

Novell Archive and Version Services

2.0

February 28, 2005

ADMINISTRATION GUIDE FOR
NETWARE® 6.5

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Novell Archive and Version Services 2.0 Administration Guide for NetWare 6.5

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About This Guide

This guide describes how to configure Novell® Archive and Version Services 2.0 to capture and maintain a database of multiple historical versions of files for convenient access and retrieval by users.

This guide is intended for network administrators and is divided into the following sections:

- ◆ Chapter 1, “Overview of Archive and Version Services,” on page 11
- ◆ Chapter 2, “What’s New,” on page 21
- ◆ Chapter 3, “Planning for Archive and Version Services,” on page 23
- ◆ Chapter 4, “Prerequisites and Guidelines,” on page 35
- ◆ Chapter 5, “Installing and Configuring Archive Servers,” on page 47
- ◆ Chapter 6, “Upgrading Archive Servers,” on page 63
- ◆ Chapter 7, “Configuring Jobs in ArkConfig,” on page 71
- ◆ Chapter 8, “Managing the Archive Server,” on page 77
- ◆ Chapter 9, “Managing the Versioning Jobs,” on page 83
- ◆ Appendix A, “XML Elements and Attributes for ArkConfig,” on page 97
- ◆ Appendix B, “XML Elements and Attributes for ArkUpgrade,” on page 113
- ◆ Appendix C, “Sample Configuration Files,” on page 117
- ◆ Appendix D, “Configuring Versioning Jobs with iManager (NetWare 6.5 SP2),” on page 125
- ◆ Appendix E, “Troubleshooting,” on page 137

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When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as Linux or UNIX, should use forward slashes as required by your software.

User Comments

We want to hear your comments and suggestions about this manual and the other documentation included with NetWare 6.5. To contact us, use the User Comments feature at the bottom of any page in the online documentation.

Documentation Updates

For the most recent version of the *Novell Archive and Version Services Administration Guide for NetWare 6.5*, see the latest [NetWare 6.5 online documentation \(http://www.novell.com/documentation/nw65/index.html\)](http://www.novell.com/documentation/nw65/index.html).

Additional Documentation

For documentation on accessing and restoring archived file versions, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

For information about Novell Storage Services™, see the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

For information about Novell iManager, see the *Novell iManager 2.5 Administration Guide*.

1

Overview of Archive and Version Services

Novell® Archive and Version Services 2.0 provides a convenient and cost-effective way for individual users to instantly restore previous versions of modified, renamed, or deleted network files. It helps to minimize the user's unproductive time and frees you to focus on other critical IT issues. The user simply views a list of previous interval-based versions of source files, selects the file needed, then recovers it. The user can recover any of the available versions. If users work in a collaborative environment, a user can determine which version to choose based on who modified a document and when.

Archive and Version Services is available for NetWare® 6.5 to archive user network files that are stored on Novell Storage Services™ volumes on NetWare 6.5 and later servers.

This section discusses the following:

- ◆ [“Individual File Losses Impact Business” on page 11](#)
- ◆ [“Benefits of Archive and Version Services” on page 12](#)
- ◆ [“Key Concepts of Archive and Version Services” on page 13](#)
- ◆ [“Scenarios for Using Archive and Version Services” on page 17](#)
- ◆ [“What's Next” on page 19](#)

Individual File Losses Impact Business

Most enterprises implement some type of data backup and recovery to prevent major data losses. Backups occur periodically to prevent catastrophic losses of data. Often, the files that individuals lose have a life cycle shorter than the major backup cycles. Until now, these data losses have been an unfortunate cost of doing business.

Recovery of a single file is not usually a simple process. Only the administrator can access the backup media to retrieve and recover the file. The user must know exactly when the file existed so that the administrator can find the right version of the file. Even after the file is recovered, the user must update the file with changes made between the time it was backed up until the time it was modified, deleted, or lost.

Although individual losses of key data impact business, most enterprises leave prevention and recovery to the best practices and personal habits of users. In a typical network environment, users employ different techniques to ensure that they do not lose critical files. For example, some users manually save multiple versions of a file under different names. Others save the same version of a file in different locations. Some do both.

Despite precautions, almost every user has accidentally modified, lost, or deleted a key file. When problems occur, the user is left with two choices:

- ◆ Wait for the administrator to recover the file from backup media, if the file was backed up at all
- ◆ Painstakingly rebuild the file from draft versions or from scratch

Either solution negatively impacts business:

- ◆ It's inefficient. The user cannot access backup files without administrator action.
- ◆ It's inconvenient. The user must waste time re-creating materials.
- ◆ It can affect the enterprise's ability to meet business commitments. Time lost can impact the user's ability to meet milestones, thereby impacting delivery to other processes down the line.

Benefits of Archive and Version Services

Novell Archive and Version Services provides benefits for the enterprise, IT administrators, and users.

Benefits for the Enterprise

Novell Archive and Version Services offers two key benefits for the enterprise:

- ◆ It provides a lower cost of management for IT departments by allowing users to self-restore files from interval-based file versions.
- ◆ It provides a means to allow users to be more productive by allowing them to correct their own accidental deletions or file-modification mistakes.

Benefits for IT Administrators

For IT administrators, Novell Archive and Version Services solves the problem of individual file recovery. No longer will the Help Desk need to deal with users asking for a particular file to be restored. Removing this task will free IT organizations to focus on more important solutions for the users and the company as a whole.

Benefits for Users

The user controls the file recovery; there is no need to completely rebuild a file or to involve the IT department. Users can retrieve file versions from anywhere, at any time, using a Web browser and an active network or Internet connection.

Novell Archive and Version Services offers many benefits for users:

- ◆ The versioning process is transparent to users until they need to retrieve a previous version of a file. Versioning does not affect how applications behave and requires no action on the part of the user.
- ◆ All security features and permissions of the source file are in effect for its file versions if the file versions are restored to a Novell Storage Services storage location. Users can also download a file version as a new file, without its prior rights and metadata, to other types of storage media such as to their local workstations.
- ◆ Versioning supports collaborative work environments where groups of users can create and modify shared files. The archive server allows a work group to properly select previous versions of files they are working on based on who modified it and the time stamp of the version.
- ◆ Versioning works with any type of file from any type of application.
- ◆ Novell Archive and Version Services uses Novell NetStorage to provide a Web-based interface to users for file version retrieval and restoration. Users can retrieve file versions from any workstation operating platform, including NetWare, Microsoft* Windows*, Apple* Macintosh*, Linux, and UNIX. All a user needs is a Web browser and an active network or

Internet connection to locate the file version of interest and restore it to an NSS storage location with all security and metadata features in tact, or download it to alternate media types as a new file.

- ◆ Novell Archive and Version Services for NetWare provides the NSS File Version Utility for Windows clients. Users can retrieve file versions and restore them from compatible Windows workstations.

Key Concepts of Archive and Version Services

Novell Archive and Version Services saves versions of user files at scheduled intervals, stores file versions in an archive database, and makes file versions available on demand to users. NetWare installs Novell Archive and Version Services by default as part of the NetWare basic install. However, the service does not run until you configure and start it. For information, see [Chapter 5, “Installing and Configuring Archive Servers,”](#) on page 47.

It is important to understand several key concepts and tools:

- ◆ [“The Archive Server”](#) on page 13
- ◆ [“The Archive Database and ArkSQL”](#) on page 14
- ◆ [“ArkUpgrade and the ArkUpgrade.xml File”](#) on page 14
- ◆ [“ArkManager and the ArkConfig.xml File”](#) on page 15
- ◆ [“Versioning Jobs”](#) on page 15
- ◆ [“Job Schedules”](#) on page 16
- ◆ [“File Versions”](#) on page 16
- ◆ [“Delete Policy”](#) on page 16
- ◆ [“Archive Versioning Plug-In for Novell iManager”](#) on page 16
- ◆ [“NSS File Version Utility for Native Windows File Retrieval and Restoration”](#) on page 17
- ◆ [“NetStorage Archive Function for File Version Retrieval and Restoration”](#) on page 17

The Archive Server

The archive server runs Novell Archive and Version Services, which includes the following services:

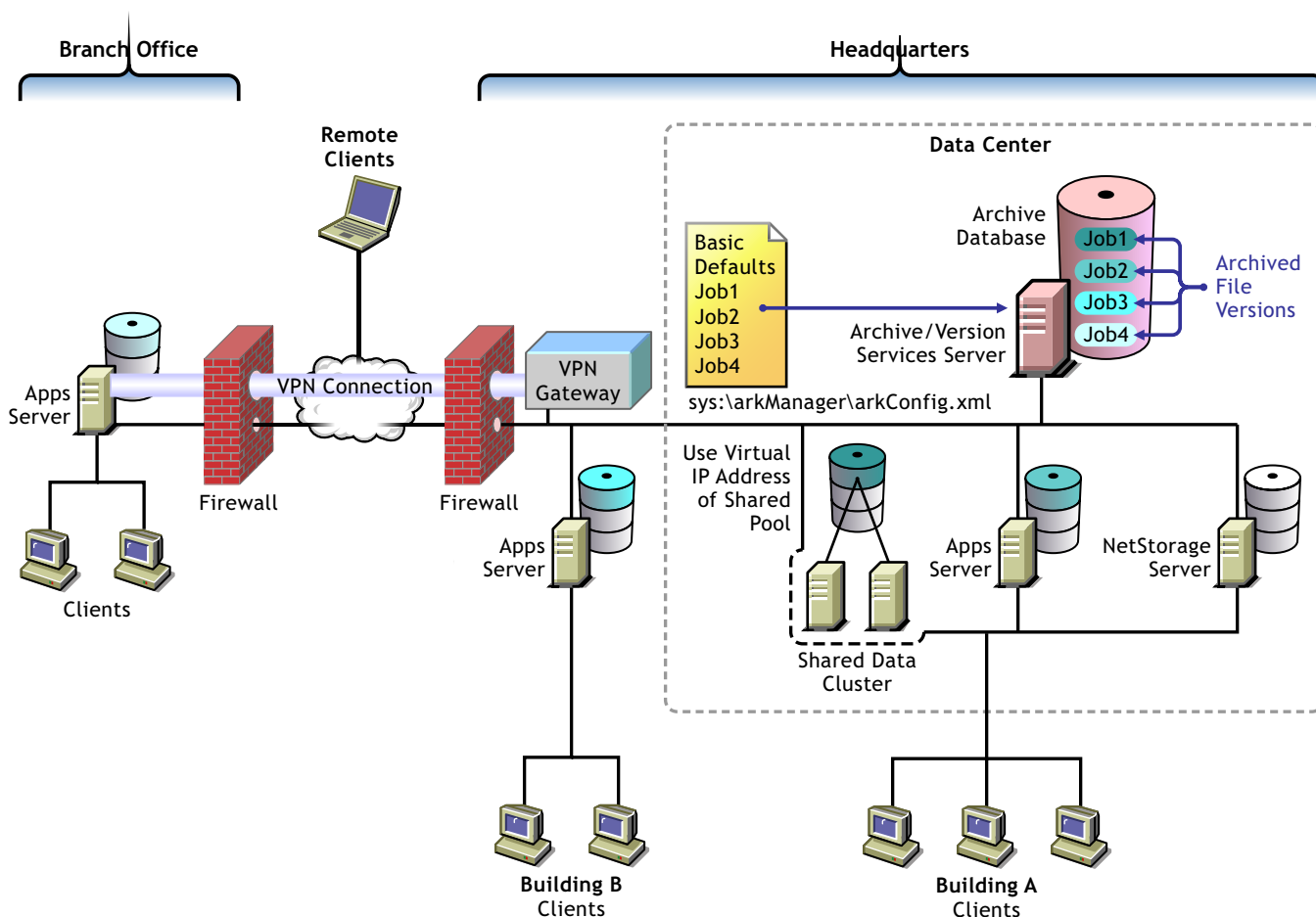
- ◆ Controlling the versioning process
- ◆ Providing the storage resources for the archive database
- ◆ Organizing and hosting the archive database
- ◆ Allowing users to search and restore file versions

An archive server and the volumes it serves reside in the same Novell eDirectory™ tree.

Novell Archive and Version Services supports several storage topologies, as shown in the following figure. Because file versions are transferred in clear text, the archive server should reside behind the corporate firewall. Any transfer of files during file versioning or restore should occur over a secure connection such as a virtual private network (VPN). The volumes with files to be versioned can reside on local or remote servers and in single or clustered configurations.

For information, see [“Planning for Archive and Version Services”](#) on page 23.

Figure 1 Example of Storage Topologies Supported by Novell Archive and Version Services



The Archive Database and ArkSQL

The archive database resides on the archive server. Novell Archive and Version Services 2.0 uses a MySQL* server to organize and host file versions in the archive database. MySQL is an open source, structured query language (SQL) database. The `sys:\arkManager\ArkSQL.cnf` file is the configuration information for ArkManager’s MySQL instance on the MySQL server. This guide refers to that instance of MySQL as ArkSQL.

ArkUpgrade and the ArkUpgrade.xml File

ArkUpgrade is a utility that converts existing archive data from the format for ArkManager 1.0 (in NetWare 6.5) to the format based on MySQL in ArkManager 2.0 (in NetWare 6.5 Support Pack 1 and later). If your existing archive database already uses ArkManager 2.0, it is not necessary to use ArkUpgrade.

Configure ArkUpgrade settings in the `sys:\arkManager\arkUpgrade.xml` file. You must run ArkUpgrade to convert the data related to each existing ArkManager 1.0 job before the job can run on ArkManager 2.0. File versions related to an existing job are not available to users until the data conversion for the job is complete.

For upgrade instructions, see [“Upgrading Archive Servers” on page 63](#).

For detailed information about ArkUpgrade configuration settings in the sys:\arkManager\arkUpgrade.xml file, see [“XML Elements and Attributes for ArkUpgrade” on page 113](#).

ArkManager and the ArkConfig.xml File

ArkManager is the software component in Novell Archive and Version Services that manages the versioning, archiving, and file version management processes. For each archive server, you must configure its basic properties, default job properties, and one or more individual job properties. Basic properties include details about the archive server and database. Default job properties specify parameter settings to use if one or more parameters are not defined in a specific job. An individual job specifies the property settings to use when archiving file versions for a specified volume that resides in the same Novell eDirectory tree as the archive server. The ArkManager configuration information resides in the sys:\arkManager\arkConfig.xml file.

To configure versioning jobs in Novell Archive and Version Services, see [“Configuring Jobs in ArkConfig” on page 71](#).

For detailed information about ArkManager configuration settings in the sys:\arkManager\arkConfig.xml file, see [“XML Elements and Attributes for ArkConfig” on page 97](#).

Versioning Jobs

A versioning job captures copies of eligible files on a specified source volume at specified intervals. Eligible files are those that exist in the source volume at the time the volume is versioned, meet the general versioning criteria, and pass any administrator-specified filtering criteria. You can define only one job for a given source volume.

As illustrated in [Figure 1 on page 14](#), each job identifies the settings for the following properties:

- ◆ **Name:** The unique, administrator-specified job name that represents the relationship between the archive server and a given source volume. The job name persists for the life of the archive server and can represent only the specified source volume.
- ◆ **Source Server:** The NetWare 6.5 or later server where the data to be versioned is located.
- ◆ **Source Volume:** The NetWare 6.5 or later volume where the data to be versioned is located.
- ◆ **Server Context:** The Novell eDirectory context where the source server is located.
- ◆ **Snapshot Pool:** The NetWare 6.5 or later NSS pool where the snapshots of the source volume are stored temporarily while file versions are written to the archive database.
- ◆ **Scheduled Interval:** For a job, the elapsed time between the beginning of versioning processes..
- ◆ **Start Time and Schedule:** The scheduled start time when the job’s version process begins on one or more scheduled days of the week.
- ◆ **Delete Policy:** Determines the lifetime of file versions in the archive.
- ◆ **Filter:** Sets criteria to determine which files in the source volume are eligible for versioning.

For information, see [“Configuring Jobs in ArkConfig” on page 71](#).

Job Schedules

You must establish a schedule for each versioning job that meets users' requirements for file versioning, given limited storage and bandwidth resources. Versioning occurs for eligible files at scheduled intervals, called epochs. In Novell iManager, you can also manually pause versioning jobs and run jobs on demand, as needed.

A file's lifetime must span the end of an epoch to be versioned. Only files that exist when the versioning occurs are eligible to be versioned. If a user creates and deletes a file within the epoch, it cannot be versioned.

For more information, see [“Run Schedule” on page 29](#).

File Versions

File versions are actual copies of files taken at scheduled intervals, as determined by the administrator. No matter how many changes users makes to files during an epoch, only those eligible files that exist at the end of the epoch are saved.

Novell Archive and Version Services 2.0 for NetWare can use NSS pool snapshot technology to capture point-in-time copies of all files, even if the file is in use when the versioning process begins. If the snapshot option is not used, the versioning process captures only eligible files that are not deleted and not exclusively opened at the time.

User needs and limited storage and bandwidth resources are key considerations for setting the criteria to determine which files are eligible for versioning. Files can be filtered to include or exclude source files, according to their path, file extension, or filename patterns. If a user's files meet the filtering criteria, they are eligible for versioning. For information, see [“Filter” on page 30](#).

Users do not have direct control over which of their files get versioned, when the versioning occurs, or the state of their files when the epoch ends and the copy is made. Users can access files natively with the NSS File Version Utility on a Windows 2000/XP/2003 desktop, or they can access their file versions at any time and from anywhere using the NetStorage Archive function. For information, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

Delete Policy

The Delete Policy determines when and which of a job's file versions to automatically delete from the archive database. Versioned files can have a limited lifetime in the archive. You optionally configure a job's Delete Policy to set the maximum keep time and the maximum number of versions to retain. The Delete Policy can allow indefinite retention of at least one most recent versioned file.

For more information, see [“Delete Policy” on page 30](#).

Archive Versioning Plug-In for Novell iManager

After you configure your archive server and its versioning jobs, you can use the Archive Versioning plug-in for Novell iManager to manage those jobs. You can start and stop jobs, view a list of jobs, and view information about jobs, such as their current status, configuration details, and run schedules. You can also view the ArkManager log, which lists all normal, warning, and error messages for each job on the archive server.

For information, see [“Accessing the Archive Versioning Role in iManager” on page 83](#).

NSS File Version Utility for Native Windows File Retrieval and Restoration

The NSS File Version Utility provides convenient and direct access to archived versions of your files in a native Windows environment. The utility integrates with a Windows Explorer desktop to provide a Versions option, which allows you to view recent versions of your files in the archive database and restore the desired file. Select the desired version of the file, then click Restore to download the file locally or to restore the file version to a network storage location.

The NSS File Version Utility, `nwver.exe`, is provided on the *Novell NetWare 6.5 Products CD* in the `\tools\nsstools` directory for Support Pack 2 or later. For information about using the utility, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

NetStorage Archive Function for File Version Retrieval and Restoration

File versions reside in the archive database on the archive server. Users can restore file versions from the archive database at any time from anywhere using the Archive function in Novell NetStorage. Using the NetStorage interface in the enterprise portal, a user views a list of available versions of a file. The user simply selects the previous version of the file, then clicks Restore to download the file version to a specified location where the user has the necessary permissions.

If a user restores the file version to a NetWare NSS storage location, the archive server recovers the file version and all the rights and metadata about the file. If a user opts to download the file version elsewhere, the file is saved as a new file, without the prior rights and associations.

For information, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

Scenarios for Using Archive and Version Services

Novell Archive and Version Services is a valuable asset in today's diversified workplace. This section discusses the following usage scenarios:

- ◆ [“Cross-Platform Work Environments” on page 17](#)
- ◆ [“Group Collaboration” on page 17](#)
- ◆ [“File and Directory Name Changes” on page 18](#)
- ◆ [“Selective File Versioning” on page 18](#)

Cross-Platform Work Environments

Novell Archive and Version Services provides an Web-based interface to the archive database in Novell NetStorage with the Archive function. Users can retrieve file versions from any workstation operating platform, including NetWare, Microsoft Windows, Apple Macintosh, Linux, and UNIX. All a user needs is a Web browser and an active network or Internet connection. Users can restore the file version to a NetWare NSS storage location with all security and metadata intact, or download the file version as a new file to any other location where they have the necessary permissions to do so.

