if possible) for files fetched from separate pieces of media. This reduces the potential for drive and media competition within a library.

For more information, see the following sections:

Prefetch File Format

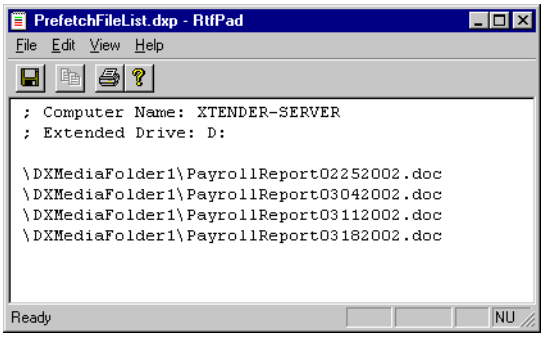
If you are performing an indirect prefetch request, you should create the prefetch file before you run the Prefetch Wizard to create the request. In the wizard, you can browse for the file or type it in the file text box. Prefetch request files should be saved with an extension of .DXP. You can also use the direct prefetch wizard to create the listing of files, and then save the created list for use later. See “Saving a Prefetch File List to a File” on page 154.

If you have an existing list of files, you can load that list into the file list once you have formatted it correctly. For the list import to be successful, the file must contain a complete, correct directory path for each file to be added, such as:

\ACCOUNTS\OCTOBER\EXPENSES.XLS

The file should have a single file listing per line (in other words, file listings are separated by hard returns). Comments can be inserted in the file, but each comment line should be proceeded by a semi-colon (;).

Figure 64. Example of File for List Creation



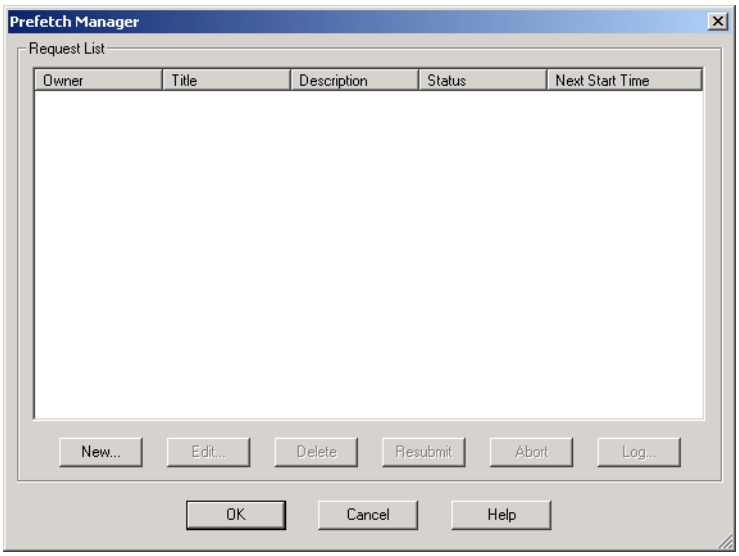
Starting the Prefetch Wizard

To create a prefetch request, start the Prefetch Wizard through the Prefetch Manager.

To start the Prefetch Wizard:

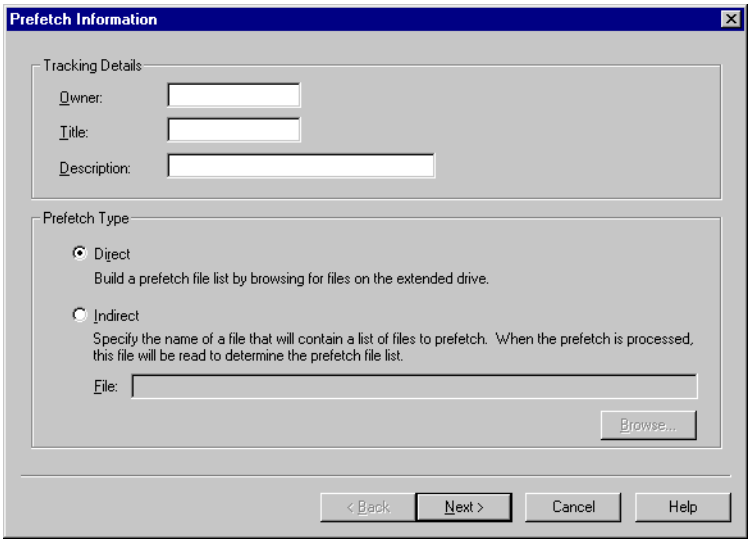
1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.

Figure 65. Prefetch Manager Dialog Box



2. Click New. The Prefetch Wizard opens with the Prefetch Information page.

Figure 66. Prefetch Wizard – Prefetch Information Page



The Prefetch Information page allows you to configure settings for the prefetch request. For more information, see *"Configuring Prefetch Information, " which follows*.

Configuring Prefetch Information

You can configure tracking details and the type of prefetch you want to perform on the Prefetch Information page of the Prefetch Wizard.

To configure prefetch information:

1. In the Tracking Details section of the Prefetch Information page, enter the identifying information for the request. This information appears in the Prefetch Properties page once the request is complete.

Table 17. Prefetch Information Page – Request Details

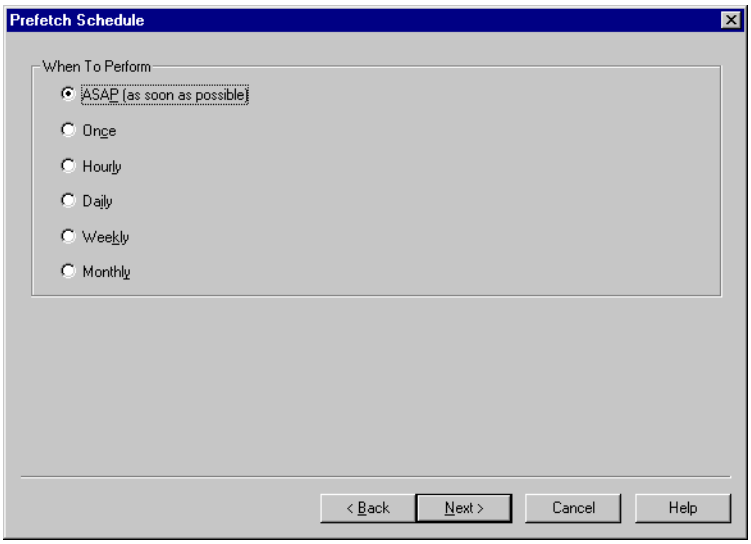
Item	Description
Owner	The name of the person initiating the prefetch request
Title	The name of the prefetch job
Description	A description of the request (up to 128 characters in length)

2. Select the type of prefetch you want to perform. You have the following choices:

   - Choose Direct if you want to build a prefetch file list by browsing to specific files.
   - Choose Indirect if you have created a file that lists the files that you want to prefetch. Then enter the path and name for the file, or click Browse to browse to and select the file.

3. Click Next. The Prefetch Schedule page appears.

Figure 67. Prefetch Wizard – Prefetch Schedule Page



For more information on the Prefetch Schedule page, see "Scheduling the Prefetch Request, " which follows.

Scheduling the Prefetch Request

The Prefetch Schedule page defines when the prefetch will occur. Prefetches can be scheduled to occur as soon as possible, once, hourly, daily, weekly, or monthly.

Note: The prefetch scheduler functions independently of the Allow fetches from media schedule, and runs when scheduled through the wizard, regardless of whether the Allow fetches from media schedule is active at that time. For more information on setting the Allow fetches from media schedule, see “Scheduling Media Activities” on page 71.

To continue with the Prefetch Wizard:

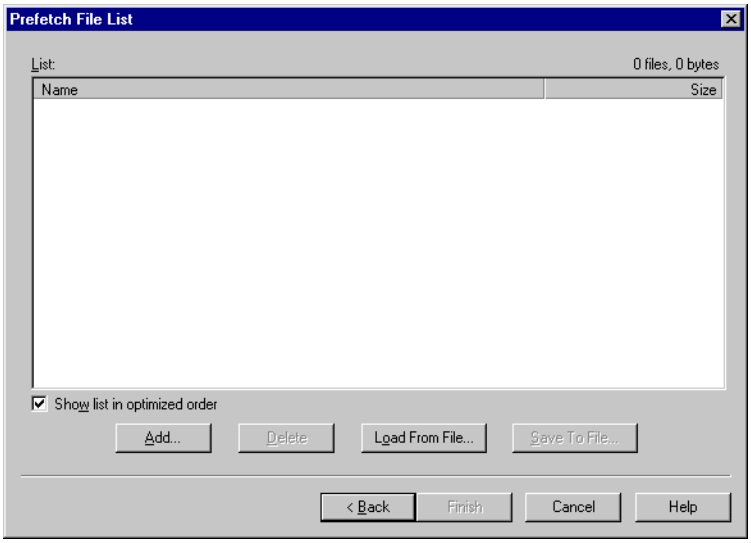
1. Select a scheduling option. The following table contains detailed information on each of the scheduling options:

Table 18. Prefetch Scheduling Options

Scheduling Option	Prefetch Frequency	Settings to Configure
ASAP	Once, immediately after you finish configuring the prefetch in the wizard. This is the default.	None
Once	Once on the specified date and time. Note that the default values when this option is enabled are the current date and time.	Date Time
Hourly	On an hourly basis (once every *x* hours where *x* is a number between 1 and 24) at the interval and time you specify.	Hourly rate Time
Daily	Every *x* days at the specified time, where *x* is a number between 1 and 365.	Daily frequency Time
Weekly	Every *x* weeks on the specified days (Monday through Sunday) and time, where *x* is a number between 1 and 52.	Weekly frequency Time Days of the week
Monthly	Every *x* months on the specified date (1st through 31st) and time, where *x* is a number between 1 and 12.	Monthly frequency Time Day of the month

2. When you finish selecting a scheduling option, you have the following choices:
   - If you are configuring an indirect prefetch, click Finish to complete configuration of your prefetch. The request appears in the Request List in the Prefetch Manager dialog box.
   - If you are configuring a direct prefetch, click Next. The Prefetch File List page appears.

Figure 68. Prefetch Wizard – Prefetch File List Page



For more information, see *"Managing a Prefetch File List, " which follows*.

Managing a Prefetch File List

For a new request, the Prefetch File List page is initially blank because no files have been selected for prefetch. You can add files to the list by browsing for them or by loading a file with a list of files in it. Once files have been added, you can delete files from the list. You can also save the list to a file if you would like to use the list again later. You can sort the list of added files by media ID and file location by checking Show list in optimized order.

For more information, see the following sections:

- "Browsing to Files to Add to the Prefetch File List, " which follows
- “Saving a Prefetch File List to a File” on page 154
- “Loading Files to the Prefetch File List From a File” on page 154

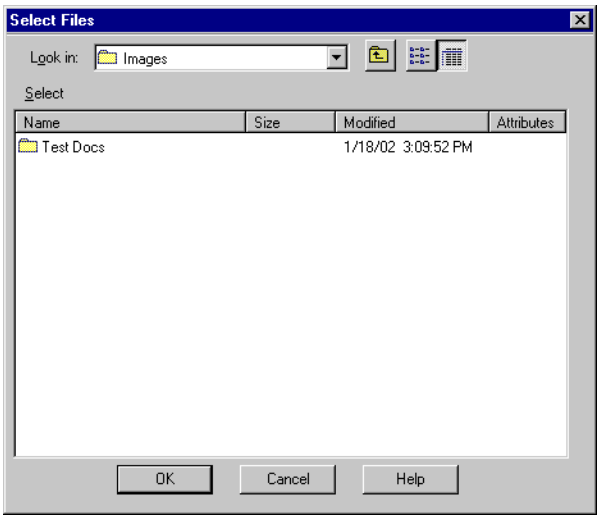
Browsing to Files to Add to the Prefetch File List

If you do not have a file containing a list of files that you want to prefetch, you can browse to and select the files you want to prefetch.

To add files to the Prefetch file list:

1. On the Prefetch File List page, click Add. The Select Files dialog box appears.

Figure 69. Select Files Dialog Box



The Select Files dialog box lists files available on the extended drive on the Data Manager computer. You can select a new directory from the Look in drop-down list, or use the Up button to move up one directory level at a time on the current drive.

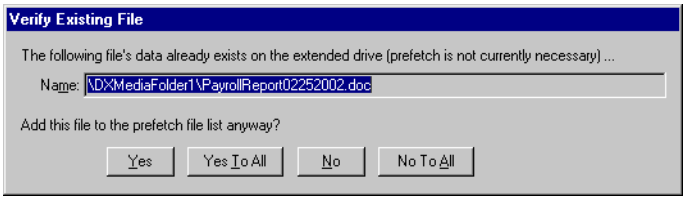
2. Select the files that you would like to add to the prefetch request and click OK. One of the following may occur:

   - If you choose to add an entire folder, a message appears, verifying addition of subfolders. Click Yes to include files in subfolders.

Figure 70. Include Subfolder Verification Message

   - If a file you are adding is already present on the extended drive, a message appears, verifying addition to the list. Click Yes or Yes To All to verify adding the specified file(s), or click No or No To All to not add the specified file(s) to the list. Files listed on the Prefetch list that are already resident on the extended drive at the time the prefetch is run will be ignored.

Figure 71. Verify Existing File Dialog Box



- If neither of the above occurs, the files are added successfully to the prefetch file list and appear in the Prefetch File List page.

3. You have the following choices:
   - Repeat steps 1 and 2 if you want to add more files to the prefetch file list.
   - To delete files from the list, select the files you want to delete and click Delete. A confirmation message appears. Click Yes.
   - If you want to prefetch the same files again at a later date, you can save the list you created to a file. For more information, see the next section on "Saving a Prefetch File List to a File, " which follows.
4. When you finish creating the prefetch file list, click Finish. The request appears in the Request List in the Prefetch Manager dialog box.

Saving a Prefetch File List to a File

You can save the currently displayed file list to a file. The saved file can be used or edited later for an indirect prefetch request.

To save a prefetch file list to a file:

1. On the Prefetch File List page, click Save As. The Save As dialog box appears.
2. Prefetch files are saved by default to the root of the extended drive. The file list is saved as a prefetch file (.DXP) by default. You can change the directory by selecting a different location in the Save As dialog box.
3. Enter the file name for the list you are saving and click Save to return to the File List page.

Loading Files to the Prefetch File List From a File

If you have an existing list of files, you can load those files into the file list by selecting the list file once you have formatted it correctly. For more information on the correct prefetch file list format, see “Prefetch File Format” on page 147.

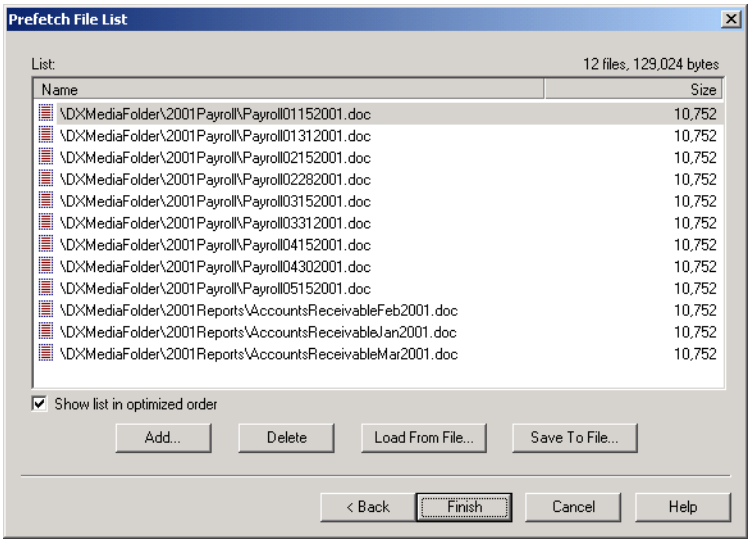
If the contents of a file list loaded for a direct request changes, Data Manager does not register those changes for resubmission. If you are using recurring prefetches where file lists are being regenerated each time, save the recurring

file list for later use in an indirect prefetch request. For more information on saving file lists, see “Saving a Prefetch File List to a File” on page 154.

To load files to the Prefetch File List from a file:

1. On the Prefetch File List page, click Load From File. The Open dialog box appears. By default, only prefetch (.DXP) files are listed.
2. Navigate to the file that you want to add and click Open. If you successfully open a file list, the files from the list appear in the File List page.

Figure 72. Prefetch Wizard – File List Page



Note: To delete files from the list, select the files you want to delete and click Delete. A confirmation message appears. Click Yes.

3. Click Finish. The request appears in the Request List in the Prefetch Manager dialog box.

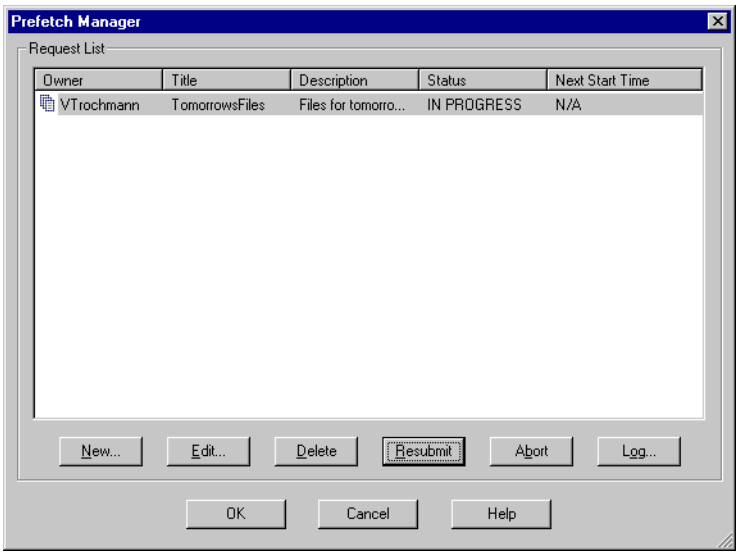
Modifying a Prefetch Request

After you create a prefetch request, you can modify it if necessary.

To edit a prefetch request:

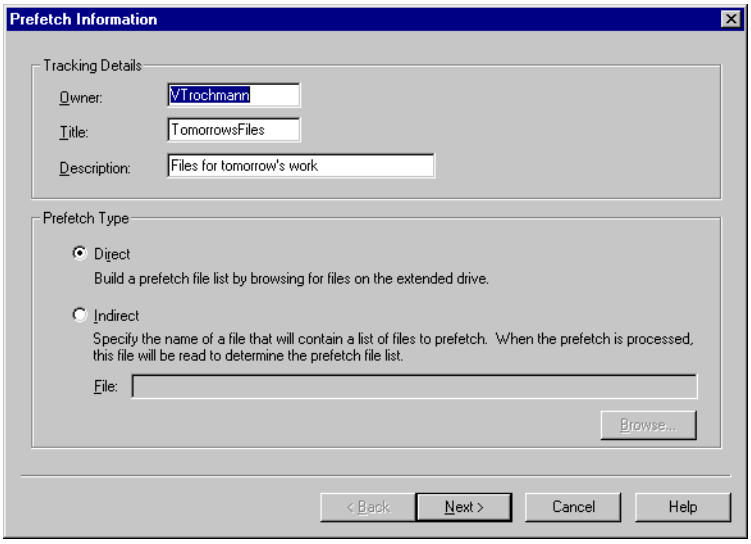
1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.

Figure 73. Prefetch Manager Dialog Box



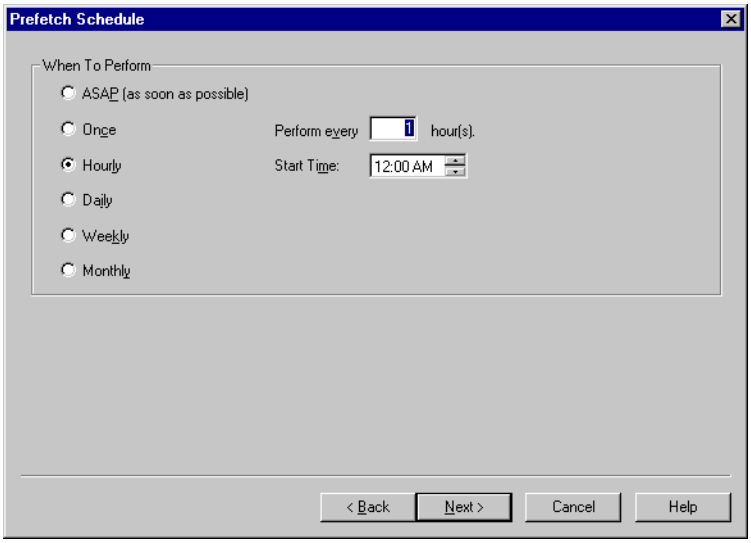
2. Select the prefetch request you want to change and then click Edit. The Prefetch Information page appears.

Figure 74. Prefetch Wizard – Prefetch Information Page



3. Edit the fields on the Prefetch Information page as necessary. For more information, see “Configuring Prefetch Information” on page 149. When you finish, click Next. The Prefetch Schedule page appears.

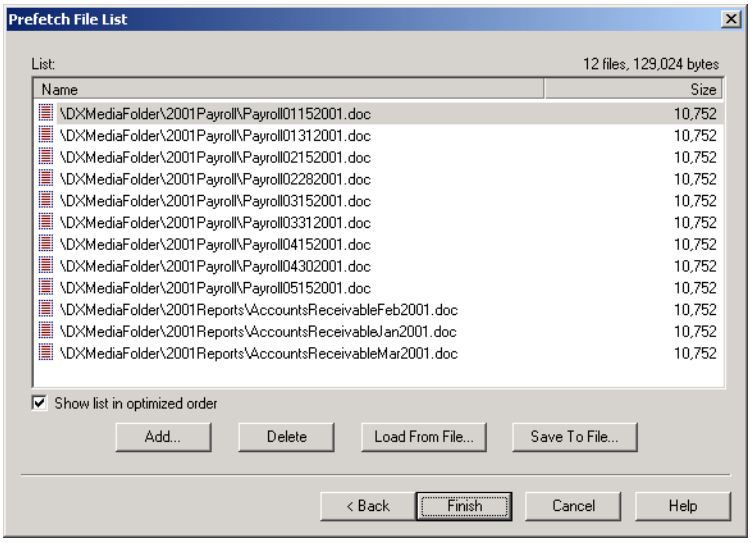
Figure 75. Prefetch Wizard -- Prefetch Schedule Page



4. Adjust the schedule for the prefetch request as necessary. For more information, see “Scheduling the Prefetch Request” on page 150. When you finish, click Next. One of the following occurs:

   - If you are configuring an indirect prefetch, click Finish to complete configuration of your prefetch. The edited request appears in the Request List in the Prefetch Manager dialog box.
   - If you are configuring a direct prefetch, click Next. The Prefetch File List page appears.

Figure 76. Prefetch Wizard -- Prefetch File List Page with Files



5. If the Prefetch File List page appears, edit the list as necessary. For more information, see “Managing a Prefetch File List” on page 152. Then click

Finish to complete configuration of your prefetch. The edited request appears in the Request List in the Prefetch Manager dialog box.

Viewing a Prefetch Request Log

When a prefetch request is in progress or complete, you can view a log containing information about the request. The log allows you to determine whether the prefetch request is successful, and if not, to diagnose the problems.

To view a prefetch request log:

1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.
2. Select the prefetch request for which you want to view the log and then click Log. The request must be in process or complete.

   The prefetch request log appears in RtfPad. (For more information on using RtfPad, see “Using RtfPad” on page 303.) The following table explains the information that appears in the prefetch request log.

Table 19. Prefetch Request Log Information

Field	Description
Log start time	The date and time the log was started
Owner	The owner of the prefetch request as entered on the Prefetch Request Information page
Title	The title of the prefetch request as entered on the Prefetch Request Information page
Description	A description of the prefetch request as entered on the Prefetch Request Information page
Indirect	Whether the request was a direct or indirect prefetch request
Target extended drive	The extended drive to which the files are prefetched from media
Submit time	The time the prefetch request was submitted
Prefetch started at	The time Data Manager began to process the prefetch request
Prefetch ended at	The time Data Manager finished processing the prefetch request
Files processed	The number of files that were processed as part of the prefetch request
Files fetched	The number of files that were fetched from media and copied to the extended drive

Table 19. Prefetch Request Log Information (Continued)

Field	Description
Files not needing fetch	The number of files that were listed in the prefetch request but already resided on the extended drive, or were marked for direct read, and therefore did *not* need to be fetched from media
Files on offline media	The number of files that were listed in the prefetch request but resided on media that was offline when Data Manager attempted to fetch them
Files not on media	The number of files that were listed in the prefetch request but did not reside on media in the Data Manager system
Files not found	The number of files that were listed in the prefetch request but that Data Manager could not find
File error count	The number of files that were listed in the prefetch request but that caused an error when Data Manager attempted to fetch them
Total time	The total time it took for Data Manager to process prefetch request
Prefetch … completed	Whether the prefetch was successfully completed

Resubmitting a Prefetch Request

Prefetch requests remain in the Prefetch Manager with a status of COMPLETE after Data Manager finishes processing them. You can resubmit a prefetch request to reuse the request after it is completed. Resubmitting a prefetch request reduces your prefetch configuration time.

Note: If you want to resubmit a prefetch request that was run using the Once scheduling option, you will have to modify the request and change the date/time values on the Schedule page, as the scheduled time for the request will have occurred in the past. See “Modifying a Prefetch Request” on page 155 for more information.

To resubmit a prefetch request:

1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.
2. Select the prefetch request you want to resubmit and then click Resubmit. The request must be complete before you can resubmit it.

3. Click Yes on the confirmation message that appears.

Aborting a Prefetch Request

If a prefetch request is in process and you want to stop it before it is completed, you can abort the request.

To abort a prefetch request:

1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.
2. Select the prefetch request you want to abort and then click Abort. The request must be in progress for you to abort it.
3. Click Yes on the confirmation message that appears.

Deleting a Prefetch Request

Prefetch requests that have completed and are not scheduled to run again remain in the Prefetch Manager with a status of COMPLETE. This allows you to reuse the request by resubmitting it later if necessary. If you no longer need the request, however, you can delete it.

To delete a prefetch request:

1. From the Tools menu in the Administrator, select Prefetch Request Manager. The Prefetch Manager dialog box appears.
2. Select the prefetch request you want to delete and then click Delete. The request must be complete for you to delete it.
3. Click Yes on the confirmation message that appears.

Requesting All Files from a Piece of Media Using a Prefetch Media Task

The prefetch media task writes all files from the selected piece of media to the corresponding media folder on the extended drive (ignoring duplicates and files marked for direct read). This task is particularly useful if you know a specific piece or pieces of media will not be available for file retrieval for an extended period of time. It also makes it possible to remove the media from the system without the risk that it may be needed to provide file data for client requests.

Note: The prefetch media task is governed by the Process scheduled media tasks schedule, and is in no way affected by the Allow fetches from media schedule. For more information on media activity schedules, see “Scheduling Media Activities” on page 71.

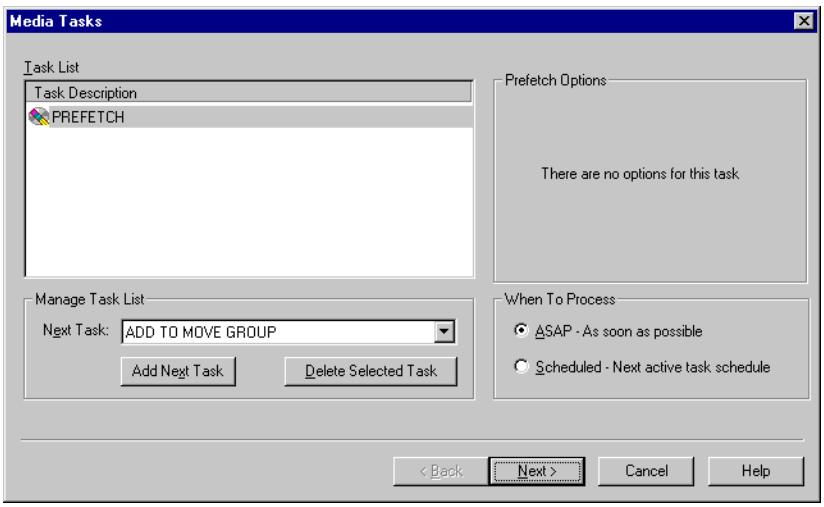
Note: Data Manager cannot read a file with streams directly from the media. For this reason, when a streamed file marked for direct read is

prefetched, the file is fetched, and the direct read attribute is removed from the file.

To assign a prefetch task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the prefetch media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the prefetch media task and then click Next.
2. From the Next Task drop-down list, select the prefetch media task and then click Add Next Task. The prefetch task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 77. Prefetch Media Task



3. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 71.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has

the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

4. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.

5. To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish or Close as appropriate.

   All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

Managing the Extended Drive

4

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 ASM Data Manager 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, allows you to configure Data Manager in a way that makes management of the system simple and more efficient.

In addition, using a file migration system to manage your data and files also allows you to manage data storage space. After file data is moved to storage media, that data can be removed from the local storage space, freeing up that space for additional files. The key is to maintain as much local storage space as possible while still making files easily available. Ultimately, your data management system is also a space management system. You can manage space on the extended drive by purging and deleting files. As with file migration, Data Manager provides a rule-based system so that you can select which files you want to purge and/or delete, and when.

Since the extended drive is one of the most critical components of the Data Manager system, this guide has devoted this entire chapter to explaining space management and the extended drive functions and options available to you. You will also find instructions for deleting an extended drive if you no longer need it, and for running drive scans so that Data Manager can 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. For more information, see the following sections:

- "Managing Space on the Extended Drive, " which follows
- “Modifying the Extended Drive” on page 190
- “Deleting the Extended Drive” on page 204
- “Running Drive Scans” on page 204

Managing Space on the Extended Drive

Space management refers to management of the available space on your extended drive. An extended drive is called such because its storage capacity

is “extended” for use by ASM Data Manager’s file migration services. Data Manager allows you to “extend” an NTFS-formatted hard drive on a Data Manager computer by moving files to media for storage while making the files appear to remain on the hard drive.

Those files appear to remain on the hard drive because Data Manager uses a “file tag” to identify the file after the file data is removed. Removing file data while leaving the file tag behind is called a purge. The file is still accessible, and to a client workstation, appears to be saved on the extended drive volume. When the client requests the file, Data Manager goes to the media where the file is stored and retrieves the file data, displaying it for the client.

In some instances, you may also want to delete files completely when they are no longer of use. Data Manager allows you to set up delete rules that set specific criteria for what files are to be deleted from both the extended drive and the storage media.

The extended drive, media folders, move groups, and move rules, and their creation and management are what enable and automate file migration in your data management system. The purge rules (and the purge after move setting in move rules) and delete rules are what enable and automate space management within your data management system.

For more information, see the following sections:

- "Purging Files, " which follows
- “Deleting Files” on page 180

For details on the creation of extended drives and media folders, and creation and management of move groups and move rules, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

Purging Files

Once files have been moved to media, they can be purged from the extended drive, creating more space for new files. When a file is purged, the data in the file is removed from the extended drive and a “file tag” is left behind. The file tag contains information about the file, including name, size, age, and other attributes. It is this tag that makes purged files appear to be resident on the extended drive volume, allowing clients to access them.

Because space and file retrieval requirements vary, Data Manager provides several different ways to purge files from the extended drive. In addition, Data Manager allows you to be very specific as to when files are purged from the extended drive.

There are four different events that can trigger files to be purged from the extended drive:

- Moving a file to media. Files can be purged from the extended drive immediately after they are moved if you enable the Purge files immediately after move option on the Settings tab of the move rule.
- Finalizing media. Files written to DVD-R media cannot be purged until the media is finalized (to avoid the possibility of data loss, in the event there is a problem with the media before it is finalized). Because of this, the finalize media task contains a Purge files option that allows you to purge the file data for all files written to the media at the time the media is finalized.
- During an extended drive scan. Files that qualify for purge rules that are configured with the Force files to purge during extended drive scans option selected (in the Settings tab of the purge rule) are purged from the extended drive during the first drive scan that occurs after the file qualifies for the rule.
- When the used extended drive space reaches a pre-set limit or watermark. Files that qualify for purge rules that do not have the Force files to purge during extended drive scans option enabled (in the Settings tab of the purge rule) are written to the purge list. The purge list is a listing of files that are due to be purged from the extended drive based on purge rules configured. The purge list is not processed until space is needed on the extended drive, at which time the purge list is processed and those files are purged.

For more detailed information on these processes, see the following sections:

- "When to Purge Files, " which follows
- “Purge Rules” on page 169

When to Purge Files

Files cannot be purged from the extended drive until they are moved to media. However, once a file is moved to media, you can choose whether to purge that file from the extended drive immediately after it has been moved, wait until a specified period of time has passed, purge the file when extended drive space is low, purge during the next drive scan (after the file qualifies for the purge rule) or choose not to purge the file at all, leaving the file data on the extended drive.

Note: You can also select specific files and purge them manually using the Explorer Add-ons. For more information, see “Using Explorer Add-ons” on page 309.

Which option you choose is likely determined by a number of factors, including the type of storage media you are using, how much space you have on your extended drive, and how often files are normally accessed. For example, if you are using EMC or NAS as your storage media, you may want to purge all files as soon as they have been moved, because file retrieval from these media is much faster than with other types of media. Or, if you only want to

remove infrequently used files, you may decide to purge files only after a certain number of days have passed since they were last accessed.

In addition, if you disable certain time periods on the Allow fetches from media schedule to create a time-based restriction of access to purged files, you may want to take that into consideration when determining when to purge files. (For more information on the Allow fetches from media schedule, see “Fetching Files from Media” on page 47.)

Purge rules can be used to purge files based on the age of the file. That capability, in combination with one or more of the purge options listed below, allows you to maintain necessary extended drive space while still allowing client access to needed files, regardless of media access restrictions:

- "Purging Files Immediately After They Have Been Moved, " which follows
- “Purging Files During Drive Scans” on page 167
- “Purging Files As Disk Space Is Needed” on page 167
- “Never Purging Files” on page 168

Purging Files Immediately After They Have Been Moved

The option to purge files immediately after they have been moved to media is configured in move rules as opposed to purge rules. This is because the attribute that qualifies the file to be purged is that it was moved to media; no other qualifier is necessary.

When the Purge files immediately after move option is enabled in a move rule (using the Settings tab), the files that qualify for the move rule are moved to media and their data is immediately purged. They are never written to the purge list. Purging files in this way allows you to maintain a high volume of free space on your extended drive and is particularly useful if your storage media allows for fast retrieval of files upon client request.

Purging files immediately after they are moved to media and then setting up prefetch requests for frequently used files allows you to manage, very specifically, what file data is resident on the extended drive. Using these two options in conjunction with one another gives you a great deal of control over your extended drive space. For information on configuring the Purge files immediately after move option for your move rules, see *The Settings Tab* for move rules on page 141. For information on prefetch requests, see “Requesting Specific Files Using Prefetch Requests” on page 146.

Purging Files During Finalization (DVD-R media only)

If you are using DVD-R as your media, you cannot purge files that were written to the media until the media is finalized. The finalize media task allows you to select the Purge Files option, which tells Data Manager to purge those files at the time the media is finalized. If you do not select to purge files at that time, the data for those files remains on the extended drive until the files qualify for

configured purge rules. Then it is the selections made in the purge rules that determine when the files are purged from the extended drive (see the two discussions that follow). For information on the finalize media task, see “Finalizing Media” on page 82.

Purging Files During Drive Scans

Setting up purge rules allows you to specify what files are purged from the extended drive and when. You can set up your purge rules so that Data Manager purges files that qualify for the purge rule during the next drive scan rather than when the used extended drive space reaches the purge start watermark.

During an extended drive scan (either scheduled or forced), Data Manager checks all migrated files to see whether they qualify for a purge rule. If a file does qualify, and the rule for which it qualifies is configured with the Force files to purge during extended drive scans option enabled on the Settings tab, that file is purged from the extended drive at the time of the drive scan.

Note: When purge rules are configured without an age delay, files are written to the purge list when they are moved to media. If the purge rules are configured to force purges during drive scans, then the files are purged during the next drive scan. If, however, the extended drive used space reaches the purge start watermark before the next drive scan, then the files may be purged as the purge list is processed. For information on configuring the purge start watermark, see “Purge start watermark (drive percent full)” on page 200.

Using this option in conjunction with regularly scheduled extended drive scans helps maintain a high volume of free space on your extended drive. This may be particularly useful if the types of files written to the drive are very large (multi-media files, for example). For information on configuring the Force files to purge during extended drive scans option, see “Configuring the Purge Rule Settings Page” on page 176. For information on running drive scans, see “Running Drive Scans” on page 204.

Purging Files As Disk Space Is Needed

Because setting up purge rules is designed to make sure there is always enough usable space on the extended drive for new files, the default setup for purging files is to do so only when the free space on the extended drive reaches a critical level.

When files are moved to media or fetched from media, Data Manager checks the files to see whether they qualify for a purge rule. If the files qualify, the files are written to the purge list.

Unless the files qualify for a purge rule that is configured to purge during drive scans, the files on the purge list are not purged from the extended drive until the drive’s used space reaches the purge start watermark, as configured on the Options tab of the Extended Drive Properties dialog box. The purge start

watermark is simply an identification of how much space on the extended drive must be filled (in percentage) before files will be purged. The default is 95 percent.

In addition, the purge list is only processed (and listed files are purged) until the purge stop watermark is reached, which is also configured on the Options tab of the Extended Drive Properties dialog box. The purge stop watermark is simply an identification of how much space on the extended drive must be filled (in percentage) before processing of the purge list will stop. The default is 90 percent.

The percentage of extended drive space between the purge start and the purge stop watermarks is how much space must be reclaimed for use by purging files from the extended drive through processing the purge list.

Note: If files on the purge list qualify for a purge rule that is configured to purge during drive scans and a drive scan occurs before the purge start watermark is reached, then the files are purged as part of the drive scan and the purge list is updated.

You can also configure your purge rules using a priority system for purging qualified files. This priority ranking allows you to make an additional determination with respect to keeping certain file data on the extended drive until removing it is absolutely necessary.

Purging files in this way assures that file data remains on the extended drive until purging to recover space on the extended drive is absolutely necessary. This method is recommended if you are using a type of storage media that does not allow for fast retrieval of files.

For information on configuring the purge start and stop watermarks, see “Purge start watermark (drive percent full)” on page 200 and “Purge stop watermark (drive percent full)” on page 201.

Never Purging Files

It is not necessary to purge files from your extended drive. However, files moved to media remain resident on the extended drive if they are not purged. Files then become redundant, because the files are now saved on both the extended drive and the media. Be advised that filling up extended drive space to capacity can cause problems if extended drive space is required to run a Data Manager function such as compaction.

Setting up file migration without purging files may be useful if you are only using your Data Manager system for file backup or extended drive mirroring. However, if you are using Data Manager as a tool to manage files and file space, we recommend purging files at a point that makes the most sense for proper maintenance of your Data Manager system.

To configure Data Manager to never purge files, do not configure any purge rules, and be sure that the Purge files immediately after move setting in your

move rules is not enabled. If you choose to never purge files from the extended drive, however, you will want to have Data Manager send an alert when drive space reaches a critical level. For more information on enabling the extended drive option to send this warning, see “Warn when free space is getting low (MB)” on page 201.

Purge Rules

Data Manager allows you to configure purge rules to reclaim space on the extended drive by truncating files after those files have been moved to media. Purge rules control when file data from moved files is purged from the hard drive.

The parameters used to select files for a purge rule are similar to those configured for a move rule. File age, size, extension, and attributes can be used to specify a set of files to be purged. You can also configure the processing priority for a purge rule. Priorities can be used to ensure that certain files, such as larger files, are purged first, optimizing the purge process.

Purge rules also contain an exclusion type option that allows you to identify files in the media folder that should *not* be purged from the drive. Exclusion type purge rules allow for specification of the same kind of criteria as inclusion type purge rules. This exclusion option makes it easy to set up Data Manager to purge all files in a folder except for a specified file type or a specified sub-folder. By combining inclusion and exclusion type purge rules, you can be very specific about what files are purged from the extended drive.

Note: When files qualify for both an inclusion purge rule and an exclusion purge rule, the exclusion purge rule takes precedence, and the files are excluded from purging.

Regular drive scans are *required* to make sure that files that qualify against purge rules are either purged (during the drive scan if the Force files to purge during extended drive scans option on the Settings page is enabled) or written to the purge list (if the purge rules are configured with an age delay). For more information on drive scans, see “Running Drive Scans” on page 204.

When purge rules are configured without an age delay, files are written to the purge list when they are moved to media. If the purge rules are configured such that Data Manager does *not* force purges during drive scans, then the purge list is processed (and files are purged) when the purge start watermark is reached. Data Manager continues to purge files until the purge stop watermark is reached.

If, however, the purge rules are configured to force purges during drive scans, then the files are purged during the next drive scan *or* when the purge start watermark is reached (and the purge list is therefore processed), whichever comes first.

For information on configuring the purge start and stop watermarks, see “Purge start watermark (drive percent full)” on page 200 and “Purge stop watermark (drive percent full)” on page 201.

Since Data Manager does not attempt to qualify files for purge until they have been moved to media, only files that have been moved to media can be purged using purge rules.

In addition, files moved to DVD-R media cannot be purged until the media is finalized. When you finalize DVD-R media, you have the option of purging those files at the time of finalization. If you select not to purge files at that time, the files that were written to the media remain on the extended drive, but will be purged like any other files, as they qualify for configured purge rules.

You can create, modify, and delete purge rules. For instructions, see the following sections:

- "Creating a Purge Rule, " which follows
- “Modifying a Purge Rule” on page 178
- “Deleting a Purge Rule” on page 180

Creating a Purge Rule

The Purge Rule Wizard leads you step-by-step through the purge rule creation process. You can configure the purge rule at the time you create it, or you can access and change these configurations later through the Purge Rule Properties dialog box. Each tab of the Purge Rule Properties dialog box is identical to the corresponding page of the Purge Rule Wizard.

For instructions on running the Purge Rule Wizard, see the following sections:

- "Starting the Purge Rule Wizard, " which follows
- “Configuring the Purge Rule File Name Page” on page 172
- “Configuring the Purge Rule Size Page” on page 173
- “Configuring the Purge Rule Attributes Page” on page 174
- “Configuring the Purge Rule Age Page” on page 175
- “Configuring the Purge Rule Settings Page” on page 176
- “Completing the Purge Rule Wizard” on page 177

Starting the Purge Rule Wizard

This section describes how to start the Purge Rule Wizard and configure the Rule Type page.

To start the Purge Rule Wizard:

1. Right-click the Purge Rules node under the media folder for which you want to create the purge rule, and then select New from the shortcut menu. The Purge Rule Wizard appears, starting with the Rule Type page.

Figure 78. Purge Rule Wizard -- Rule Type Page

The Rule Type page allows you to select whether the criteria configured in the rule you are creating qualifies files for purge, or excludes files from being purged from the extended drive.

2. Select the appropriate Rule Type for this purge rule. You have the following choices:

   - Select the Include option if you want to create a purge rule that specifies which files should be purged from the extended drive.
   - Select the Exclude option if you want to create a purge rule that specifies which files should *not* be purged from the extended drive.

   For example, if you want to purge all the files in a media folder except for text files, configure an inclusion type purge rule to include all files, and then configure an exclusion type purge rule to exclude all “*.txt” files.

   If your media folder has multiple sub-directories that contain files you do not want purged from the drive, you can set an inclusion type purge rule to purge all files from the media folder and all sub-directories, and then set an exclusion type purge rule to exclude all files (or specific files) in a sub-directory.

   Note: When files qualify for both an inclusion purge rule and an exclusion purge rule, the exclusion purge rule takes precedence, and the files are excluded from purging. However, if a configured move rule applies to the same files as an exclusion type purge rule you are configuring, *and* the Purge files immediately after move option on the move rule Settings page was selected, the files qualifying for

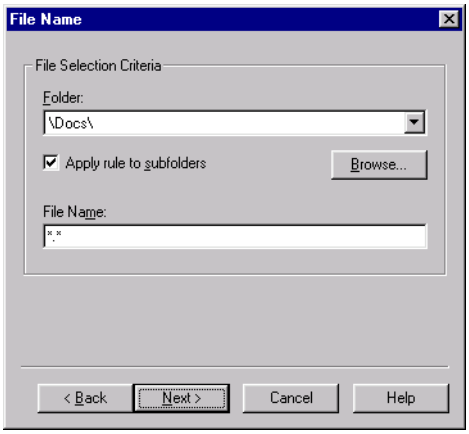
the move rule are purged and are *not* subject to the exclusion type purge rule.

3. Click Next. The File Name page appears. For more information, see "Configuring the Purge Rule File Name Page, " which follows.

Configuring the Purge Rule File Name Page

The File Name page allows you to define the location and extension for the files to be purged or excluded from purging.

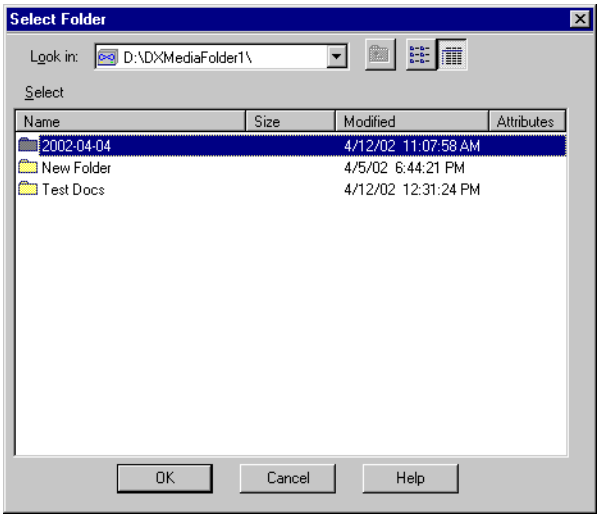
Figure 79. Purge Rule Wizard -- File Name Page



To configure the purge rule File Name page:

1. Select the folder to which you want the purge rule to apply. The active media folder is listed by default. If you want to apply the rule to only the files in a specific subfolder of the media folder, click Browse. The Select Folder window appears.

Figure 80. Select Folder Window



Select the subfolder to use for the purge rule and click OK.

Note: You cannot include more than one subfolder of the media folder in a single purge rule. You can include either one or all subfolders only. To apply a purge rule to files in a different subfolder, create a second purge rule.

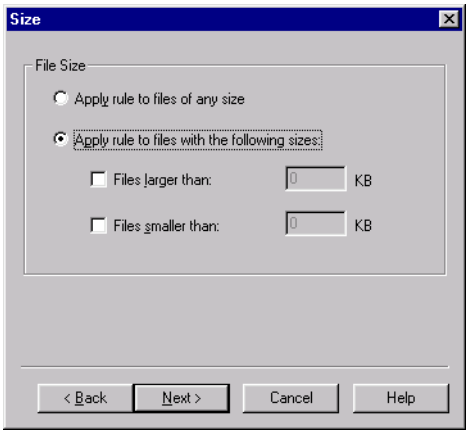
2. Enable or disable the Apply rule to subfolders option. If enabled, all files in the specified folder and all subfolders and their files are subject to the purge rule. If disabled, only the files in the specified directory are subject to the purge rule.
3. In the File Name text box, enter the file specification to determine which files are to qualify for this purge rule. You can use the standard Windows asterisk (*) wildcard to select only files with specific extensions or naming conventions for qualification. The asterisk represents one or more characters in the name or extension part of the file name. For example:
   - To apply the purge rule to all files in the directory, type `*.*` in the File Name text box.
   - To apply the purge rule to only files of a particular type, type in an asterisk before the period and the appropriate file extension after the period. For example, to qualify only bitmaps, type `*.BMP` in the File Name text box.
   - To apply the purge rule to files with a certain naming convention use the asterisk as part of the file name. For example, to qualify only files indicated as reports, type `*REPORT.* or *REPORT*.*` in the File Name text box.
   - To use the wildcard to specify only files of a certain type with a specific naming convention, use the asterisk in the name part of the file name while specifying the file extension. For example, to qualify only text files indicated as reports, type `*REPORT*.txt` in the file name text box.

   Note: Only one specified file extension can be configured per purge rule. To purge or exclude files of different specified extensions in the same folder, create a second purge rule.
4. Click Next. The Size page appears. For more information, see *"Configuring the Purge Rule Size Page, " which follows*.

Configuring the Purge Rule Size Page

The Size page allows you configure a specific size range for the files to be affected by the purge rule, or to qualify files of any size.

Figure 81. Purge Rule Wizard -- Size Page



To configure the purge rule Size page:

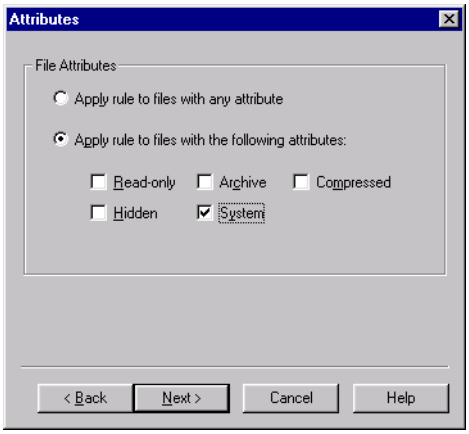
1. You have the following choices:
   - To qualify files of all sizes, select Apply rule to files of any size.
   - To qualify only files of a certain size, select the Apply rule to files with the following sizes option.
2. If you select the Apply rule to files with the following sizes option, you have the following options:
   - Enable the Files larger than __ KB check box. In the text box, type in the number of kilobytes that a file must equal or exceed in order to qualify for this rule.
   - Enable the Files smaller than __ KB check box. In the text box, type in the number of kilobytes that a file must be equal to or smaller than in order to qualify for this rule.

   Note: If both options are enabled, only files whose size falls in between the kilobyte specifications are subject to the purge rule.
3. Click Next. The Attributes page appears. For more information, see *"Configuring the Purge Rule Attributes Page, " which follows*.

Configuring the Purge Rule Attributes Page

The Attributes page allows you to choose whether to qualify only files with certain attributes against the purge rule, or to qualify all files regardless of attributes.

Figure 82. Attributes Page



To configure the purge rule Attributes page:

1. You have the following choices:

   - To qualify files regardless of attribute, select Apply rule to files with any attribute.
   - To qualify only files with particular attributes for this rule, select Apply rule to files with the following attributes. Then enable the options for the attributes a file should have if you want the file to qualify for this rule.

   Note: When selecting attributes, be advised that files possessing ***any*** of the checked attributes will qualify for the rule (as opposed to files that need to possess ***all*** of the checked attributes to qualify, or files that need to possess ***only*** the checked attributes to qualify).

   Note: If you have extended a system drive, or if you have application files on an extended drive, be sure to configure an exclude rule that excludes all files with the System attribute in order to prevent operating system or application file purge. Extending a system drive with Data Manager is *not recommended* and may cause severe operating system damage. Attributes for existing files can be viewed through Windows Explorer.

2. Click Next. The Age page appears. For more information, see *"Configuring the Purge Rule Age Page, " which follows*.

Configuring the Purge Rule Age Page

The Age page allows you to configure a time delay for the purging of files from the extended drive.

If there is no age specification configured for the purge rule, and if it is an inclusion type purge rule, all files that have been moved to media and that otherwise qualify for purge under this purge rule are written to the purge list.

If an age specification is configured for the purge rule, and it is an inclusion type purge rule, all files that have been moved to media and that otherwise qualify for purge under this purge rule are written to the purge list when the entered number of days has elapsed since the selected file action *and* when the next drive scan is run.

Figure 83. Purge Rule Wizard -- Age Page

To configure the purge rule Age page:

1. You have the following choices:
   - To qualify files regardless of age, select Apply rule to files of any age.
   - To qualify only files older than a particular age, enable the Apply rule to files of age greater than option.
2. If you enable the Apply rule to files of age greater than option, enter the number of days that must elapse before a file qualifies for this rule.
3. Set the date from which that file age is calculated by selecting one of the following options from the Since drop-down list:
   - Create time
   - Last write time
   - Last access time
4. Click Next. The Settings page appears. For more information, see *"Configuring the Purge Rule Settings Page, " which follows*.

Configuring the Purge Rule Settings Page

The Settings page allows you to specify whether you want to purge files as disk space is needed (as determined by the purge start and stop watermarks) or during extended drive scans.

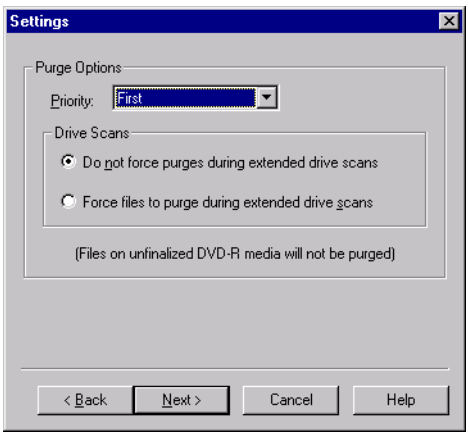
You can also configure the processing priority for a purge rule. Priorities can be used to ensure that certain files, such as larger files or files that are

accessed less frequently, are purged first (when disk space is needed), optimizing the purge process.

For exclusion type purge rules, the Settings page appears, but the information and options on the page do not apply, and therefore are grayed out.

In addition, files written to DVD-R media are not purged until the media is finalized.

Figure 84. Purge Rule Wizard -- Settings Page



To configure the purge rule Settings page:

1. You have the following choices:

   - To purge files only when extended drive space is needed, select Do not force purges during extended drive scans. Then choose the priority for the purging of files that qualify for this rule in relation to other purge rules.
   - To configure the rule to purge eligible files during a drive scan, select Force files to purge during extended drive scans.

   Note: If you choose to purge files as disk space is needed, remember to configure the purge start and stop watermarks in the Options tab of the Extended Drive Properties. For more information, see “The Options Tab” on page 194. If you choose to purge files during extended drive scans, remember to set up a regular drive scan schedule. For more information, see “Scheduling Drive Scans” on page 205.

2. Click Next. The Summary page appears. For more information, see "Completing the Purge Rule Wizard, " which follows.

Completing the Purge Rule Wizard

The Summary page allows you to review the information that you have provided in the Purge Rule Wizard and then to finish creating the purge rule.

To complete the Purge Rule Wizard:

1. Review the information on the Summary page.
2. If the information in the summary is correct, click Finish. The purge rule is created and appears under the Purge Rules node of the media folder on the extended drives tree.

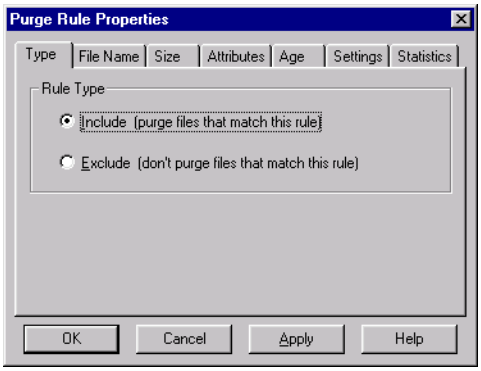
Modifying a Purge Rule

Accessing the Purge Rule Properties dialog box and selecting each of the tabs allows you to view and change the settings established when the purge rule was created. You can change the folder and files to which the rule applies, change or disable the file size specifications, change or disable the qualification of files based on file attributes, change or disable the age (time delay) specifications for purging files and select whether to purge files during drive scans or only when extended drive disk space is needed. In addition, you can change whether the rule is an inclusion or exclusion type of purge rule.

To modify a purge rule:

1. Right-click the purge rule you want to modify and then select Properties from the shortcut menu, or double-click the purge rule you want to modify. The Purge Rule Properties dialog box appears with the Rule Type tab active by default.

Figure 85. Purge Rule Properties Dialog Box



2. Modify the settings on each of the tabs as necessary. All of the tabs but the Statistics tab are identical to the corresponding page of the Purge Rule Wizard. For more information, see the following sections:
   - The Rule Type tab is discussed in “Starting the Purge Rule Wizard” on page 170
   - The File Name tab is discussed in “Configuring the Purge Rule File Name Page” on page 172.
   - The Size tab is discussed in “Configuring the Purge Rule Size Page” on page 173.

- The Attributes page is discussed in “Configuring the Purge Rule Attributes Page” on page 174.
- The Age tab is discussed in “Configuring the Purge Rule Age Page” on page 175.
- The Settings page is discussed in “Configuring the Purge Rule Settings Page” on page 176.
- The Statistics tab, which is not part of the Purge Rule Wizard, is discussed in *"The Statistics Tab, " which follows*.

3. As with most Properties functions in ASM, after making changes you have three options:
   - To save changes and close the Properties dialog box, click OK.
   - To save changes and keep the Properties dialog box open, click Apply.
   - To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

The Statistics Tab

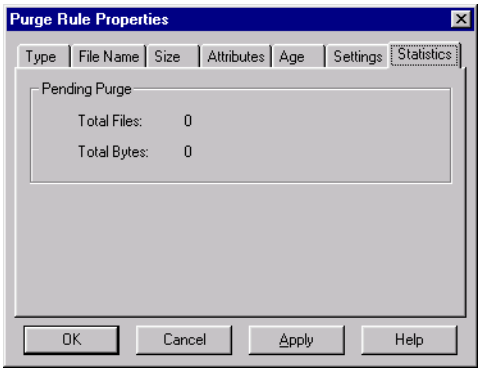
The Statistics tab of the Purge Rule Properties dialog box provides pending file purge statistics from the most recent drive scan. The statistics shown pertain only to the files selected for purge by qualifying for this purge rule, and are valid only until the next extended drive scan.

For exclusion type purge rules, the Statistics tab appears, but the information does not apply.

To view the Statistics tab:

- Click the Statistics tab in the Purge Rule Properties dialog box.

Figure 86. Purge Rule Properties – Statistics Tab



The items shown on the Statistics tab are as follows:

Table 20. Purge Rule Statistics Tab Information

Item	Description
Total Files	The number of files that, at the time of the last drive scan, qualified for purging from the extended drive using this purge rule
Total Bytes	The total size in bytes of all files that, at the time of the last drive scan, qualified for purging from the extended drive using this purge rule

Deleting a Purge Rule

Deleting a purge rule deletes all configured options for that purge rule.

To delete a purge rule:

1. Right-click the purge rule you want to delete and select Delete from the shortcut menu, or select the purge rule you want to delete and then press <DELETE>.
2. Click Yes on the confirmation message that appears.

Deleting Files

In certain situations, you may not want to keep files after a certain period of time, even on storage media. You can use delete rules to automatically delete files from both the extended drive and from storage media. Users may also decide to delete files when they determine those files are no longer needed.

When a file is deleted, either by a user (for example, through Windows Explorer), or by becoming eligible for deletion under a delete rule, Data Manager deletes the file from the extended drive and marks it for deletion on the media. The file may still exist on the media, but it becomes an “orphaned” file and is no longer recognized or tracked by Data Manager.

When the storage media that the (now deleted) file was moved to is compacted, Data Manager does not copy any deleted files from the original piece of media back to the extended drive. Files on compacted media are actually deleted when the compacted media is reformatted. For more information on compacting media, see “Compacting Media” on page 79. While it may be possible to recover deleted files from storage media, we do not support this recovery and recommend that you use extreme caution if using delete rules to delete files on a regular basis.

On NTFS media, deleted files are removed from the storage media when the transactions are flushed. However, for other types of media, files qualifying for deletion are not deleted until the media is compacted and reformatted. If the media is “write-once” media, like WORM, WORM-tape, or DVD-R, the files on

the media are never deleted, but the file tag that Data Manager uses to track the file is deleted from the extended drive. Without the file tag, Data Manager cannot track the file or retrieve it for clients.

If you are using EMC media and you have set a retention period, remember that files cannot be deleted until the retention period expires. For more information on retention periods for EMC media, see the *Setting Up Media Services* chapter of the *ASM Data Manager Getting Started Guide*.

Note: It is important to note that Data Manager does not keep copies of deleted files anywhere in the Data Manager system. To simply clear space on the extended drive but retain file data on storage media, use purge rules rather than delete rules.

Delete Rules

Delete rules allow you to specify what files you want to delete from both the extended drive and storage media (if applicable). When a file becomes eligible for deletion under a delete rule, Data Manager deletes it from the extended drive and marks it for deletion on the media. The file may still exist on a piece of media, but it becomes an “orphaned” file and is no longer recognized or tracked by Data Manager.

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 Data Manager and remain in the directory. Once the files no longer meet the required criteria (for example, the files reach a certain age), however, Data Manager can automatically delete them in accordance with a delete rule.

The parameters used to select files for a delete rule are similar to those configured for move and purge rules. File age, size, extension, and attributes can be used to specify a set of files to be deleted.

Delete rules also contain an exclusion type option that allows you to identify files in the media folder that Data Manager should *not* delete from the extended drive and associated media. Exclusion type delete rules allow for specification of the same kind of criteria as inclusion type delete rules. Combining inclusion and exclusion type delete rules allows you to be very specific about what files are deleted from the ASM system.

Note: When files qualify for both an inclusion delete rule and an exclusion delete rule, the exclusion delete rule takes precedence, and Data Manager does *not* delete the files.

Note: Delete rules do *not* prevent users from deleting files on the extended drive; they only specify which files Data Manager should or should not delete.

Delete rules are processed when a drive scan is run. For more information on drive scans, see “Running Drive Scans” on page 204.

You can create, modify, and delete your delete rules. For instructions, see the following sections:

- "Creating a Delete Rule, " which follows
- “Modifying a Delete Rule” on page 189
- “Deleting a Delete Rule” on page 190

Creating a Delete Rule

The Delete Rule Wizard leads you step-by-step through the delete rule creation process. You can configure the delete rule at the time you create it, or you can access and change these configurations later through the Delete Rule Properties dialog box. Each tab of the Delete Rule Properties dialog box is identical to the corresponding page of the Delete Rule Wizard.

For instructions on running the Delete Rule Wizard, see the following sections:

- "Starting the Delete Rule Wizard, " which follows
- “Configuring the Delete Rule File Name Page” on page 184
- “Configuring the Delete Rule Size Page” on page 186
- “Configuring the Delete Rule Attributes Page” on page 186
- “Configuring the Delete Rule Age Page” on page 187
- “Completing the Delete Rule Wizard” on page 188

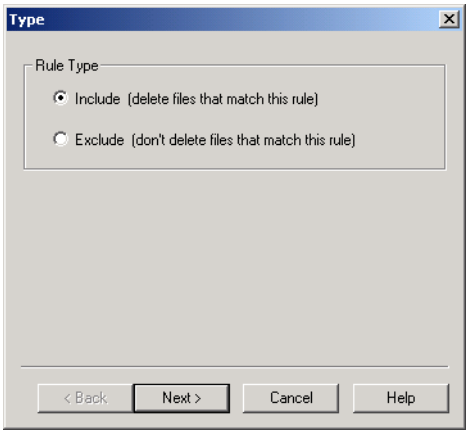
Starting the Delete Rule Wizard

This section describes how to start the Delete Rule Wizard and configure the Rule Type page.

To start the Delete Rule Wizard:

1. Right-click the Delete Rules node under the media folder for which you want to create the delete rule and then select New from the shortcut menu. A verification message appears stating that delete rules are automatic policies that will permanently remove files from your system.
2. Click Yes. The Delete Rule Wizard appears, starting with the Rule Type page.

Figure 87. Delete Rule Wizard -- Rule Type Page



The Rule Type page allows you to select whether the criteria configured in the rule you are creating will qualify files for or exclude files from being deleted from the extended drive and associated media.

3. Select the appropriate Rule Type for this delete rule. You have the following choices:

   - Select the Include option if you want to create a delete rule that specifies which files should be deleted from the system.
   - Select the Exclude option if you want to create a delete rule that specifies which files should *not* be deleted from the system.

   For example, if you want to delete all the files in a media folder except for text files, configure an inclusion type delete rule to include all files, and then configure an exclusion type delete rule to exclude all “*.txt” files.

   If your media folder has multiple sub-directories that contain files you do not want deleted from the system, you can set an inclusion type delete rule to remove all files from the media folder and all sub-directories, and then set an exclusion type delete rule to exclude all files (or specific files) in a sub-directory.

   Note: When files qualify for both an inclusion delete rule and an exclusion delete rule, the exclusion delete rule takes precedence, and Data Manager does *not* delete the files.

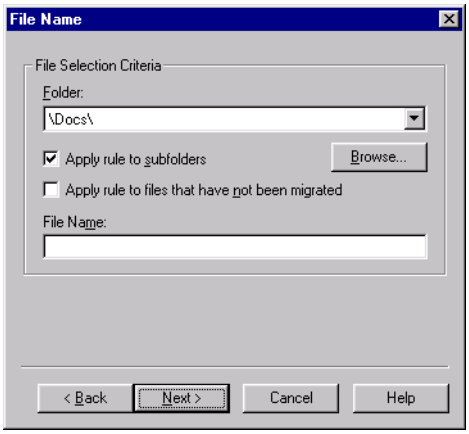
   Note: Delete rules do *not* prevent users from deleting files on the extended drive; they only specify which files Data Manager should or should not delete.

4. Click Next. The File Name page appears. For more information, see "Configuring the Delete Rule File Name Page, " which follows.

Configuring the Delete Rule File Name Page

The File Name page allows you to define the location and extension for the files to be deleted or excluded from deletion. You can also select to Apply the rule to subfolders and Apply the rule to files that have not been migrated for qualification for this rule.

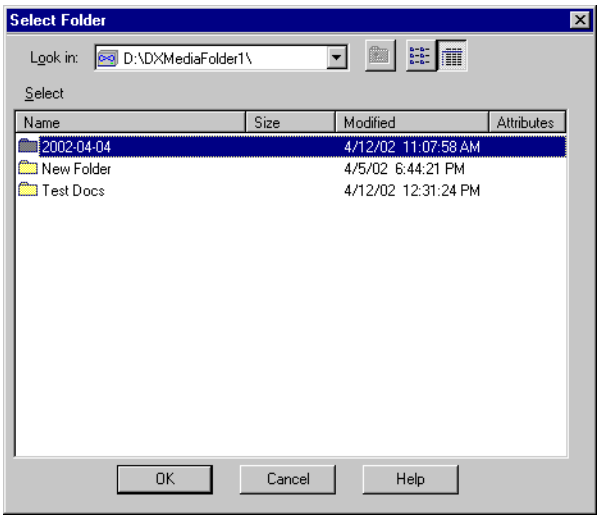
Figure 88. Delete Rule Wizard -- File Name Page



To configure the delete rule File Name page:

1. Select the folder to which you want the delete rule to apply. The active media folder is listed by default. If you want to apply the rule to only the files in a specific subfolder of the media folder, click Browse. The Select Folder window appears.

Figure 89. Select Folder Window



Select the folder to use for the delete rule and click OK. The file path appears in the Folder box of the File Name page.

Note: You cannot include more than one subfolder of the media folder in a single delete rule. You can include either one or all subfolders only. To qualify files in a different subfolder, create a second delete rule.

2. Enable or disable the Apply rule to subfolders option. If enabled, all files in the specified folder and all subfolders and their files are subject to the delete rule. If disabled, only the files in the specified directory are subject to the delete rule.

3. Enable or disable the Apply rule to files that have not been migrated option. If enabled, all files, including those files that have not been migrated, are subject to the delete rule. If disabled, only files that have been migrated are subject to the delete rule.