Group Collaboration

In a shared work group, a team works collectively to share information, create information, and process information. Files are regularly shuffled back and forth between users, and they are usually worked on by more than one person. Sections of a presentation are created by different people and either merged or are simply edited into an existing file that is passed around.

Research has shown that people tend to solve the problems associated with lack of versioning in PC network systems by attempting to do an ad hoc versioning system. Unfortunately, everyone does it a bit differently. Some put a version or date in the name of the file, such as “MarketAnalysis-v3.ppt”. Others put dates in the filename, such as “MarketAnalysis-oct3-02.ppt”. Still others use file folders with versions or dates in the names of the folders. Most are not consistent with their techniques and many do not even try. It is especially troublesome when the files are shared, because not every personal scheme is alike. Even with these various methods, mistakes happen.

Novell Archive and Version Services supports collaborative work environments. The archive interface allows a user to view previous versions and see instantly who was the modifier of each of the versions without opening file versions to attempt to ascertain who modified it.

For example, Tom and Alice worked together to prepare a presentation. Two weeks ago, Alice deleted some edits that Tom made to the file. Now, the team needs those edits back. Alice cannot recall when she deleted the edits. By going to the Web-based archive access, Alice can view previous file versions. The modifier of the file is listed next to each file version. Alice easily identifies the file version from about two weeks ago that shows up with Tom as the modifier of the file. She can view the file version or restore the file, as needed, to recover the lost modifications.

File and Directory Name Changes

File and directory names are likely to change during their lifetimes. Novell Archive and Version Services supports file and directory renaming. It tracks changes to the filename, such as when a user renames a file at some point in the process of its creation and modification. It also tracks changes made to the file’s subdirectory (or path) if it is changed.

Selective File Versioning

It is not desirable nor practical to version every file in a volume. The Novell Archive and Version Services allows administrators to determine which files on their NetWare 6.5 or later servers get versioned and the versioning intervals on a per-volume basis.

For example, consider a source volume that comprises multiple directories: Users, Shared, and several directories for applications. Although the files in the Users and Shared directories change frequently, the files in the applications directories are fairly stable. Novell Archive and Version Services allows the administrator to exclude files in applications directories from versioning.

The administrator can selectively control the versioning frequency for each volume. For example, consider a Users volume with files that change intermittently throughout the day and a Shared volume with files that change at the end of each scheduled work shift. Novell Archive and Version Services allows the administrator to schedule 30-minute epochs for the Users volume and schedule the start time and subsequent epochs to coincide with shift changes for the Shared volume.

The administrator can selectively control the types of files versioned. For example, consider a Productivity volume that contains both Web development applications and user files. With Novell Archive and Version services, the administrator can specify that only files with extensions of .doc, .html, .xml, and .pdf be versioned in a Productivity volume.

What's Next

To Perform This Task	Refer To
Planning your Novell Archive and Version Services implementation	Planning for Archive and Version Services (page 23)
Assessing your implementation against the prerequisites and guidelines	Prerequisites and Guidelines (page 35)
Setting up your archive server	Installing and Configuring Archive Servers (page 47)
Upgrading your archive server	Upgrading Archive Servers (page 63)
Configuring ArkUpgrade to convert archive databases for existing jobs from ArkManager 1.0 to ArkManager 2.0 format	Upgrading an Archive Server from ArkManager 1.0 to 2.0 (page 65)
Configuring the versioning jobs	Configuring Jobs in ArkConfig (page 71)
Managing the archive server	Managing the Archive Server (page 77)
Managing the versioning jobs	Managing the Versioning Jobs (page 83)

2

What's New

Novell® Archive and Version Services 2.0 for NetWare® 6.5 Support Pack 3 provides the following enhancements over Novell Archive and Version Services 1.0, released in NetWare 6.5:

- ♦ **Archive Database:** The archive database now uses MySQL to organize and host file versions, which greatly reduces the time involved in searching for file versions. It also supports filenames with UTF-8 characters.
- ♦ **Versioning Process:** The versioning process can use NSS pool snapshot technology to capture file versions at the end of an epoch. This ensures a point-in-time copy of all file versions, instead of copying files from the original files.
- ♦ **Archive Log:** You can view the log in the Archive Versioning plug-in to iManager, the server logger screen, or `sys:\arkManager\log`.
- ♦ **Novell Storage Services File Version Utility for Windows:** You can now retrieve files natively from your Windows computer with the Versions function of the NSS File Version Utility. For information, see “[Restoring File Versions with the NSS File Version Utility](#)” in the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.
- ♦ **Novell NetStorage Archive Function:** Updates were made in the Novell NetStorage Archive function. The interface now allows you to retrieve file versions, even if the original parent directory is deleted or renamed. For information, see “[Restoring File Versions with NetStorage](#)” in the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

3

Planning for Archive and Version Services

This section discusses how to plan and design a Novell® Archive and Version Services solution to meet your business needs.

- ◆ “Assessing Your Versioning Needs” on page 23
- ◆ “Designing the Archive and Version Services Topology” on page 25
- ◆ “Understanding Archive Server Properties” on page 26
- ◆ “Understanding Job Properties” on page 27
- ◆ “What’s Next” on page 33

Assessing Your Versioning Needs

Before implementing Novell Archive and Version Services in your network environment, collect information about your system to assess your versioning needs. Ask and answer the following questions:

- ❑ **Users:** Which users would benefit from having an archived database of multiple historical versions of their network files? For example, in a university environment, you might provide versioning support for faculty and staff, but not for campus lab environments.

Examine business and operational activities to identify and prioritize users’ versioning needs. Use this information to plan a strategic implementation of versioning throughout your network.

- ❑ **Volumes and Directories:** What volumes do these users use? How are the user directories organized on each volume?

If you are not versioning every user’s data on a volume, you can include and exclude a volume’s data by path.

If you archive files from an encrypted volume, the destination path for Archive Manager must be on an encrypted volume. If the destination path is a non-encrypted volume, the versioned data is stored in a non-encrypted state, an outcome that is not desired.

For any source volume, you can define only one versioning job. If you attempt to define multiple jobs for a volume on the same or different server, Archive and Version Services does not run as designed and data integrity in the archive database is compromised.

- ◆ The archive server can be the same or different server as the source server.
- ◆ A single archive server can archive many volumes with only one job defined per volume.
- ◆ A given volume cannot have multiple jobs defined for it, even if the jobs run on different archive servers.

- ❑ **File Extensions:** What types of data within these volumes are candidates for versioning? For example, productivity files such as documents, spreadsheets, presentations, graphics, and other file types typical in your industry.

Many types of data do not need versioning and can quickly consume valuable space in your archive database. Avoid versioning system files, log files, and databases. In addition, do not version temporary files that have no value to users, such as temporary Internet files and temporary application files. Identify the extensions of temporary files to be excluded from the job.

- ❑ **Versioning Frequency:** How often does the identified data change on each volume? Look for patterns of turnover frequency, such as the following:
 - ◆ Does frequency vary by types of data?
 - ◆ Does frequency vary by individual users?
 - ◆ Does frequency vary by categories of user, such as power users, support groups, or manufacturing?
 - ◆ Does frequency vary by physical location? For example, headquarters, branch offices, geographical regions, or departments.
 - ◆ Does frequency vary by time? For example, by time of day, day of the week, week in the month, month in the year, fiscal quarter, season (winter, spring, summer, or fall), or special events.
- ❑ **Storage:** What are the minimum initial storage capacity and scalability needs for your archive database? Determine this information by assessing your current storage requirements. For example:
 - ◆ How much storage space is consumed by each data type? For example, estimate the number of files and their average size.
 - ◆ What is the expected growth of data? For example, the additional number of megabytes or gigabytes of storage needed by users by month, quarter, or year.
 - ◆ What is the rate of growth in storage capacity by data type? For example, evaluate the percentage increase over time of a particular file type, such as documents, spreadsheets, presentations, graphics, or other file types typical of your industry.
- ❑ **Archive Database:** The potential size of the archive database depends on the combination of the following:
 - ◆ How many versioning jobs are defined for the server?
 - ◆ How often does each job run?
 - ◆ How many files are versioned on the source volume?
 - ◆ How often are the files modified and how does that correspond to the scheduled interval for the versioning epoch?
 - ◆ What is the delete policy for the job?
- ❑ **Topology:** Where in the enterprise network are the volumes stored? For example, a data center, a branch office, or work islands throughout the campus.

- ❑ **Delete Policy:** What type of retention policy for file versions do you need for each volume? Establishing a delete policy helps you control the storage capacity required by the archive database. For example:
 - ◆ How long do you need to retain versions?
 - ◆ What is the maximum number of versions to keep, given the number of source files versioned and their sizes?
 - ◆ Do you need to keep at least one file version after its source file has been deleted?
 - ◆ Do you need a complete copy of all the data to begin the archive database, or do you want the collection of file versions to grow only as data changes?

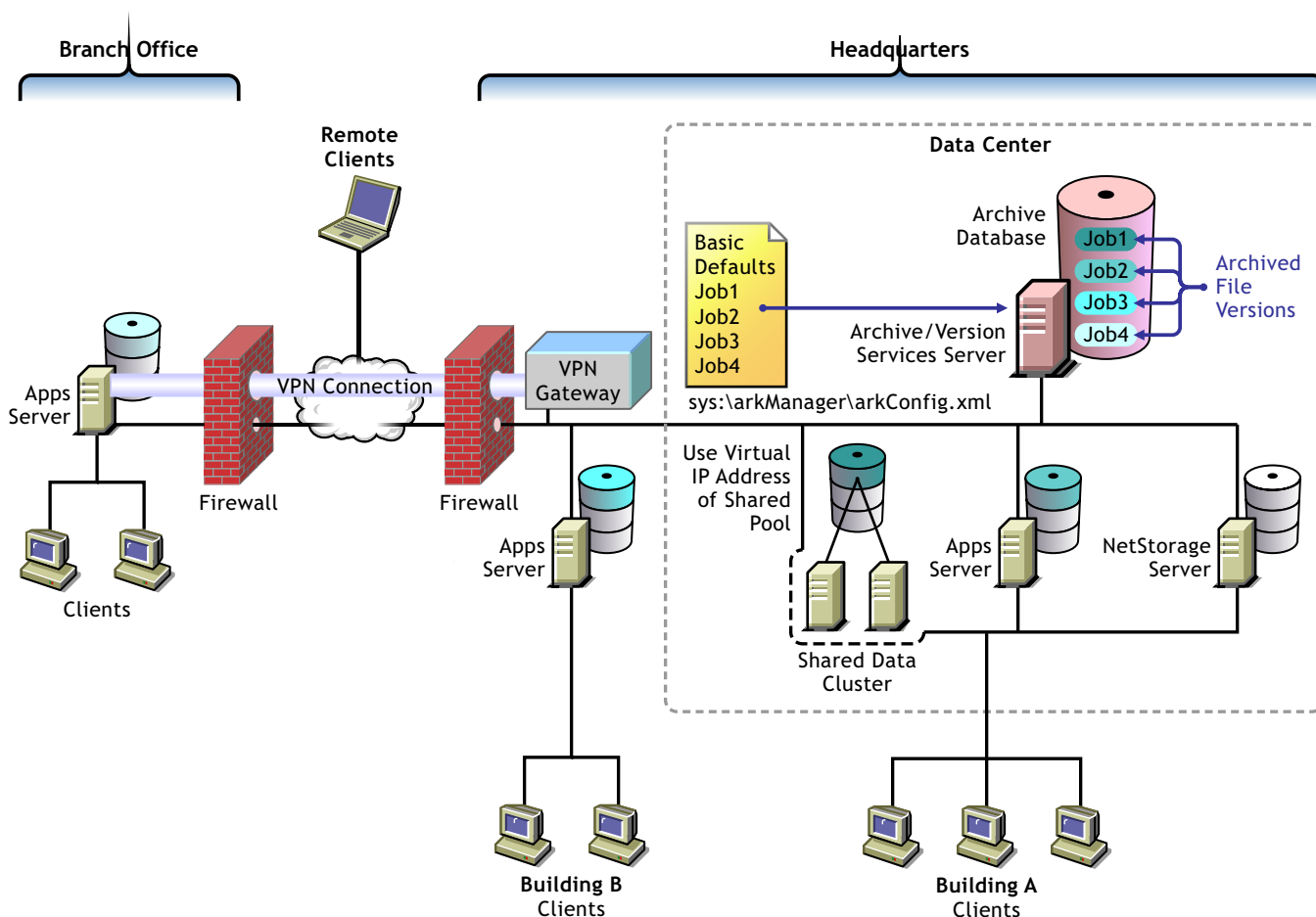
Designing the Archive and Version Services Topology

Novell Archive and Version Services 2.0 for NetWare supports several storage topologies, as shown in [Figure 2](#). In a typical enterprise, the archive server resides in the data center to provide convenient access to services for all users. The source volumes with files to be versioned can reside on local or remote servers in single or clustered configurations.

The number of archive servers you need depends on the number and size of file versions being archived and the distribution of users who need to access the versions. For example, if you have numerous volumes with many files changing at a high frequency, you might implement multiple archive servers. You should also consider the feasibility of backup for a server based on the anticipated size of the archive database and data.

For a geographically distributed enterprise, an archive server might reside in each regional data center. Key factors to consider are the speed, capacity, security, and cost of communications links between regions. Because the archive server transfers files nonencrypted across network connections, communications environments and connections must be secure.

Figure 2 Example of Storage Topologies Supported by Novell Archive and Version Services



Understanding Archive Server Properties

The archive server properties define the basic information that applies to all jobs controlled by an archive server. They specify the authentication information for Novell eDirectory™ and the ArkSQL archive database, whether to display the log on the logger screen, and the storage location where the archive database (file versions) reside.

You must configure the following server properties in the `sys:\arkManager\arkConfig.xml` file.

Archive Server Properties	Description
Archive Path	Specifies the location of archive data in the NetWare 6.5 or later NSS archive volume. For example, <code>ark:\finance</code> or <code>archive:\users</code> .
Display Log	By default, the archive server records the error, warning, and normal messages for all of its jobs in the Archive Log (<code>sys:\arkManager\log</code>). If the Display Log option is enabled, the archive server prints the messages to the server's logger screen in addition to recording them in the log. You can view the logged messages in the Archive Versioning plug-in for iManager, the logger screen, or the archive log file.

Archive Server Properties	Description
eDirectory	<p>Specifies authentication information about the Archive and Version Services administrator user.</p> <ul style="list-style-type: none"> ◆ User Name: The eDirectory Common Name of the administrator user who has the appropriate rights to the original data location and to the archive data location. For example, <code>admin.servercontext</code> <p>The archive server administrator user must have the file system Supervisor right to the archive server and to all servers being accessed by the selected archive server.</p> <p>The user must be in the same eDirectory tree as the archive server and the source servers.</p> <ul style="list-style-type: none"> ◆ Password: The password of the archive server administrator for the specified eDirectory username. ◆ Tree: The eDirectory tree that contains the administrator user, the archive server, and the source servers.
Database	<p>Specifies authentication information about the MySQL database for the archive server.</p> <ul style="list-style-type: none"> ◆ User Name: The administrator user of MySQL. For example, <code>root</code> or <code>mysqladmin</code>. ◆ Password: The password of the MySQL administrator for the specified MySQL username. ◆ Port: The port used by the ArkManager instance of MySQL on the archive server. By default, Port 3306 is used. If Port 3306 is used by other services, other ports can be used instead, such as 3307 or 3308.

Understanding Job Properties

Job properties are the set of parameters used for individual job settings and default job settings. Individual job settings apply only to a single job. Default job settings can apply, in whole or in part, to any individual job defined for an archive server. Parameters used only for individual jobs include Name, Volume, Now, and Stopped. Within a job definition, you can specify values for a given job parameter, or if you do not specify the parameter, its default value is applied.

Changing parameter values in an individual job's settings causes a different outcome than changing parameter values for the default job settings. Modifying values in an individual job affects only the behavior of the individual job. Modifying values for the default job settings affects every job that uses the default values. All changes take effect the next time ArkManager runs.

Use the following properties to define jobs for your archive server:

- ◆ [“Job Information” on page 28](#)
- ◆ [“Source Server Information” on page 28](#)
- ◆ [“Run Schedule” on page 29](#)
- ◆ [“Delete Policy” on page 30](#)
- ◆ [“Filter” on page 30](#)

Job Information

The Job Information in the `sys:\arkManager\arkConfig.xml` file identifies control information for jobs on an archive server. Each job has a unique name that represents a unique relationship between an archive server and a source volume.

IMPORTANT: You can define only one job per source volume.

The following table describes the job properties.

Job Property	Description
Name	<p>The administrator-specified unique job name. For example, <code>svr1_users</code> or <code>svr2_finance</code>. A job name can be up to 64 ASCII characters.</p> <p>The job name persists for the life of the archive server and represents the relationship between the archive server and a specific source volume. You cannot reuse the name for any other archive server and volume relationship.</p> <p>Specify the Name property only for individual jobs, not as a default value.</p>
Stopped	<p>Specify this parameter to define the job but leave it in a Stopped state until you manually activate the job. If the stopped parameter is not used, the job starts, according to the Run Schedule settings, the next time ArkManager runs.</p> <p>Specify the Stopped property only for individual jobs, not as a default value.</p>
Full Copy or No Full Copy	<p>If Full Copy is enabled, the archive server copies all files specified by the job from the source volume to the archive volume on a one-time, special version occurrence. Use this option to save at least one version of every file eligible for versioning.</p> <p>If No Full Copy is disabled, the job begins at the next scheduled start time. Use this option to save versions of files eligible for versioning only as the files change during epochs.</p>

Source Server Information

The Source Server information in the `sys:\arkManager\arkConfig.xml` file identifies the source server, the NSS volume that contains the information to be versioned, and the destination pool where temporary snapshot pools are stored during the versioning process.

Job Property	Description
Server	<p>The host name of the NetWare 6.5 or OES NetWare source server where the data to be versioned is located. For example, <code>svr2</code>. This server is in the same eDirectory tree as the archive server.</p>
Volume	<p>The name of the source NetWare 6.5 or OES NetWare NSS volume where the data to be versioned is located. For example, <code>users</code> or <code>data</code>.</p> <p>Specify the Volume property only for individual jobs, not as a default value.</p>

Job Property	Description
Snapshot Pool	<p>NSS pool snapshot technology allows all eligible files to be versioned at the end of the epoch, even exclusively open files.</p> <p>Specify the pool name of the destination pool for the snapshots. The snapshots are maintained temporarily at the end of an epoch until point-in-time file versions can be saved to the archive database. For example, create a pool named arksnaps on the source server.</p> <p>If defined in an individual job, the snapshot pool must be a different pool than the original pool where the source volume resides. If defined in the default job settings, the snapshot pool must be a different pool than any of the original pools where source volumes reside.</p> <p>If no snapshot pool name is specified or if the snapshot cannot be created for any reason, the versioning process copies files directly from the source volume. In this case, eligible files that are exclusively opened at the time cannot be versioned, and eligible files that are deleted before the copy occurs cannot be archived.</p>

Run Schedule

Run Schedule in the `sys:\arkManager\arkConfig.xml` file specifies when to start the job upon activation, and the frequency for running the job. To set the frequency, you must specify one of three scheduling options: Use Defaults, Scheduled Interval, or Scheduled Start Time.