   Note: If you check the Apply rule to files that have not been migrated option, Data Manager attempts to qualify *all* files in the media folder against the delete rule(s), *regardless* of whether the files have been moved to media.

4. In the File Name text box, enter the file specification to determine which files are to be deleted or excluded from deletion using this delete rule. You can use the standard Windows asterisk (*) wildcard to select only files with specific extensions or naming conventions for delete. The asterisk represents one or more characters in the name or extension part of the file name. For example:

   - To apply the delete rule to all files in the directory, type `*.*` in the File Name text box.
   - To apply the delete rule to only files of a particular type, type in an asterisk before the period and the appropriate file extension after the period. For example, to qualify only bitmaps, type `*.BMP` in the File Name text box.
   - To apply the delete rule to files with a certain naming convention use the asterisk as part of the file name. For example, to qualify only files indicated as reports, type `*REPORT.* or *REPORT*.*` in the File Name text box.
   - To use the wildcard to specify only files of a certain type with a specific naming convention, use the asterisk in the name part of the file name while specifying the file extension. For example, to qualify only text files indicated as reports, type `*REPORT*.txt` in the file name text box.

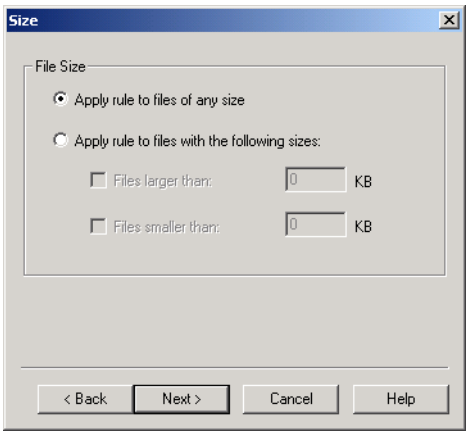
   Note: Only one file name specification can be configured per delete rule. To qualify files of a different specification in the same folder, create a second delete rule.

5. Click Next. The Size page appears. For more information, see "Configuring the Delete Rule Size Page, " which follows.

Configuring the Delete Rule Size Page

The Size page allows you to choose to qualify all files in the folder, or configure a specific size range for the files affected by the delete rule.

Figure 90. Delete Rule Wizard -- Size Page



To configure the delete rule Size page:

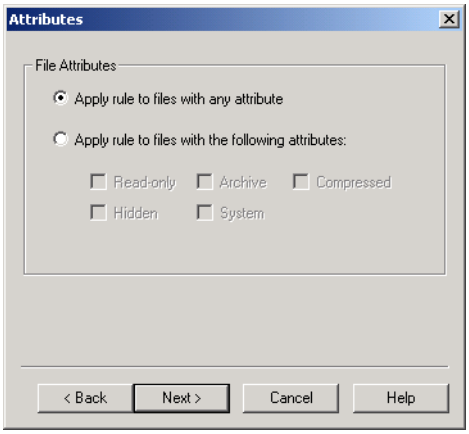
1. You have the following choices:
   - To qualify files of all sizes, select Apply rule to files of any size.
   - To qualify only files of certain sizes for this rule, select the Apply rule to files with the following sizes option.
2. If you select the Apply rule to files with the following sizes option, you have the following options:
   - Enable the Files larger than __ KB check box. In the text box, type in the number of kilobytes that a file must equal or exceed in order to qualify for this rule.
   - Enable the Files smaller than __ KB check box. In the text box, type in the number of kilobytes that a file must be equal to or smaller than in order to qualify for this rule.

   Note: If both options are enabled, only files whose size falls in between the kilobyte specifications are subject to the delete rule.
3. Click Next. The Attributes page appears. For more information, see "Configuring the Delete Rule Attributes Page, " which follows.

Configuring the Delete Rule Attributes Page

The Attributes page allows you to choose whether to qualify files with certain attributes against this rule, or to qualify all files regardless of attribute.

Figure 91. Delete Rule Wizard -- Attributes Page



To configure the delete rule Attributes page:

1. You have the following choices:

   - To qualify files regardless of attributes, select Apply rule to files with any attribute.
   - To qualify only files with particular attributes for this rule, select Apply rule to files with the following attributes, and then enable the options for the attributes of files that should qualify for this rule.

   Note: When selecting attributes, be advised that files possessing ***any*** of the checked attributes will qualify for the rule (as opposed to files needing to possess ***all*** of the checked attributes to qualify, or files needing to possess ***only*** the checked attributes to qualify).

   Note: If you have extended a system drive, or if you have application files on an extended drive, be sure to configure an exclude rule that excludes all files with the System attribute, to prevent operating system or application file purge. Extending a system drive with Data Manager is *not recommended* and may cause severe operating system damage. Attributes for existing files can be viewed through Windows Explorer.

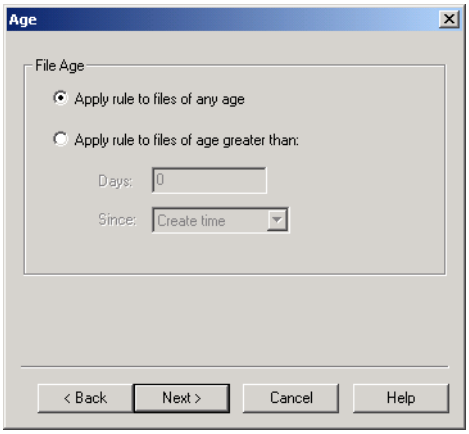
2. Click Next. The Age page appears. For more information, see "Configuring the Delete Rule Age Page, " which follows.

Configuring the Delete Rule Age Page

The Age page allows you to configure a time delay for the qualification of files for this rule.

If an age specification is configured for the delete rule and it is an inclusion type delete rule, all files that otherwise qualify for deletion under this delete rule are deleted when the entered days have elapsed since the selected file action *and* when the next drive scan is run.

Figure 92. Delete Rule Wizard -- Age Page



Note: If there is no age specification configured for the delete rule, and it is an inclusion type delete rule, all files that otherwise qualify for deletion under this delete rule are deleted immediately after the first drive scan.

To configure the delete rule Age page:

1. You have the following choices:
   - To qualify files regardless of age, select Apply rule to files of any age.
   - To qualify files older than a particular age, enable the Apply rule to files of an age greater than option.
2. If you enable the Apply rule to files of an age greater than option, enter the number of days that must elapse before a file qualifies for the rule.
3. Set the date from which that file age is calculated by selecting one of the following options from the Since drop-down list.
   - Create time
   - Last write time
   - Last access time
4. Click Next. The Summary page appears.

Completing the Delete Rule Wizard

The Summary page allows you to review the information that you have provided in the Delete Rule Wizard and then to finish creating the delete rule.

To complete the Delete Rule Wizard:

1. Review the information in the summary.
2. If the information in the summary is correct, click Finish. The delete rule is created and appears under the Delete Rules node of the media folder in the extended drive tree.

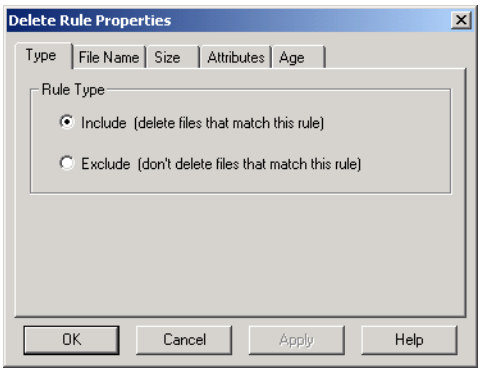
Modifying a Delete Rule

Accessing the Delete Rule Properties dialog box and selecting each of the tabs allows you to view and change the settings established when the delete rule was created. You can change the folder and files to which the rule applies, change or disable the file size specifications, change or disable the qualification of files based on file attributes, and change or disable the age (time delay) specifications for deleting files. You can also change whether the rule is an inclusion or exclusion type delete rule.

To modify a delete rule:

1. Right-click the delete rule you want to modify and then select Properties from the shortcut menu, or double-click the delete rule you want to modify. The Delete Rule Properties dialog box appears with the Rule Type tab active by default.

Figure 93. Delete Rule Properties -- Rule Type Tab



2. Modify the settings on each of the tabs as necessary. All of the tabs are identical to the corresponding page of the Delete Rule Wizard. For more information, see the following sections:
   - The Rule Type tab is discussed in “Starting the Delete Rule Wizard” on page 182
   - The File Name tab is discussed in “Configuring the Delete Rule File Name Page” on page 184.
   - The Size tab is discussed in “Configuring the Delete Rule Size Page” on page 186.
   - The Attributes page is discussed in “Configuring the Delete Rule Attributes Page” on page 186.
   - The Age tab is discussed in “Configuring the Delete Rule Age Page” on page 187.
3. As with most Properties functions in ASM, after making changes you have three options:

- To save changes and close the Properties dialog box, click OK.
- To save changes and keep the Properties dialog box open, click Apply.
- To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

Deleting a Delete Rule

Deleting a delete rule deletes all configured options for that delete rule.

To delete a delete rule:

1. Right-click the delete rule you want to delete and select Delete from the shortcut menu, or select the delete rule you want to delete and then press <DELETE>.
2. Click Yes on the confirmation message that appears.

■ Modifying the Extended Drive

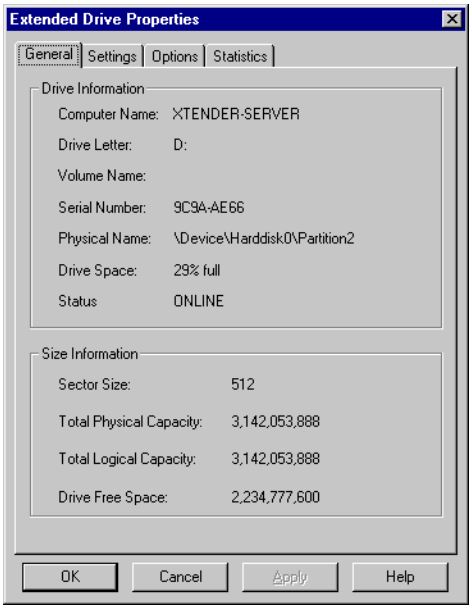
Much of your extended drive administration can be taken care of automatically with proper setup and configuration of the available extended drive properties. The options available within the Extended Drive Properties dialog box allow you to do everything from setting up media activity schedules and drive 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.

To modify the extended drive:

1. Right-click on the extended drive you want to modify and then select Properties from the shortcut menu that appears, or double-click the

extended drive you want to modify. The Extended Drive Properties dialog box appears.

Figure 94. Extended Drive Properties Dialog Box



2. Modify the settings on each of the tabs as necessary. Note that the Settings and Options tabs are identical to the corresponding pages of the Extended Drive Wizard used to create the extended drive. For more information, see the following sections:
   - "The General Tab, " which follows
   - “The Settings Tab” on page 193
   - “The Options Tab” on page 194
   - “The Statistics Tab” on page 202
3. As with most Properties functions in ASM, after making changes you have three options:
   - To save changes and close the Properties dialog box, click OK.
   - To save changes and keep the Properties dialog box open, click Apply.
   - To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

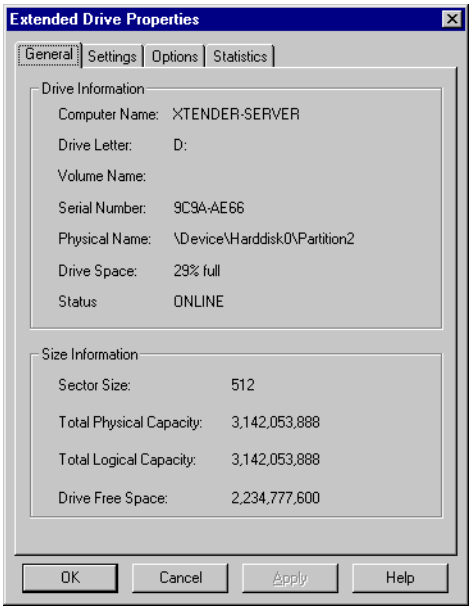
The General Tab

The General tab of the Extended Drive Properties dialog box displays identifying information for the drive, as well as extended drive total space and free space information.

To view the General tab:

- Click the General tab of the Extended Drive Properties dialog box.

Figure 95. 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 21. Extended Drive Properties – General Tab Items

Group	Item	Description
Drive Information	Computer Name	The name of the Data Manager 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)
	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

Table 21. Extended Drive Properties – General Tab Items (Continued)

Group	Item	Description
	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

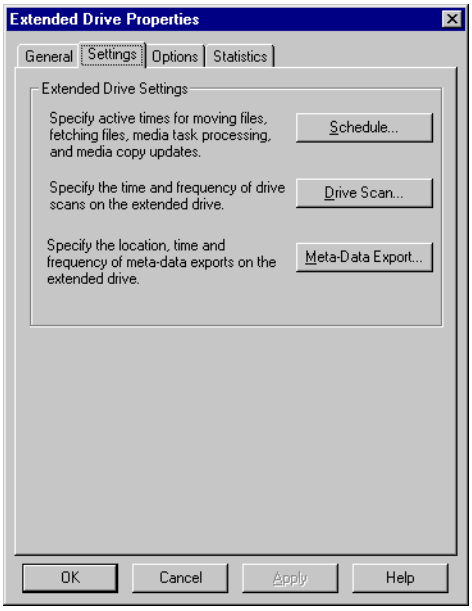
The Settings Tab

The Settings tab of the Extended Drive Properties dialog box provides access to the scheduling functions for drive scans, media activities, and meta-data exports.

To configure the Settings tab:

1. Click the Settings tab of the Extended Drive Properties dialog box.

Figure 96. Extended Drive Properties – Settings Tab



2. You have the following choices:

   - To configure media activity schedules, click Schedule. There are four storage media activities that can be scheduled for each extended drive: Move files to media, Process scheduled media tasks, Update copy media, and Allow fetches from media. For more information, see “Scheduling Media Activities” on page 52.
   - To configure a drive scan schedule, click Drive Scan. 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. Drive scans are also required to delete files based on configured delete rules. You should have configured a drive scan when you initially set up your Data Manager system. For more information, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.
   - To configure a meta-data export schedule, click Meta-Data Export. Because configuration and scheduling of meta-data exports should be a part of a complete backup and recovery plan, we have placed details and specific instructions for this function in the *Data Manager Backup and Recovery* chapter. For more information, see “Exporting File Meta-Data” on page 268.

The Options Tab

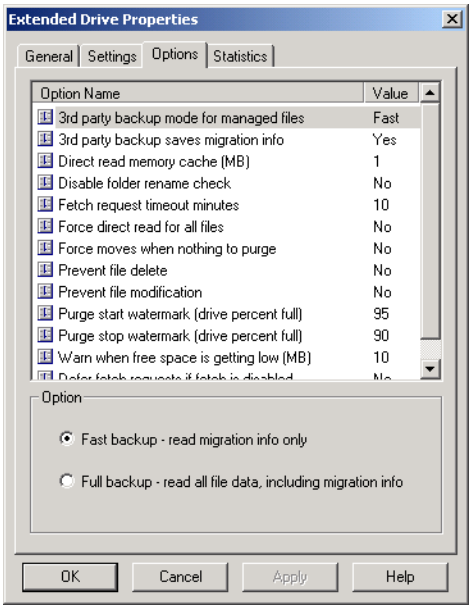
The Options tab of the Extended Drive Properties dialog box allows you to view and configure several options affecting extended drive functionality. We recommend that you pay special attention to the functions available through the Extended Drive Properties Options tab and configure them appropriately.

These options are designed to make administering your extended drive easier, and to help prevent file read/write and space issues.

To configure the Options tab:

1. Click the Options tab of the Extended Drive Properties dialog box.

Figure 97. Extended Drive Properties – Options Tab



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

2. Modify the settings for each option as necessary. For more information, see the following sections:

   - "3rd party backup mode for managed files, " which follows
   - “3rd party backup saves migration info” on page 196
   - “Direct read memory cache (MB)” on page 197
   - “Disable folder rename check” on page 197
   - “Fetch request timeout minutes” on page 198
   - “Force direct read for all files” on page 198
   - “Force moves when nothing to purge” on page 198
   - “Prevent file delete” on page 199
   - “Prevent file modification” on page 200
   - “Purge start watermark (drive percent full)” on page 200

- “Purge stop watermark (drive percent full)” on page 201
- “Warn when free space is getting low (MB)” on page 201
- “Defer fetch requests if fetch is disabled” on page 201

3rd party backup mode for managed files

Use this extended drive option to configure how Data Manager managed files are saved during a backup using a third-party backup system. Files become “managed” by Data Manager once they are moved to media. Since the file data is managed by Data Manager on storage media, you can choose to have the third-party backup system only back up the file tag for those files.

Note: This backup setting pertains only to third-party system backups external to Data Manager and is not related in any way to the Data Manager meta-data export utility. We recommend that you also back up your extended drive files using the Data Manager meta-data export utility. For more information, see “Exporting File Meta-Data” on page 268.

To configure the 3rd party backup mode for managed files option:

- You have the following choices:
  - To back up only the file tags of files that are managed by Data Manager, select Fast backup – read only ASM tracking data. This is the default.
  - To back up all file tags and the file data of files that are managed by Data Manager, select Full backup – read all file data, including tracking data.

    Note: Setting the 3rd party backup option to Full will cause purged files to be fetched to the extended drive. If you need to use this option, be sure you have enough extended drive free space to accommodate the file data.

    Note: If you are using a third-party backup program that does NOT back up 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, as Data Manager will not recognize the files restored to the extended drive if the extended attributes are not captured.

3rd party backup saves migration info

If the 3rd party backup mode for managed files option is set to Full, all file data for managed files is included in third-party backups. Use this extended drive option to configure whether Data Manager migration information is included in the third-party backups for those files, or if just the file data is saved in the backup image.

If you expect to restore the data to a drive that is not an Data Manager extended drive, you do not need to retain the migration information. If, however, you restore a backup without migration information to a Data Manager extended drive, Data Manager re-migrates the files (as if they had never been migrated to media). This causes those files to be saved to media again, duplicating the amount of space used for migrated files.

Note: This feature is only available when the 3rd party backup mode for managed files option is set to Full backup. For more information, see *3rd party backup mode for managed files* above.

Note: This backup setting pertains only to third-party system backups external to Data Manager and is not related in any way to the Data Manager meta-data export utility. We recommend that you also back up your Data Manager files using the Data Manager meta-data export utility. For more information, see “Exporting File Meta-Data” on page 268.

To configure the 3rd party backup saves migration info option:

- You have the following choices:
  - To strip Data Manager extended attributes from each file before the file is backed up by a third-party tool, select Migration info will not be stored in backup image.
  - To include Data Manager extended attributes for each file in a third-party backup, select Migration info will be stored in backup image.

Direct read memory cache (MB)

Use this extended drive option to configure the amount of memory in megabytes (MB) 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 for distribution to the requesting client. This setting determines how much space to allow for that temporary cache. Each open file will consume at least 64KB of this cache, and you should configure the size based on the expected number of concurrently open files on the extended drive. The default value for this setting is 1 MB, which will handle 16 concurrently open files 64KB x 16 = 1MB).

Disable folder rename check

Use this extended drive option to manage whether users can rename folders on the extended drive. The folder rename check allows only folders containing Window Native file system media to be renamed. ASM and UDF (for DVD-R) file system formatted media do not support folder renaming. Folder renames are also not allowed on WORM NAS and Aggregate NAS media. For more

information on file systems, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

To configure the Disable folder rename check option:

- You have the following choices:
  - To allow users to rename folders regardless of whether the rename is supported by media, select Disable rename folder check (allow rename of all folders).
  - To allow users to rename only folders that contain Windows Native file system formatted media, which supports folder renaming, select Prevent folder renames when not supported by media. This is the default.

Fetch request timeout minutes

Use this extended drive option to configure the number of minutes Data Manager waits 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. This number should be high enough to prevent cancellation of requests for which clients could conceivably still be waiting. The default value is 10 minutes.

Force direct read for all files

Use this extended drive option to add the direct read attribute to *all* files purged from the 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.

To configure the Force direct read for all files option:

- You have the following choices:
  - 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, select Force all files to be read using direct read.
  - To apply the direct read attribute only to files that have been otherwise configured for direct read (either through move rules or Explorer Add-ons, or if the option was enabled when media is restored), select Use direct read only for files marked for direct read. This is the default.

Force moves when nothing to purge

Use this extended drive option when the purge watermark for the extended drive has been reached and there are no files on the purge list (in other words, eligible for purge). 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 schedule for the extended drive.

To configure the Force moves when nothing to purge option:

- You have the following choices:
  - 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, select Force file moves when there is nothing to purge.
  - To prevent Data Manager from being forced to move files, even if space still needs to be cleared on the extended drive to reach the purge stop watermark, select Do not force moves when there is nothing to purge. If this option is selected, purging resumes 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 and purge rules, make sure your drive scan schedule is set to run regular drive scans so that files are added to the move list and purged when they become eligible. You should have configured a drive scan when you initially set up your Data Manager system. For instructions, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

Prevent file delete

Use this extended drive option to limit delete rights for files in media folders that contain write-once only media. This type of media includes WORM, WORM-tape, WORM NAS, CD-ROM, DVD-ROM, and finalized DVD-R media, and any media formatted with the FAT file system. This option does not affect files in media folders associated with re-writable media.

If file deletion is not prevented, deletion of files stored on write-once and read-only media deletes the files (and/or file tags) from the extended drive, preventing Data Manager from tracking the files on the media. However, running a file restore media task on the associated media restores those file tags, allowing access to those files.

To configure the Prevent file delete option:

- You have the following choices:
  - To prevent clients from deleting files from Data Manager media folders that contain only write-once media, select Prevent deletion of files stored on write-once and read-only media.
  - To allow clients to delete any files, select Do not prevent the delete operation for any files. This is the default.

Prevent file modification

Use this extended drive option to restrict user rights to modify files in media folders that contain only read-only or write-once media. This includes WORM, WORM-tape, WORM NAS, CD-ROM, DVD-ROM, and finalized DVD-R media, and any media formatted with the FAT file system. This option does not affect files in media folders associated with re-writable media.

If file modification is allowed, modification of files stored on read-only media only modifies the files on the extended drive. However, if the updated files qualify for move, the files are re-migrated to media.

To configure the Prevent file modification option:

- You have the following choices:
  - To prevent clients from modifying files in media folders that contain only write-once media, select Prevent modification of files stored on write-once and read-only media.
  - To allow clients to modify any files in Data Manager media folders that contain only write-once or read-only media, select Do not prevent modification of any files. This is the default.

Purge start watermark (drive percent full)

Use this extended drive option to configure whether Data Manager starts processing the purge list (and therefore purging files) when extended drive used space reaches a certain percentage. Processing of the purge list then continues until the purge list is empty or until the purge stop watermark is reached.

To configure the Purge start watermark option:

- You have the following choices:
  - To configure Data Manager to begin processing the purge list when the extended drive is filled to a certain percentage, enable the Start purging files when the extended drive becomes more than option. Then enter the percentage in the text box. This option is enabled by default, with a value of 95 percent full.
  - To configure Data Manager so that files are *not* purged based on extended drive used space, enable the Do not purge files based on extended drive free space option.

Note: If you choose to prevent Data Manager from purging files based on extended drive used space, you should configure Data Manager to purge files either when files are moved to media (move rule setting) or during drive scans (purge rule setting) in order to avoid filling up your extended drive. Otherwise, files may never be purged from the extended drive. In addition, you may want to enable the Warn when

free space is getting low option to alert you before the free space on the extended drive reaches a critical level. For more information, see “Purging Files” on page 164 and “Warn when free space is getting low (MB)” on page 201.

Purge stop watermark (drive percent full)

Use this extended drive option to configure the percentage of used drive space that must be reached to cause Data Manager to stop processing the purge list once processing has been triggered (by the purge start watermark configuration). This option is only available if the Purge start watermark option is enabled. The default value is 90 percent full.

Warn when free space is getting low (MB)

Use this extended drive option to configure whether Data Manager creates a warning when the free space on the extended drive reaches a (configured) critical point.

Warnings appear in the Event Viewer and in the Data Manager event logs. They can also be sent out as alerts using the Alerts tab in the Service Properties dialog box. For more information on using the Event Viewer and the event logs, see “Tracking Data Manager Events, Errors, and Warnings” on page 237. For more information on alerts, see “The Alerts Tab” on page 232.

To configure the Warn when free space is getting low option:

- You have the following choices:
  - To configure Data Manager to create a warning when free space falls below a certain number of megabytes, select Warn when free space falls below. Then, in the text box, enter the amount of free extended drive space (in MB) that will trigger the warning. The default setting is to send a warning when the extended drive free space reaches 10 MB or less.
  - To disable low free space warnings, select Do not warn when extended drive is low on free space.

Defer fetch requests if fetch is disabled

If you have set the Allow fetches from media schedule to be inactive at any time, clients are unable to retrieve purged files from media during those times. Data Manager allows you to determine whether those requests for files are rejected outright or queued as deferred fetch requests until the fetch schedule becomes active again. If you enable this extended drive option, all client file retrievals are postponed until the Allow fetches from media schedule becomes active. At that time, all requested (queued) files are retrieved from media.

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. The Allow fetches from media schedule is active 24 hours a day by default.

To configure the Defer fetch requests if fetch is disabled option:

- You have the following choices:
  - To configure Data Manager to accept but defer all requests for purged files made when the Allow fetches from media schedule has been disabled, select Defer fetch requests if fetch is disabled. The queued requests are processed when the schedule becomes active again.
  - To configure Data Manager to reject all requests for purged files made during times when the Allow fetches from media schedule is inactive, select Refuse fetch requests if fetch is disabled.

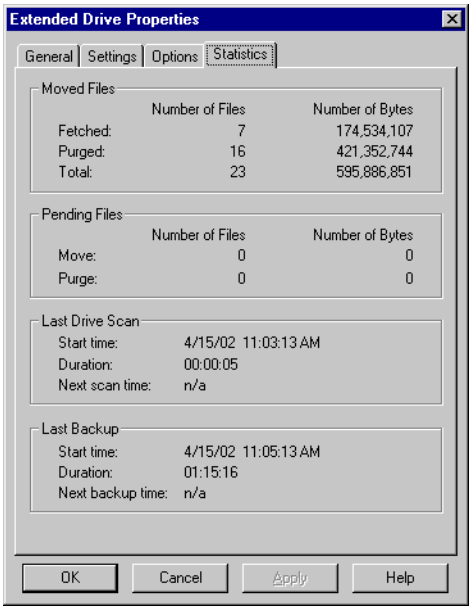
The Statistics Tab

The Statistics tab of the Extended Drive Properties dialog box provides statistics on files on the extended drive. These statistics are based on information collected during the most recent drive scan.

To view the Statistics tab:

- With the Extended Drive Properties dialog box open, click the Statistics tab.

Figure 98. Extended Drive Properties – Statistics Tab



The following table describes each of the items on the Statistics tab:

Table 22. Extended Drive Properties – Statistics Tab Items

Group	Item	Description
Moved Files	Fetched	The total number and size of files fetched between the most recent drive scan and the drive scan immediately preceding it
	Purged	The total number and size of files purged between the most recent drive scan and the drive scan immediately preceding it
	Total	The sum of the number and size of files fetched and files purged between the most recent drive scan and the drive scan immediately preceding it
Pending Files	Move	The total number and size of files currently on the move list for the extended drive
	Purge	The total number and size 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 Meta-Data Export	Start Time	The time at which the last meta-data export began
	Duration	The amount of time that the last meta-data export took to process
	Next Export Time	The date and time of the next scheduled meta-data export

Note: The Moved Files and Pending Files lists are dynamically updated as files are fetched and purged and added to the move and purge lists, respectively.

Deleting the Extended Drive

When you delete an extended drive from ASM Data Manager, all associated settings are deleted as well, including all schedules and configured options for that extended drive.

All components of the extended drive should be deleted prior to deleting the extended drive. In addition, you must deallocate all media from the extended drive before you delete the drive.

To delete an extended drive:

1. In the tree view of the Administrator, right-click the extended drive you want to delete. Select Delete Extended Drive from the shortcut menu that appears.
2. Click Yes on the confirmation message that appears.

Running 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. Drive scans are also required to delete files from the system based on configured delete rules.

During a drive scan, ASM Data Manager 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 list, purging files or adding them to the purge list, and deleting files that qualify for deletion.

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 Data Manager prompts 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 an extended drive, automatic (scheduled) drive scans are disabled. However, you can force an extended drive scan whenever needed.

For more information, see the following sections:

- "Forcing Drive Scans, " which follows
- “Scheduling Drive Scans” on page 205

Forcing Drive Scans

If you are planning any Data Manager 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. For more information on the Move files to media schedule, see “Moving Files to Media” on page 48. You can also use this command to run a drive scan if you need to remove several pieces of media, but do not want to run a drive scan after each one. You can force a drive scan when you are finished removing all pieces of media.

To force a drive scan on the extended drive:

- 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.

Scheduling Drive Scans

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).

If you configure any move rules to have age-delays, you *must* perform regular extended drive scans to update the move list. If you configure any purge or delete rules for your extended drive, you *must* perform regular drive scans to purge files or to write files to the purge list (depending on the purge rule setting), and to delete files qualifying for delete rules.

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

Drive scans are scheduled through the Settings tab of the Extended Drive Properties dialog box. You should have configured a drive scan when you initially set up your Data Manager system. For more information, refer to the *Setting Up File Migration* chapter of the *ASM Data Manager Getting Started Guide*.

Managing the Data Manager Computer

5

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

The Service Properties dialog box lets you view and manage the Data Manager computer configuration. You can view general information about the Data Manager installation. You can also configure options to control the behavior of the hardware devices holding the media to which Data Manager moves files.

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.

For more information, see the following sections:

- "Managing the Data Manager Computer, " which follows
- “Configuring Data Manager Service Properties” on page 218
- “Tracking Data Manager Events, Errors, and Warnings” on page 237

Managing the Data Manager Service

ASM Data Manager functions as a Windows NT/2000 service rather than as a user-mode application. As a Windows service, Data Manager can be configured for various startup settings, including automatic startup, which starts Data Manager upon Windows system startup, and manual startup, which allows you to start the service manually. You can also disable the service, which prevents the service from starting until that status is changed to either manual or automatic.

As a Windows NT/2000 service, Data Manager can continue to be active even after you log off Windows, as long as the computer is still running.

Since the service will continue to run as long as the computer is running, if you are planning to shut down the Data Manager computer, we ***highly*** recommend stopping the Data Manager service before doing so. This allows the service to complete whatever function it was performing before the system shuts down. In the case where Data Manager is writing a file to media, stopping the service before shutting down the computer reduces the possibility of file write and/or media errors occurring during shutdown.

You can manage the service either through the Data Manager Administrator or through Windows.

Note: If Data Manager is installed in a clustered environment, the Data Manager service should *only* be stopped, paused, or started using the Cluster Administrator. You should *not* manage services through either the Service Manager or the Windows Services feature. If you stop the service in the Administrator or through the Windows Services feature, the system detects that the service filed and fails over to the other node in the cluster. For more information on clustering see *Appendix A: Clustering*, of the *ASM Data Manager Getting Started Guide.*

For more information, see the following sections:

- "Managing the Service Using the Administrator, " which follows
- “Managing the Service Using the Windows NT Control Panel” on page 211
- “Managing the Service Using the Windows 2000 Administrative Tools” on page 214

Managing the Service Using the Administrator

Management of the Data Manager service can be performed through the Data Manager Administrator using the Service Manager. You can start, pause, and stop the service, as well as change the startup type and the account Data Manager uses to log on as a service

You can manage the Data Manager service on more than one computer if the computers are registered in the Administrator even if the computer is not currently connected through the Administrator. Data Manager computers that are not connected are listed in the tree view with a status of `(Disconnected)`. For more information on registering remote Data Manager computers, refer to the *Remotely Administering Data Manager* chapter of the *ASM Data Manager Getting Started Guide*.

To manage the service through the Administrator:

1. In the Administrator, select the computer for which you want to manage the Data Manager service. You can choose the computer from the

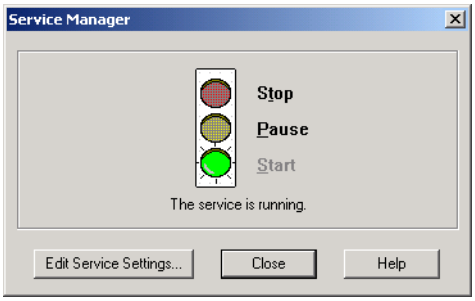
Computer drop-down list, or, in the tree view, select the extended drive of the computer whose service you want to manage.

2. Open the Service Manager. From the Tools menu, select Service Manager, or click the Service Manager toolbar button.

Figure 99. Service Manager Toolbar Button

The Service Manager dialog box appears.

Figure 100. Service Manager Dialog Box



The Service Manager indicates the status of the Data Manager 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.

Note: When you plan to pause or shut down the service, it is a good idea to broadcast a message telling users the service will be paused or stopped. This gives users enough time to finish their tasks. To broadcast a message, simply proceed to the command prompt and type `net send /users "message"`, where "message" contains the words notifying the users that the service will pause or stop. The message is then sent to all users connected to the Data Manager computer.

3. Configure the service settings as necessary. You have the following choices:

   - To stop the service, double-click Stop. A confirmation message appears. Click Yes.
   - To pause the service, double-click Pause. A confirmation message appears. Click Yes.
   - To start the service, double-click Start. A confirmation message appears. Click Yes.
   - To edit service settings, including the startup type and the account Data Manager uses to log on as a service, click Edit Service Settings.

For more information, see *"Configuring Service Settings in the Administrator, " which follows*.

4. When you finish configuring service settings, click Close to return to the Administrator.

Configuring Service Settings in the Administrator

The Data Manager service, like any Windows NT/2000 service, can be set to start in a number of ways. For example, you may want the service to start immediately upon system startup, or you may want the ability to manually start or even disable the service.

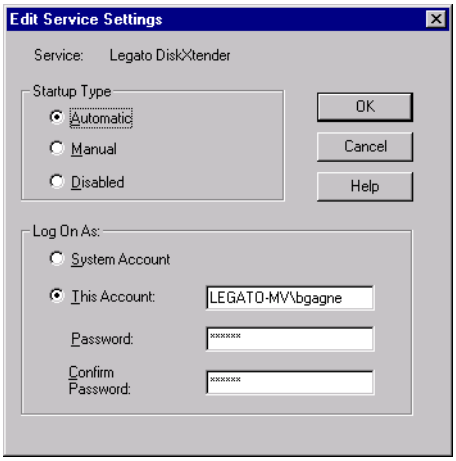
You may also need to change the user name or password for the account that Data Manager uses to log on as a service.

You can edit these service settings through the Service Manager.

To edit service settings through the Service Manager:

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

Figure 101. Edit Service Settings Dialog Box



2. Select a startup type. You have the following choices:

   - Choose Automatic if you want the service to start every time the Windows system starts. This is the default.
   - Choose Manual if you want the service to be started by a user or by a dependent service.
   - Choose Disabled to prevent the service from starting until the startup type is changed to Automatic or Manual.

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 Data Manager on the computer. You have the following choices:

- To change the domain name or user name Data Manager uses to log on, enter the new name(s) in the This Account text box.
- To change the password Data Manager uses to log on, enter the new password in the Password text box. Then re-enter the password in the Confirm Password text box.
- To have the service log in as the system account, enable System Account.

Note: The account that Data Manager uses to log on as the service must have the Log on as a service privilege. This privilege is automatically assigned to the account entered during installation; however, if you want to change the service account, you will need to add this privilege to the new account if it does not already have the privilege.

Note: Unless you have specific reason to do so, you should not enable the System Account option for logon. The local system account may not have all of the rights necessary to perform all Data Manager functions, particularly if your media service resides on a different machine.

4. Click OK to save your changes and return to the Service Manager.

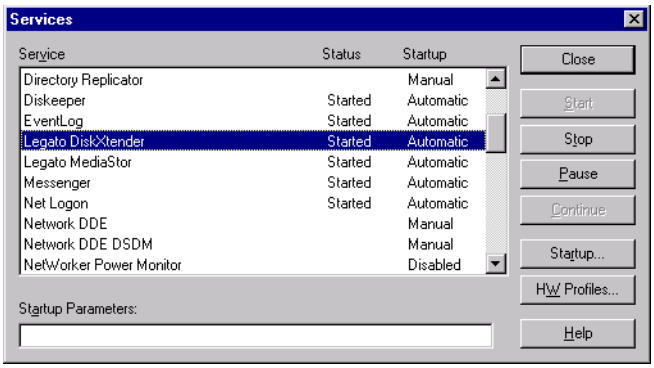
Managing the Service Using the Windows NT Control Panel

The Control Panel in Windows NT allows you to modify the system while working in Windows. The Services option in the Control Panel allows you to start and stop Windows NT services as well as configure service parameters for services running on the local machine, including the Data Manager service.

To manage the service using Windows NT:

1. On the Data Manager computer, open the Windows Service Manager. From the Start menu, select Control Panel and then Services.

Figure 102. Windows NT Services Dialog Box



2. From the services list in the right pane of the Services dialog box, select ASM.
3. You have the following choices:
   - To stop the service, click Stop. A confirmation message appears. Click Yes.
   - To start the service, click Start.
   - To pause the service, click Pause. A confirmation message appears. Click Yes.
   - To edit service settings, including the startup type and the account Data Manager uses to log on as a service, click Startup. For more information, see "Configuring Service Settings in Windows NT, " which follows.
4. When you finish configuring service settings, click Close to close the Services dialog box.

Configuring Service Settings in Windows NT

The Data Manager service, like any Windows NT service, can be set to start in a number of ways. For example, you may want the service to start immediately upon system startup, or you may want the ability to manually start or even disable the service.

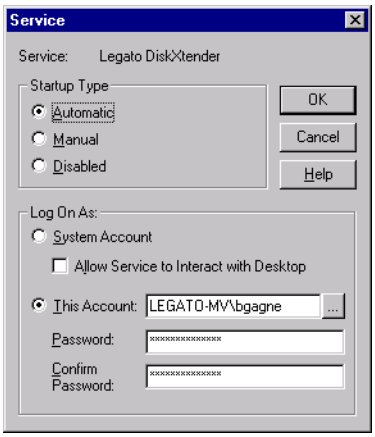
You may also need to change the user name or password for the account that Data Manager uses to log on as a service.

You can edit these service settings through the Services option from the Windows NT Control Panel.

To edit service settings through Windows NT:

1. In the Windows NT Services dialog box, select ASM and then click Startup. The Service dialog box appears.

Figure 103. Service Dialog Box



2. Select a startup type. You have the following choices:

   - Choose Automatic if you want the service to start every time the Windows system starts. This is the default.
   - Choose Manual if you want the service to be started by a user or by a dependent service.
   - Choose Disabled to prevent the service from starting until the startup type is changed to Automatic or Manual.

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 Data Manager on the computer. You have the following choices:

   - To change the domain name or user name Data Manager uses to log on, enter the new name(s) in the This Account text box.
   - To change the password Data Manager uses to log on, enter the new password in the Password text box. Then re-enter the password in the Confirm Password text box.
   - To have the service log in as the system account, enable System Account.

   Note: The account that Data Manager uses to log on as the service must have the Log on as a service privilege. This privilege is automatically assigned to the account entered during installation; however, if you want to change the service account, you will need to add this privilege to the new account if it does not already have the privilege.

Note: Unless you have specific reason to do so, you should not enable the System Account option for logon. The local system account may not have all of the rights necessary to perform all Data Manager functions, particularly if your media service resides on a different machine.

4. When you finish configuring service settings, click OK to save your changes and return to the Services dialog box.

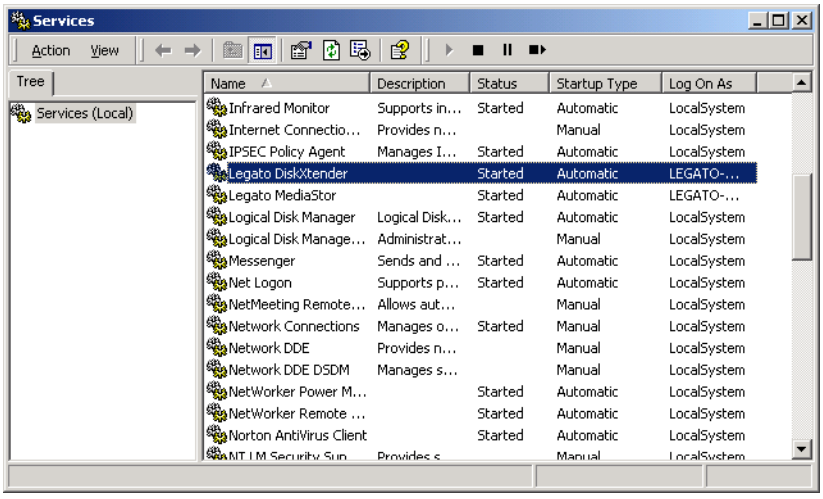
Managing the Service Using the Windows 2000 Administrative Tools

The Administrative Tools application in Windows 2000 allows you to modify the system while working in Windows. The Services and Applications option in the Administrative Tools allow you to start and stop Windows 2000 services as well as configure service parameters for services running on the local machine, including the Data Manager service.

To manage the service using Windows 2000:

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

Figure 104. Windows 2000 Services Dialog Box



2. From the services list in the right pane of the Services dialog box, select ASM.

3. You have the following choices:

   - To stop the service, click the Stop button or choose Stop from the Action menu.
   - To start the service, click the Start button or choose Start from the Action menu.

- To pause the service, click the Pause button or choose Pause from the Action menu.
- To stop and then restart the service in one step, click the Restart button or choose Restart from the Action menu.
- To edit service settings, including the startup type and the account Data Manager uses to log on as a service, double-click on the service to open the ASM Properties dialog box. For more information, see *"Configuring Service Settings in Windows 2000, " which follows*.

4. When you finish configuring service settings, click the Close button to close the Services dialog box.

Configuring Service Settings in Windows 2000

The Data Manager service, like any Windows 2000 service, can be set to start in a number of ways. For example, you may want the service to start immediately upon system startup, or you may want the ability to manually start or even disable the service.

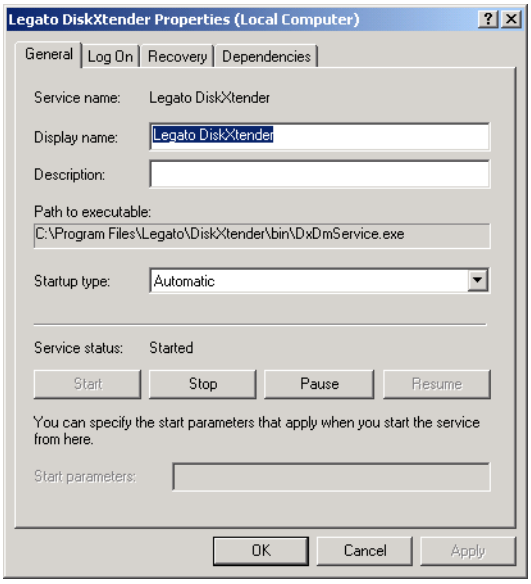
You may also need to change the user name or password for the account that Data Manager uses to log on as a service.

You can edit these service settings through the Services and Applications option from the Windows 2000 Administrative Tools.

To edit service settings through Windows 2000:

1. In the services list of the Windows 2000 Services dialog box, double-click ASM. The Properties dialog box appears with the General tab active by default.

Figure 105. ASM Properties Dialog Box

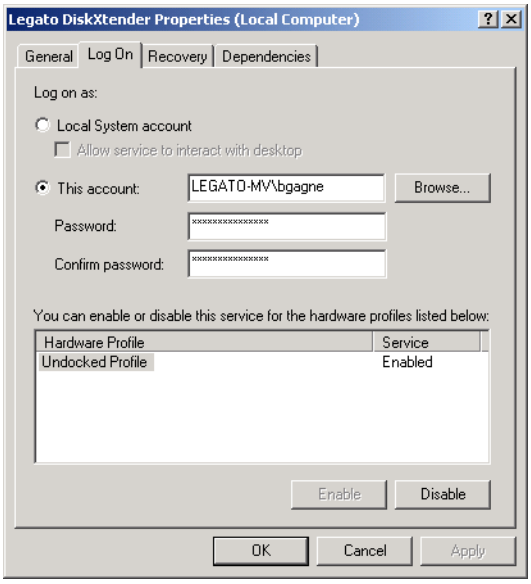


2. From the Startup type drop-down list, select a startup type. You have the following choices:

   - Choose Automatic if you want the service to start every time the Windows system starts. This is the default.
   - Choose Manual if you want the service to be started by a user or by a dependent service.
   - Choose Disabled to prevent the service from starting until the startup type is changed to Automatic or Manual.

3. Select the Log On tab.

Figure 106. ASM Properties Dialog Box – Log On Tab



4. This account option is enabled by default and should contain the login and password entered on installation of Data Manager on the computer. You have the following choices:

   - To change the domain name or user name Data Manager uses to log on as a service, enter the new name(s) in the This account text box.
   - To change the password Data Manager uses to log on, enter the new password in the Password text box. Then re-enter the password in the Confirm password text box.
   - To have the service log on as the system account, enable Local System account.

   Note: The account that Data Manager uses to log on as the service must have the Log on as a service privilege. This privilege is automatically assigned to the account entered during installation; however, if you want to change the service account, you will need to add this privilege to the new account if it does not already have the privilege.

   Note: Unless you have specific reason to do so, you should not enable the Local System account option for logon. The local system account may not have all of the rights necessary to perform all Data Manager functions, particularly if your media service resides on a different machine.

5. When you finish configuring service settings, click OK to save your changes and retu

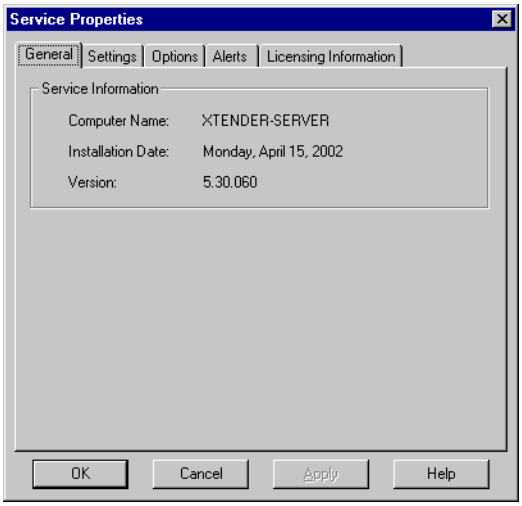
Configuring Data Manager Service Properties

ASM Data Manager allows you to view and configure Data Manager service properties. Each Data Manager computer has a Service Properties dialog box that displays tabs of information pertaining to the Data Manager service. These tabs include: General, Settings, Options, Alerts, and Licensing Information.

To configure Data Manager service properties:

1. From the Service menu, select Properties.

Figure 107. Service Properties Dialog Box



2. Modify the settings on each of the tabs as necessary. For more information, see the following sections:
   - "The General Tab, " which follows
   - “The Settings Tab” on page 219
   - “The Options Tab” on page 222
   - “The Alerts Tab” on page 232
   - “The Licensing Information Tab” on page 236
3. As with most Properties functions in ASM, after making changes you have three options:
   - To save changes and close the Properties dialog box, click OK.
   - To save changes and keep the Properties dialog box open, click Apply.
   - To discard all changes made since the Properties dialog box was opened (or since the Apply button was used) and close the Properties dialog box, click Cancel.

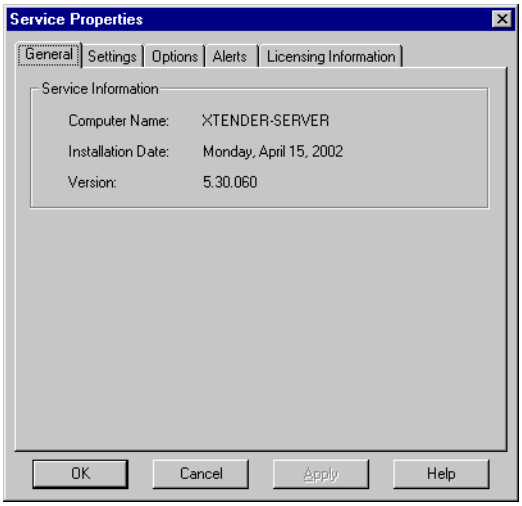
The General Tab

The General tab of the Service Properties dialog box displays identifying information for the Data Manager computer.

To view the General tab:

- Click the General tab in the Service Properties dialog box.

Figure 108. Service Properties – General Tab



The following table describes each of the items appearing on the General tab.

Table 23. Service Properties – General Tab

Item	Description
Computer Name	The Windows computer name for the Data Manager computer
Installation Date	The date that Data Manager was installed (or updated)
Version	The installed version of Data Manager

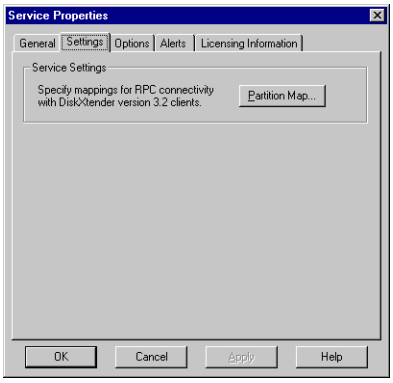
The Settings Tab

The Settings tab of the Service Properties dialog box allows you to map a partition to the Data Manager extended drive. Partition mapping allows clients (like ApplicationXtender) to connect to the Data Manager service via a Remote Procedure Call (RPC). Creating a partition allows other applications to connect to the Data Manager extended drive without using an actual folder share.

To configure the Settings tab:

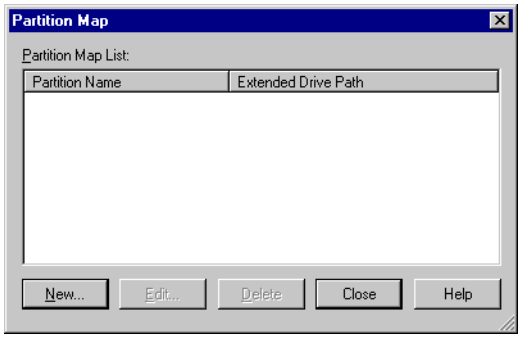
1. Click the Settings tab of the Service Properties dialog box.

Figure 109. Service Properties – Settings Tab



2. Click Partition Map. The Partition Map dialog box appears.

Figure 110. 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.

3. You have the following choices:
   - Create a new partition map. For more information, see *"Creating a Partition Map, " which follows*.
   - Edit a partition map. For more information, see “Editing a Partition Map” on page 221.
   - Delete a partition map. For more information, see “Deleting a Partition Map” on page 222.
4. When you finish configuring partition maps, click Close to return to the Settings tab of the Service Properties dialog box.

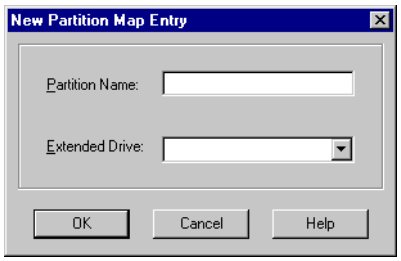
Creating a Partition Map

If you want to allow clients to connect to Data Manager via RPC, you need to create a partition map.

To create a partition map:

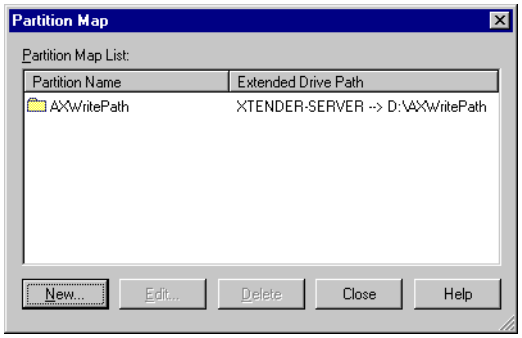
1. In the Partition Map dialog box, click New. The New Partition Map Entry dialog box appears.

Figure 111. New Partition Map Entry Dialog Box



2. In the Partition Name text box, enter a name for the partition.
3. From the Extended Drive drop-down list, select the extended drive to which you want to map the partition.
4. Click OK. The Partition Map dialog box appears with the new partition map listed.

Figure 112. Partition Map Dialog Box



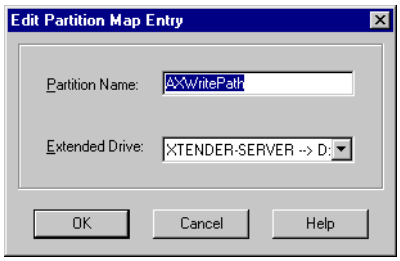
Editing a Partition Map

If you have already created a partition map, you can edit it. If you edit a partition map, remember to change the configuration for the applications that point to the partition map as necessary.

To edit a mapped partition:

1. In the Partition Map dialog box, select the partition you want to change and click Edit. The Edit Partition Map Entry dialog box appears.

Figure 113. Edit Partition Map Entry Dialog Box



2. You have the following choices:
   - To change the partition name, enter the new name in the Partition Name text box.
   - To change the extended drive to which the partition is mapped, select the extended drive from the Extended Drive drop-down list.
3. Click OK. The Partition Map dialog box appears with the changes to the partition map listed.

Deleting a Partition Map

If you no longer need a partition map, you can delete it. Remember that if you delete a partition map, you may need to reconfigure the applications that point to that partition map.

To delete a mapped partition:

1. In the Partition Map dialog box, select the partition you want to delete and click Delete.
2. Click Yes on the confirmation message that appears.

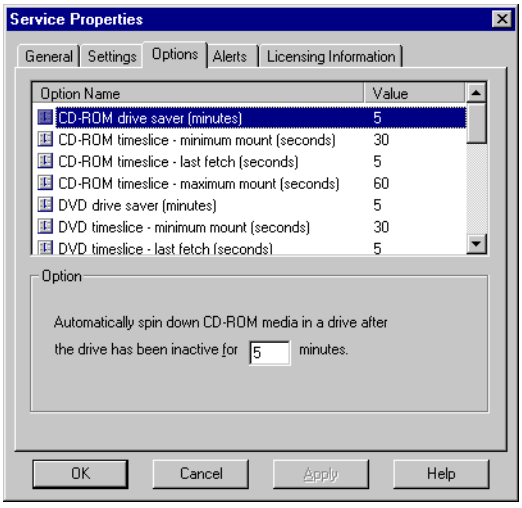
The Options Tab

The Options tab of the Service Properties dialog box allows you to configure options that control the behavior of the hardware devices holding the media to which Data Manager moves files. We recommend you pay special attention to the functions available through the Options tab and configure them appropriately. These options are designed to ease administration of your Data Manager service and improve performance.

To configure the Options tab:

1. Click the Options tab of the Service Properties dialog box.

Figure 114. Service Properties – Options Tab



The upper section of the Options tab shows a list of 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 of the Options tab.

2. Modify the settings for each option as necessary. For more information, see the following sections:

   - "CD-ROM Drive Saver, " which follows
   - “CD-ROM Timeslice - Minimum Mount” on page 224
   - “CD-ROM Timeslice - Last Fetch” on page 224
   - “CD-ROM Timeslice - Maximum Mount” on page 224
   - “DVD Drive Saver” on page 224
   - “DVD Timeslice - Minimum Mount” on page 225
   - “DVD Timeslice - Last Fetch” on page 225
   - “DVD Timeslice - Maximum Mount” on page 225
   - “Optical Drive Saver” on page 225
   - “Optical Timeslice - Minimum Mount” on page 225
   - “Optical Timeslice - Last Fetch” on page 225
   - “Optical Timeslice - Maximum Mount” on page 226
   - “Tape Block Size Default Value” on page 226
   - “Tape Timeslice - Minimum Mount” on page 226
   - “Tape Timeslice - Last Fetch” on page 226

- “Tape Timeslice - Maximum Mount” on page 226
- “Use Hardware Compression” on page 226
- “Use Special Application Filtering” on page 228
- “Use Write Verify Command” on page 227
- “EMC Centera Resource Saver” on page 228

CD-ROM Drive Saver

Use this service option to configure how long Data Manager waits after CD-ROM media becomes inactive before it automatically spins down the media. Automatically spinning down media means that the media is still mounted but lies idle until the media is requested by Data Manager or dismounted. The default value is 5 minutes.

CD-ROM Timeslice - Minimum Mount

Use this service option to configure the minimum amount of time Data Manager keeps CD-ROM media in a drive after it has been mounted. This means that CD-ROM media remains in the drive for at least the amount of time you enter. Data Manager does not automatically dismount CD-ROM media, and you cannot dismount the media before the time limit is up. The default value is 30 seconds.

CD-ROM Timeslice - Last Fetch

Use this service option to configure the amount of time CD-ROM media must remain mounted after Data Manager has fetched data from that media. This means that CD-ROM media is not dismounted immediately after a fetch; instead, Data Manager waits at least the entered amount of time before dismounting the media. The default value is 5 seconds.

CD-ROM Timeslice - Maximum Mount

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

DVD Drive Saver

Use this service option to configure how long Data Manager waits after DVD media becomes inactive before it automatically spins down the media. Automatically spinning down media means that the media is still mounted but lies idle until the media is requested by Data Manager or dismounted. The default value is 5 minutes.

DVD Timeslice - Minimum Mount

Use this service option to configure the minimum amount of time Data Manager keeps DVD media in a drive after it has been mounted. This means that DVD media is mounted for at least the amount of time you enter. Data Manager does not automatically dismount DVD media, and you cannot dismount the media before the time limit is up. The default value is 30 seconds.

DVD Timeslice - Last Fetch

Use this service option to configure the amount of time DVD media must remain mounted after Data Manager has fetched data from that media. This means that DVD media is not dismounted immediately after a fetch; instead, Data Manager waits at least the entered amount of time before dismounting the media. The default value is 5 seconds.

DVD Timeslice - Maximum Mount

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

Optical Drive Saver

Use this service option to configure how long Data Manager waits after optical media becomes inactive before it automatically spins down the media. Automatically spinning down media means that the media is still mounted but lies idle until the media is requested by Data Manager or dismounted. The default value is 5 minutes.

Optical Timeslice - Minimum Mount

Use this service option to configure the minimum amount of time Data Manager keeps optical media in a drive after it has been mounted. This means that optical media is mounted for at least the amount of time you enter. Data Manager does not automatically dismount optical media, and you cannot dismount the media before the time limit is up. The default value is 30 seconds.

Optical Timeslice - Last Fetch

Use this service option to configure the amount of time optical media must remain mounted after Data Manager has fetched data from that media. This means that optical media is not dismounted immediately after a fetch; instead, Data Manager waits at least the entered amount of time before dismounting the media. The default value is 5 seconds.

Optical Timeslice - Maximum Mount

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

Tape Block Size Default Value

Use this service option to configure the size settings Data Manager uses for formatting tape and WORM-tape media. The value you use dictates the default block size of tape and WORM-tape media that Data Manager formats. This value is used to set the default block size of the media when the Media Prepare Wizard and the format media task are run. The default value is 64 kilobytes.

Tape Timeslice - Minimum Mount

Use this service option to configure the minimum amount of time Data Manager keeps tape media in a drive after it has been mounted. This means that tape media is mounted for at least the amount of time you enter. Data Manager does not automatically dismount tape media, and you cannot dismount the media before the time limit is up. The default value is 300 seconds.

Tape Timeslice - Last Fetch

Use this service option to configure the amount of time tape media must remain mounted after Data Manager has fetched data from that media. This means that the tape media is not dismounted immediately after a fetch; instead, Data Manager waits at least the entered amount of time before dismounting the media. The default value is 60 seconds.

Tape Timeslice - Maximum Mount

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

Use Hardware Compression

Use this service option if you want Data Manager to compress data. Data compression allows Data Manager to store data in a format that requires less space than usual.

Note: Not all hardware devices support data compression. The Use hardware compression option only works with devices that support data compression.

To configure the Use hardware compression option:

- You have the following choices:
  - To compress migrated data, select Enable hardware compression if supported by drive.
  - To leave migrated data uncompressed, select Do not use hardware compression. This is the default.

Use Write Verify Command

The Write Verify command sends data to the device buffer, writing the data to the media and then reading the data from the media to compare it to the data in the buffer. This verifies that the media properly accepted the file data and that no error occurred during migration.

It is possible to disable write verification for your Data Manager system by disabling this service option. However, note that without write verification, you have no assurance that data has been correctly transferred to media. We recommend that you leave this option enabled, particularly if you frequently purge files immediately after they are moved.

This option only applies for magneto-optical, WORM, and DVD-RAM media using the ASM file system. Write verification is always enabled (regardless of this option's setting) for DVD-RAM media using the UDF file system, and is not managed by Data Manager for media using the NTFS file system. DX cannot write-verify DVD-R media.

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

To configure the Use write verify command option:

- You have the following choices:
  - To enable the Write Verify command, select Verify data after writing to media. This is the default.
  - To disable write verification, select Do not verify data after writing. Remember, selecting this option gives you no assurance that data has been correctly transferred to media.

Note: 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.

EMC Centera Resource Saver

Use this service option to configure how long Data Manager waits after EMC media becomes inactive before it automatically frees session resources. This is designed to help conserve system memory by freeing up idle EMC media resources. The default value is 600 seconds (10 minutes).

Use Special Application Filtering

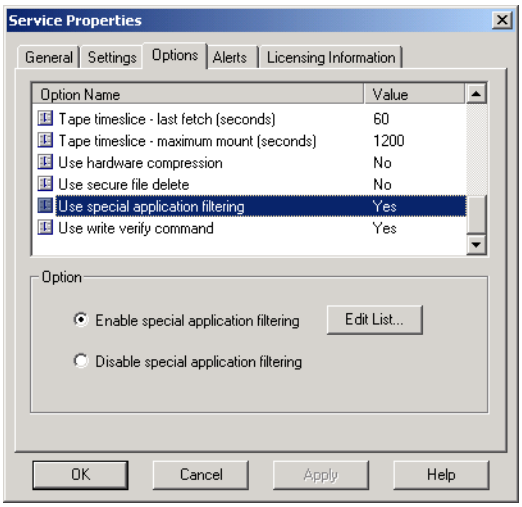
Use this service option to allow Data Manager to force a type of data access for purged files when those files are called by specific software applications. For example, you may not want your virus scanning software to recall purged file data from media during a virus scan, or you may want a program to read files directly from the media.

To configure the Use special application filtering option:

1. You have the following choices:

   - To force a type of data access for purged files when those files are called by specific software, select Enable special application filtering. This is the default.

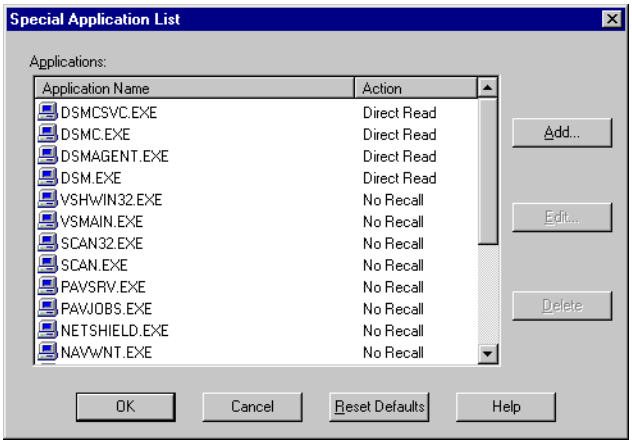
Figure 115. Service Properties – Options Tab



   - If you do *not* want Data Manager to force a type of data access for purged files, select Disable special application filtering.

2. If choose to enable special application filtering, click Edit List. The Special Application List dialog box appears.

Figure 116. Special Application List Dialog Box



The following table describes the applications listed in the Applications list:

Table 24. Default Applications Listed for Filtering

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

Table 24. Default Applications Listed for Filtering (Continued)

Application Name	EXE Name	EXE Type	Default Action
Tivoli Backup	dsmc.exe	CmdLine	Direct read
Tivoli Backup	dsmagent.exe	Service	Direct read
Tivoli Backup	dsmcsvc.exe	Service	Direct read

3. You have the following choices:

   - Add an application to the list. For more information, see "Adding an Application to the Special Application Filtering List, " which follows.
   - Edit the name of the application executable or the type of data access Data Manager allows the application. For more information, see “Editing an Application in the Special Application Filtering List” on page 231.

   Note: The four Tivoli Backup executables in the Applications list (DSM.EXE, DSMC.EXE, DSMCSVC.EXE, and DAMAGENT.EXE) 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 data loss.

   - Delete an application from the list. For more information, see “Deleting an Application from the Special Application Filtering List” on page 232.

   Note: Deleting default applications set by Data Manager may cause system problems (including deadlock) due to both the application and Data Manager attempting to run conflicting processes at the same time.

   - Reset the applications list and its settings to their status when Data Manager was installed. For more information, see “Resetting the Special Application Filtering List Defaults” on page 232.

4. When you finish, click OK to return to the Options tab of the Service Properties dialog box.

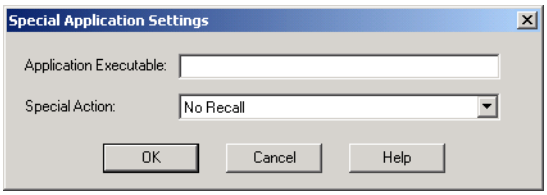
Adding an Application to the Special Application Filtering List

If you are using an application not listed in the Applications list in conjunction with your Data Manager system and you would like to specify the type of data access Data Manager allows the application, you can add the application to the list.

To add an application to the special application filtering list:

1. In the Special Application List dialog box, click New. The Special Application Settings dialog box appears.

Figure 117. Special Application Settings Dialog Box – Add Mode



2. In the Application Executable text box, enter the executable file name (including the .EXE extension) for the application you want to add.
3. From the Special Action drop-down list, select the type of data access you want Data Manager to allow. You have the following choices:
   - Choose No Recall if you want the software application to ignore purged files (the program sees the purged files as 0 bytes and skips over them). This is the default.
   - Choose Direct Read if you want the software application to read the purged file data directly from the media.
4. Click OK. The Special Application List dialog box appears with the application added to the list.

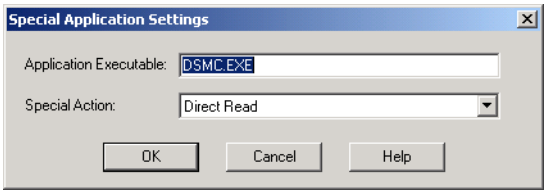
Editing an Application in the Special Application Filtering List

If necessary, you can change the name of the application executable or the type of data access Data Manager allows the application.

To edit an application in the special application filtering list:

1. In the Special Application List dialog box, select the application you want to edit from the Applications list and then click Edit. The Special Application Settings dialog box appears.

Figure 118. Special Application Settings Dialog Box – Edit Mode



2. You have the following choices:
   - If you want to change the application's executable name, enter the new name (including the .EXE extension) in the Application Executable text box.

- If you want to change the type of data access Data Manager allows the application, select the option from the Special Action drop-down list. Choose No Recall if you want the software application to ignore purged files (the program sees the purged files as 0 bytes and skips over them), or choose Direct Read if you want the software application to read the purged file data directly from the media.

Note: The four Tivoli Backup executables in the Applications list (DSM.EXE, DSMC.EXE, DSMCSVC.EXE, and DAMAGENT.EXE) 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 data loss.