Job Property	Description
Now	<p>If Now is enabled, the job begins immediately the first time it is activated.</p> <p>If Now is disabled, the job begins at its next scheduled start time whenever it is activated.</p> <p>Specify the Now property only for individual jobs, not as a default value.</p>
Scheduled Interval	<p>If it is used, the Scheduled Interval specifies the elapsed time between the beginning of versioning processes for a job. The units can be seconds, minutes, hours, or days. For example, 45 seconds, 1 minute, 15 minutes, 2 hours, or 12 hours.</p> <p>If the versioning process exceeds the time specified as the interval, the overlapping scheduled job is skipped. No file versions are saved for skipped job runs. After the version process completes, the job runs at its next scheduled interval. If you observe the job skipping some versioning intervals, you can increase the interval between versions or reduce the amount of data to be versioned by setting Filter properties.</p>
Scheduled Start Time	<p>If it is used, the Scheduled Start Time specifies the start time when the job's version process begins and one or more days of the week to run the job.</p> <ul style="list-style-type: none"> ◆ Start: Specify the start time in hours and minutes. ◆ Daily: Specify the days of the week to run the job. For example, specify All days for a daily job run, or specify one or more days of the week you want the job to run. Choices include Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday, and All.

Delete Policy

The Delete Policy in the `sys:\arkManager\arkConfig.xml` file determines the retention of file versions by age or by number of versions.

Job Property	Description
Delete Interval	<p>Specifies the schedule for deleting file versions, if they are eligible for deletion. The interval represents the amount of time to wait from the time a Delete process ends until another Delete process begins. If a value is not specified, 24 hours is the default interval.</p> <p>The time involved in deleting file versions varies with the amount and complexity of data stored in the archive server. The Delete Schedule operates separately from the Version Schedule.</p> <p>For example, suppose you set the Delete Schedule to 1 hour. When you activate the job, the Delete Schedule begins an interval timer. After 1 hour elapses, the Delete process runs. The timer is inactive while the process runs. When the delete process ends, the interval timer begins again. The process repeats until the job is deactivated.</p>
Maximum Keep	<p>Specifies the maximum number of versions of each file to keep in the archive and how long to keep file versions. At least one of the values must be non-zero. If you set both the Maximum Keep Versions and Maximum Keep Time to zero values, the Delete Policy function does not run.</p> <ul style="list-style-type: none">♦ Time: The maximum time that a file version is maintained in the archive. Specify the time in whole numbers for seconds, minutes, hours, or days.♦ Versions: Specify the maximum number of versions of each file to keep in the archive. When the number of versions exceeds this integer value, the oldest version is deleted.♦ Keep Current Copy: By default, at least one file version of current files remains in the database, even if the Maximum Keep Time elapses. If Keep Current Copy is enabled, the archive keeps an existing file version as long as its source file is current on the source volume, beyond the Maximum Keep Time. After the user deletes the current source file, the deletion is noted at the next scheduled epoch. If the file version's age is within the Maximum Keep Time, the archive database retains a copy of the file version until its Maximum Keep Time elapses. When the file version's age exceeds the Maximum Keep Time, the archive deletes the file version at the next scheduled delete time. <p>If Keep Current Copy is disabled, the archive deletes the file version when the Maximum Keep Time elapses.</p>

Filter

The Filter information in the `sys:\arkManager\arkConfig.xml` file determines what data in the source volume gets versioned. You can combine the filters for the individual job with filters for the default job settings.

Filtering is optional, but you should avoid versioning volumes that contain system software. Exclude system files and file types that change constantly, such as log files and databases. You can also exclude nonessential file types such as MP3 and temporary files such as Internet files. Identify the file types your applications use as intermediate saves for open files, such as the TMP files for Microsoft Word, and set up filters to exclude that file extension from versioning.

Extremely large files, such as database files and ISO image files, take a long time to be copied into the archive, which can potentially block other requests to access the database. You cannot filter files by file size, but you can modify database settings or distribute data to lessen the impact of versioning large files. If your files are potentially very big, such as several hundred megabytes to gigabytes in size, you might need to increase the time that queries wait to access a locked MySQL database before timeout. For example, set the MySQL Lock Wait Timeout variable (`innodb_lock_wait_timeout`) in the `sys:\arkManager\arkSQL.cnf` file to more than the default 50 seconds. Another option is to separate larger files into one or more separate volumes, and then create a job for each source volume. Schedule the jobs to run in off-peak hours.

Job Property	Description
Path	Specifies the relative path of directories in the specified source volume that you want to include or exclude in the versioning process. For example: <path>\log</path>
Extension	Specifies the extension of files in the specified source volume that you want to include or exclude in the versioning process. Use the preceding dot followed by the characters of the file extension. For example: <extension>.mp3</extension>
Pattern	Specifies the regular expression pattern to match for files that you want to include or exclude in the versioning process. For example, to specify a pattern for files that start with the letter a: <pattern>.*\a.*</pattern>
Wildcard	Specifies the wildcard pattern to match for files that you want to include or exclude in the versioning process. For example: <wildcard>a*tmp</wildcard>

Include and Exclude Elements

You can filter out files in the source volume that you do not want to version by using a series of Include and Exclude elements. The child elements within each Include or Exclude element can contain multiple Path, Extension, and Pattern elements, in whatever order is needed to determine what data is eligible for versioning.

By default, all data in the volume is included. The first step in filtering is to exclude everything. For example:

```
<exclude>
  <path>\</path>
</exclude>
```

Next, add back in the paths, file types, and patterns for files you want to version. The latter include or exclude elements override previous include or exclude elements.

Pattern Elements

The regular-expression parser used for the `<pattern>` tag does not support the following regular-expression constructs in PERL 5:

- ◆ The conditional constructs `(?{X})` and `(?(condition)X|Y)`
- ◆ The embedded code constructs `(?{code})` and `(??{code})`

- ◆ The embedded comment syntax (?#comment)
- ◆ The preprocessing operations \l \u, \L, and \U

The regular-expression parser used for the <pattern> tag supports the following regular-expression constructs, which PERL 5 does not:

- ◆ Possessive quantifiers, which match as much as they can and do not back off, even when doing so would allow the overall match to succeed
- ◆ Character-class union and intersection

Character classes can appear within other character classes, and can be composed by the union operator (implicit) and the intersection operator (&&). The union operator denotes a class that contains every character that is in at least one of its operand classes. The intersection operator denotes a class that contains every character that is in both of its operand classes.

The precedence of character-class operators is as follows, from highest to lowest:

- ◆ 1 - Literal escape \x
- ◆ 2 - Grouping [...]
- ◆ 3 - Range a-z
- ◆ 4 - Union [a-e][i-u]
- ◆ 5 - Intersection [a-z&&[aeiou]]

Other notable differences from PERL-based regular expressions are shown in the following table.

Supported Regular Expressions	PERL-Based Regular Expressions
Octal escapes must always begin with a zero. \1 through \9 are always interpreted as back references, and a larger number is accepted as a back reference if at least that many subexpressions exist at that point in the regular expression; otherwise, the parser drops digits until the number is smaller or equal to the existing number of groups or it is one digit.	\1 through \9 are always interpreted as back references; a backslash-escaped number greater than 9 is treated as a back reference if at least that many subexpressions exist; otherwise, it is interpreted, if possible, as an octal escape.
It is implicit that repeated invocations of the find method resume where the last match left off, unless the matcher is reset.	PERL uses the g flag to request a match that resumes where the last match left off.
Embedded flags always take effect at the point where they appear, whether they are at the top level or within a group; in the latter case, flags are restored at the end of the group just as in PERL.	In PERL, embedded flags at the top level of an expression affect the whole expression.
The defined class accepts dangling brackets but is strict about dangling metacharacters like +, ? and *, and throws a PatternSyntaxException if it encounters them.	PERL is forgiving about malformed matching constructs, as in the expression *a, as well as dangling brackets, as in the expression abc], and treats them as literals.

For more information, consult a programming textbook or search the Internet for a reference that discusses the behavior of regular expression constructs.

Wildcard Elements

A wildcard functions like a wildcard in directory searches. Replace characters with an asterisk (*) to search for files that match. For example, to include or exclude files that start with d of type .sxi::

```
<wildcard>d*sxi</wildcard>
```


What's Next

Before you install and configure Novell Archive and Version Services 2.0 on your NetWare server, make sure you meet the prerequisites and guidelines discussed in [“Prerequisites and Guidelines”](#) on page 35.

4

Prerequisites and Guidelines

This section discusses prerequisites and guidelines for designing your Novell® Archive and Version Services system:

- ◆ “Network Architecture Prerequisites and Guidelines” on page 35
- ◆ “Server Prerequisites and Guidelines” on page 36
- ◆ “Storage Media Prerequisites and Guidelines” on page 36
- ◆ “MySQL Prerequisites and Guidelines” on page 38
- ◆ “ArkSQL Guidelines” on page 38
- ◆ “Security Guidelines” on page 39
- ◆ “Coexistence Guidelines” on page 40
- ◆ “Upgrade Path Guidelines” on page 41
- ◆ “Fault Tolerance Guidelines” on page 41
- ◆ “Job Guidelines” on page 42
- ◆ “Schedule Guidelines” on page 43
- ◆ “Prerequisites for Using the NSS File Version Utility” on page 43
- ◆ “Prerequisites for Using the NetStorage Archive Function” on page 44
- ◆ “Prerequisites and Guidelines for Retrieving File Versions” on page 44
- ◆ “Guidelines for Availability of File Versions” on page 45
- ◆ “What’s Next” on page 46

Network Architecture Prerequisites and Guidelines

Make sure your network architecture meets the following prerequisites:

- ◆ Install and configure Novell eDirectory™ for your network, including the tree and server context where you want your archive server to reside. Make sure it is active and running properly. For information, see the *Novell eDirectory 8.7.3 Administration Guide*.
- ◆ Your archive server must be located in the same eDirectory tree as the servers that host its source volumes.
- ◆ Because the archive server moves data in decrypted format, the archive server should be located behind the corporate firewall. If you are versioning data on remote servers, use a virtual private network (VPN) connection between the two.
- ◆ Install Novell iManager, making sure to install the Archive Versioning plug-in. For information, see *Novell iManager 2.5 Administration Guide*.

- ◆ Determine how much bandwidth is required to support versioning traffic, given the following criteria:
 - ◆ How much data is transferred as file versions during each epoch
 - ◆ When the scheduled epochs occur
 - ◆ Where in the network the source volumes are located (the path between the archive server and the source server)
 - ◆ Peak traffic flow based on seasonal variations in productivity

Server Prerequisites and Guidelines

Make sure your archive server and source servers meet the following prerequisites and guidelines:

- ◆ The archive server can be the same or different server as the source server.
- ◆ One archive server can have only one job defined for any one volume.
- ◆ A single archive server can archive many volumes with only one job defined per volume.
- ◆ A given volume can have only one job defined for it.
- ◆ The archive server and the source server can be the same machine or different machines.
- ◆ Archive and Version Services is compatible with OES NetWare and NetWare 6.5. An archive server and its source servers can run either operating system in a mixed environment. Make sure the servers are running the latest upgrades.
- ◆ Make sure your server meets the system and software requirements for NetWare 6.5 SP3 or later. For information, see the *NetWare 6.5 Overview and Installation Guide*.
- ◆ ArkManager uses UTF-8 encoding for filenames. Either the Language Code pages of the NCP™ client and server must be the same, or you must use a current version of the Novell Client™ to provide UTF-8 support and enable the UTF-8 service in the client. CIFS clients have included UTF-8 encoding support since NetWare 6.0 SP 2 and NetWare 6.5. For information, see “[Enabling UTF-8 Encoding Support for Clients](#)” on page 81.
- ◆ Determine how much storage space you need for the archive database, given the following criteria:
 - ◆ How much data needs to be stored immediately by the versioning job
 - ◆ How much data there is to version (the physical storage requirements by versioning job)
 - ◆ How frequently the data must be versioned (the length of time in an epoch by versioning job)
 - ◆ How long you need to store the versions (maximum keep time and maximum versions to keep by versioning job)

Storage Media Prerequisites and Guidelines

Make sure your archive volume and source volumes meet the following prerequisites and guidelines:

- ◆ The source and archive data volumes must be Novell Storage Services™ (NSS) data volumes that use the OES NetWare and NetWare 6.5 media format.

You can create the NSS volumes on an OES NetWare server, an OES Linux server, or a NetWare 6.5 server. If the NSS volume is on an OES Linux server, you must move it to a

cross-compatible OES NetWare server before it can participate in your Archive and Version Services solution.

- ◆ If you are upgrading an existing archive server:
 - ◆ Back up your existing archive database and the archive data before you begin the upgrade to NetWare 6.5 Support Pack 3 or later. For information, see [“Backing Up the Archive Database” on page 80](#) and [“Backing Up the Archive Data” on page 80](#).
 - ◆ Verify that ArkManager is not running when you begin the upgrade. For information, see [“Stopping ArkManager” on page 77](#).
 - ◆ After the upgrade, continue to use the same NSS pool, volume, and directory for your upgraded archive database and archive data.
- ◆ If the volumes with files you want to version reside on NetWare 6.0 and earlier servers, perform the following operating system upgrades, as appropriate:
 - ◆ Upgrade the source server to OES NetWare or NetWare 6.5 SP3 or later. For information, see the [NetWare 6.5 Overview and Installation Guide](#).
 - ◆ If you are upgrading from NetWare 6.0, your NSS media format upgrades in the background over a period of up to 21 days. The format update process is accelerated automatically if the volume begins to participate as a source volume before the conversion is complete; the upgrade requires no outside action on your part.
 - ◆ If you are upgrading from NetWare 5.x, you must upgrade your NetWare 5.x NSS volumes and Traditional volumes. For information, see [“Upgrading NetWare 5 Volumes to NetWare 6.x NSS Volumes Using Volume Copy Upgrade”](#) in the [Novell Storage Services File System Administration Guide for NetWare 6.5](#).
- ◆ Create an NSS storage pool and volume to use exclusively for your archive database and archive data that meets the following guidelines:
 - ◆ Do not place the archive volume in your sys: pool.
 - ◆ For each archive server, use the information from your planning session to design the physical storage media for its archive database.
 - ◆ Make sure your implementation allocates enough space to meet your immediate archive needs and is scalable to accommodate future growth.
 - ◆ The NSS volume you use for your archive database cannot contain data that you plan to archive. The archive volume and the source volume cannot be the same volume.
 - ◆ If you plan to version files from an encrypted source volume, the archive volume should also be an encrypted volume so that data continues to be protected in the archive database. For information about Encrypted Volume Support, see [“Managing Encrypted NSS Volumes”](#) in the [Novell Storage Services File System Administration Guide for NetWare 6.5](#).
- ◆ The archive volume and the source volume should reside in separate storage pools, but they can be in the same pool.
- ◆ The pool for the archive volume and the pool for the source volumes should use different storage devices, but this is not required.
- ◆ You should store the archive database and archive data in a directory in the archive volume for easy backup. The archive data is always stored in subdirectories at the base of the archive path.

MySQL Prerequisites and Guidelines

Before you install the Novell Archive and Version Services 2.0 instance of MySQL on your MySQL server:

- ◆ If this is a new install, create the pool, volume, and directory where you want to store the archive database and archive data for Novell Archive and Version Services 2.0. For information, see [“Creating an Archive Volume” on page 50](#).
- ◆ If this is an upgrade, continue to use the existing pool, volume, and directory for the archive database and archive data.
- ◆ Consider security issues for MySQL. If you are currently using a MySQL server, modify its settings to ensure a secure installation. If you are setting up a new MySQL server, make sure to choose the Secure Installation options.

By default, the MySQL installation does the following:

- ◆ Allows the MySQL database to be created without specifying a root password
- ◆ Allows a root user to connect to the MySQL database from the local host or remotely
- ◆ Creates an anonymous user and allows that user to connect locally or remotely
- ◆ Allows the anonymous user to perform any function on any databases named “test” or that begin with “test_”
- ◆ Creates an initial test database.

With the default installation instead of a secure installation, any local user can connect without a password and be treated as the anonymous user. This creates a high security risk in your production environment. You are strongly encouraged to use a secure installation of MySQL for production environments.

For information about MySQL, see the [MySQL Reference Manual \(http://dev.mysql.com/doc/mysql/en/index.html\)](http://dev.mysql.com/doc/mysql/en/index.html) or see [MySQL for NetWare Administration Guide for NetWare 6.5](#).

ArkSQL Guidelines

Archive and Version Services uses MySQL with InnoDB, which manages all tables within one tablespace. The potential size of the tablespace in the archive database depends on the combination of the following:

- ◆ Number of versioning jobs defined
- ◆ The scheduled frequency of each job
- ◆ The expected number of source files and their modification frequency for each job
- ◆ The delete policy for file versions

By default, the initial amount of space reserved for the archive database tablespace is 400 MB. The size of the reserved space is automatically extended by 8 MB every time the tablespace is filled.

You can specify a larger or smaller initial tablespace by modifying the `innodb_data_file_path` parameter in `sys:\arkManager\arkSQL.cnf` file. The minimum tablespace size is 10MB, as governed by the InnoDB constraints. The reserved size must not exceed the volume size. The maximum tablespace size on NetWare is 8 TB because the maximum size of an NSS volume is 8 TB. However, because your archive database and archive data files share the same volume, the practical limit of the tablespace is much smaller than 8 TB.

For information about configuring ArkSQL, see “[Modifying the ArkSQL Settings](#)” on page 79.

You can also extend the existing tablespace manually by adding new components (raw partition or regular file). For information, see “[The InnoDB Storage Engine](#)” (<http://dev.mysql.com/doc/mysql/en/InnoDB.html>) in the *MySQL Reference Manual* (<http://dev.mysql.com/doc/mysql/en/index.html>).

Security Guidelines

NSS Encrypted Volume Support

If you plan to version files from an encrypted source volume, the archive volume must also be an encrypted volume. For information about Encrypted Volume Support, see “[Managing Encrypted NSS Volumes](#)” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

eDirectory and MySQL Administrator Passwords

The administrator passwords for Novell eDirectory and MySQL are stored initially in the `sys:\arkManager\arkConfig.xml` file in clear text. The first time you run ArkManager, it reads the password, encrypts it, then stores the encrypted password in a local store. It removes the password from the `arkConfig.xml` file, then saves the file. Until the password is moved to an encrypted store, the `arkConfig.xml` file is protected from unauthorized access by the file system rights that apply to the `sys:\arkManager` directory and the `arkConfig.xml` file itself.

The eDirectory and MySQL `<password>` elements in the `sys:\arkManager\arkConfig.xml` file are not necessary unless you need to change the saved password. ArkManager refers to the encrypted passwords whenever you use the `arkStart` command. If you change the administrator user’s password on the network or the root user’s password for MySQL, you must also change the related passwords that arkManager uses when it starts. ArkManager cannot restart until you pass it the correct password in the `arkConfig.xml` file.

MySQL Secure Installation

You are strongly encouraged to use a secure installation of MySQL for production environments. With the default installation instead of a secure installation, any local user can connect without a password and be treated as the anonymous user. This creates a high security risk in your production environment. You are strongly encouraged to use a secure installation of MySQL for production environments.

Secure Data Transfer

Because the archive server moves data in decrypted format, the archive server should be located behind the corporate firewall. If you are versioning data on remote servers, use a virtual private network (VPN) connection between the two.

User Authentication

Archive and Version Services uses Novell eDirectory to authenticate users accessing the archive database. For more information, see “[Network Architecture Prerequisites and Guidelines](#)” on page 35.

Archive Database

You should store the archive database and archive data in a directory in the archive volume for easy backup. The archive data is always stored in subdirectories at the base of the archive path.

Coexistence Guidelines

This section discusses coexistence issues for Novell Archive and Version Services for NetWare 6.5 Support Pack 3 and for Novell Open Enterprise Server NetWare.

Network Systems Support

The following table summarizes the compatibility of Novell Archive and Version Services 2.0 with operating systems and directory services versions, along with any dependencies on other products or services.

NetWare 6.5 SP3 Operating System	Supported
OES NetWare Operating System	Supported
OES Linux Operating System	Not supported
Directory Services	eDirectory 8.7.3 or later
Dependencies	MySQL

File System Support for Data to be Archived

The source and archive data volumes must be Novell Storage Services™ (NSS) data volumes that use the OES NetWare and NetWare 6.5 media format. For information, see [“Storage Media Prerequisites and Guidelines” on page 36](#).

An archive server and its source servers where NSS data volumes reside can run either operating system in a mixed environment. Make sure the servers are running the latest upgrades. The following table summarizes the compatibility of Novell Archive and Version Services 2.0 with various network operating systems versions and file systems available in NetWare 6.5 and OES NetWare.

Archive Server	Target Source Volumes Where Data to be Versioned Resides						
Supported Operating Systems	NSS Volumes for OES NetWare	NSS Volumes for NetWare 6.5 and later	NSS Volumes for NetWare 5.1 and 6.0	Traditional Volumes for NetWare (all versions)	NSS Volumes on OES Linux	NCP Volumes (Native Linux plus NCP Server) on OES Linux	Native Linux Volumes on SLES 9.x
OES NetWare	Yes	Yes	No	No	No	No	No
NetWare 6.5 SP3	Yes	Yes	No	No	No	No	No
NetWare 6.5 SP2	Yes	Yes	No	No	No	No	No
NetWare 6.5 SP1	Yes	Yes	No	No	No	No	No
NetWare 6.5	Yes	Yes	No	No	No	No	No

UTF-8 Encoding for Filenames

ArkManager uses UTF-8 encoding for filenames. Either the Language Code pages of the NCP client and server must be the same, or you must use a current version of the Novell Client to provide UTF-8 support and enable the UTF-8 service in the client. CIFS clients have included

UTF-8 encoding support since NetWare 6.0 SP 2 and NetWare 6.5. For information, see [“Enabling UTF-8 Encoding Support for Clients” on page 81](#).

Upgrade Path Guidelines

This section provides information on how to upgrade a previous installation of Novell Archive and Version Services to the NetWare 6.5 Support Pack 3 or later version.

Upgrading from ArkManager 1.0

You can upgrade your ArkManager 1.0 server, using ArkUpgrade. For information, see [“Upgrading an Archive Server from ArkManager 1.0 to 2.0” on page 65](#).

Upgrading from ArkManager 2.0

You can upgrade your ArkManager 2.0 server, using the standard upgrade process. For information, see [“Upgrading an Archive Server” on page 64](#) or [“Upgrading an Archive Server Cluster” on page 65](#).

Fault Tolerance Guidelines

If your data is critical, you can design fault tolerant and high availability solutions for Novell Archive and Version Services, including multiple connection channels, software RAID devices, and cluster solutions. These solutions are optional.

Multiple Connection Channels for Storage Devices

Multiple connection channels can help ensure fault-tolerant connectivity between the archive server and the devices containing the archive volume.

For information, see [“Managing Multiple Connection Paths to Devices”](#) in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

Software RAID Devices

Software RAIDs can improve read/write performance and ensure data protection. NSS file systems support software RAID 0 (striping), RAID 1 (mirroring), and RAID 5 (striping with parity). All software RAID devices can improve file access performance, but only RAID 1 and RAID 5 also provide data protection to your storage media solution. To add fault tolerance your archive volume, you can set up the device you plan to use for your NSS pool as a RAID-1 device, a RAID-5 device, or a RAID-10 device.

For information, see [“Managing Software RAID Devices”](#) in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

Server Clusters

A Novell Cluster Services™ solution improves service availability. In an active/passive cluster configuration, one server is active and any other server nodes act as hot-standby servers. If the active server goes down, the Cluster Services software handles the failover to the next available server in the cluster. If the server running Archive and Version Services goes down, Cluster

Services ensures that the archive services and database remains available to versioning processes and to users who need to retrieve file versions.

Before you configure Novell Archive and Version Services in a cluster solution, you must install Novell Cluster Services 1.7 for NetWare, which includes Cluster Services and licenses for two cluster nodes. An active/passive, two-node NetWare cluster is the basic fault-tolerant solution.

If you plan to set up the archive server in a clustered configuration, you must create a shared NSS volume as your archive volume. If you are combining a clustered configuration and using software RAID devices, make sure the software RAID devices are sharable for clustering, then assign them as devices in the cluster-enabled NSS pool you create for your archive volume.

For information, see the *Novell Cluster Services 1.7 Administration Guide*.

Job Guidelines

One archive server can have only one job defined for any one volume. However, the archive server can run jobs for multiple source volumes.

WARNING: Define only one job per volume. If you attempt to define multiple jobs for a volume, ArkManager does not run as designed and data integrity in the archive database is compromised.

Jobs should focus on versioning files from productivity applications. Filtering is optional, but you should avoid versioning volumes that contain system software. Exclude system files and file types that change constantly, such as log files and databases. You might also want to exclude nonessential file types such as MP3 and temporary files such as Internet files. Identify the file types your applications use as intermediate saves for open files, such as the TMP files for Microsoft Word, and set up filters to exclude that file extension from versioning.

Extremely large files, such as database files and ISO image files, take a long time to be copied into the archive, which can potentially block other requests to access the database. You cannot filter files by file size, but you can modify database settings or distribute data to lessen the impact of versioning large files. If your files are potentially very big, such as several hundred megabytes to gigabytes in size, you might need to increase the time that queries wait to access a locked MySQL database before timeout. For example, set the MySQL Lock Wait Timeout variable (innodb_lock_wait_timeout) in the sys:\arkManager\arkSQL.cnf file to more than the default 50 seconds. Another option is to separate larger files into one or more separate volumes, and then create a job for each source volume. Schedule the jobs to run in off-peak hours.

A job name must be unique to the archive server. Make sure your job names conform to the following guidelines:

- ◆ To see job names that are currently in use, see “[Viewing a List of Versioning Jobs on Your Archive Server](#)” on page 85. However, after you delete a job, it no longer appears in this list.
- ◆ Once defined, the job (as identified by its name) persists for the life of the archive server. The job name is reserved for the unique relationship between the archive server and a specific source volume. It cannot be reused to represent a relationship between the archive server and a different volume, even if the original source volume ceases to exist.
- ◆ Consider using a naming convention for jobs or keeping a log of the jobs you create for each archive server, as illustrated in the table below.

Archive Server	Archive Volume	Source Server	Source Volume	Job Name
ark1	ark	data1	usersa2j	data1_usersa2j

Archive Server	Archive Volume	Source Server	Source Volume	Job Name
		data2	usersk2r	data2_usersk2r
		dev81	projA	dev81_projA

- ◆ You can only reuse a job name for its original source volume. If you delete a job by removing its definition from the `sys:\arkManager\ArkConfig.xml` file, only the job definition is deleted. It does not delete a job's related file versions from the archive. After deleting a job, if you later add a new job for the same source volume on the same archive server, you must assign the same job name. For this reason, use the `Stopped` element (`<stopped/>`) if you want to stop a job.

Schedule Guidelines

You should allow enough time for one version job to be captured before beginning another epoch for that job. If a versioning process cannot finish before the next process is scheduled to begin, the archive server continues to version the job and skips other scheduled processes until the job finishes.

For example, suppose that you configure a versioning job with a one-minute epoch for a source volume that contains an amount of data that takes 5.2 minutes to archive. The version process begins at time 0. At each 1-minute interval thereafter, the next scheduled versioning checks to see if the job is already running. If it is, the job does not begin. In this example, the scheduled versioning processes do not occur at 1, 2, 3, 4, and 5 minutes. The next versioning process begins at 6 minutes. Although the user expects to have file versions available at 1-minute intervals, the file versions are at 6-minute intervals.

To avoid such problems, consider the following configuration alternatives:

- ◆ Set epochs realistically, based on the amount of data to be versioned from the source volume and the bandwidth of the connection between the source server and the archive server.
- ◆ Filter the data on the source volume to exclude unnecessary data from being versioned.
- ◆ Divide data on the source volume to create multiple volumes. Then you can configure multiple jobs to run concurrently on the same or different archive server.

Prerequisites for Using the NSS File Version Utility

Users can search for file versions and restore them with the NSS File Version Utility on their Microsoft Windows 2000/XP/2003 clients, with either NCP™ or CIFS support. The utility integrates with the Windows desktop to allow users to natively restore previous versions of their current, renamed, or deleted files that are stored in the archive database.

- Set up NCP or CIFS support for the archive server.
- Distribute and install the NSS File Version Utility on compatible user workstations.

You can find the NSS File Version Utility installation file (`nwver.exe`) in the *Novell NetWare Products* CD in the `\tools\nsstools` directory.

For information about installing and using the NSS File Version Utility, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

Prerequisites for Using the NetStorage Archive Function

Users can search for file versions and restore them with Novell NetStorage from anywhere, at any time, using a compatible Web browser and a network or Internet connection.

- ❑ Install a Novell NetStorage server.
- ❑ Configure Archive access to NetStorage services.

For information about installing and configuring Novell NetStorage, see the *NetWare 6.5 NetStorage Administration Guide*.

For information about using NetStorage and the Archive function, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

Prerequisites and Guidelines for Retrieving File Versions

Previous versions of files can exist in the archive database only after the files meet the following prerequisites:

- ◆ You install and configure Novell Archive and Version Services 2.0 on your NetWare 6.5 Support Pack 3 or later server.
- ◆ You configure at least one job to version OES NetWare or NetWare 6.5 NSS volumes where user data is stored. These NSS data volumes can reside on an OES NetWare server or NetWare 6.5 server.
- ◆ You set criteria to determine which files are eligible for versioning. Files can be included or excluded according to their path, file extension, or filename patterns. If files on a specified volume meet the resultant criteria, they are eligible for versioning.
- ◆ Versioning occurs for eligible files at scheduled intervals, called epochs. You can also use iManager to pause jobs and run jobs on demand, as needed.
- ◆ A file's lifetime must span the end of at least one epoch to be versioned. Only files that exist when the versioning occurs are versioned.

If a user creates a file after an epoch begins, and deletes the file before the end of the epoch, the file cannot be versioned. If a user creates a file that spans the end of a scheduled epoch, but deletes the file before the scheduled job actually copies the file to the archive, the file is not versioned.

- ◆ It does not matter how much or how often a user changes an eligible file during an epoch. The versioning process captures the file in whatever state it is in at the end of the epoch. A user does not have direct control over which files are versioned, when the versioning occurs, or what the state of any file is when the epoch ends and the file versions are copied to the archive database.
- ◆ Versioned files typically have a limited lifetime in the archive. You configure a Delete Policy that sets the maximum keep time and the maximum number of versions to retain. The Delete Policy for volumes can be configured to allow indefinite retention of at least one most recent file version of a current file.
- ◆ To retrieve file versions using the NSS File Version Utility, users must download and install the NSS File Version utility on their Windows 2000/XP/2003 workstations.
- ◆ To retrieve file versions using Novell NetStorage, users must have a workstation with a compatible Web browser and a network or Internet connection to the Novell NetStorage server.

Guidelines for Availability of File Versions

After your system meets the [Prerequisites and Guidelines for Retrieving File Versions](#), there are several reasons that previous versions of a current, renamed, or deleted file might not exist in the archive database:

File Versions Are No Longer Supported for a Volume

If you suspend or delete a versioning job for a volume, its scheduled jobs do not run and no new versions are saved to the archive. For suspended jobs, users can retrieve available file versions from the archive. For deleted jobs, the file versions remain in the database but users cannot access them until a job with the same name is added back into the `sys:\arkManager\arkConfig.xml` file. For suspended jobs, the job's Delete Policy continues to be applied to existing versions in the archive. Eventually, the file versions meet the criteria for deletion defined in the job's Delete Policy.

If Keep Current Copy is enabled for the job's Delete Policy, at least one file version of a file remains in the database if its source file is current on the source volume, even if the Maximum Keep Time elapses.

If Keep Current Copy is disabled, the archive deletes the file version when the Maximum Keep Time elapses.

A File's Lifetime Does Not Span the End of an Epoch

A file is versioned only if it exists at the end of an epoch. If scheduled versioning processes are paused or delayed for a period of time that exceed the lifetime of a given file, its file version might not be captured, even if the file exists for a length of time that exceeds the epoch. Although the frequency of the epoch usually is less than the typical lifetime of your files, there might be occasions when the versioning time is extended. For example, if the time it takes to save versions of all the files eligible for versioning overlaps one or more scheduled epochs, some scheduled epochs might be skipped until the current process ends and the next scheduled start time occurs.

To avoid this problem:

- ◆ Schedule a job's epoch for a period of time shorter than a typical file's lifetime for the volume, while allowing enough time to capture file versions.
- ◆ Enable the Pool Snapshot option for capturing file versions.
- ◆ Minimize the use and length of job pauses.

A File Is Open When Versioning Occurs

Novell Archive and Version Services 2.0 leverages NSS pool snapshot technology to save point-in-time versions of all files, including open ones. If you disable the Pool Snapshot option, the files that are eligible for versioning are copied directly from the source volume. Exclusively open files cannot be versioned and data might be inconsistent.

To avoid this problem, make sure to enable the Pool Snapshot option for the archive server.

A File Is Deleted Before A Version Can Be Saved

If the Pool Snapshot option is disabled for your archive server, file versions are saved from the volume to the archive, which takes time. If a file is created during an epoch and exists at the end of an epoch, but a user deletes it before a version can be copied to the archive database, that file version is not saved to the archive database. If the Pool Snapshot option is enabled, versions of all

files, even exclusively open ones, are captured by the snapshot and a point-in-time version of each file can be saved to the archive.

To avoid this problem, make sure to enable the Pool Snapshot option for the archive server.

The Age of a File Version Exceeds Retention Thresholds

If your Delete Policy is excessive, file versions might exceed retention thresholds too quickly to be of use to your users. Typically, the file's archived versions are deleted automatically from the archive database as they exceed the Maximum Time to Keep Versions or the Maximum Number of Versions.

To avoid this problem, make sure your Delete Policy meets the needs of your users.

What's Next

After your design and resources meet the requirements and guidelines, you are ready to install or upgrade Archive and Version Services.

To Perform This Task	Refer To
Installing Novell Archive and Version Services	Installing and Configuring Archive Servers (page 47)
Configuring ArkUpgrade to convert archive databases for existing jobs from ArkManager 1.0 to ArkManager 2.0 format	Upgrading an Archive Server from ArkManager 1.0 to 2.0 (page 65)

5

Installing and Configuring Archive Servers

This section describes how to install and configure Novell® Archive and Version Services 2.0 on NetWare® 6.5 Support Pack 3 or later.

- ♦ [“Before You Begin” on page 47](#)
- ♦ [“Selecting an Installation Scenario” on page 47](#)
- ♦ [“Installing and Configuring an Archive Server” on page 47](#)
- ♦ [“Installing and Configuring an Archive Server Cluster” on page 56](#)

To upgrade your existing archive servers, see [“Upgrading Archive Servers” on page 63](#).

Before You Begin

Before installing NetWare and Novell Archive and Version Services 2.0:

- 1** Plan your archive server implementation. For information, see [“Planning for Archive and Version Services” on page 23](#).
- 2** Make sure that your planned archive server implementation meets the prerequisites and guidelines for Novell Archive and Version Services. For information, see [“Prerequisites and Guidelines” on page 35](#).
- 3** Continue with [“Selecting an Installation Scenario” on page 47](#).

Selecting an Installation Scenario

Depending on your planned implementation, continue with one of the following ways to set up an archive server:

Existing Archive	Single or Cluster	Refer To
None	Single server	Installing and Configuring an Archive Server (page 47)
None	Server cluster	Installing and Configuring an Archive Server Cluster (page 56)

Installing and Configuring an Archive Server

This section discusses the following tasks:

- ♦ [“Installing NetWare and ArkManager 2.0” on page 48](#)
- ♦ [“Configuring Software RAID Devices for Your Archive Pool and Volume” on page 48](#)

- ◆ “Creating an Archive Pool” on page 50
- ◆ “Creating an Archive Volume” on page 50
- ◆ “Configuring the ArkSQL Configuration File” on page 51
- ◆ “Installing and Configuring the ArkSQL Server” on page 52
- ◆ “Configuring Archive Server Information” on page 54
- ◆ “Archiving File Versions” on page 55

Installing NetWare and ArkManager 2.0

After you [plan your system and meet prerequisites and guidelines](#), you are ready to install the Archive and Version Services software module, ArkManager, on your server.

- 1** Install the latest version of NetWare 6.5 on your archive server, using the Basic install option.

The Basic option installs ArkManager 2.0 on your server, but you must configure other key components before you can run the program.

- 2** The configuration files and sample configuration files are located in the `sys:\arkManager` directory. Confirm the install by looking for these elements:

```
arkConfig_sample_basic.xml
arkConfig_sample_full.xml
arkSQL_sample.cnf
```

- 3** Use the Archive Versioning plug-in for iManager as the management interface to control versioning jobs and to view the ArkManager job log.

- 3a** Launch a Web browser, then open it to the Novell iManager Login:

```
https://svr1.domain.com/nps/iManager.html
```

Replace `svr1.domain.com` with the actual IP address or DNS name of your archive server. The URL path is case sensitive.

- 3b** Log in as the administrator user (such as admin) to the Novell eDirectory™ tree that contains your archive server.

The Archive Versioning role is available in the Infrastructure category. For information about iManager, see [Novell iManager 2.5 Administration Guide](#).

- 4** Depending on your implementation plan, continue with one of the following:

- ◆ [Configuring Software RAID Devices for Your Archive Pool and Volume \(page 48\)](#)
- ◆ [Creating an Archive Pool \(page 50\)](#)

Configuring Software RAID Devices for Your Archive Pool and Volume

After you [install NetWare](#), you can optionally create a software RAID device for the archive pool and volume to satisfy your availability needs. Use one of the following methods:

- ◆ “Creating a Software RAID 1 or 5 Device” on page 49
- ◆ “Creating a Software RAID 10” on page 49

Creating a Software RAID 1 or 5 Device

To create a fault-tolerant solution for data, create a software RAID 1 or 5 device to use for your archive pool and volume. For information, see “Configuring Software RAID Devices” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 1** In iManager, click Storage > Software RAIDs.
- 2** If it is not already selected, select the archive server.
- 3** Click New to open the Create a Software RAID dialog box.
- 4** Specify a name for the RAID.
- 5** Specify the type of RAID:
 - ♦ RAID 1 (mirroring)
 - ♦ RAID 5 (striping with parity)
- 6** (Conditional) For a RAID 5 device, specify the stripe size.

The default size of 64 KB typically provides the best performance for devices with NSS volumes.
- 7** From the available devices, select the devices that you want to use.

For a RAID 1 device, specify 2 to 4 devices. For a RAID 5 device, specify 3 to 14 devices.
- 8** Specify the amount of space to use for each segment. Each segment contributes equal amounts of space.
- 9** Click OK.
- 10** Continue with “[Creating an Archive Volume](#)” on page 50.

Creating a Software RAID 10

To provide maximum data fault tolerance, create a software RAID 10 (mirrored RAID 0 device) by creating a pool on a RAID 0 device, and then mirroring the pool’s partition.

- 1** Create 2 to 4 software RAID 0 (striping) devices. Repeat the following these steps to create each device:
 - 1a** In iManager, click Storage > Software RAIDs.
 - 1b** If it is not already selected, select the archive server.
 - 1c** Click New to open the Create a Software RAID dialog box.
 - 1d** Specify a name for the RAID.
 - 1e** Specify the type of RAID as RAID 0.
 - 1f** Specify the stripe size.

The default size of 64 KB typically provides the best performance for devices with NSS volumes.
 - 1g** From the available devices, select the devices that you want to use.

Make sure that the segments in each of your RAID 0 devices have no devices in common; otherwise, you cannot mirror them later.
 - 1h** Specify the amount of space to use for each segment. Each segment contributes equal amounts of space.
 - 1i** Click OK.