3. Click OK. The Special Application List dialog box appears with the edited application in the list.

Deleting an Application from the Special Application Filtering List

If you do not want to specify a type of data access for an application, you can delete it from the Applications list.

Note: Deleting default applications set by Data Manager may cause system problems (including deadlock) due to both the application and Data Manager attempting to run conflicting processes at the same time.

To delete an application from the special application filtering list:

1. In the Special Application List dialog box, select the application you want to delete from the Applications list and then click Delete. A confirmation message appears.
2. Click Yes.

Resetting the Special Application Filtering List Defaults

You can reset the Applications list to all of the settings established when Data Manager was installed. When the list is reset, all applications you added are removed, all applications you deleted are reinstated with their original settings, and all applications you changed are reset to their original values.

To reset the special application filtering list defaults:

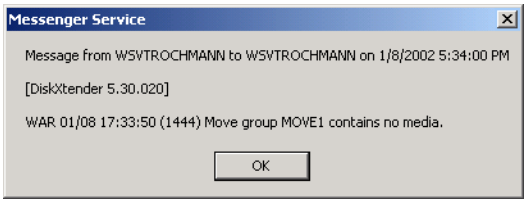
1. In the Special Application List dialog box, click Reset Defaults. A confirmation message appears.
2. Click Yes.

The Alerts Tab

The Alerts tab of the Service Properties dialog box allows you to configure Data Manager to send alerts to specific users, workstations, email addresses,

or domains. An alert is a message box that appears notifying the recipient of an error or warning on the Data Manager system.

Figure 119. Alert Message



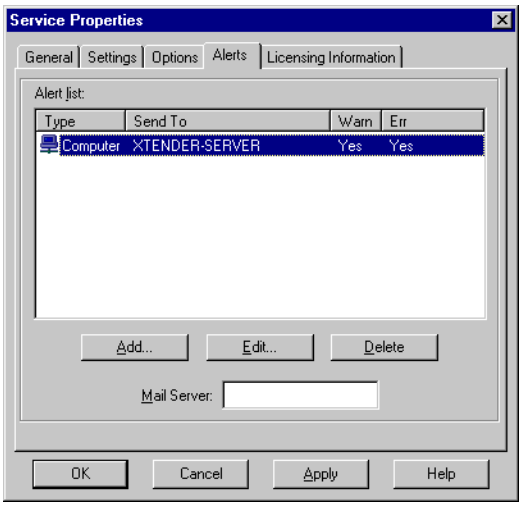
Alerts can be sent to a specific computer or user, to an entire domain, or to an email address.

A default alert for both warnings and errors is created for the Data Manager computer when Data Manager is installed.

To configure alerts:

1. Click the Alerts tab on the Service Properties dialog box.

Figure 120. Service Properties – Alerts Tab



2. You have the following choices:
   - Add an alert. For more information, see *"Adding an Alert, " which follows*.
   - Edit an existing alert. For more information, see “Editing an Alert” on page 235.
   - Delete an alert. For more information, see “Deleting an Alert” on page 236.
3. If you configured any email alerts, enter 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. The well-known port for SMTP servers is supported, so no

additional configuration should be required for use with mail servers, routers, or firewalls.

Note: An email client must be installed on the Data Manager computer on which you are configuring the alert in order for email alerts to work.

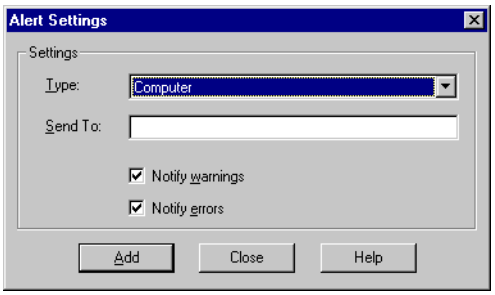
Adding an Alert

To send alerts to specific users, workstations, email addresses, or domains, you need to add an alert from the Alerts tab of the Service Properties dialog box.

To add an alert:

1. On the Alerts tab of the Service Properties dialog box, click Add. The Alert Settings dialog box appears.

Figure 121. Alert Settings Dialog Box – Adding an Alert



2. 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
   - Email
   - User
3. In the Send To text box, enter the email address, domain name, user name, or computer name to which you want alerts sent.
4. 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 check boxes.
   - If you want an alert to be sent for warnings but not for errors, enable the Notify warnings check box.
   - If you want an alert to be sent for errors but not warnings, enable the Notify errors check box.

- If you want to temporarily disable the alert, disable both the Notify warnings and Notify errors check boxes. You can enable either of these options at a later time.

5. When you are finished choosing the alert settings, click Add. The information in the Send To box disappears, and the recipient is added to the alerts listing.
6. You have the following choices:
   - Repeat steps 2 through 5 to add another alert.
   - If you are finished configuring alerts, click Close on the Alert Settings dialog box. The alert appears in the Alert list in the Alerts tab.

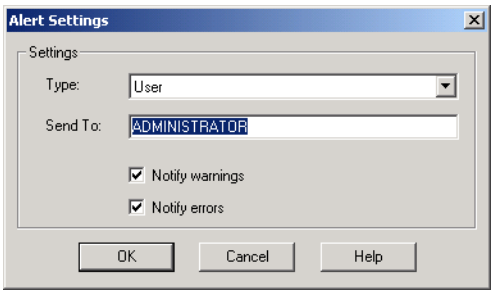
Editing an Alert

Once alerts have been established, you can edit them.

To edit an alert:

1. On the Alerts tab of the Service Properties dialog box, select the alert you want to edit and then click Edit. The Alert Settings dialog box appears.

Figure 122. Alert Settings Dialog Box -- Editing an Alert



2. You have the following choices:
   - To change the type of alert that is sent, select a type from the Type drop-down list box.
   - To change the email address, domain name, user name, or computer name to which you want alerts sent, enter the new value in the Send To text box.
   - To change whether warnings are sent as alerts, enable or disable the Notify warnings check box.
   - To change whether errors are sent as alerts, enable or disable the Notify errors check box.
3. When you finish editing the alert, click OK. The edited alert appears in the Alert list in the Alerts tab.

Deleting an Alert

If you no longer need an alert, you can delete it.

To delete an alert:

1. On the Alerts tab of the Service Properties dialog box, select the alert you want to delete and then click Delete. A confirmation message appears.
2. Click Yes.

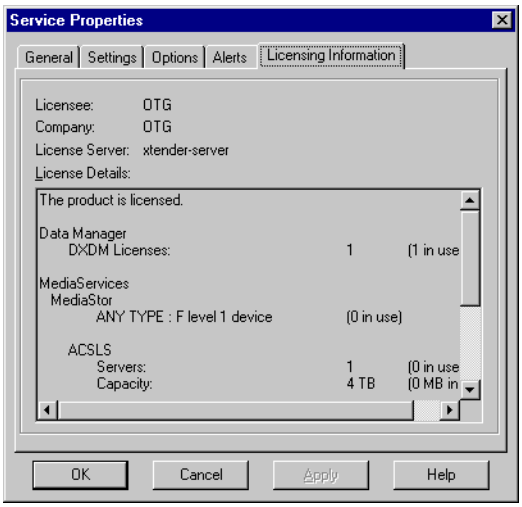
The Licensing Information Tab

The Licensing Information tab of the Service Properties dialog box displays license information for the Data Manager computer.

To view the Licensing Information tab:

- Click the Licensing Information tab in the Service Properties dialog box.

Figure 123. Service Properties – Licensing Information Tab



The following table describes each of the items appearing on the Licensing Information tab.

Table 25. Service Properties – Licensing Information Tab

Item	Description
Licensee	The user information entered during the Data Manager installation.
Company	The company information entered during the Data Manager installation.

Table 25. Service Properties – Licensing Information Tab

Item	Description
License Server	The name of the computer containing the installation of License Server that is currently administering the Data Manager licenses for this Data Manager service.
Licensing Details	Detailed description of the Data Manager licenses configured in the License Server. This includes the number of Data Manager licenses and type and file size capacity of the media services available for use with Data Manager.

Tracking Data Manager Events, Errors, and Warnings

ASM Data Manager has built-in utilities for monitoring events, errors, and warnings on the extended drive. The Event Viewer contains a listing of all Data Manager events, errors, and warnings. This information is also logged to event logs. Errors and warnings are logged automatically, while Data Manager must be configured to log other events.

The Event Viewer and event logs provide a quick look at the activities of Data Manager. 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. If the Event Viewer and event logs become large and cumbersome to navigate, you can clear them.

For more information, see the following sections:

- "Using the Event Viewer, " which follows
- “Using Event Logs” on page 238
- “Looking up Errors” on page 239
- “Configuring Event Logging” on page 240
- “Clearing the Event Viewer and Event Logs” on page 244

Using the Event Viewer

The Event 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 Service Event Configuration dialog box and simply monitor events in the Event Viewer. For more information on disabling event logging, see “Configuring Event Logging” on page 240.

You can also take a “snapshot” of the contents of the Event Viewer and save it for later use. A snapshot is a capture of up to the last 2048 lines of the Event Viewer.

To open the Event Viewer:

- From the Service menu, select Event Viewer.

To take a snapshot of the Event Viewer:

- From the File menu in the Event Viewer, select Snapshot. The snapshot appears in RtfPad. You can save, print, and email the snapshot from RtfPad. For more information, see “Using RtfPad” on page 303.

Using Event Logs

In addition to the viewing capabilities offered by the Event Viewer, Data Manager also contains three event logs that save events, errors, and warnings for the Data Manager computer to log files.

- The All Events log lists all activities on the Data Manager service. Event logging is useful to trace Data Manager service events of interest to you. You can configure which events are traced.
- The Errors Only Log lists only Data Manager system errors and is a useful tool for detecting and diagnosing those errors.

  Note: You can use the System Error Lookup feature to obtain additional information about each error, including the error’s name and description, and to quickly translate error codes that appear in Data Manager. For more information, see “Looking up Errors” on page 239.

- The Warnings Only Log lists only Data Manager system warnings to warn you of possible problems in Data Manager, 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 ASM 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, or 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 Data Manager performance.

Errors and warnings also appear in the Event Viewer, but the Errors Only Log and Warnings Only Log provide a more precise focus on these important events. You can also configure errors and warnings to be sent out as alerts to a specific domain, user, computer, or email address so that you are automatically notified when they occur. For more information, see “The Alerts Tab” on page 232.

Because they are necessary for system diagnostics, error and warning logging cannot be disabled. If technical support is needed, you may be asked to open these logs and specify the information reported.

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

Note: 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. For more information, see “Configuring Event Logging” on page 240.

To open a log:

1. From the Service menu, select Event Logs. A shortcut menu appears.
2. Select the log you want to view. You have the following choices:
   - All Events
   - Warnings Only
   - Errors Only

   The selected log appears in RtfPad. The 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).
3. You can save, print, and email the log from RtfPad. For more information, see “Using RtfPad” on page 303.
4. When you finish, open the File menu in RtfPad and then select Exit to close the log.

Looking up Errors

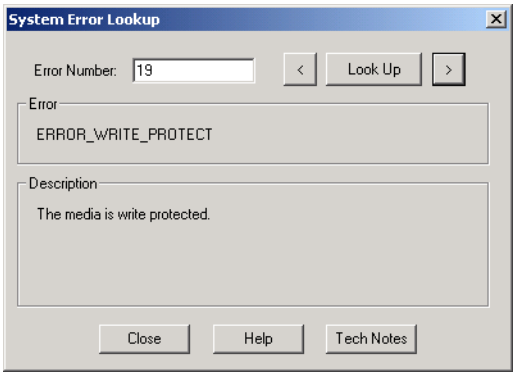
Each Data Manager error is displayed as an error number. The Data Manager error lookup feature allows you to obtain additional information about the error, including the error name and description, and to quickly translate the error codes provided in Data Manager messages.

To look up an error:

1. You have the following choices:
   - In the Administrator window, open the Help menu and then select Error Glossary. press <CTRL>+E. The System Error Lookup dialog box appears. Enter the error number in the Error Number text box and click Look Up.
   - Highlight the error code number in the event log and then press F2 or select Error Lookup from the View menu in RtfPad.

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

Figure 124. System Error Lookup Dialog Box



2. You have the following choices:
   - Click the forward or backward arrow buttons to scroll through the list of system errors.
   - When you finish, click Close to exit the dialog box.

Configuring 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.

Data Manager 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 All Events Log, you can disable logging and enable the tracing of events upon startup. You can enable logging to the Windows Application Log for the Warnings Only Log and the Errors Only Log.

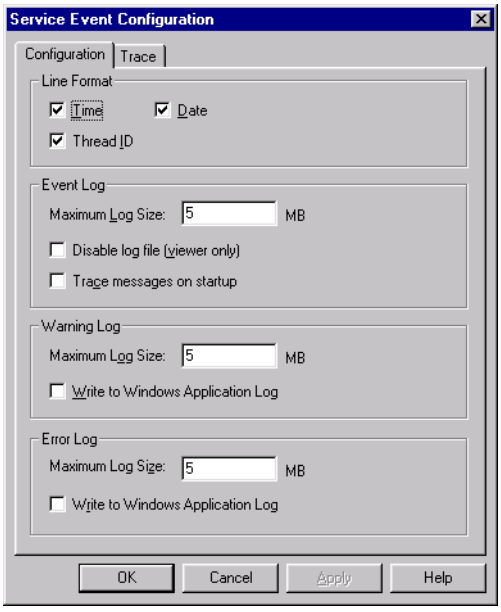
Log Properties Configuration

You can control several aspects of logging functionality, including log entry format, log file size, 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 125. Service Event Configuration Dialog Box – Configuration Tab



2. In the Line Format section, specify logging of particular event attributes. These options are enabled by default. You have the following choices:

   - To disable logging the time each event occurs, disable the Time check box.
   - To disable logging the date each event occurs, disable the Date check box.
   - To disable logging the thread the event used to communicate with the processor, disable the Thread ID check box.

3. In the Event Log section, configure logging to the All Events Log. Event logging is enabled by default; however, no events are traced. For information on selecting events to trace, see "Event Tracing Configuration, " which follows. You have the following choices to configure event logging:

   - To change the maximum size in megabytes (MB) for the log file, enter a new value in the Maximum Log Size text box. The default size is 5 MB. After the maximum log size is reached, the log is truncated from the beginning of the file (oldest events).
   - To disable logging to the All Events Log, enable the Disable log file (viewer only) check box. Events are still logged to the Event Viewer.

- To automatically initiate event logging when Data Manager is started, enable the Trace messages on startup check box.

4. In the Warning Log section, configure logging to the Warnings Only Log. You have the following choices:

   - To change the maximum size in MB for the log file, enter a new value in the Maximum Log Size text box. The default size is 5 MB. After the maximum log size is reached, the log is truncated from the beginning of the file (oldest events).

   - To enable logging of Data Manager warnings to the Windows Application Log, enable the Write to Windows Application Log check box. Since Data Manager warning logs are cleared when the service is restarted, this would allow the Windows Application Log to maintain a running log for Data Manager warnings outside of the Data Manager service.

   Note: To access the Windows Application Log, open the Start menu. Then select Programs, Administrative Tools, and Event Viewer.

   Note: You cannot disable logging to the Warnings Only Log and Errors Only Log.

5. In the Error Log section, configure logging to the Errors Only Log. You have the following choices:

   - To change the maximum size in MB for the log file, enter a new value in the Maximum Log Size text box. The default size is 5 MB. After the maximum log size is reached, the log is truncated from the beginning of the file (oldest events).

   - To enable logging of Data Manager errors to the Windows Application Log, enable the Write to Windows Application Log check box. Since Data Manager error logs are cleared when the service is restarted, this would allow the Windows Application Log to maintain a running log for Data Manager errors outside of the Data Manager service.

   Note: To access the Windows Application Log, open the Start menu. Then select Programs, Administrative Tools, and Event Viewer.

6. You have the following choices:

   - If you want to begin tracing events, click Apply to save your changes and then select the Trace tab. For more information on tracing events, see *"Event Tracing Configuration, " which follows*.

   - If you are finished configuring log properties, click OK to save your changes and close the Service Event Configuration dialog box.

Event Tracing Configuration

You can configure which events are to be traced and reported to the Event Viewer and the All Events 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.

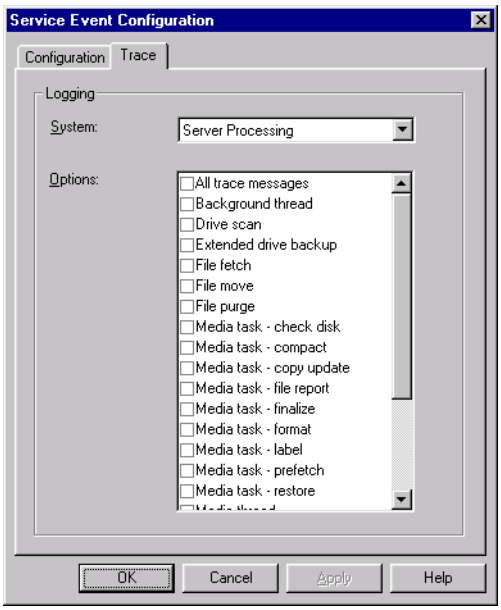
Note: Event tracing configuration affects events only; errors and warnings relating to events of the types listed are logged regardless of event tracing settings.

Note: 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. The System drop-down list displays Server Processing by default.

Figure 126. 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 list, enable the check box next to an event to begin tracing that event.
5. When you are finished, click OK to save the new settings and close the Service Event Configuration dialog box.

Clearing the Event Viewer and Event Logs

Note: You can manually clear the information in the Event Viewer and the event logs. Event logs have a specific size limitation, after which the log is truncated from the beginning of the file. While the log size is regulated through automatic truncation (see “Configuring Event Logging” on page 240 for more information), large logs are often cumbersome and difficult to navigate. Clearing event logs regularly makes it easier to find new information.You may want to save your log before clearing it. To save a log, open it and then select Save from the File menu in RtfPad.

To clear the Event Viewer or an event log:

1. From the Service menu, select Event Logs. A shortcut menu appears.
2. You have the following choices:
   - To clear the Event Viewer and the All Events Log, select Clear Event Log.
   - To clear the Warnings Only Log, select Clear Warning Log.
   - To clear the Errors Only Log, select Clear Error Log.
3. Click Yes on the confirmation message that appears.

Running Data Manager Reports 6

The ASM Data Manager 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 Data Manager registry settings.

You can run the following reports in Data Manager:

- The Extended Drive Information Report provides detailed information about the selected extended drive(s). For more information, see page 247.
- The Media Report provides detailed information on the selected piece(s) of media. For more information, see page 249.
- The Media Files Report provides information about the files on the selected piece(s) of media. For more information, see page 251.
- The Media Services Report provides detailed information about the media service(s) configured for the selected Data Manager computer(s). For more information, see page 255.
- The Media Tasks Report lists all pending media tasks for the selected piece (s) of media. For more information, see page 256.
- The Product Registry Information Report lists all of the Data Manager information contained in the Windows registry for the selected Data Manager computer(s). For more information, see page 258.

You can also 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 “Report Layout Editor” on page 259.

Since Data Manager is designed to allow you to manage multiple registered Data Manager 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 run more than one report at a time, allowing you to view several different aspects or details about several different registered Data Manager computers/extended drives in one consolidated report.

For more information, see the following sections:

- "Creating Reports, " which follows
- “Report Layout Editor” on page 259

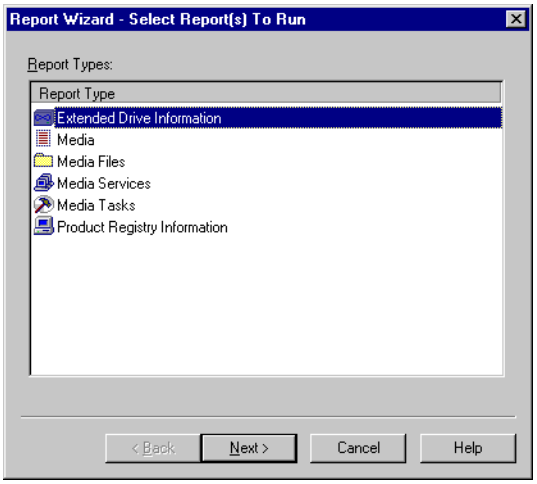
Creating Reports

The Report Wizard allows you to create various reports of system activities on one or more registered ASM Data Manager computers, including information about each extended drive and its components, media, and media task information. It also allows you to run more than one report at a time so that you can view several different aspects or details about several different registered Data Manager computers/extended drives in one consolidated report.

To open the Report Wizard:

1. From the Tools menu, select Report Generator, or press <CTRL>+R. The Report Wizard opens, starting with the Select Report(s) To Run page.

Figure 127. Report Wizard – Select Report(s) To Run Page



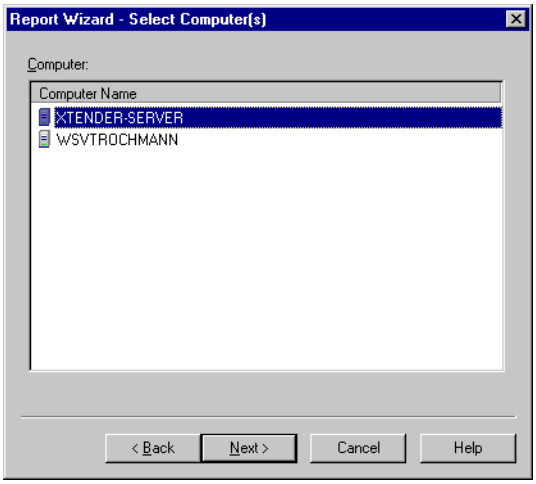
The Select Report(s) To Run page lists all available Data Manager reports. A description of the report appears as a pop-up text box when you rest the mouse pointer on any report option.

2. Select the appropriate report type(s).

   Note: If you choose multiple reports to run, the appropriate Report Wizard pages for each report are merged to form one wizard to lead you through the report generation process.

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

Figure 128. Report Wizard – Select Computer(s) Page



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

4. Select the Data Manager computer(s) for which you want to generate a report and then click Next. The next page of the Report Wizard for the selected report(s) appears. For more information, see the following sections:

   - "Extended Drive Information Report, " which follows
   - “Media Report” on page 249
   - “Media Files Report” on page 251
   - “Media Services Report” on page 255
   - “Media Tasks Report” on page 256
   - “Product Registry Information Report” on page 258

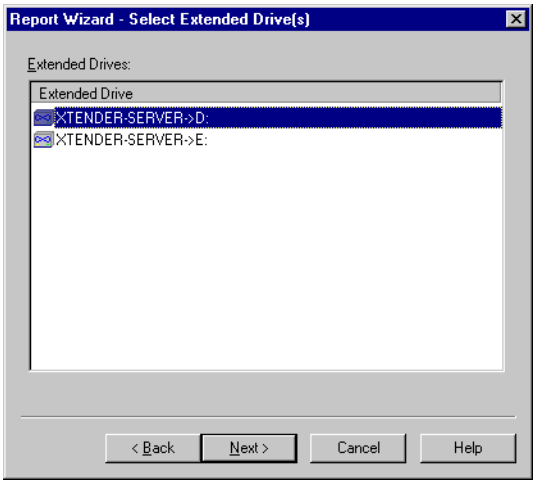
Extended Drive Information Report

The Extended Drive Information Report displays information about the extended drive(s) you select, including properties and assigned media. Full reports also display additional information, including drive scan statistics and schedule information, as well as meta-data export statistics, move statistics, and fetch statistics.

To create an Extended Drive Information Report:

1. After you select the Data Manager computers for which you want to generate a report and then click Next, the Select Extended Drive(s) page appears.

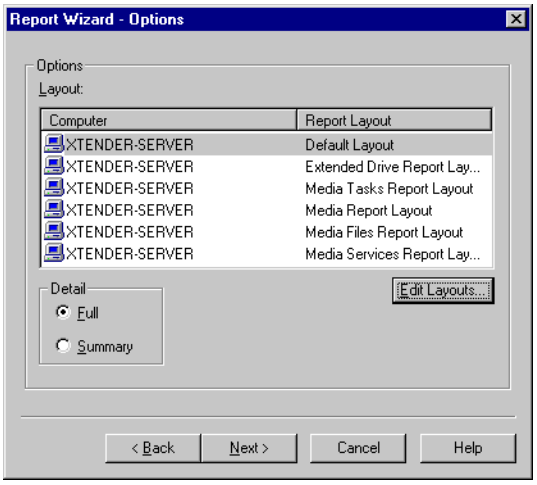
Figure 129. Report Wizard – Select Extended Drive(s) Page



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

2. Select the extended drive(s) for which you want to generate a report and then click Next. The Options page appears.

Figure 130. Report Wizard – Extended Drive Information Report Options Page



3. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a selected layout, click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
4. Select the amount of detail you want on the report: Full or Summary.
5. Click Next. The Summary page appears.
6. Review the information in the Summary page.
7. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can

save, print, or email the report. For more information, see “Using RtfPad” on page 303.

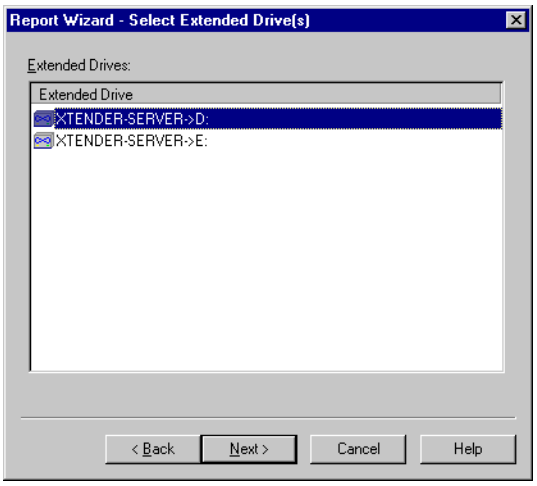
Media Report

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 information, total/free space, and read/write/mount statistics.

To run a Media Report:

1. After you select the Data Manager computer(s) for which you want to generate a report and then click Next, the Select Extended Drive(s) page appears.

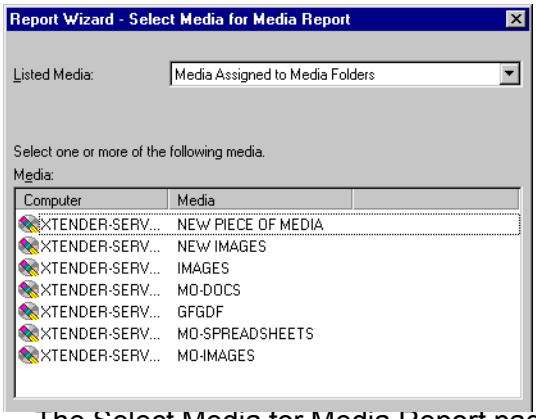
Figure 131. Report Wizard – Select Extended Drive(s) Page



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

2. Select the extended drive(s) for which you want to generate a report and then click Next. The Select Media for Media Report page appears.

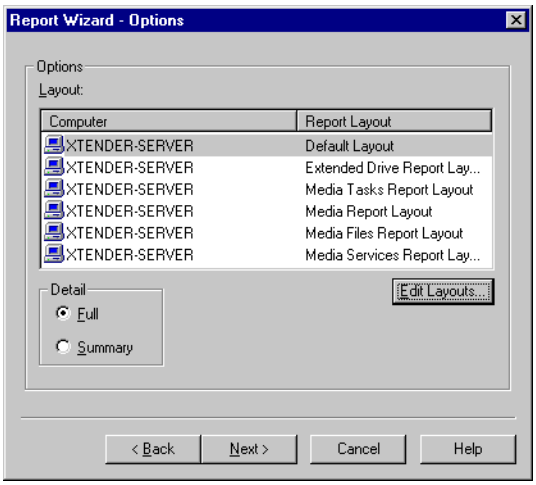
Figure 132. Report Wizard – Select Media for Media Report Page



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

3. From the Listed Media drop-down list, select one of the media types to narrow the number of media listed in the Media list and make it easier to find and choose media for the report.
4. Select the media for which you want to generate the report and then click Next. The Options page appears.

Figure 133. Report Wizard – Media Report Options Page



5. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a selected layout, click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
6. Select the amount of detail you want on the report: Full or Summary.
7. Click Next. The Summary page appears.
8. Review the information in the Summary page.

9. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the report. For more information, see “Using RtfPad” on page 303.

Media Files Report

A Media Files Report provides information about the files on the selected piece(s) of media. You cannot run a Media Files Report unless you have previously processed a file report media task for the selected piece(s) of media on the selected extended drive(s). For instructions, see the following sections:

- "Assigning a File Report Media Task, " which follows
- “Running a Media Files Report” on page 253

Note: You can also run a file report using the Explorer Add-ons. For more information, see “Running a Media Files Report” on page 253.

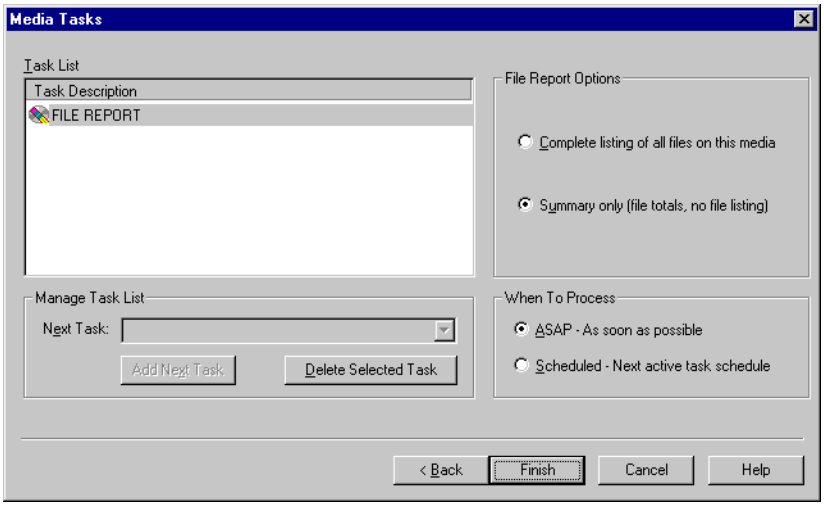
Assigning a File Report Media Task

The file report media task obtains file information from the specified piece of media so that you can run a Media Files Report using the Report Wizard. You must run this task before running a Media Files Report to have current media information in the report. You can choose whether to obtain a complete listing of files on the piece of media, or a summary of file totals on the media.

To assign a file report task:

1. Open the Media Tasks page. You have the following choices:
   - In the tree view of the Administrator, right-click the piece of media to which you want to add the file report media task and then select Edit Tasks from the shortcut menu that appears.
   - Press <CTRL>+T, or open the Tools menu and then select Media Task Manager to open the Media Task Queue Manager. If the media already has tasks assigned to it, select the media and then click Edit Tasks. If the media does not have tasks already assigned to it, click Add New Media. The Select Media for New Tasks page appears listing all media that do not currently have tasks assigned to them. Select the piece of media to which you want to assign the file report media task and then click Next.
2. From the Next Task drop-down list, select the file report media task and then click Add Next Task. The file report task appears in the Task List, and the Options and When To Process regions of the Media Tasks page become available.

Figure 134. File Report Media Task



3. Choose whether you want a full or summary report. You have the following choices:

   - Select the Complete listing of all files on this media option to run a full report.
   - Select the Summary only option to run a summary report that contains only file totals (no file listing).

4. Select whether to process the media task as soon as possible or on a scheduled basis. If you choose to process the media task on a scheduled basis, the task is not processed until the Process scheduled media tasks schedule is active. For information on configuring media activity schedules, see “Scheduling Media Activities” on page 52.

   Note: If you assign multiple tasks for media, be advised that all tasks for that media will have the same When to Process option, since all tasks for a piece of media are processed at once. If one task has the ASAP – as soon as possible option selected, all tasks for that piece of media will process ASAP by default.

5. Once tasks have been added and configured as needed in the Media Tasks page, you have the following choices:

   - If you added the task through the Media Task Queue Manager, click Finish. The Media Task Queue Manager dialog box appears with the media listed and the task pending.
   - If you added the task using the Edit Tasks option on either the shortcut menu for the media or the Edit menu, click Next. The Order Media in Task Queue page appears with the recently added media at the bottom of the media task queue list.
   - To promote the selected piece of media so that the media tasks for the media are processed before other media in the queue, click the up

arrow button to the right of the list box. You can also demote a piece of media in the list by selecting the media and then clicking the down arrow to the right of the list box. When you finish, click Finish.

All media with tasks assigned appear in the Media Task Queue Manager until they are processed. For media with tasks selected to process ASAP – as soon as possible, those media may only appear briefly in the queue before the processing completes and the media is removed from the queue.

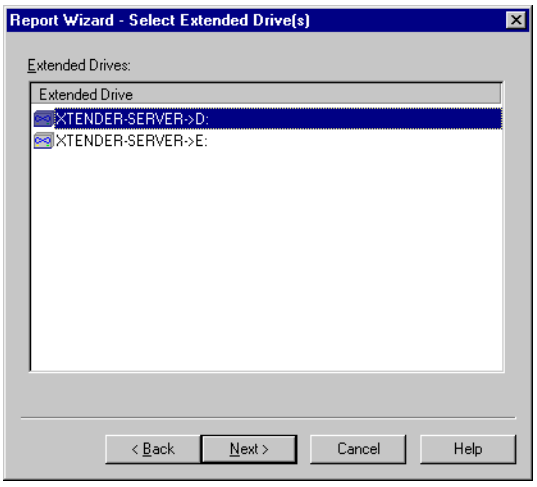
Running a Media Files Report

After the file report media task finishes processing, you can run the Media Files Report using the Report Wizard.

To run a Media File Report:

1. After you select the Data Manager computer(s) for which you want to generate a report and then click Next, the Select Extended Drive(s) page appears.