- 2** Create an archive pool on one of the RAID 0 devices. For information, see [“Creating an Archive Pool” on page 50](#).
 - 3** Mirror the archive pool to create the RAID 10 pool.
 - 3a** In NSSMU, select Partitions from the NSSMU main menu.
 - 3b** Select the NSS partition for the archive pool.
 - 3c** Press F3 to create the RAID 1 device and mirror the partition.
 - 3d** From the available devices, select 1 to 3 of the RAID 0 devices you created in [Step 1](#), then press Enter.
- For information, see “Configuring Software RAID Devices” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.
- 4** Continue with [“Creating an Archive Volume” on page 50](#).

Creating an Archive Pool

On your [NetWare archive server](#), you must create an NSS pool where you plan to store the archive database and archive data. For information, see “Configuring Pools” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 1** In iManager, click Storage > Pools.
- 2** If it is not already selected, select the archive server.
- 3** Click New to open the New Pool Wizard.
- 4** Specify a name for the pool. For example, ark.
- 5** Specify the devices to use.

If you created a software RAID device in [“Configuring Software RAID Devices for Your Archive Pool and Volume” on page 48](#), make sure to select that device for your pool.
- 6** Specify the amount of space to use.
- 7** Click OK.
- 8** Continue with [“Creating an Archive Volume” on page 50](#).

Creating an Archive Volume

On your [archive pool](#), create an NSS volume and directory where you plan to store the archive database and archive data. You should use the volume exclusively for the archive.

- 1** Create an NSS volume.

The following procedure describes how to create a non-encrypted NSS volume with iManager. If your implementation requires an encrypted NSS volume to store file versions from encrypted NSS data volumes, use the NSS Management Utility to create the encrypted volume. The iManager Storage plug-in does not provide an encryption option. For information, see “Configuring Encrypted NSS Volumes” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

 - 1a** In iManager, click Storage > Volumes.
 - 1b** If it is not already selected, select the archive server.
 - 1c** Click New to open the New Volume Wizard.

- 1d** Configure the new volume.
 - ◆ Specify a name for the volume. For example, ark.
 - ◆ Select the NSS pool you created in [“Creating an Archive Pool” on page 50](#), then select the Allow the Volume to Grow to Pool Size check box.
 - ◆ Specify the desired attributes for the volume.

1e Click Finish.

For more information, see “Configuring Volumes” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 2** (Optional, recommended) Create a directory in the archive volume where you want to store the archive database and archive data.
 - 2a** Open your Web browser to the Novell Remote Manager Login page on the archive server, and then log in with your administrator username and password. For example, enter `https://192.168.1.1:8009`
Replace `192.168.1.1` with the actual IP address or DNS name of your archive server.
 - 2b** Click Manage Server > Volumes.
 - 2c** Click the Properties icon next to the archive volume.
 - 2d** Type the name of the directory, then click Create Subdirectory.
- 3** Continue with [“Configuring the ArkSQL Configuration File” on page 51](#).

Configuring the ArkSQL Configuration File

The ArkSQL configuration file (`sys:\arkManager\arkSQL.cnf`) contains the configuration information for the Novell Archive and Version Services instance of MySQL on your MySQL server. ArkManager uses this information to access the archive database.

- 1** In a text editor, configure ArkSQL with the MySQL settings for the archive database.

- 1a** Copy the contents of the `sys:\ArkManager\arkSQL_sample.cnf` file to the `sys:\arkManager\arkSQL.cnf` file.

Microsoft Windows automatically hides the `.cnf` extension. If you use a Microsoft Windows computer to create or edit the `arkSQL.cnf` file, make sure file name is `arkSQL.cnf`, not `arkSQL.cnf.cnf`.

To view a copy of the `arkSQL_sample.cnf` file, see [“Sample of the Database Configuration for ArkSQL.cnf” on page 117](#).

- 1b** Modify the `arkSQL.cnf` file to meet your needs. For example:

- ◆ Set the Data Directory path by modifying the following directives:

```
datadir = ark:/archive/
innodb_data_home_dir = ark:/archive/
innodb_log_group_home_dir = ark:/archive/
innodb_log_arch_dir = ark:/archive/
```

The data directory is the directory in your archive volume where the archive database resides. A directory location facilitates easy backup. Replace `ark` with the name of the archive volume. Replace `archive` with the name of the archive database directory.

- ◆ Set the Port Number by modifying the following directive:

```
port = 3306
```

Replace *3306* with the actual port number.

- ◆ Set the size of reserved storage space for the archive database by modifying the following directive:

```
innodb_data_file_path = ibdata1:400M:autoextend
```

Replace *400* with the amount of space (in MB) that you want to reserve initially for the archive database. The reserved size you specify must be at least 10 MB and must not exceed the volume size.

- ◆ (Optional) If your files are potentially very big, such as several hundred megabytes to gigabytes in size, consider increasing the time that queries wait to access a locked MySQL database. Set the Lock Wait Timeout variable by modifying the following directive:

```
set-variable = innodb_lock_wait_timeout=50
```

The default value is 50 seconds. Specify a longer wait time in seconds that is sufficient to avoid Lock Request Timeout errors. The more and bigger the files versioned, the longer the wait time should be.

- 2 Continue with “[Installing and Configuring the ArkSQL Server](#)” on page 52.

Installing and Configuring the ArkSQL Server

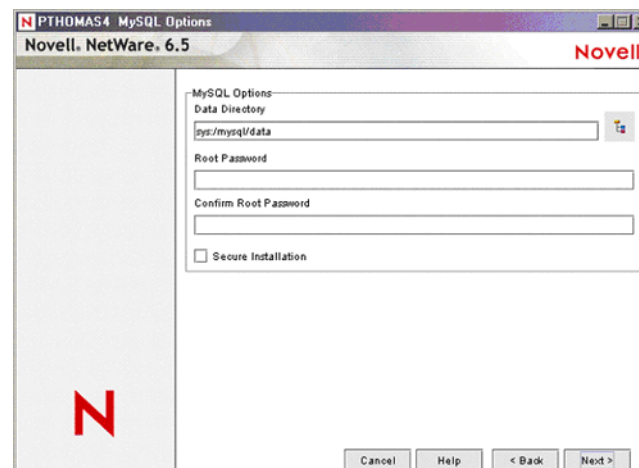
After you [configure the ArkSQL configuration file](#), you are ready to install the ArkManager instance of MySQL on your archive server. Novell Archive and Version Services 2.0 uses a MySQL server to organize and host file versions in the archive database. MySQL is an open source, structured query language (SQL) database.

IMPORTANT: This guide refers to the Archive and Version Services instance of MySQL as ArkSQL.

- 1 (Conditional) If MySQL is not installed, install MySQL Server and configure an instance of MySQL for Novell Archive and Version Services. If MySQL server is already installed on your archive server, go to [Step 2](#).

- 1a From the NetWare GUI, click the NetWare post-install program, then select MySQL. The installation begins and opens the MySQL installation dialog box.

Figure 3 MySQL Installation Dialog Box



1b Complete the following information:

- ◆ **Data Directory:** The data directory is the directory in your archive volume where the archive database resides. A directory location facilitates easy backup.

For example, type `ark:\archive`, where *ark* is the name of your archive volume and *archive* is the archive database directory. This is the same information you used in the `sys:\arkManager\arkSQL.cnf` file.

IMPORTANT: Do not use the default location of `sys:\mysql\data`.

Allow a minimum of 1 gigabyte of space on the archive volume for the data organization and management information related to ArkSQL.

- ◆ **Root Password:** The password for the root user, or *superuser*, who has access rights to perform any function.

We strongly recommend that a password be assigned for the MySQL root user in a production environment. If you leave this field blank, anyone can connect as root without a password and be granted all privileges.

- ◆ **Port Number:** The port you want ArkManager to use for communications with ArkSQL. For example, type

`3306`

If other services use Port 3306, you can assign any free port, such as 3307 or 3308.

- ◆ **Secure Installation:** Select the Secure Installation check box to enable this option.

We strongly recommend a secure installation for your production environment. If Secure Installation is enabled, it overrides the default installation by enforcing the requirement for a root password and restricting post-install access to the database to authorized users and only from the local host.

1c Click Next, then follow the on-screen instructions.

1d When the installation is complete, the MySQL service is running and the archive database is initialized.

1e If the ArkSQL instance is running at the intended port, shut it down. At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Specify `-p` if the root user's password is set. Specify the port if the port is not 3306.

1f If the `ibdata1` file exists in the archive database directory, delete it.

For example, use a file manager to look for `ark:\archive\ibdata1`, where `ark:\archive` is the database directory you specified when you installed MySQL service. If it exists, delete it.

1g Restart ArkSQL service using `sys:\arkManager\arkSQL.cnf` file. At the server console, enter

```
mysqld_safe --defaults-file=sys:\arkManager\arkSQL.cnf
```

1h Go to [Step 3](#).

2 (Conditional) If MySQL server is currently installed on your archive server, use MySQL commands to set up an instance of MySQL for Novell Archive and Version Services. Otherwise, go to [Step 3](#).

2a If a MySQL instance is running at the intended port, shut it down. At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Specify `-p` if the root user's password is set. Specify the port if the port is not 3306.

- 2b** To set the database directory path and port number and to initialize the database in that location: At the server console, enter

```
mysql_install_db --datadir=ark:\archive\ --port=3306
```

Replace *ark* with the name of the archive volume. Replace *archive* with the name of the archive database directory. Replace *3306* with the actual port number. These are the same values that you used in the `sys:\arkManager\arkSQL.cnf` file.

- 2c** Start ArkSQL service using `sys:\arkManager\arkSQL.cnf` file. At the server console, enter

```
mysqld_safe --defaults-file=sys:\arkManager\arkSQL.cnf
```

- 2d** To set a password for user "root": At the server console command prompt, enter

```
mysql -u root --port=3306
```

Replace *3306* with the actual port number.

- 2e** At the MySQL prompt, enter

```
set password for root@'localhost'=password('your-password');
```

Replace *your-password* with the root user's actual password. (The ending semicolon is necessary.)

- 2f** When the installation is complete, the MySQL service is running and the archive database is initialized on the archive volume.

- 3** Modify the archive server's `autoexec.ncf` file.

- 3a** To start the ArkSQL server automatically whenever the NetWare server starts, add the following line in the `autotexec.ncf` file:

```
mysqld_safe --defaults-file=sys:\arkManager\arkSQL.cnf
```

- 3b** Depending on the port number you are using for the ArkSQL instance of MySQL, do one of the following:

- ♦ If you are using Port 3306 for your ArkSQL server, comment out the following line by placing a pound sign (#) at the beginning of the line, as shown.

```
#mysqld_safe --autoclose
```

- ♦ If you are using another port for your ArkSQL server, comment out the `mysqld_safe` command that matches your port number. For example:

```
#mysqld_safe --port=3307 --autoclose
```

Replace *3307* with your actual port number.

- 4** Continue with ["Configuring Archive Server Information" on page 54](#).

Configuring Archive Server Information

After you [install MySQL](#) and [configure ArkSQL](#), you are ready to configure the archive server information. Before ArkManager can run, the `sys:\arkManager\arkConfig.xml` file must contain the Novell eDirectory authentication information for ArkManager and the MySQL authentication information for the archive database. For information, see ["Understanding Archive Server Properties" on page 26](#).

The mandatory elements are:

- ♦ <arkConfig>
- ♦ <basic>
- ♦ <authentication> and its child elements:
 - ♦ <eDirectory> and its child elements: <user>, <password>, and <tree>
 - ♦ <database> and its child elements: <user>, <password>, and <portNumber>

The <displayLog/> tag is optional.

During the configuration, refer to the following resources:

- ♦ For information about using XML, see [“Working with XML: An XML Primer” on page 71](#).
- ♦ For an example of the basic XML setup for the archive server information, see [“Sample of a Basic Configuration for ArkConfig.xml” on page 120](#).
- ♦ For information about the basic ArkManager XML elements and their attributes, see [Appendix A, “XML Elements and Attributes for ArkConfig,” on page 97](#).

1 In a text editor, copy the XML tags from sys:\arkManager\arkConfig_sample_full.xml file to sys:\arkManager\arkConfig.xml.

2 In the arkConfig.xml file, modify the example settings for each of the mandatory elements with the actual values of your system.

3 Review your XML code to make sure that all required tags are present and that tags are properly formed.

4 Save the sys:\arkManager\arkConfig.xml file.

5 Confirm your ArkManager setup in a test environment before you create jobs for the archive server.

5a Make sure MySQL is running and at the correct port. It should start automatically when you boot your system. If it is not running, go to the server console and enter

```
mysqld_safe --defaults-file=sys:\ArkManager\arkSQL.cnf
```

5b At the server console, enter

```
arkstart
```

5c Verify that the ArkManager process starts.

5d At the server console, enter

```
arkstop
```

For information, see [“Stopping ArkManager” on page 77](#).

6 Your archive server is ready to use. To manage the archive server settings in the future, see [Chapter 8, “Managing the Archive Server,” on page 77](#).

7 Continue with [“Archiving File Versions” on page 55](#).

Archiving File Versions

To archive file versions, you must define versioning jobs to run on the archive server. For information, see [“Configuring Jobs in ArkConfig” on page 71](#).

To manage jobs, see [Chapter 9, “Managing the Versioning Jobs,” on page 83](#).

Installing and Configuring an Archive Server Cluster

You can configure the archive server in an active/passive cluster configuration, using Novell Cluster Services™ 1.7 for NetWare. Before you attempt to implement this solution, familiarize yourself with how Cluster Services works. For information, see the *Novell Cluster Services 1.7 Administration Guide*.

This section discusses the following tasks:

- ◆ “Installing NetWare and ArkManager 2.0” on page 56
- ◆ “Making Devices Sharable for Clustering” on page 57
- ◆ “Configuring Sharable Software RAID Devices for Your Archive Pool and Volume” on page 57
- ◆ “Installing Novell Cluster Services 1.7 for NetWare” on page 59
- ◆ “Configuring a Sharable Archive Pool” on page 59
- ◆ “Configuring a Shared Archive Volume” on page 60
- ◆ “Configuring the ArkSQL Configuration File” on page 60
- ◆ “Installing and Configuring the ArkSQL Server” on page 61
- ◆ “Configuring Archive Server Information” on page 61
- ◆ “Archiving File Versions” on page 61
- ◆ “Editing the Autoexec.ncf File” on page 61
- ◆ “Configuring Cluster Services to Automatically Stop and Start ArkManager and ArkSQL on System Reboot” on page 62

Installing NetWare and ArkManager 2.0

After you **plan your system and meet prerequisites and guidelines**, you are ready to install the Archive and Version Services software module, ArkManager, on your server.

Perform the following procedure for each server you plan to include in the archive server cluster:

- 1** Install NetWare on your archive server, using the Basic install option.

The Basic option installs ArkManager 2.0 on your server, but you must configure other key components before you can run the program.

- 2** The configuration files and sample configuration files are located in the `sys:\arkManager` directory. Confirm the install by looking for these elements:

`arkConfig_sample_basic.xml`

`arkConfig_sample_full.xml`

`arkSQL_sample.cnf`

- 3** Use the Archive Versioning plug-in for iManager as the management interface to control versioning jobs and to view the ArkManager job log.

- 3a** Launch a Web browser, then open it to the Novell iManager Login:

`https://svr1.domain.com/nps/iManager.html`

Replace `svr1.domain.com` with the actual IP address or DNS name of your archive server. The URL path is case sensitive.

- 3b** Log in as the administrator user (such as admin) to the Novell eDirectory tree that contains your archive server.

The Archive Versioning role is available in the Infrastructure category. For information about iManager, see *Novell iManager 2.5 Administration Guide*.

- 4** Continue with “[Making Devices Sharable for Clustering](#)” on page 57.

Making Devices Sharable for Clustering

After you [install NetWare](#), make your storage devices sharable for clustering.

- 1** In iManager, click Storage > Devices, then specify the primary archive server for the cluster as the server you want to manage.
- 2** Select the devices you plan to use for the archive pool and volume, then mark the devices as Sharable.

Make sure the devices you choose are located in a configuration that is available to every server in the planned cluster. For more information, see “Sharing Devices” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 3** Depending on your implementation plan, continue with one of the following:
 - ◆ [Configuring Sharable Software RAID Devices for Your Archive Pool and Volume \(page 57\)](#)
 - ◆ [Installing Novell Cluster Services 1.7 for NetWare \(page 59\)](#)

Configuring Sharable Software RAID Devices for Your Archive Pool and Volume

After you [make devices sharable for clustering](#), you can optionally create a software RAID devices for the archive pool and volume to satisfy your availability needs. Use one of the following methods:

- ◆ [“Creating a Sharable Software RAID 1 or 5 Device” on page 57](#)
- ◆ [“Creating a Sharable Software RAID 10” on page 58](#)

Creating a Sharable Software RAID 1 or 5 Device

To create a data fault-tolerant solution, create a software RAID 1 or 5 device to use for your archive pool and volume. For information, see “[Managing Software RAID Devices](#)” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 1** In iManager, click Storage > Software RAIDs.
- 2** If it is not already selected, select the primary archive server in the cluster.
- 3** Click New to open the Create a Software RAID dialog box.
- 4** Specify a name for the RAID.
- 5** Specify the type of RAID:
 - ◆ RAID 1 (mirroring)
 - ◆ RAID 5 (striping with parity)
- 6** (Conditional) For a RAID 5 device, specify the stripe size.

The default size of 64 KB typically provides the best performance for devices with NSS volumes.

- 7** From the available devices, select the devices that you made sharable in [“Making Devices Sharable for Clustering” on page 57](#).
For a RAID 1 device, specify 2 to 4 devices. For a RAID 5 device, specify 3 to 14 devices.
- 8** Specify the amount of space to use for each segment. Each segment contributes equal amounts of space.
- 9** Click OK.
- 10** Continue with [“Installing Novell Cluster Services 1.7 for NetWare” on page 59](#).

Creating a Sharable Software RAID 10

To provide maximum data fault tolerance, create a software RAID 10 (mirrored RAID 0 device) pool by creating a pool on a RAID 0 device, and then mirroring the pool.

- 1** Create 2 to 4 RAID 0 (striping) devices. Repeat the following steps to create each device:
 - 1a** In iManager, click Storage > Software RAIDs.
 - 1b** If it is not already selected, select the primary archive server in the cluster.
 - 1c** Click New to open the Create a Software RAID dialog box.
 - 1d** Specify a name for the RAID.
 - 1e** Specify the type of RAID as RAID 0.
 - 1f** Specify the stripe size.
The default size of 64 KB typically provides the best performance for devices with NSS volumes.
 - 1g** From the available devices, select the devices that you made sharable in [“Making Devices Sharable for Clustering” on page 57](#).
Make sure that the segments in each of your RAID 0 devices have no devices in common; otherwise, you cannot mirror them later.
 - 1h** Specify the amount of space to use for each segment. Each segment contributes equal amounts of space.
 - 1i** Click OK.
- 2** Install Novell Cluster Services 1.7 on each of the servers. For information, see [“Installing Novell Cluster Services 1.7 for NetWare” on page 59](#).
- 3** Create a cluster-enabled pool on one of the RAID 0 devices. For information, see [“Configuring a Sharable Archive Pool” on page 59](#).
- 4** Mirror the cluster-enabled pool to create the RAID 10.
 - 4a** In NSSMU, select Partitions from the NSSMU main menu.
 - 4b** Select the NSS partition for the archive pool.
This is the cluster-enabled pool you create in [“Configuring a Sharable Archive Pool” on page 59](#).
 - 4c** Press F3 to create the RAID 1 device and mirror the partition.
 - 4d** From the available devices, select 1 to 3 of the RAID 0 devices you created, then press Enter.

For more information, see “Managing Software RAID Devices” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 5 Continue with “Configuring a Shared Archive Volume” on page 60.

Installing Novell Cluster Services 1.7 for NetWare

- 1 Install Novell Cluster Services 1.7 for NetWare for each server you plan to include in the archive server cluster.

For information, see the *Novell Cluster Services 1.7 Administration Guide*.

- 2 After Cluster Services is installed successfully on each server, continue with “Configuring a Sharable Archive Pool” on page 59.

Configuring a Sharable Archive Pool

Configure a cluster-enabled, sharable pool. For more information, see “Managing NSS Pools” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

- 1 In iManager, select Storage > Pools.
- 2 If it is not already selected, select the primary server in the cluster.
- 3 To open the New Pool Wizard, click New.
- 4 Name the pool.
- 5 For each of the shared devices, specify the space to use in the pool.
If you select sharable software RAID devices, the entire space is used in the pool.
- 6 Select Cluster Enable on Creation to enable this option.
- 7 Select Activate on Creation to enable this option.
- 8 To complete the cluster information, specify the following Shared-Pool Clustering Parameters:
 - ♦ **Virtual Server Name:** The name assigned by NetWare to the virtual server that represents the shared pool in the cluster.
 - ♦ **CIFS Virtual Server Name:** The name assigned by NetWare to the virtual server for handling CIFS (Common Internet File System) requests. This is the name of the server as it appears in a Windows system.
 - ♦ **IP Address:** The IP address that you want to assign the virtual server.
To specify an IP address, tab between the different entries; no dot is required in the fields. For example, if the IP address is 192.168.1.1, type
192 168 1 1
 - ♦ **Advertising Protocols:** Protocols that give users native file access to data: NCP, CIFS, and AFP.
Specify one or more advertising protocols by selecting the check boxes of the protocols you want to enable for data requests to this shared pool.
- 9 Click Finish.
- 10 Continue with “Configuring a Shared Archive Volume” on page 60.

Configuring a Shared Archive Volume

On the **cluster-enabled archive pool**, create an NSS volume and directory where you plan to store the archive database and archive data. You should use the volume exclusively for the archive.

1 Configure an NSS volume.

The following procedure describes how to create a nonencrypted NSS volume with iManager. If your implementation requires an encrypted NSS volume to store file versions from encrypted NSS data volumes, use the NSS Management Utility to create the encrypted volume. The iManager Storage plug-in does not provide an encryption option in OES. For information, see “**Managing Encrypted NSS Volumes**” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

1a In iManager, click Storage > Volumes.

1b If it is not already selected, select the archive server.

1c Click New to open the New Volume wizard.

1d Configure the new volume.

- ◆ Specify a name for the volume. For example, ark.
- ◆ Select the NSS pool you created in “**Creating an Archive Pool**” on page 50, then select the Allow the Volume to Grow to Pool Size check box.
- ◆ Specify the desired attributes for the volume.

1e Click Finish.

For more information, see “**Configuring Nonencrypted NSS Volumes with iManager**” in the *Novell Storage Services File System Administration Guide for NetWare 6.5*.

2 (Optional, recommended) Create a directory in the archive volume where you want to store the archive database and archive data.

2a Open your Web browser to the Novell Remote Manager Login page on the archive server, and then log in with your administrator username and password. For example, enter

`https://192.168.1.1:8009`

Replace *192.168.1.1* with the actual IP address or DNS name of your archive server.

2b Click Manage Server > Volumes.

2c Click the Properties icon next to the archive volume.

2d Type the name of the directory, then click Create Subdirectory.

3 Continue with “**Configuring the ArkSQL Configuration File**” on page 60.

Configuring the ArkSQL Configuration File

1 On the primary server in the cluster, configure the `sys:\arkManager\arkSQL.cnf` file.

For information, see “**Configuring the ArkSQL Configuration File**” on page 51.

2 Copy the `sys:\arkManager\arkSQL.cnf` file from the primary server to the `sys:\arkManager` directory for each of the other servers in the cluster.

3 Continue with “**Installing and Configuring the ArkSQL Server**” on page 61.

Installing and Configuring the ArkSQL Server

- 1 On each server in the cluster, install MySQL. Specify the shared volume location as the path of the archive database.
For information, see [“Installing and Configuring the ArkSQL Server” on page 52.](#)
- 2 Continue with [“Configuring Archive Server Information” on page 61.](#)

Configuring Archive Server Information

- 1 On the primary server, configure the archive server information in the `sys:\arkManager\arkConfig.xml` file.
For information, see [“Configuring Archive Server Information” on page 54.](#)
- 2 Copy the `sys:\arkManager\arkConfig.xml` file from the primary server to the `sys:\arkManager` directory for each of the others servers in the cluster.
If you modify the settings for the archive server in the future, you must reconfigure the Basic elements in the `sys:\arkManager\arkConfig.xml` file and copy the modified file to all of the servers in the cluster.
- 3 Continue with [“Archiving File Versions” on page 61.](#)

Archiving File Versions

- 1 On the primary server in the cluster, configure the individual jobs for the archive cluster server. Specify the shared volume location as the path of the archive database.
For information, see [Chapter 7, “Configuring Jobs in ArkConfig,” on page 71.](#)
- 2 Copy the `sys:\arkManager\arkConfig.xml` file from the primary server to the `sys:\arkManager` directory of the secondary servers in the cluster.
- 3 Continue with [“Editing the Autoexec.ncf File” on page 61.](#)

Editing the Autoexec.ncf File

When you install MySQL and ArkManager, commands are added to the `autoexec.ncf` file on the server to automatically start both programs when the NetWare server starts. Because Novell Cluster Services starts and stops the programs, these commands must be removed or commented out from each server in the cluster where they are installed.

- 1 On the primary server, open the `autoexec.ncf` file in a text editor.
- 2 Comment out or remove the following line:

```
mysqld_safe --defaults-file=sys:\ArkManager\arkSQL.cnf
```

- 3 Comment out or remove the following line:

```
arkstart
```

- 4 If you are using Port 3306 for your ArkSQL server, make sure the following line is commented out.

```
mysqld_safe --autoclose
```

This line should already be commented out as part of the install procedure.

- 5** If you are using another port for your ArkSQL server, make sure the following line is commented out:

```
mysqld_safe --port=3307 --autoclose
```

Replace 3307 with your actual port number. This line should already be commented out as part of the install procedure.

- 6** Save the autoexec.ncf file.
- 7** Copy the autoexec.ncf file to the other servers in the cluster.
- 8** Continue with “[Configuring Cluster Services to Automatically Stop and Start ArkManager and ArkSQL on System Reboot](#)” on page 62.

Configuring Cluster Services to Automatically Stop and Start ArkManager and ArkSQL on System Reboot

For each server in the cluster:

- 1** Set up Novell Cluster Services to start arkManager by default on reboot of the cluster.
 - 1a** Open ConsoleOne®.
 - 1b** In the ConsoleOne Properties dialog box, click Scripts > Cluster Resource Load Script.
 - 1c** Add the following commands to the end of the existing load script:

```
delay 2

mysqld_safe --defaults-file=sys:\ArkManager\arkSQL.cnf

search add sys:\arkManager

arkstart
```
 - 1d** Click Apply.
- 2** Set up Novell Cluster Services to stop arkManager services by default on the server down command.
 - 2a** In the ConsoleOne Properties dialog box, click Scripts > Cluster Resource Unload Script.
 - 2b** Add the following command to the *beginning* of the existing unload script:

```
arkstop
```
 - 2c** Click Apply, then click Close.
- 3** Restart each of the servers in the cluster to offline and then online the resources. For information, see the [Novell Cluster Services 1.7 Administration Guide](#).

When the servers come back up, Novell Archive and Version Services is running on the primary server. The secondary servers will be on hot standby, waiting to be called to action.

6

Upgrading Archive Servers

Use instructions in this section to upgrade Novell® Archive and Version Services for NetWare® to the latest version released with Novell Open Enterprise Server.

- ♦ [“Before You Begin” on page 63](#)
- ♦ [“Selecting an Upgrade Scenario” on page 63](#)
- ♦ [“Upgrading an Archive Server” on page 64](#)
- ♦ [“Upgrading an Archive Server Cluster” on page 65](#)
- ♦ [“Upgrading an Archive Server from ArkManager 1.0 to 2.0” on page 65](#)

Before You Begin

Before upgrading to Novell Open Enterprise Server NetWare and Novell Archive and Version Services 2.0 for NetWare:

- 1** Review your archive server implementation. For information, see [“Planning for Archive and Version Services” on page 23](#).
- 2** Make sure that your existing archive server implementation meets the prerequisites and guidelines for Novell Archive and Version Services 2.0 for NetWare 6.5 Support Pack 3 or later. For information, see [“Prerequisites and Guidelines” on page 35](#).
- 3** Back up your archive database. For information, see [“Backing Up the Archive Database” on page 80](#).
- 4** Back up your archive data. For information, see [“Backing Up the Archive Data” on page 80](#).
- 5** As a precaution, make a backup copy of the `sys:\arkManager\arkConfig.xml` file that contains the configuration information for your archive server, default job settings, and individual jobs.
- 6** As a precaution, make a backup copy of the `sys:\arkManager\arkSQL.cnf` file that contains the configuration information the ArkSQL instance on the MySQL server.
- 7** Continue with [“Selecting an Upgrade Scenario” on page 63](#).

Selecting an Upgrade Scenario

Depending on your situation, continue with one of the following ways to upgrade your existing archive server:

Existing Archive	Single or Cluster	Refer To
ArkManager 2.0	Single server	Upgrading an Archive Server (page 64)
ArkManager 2.0	Server cluster	Upgrading an Archive Server Cluster (page 65)

Existing Archive	Single or Cluster	Refer To
ArkManager 1.0	Single server or server cluster	Upgrading an Archive Server from ArkManager 1.0 to 2.0 (page 65)

Upgrading an Archive Server

This section describes how to upgrade an existing Novell Archive and Version Services 2.0 for NetWare server. Use this upgrade procedure to apply ArkManager patches and operating system upgrades. ArkManager continues to use your existing configuration files for the archive server, versioning jobs, and ArkSQL. It also uses the existing archive database and archive data.

- 1 Stop ArkManager. At the server console, enter

```
arkstop
```

Wait until ArkManager stops completely before continuing with the upgrade.

For more information, see [“Stopping ArkManager” on page 77](#).

- 2 Stop the MySQL server and ArkSQL. At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Specify -p if root user’s password is set. Specify the port if the port is not 3306.

- 3 Upgrade to NetWare 6.5 Support Pack 3 or later on your archive server, using the Basic install option.

For information, see the [NetWare 6.5 Overview and Installation Guide](#).

The Basic option upgrades your operating system and installs the latest version of ArkManager 2.0 on your server. It does not overwrite your existing configuration files, archive database, or archive data.

- 4 (Conditional) If you upgrade directly from NetWare 6.5 SP1 to NetWare 6.5 Support Pack 3 or later, you must modify the sys:\arkManager\arkSQL.cnf file before restarting ArkManager to prevent data corruption.

Compare and modify values of non-system-specific information in sys:\arkManager\arkSQL.cnf with the ones defined in sys:\arkManager\arkSQL_sample.cnf. Make sure to add the following parameter setting to the end of the file:

```
set-variable = transaction_isolation=READ_COMMITTED
```

- 5 After the upgrade completes successfully, if you have not already rebooted your server, reboot the server to start the ArkSQL instance on the MySQL server.

- 6 Start ArkManager. At the server console, enter

```
arkstart
```

- 7 In iManager, verify that the jobs are available and functioning properly.

For information, see [“Viewing a List of Versioning Jobs on Your Archive Server” on page 85](#).

Upgrading an Archive Server Cluster

This section describes how to upgrade an existing Novell Archive and Version Services 2.0 for NetWare server in a cluster configuration with Novell Cluster Services™. Use this upgrade procedure to apply ArkManager patches and operating system upgrades. ArkManager continues to use your existing configuration files for the archive server, versioning jobs, and ArkSQL. It also uses the existing archive database and archive data.

- 1 Unload the cluster resources to stop ArkManager and ArkSQL.
- 2 For each server in the cluster, upgrade to NetWare 6.5 Support Pack 3 or later, using the Basic install option.

For more information, see the *NetWare 6.5 Overview and Installation Guide*.

The Basic option upgrades your operating system and installs the latest version of ArkManager 2.0 on your server. It does not overwrite your existing configuration files, archive database, or archive data.

- 3 For each server in the cluster, upgrade to OES Cluster Services 1.7 for NetWare.

For more information, see the *Novell Cluster Services 1.7 Administration Guide*.

- 4 (Conditional) If you upgrade directly from NetWare 6.5 SP1 to NetWare 6.5 Support Pack 3 or later, you must modify the sys:\arkManager\arkSQL.cnf file before restarting ArkManager to prevent data corruption.

Compare and modify values of non-system-specific information in sys:\arkManager\arkSQL.cnf with the ones defined in sys:\arkManager\arkSQL_sample.cnf. Make sure to add the following parameter setting to the end of the file:

```
set-variable = transaction_isolation=READ_COMMITTED
```

- 5 After the upgrade completes successfully, if you have not already rebooted your server, reboot the server to start the MySQL server and ArkSQL.

Rebooting loads cluster resources that start the MySQL server, ArkSQL, and ArkManager.

- 6 Verify that the ArkManager service is running.

- 7 In iManager, verify that the jobs are available and functioning properly.

For information, see *“Viewing a List of Versioning Jobs on Your Archive Server” on page 85*.

Upgrading an Archive Server from ArkManager 1.0 to 2.0

This section describes how to upgrade an existing Novell Archive and Version Services 1.0 for NetWare server to Novell Archive and Version Services 2.0 for NetWare. The data organization and hosting for ArkManager 2.0 is incompatible with ArkManager 1.0 format. After the upgrade, you must use the ArkUpgrade tool to convert your existing configuration files, versioning jobs, archive database, and archive data to the new format.

- 1 Make sure the existing archive volume meets the defined in *“Storage Media Prerequisites and Guidelines” on page 36*. Specifically, the archive volume should not contain data that you plan to version with this archive server. The archive database cannot reside in the sys pool or sys: volume.

WARNING: If your archive volume does not meet prerequisites, do not continue with the upgrade. You must treat this as a new installation. Save the old sys:\etc\arkConfig.xml file to use as a reference when you create jobs in the sys:\arkManager\arkConfig.xml file. To delete existing archive data, see *Step 7* in the procedure below. For installation instructions, see *“Installing and Configuring Archive Servers” on page 47*.

- 2 Upgrade from NetWare 6.5 Support Pack 3 or later on your archive server, using the Basic install option.

The Basic option installs ArkManager 2.0 on your server, but you must configure other key components before you can run the program. The old configuration files for ArkManager 1.0 remain undisturbed in the `sys:\etc` directory.

IMPORTANT: Existing ArkManager 1.0 jobs cannot run until you complete the appropriate steps below.

For information, see the *NetWare 6.5 Overview and Installation Guide*.

- 3 The configuration files and sample configuration files are located in the `sys:\arkManager` directory. Confirm the install by looking for these elements:

```
arkConfig_sample_basic.xml
arkConfig_sample_full.xml
arkSQL_sample.cnf
```

- 4 Continue to use the existing archive volume and data directory as your archive path. For example,

```
ark:\archive
```

where *ark* is the archive volume and *archive* is the data directory.

- 5 Configure the `sys:\arkManager\arkSQL.cnf` file.

For information, see “[Configuring the ArkSQL Configuration File](#)” on page 51.

- 6 Install MySQL server and configure an instance for ArkManager 2.0.

For information, see “[Installing and Configuring the ArkSQL Server](#)” on page 52.

- 7 Do one or both of the following:

- ♦ **Keep Existing File Versions:** For each of the existing jobs with file versions you want to keep, convert the job’s archive database to use the ArkSQL format.

IMPORTANT: Upgrading the archive database can take several hours to several days.

For information, see “[Converting the ArkManager 1.0 Database with ArkUpgrade](#)” on page 67.

- ♦ **Delete Existing File Versions:** For each of the existing jobs with file versions you do not want to keep, remove any existing file versions by deleting any directories in the following format

```
ark:\archive\jobservername\jobvolumename\
```

where *ark* is the archive volume, *archive* is the archive data directory, *jobservername* is the source server name, and *jobvolumename* is the source volume name.

Remember to delete the related Job elements for the job, if you don’t want to run this job any more.

- 8 Configure the archive server information.

For information, see “[Configuring Archive Server Information](#)” on page 54.

- 9 Transfer information about existing Default settings and Individual Job setting for jobs you want to keep from the old `sys:\etc\arkConfig.xml` file to the new `sys:\arkManager\arkConfig.xml` file.

During the configuration, refer to the following resources:

- ♦ For information about using XML, see “[Working with XML: An XML Primer](#)” on page 71.

- ◆ For an example of the basic XML setup for the archive server information, see [“Sample of a Basic Configuration for ArkConfig.xml” on page 120.](#)
 - ◆ For information about the basic ArkManager XML elements and their attributes, see [Appendix A, “XML Elements and Attributes for ArkConfig,” on page 97.](#)
- 9a** Reference XML elements of `sys:\arkManager\arkConfig_sample_full.xml` to create `sys:\arkManager\arkConfig.xml`. Use the full example to understand how to organize your mandatory and optional elements of the `arkConfig.xml` file.
- 9b** Update the Defaults elements, replacing the example settings with your actual values.
- If you use the `<snapshotPool>` feature, make sure that the pool you specify is not the `sys:pool`.
- 9c** Do one or both of the following:
- ◆ **Convert Existing Jobs:** For each of the existing jobs you want to keep, convert the job’s properties to use the new `arkConfig` elements and attributes.
- Update each job’s Job elements, replacing the example settings with the jobs defined in the old `sys:\etc\arkConfig.xml` file. Make sure to add the new `<snapshotPool>` element to take advantage of the point-in-time versioning capability in Novell Archive and Version Services 2.0.
- ◆ **Do Not Convert Existing Jobs:** For each of the existing jobs you do not want to keep, do not transfer the related job elements and attributes to `sys:\arkManager\arkConfig.xml`.
- 10** (Optional) Configure new jobs.
- For information, see [“Configuring Jobs in ArkConfig” on page 71.](#)
- 11** Convert the ArkManager 1.0 database to the ArkManager 2.0 database format for each of the jobs you plan to keep. Continue with [“Converting the ArkManager 1.0 Database with ArkUpgrade” on page 67.](#)

Converting the ArkManager 1.0 Database with ArkUpgrade

After you upgrade to NetWare 6.5 Support Pack 3 or later, Novell Archive and Version Services 2.0 does not run the ArkManager 1.0 jobs until you perform the data and job conversion to support the new ArkSQL data structures. Conversion allows you to continue to access existing file versions for existing jobs.

This section discusses the following:

- ◆ [Understanding Differences between ArkManager 1.0 and 2.0 Databases \(page 67\)](#)
- ◆ [Upgrading Your Preexisting Database to ArkManager 2.0 Format \(page 68\)](#)

Understanding Differences between ArkManager 1.0 and 2.0 Databases

ArkManager 1.0 created the job’s data path using a directory structure based on the source server and volume server names. The old naming convention for creating a job’s data directory was

```
ark:\archive\jobservername\jobvolumename\
```

where *ark* is the archive volume, *archive* is the archive data directory, *jobservername* is the source server name, and *jobvolumename* is the source volume name.

Novell Archive and Version Services 2.0 creates the job's data path using a new naming convention for creating a job's data directory. The general data path is

```
ark:\archive\arkDataxxxxxx\
```

where *ark* is the archive volume, *archive* is the archive data directory, and *xxxxxx* is a 6-digit random number assigned to the job.

If you do not convert a job's database, its file versions are no longer available to users. In this case, the old archive database remains on the archive server and must be deleted manually.

If you inadvertently omit a job from arkUpgrade, the job does not run in ArkManager 2.0. ArkManager skips the job and does not allow users to access file versions related to the job until you convert the job's archive database to the arkSQL format.