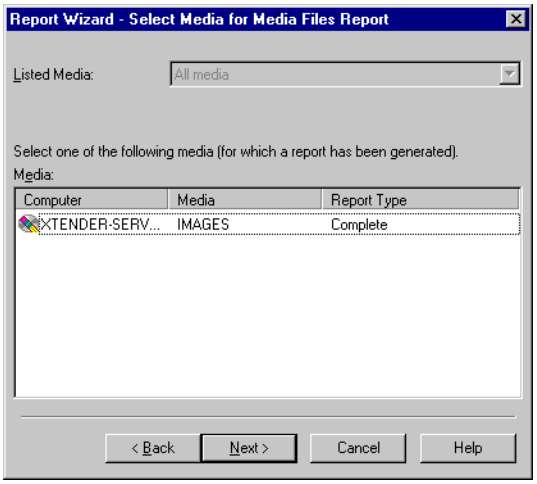
Figure 135. Report Wizard – Select Extended Drive(s) Page



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

2. Select the extended drive(s) for which you want to generate a report and then click Next. The Select Media for Media Files Report page appears.

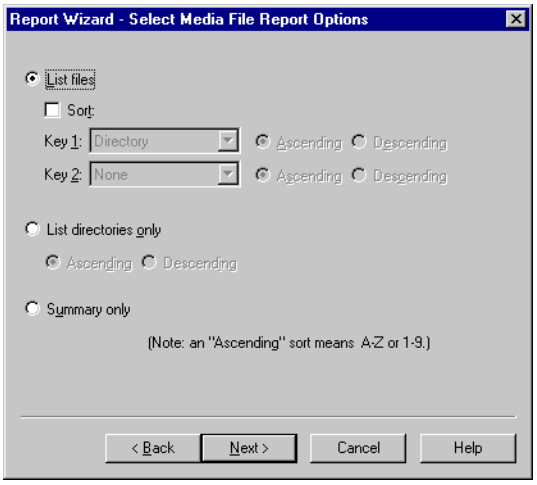
Figure 136. Report Wizard – Select Media for Media Files Report Page



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.

3. Select one of the listed media for which you want to generate the report and then click Next. The Select Media File Report Options page appears.

Figure 137. Report Wizard – Select Media File Report Options Page



4. You have the following choices:

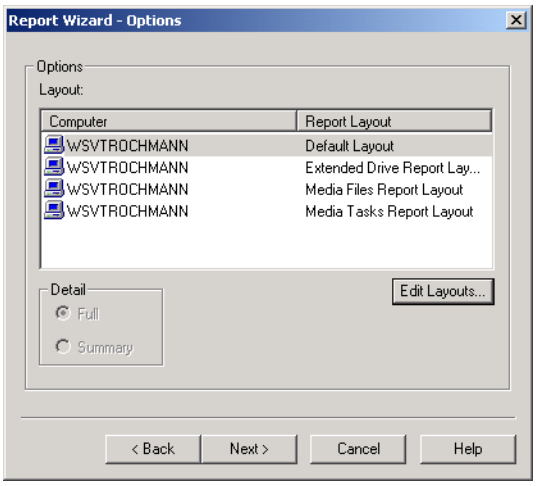
   - Choose List files to list all files on the media. If you want to sort the files in a particular order in the report, enable the Sort check box. Then choose the first sort criteria from the Key 1 drop-down list, and select whether to sort the files in ascending or descending order using that sort criteria. To choose a secondary sort criteria, choose the criteria from the Key 2 drop-down list, and then choose ascending or descending.

- Choose List directories only to list only the directories on the media. Then choose whether to list the directories in ascending or descending order.
- Choose Summary only to list only summary information on the media.

Note: If you chose the Summary only option on the Media Tasks page when you ran the file report media task, the List files and List directories only options are not available. You can only run a summary report in this case. For more information on running a file report media task, see “Assigning a File Report Media Task” on page 251.

5. When you finish choosing report option(s), click Next. The Options page appears.

Figure 138. Report Wizard – Options Page



6. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a selected layout, click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
7. Click Next. The Summary page appears.
8. Review the information in the Summary page.
9. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the report. For more information, see “Using RtfPad” on page 303.

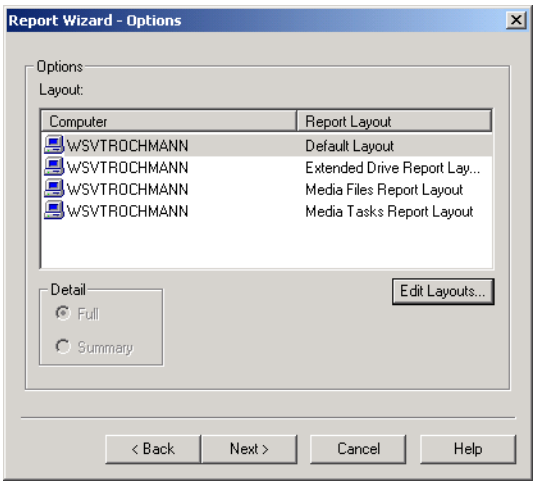
Media Services Report

The Media Services Report provides information on the media services configured on the selected Data Manager computer(s).

To run a Media Services Report:

1. After you select the Data Manager computer(s) for which you want to generate a report and then click Next, the Options page appears.

Figure 139. Report Wizard – Media Services Report Options Page



2. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a selected layout, click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
3. Click Next. The Summary page appears.
4. Review the information in the Summary page.
5. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the report. For more information, see “Using RtfPad” on page 303.

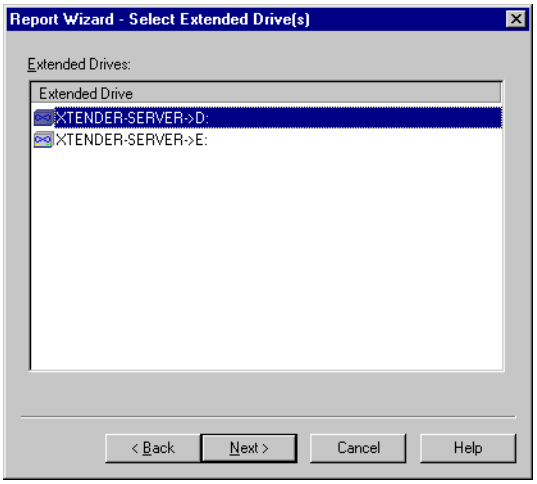
Media Tasks Report

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. After you select the Data Manager computer(s) for which you want to generate a report and then click Next, the Select Extended Drive(s) page appears.

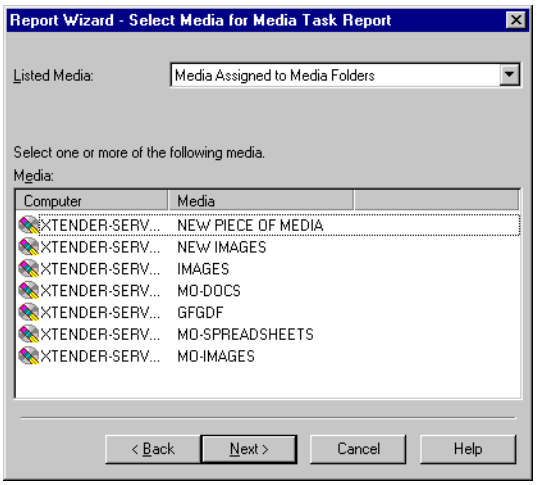
Figure 140. Report Wizard – Select Extended Drive(s) Page



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

2. Select the extended drive(s) for which you want to generate a report and then click Next. The Select Media for Media Task Report page appears.

Figure 141. Report Wizard – Select Media For Media Task Report Page



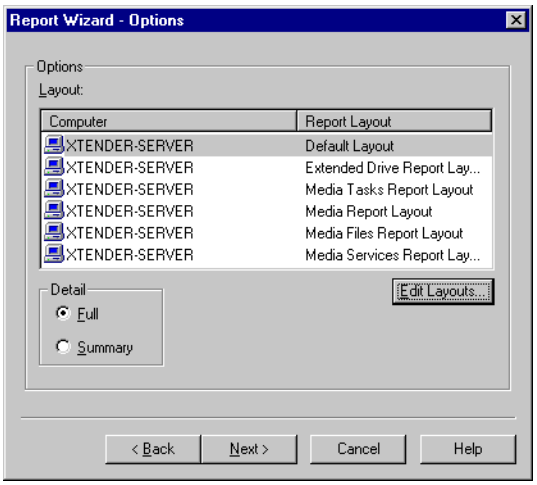
The Select Media for Media Task Report page lists all available media for which you can generate a report. It lists the Data Manager computer where the media is located and the name of the media.

3. From the Listed Media drop-down list, select one of the media types to narrow the number of media listed in the Media list and make it easier to find and choose media for the report.

4. Select the media for which you want to generate the report and then click Next. The Options page appears.

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 is still generated but contains no information for that media.

Figure 142. Report Wizard – Media Tasks Report Layout Options Page



5. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a selected layout, click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
6. Select the amount of detail you want on the report: Full or Summary.
7. Click Next. The Summary page appears.
8. Review the information in the Summary page.
9. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the report. For more information, see “Using RtfPad” on page 303.

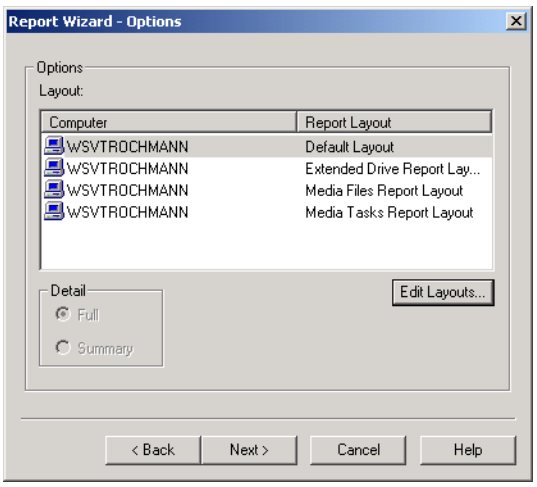
Product Registry Information Report

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

To run a Product Registry Information Report:

1. After you select the Data Manager computer(s) for which you want to generate a report and then click Next, the Options page appears.

Figure 143. Report Wizard – Product Registry Information Report Options Page



2. If there is more than one layout/computer listed, select the one you want to use for your report. To edit a layout, select the layout from the list and click Edit Layouts. For instructions, see “Report Layout Editor” on page 259.
3. Click Next. The Summary page appears.
4. Review the information in the Summary page.
5. If the information in the summary is correct, click Finish. The report appears in RtfPad. As with any information appearing in RtfPad, you can save, print, or email the report. For more information, see “Using RtfPad” on page 303.

Report Layout Editor

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

Data Manager also allows you to create and save new layouts on different Data Manager computers. These layouts are available for use any time a report is run for that Data Manager computer, regardless of whether the report is being run from that Data Manager computer or from a remote Data Manager computer.

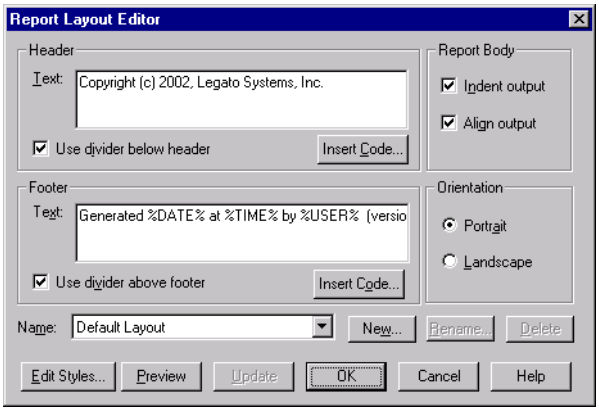
To customize report layouts:

1. You have the following choices:

   - If you are in the process of running a report and you want to edit an existing layout, select the layout on the Options page of the Report Generator Wizard and then click Edit Layouts.
   - If you are in the process of running a report and you want to create a new layout, on the Options page of the Report Generator Wizard, click Edit Layouts.
   - If you are not in the process of running a report, open the Tools menu and then select Report Layouts.

   The Report Layout Editor dialog box appears.

Figure 144. Report Layout Editor



2. You have the following choices:

   - Create a new layout. For more information, see "Creating a New Layout, " which follows.
   - Change the header or footer for a report layout. For more information, see “Changing Headers and Footers for Layouts” on page 261.
   - Edit layout styles. For more information, see “Editing Layout Paragraph Styles” on page 263.
   - Rename a layout. For more information, see “Renaming a Layout” on page 265.
   - Switch from one layout to another. For more information, see “Switching from One Layout to Another” on page 265.
   - Preview a layout. For more information, see “Previewing a Layout” on page 265.
   - Delete a layout. For more information, see “Deleting a Layout” on page 266.

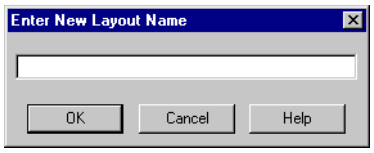
Creating a New Layout

Creating a layout is as simple as giving it a name. When creating a layout, remember that each layout should be identified by a descriptive name to make the layout easy to identify for use with your reports.

To create a new layout:

1. In the Report Layout Editor dialog box, click New. The Enter New Layout Name dialog box appears.

Figure 145. Enter New Layout Name Dialog Box



2. In the text box, type a name. Click OK. A new layout is created with that name and the default layout settings. To modify the default settings, see the following sections:
   - "Changing Headers and Footers for Layouts, " which follows
   - “Editing Layout Paragraph Styles” on page 263

Changing Headers and Footers for Layouts

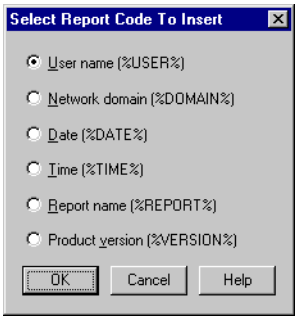
You can configure a customized header and footer for each report layout using the Report Layout Editor.

The header and footer can contain dynamic codes that retrieve specific values, such as date, time, user name, and domain, and write them directly into the header or footer. 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. Verify that the correct report appears in the Name drop-down list in the Report Layout Editor.
2. Click in either the Header Text box or the Footer Text box and type or edit the desired text.
3. To insert a dynamic code in the text, place the cursor in the Text box where you want the code value to appear. If you do not want to insert a dynamic code in the text, skip to step 7.
4. Click Insert Code under the appropriate text box. The Select Report Code to Insert dialog box appears.

Figure 146. Select Report Code To Insert Dialog Box



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

Table 26. Report Code Options

Option	Description
User name	Inserts the user name of the currently logged in Windows user
Network domain	Inserts the domain on which Data Manager is running
Date	Inserts the system date on which 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 Data Manager being used to generate the report

6. 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 where you want spaces to appear.

7. Choose whether to use a dotted line as a divider between the header or footer and the report body.

   - If you do not want a dotted line to separate the header from the report body, disable the Use divider below header check box. This option is enabled by default.
   - If you do not want a dotted line to separate the footer from the report body, disable the Use divider above footer check box. This option is also enabled by default.

8. You have the following choices:

- To preview the report layout, click Preview.
- To save changes and keep the Report Layout Editor dialog box open, click Update.
- To save changes and close the Report Layout Editor dialog box, click OK.

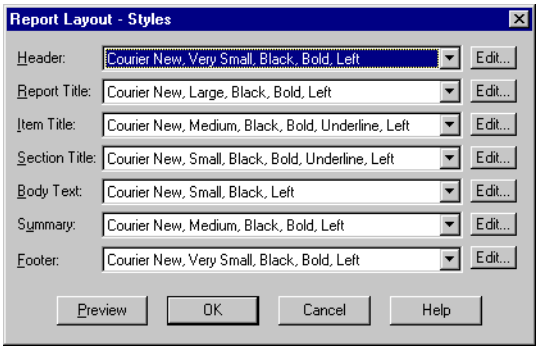
Editing Layout Paragraph Styles

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. Verify that the correct report appears in the Name drop-down list in the Report Layout Editor.
2. Click Edit Styles. The Report Layout - Styles dialog box appears.

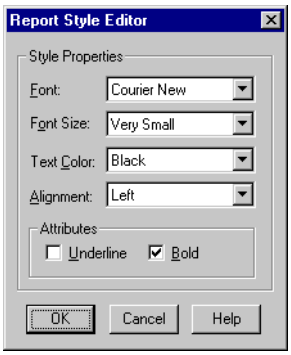
Figure 147. Report Layout - Styles Dialog Box



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

3. You have the following choices:
   - To use an existing style profile, select the profile from the drop-down list next to the paragraph type you want to change.
   - To create a new profile, click the Edit button to the right of profile drop-down list. The Report Style Editor dialog box appears.

Figure 148. Report Style Editor Dialog Box



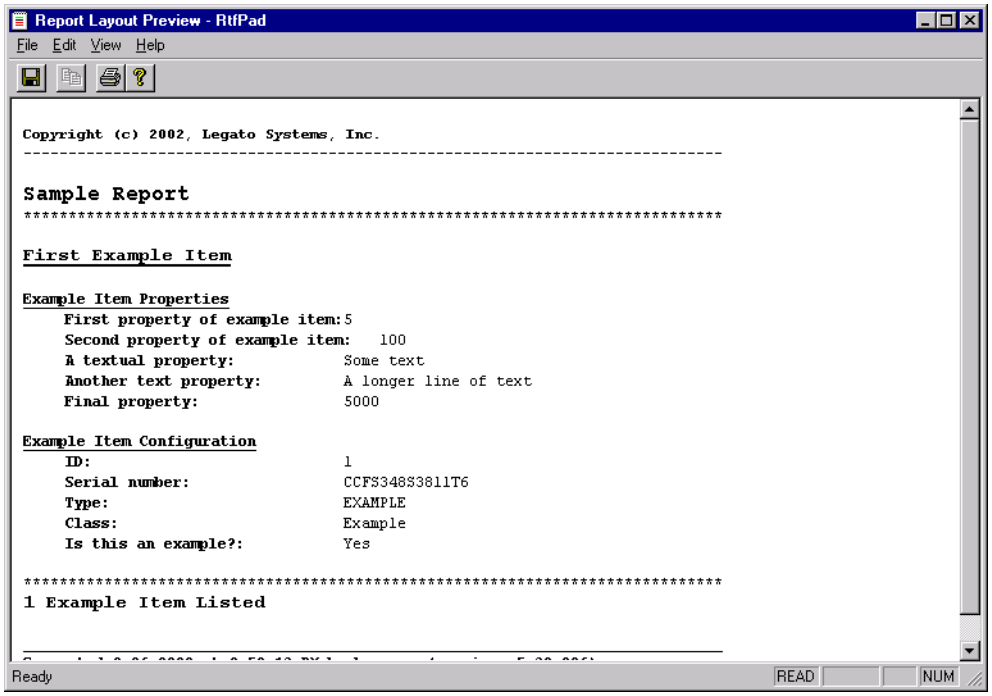
Select the desired characteristics for Font, Font Size, Text Color, and Alignment from the appropriate drop-down lists.

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

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 profile drop-down list.

4. 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 in RtfPad.

Figure 149. Report Layout Preview – Sample Report



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

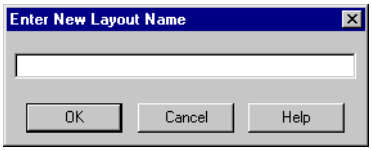
Renaming a Layout

If necessary, you can rename an existing custom layout.

To rename a layout:

1. In the Report Layout Editor dialog box, make sure that the correct layout appears in the Name drop-down list.
2. Click Rename. The Enter New Layout Name dialog box appears.

Figure 150. Enter New Layout Name Dialog Box

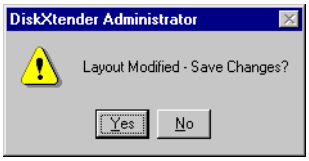


3. In the text box, type the new name.
4. Click OK. The new name appears in the Name text box in the Report Layout Editor dialog box.

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 or click New without clicking the Update button, Data Manager prompts you to save unsaved changes to the current layout.

Figure 151. Save Changes?



To save changes, click Yes. Or, to discard changes that you have made since the last time you clicked Update, click No.

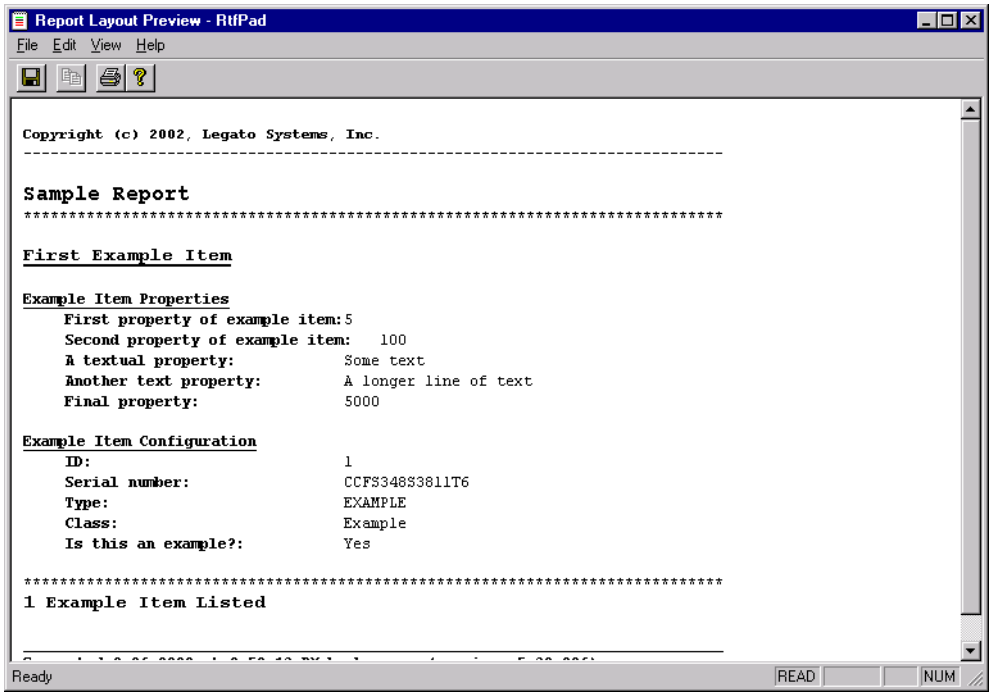
Previewing a Layout

You can preview a report layout so that you know what the report will look like before you run it.

To preview a layout:

1. In the Report Layout Editor dialog box, make sure the correct layout appears in the Name drop-down list.
2. Click Preview. A Report Layout Preview appears in RtfPad.

Figure 152. Report Layout Preview – Sample Report



3. When you finish, close the preview by selecting Exit from the RtfPad File menu.

Deleting a Layout

If you no longer need a custom report layout, you can delete it.

To delete a layout:

1. In the Report Layout Editor dialog box, make sure the layout you want to delete appears in the Name text box.
2. Click Delete. A confirmation message appears.
3. Click Yes.

Data Manager Backup and Recovery

7

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. ASM Data Manager contains several functions that can make creation and/or maintenance of your recovery plan easier. Data Manager also contains registry backup and meta-data export utilities that can help you restore Data Manager files and registry information, even when the problem is a minor one.

For more information, see the following sections:

- "Backing Up Your Data Manager System, " which follows
- “Restoring Your Data Manager System” on page 279

Backing Up Your Data Manager System

ASM Data Manager contains several utilities that allow you to effectively back up the most important aspects of your Data Manager system. There are three basic backups that you should perform in addition to regular third-party backups to ensure that you can restore your Data Manager system after a disaster or catastrophic system failure.

- Meta-data exports should be performed periodically in order to export Data Manager extended drive files and file tags for backup. For more information, see "Exporting File Meta-Data, " which follows.
- Copy media are media that are being used as copies, or backups, of original media on the Data Manager extended drive. If an original piece of media becomes unreadable, the copy of the media can be promoted to an original piece of media. For more information, see “Backing Up Media” on page 275.
- Data Manager system configuration is stored in registry settings. You can create a backup of your Data Manager system configuration using the repair disk utility, which saves a backup of the Data Manager registry settings. In the event of a Data Manager computer crash, you can then use the repair disk backup to restore the Data Manager configuration.

For “virtual” media such as Tivoli Storage Manager (TSM) and EMC Centera (EMC), the repair disk backup is especially critical because “virtual” media is defined through Data Manager configuration. In the event of system failure, you must restore that configuration to access (and restore, if necessary) files on the media.

For more information, see “Backing Up the Data Manager Configuration” on page 275.

Exporting File Meta-Data

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 Data Manager 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 Data Manager meta-data export feature provides an alternative solution when these problems occur.

Backup programs that are not “NTFS aware” suffer from performance problems when running with Data Manager. 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 many backup solutions that are “NTFS aware” may not be suitable for Data Manager because they do not back up (and restore) *all* NTFS data. A complete backup for an extended drive must include the following information:

- File names and metadata (for files managed by Data Manager)
- File data (for files that are *not* managed by Data Manager)
- File stream data
- Security information
- Extended attributes (additional metadata)

Since Data Manager stores its file tracking data in NTFS extended attributes, this data is critical to any backup and restore strategy. Many backup programs do not back up and restore this data, making them ineffective as disaster A Data Manager meta-data export set contains all necessary data for disaster recovery of a Data Manager extended drive. This feature provides a compact, high-speed export of any extended drive. Export sets contain different data depending on the type of file being exported:

Table 27. Types of Data Exported By Data Manager

Data Manager Files	Non-Data Manager 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 meta-data export sets *do not* include file data for Data Manager files (files that Data Manager 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 export. This optimization significantly reduces the size of export data sets and the time it takes to export large volumes.

Note: If you intend to use backups to restore files that have been accidentally deleted, we recommend you use non-rewritable media with your ASM system to ensure that delete transactions are not flushed out to media and that manual recovery of file data from media is possible if needed.

Once Data Manager has created an export set, this data must be archived (like any other backup data) for disaster recovery.

During a meta-data export, Data Manager inventories the files on an extended drive and sees that the appropriate information (file data, file tags, and all necessary additional data) is saved. The Data Manager meta-data export utility allows you to set a network path for the export data and choose to export either all files on the extended drive or only those files that have not yet been migrated to media. You can also set schedules for full and incremental exports. Until you set up an export schedule for the extended drive, automatic exports are disabled.

Incremental exports are generally used in between full export schedules to export files not previously exported by Data Manager. Incremental exports take significantly less time than full exports.

Meta-data exports can be forced or scheduled. You can also stop a meta-data export once it has started.

For more information, see the following sections:

- "Scheduling Meta-Data Exports, " which follows
- “Forcing a Meta-Data Export” on page 274
- “Stopping a Meta-Data Export in Progress” on page 274

Scheduling Meta-Data Exports

For the most complete export results, you should schedule your meta-data exports to occur when the fewest number of users are likely to be accessing Data Manager files. Most applications do not allow simultaneous access to open files, meaning that any files open at the time the export is run will be “locked” to the export process. Files that are locked when the export is run are skipped at that time but captured during the next export.

To configure meta-data exports:

1. Right-click on the extended drive that contains the meta-data you want to export and then select Properties from the shortcut menu. The Extended Drive Properties dialog box appears.
2. Click the Settings Tab.

Figure 153. Extended Drive Properties – Settings Tab

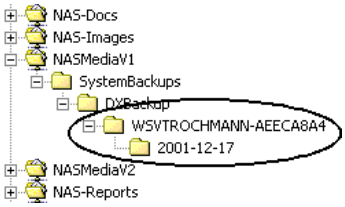
3. Click Meta-Data Export. The Extended Drive Meta-Data Export dialog box appears.

Figure 154. Extended Drive Meta-Data Export Dialog Box

4. In the UNC Path text box of the Location section of the Extended Drive Meta-Data Export dialog box, type in or browse to the folder in which you want to have your export sets saved.

   When your export is created, Data Manager creates 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 most recent export.

Figure 155. Export Folders Created in Explorer



   Each time a new full export is created, a new dated folder is created that *replaces* the old one. This means that only the current full and associated incremental exports are resident in the UNC path at any given time.

5. In the Scheduling section of the Extended Drive Meta-Data Export dialog box, select the frequency with which you want incremental meta-data exports created. This schedule is disabled by default and remains disabled until you set a schedule.

   The table below lists the scheduling options and descriptions available for incremental exports.

Table 28. Export Scheduling Options

Scheduling Option	Export Frequency	Settings to Configure
Disable	Never. This is the default.	None
Once	Once on the specified date and time. Note that the default date and time are today's date and 12:00AM, respectively. Because this default time likely occurs in the past, the export will not run unless you change the defaults to a date and/or time in the future.	Date Time
Daily	Every day at the specified time.	Time
Weekly	Every week on the specified days (Monday through Sunday) at the same time each day specified.	Time Days of the week
Monthly	Every month on the specified date (1st through 31st) and time.	Time Day of the month

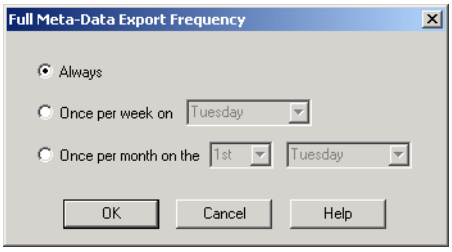
6. To force Data Manager to create a full meta-data export the next time the incremental export schedule is activated, enable the Force next export to be full (setting cleared upon completion) check box. Once completed, this setting is cleared. (Selecting this option does not affect any scheduled full exports described in the step below.)

7. To set a regular schedule for Data Manager to create full meta-data exports, enable the Perform at scheduled interval check box. (Selecting this option does not affect a forced full export described in the step above.)

   Note: Data Manager does not allow you to schedule full exports more frequently than incremental exports. For this reason the Perform at scheduled interval option may be grayed out, depending on your incremental export schedule.

8. If you enabled the Perform at scheduled interval option, click Full Export Frequency. The Full Meta-Data Export Frequency dialog box appears.

Figure 156. Full Meta-Data Export Frequency Dialog Box



Note: Data Manager does not allow you to schedule full exports more frequently than incremental exports. For this reason, the full export scheduling options in the Full Meta-Data Export Frequency dialog box may be grayed out, depending on your incremental export schedule.

9. You have three options:

   - Select Always to create a full meta-data export every time the incremental export schedule is active. If you select this option, Data Manager always creates a full export and never creates incremental exports.
   - Select Once per week on ____ to create a full meta-data export once per week on the day you select from the drop-down list. If you select this option, Data Manager creates a full export on the selected day, and creates incremental exports at the time(s) configured for the incremental export schedule.
   - Select Once per month on the ___ (1^{st} – 4^{th}) _____ (day) to create a full meta-data export once a month on the day of the month you select from the drop-down list. If you select this option, Data Manager creates a full export on the selected day, and creates incremental exports at the time(s) configured for the incremental export schedule.

   Full exports can often be time-consuming because a full export may include all files on the extended drive. Please keep this in mind when scheduling full exports.

   1 After setting your full export frequency schedule, click OK to save changes and return to the Extended Drive Meta-Data Export dialog box.

   2 To export only those files that have not yet been migrated to media, enable the Only export files that have not been migrated check box.

   3 When all meta-data export schedule settings are complete, click OK to return to the Extended Drive Properties Settings tab.

   4 Click OK to close the Extended Drive Properties dialog box.

Forcing a Meta-Data Export

Data Manager allows you to force a meta-data export whenever needed. Forcing a meta-data export is similar to running an incremental export using the Once option. All files that have not already been exported are exported at that time.

If there is no current export of the Data Manager extended drive, forcing a meta-data export forces a full export (essentially an incremental export of all files, because they have not been exported before). If an export of the Data Manager extended drive has already been created, forcing an export creates a true incremental export, capturing all files since the last export (either full or incremental) was run.

A forced meta-data export uses the folder specified in the UNC Path text box of the Extended Drive Meta-Data Export dialog box to save the export. You must have this path information entered in order to force an export.

To force a meta-data export:

1. Right-click the extended drive you want to back up and then select Force Meta-data Export from the shortcut menu. A message appears reminding you that a meta-data export may take a considerable amount of time for a large extended drive.
2. Click Yes to continue with the forced meta-data export. One of the following occurs:
   - If you have not configured a UNC Path in the Extended Drive Meta-Data Export dialog box, an error message appears.

Figure 157. Force Meta-data Export Error – No Path Defined

Click OK to close the message and return to Data Manager. Follow the *Scheduling Meta-Data Exports* instructions beginning on page 270 to set a UNC path for your export.

- If you have a location path configured, the export proceeds and the forced export is saved in the specified UNC path folder.

Stopping a Meta-Data Export in Progress

Data Manager allows you to stop a meta-data export after one has started. This function may be useful if a scheduled export begins at an inconvenient or inappropriate time, or if you forced an export and later determined it was going to take more time than could be allotted for the function.

When you stop a meta-data export in progress, the system finishes exporting the file it was on when the stop export command was issued, and retains whatever files were exported to that point. Any files not exported are captured during the next export.

To stop a meta-data export in progress:

1. Right-click on the extended drive with the export in progress and then select Abort Meta-data Export from the shortcut menu.
2. Click Yes on the confirmation message that appears. An additional message appears to confirm that the meta-data export was aborted.
3. Click OK to close the message and return to Data Manager.

Backing Up Media

You can back up the files on your media by creating a copy of each piece of media. In the event the original piece of media is lost or damaged, it may become necessary to replace the original using the copy. Copy media has the same label as the original it corresponds to, but it has a unique serial number. Copy media can be created for each piece of media that is allocated to an extended drive and appears in the Original node of the Available Media tree. You can create copy media of all media types except for NAS, EMC, TSM, CD-ROM, and DVD-ROM. For NAS media, we recommend that you use a third-party backup system. CD-ROM and DVD-ROM media are read-only.