The upgrade can take from a few hours to several days, depending on the following factors:

- ◆ The number of jobs defined for the archive server
- ◆ The number of source files versioned for each job
- ◆ The number of file versions retained for each source file

The more jobs, files, and file versions there are, the longer it takes. You can upgrade all job databases in a single run of ArkUpgrade, or run ArkUpgrade sequentially with only one or more job-related databases to convert at a time.

Upgrading Your Preexisting Database to ArkManager 2.0 Format

- 1** Make sure ArkManager is not running before or during the upgrade process.

WARNING: While ArkUpgrade is running, ArkManager cannot be running and file versions are not available to users.

- 2** In a text editor, copy the contents of the sys:\arkManager\arkUpgrade_sample.xml file to sys:\arkManager\arkUpgrade.xml.

To view an annotated version of the arkUpgrade_sample.xml file, see [“Sample of the Upgrade Configuration for ArkUpgrade.xml” on page 119](#).

- 3** Modify the elements and property settings to meet your needs.

For information, see [“XML Elements and Attributes for ArkUpgrade” on page 113](#).

View the old sys:\etc\arkConfig.xml file on the archive server to identify your ArkManager 1.0 jobs and extract the correct XML elements to use in the arkUpgrade.xml file.

- 4** Test your arkUpgrade.xml file before running against the live database.

There is an optional <test/> tag in arkUpgrade.xml. If the <test/> tag is presented, ArkUpgrade analyzes the data and logs all possible errors; no actual conversion occurs. If this tag is not presented, arkUpgrade performs the actual conversion.

- 4a** Add the <test/> element as a child element of <arkUpgrade>, then save the file.

- 4b** To start the test: At the archive server console, enter

```
arkupgrade
```

- 4c** View the conversion messages in the convert.log and the error messages in the error.log files to determine if the upgrade ran properly.

The logs are in the directory you specified as the path to the archive database. For example:

```
ark:\archive\convert.log
```

```
ark:\archive\error.log
```

Replace *ark:\archive* with your archive path. Open the log files in a text-based word processor such as Notepad.

- 4d** If the errors reported are not resolved to your satisfaction, call Novell Technical Support for assistance.
- 5** In a text editor, remove the `<test/>` element from the `sys:\arkManager\arkUpgrade.xml` file, then save the file.
- 6** To start ArkUpgrade, go to the archive server console and enter

```
arkupgrade
```

The ArkUpgrade process is system-crash safe. If you need to reboot the server, ArkUpgrade begins again where it left off. The upgrade process can take several hours to several days. During that time, existing file versions are not available to users.

- 7** After the ArkUpgrade is finished, review the `error.log` in your archive path. For example, `ark:\archive\error.log`.

The `error.log` file records all the data that cannot be converted successfully because of previous bugs in ArkManager. File versions in the identified directories cannot be converted and are no longer accessible to users.

- 8** For each of the existing jobs, remove any existing file versions that could not be converted by deleting any directories that are in the following general format:

```
ark:\archive\jobservername\jobvolumename\
```

where *ark* is the archive volume, *archive* is the archive data directory, *jobservername* is the source server name, and *jobvolumename* is the source volume name.

7

Configuring Jobs in ArkConfig

This section discusses how to configure jobs for Novell® Archive and Version Services, using an XML (Extensible Markup Language) configuration file. Use the `sys:\arkManager\arkConfig.xml` file to control the versioning processes for the archive server it is on. You configure the basic settings, the job defaults, and one or more individual jobs for volumes with data that you want to version.

This section explains how to configure a `sys:\arkManager\arkConfig.xml` file:

- ◆ [“Working with XML: An XML Primer” on page 71](#)
- ◆ [“Configuring the ArkConfig.XML File” on page 73](#)
- ◆ [“What’s Next” on page 76](#)

Working with XML: An XML Primer

An XML document is a plain text file that contains hierarchically structured data. You can edit the file in a text editor if you are using ASCII characters. For non-ASCII characters, you must convert the XML document to UTF-8 encoding.

An XML document describes the data it contains using elements and attributes. An element identifies what the data is and an attribute defines metadata about the data. The relative placement of elements within the XML structure matters because elements can take on different meaning based on where it is located in the XML structure.

For information, see the following:

- ◆ [“Elements” on page 71](#)
- ◆ [“Attributes” on page 72](#)
- ◆ [“Hierarchical Relationships between XML Elements” on page 72](#)
- ◆ [“Element Content” on page 72](#)
- ◆ [“Rules for Well-Formed XML Documents” on page 72](#)

Elements

An element uses a set of markup tags to delimit and define each piece of data in a document. The tag set consist of an start tag and an end tag. For example:

```
<tagname>data</tagname>
```

An element consists of all of the information from the start tag to the end tag and everything in between.

If data contains the less than (<), greater than (>), or ampersand (&) characters, you must enclose the data with the CDATA tag <![CDATA[*data*]]>. For example:

```
<tagname><![CDATA[1&2]]></tagname>
```

Attributes

Elements can be annotated with any number of unique attributes. Attributes appear as name/value pairs separated by an equal sign (=) and must appear in double quotes or single quotes. You attach attributes in the start tag, but not to the end tag. For example:

```
<tagname attribute_name="value">data</tagname>
```

Hierarchical Relationships between XML Elements

Elements have a hierarchical structure that defines the relationships between parent and child elements. Every XML document has exactly one top-level element, known as the root element. In fact, it must have a root element even if it has no content. All other elements are its children.

Some elements appear only once in a document, while others can appear multiple times. The elements beneath the root element can be a parent to multiple elements and the child of multiple elements. This means that an element can have different meanings when it appears as a child of different parent elements.

Element Content

Element content is the information between the two tags of an element, such as no content, parsed character data (PCData), and child elements. If a tag has no element content, it is called an empty element. The table below shows examples of some common XML tag constructs.

Element Content	Example of Tag Construct	Description
No content	<tagname></tagname>	An empty element
	<tagname/>	A abbreviated form of an empty element
Parsed character data (PCData)	<tagname>text</tagname>	An element with data
	<tagname attribute_name="value">text</tagname>	An element with data and with one or more attributes that describe the data
One or more child elements	<tagname> <child1_tag>text</child1_tag> <child2_tag></child2_tag> </tagname>	An element with two child elements: an element with PCData and an empty element

Rules for Well-Formed XML Documents

As you configure the XML file, keep in mind the following rules for well-formed XML documents:

- ◆ Every XML document has only one root element.
- ◆ Every start tag must have a matching end tag. The exception is the abbreviated version of an empty element (<tagname/>).

- ◆ Tags cannot overlap; every element must be properly nested.
- ◆ Element names and attribute names are case sensitive.
- ◆ XML keeps any white space in your text.

For more information about using XML, consult an XML programming textbook or search the Internet for an XML tutorial.

Configuring the ArkConfig.XML File

Use the `sys:\arkManager\arkConfig.xml` file to control which data resources to version, to set a schedule for versioning, and to determine the lifetime for versions such as by age or by numbers of versions.

The XML root element in the `arkConfig.xml` file is the `arkConfig` (<arkConfig>) element. Within the root element, you will have at least three child elements:

- ◆ **Basic Element**

Defines the file system authentication information and the archive volume location on your archive server. Specify the physical location of the archive volume for single-server solutions. Specify the virtual location of the archive volume for clustered-server solutions.

The Basic element also contains any other non-job-specific settings such as whether entries to the log should also be displayed on the server's logger screen. All child elements in the Basic element are mandatory except for <displayLog/>.

- ◆ **Defaults Element**

Defines the settings for the server context to use, the location of data to version, and the frequency that versioning occurs. Use this element to specify the parameters to use for version jobs if they are not specified in the individual Job elements.

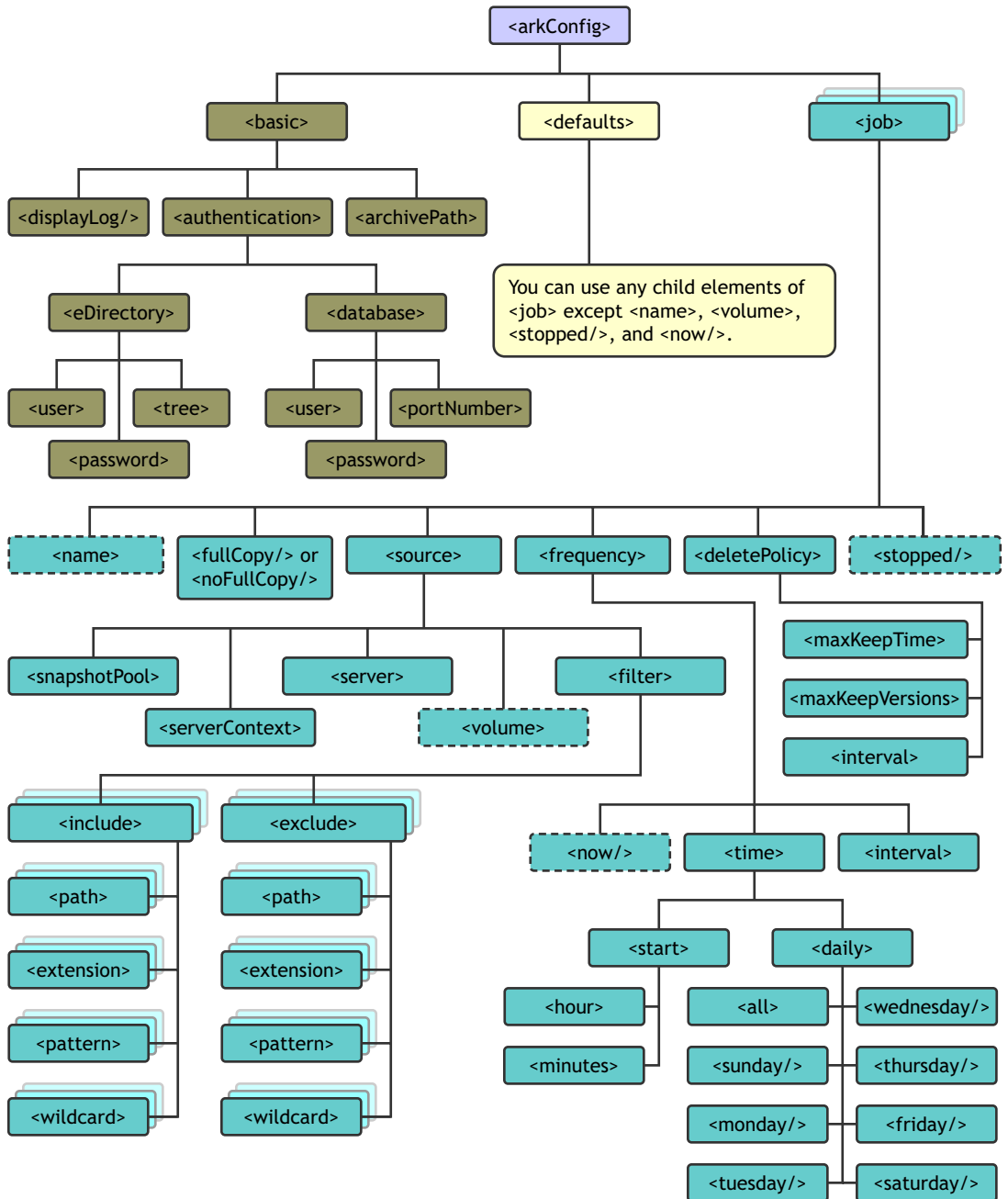
- ◆ **Job Element**

Defines the settings for versioning of a particular volume or of filtered data within the volume.

XML is hierarchical in nature; information is structured like a tree, with parent/child relationships. The figure below illustrates the XML hierarchy for an `arkConfig.xml` file. See [Appendix A, “XML Elements and Attributes for ArkConfig,” on page 97](#) for a detailed discussion of each of these elements.

You can use the sample `sys:\arkManager\arkConfig_sample_full.xml` file as a guide to configure the settings for your archive server; do not attempt to use the sample as is. For an annotated version of this sample XML file, see [“Sample of a Full Configuration for ArkConfig.xml” on page 121](#).

Figure 4 Hierarchy of Elements in the arkConfig.xml File



1 Before you begin, make sure your versioning plan satisfies the following guidelines:

- ◆ “Job Guidelines” on page 42
- ◆ “Schedule Guidelines” on page 43

2 Stop the archive server. At the server console, enter

arkstop

For information, see “Stopping ArkManager” on page 77.

3 In a text editor, open the sys:\arkManager\arkConfig.xml file.

- 4** (Conditional) Configure the archive server information, if necessary, by modifying data in the Basic element.

You initially configured this information when you set up your server. You need to modify this information only if you have modified the password for the admin user of Novell eDirectory or if you have modified the root user password or port number for your MySQL server. For information, see [“Configuring Archive Server Information” on page 54](#).
- 5** Configure the Default Job Settings to apply for job parameters when individual jobs on this archive server do not specify a value to use. To do this, modify information in the Defaults element.

When you first set up Defaults, you can copy the Defaults element from the arkConfig_sample_full file, and then modify it, as needed. For information, see [“Understanding Job Properties” on page 27](#).
- 6** For each source volume, define a single Job element for the selected archive server.

When you first set up a job, you can copy the Job element from the sys:\arkManager\arkConfig_sample_full.xml file, and then modify it, as needed.

 - 6a** Provide a unique name for the job.
 - 6b** Modify the job settings. For information, see [“Understanding Job Properties” on page 27](#).
 - 6c** Make sure to set the job’s Start time at some time in the future so that you have time to correct any job settings before the versioning begins.
- 7** Save your changes.
- 8** Open the sys:\arkManager\arkConfig.xml file in Internet Explorer to verify that the XML document is well-formed. IE will identify missing tags, illegal characters, and missing characters. It does not verify that the ArkManager settings are correct.

Other Web browsers might also provide this capability. For information, consult your browser’s Help.

Correct any mistakes to create a well-formed XML document, then save your changes.
- 9** Start ArkManager. At the server console, enter

```
arkstart
```
- 10** Verify that ArkManager recognizes the jobs.
 - 10a** View a list of jobs with the Archive Versioning plug-in for Novell iManager. For information, see [“Viewing a List of Versioning Jobs on Your Archive Server” on page 85](#).
 - 10b** If the job is in the list, continue with [Step 11](#).

If the job is not in the list, you probably have an XML error. Continue with [Step 10c](#).
 - 10c** Stop ArkManager. At the server console, enter

```
arkstop
```
 - 10d** In a text editor, open the sys:\arkManager\arkConfig.xml file.
 - 10e** Review the XML code for the job definition.
 - 10f** Make the necessary corrections, then save the file.
 - 10g** Start ArkManager. At the server console, enter

```
arkstart
```
 - 10h** Repeat this process until the missing job appears in the Jobs list.

- 11** Verify that the job settings are correct.
 - 11a** View a job's details with the Archive Versioning plug-in for Novell iManager. For information, see [“Viewing Details of a Versioning Job” on page 86](#).
 - 11b** If the job details are correct, continue with [Step 12](#).
If the job details are not correct, you probably have an XML error. Continue with [Step 11c](#).
 - 11c** Stop ArkManager. At the server console, enter
`arkstop`
 - 11d** In a text editor, open the `sys:\arkManager\arkConfig.xml` file.
 - 11e** Review the XML code for the job definition.
 - 11f** Make the necessary corrections, then save the file.
 - 11g** Start ArkManager. At the server console, enter
`arkstart`
 - 11h** Repeat this process until the job details are correct.
- 12** Start the job now or schedule the job. For information, see [“Starting and Scheduling a Versioning Job” on page 84](#).

What's Next

To manage Archive and Version services jobs, see [Chapter 9, “Managing the Versioning Jobs,” on page 83](#).

8

Managing the Archive Server

This section discusses how to manage your Novell® Archive and Version Services 2.0 for NetWare® server.

- ◆ [“Starting ArkManager” on page 77](#)
- ◆ [“Stopping ArkManager” on page 77](#)
- ◆ [“Starting the MySQL Server and ArkSQL” on page 78](#)
- ◆ [“Stopping the MySQL Server and ArkSQL” on page 79](#)
- ◆ [“Modifying the ArkSQL Settings” on page 79](#)
- ◆ [“Modifying the Archive Server Information” on page 80](#)
- ◆ [“Backing Up the Archive Database” on page 80](#)
- ◆ [“Backing Up the Archive Data” on page 80](#)
- ◆ [“Recovering the Archive Database” on page 81](#)
- ◆ [“Enabling UTF-8 Encoding Support for Clients” on page 81](#)

Starting ArkManager

Starting ArkManager on a Server

To start ArkManager, enter the following command at the server console command prompt:

```
arkstart
```

The ArkSQL instance of MySQL starts automatically whenever you boot the server. If you need to start ArkSQL manually, see [“Starting the MySQL Server and ArkSQL” on page 78](#).

If you want ArkManager and ArkSQL to start automatically on server reboot, add the arkstart command in the autoexec.ncf.

Starting ArkManager and ArkSQL in a Cluster

For a clustered server solution, start ArkManager and ArkSQL by starting the cluster resources. For information, see the *Novell Cluster Services 1.7 Administration Guide*.

Stopping ArkManager

Stopping ArkManager on a Server

To stop ArkManager, enter the following command at the server console command prompt:

```
arkstop
```

After typing `arkstop`, make sure ArkManager is shutting down cleanly before running it again. You can check this in two ways:

- ◆ If Display Log is enabled (a `<displayLog/>` tag is in the `arkconfig.xml` file), go to the server's Logger screen and wait until the "ArkManager shutdown is completed" message appears.
- ◆ On the archive server's console screen, use the `java -show` command to check that no ArkManager Java thread is running.

It might take a while for ArkManager to shut down because it needs to wait for its current file archiving process to finish. Under normal circumstances, ArkManager should eventually shut down cleanly.

If you need to stop the ArkSQL instance of MySQL, see "[Stopping the MySQL Server and ArkSQL](#)" on page 79.

Killing the ArkManager Process If It Hangs

If you suspect the shutdown process is taking an unreasonably long time, and it might be hanging, use the following procedure to get ArkManager's thread ID and kill the ArkManager process manually.

- 1 At the server console command prompt, enter

```
java -show
```

This returns a list of current process IDs.

- 2 Get ArkManager's process ID from the list.
- 3 At the server console command prompt, enter

```
java -killxx
```

where `xx` is ArkManager's process ID.

Stopping ArkManager and ArkSQL in a Cluster

For a clustered server solution, stop ArkManager and ArkSQL by stopping the cluster resources. For information, see the *Novell Cluster Services 1.7 Administration Guide*.

Starting the MySQL Server and ArkSQL

When you installed and configured the MySQL instance for ArkManager, you set up commands in the `autoexec.ncf` file to automatically start ArkSQL whenever you boot the system.

Manually Starting ArkSQL

If you need to manually start ArkSQL, at the server console, enter

```
mysqld_safe --defaults-file=sys:\ArkManager\arkSQL.cnf
```

Starting ArkSQL in a Cluster

For a clustered server solution, start ArkSQL by starting the cluster resources. For information, see the *Novell Cluster Services 1.7 Administration Guide*.

Stopping the MySQL Server and ArkSQL

Stopping the MySQL Server and ArkSQL on a Server

At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Specify `-p` if the root user's password is set. Specify the port if the port is not 3306.

Make sure that the MySQL Database Server screen has closed. If `mysqld_safe` command was not issued with the `--autoclose` option (a typical situation for ArkSQL), go to the MySQL Database Server screen and press any key to close the screen.

Stopping ArkSQL in a Cluster

For a clustered server solution, stop ArkSQL by stopping the cluster resources. For information, see the *Novell Cluster Services 1.7 Administration Guide*.

Modifying the ArkSQL Settings

If you need to modify the MySQL root username, password, or port number, you must modify the values in MySQL, in the `sys:\arkManager\arkSQL.cnf` file, and in the `sys:\arkManager\arkConfig.xml` file.

1 Stop ArkManager.

For information, see [“Stopping ArkManager” on page 77](#).