There are two ways to create copy media:

- Use the Copy Media Manager.
- Assign the label copy media task.

For more information, see “Creating and Managing Copies of Media” on page 103.

Backing Up the Data Manager Configuration

You can create a backup of your Data Manager system configuration, which is stored in registry settings, using the repair disk utility. In the event of an Data Manager computer crash, you can then use the repair disk backup to restore the Data Manager configuration.

Note: For “virtual” media such as Tivoli Storage Manager (TSM) and EMC Centera (EMC), the repair disk backup is especially critical because “virtual” media is defined through Data Manager configuration. In the event of system failure, you must restore that configuration to access (and restore, if necessary) files on the media.

Data Manager automatically updates the repair disk backup after the following actions:

- Every 15 minutes
- When the service starts or stops
- When an extended drive is created or deleted
- When a media service is added or deleted
- When changes are made to the Service Properties (and OK or Apply is clicked)
- When the repair disk backup location is changed (through the Administrator)

You can set the location where the repair disk is automatically saved, set a location for a copy of the repair disk for the current Data Manager configuration, or restore Data Manager 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 Data Manager Configuration” on page 280.

For more information, see the following sections:

- "Setting the Repair Disk Backup Location, " which follows
- “Copying the Repair Disk Backup” on page 278

Setting the Repair Disk Backup Location

The Repair Disk Wizard allows you to designate where Data Manager stores the repair disk backup it creates. In order to ensure fail-proof disaster recovery, the backup should be copied to a location separate from your Windows server files. Ideally, you should copy it to a different volume.

Note: The repair disk backup file should also be saved regularly to an additional location. Besides allowing for an additional backup of the repair disk file, this also allows for “versioning” of repair disk backup copies, in the event the last saved repair disk is corrupt or otherwise unusable for system restore.

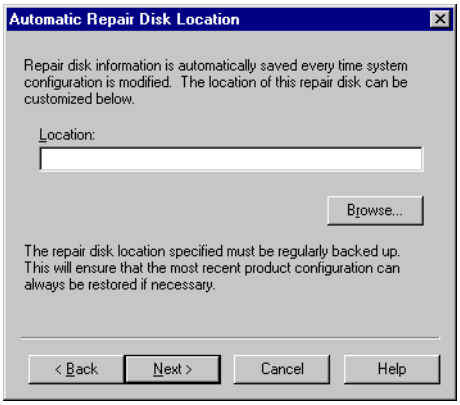
To set the repair disk location:

1. From the Tools menu, select Repair Disk. The Repair Disk Wizard appears.

Figure 158. Repair Disk Wizard – Introduction Page

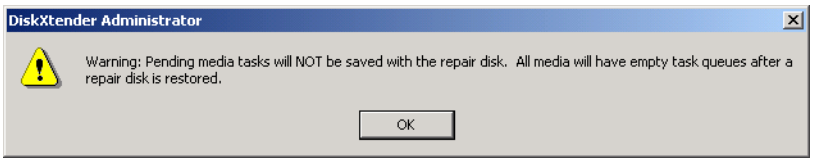
2. Choose Set the automatic repair disk location and then click Next. The Automatic Repair Disk Location page appears.

Figure 159. Repair Disk Wizard -- Automatic Repair Disk Location Page



3. In the Location text box, enter the UNC path to which the repair disk backup should be saved. To browse to a directory, click Browse.
4. Once you have entered a path in the Location text box, click Next. The Summary page appears.
5. Review the information in the summary.
6. If the information in the summary is correct, click Finish to complete the wizard. A warning message appears.

Figure 160. Repair Disk Media Task Warning Message



7. Click OK. 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 Repair Disk Backup

In addition to designating where the repair disk backup is stored, the Repair Disk Wizard also allows you to store a copy of the current registry settings at will. We highly recommend regularly creating a copy of the repair disk, in order to be sure you have a usable copy of your system configuration. In addition, because the normal repair disk is saved at a minimum of every 15 minutes, if some corruption took place before the new repair disk was saved, the primary copy of your repair disk file may be unusable for system restoration.

When you use the Repair Disk Wizard to set a location for a copy of the current configuration, Data Manager creates a copy of the Data Manager configuration as soon as the wizard is completed. The copy is a one-time backup and does not update regularly.

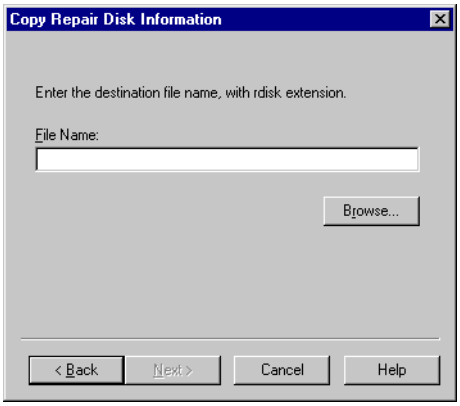
Setting a location for a copy of the current configuration does not affect the location for automatic backup. Data Manager continues to back up Data Manager registry information to the location set for automatic repair disk creation. **To copy the current repair disk backup:**

1. From the Tools menu, select Repair Disk. The Repair Disk Wizard appears.

Figure 161. Repair Disk Wizard – Introduction Page

2. Select Copy current repair disk information to another location and then click Next. The Copy Repair Disk Information page appears.

Figure 162. Repair Disk Wizard -- Copy Repair Disk Information Page



3. Enter a directory path and file name in the File Name text box. To browse to a directory and/or file, click Browse.
4. Once you have entered a path in the File Name text box, click Next. The Summary page appears.
5. Review the information in the summary.
6. If 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 copy is complete.

Restoring Your Data Manager System

In the event of catastrophic system failure, the same ASM Data Manager utilities that allow you to create exports of your extended drive files and backups of your registry settings also allow you to restore those exports and backups to your Data Manager system. The restore functions for the repair disk utility and the meta-data export 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 export files and registry configurations in the event you ever need to restore your Data Manager system after a disaster or catastrophic system failure.

Note: If you are using the EMC Centera media service with your Data Manager system, additional recovery steps related to the EMC Centera Content Network Repository are required. Please contact StorageTek technical support at 1-800-678-4430 for assistance when restoring Data Manager.

When a system failure or disaster occurs, the following steps should be taken in order to most effectively restore your Data Manager system, Data Manager files, and Data Manager configurations.

To restore your Data Manager system:

1. If necessary, reformat the Data Manager computer hard drive.
2. Reinstall Windows NT/2000.
3. Reinstall and configure the necessary media service software. For more information on media services, see the *Setting up Media Services* chapter of the *ASM Data Manager Getting Started Guide*.
4. Reinstall Data Manager. For instructions, refer to the *Installing Data Manager* chapter of the *ASM Data Manager Getting Started Guide*.
5. Restore the repair disk (Data Manager registry) file. For instructions, see "Restoring Data Manager Configuration, " which follows.
6. Run the Change Extended Drive Serial Number Wizard (which automatically appears if the change is required – otherwise, continue with next step). For more information, see “Changing the Extended Drive Serial Number” on page 283.
7. Restore any third-party backups you may have made.
8. Restore the extended drive from the meta-data export. For instructions, see “Restoring the Meta-Data Export” on page 284.
9. If your meta-data export contains only files that had not been migrated, you also need to restore files that were migrated to media. (If the Only export files that have not been migrated check box is enabled on the Extended Drive Meta-Data Export dialog box, meta-data exports contain only files that have not been migrated and do not contain file tags for files that are on media. For more information, see “Scheduling Meta-Data Exports” on page 270.) To restore files from media, run the file restore media task for each piece of media. For more information, see “Restoring Files from Media” on page 77.

Note: In addition, if you are restoring files using a third-party backup, and you have any non-finalized DVD-R media in your system, you should plan to assign the file restore media task to that media, to ensure that all appropriate file data is copied back to the extended drive after the system is restored.

These steps should be sufficient to get your Data Manager system up and running after a disaster or system failure. As always, if you run into any problems, contact your technical support representative for assistance.

Restoring Data Manager Configuration

When problems occur on your Data Manager computer, you can restore your Data Manager registry configuration by using the Repair Disk Wizard to restore the backup copy of the registry settings after you have reinstalled all of the necessary software components.

Note: Attempting to restore a repair disk file from a version of Data Manager other than the one currently installed will fail. Be sure that you are restoring a repair disk file from the same version and build of Data Manager you are currently running.

Note: Depending on what problems occurred to cause you to have to restore your Data Manager system, you may be prompted to run the Change Extended Drive Serial Number Wizard before restoring the Data Manager repair disk. If the wizard appears, we recommend that you click Cancel and run the repair disk restore first.

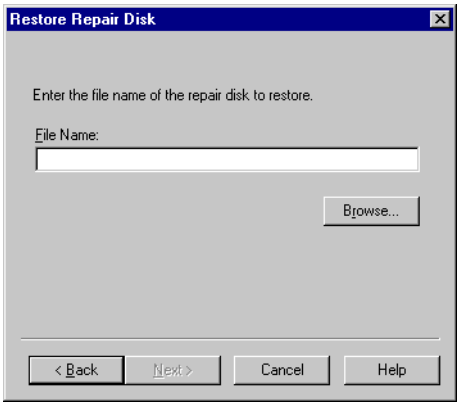
To restore the repair disk configuration:

1. From the Tools menu, select Repair Disk. The Repair Disk Wizard appears.

Figure 163. Repair Disk Wizard – Introduction Page

2. Choose Restore service configuration from a repair disk and click Next. The Restore Repair Disk page appears.

Figure 164. Repair Disk Wizard -- Restore Repair Disk Page



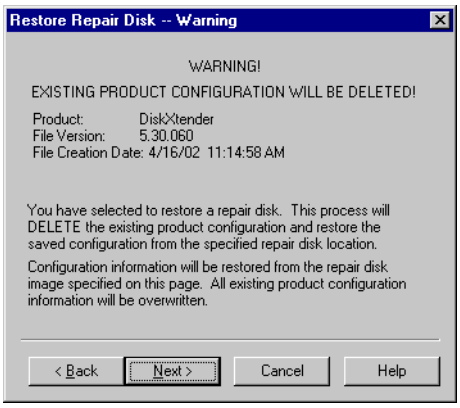
3. Enter the directory path and file name for the repair disk file in the File Name text box. To browse for a file, click Browse.

   Note: Be sure that you are restoring a repair disk file from the same version and build of Data Manager you are currently running.

Attempting to restore a repair disk file from a version of Data Manager other than the one currently installed will fail.

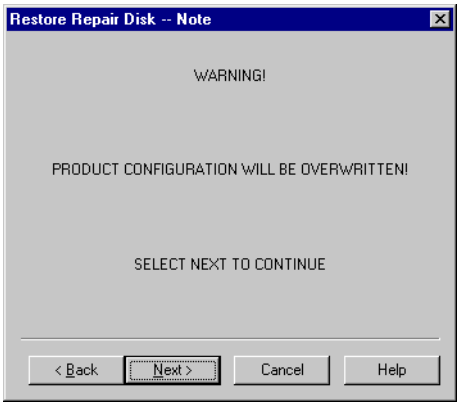
4. Click Next. The Restore Repair Disk – Warning page appears.

Figure 165. Repair Disk Wizard -- Restore Warning Page



5. Read the Restore Repair Disk – Warning page carefully.
6. When you finish, click Next. The Restore Repair Disk – Note page appears.

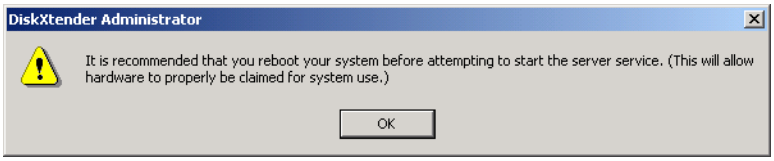
Figure 166. Repair Disk Wizard -- Restore Note Page



This page provides a reminder that the current product configurations will be overwritten with the saved configuration from the specified repair disk location.

7. To continue, click Next. The Summary page appears.
8. Review the information in the summary carefully.
9. If the information in the summary is correct, click Finish to complete the wizard. The repair disk information is copied, and the backup Data Manager configuration is restored to your machine. Then a message appears to prompt you to restart the Data Manager computer.

Figure 167. Restore Repair Disk



10. Click OK, and then restart the Data Manager computer. After restart, if necessary, Data Manager may prompt you to run the Change Extended Drive Serial Number Wizard.

Changing the Extended Drive Serial Number

Data Manager 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 Data Manager (identified by the old serial number) appears as OFFLINE in the Administrator, indicating that the extended drive cannot be found.

The Change Extended Drive Serial Number Wizard allows you to view all OFFLINE extended drives and redefine volume serial numbers for each drive. When completed, this wizard resets the Data Manager configuration to recognize “old” extended drives under the “new” volume serial number.

This wizard is typically used after restoring an Data Manager repair disk. In most cases, the extended drive has been lost and reformatted before restoring the Data Manager repair disk. Although the repair disk restores all pre-existing configuration information for Data Manager, it has no way of knowing what drives have been reformatted or what their new serial numbers are.

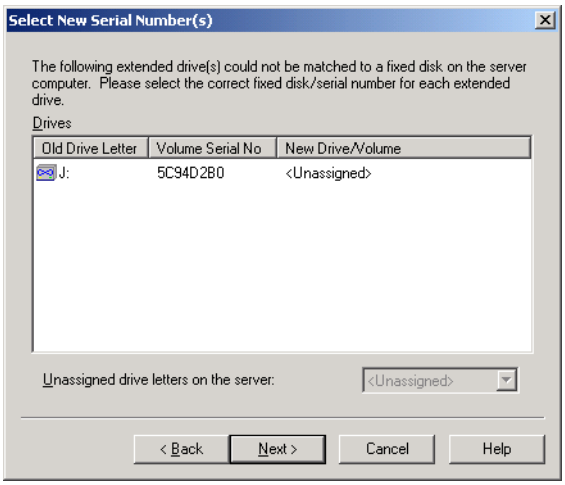
Using the Change Extended Drive Serial Number Wizard, you may select new volume serial numbers from a drop-down list containing all unused volume serial numbers on the Data Manager computer.

Be advised, there is no way to manually start the Change Extended Drive Serial Number Wizard. The wizard automatically starts when the Data Manager service starts and determines that one or more extended drives are offline due to a serial number change.

To change an extended drive's serial number:

1. When the wizard starts, the Welcome page appears. Read the information in the Welcome page and click Next. The Select New Serial Number(s) page appears.

Figure 168. Change Extended Drive Serial Number Wizard -- Select New Serial Number(s) 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 Data Manager computer.

2. Select the drive with the serial number you want to change.
3. From the drop-down list of drive letters, select the drive letter (and new serial number) to which you want to assign the original serial number.
4. Click Next. The Summary page appears.
5. Review the information in the summary.
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. When the process is complete, you are returned to the Administrator and your extended drive appears in the tree view.

Restoring the Meta-Data Export

If you have created meta-data exports, Data Manager allows you to restore the exported files. If it is necessary, you can restore extended drive files exported from a different extended drive in the event that the entire structure of your Data Manager system had to change to accommodate recovery.

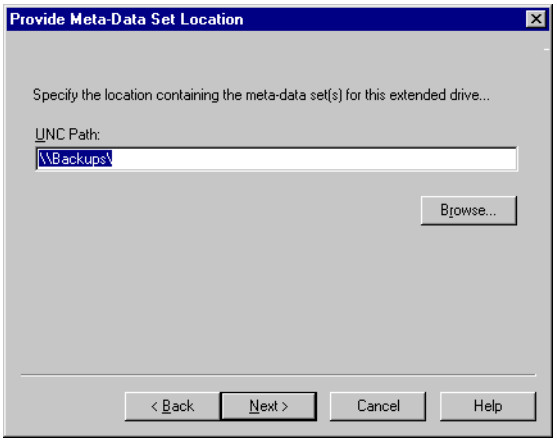
Be advised that a meta-data import does not overwrite files created on the extended drive since the export was created, and as such, does not restore

files from an export 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 meta-data import/export function except as a disaster recovery tool.

To restore the extended drive from a meta-data export:

1. Right-click on the extended drive you want to restore and select Meta-data Import from the shortcut menu. The Extended Drive Meta-Data Import Wizard welcome page appears.
2. Click Next. The Provide Meta-Data Set Location page appears with the meta-data export folder location listed in the UNC Path text box by default.

Figure 169. Extended Drive Meta-Data Import Wizard -- Provide Meta-Data Set Location Page

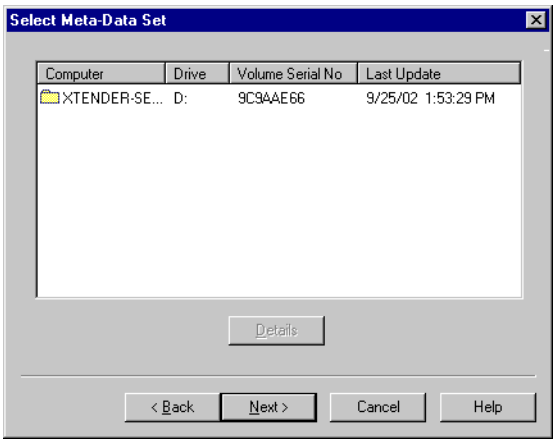


3. To change the export from which the extended drive is restored, enter the path in the UNC Path text box. To browse to the directory, click Browse.

   Note: You must select the same UNC path that you specified for the meta-data export. ***Do not*** attempt to specify the Data Manager-created meta-data export folder (identified by date) for the restore. The Extended Drive Meta-Data Import Wizard finds the most recent export(s) automatically and allows you to select the correct one.

4. When you finish selecting the UNC path for the export, click Next. The Select Meta-Data Set page appears.

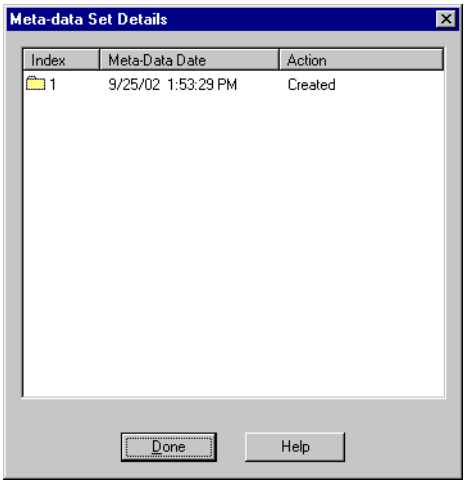
Figure 170. Extended Drive Meta-Data Import Wizard -- Select Meta-Data Set Page



Since you can create export sets for more than one extended drive and maintain them in the same UNC path, you may have multiple export sets from which to choose. However, Data Manager only retains the most recent exports for each extended drive, so only one export set appears within each meta-data export folder.

5. To view the folder and date information for an export set, highlight the appropriate export set and click Details. The Meta-Data Set Details dialog box appears.

Figure 171. Meta-data Set Details Dialog Box



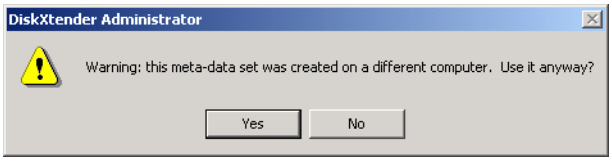
6. When you finish viewing the details, click Done to return to the Select Meta-Data Set page.

7. When you finish selecting a meta-data set, click Next. One of the following occurs:

   - If you are restoring a meta-data export to a *different* extended drive than the one from which the export 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 172. Meta-Data Restore Verification Message



Click Yes to continue with the restore. The Summary page appears.

- The Summary page appears.

8. Review the information in the summary.
9. If it is correct, click Finish. Your extended drive files are restored to the point at which the export was created.

There are two points to keep in mind about migrated files when restoring a meta-data export.

First, if the Only export files that have not been migrated check box is enabled on the Extended Drive Meta-Data Export dialog box, your meta-data exports will contain only files that have not been migrated and will *not* contain file tags for files that are on media. If this is the case with the export you are restoring, you will also need to restore files that were migrated to media. To restore files from media, run the file restore media task for each piece of media. For more information, see “Restoring Files from Media” on page 77.

Second, if your meta-data export contains both migrated and non-migrated files, the files in the export that had been migrated to media will not be restored unless that media is in the media folder at the time the export is restored.

For more information on scheduling meta-data exports and setting the associated options, see “Scheduling Meta-Data Exports” on page 270.

After restoring your Data Manager system, you may want to run one or more of the available Data Manager reports to make sure that your system has been returned to the appropriate state and that Data Manager files, system registry, and media have been reset to their proper configuration. For more information, see “Running Data Manager Reports” on page 245.

Remotely Administering Data Manager

8

You can administer the ASM Data Manager system both from the computer on which Data Manager is installed and from remote computers. You can use the Administrator function that comes with a full installation of Data Manager to administer other Data Manager computers, or you can install the Remote Administrator, which simply provides you with the Administrator interface and the registration capability to attach remotely to one or more networked Data Manager computers. The remote administration function is the same whether you use an Data Manager Administrator (full installation) or a Remote Administrator.

The Data Manager computer(s) you plan to manage must be the same version or higher as the Administrator you are using (either a Remote Administrator, or a full Data Manager Administrator). For example, a Data Manager version 5.4 SR1 installation can be remotely administered using a version 5.4 or a version 5.40.102 Administrator. However, a version 5.40.102 Administrator will ***not*** be able to connect to a version 5.4 (lower version) Data Manager service.

This chapter covers installation of the Remote Administrator, and briefly outlines procedures for starting the Remote Administrator for the first time. It also covers registering a Data Manager computer so that you can remotely administer it, and connecting to and disconnecting from Data Manager computers. For more information, see the following sections:

Before Installing the Remote Administrator

Before you install the Remote Administrator, you need to consider the following requirements:

Operating System Requirements

The ASM Data Manager Remote Administrator requires one of the following operating systems:

- Windows NT 4.0 with Service Pack 6a, or
- Windows 2000 with Service Pack 2 or 3
- Windows XP

Consult your Windows documentation for information on installing the operating system.

Windows Security

Remote administration of Data Manager computers works through a Remote Procedure Call (RPC) connection that enables communication between a remote Data Manager Administrator and the Data Manager computer. Security for that connection is managed by managing the membership of the local domain Administrators group and the DXAdministrators group on the Data Manager computer. To administer the Data Manager functions through a remote installation of the Data Manager Administrator, you must be a member of the DXAdministrators group on the Data Manager computer. To administer the Data Manager service through a remote installation of the Data Manager Administrator, you must be a member of the local Administrators group on the Data Manager computer. For more information, refer to the *Planning Your Data Manager System* chapter of the *ASM Data Manager Getting Started Guide*.

In addition, for your convenience, the Remote Administrator setup wizard allows you to install the Remote Administrator on multiple computers at once, provided those computers are visible on your network and you are a member of the local Administrators group on those computers. To take advantage of this feature, you may want to determine which computers are to have the Remote Administrator installed on them and make sure you have administrative privileges on those machines before you run the setup wizard. This will enable you to run the installation only once rather than multiple times.

Clustering

You can install the Remote Administrator in either an active/passive or active/active clustered environment. In both environments, you must register each computer you want to remotely administer on both nodes once the installation is complete.

If you choose to install the Remote Administrator in an active/passive clustered environment, install the program on the Primary server. Once the installation is replicated to the Secondary server, register each computer you want to remotely administer on both the Primary server and the Secondary server.

If you choose to install the Remote Administrator in an active/active clustered environment, select the node names as the target computers for install, not the virtual server names.

For more information, see the *Clustering* appendix in the *ASM Data Manager Getting Started Guide*.

Installing the Remote Administrator

For Remote Administrator workstations connecting to a Data Manager computer, a full Data Manager setup is not necessary. Connecting workstations need access to the Administrator only. A Remote Administrator installation sets up the Administrator interface as well as online help on the computer.

To install the Remote Administrator:

1. Exit all applications on the computer(s) on which you want to install the Remote Administrator. The Remote Administrator setup wizard may not be able to write to all necessary files if other software is running.
2. Insert the ASM CD-ROM into the drive.
3. From the Start menu, select Run. The Run dialog box appears.
4. You can either browse to the following file or type the path in the Open text box:

   D:\DX2000.XXX\DISKXTENDER REMOTE ADMINISTRATOR\SETUP.EXE

   (In this path, `D` represents the drive holding the setup CD-ROM and *`XXX`* represents the ASM version number.)
5. Once the file/path appears in the Open text box, click OK. Data Manager Remote Administration setup is initiated (which may take up to two minutes), and the Installation page appears. The Installation page briefly describes the installation process.
6. Click Next. The Installation Options page appears.

Figure 173. Remote Administrator Setup Wizard -- Installation Options Page

7. Select Install new product and then click Next. The License Agreement page appears.

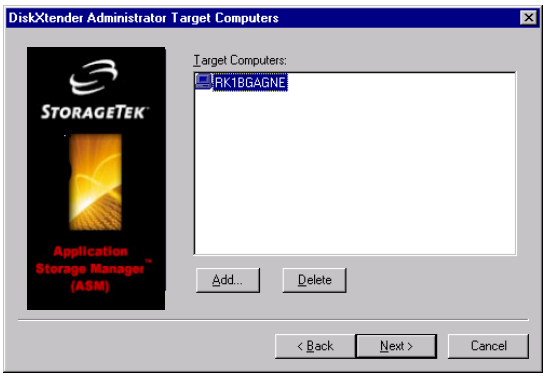
Figure 174. Remote Administrator Setup Wizard -- License Agreement Page

8. You must accept the terms of the license agreement before you can proceed with the installation. Scrolling to the bottom of the agreement allows you to enable the Accept terms of agreement check box. Check the box and click Next. The Registration page appears.

Figure 175. Remote Administrator Setup Wizard -- Registration Page

9. Enter your name and the name of your organization and then click Next. The Target Computers page appears.

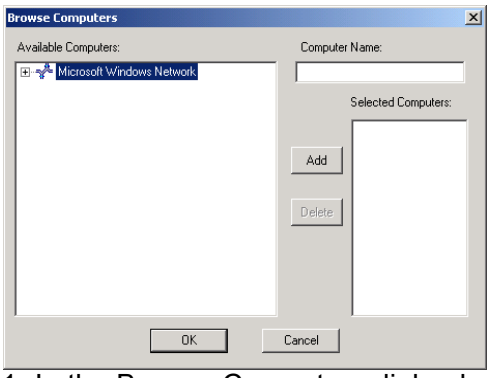
Figure 176. Remote Administrator Setup Wizard -- Target Computers Page



10. You have the following choices:

    - To install the Remote Administrator only on the computer listed in the Target Computers list, click Next. The Summary page appears.
    - To install the Remote Administrator on other computers in addition to the one listed in the Target Computers list, click Add. The Browse Computers dialog box appears.

Figure 177. Browse Computers Dialog Box



11. In the Browse Computers dialog box, you have two choices:

    - Under Available Computers, navigate to and select the computer on which you want to install the Remote Administrator and then click Add to add the computer to the Selected Computers list.
    - In the Computer Name text box, type in the name or the IP address of the computer on which you want to install the Remote Administrator and then click Add to add the computer to the Selected Computers list.

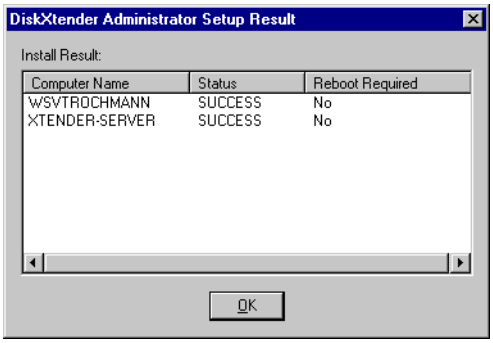
    Repeat this step for each additional computer on which you want to install the Remote Administrator. When you finish selecting target computers, click OK. You are returned to the Select Target Computers page. Click Next. The Summary page appears.

12. Verify the accuracy of the information in the summary.
13. If all information is correct, click Finish. Remote Administration Setup copies all program files onto the system, and adds Remote Administrator entries and the program group to the system configuration for each target computer selected. A progress bar displays the status of the operation.

    When the installation is complete, one of the following occurs:

    - If you installed the Remote Administrator on one or more remote computers (in addition to or instead of the local computer), the ASM Administrator Setup Result dialog box appears, listing the installation results for each computer you specified.

Figure 178. Setup Result Dialog Box



Take note of any computers that need to be restarted (or computers on which the installation failed) and then click OK. Be sure to restart each computer on which it is required before you start the Remote Administrator.

- If you installed the Remote Administrator on the local computer, a message appears, indicating that the Remote Administration installation has been successfully completed. Click Start to close the Remote Administration Setup wizard and open the Administrator, or click Exit to close the Remote Administration Setup wizard without starting the Administrator.

Starting the Remote Administrator the First Time

Because the Remote Administrator functions as an interface for Data Manager services installed on other machines, you must register the other computers through the Administrator in order to use the remote functionality.

To start the Remote Administrator:

1. From the Start menu, select Programs, ASM Administrator, and then Administrator. The first time you start the Remote Administrator, a

message appears prompting you to register a Data Manager computer to the Remote Administrator.

Figure 179. Register a Computer? Message

2. You have the following choices:

   - To close the message box, but leave the empty Administrator window open, click No.
   - To begin registering computers, click Yes. For more information and detailed instructions on registering Data Manager computers, see "Registering a Computer for Remote Administration, " which follows.

Registering a Computer for Remote Administration

You can administer ASM Data Manager both from the computer on which Data Manager is installed and from remote computers. You can use the Administrator function that comes with a full installation of Data Manager to administer other Data Manager 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 Data Manager computer. Only computers where the same or higher version of Data Manager is currently installed can be registered.

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

You can register Data Manager computers either using the auto-detect function or by adding the Data Manager computer manually by browsing to it. For procedures, see "Registering Computers Using Auto-Detect, " which follows, or “Registering Computers Manually” on page 298.

Registering Computers Using Auto-Detect

For large systems with several Data Manager computers, the manual registration process is unwieldy since you must browse to and select each computer on the network. The Auto-Detect Wizard allows you to detect and

select all currently running Data Manager services on the network without browsing the system to find individual Data Manager computers.

Note: The auto-detect function will only detect Data Manager installations whose version matches that of the Administrator you are running. To register a Data Manager service running a higher version than the Administrator, you must register the computer manually.

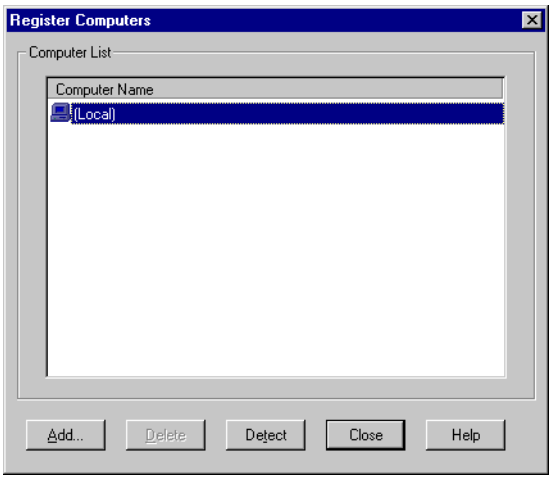
To register Data Manager computers using the Auto-Detect Wizard:

1. From the Service menu in the Administrator in which you want to register the computer(s), select Register, or click the Register Computer button on the toolbar.

Figure 180. Register Computer Button

The Register Computers dialog box appears.

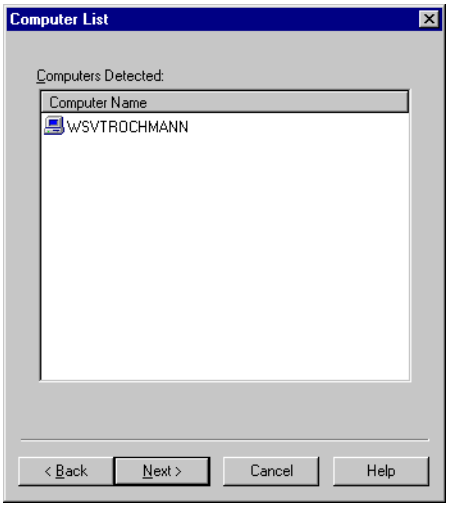
Figure 181. Register Computers Dialog Box



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

2. Click Detect to start the Auto-Detect Wizard. The Introduction Page appears.
3. Read the Introduction and click Next. The Computer List page appears.

Figure 182. Auto-Detect Wizard -- Computer List Page



The Auto-Detect Wizard detects all computers on which Data Manager is installed and where the Data Manager service is actively running.

Note: The Auto-Detect Wizard does not detect Data Manager computers that have been powered off or where the Data Manager service has been stopped, or where the Data Manager version does not match that of the Administrator you are running.

4. Select the computer(s) you want to register and click Next.

   Note: If a computer that you want to register does not appear in the Computers Detected list, you need to register the computer manually. See “Registering Computers Manually” on page 298.

5. Review the summary to make sure the computers you want to register are listed.

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

7. 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. Then click Yes on the confirmation message that appears.

8. Once the computers you want to remotely administer appear in the Register Computers dialog box, click Close. The Administrator attempts to connect to all registered Data Manager computers. All registered computer name(s) appear in the Computer drop-down list located directly beneath the menu bar in the Administrator, and in the tree view of the Administrator window.

The Administrator can be used to manage the Data Manager service on all registered and connected Data Manager computers. You can switch between registered computers by selecting different computer names from the

Computer drop-down list or by selecting the computers in the tree view of the Administrator.

Registering Computers Manually

If the Auto-Detect Wizard does not detect a Data Manager computer you want to remotely administer, or if you want to select the computers yourself, you can register them manually. In addition, if you want to register a Data Manager computer that is running a higher version of the service than that of the Administrator, you will need to register the computer manually.

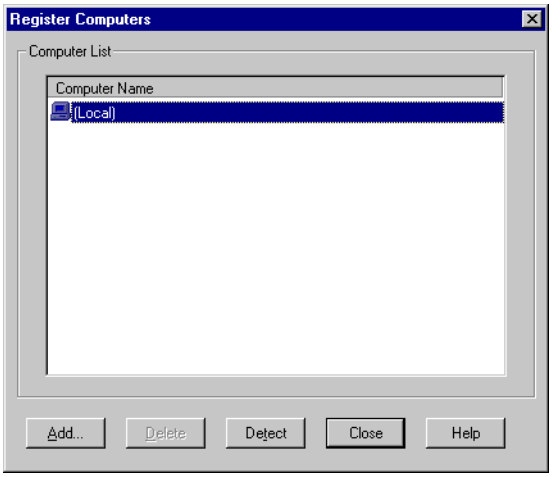
To manually register a Data Manager computer:

1. From the Service menu in the Administrator in which you want to register the computer(s), select Register, or click the Register Computer button on the toolbar.

Figure 183. Register Computer Button

The Register Computers dialog box appears.

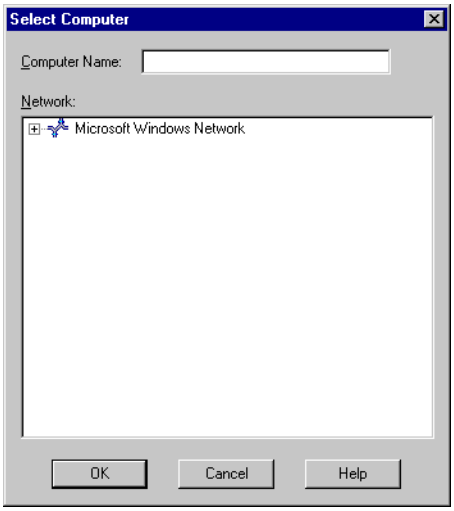
Figure 184. Register Computers Dialog Box



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

2. Click Add. The Select Computer dialog box appears.

Figure 185. Select Computer Dialog Box



The Select Computer dialog box contains a list of machines on the current network. Data Manager must be installed on the remote computer before it can be registered for remote administration.

3. You have the following choices:

   - Select the Data Manager computer you want to register and click OK.
   - Double-click the computer you want to register.

   The Register Computer dialog box appears, listing the selected computer.

4. Repeat steps 2 and 3 for each computer you want to register.

5. If you inadvertently list a computer you do not want to use as a Data Manager service, 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 Data Manager computers. All registered computer name(s) appear in the Computer drop-down list located directly beneath the menu bar in the Administrator, and in the tree view.

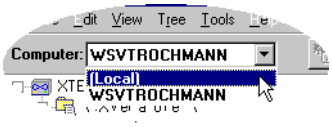
The Administrator can be used to manage the Data Manager service on all registered and connected Data Manager computer(s). You can switch between registered computers by selecting different computer names from the Computer drop-down list or by selecting the computers in the tree view of the Administrator.

Connecting to Data Manager Computers

When the Administrator is opened, it attempts to connect to all registered ASM Data Manager computers (including the local computer for full installations of Data Manager). Once these connections have been made, the window displays information pertaining to each Data Manager service.

The Administrator allows you to switch easily between registered Data Manager computers by selecting the computers in the tree view, or by selecting different computers from the Computer drop-down list.

Figure 186. Computer Drop-Down List



Remember, to successfully connect to an Data Manager computer in order to administer it, you must be a member of the DXAdministrators group on the computer you want to administer.

Note: If you are connecting to a higher version of Data Manager than that of the Administrator, you will receive a warning message noting the difference.

Disconnecting from a Data Manager Computer

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

To disconnect from the active Data Manager computer:

1. In the tree view of the Administrator, select the computer/extended drive from which you want to disconnect.
2. From the Service menu, select Disconnect, or click the Disconnect toolbar button.

Figure 187. Disconnect Toolbar Button

Data Manager removes the selected computer's components from the tree view, and the computer is listed with a status of (Disconnected).

Reconnecting to a Data Manager Computer

Disconnected Data Manager computers appear in the tree view of the Administrator with a status of `(Disconnected)`. Reconnecting Data Manager computers re-displays their configured extended drives and extended drive components so that you can administer them.

To reconnect to a Data Manager computer:

1. In the tree view of the Administrator, select the computer to which you want to connect.

1. From the Service menu, select Connect. or click the Connect toolbar button.

Figure 188. Connect Toolbar Button

Data Manager connects to the selected computer, and the computer's Data Manager components appear in the tree view of the Administrator so that you can administer them.

Using RtfPad

A

Reports and event logs all appear in RtfPad. You can use RtfPad to save, print, and email logs, reports, and Event Viewer snapshots. You can also configure RtfPad to display event logs in a black-and-white interface, or with color to contrast errors and warnings from other events. When you encounter system errors, RtfPad allows you to easily find and view descriptions of the errors. For more information, see the following:

Saving in RtfPad

You can save a log, report, or Event Viewer snapshot for future reference.

To save in RtfPad:

1. From RtfPad’s File menu, select Save As. The Save As dialog box appears.
2. Navigate to the location where you want to save the file.
3. In the File name text box, specify a file name.
4. From the Save as type drop-down list, select the file format in which you want to save the file.
5. Click Save.

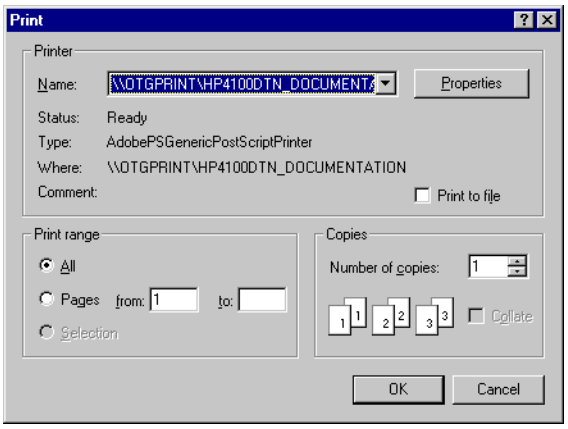
Printing in RtfPad

You can print a log, report, or Event Viewer snapshot for future reference.

To print in RtfPad:

1. From the File menu, select Print, or press <CTRL>+P. The standard Windows Print dialog box appears.

Figure 189. Print Dialog Box



2. From the Name list, select the printer you want to use.
3. In the Number of copies text box, specify the number of copies you want to print.
4. Make any other print setting selections and then click OK. The file is sent to the selected printer.

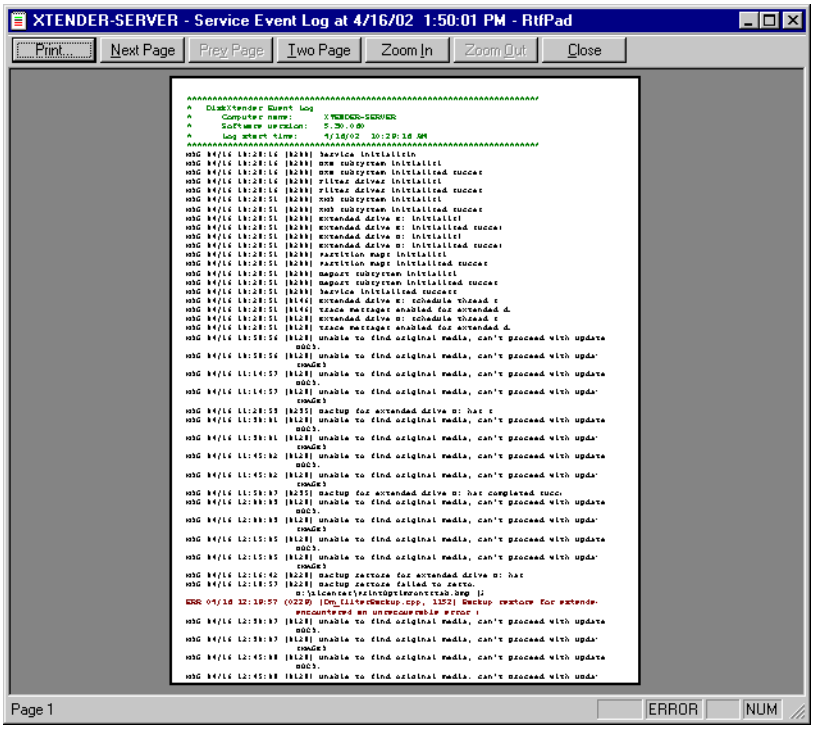
Previewing and Printing in RtfPad

You can print a log, report, or Event Viewer snapshot for future reference, and you can preview it before printing.

To preview and print in RtfPad:

1. From the File menu, select Print Preview. The text is displayed as it would appear when printed.

Figure 190. Print Preview in RtfPad



2. You have the following choices:
   - To navigate to the next or previous page, click Next Page or Prev Page.
   - To display two pages at a time, click Two Pages.
   - To display one page at a time, click One Page.
   - To zoom in on or zoom out, click Zoom In or Zoom Out.
   - To close the print preview without printing, click Close.
3. When you are ready to print the text, click Print.

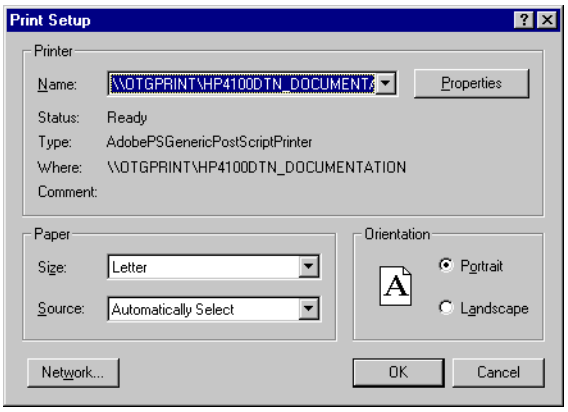
Setting up Printing in RtfPad

You can configure how a log, report, or Event Viewer snapshot is printed from RtfPad.

To set up printing in RtfPad:

1. From the File menu, select Print Setup. The Print Setup dialog box appears.

Figure 191. Print Setup Dialog Box



2. From the Name list, select the printer that you want to use as the default printer.
3. Select the default paper size, source, and orientation.
4. Make any other print setting selections and then click OK.

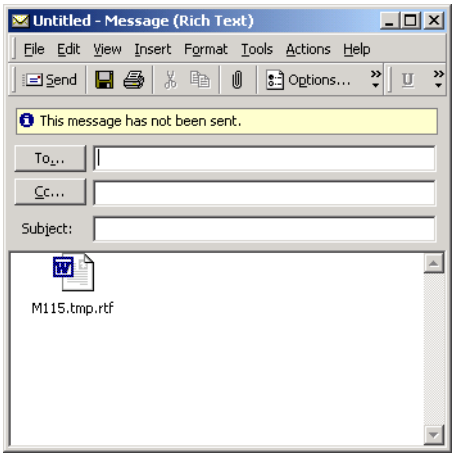
Sending from RtfPad

You can send a log, report, or Event Viewer snapshot to someone by email.

To send an RtfPad file as an email attachment:

1. From the File menu, select Send. A mail dialog box corresponding to your email system appears.

Figure 192. E-Mail Message with an RtfPad File as an Attachment



2. Address the message to the desired user.
3. Complete the message by adding any other comments.
4. Send the message using your email program's Send command.

Changing the 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, text appears as described in the following table:

Table 29. RtfPad Error Format Colors

Text	Color
Errors	Red
Warnings	Yellow
Header	Green
All other text	Black

To set RtfPad to display information in error format:

- From the RtfPad View menu, select Error Format. This is a toggle command. When enabled (selected), a check mark appears to the left of the command.

To disable error format:

- From the RtfPad View menu, select Error Format again. This is a toggle command. When disabled, no check mark appears to the left of the command.

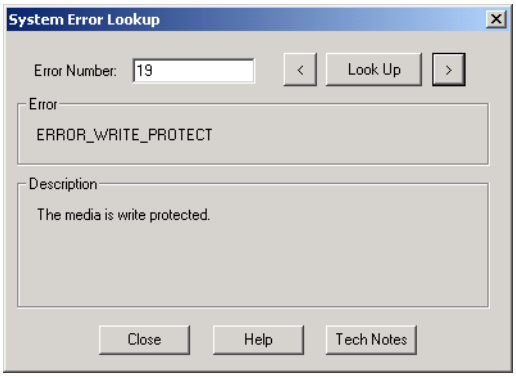
Using RtfPad Error Lookup

When an error appears in RtfPad, an error number appears in brackets 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, select the error number.
2. From the View menu, select Error Lookup, or press <F2>. The System Error Lookup dialog box appears with the error name and description.

Figure 193. System Error Lookup Dialog Box



3. You have the following choices:
   - To scroll through the list of system errors, click the forward or backward arrows.
   - To access context-sensitive help for the error glossary, click Help.
   - To close the System Error Lookup dialog box, click Close.

Using Explorer Add-ons

B

The Explorer Add-ons allow users to view ASM Data Manager file and media folder properties from client machines without a full installation of Data Manager. The Explorer Add-ons enable this by connecting to the extended drive through Windows Explorer. Explorer Add-ons can be run on a Windows NT or Windows 2000 server or workstation, or on a Windows 98, ME, or XP workstation.

You can use the Explorer Add-ons to perform the following functions:

- View Data Manager file properties
- Run Data Manager file reports
- Set direct read for specified Data Manager files
- Purge specific Data Manager files

The Explorer Add-ons also provide a client fetch notification feature. When a client (with Explorer Add-ons installed) requests a file that must be fetched from media (the data is not resident on the extended drive), and the retrieval takes more than a few seconds to complete, the client receives a progress message, noting that file retrieval is taking place. This situation occurs most often when a requested file exists on a piece of media that must be mounted in a drive before the data can be fetched.

The Data Manager Explorer Add-ons can be accessed using a wizard or by selecting files in Windows Explorer and then right-clicking the files to access a shortcut menu.

The Shell Xtensions Wizard is accessible both from the ASM program group in the Start menu and through the shortcut menu in Windows Explorer. The advantage of using the wizard over the shortcut menu commands is the ability to select multiple files from multiple directories. If you are selecting one or more files from only one directory (or all files in a single directory), it may be faster to use the shortcut menu commands.

Removing Data Manager and Its Components

C

When ASM Data Manager is removed, all configuration settings and system files are deleted. If you reinstall Data Manager, new settings must be configured. Caution should be taken when removing the product, as all settings are permanently lost.

The Data Manager setup wizard, accessed through the ASM program group in the Windows Start menu, takes you step-by-step through the uninstall process. However, Data Manager requires that you remove several key components before you attempt to uninstall the program. If you run the setup wizard before removing these components, a message appears to inform you that you must remove these items from your Data Manager configuration before uninstalling the program.

Note: If you plan to reinstall Data Manager later, you should create a copy of your Data Manager configuration before you uninstall Data Manager. The Repair Disk Wizard allows you to back up your Data Manager settings. For instructions, see “Copying the Repair Disk Backup” on page 278.

This chapter describes the steps you need to take before uninstalling Data Manager. In addition, you will find instructions on running the setup wizard to uninstall Data Manager, the Data Manager Remote Administrator, and the Explorer Add-ons. For more information, see the following sections:

Preparing for Uninstalling Data Manager

In preparation for removing ASM Data Manager, 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 Data Manager components.

For your convenience, the setup wizard allows you to uninstall Data Manager from multiple computers at once. Be sure to prepare each computer from which you are removing Data Manager.

Note: The steps below are only necessary if you are removing Data Manager itself. The preparation steps do not apply if you are uninstalling the Remote Administrator or the Explorer Add-ons.

To prepare for removing Data Manager:

1. Delete all move rules, to ensure no additional files are moved to media while executing the steps to remove Data Manager. For instructions, see “Deleting a Move Rule” on page 143.
2. Delete all scheduled media tasks for all extended drives. For instructions, see “Deleting Media Tasks” on page 46.
3. Compact all media. Compacting media writes all files on the media back to the extended drive, and ensures access to these files once the media is removed from the system. For instructions, see “Using the Compact Media Task” on page 80.
4. Remove all media from every media folder, and run the drive scans for each extended drive as prompted. For instructions, see “Removing Media from a Media Folder” on page 87.
5. Deallocate all media from the extended drive. For instructions, see “Deallocating Media from the Extended Drive” on page 95.
6. Delete each extended drive. For instructions, see “Deleting the Extended Drive” on page 204.
7. Remove all media services. For instructions, see “Removing Media Services” on page 102.
8. Stop the Data Manager service. For instructions, see “Managing the Data Manager Computer” on page 207.

Uninstalling Data Manager

Once you have completed the steps listed in *“Preparing for Uninstalling Data Manager” on page 311*, you are ready to uninstall Data Manager. The same setup wizard that installed the program can be used to uninstall the program. Because the setup wizard allows you uninstall Data Manager from multiple computers at once, you may want to determine which computers are to have Data Manager removed from them before you run the setup wizard, enabling you to run the wizard once rather than multiple times.

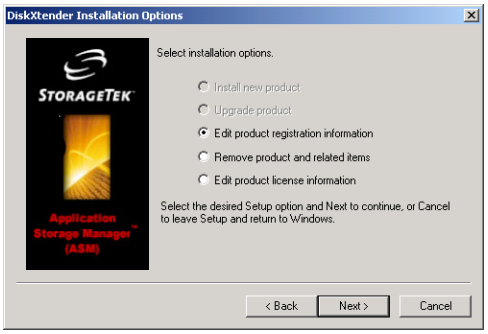
Note: If you are removing Data Manager from an active/passive clustered environment, you should run the setup wizard to remove the product directly on the Primary server (the server node currently in control). If

you are removing Data Manager from an active/active clustered environment, you can run the setup wizard from any server.

To remove Data Manager:

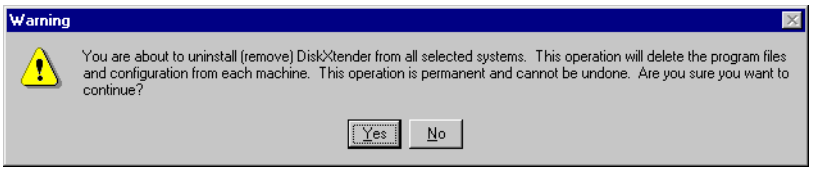
1. From the Windows Start menu, select Programs, ASM, and then Setup. The setup wizard appears, starting with the welcome page.
2. Click Next. The Installation Options page appears.

Figure 194. Data Manager Removal – Installation Options Page



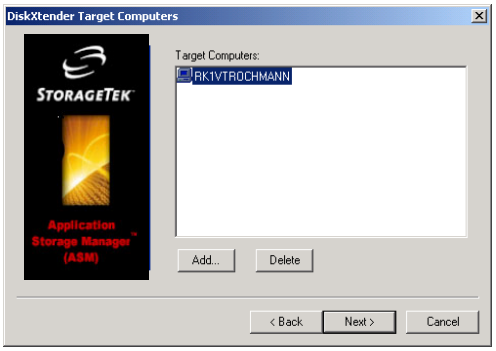
3. Select Remove product and related items and then click Next. A warning appears informing you that uninstalling cannot be undone.

Figure 195. Uninstall Warning Message



4. Click Yes to continue. The Target Computers page appears.

Figure 196. Data Manager Removal – Target Computers Page

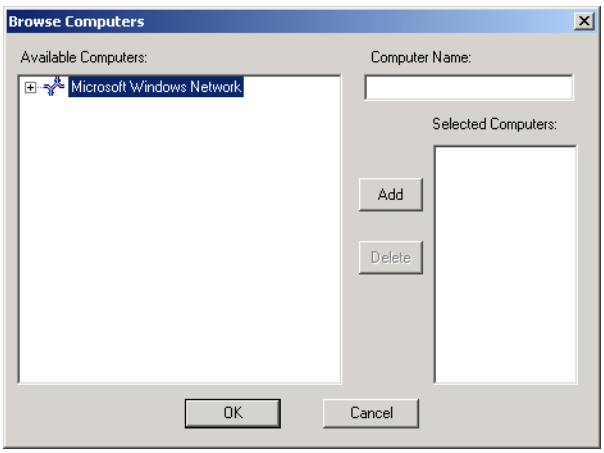


Note: If you are removing Data Manager from an active/passive clustered environment, select the logical cluster name as the target computer for removal. If you are removing Data Manager from an active/active clustered environment, select the virtual server names as the target computers for removal.

5. You have the following choices:

   - To remove Data Manager from only the computer(s) listed in the Target Computers list, click Next. The Summary page appears.
   - To remove Data Manager from other computers in addition to the one(s) listed in the Target Computers list, click Add. The Browse Computers dialog box appears.

Figure 197. Browse Computers Dialog Box



6. In the Browse Computers dialog box you have two choices:

   - Under Available Computers, navigate to and select the computer from which you want to remove Data Manager and then click Add to add the computer to the Selected Computers list.
   - In the Computer Name text box, type in the name or the IP address of the computer from which you want to remove Data Manager and then click Add to add the computer to the Selected Computers list.

   Repeat this step for each additional computer from which you want to remove Data Manager. When you finish, click OK. You are returned to the Target Computers page. When the Target Computers list is complete, click Next. The Summary page appears.

7. Review the information in the summary.

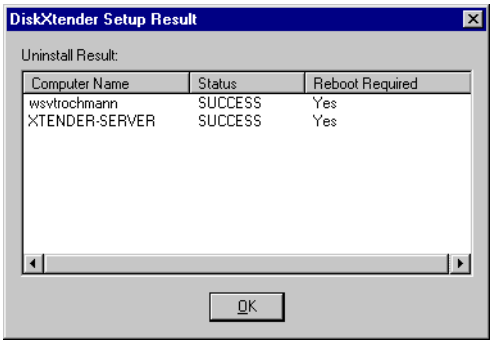
8. If the information in the summary is correct, click Finish. A progress bar appears, indicating the completion percentage of the removal process. If you are uninstalling from multiple Data Manager computers, separate progress bars appear for each computer.

   Any settings related to Data Manager in the Windows NT/2000 registry, all program files in the installation path, and the ASM program group/folder are removed.

   Then, one of the following occurs:

- If you are uninstalling from one or more remote computers (in addition to or instead of the local computer), the ASM Setup Result dialog box appears, listing the results for each target computer.

Figure 198. ASM Removal Result Dialog Box



Take note of any computers that need to be rebooted (or computers on which the uninstall failed) and then click OK. Restart each computer for which the ASM Setup Result dialog box indicates a reboot is required.

- If you are uninstalling from the local machine, a message appears to prompt you to reboot the computer. Click Restart to close the message and reboot the computer immediately, or Exit to close the message without rebooting.

Uninstalling Data Manager Remote Administrator

ASM Data Manager Remote Administrator can be removed from a computer if necessary. Removing the Remote Administrator from a remote machine does not affect the Data Manager computer to which it points. Only the system files for the Remote Administrator and Service Manager are deleted. This means that you do not need to perform the preparation steps necessary for uninstalling the Data Manager 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.

Note: If you are removing the Remote Administrator from an active/passive clustered environment, you should run the setup wizard to remove the product directly on the Primary server (the server node currently in control). If you are removing the Remote Administrator from an active/active clustered environment, you can run the setup wizard from any server.

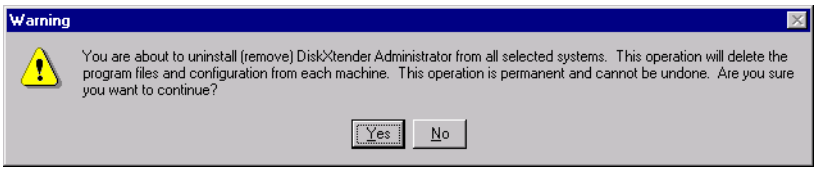
To remove the Remote Administrator:

1. From the Start menu, select Programs, then ASM Administrator and then Setup. The setup wizard opens, starting with the welcome page.
2. Click Next. The Installation Options page appears.

Figure 199. Remote Administrator Removal – Installation Options Page

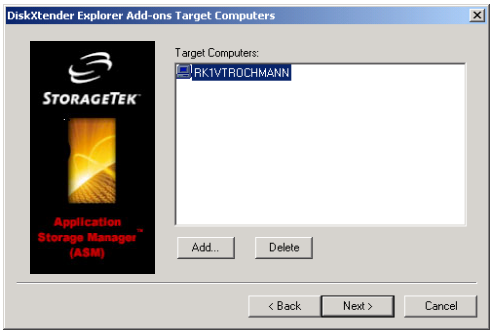
3. Select Remove product and related items and then click Next. A warning appears to inform you that the uninstall cannot be undone.

Figure 200. Uninstall Warning Message



4. Click Yes to continue. The Target Computers page appears.

Figure 201. Remote Administrator Removal – Target Computers Page

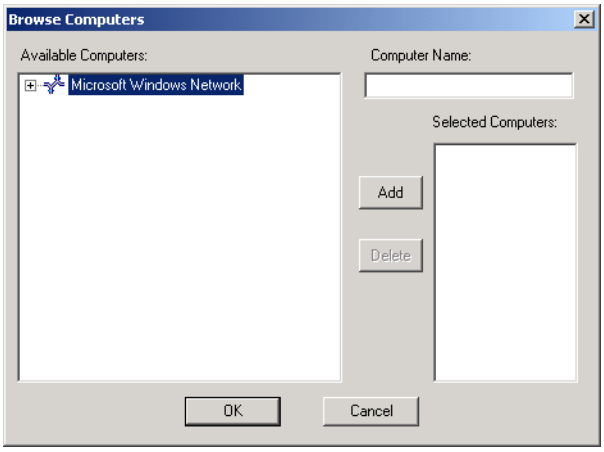


Note: If you are removing the Remote Administrator from an active/passive clustered environment, select the logical cluster name as the target computer for removal. If you are removing the Remote Administrator from an active/active clustered environment, select the virtual server names as the target computers for removal.

5. You have the following choices:

- To remove the Remote Administrator from only the computer(s) listed in the Target Computers list, click Next. The Summary page appears.
- To remove the Remote Administrator from other computers in addition to the one(s) listed in the Target Computers list, click Add. The Browse Computers dialog box appears.

Figure 202. Browse Computers Dialog Box



6. In the Browse Computers dialog box you have two choices:
   - Under Available Computers, navigate to and select the computer from which you want to remove the Remote Administrator and then click Add to add the computer to the Selected Computers list.
   - In the Computer Name text box, type in the name or the IP address of the computer from which you want to remove the Remote Administrator and then click Add to add the computer to the Selected Computers list.

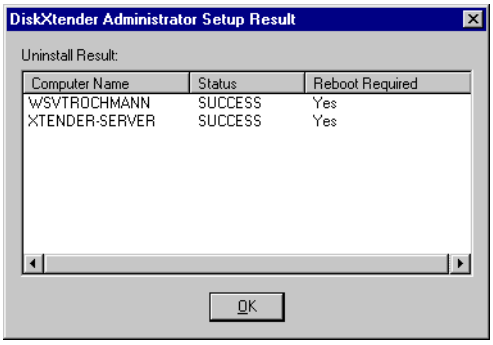
   Repeat this step for each additional computer from which you want to remove the Remote Administrator. When you finish, click OK. You are returned to the Target Computers page. When the Target Computers list is complete, click Next. The Summary page appears.
7. Review the information in the summary.
8. If the information in the summary is complete, click Finish. A progress bar appears indicating the completion percentage of the removal process. If you are uninstalling from multiple computers, separate progress bars appear for each computer.

   Any settings related to the Remote Administrator in the Windows registry, all program files in the installation path, and the ASM Remote Administrator program group/folder are removed.

   Then, one of the following occurs:

- If you are uninstalling from one or more remote computers (in addition to or instead of the local computer), the ASM Administrator Setup Result dialog box appears, listing the results for each target computer.

Figure 203. ASM Administrator Setup Result Dialog Box



Take note of any computers that need to be rebooted (or computers on which the uninstall failed) and then click OK. Restart each computer for which the ASM Administrator Setup Result dialog box indicates a reboot is required.

- If you are uninstalling from the local machine, a message appears to prompt you to reboot the computer. Click Restart to close the message and reboot the computer immediately, or Exit to close the message without rebooting.

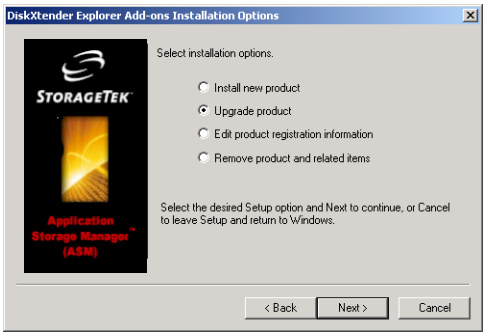
Uninstalling Explorer Add-ons

Explorer Add-ons can be removed from a machine if necessary. The same 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.

To remove Explorer Add-ons

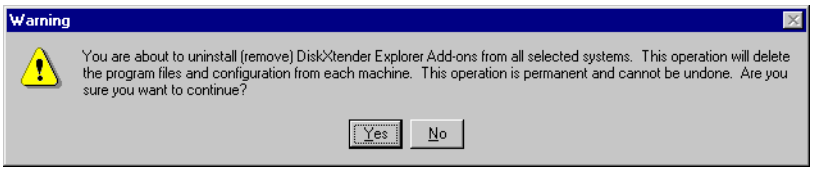
1. From the Start menu, select Programs, ASM Explorer Add-ons, and then Setup. The setup wizard opens with the welcome page.
2. Click Next. The Installation Options page appears.

Figure 204. Explorer Add-ons Removal – Installation Options Page



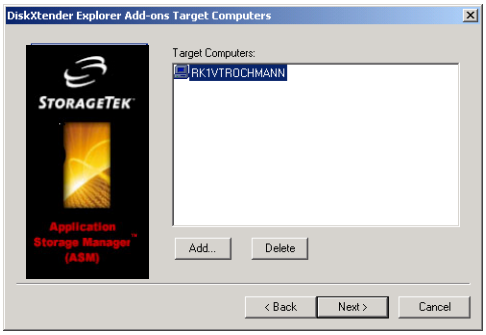
3. Select Remove product and related items and then click Next. A warning appears to inform you that the uninstall cannot be undone.

Figure 205. Uninstall Warning Message



4. Click Yes. The Target Computers page appears.

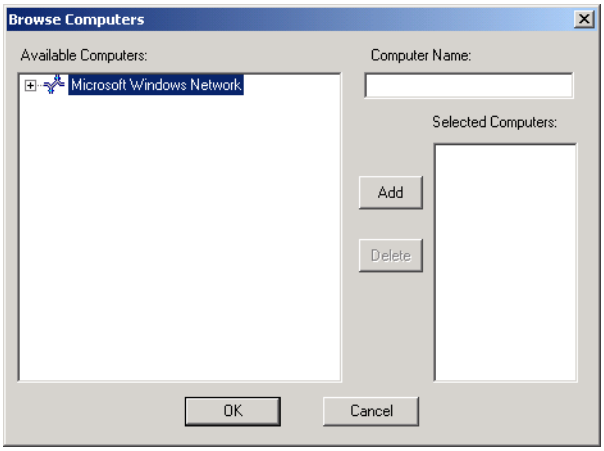
Figure 206. Explorer Add-ons Removal – Target Computers Page



5. You have the following choices:

   - To remove the Explorer Add-ons from only the computer(s) listed in the Target Computers list, click Next. The Summary page appears.
   - To remove the Explorer Add-ons from other computers in addition to the one(s) listed in the Target Computers list, click Add. The Browse Computers dialog box appears.

Figure 207. Browse Computers Dialog Box



6. In the Browse Computers dialog box you have two choices:

   - Under Available Computers, navigate to and select the computer from which you want to remove the Explorer Add-ons and then click Add to add the computer to the Selected Computers list.

   In the Computer Name text box, type in the name or the IP address of the computer from which you want to remove the Explorer Add-ons and then click Add to add the computer to the Selected Computers list.

   Repeat this step for each additional computer from which you want to remove the Explorer Add-ons. When you finish, click OK. You are returned to the Target Computers page. When the Target Computers list is complete, click Next. The Summary page appears.

7. Review the information in the summary.

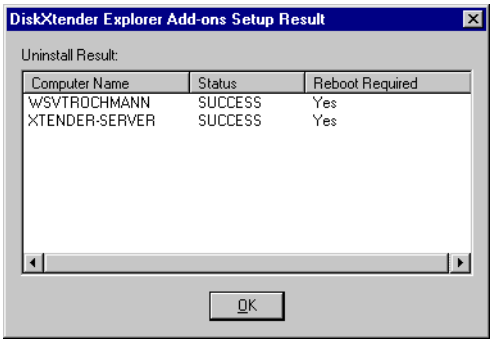
8. If the information in the summary is complete, click Finish. A progress bar appears indicating the completion percentage of the removal process. If you are uninstalling from multiple computers, separate progress bars appear for each computer.

   Any settings related to the Explorer Add-ons in the Windows registry, all program files in the installation path, and the ASM Explorer Add-Ons program group/folder are removed.

   Then, one of the following occurs:

   - If you are uninstalling from one or more remote computers (in addition to or instead of the local computer), the Explorer Add-ons Setup Result dialog box appears, listing the results for each target computer.

Figure 208. Explorer Add-ons Setup Result Dialog Box



Take note of any computers that need to be rebooted (or computers on which the uninstall failed) and then click OK. Restart each computer for which the Explorer Add-ons Setup Result dialog box indicates a reboot is required.

- If you are uninstalling from the local machine, a message appears to prompt you to reboot the computer. Click Restart to close the message and reboot the computer immediately, or Exit to close the message without rebooting.

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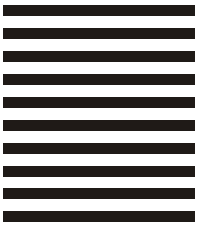

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