2 If the ArkSQL instance is running at the intended port, shut it down. At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Specify `-p` if the root user's password is set. Specify the port if the port is not 3306.

3 In a text editor, configure ArkSQL with new settings, as necessary.

3a Set the port number by modifying the following directive:

```
port = 3306
```

Replace `3306` with the actual port number.

3b Save your changes.

3c (Conditional) If this is an archive server cluster, copy the revised `sys:\arkManager\arkSQL.cnf` file to each server in the cluster.

4 Update the archive server information in the `sys:\arkManager\arkConfig.xml` file. For information, see [“Modifying the Archive Server Information” on page 80](#).

5 To start MySQL, at the server console, enter

```
mysqld_safe --defaults-file=sys:\arkManager\arkSQL.cnf
```

6 Start ArkManager by entering `arkstart` at the server console.

Modifying the Archive Server Information

You must update the archive server information in the Basic elements of the `sys:\arkManager\arkConfig.xml` file if you modify any of the following information for the archive server:

- ◆ Novell eDirectory™ username or password
- ◆ MySQL root username, password, or port number

If you change the administrator user's password on the network or if you change the root user's password in MySQL, you must also update the passwords that arkManager uses when it starts. ArkManager cannot restart until you pass it the correct passwords in the `arkConfig.xml` file.

For information, see “[Understanding Archive Server Properties](#)” on page 26 and “[Sample of a Basic Configuration for ArkConfig.xml](#)” on page 120.

1 Stop ArkManager.

For information, see “[Stopping ArkManager](#)” on page 77.

2 Stop the MySQL instance for ArkSQL.

For information, see “[Stopping the MySQL Server and ArkSQL](#)” on page 79.

3 In a text editor, open the `sys:\arkManager\arkConfig.xml`.

4 Modify the settings, as necessary, for each of the mandatory elements with the new values of your system.

5 Review your XML code to make sure that all required tags are present and that tags are well-formed.

6 Save the `sys:\arkManager\arkConfig.xml` file.

7 Start ArkManager.

For information, see “[Starting ArkManager](#)” on page 77.

Backing Up the Archive Database

You should periodically back up the archive database. The frequency depends on the critical nature of the versions you store in an archive database.

WARNING: To ensure data integrity, shut down ArkManager before and during the backup. For information, see “[Stopping ArkManager](#)” on page 77.

For information, see [Chapter 16.9: Backing Up and Recovering an InnoDB Database \(http://dev.mysql.com/doc/mysql/en/Backing_up.html\)](http://dev.mysql.com/doc/mysql/en/Backing_up.html) in the *MySQL Reference Manual* (<http://dev.mysql.com/doc/mysql/en/index.html>).

Backing Up the Archive Data

You should periodically back up the archive data. The frequency depends on the critical nature of the versions you archive.

WARNING: To ensure data integrity, shut down ArkManager and ArkSQL before and during the backup. For information, see “[Stopping ArkManager](#)” on page 77.

To back up the archive versions for a particular job, copy the directories to a different volume. We recommend that the destination volume where you store the backup copy be on a different drive

and pool than your archive volume, although it is not mandatory. You can also use your standard backup tools and procedures to make the directories part of your scheduled backup.

The general data path is

```
ark:\archive\arkDataxxxxxx\
```

where *ark* is the archive volume, *archive* is the archive data directory, and *xxxxxx* is a 6-digit random number assigned to the job.

If the archive path is in a directory in the volume, simply copy all files in the directory.

Recovering the Archive Database

For information about recovering InnoDB databases such as ArkSQL, see [Chapter 16.9: Backing Up and Recovering an InnoDB Database](http://dev.mysql.com/doc/mysql/en/Backing_up.html) (http://dev.mysql.com/doc/mysql/en/Backing_up.html) in the *MySQL Reference Manual* (<http://dev.mysql.com/doc/mysql/en/index.html>).

Enabling UTF-8 Encoding Support for Clients

UTF-8 encoding support for clients makes it possible to access multiple language files from an NCP™ client without changing the code page on either the NCP client or the NetWare server. ArkManager uses UTF-8 encoding for filenames. If the language code pages of the NCP client and server are different, and if you are using an older version of the Novell Client™, the server conveys an incorrect filename to the archive database. In turn, the archive server presents unfamiliar filenames to the user who is trying to restore file versions.

To prevent the code page problem, upgrade your NCP clients to use the Novell Client in this release of Open Enterprise Server, which provides UTF-8 support, then enable the UTF-8 service. CIFS clients have included UTF-8 encoding support since NetWare 6.0 SP 2 and NetWare 6.5.

To enable the UTF-8 service:

- 1** Install or upgrade to the newest Novell Client in NetWare 6.5 Support Pack 3 or later.
- 2** Log in to the Novell Client.
- 3** To open the Novell Client Configuration window, right-click the Novell Client icon in the system taskbar and then click Novell Client Properties.
- 4** Click Advanced Settings.
- 5** In Parameter Groups, select Use UTF-8 Encoding and NCPs.
- 6** In Setting, set the value to On to enable this service.
- 7** Click OK to apply the setting.
- 8** When prompted, reboot the client machine.

9

Managing the Versioning Jobs

After you configure jobs and start Novell® Archive and Version Services 2.0 for NetWare®, you can manage the versioning jobs using the Archive Versioning plug-in for Novell iManager. Use the Archive Job Control page to start or stop a job, view a job's details, or view a log of the job's messages. Use the Archive Log page to display recent error, warning, and normal messages reported by one or more jobs on a specified server.

This section discusses the following tasks:

- ◆ “Accessing the Archive Versioning Role in iManager” on page 83
- ◆ “Starting and Scheduling a Versioning Job” on page 84
- ◆ “Stopping a Versioning Job” on page 85
- ◆ “Viewing a List of Versioning Jobs on Your Archive Server” on page 85
- ◆ “Viewing Details of a Versioning Job” on page 86
- ◆ “Viewing the Archive Log” on page 87
- ◆ “Filtering Messages in the Archive Log” on page 90
- ◆ “Deleting File Versions from the Archive Database” on page 93
- ◆ “Deleting a Versioning Job” on page 95

Accessing the Archive Versioning Role in iManager

- 1 Launch a Web browser.
- 2 Click File > Open, then enter
`https://svrname.domain.com/nps/iManager.html`
Replace *svrname.domain.com* with the actual DNS name or IP address (for example, 192.168.1.1) of the server where iManager is running.
IMPORTANT: The URL is case sensitive.
- 3 On the iManager Login page, log in to the Novell eDirectory™ tree where the archive server you want to manage resides.
- 4 In the left navigator, click Archive Versioning to show the tasks.

Figure 5 The iManager Archive Versioning Role and Tasks



For information, see the *Novell iManager 2.5 Administration Guide*.

- 5 Click Archive Job Control or Archive Log, depending on what task you want to perform.
- 6 You must select an archive server to manage the functions on the Archive Job Control and Archive Log pages.

Use one of these methods to select an archive server in this tree:

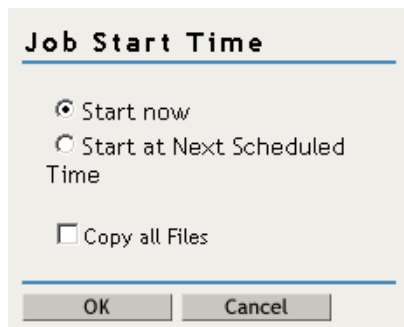
- ◆ Type the Novell eDirectory server object name for the server you want to manage, then click Apply. For example: svr1.novell.
- ◆ Click the Search icon to open the eDirectory Object Selector. Browse or search the list to locate the server object of the server you want to manage, then click the server name.
- ◆ Click the Object History icon to select a server you have recently managed.

Starting and Scheduling a Versioning Job

On the Archive Job Control page, Start allows you to vary the Job Start Time settings as follows:

- ◆ **Start Now:** Begins the selected jobs immediately.
- ◆ **Start at the Next Scheduled Time:** Begins the selected jobs at their individual next scheduled start times.
- ◆ **Copy All Files:** Copies all files specified by the individual selected jobs from their source volumes to the archive volume on a one-time, special version occurrence.

Figure 6 The Job Start Time Dialog Box



For example:

- ◆ Schedule selected stopped jobs to either Start Now or Start at the Next Scheduled Time.
- ◆ Schedule selected jobs to begin an unscheduled version to Start Now.
- ◆ Schedule a special version occurrence in which the selected jobs save all files now or on their next scheduled version.

To set Job Start Time:

- 1 On the Archive Job Control page, select the Job check box next to the jobs you want to manage concurrently.
- 2 Click Start, then vary the settings in the Job Start Time dialog box to achieve desired objectives.
- 3 Click OK to accept the settings, or click Cancel at any time to back out of the Start sequence.

Stopping a Versioning Job

You can stop a versioning job whenever you want to temporarily pause versioning or cease versioning a particular source volume. On the Archive Job Control page, select the Job check box next to the jobs you want to stop concurrently. This stops the selected jobs immediately. The jobs remain stopped until you use the Start option to restart them.

You can also use the <stopped/> tag in the Job element for the particular job in the sys:\arkManager\arkConfig.xml file.

To delete versioning jobs, see “Deleting a Versioning Job” on page 95.

Viewing a List of Versioning Jobs on Your Archive Server

The Archive Job Control page lists all of the versioning jobs on the selected archive server. [Access iManager](#), then click Archive Versioning > Archive Job Control.

Each entry in the list represents a single job for the selected server. To sort the jobs by Name, Next Start Date, or State, click the Sort icon next to the column heading.

Figure 7 A Sample Archive Job Control Report

[Archive Versioning](#) ▶ **Archive Job Control**

Archive Job Control

To create jobs, modify the sys:\etc\arkConfig.xml file for the selected server. Use this page to view the status of recent jobs. You can start or stop jobs, view a job's status, or view messages issued by a job.

Server:  

<input type="checkbox"/>	Name ▾	Next Start Date ▾	State ▾
<input checked="" type="checkbox"/>	svr1nw_users	1/27/05 12:41 PM	Scheduled
<input type="checkbox"/>	svr1nw_data	2/1/05 10:45 AM	Scheduled

The list displays the following information:

- ♦ **Jobs:** Select a check box to select the job. Select the check box in the heading row of the table to select all jobs.
- ♦ **Name:** The administrator-specified name of the job as configured in the sys:\arkManager\arkConfig.xml file.
Typical names might provide information about the source server and source volume. For example: server_name[volume_name] or srv1[vol1].
- ♦ **Next Start Date:** The next date and time that the job is scheduled to begin a versioning process. The format is mm/dd/yy hh:mm mm. For example: 06/10/03 10:24 AM.

If the job is in a Stopped state, the Next Start Date might have a date and time that is previous to the current time. Whenever the job starts again, it checks the scheduled time to determine


when next to run the program. If it is past time to begin a job, the job will begin immediately after startup.

- ◆ **State:** The current status of the job. For example: Scheduled, Stopped, Running, or Unknown.

Viewing Details of a Versioning Job

To view information about a job, on the Archive Job Control page, select a Job check box next to the job of interest, then click Details. Select only one job at a time to view its details. This opens the Job Details dialog box, as shown below.

Figure 8 A Sample Job Details Dialog Box with an Interval-Based Schedule



The screenshot shows a dialog box titled "Job Details" with a blue header bar. Below the header, the following information is displayed:

Name:	svr1nw_users
State:	Scheduled
Source Server:	svr1nw
Source Volume:	users
Last Start Date:	1/27/05 12:43 PM
Next Start Date:	1/27/05 12:43 PM
Scheduled Interval:	
Every:	20 Seconds
Run Schedule:	
Time:	N/A
Days:	N/A

At the bottom of the dialog box is a "Close" button.

The Job Details box displays the following information about the selected job:

- ◆ **Name:** The administrator-specified job name.
- ◆ **State:** The current status of the selected job: Scheduled, Stopped, Running, Unknown.
- ◆ **Source Server:** The server where the data to be versioned is located. This server is in the same eDirectory tree as the archive server.
- ◆ **Source Volume:** The volume where the data to be versioned is located.
- ◆ **Last Start Date:** The local date and time that the selected job last began a versioning process.
- ◆ **Next Start Date:** The next date and time that the selected job is scheduled to begin a versioning process. The format is mm/dd/yy hh:mm xm. For example: 06/10/03 10:42 AM.

If the job is in a Stopped state, the Next Start Date might have a date and time that is previous to the current time. Whenever the job starts again, it checks the scheduled time to determine when next to run the program. If it is past time to begin a job, the job begins immediately after startup.

- ◆ **Scheduled Interval:** The elapsed time between the beginning of versioning processes for a job. Valid units are seconds, minutes, hours, and days. Either Scheduled Interval or Run Schedule can be specified for any given job, but not both.

- ♦ **Run Schedule:** The scheduled start time when the job's version process begins on a daily basis. Valid values for the days of the week include one or more of the following: all, Sunday (Sun), Monday (Mon), Tuesday (Tue), Wednesday (Wed), Thursday (Thu), Friday (Fri), and Saturday (Sat). Either Scheduled Interval or Run Schedule can be specified, but not both.

Other Job Details

You can view the following job properties by viewing the `sys:\arkManager\arkConfig.xml` file:

- ♦ **Snapshot Pool:** The destination pool where snapshots of the source volume are temporarily created and maintained at the end of an epoch until point-in-time file versions can be saved to the archive database. If defined in an individual job, the snapshot pool must be a different pool than the original pool where the source volume resides. If defined in the default job settings, the snapshot pool must be a different pool than any of the original pools where source volumes reside.
- ♦ **Delete Policy:** Determines the lifetime of versions by age or by number of versions. The Delete policy for some volumes can allow indefinite retention of at least one most recent versioned file.
- ♦ **Filter:** Sets criteria to determine which files in the source volume are eligible for versioning. Files can be included or excluded according to their path, file extension, or filename patterns. If files meet the inclusion criteria, they are eligible for versioning.

Viewing the Archive Log

ArkManager issues messages as it performs tasks for each job. The archive log displays error, warning, and normal messages reported by all jobs on a selected archive server. You can filter log entries to view only those messages of interest (such as by severity type or by job), to set the number of messages to view per page, and to specify the date of the messages you want to jump to first in the log.

This section discusses the following topics:

- ♦ [Understanding Log Entries](#)
- ♦ [Viewing Messages in the Archive Log](#)
- ♦ [Viewing Messages on the Server Logger Screen](#)

Understanding Log Entries

The archive log contains all messages for selected jobs on a selected server. Each log entry displays the following information:

- ♦ **Job Name:** The administrator-specified name of the job. You specify the job's name in iManager and in the `sys:\arkManager\arkConfig.xml` file.
- ♦ **Severity:** The alert level of the job's message.

Messages have three levels of alert severity:

- ♦ **Error:** Reports a failure to perform a job task. For example, the versioning service might not be able to save a version of a file from the source volume to the archive volume because of a broken connection or because the target file was open and locked for reading.
- ♦ **Warning:** Reports a non-critical error in performing a job task.
- ♦ **Normal:** Reports the status of normal job tasks such as starting, copying, and completing.

- ◆ **Date:** The date and time stamp of the message. The format is month day, yyyy hh:mm xm. For example: April 25, 2003 11:45 PM.
- ◆ **Message:** The text message issued by the job.

Figure 9 A Sample Archive Log for an Archive Server

[Archive Versioning](#) ▶ [Archive Job Control](#) ▶ **Archive Log**

Archive Log ?

View the error, warning, and normal messages reported by all jobs on the selected server or use the filter to view a subset of log entries. Log entries appear from newest to oldest.

Server:  

Jobs		
Name	Severity	Date
svr1nw_users	normal	1/27/05 12:44 PM
----- Completed job svr1nw_users -----		
svr1nw_users	normal	1/27/05 12:44 PM
----- Starting Job svr1nw_users -----		
svr1nw_users	normal	1/27/05 12:44 PM
Full copy ended early		
svr1nw_users	error	1/27/05 12:44 PM
Error write the rights info to database		
svr1nw_users	error	1/27/05 12:44 PM
Error write the rights info to database		
svr1nw_users	normal	1/27/05 12:44 PM
Starting a full copy		
svr1nw_users	normal	1/27/05 12:43 PM
----- Completed job svr1nw_users -----		
svr1nw_users	normal	1/27/05 12:43 PM
----- Starting Job svr1nw_users -----		
svr1nw_users	normal	1/27/05 12:43 PM
----- Completed job svr1nw_users -----		
svr1nw_users	normal	1/27/05 12:43 PM
----- Starting Job svr1nw_users -----		

Viewing Messages in the Archive Log

- 1 Access iManager, selecting the server you want to manage.
For information, see [“Accessing the Archive Versioning Role in iManager” on page 83](#).
- 2 Use one of the following methods to view the log:
 - ◆ Click Archive Versioning > Archive Log.
 - ◆ Click Archive Versioning > Archive Job Control, select the Job check box next to one or more jobs of interest for the selected server, then click View log.

Navigating the Archive Log

By default, the log displays 10 messages per screen. Messages appear from newest (top and left) to oldest (bottom and right). Use the browser scroll bar to view all entries in the page. Use the arrows at the bottom of the page to move from page to page.

- ◆ Use the left-arrow to navigate to the previous page of newer messages.
- ◆ Use the double left-arrow to go directly to the newest messages.
- ◆ Use the right-arrow to navigate to the next page of older messages.
- ◆ Use the double right-arrow to go directly to the oldest messages.

Updating the Log Messages

To update the log to include the most recent messages, click the double left-arrows. You can also use one of these methods:

- ◆ Click Archive Log in the left navigator.
- ◆ Click Archive Log at the top of the page.

Filtering the Log Messages

- ◆ **Filter:** You can view all available log entries, or use a filter to view only those messages you want to see. Filter allows you to select messages by severity types and by one or more jobs.

By default, the log displays 10 messages per page and begins with the newest messages. You can use the filter to set preferences for the number of log entries to display per page and the date and time of the entries you want to see first in the log.

To set the filter, click Filter. For information, see [“Filtering Messages in the Archive Log” on page 90](#).

- ◆ **Clear Filter:** Resets the filter settings you made to the default settings. The log displays messages for all severity types and for all jobs. The starting position for displaying entries resets to the current date and time. The number of entries displayed per page resets to the default value of 10 entries per page.

To reset the filter to the default Archive Log values, click Clear Filter.

Viewing Messages on the Server Logger Screen

In addition to viewing the log in iManager, you can display the log on the server Logger screen. To enable this option, include the `<displayLog/>` element in the job's configuration in the `sys:\arkManager\arkConfig.xml` file. For information, see [“Configuring Jobs in ArkConfig” on page 71](#).

This is an empty element. It has no child elements and defines no data values. Either the shortened version or the long version of this element is valid. For example:

```
<displayLog/>
```

or

```
<displayLog></displayLog>
```

Filtering Messages in the Archive Log

In the iManager Archive Log page, click Filter to filter messages so that the log displays only those log entries that you want to see. You can also set preferences for how many log entries to view per page and for the date and time of messages you want to jump to first. You can set one or more of the filter types each time you activate the filter process. Click Cancel at any time to back out of the filtering process.

The Filter page allows the following:

- ◆ [“Filtering Log Entries by Severity Type” on page 90](#)
- ◆ [“Filtering Log Entries by Job” on page 91](#)
- ◆ [“Setting Preferences for the Number of Entries to Display Per Page” on page 92](#)
- ◆ [“Jumping Directly to Messages by Date and Time” on page 92](#)
- ◆ [“Resetting the Log Filters” on page 92](#)
- ◆ [“Example Log Display after Filtering” on page 92](#)

Filtering Log Entries by Severity Type

You can set filters so that the log displays only the messages that match one or more Severity Types that you specify. It filters out all unselected types.

- 1 On the Archive Log Management page, click Filter.

Figure 10 A Sample Archive Log Filter Window

[Archive Versioning](#) ▶ [Archive Log](#) ▶ [Filter](#)

Archive Log Filter ?

Filter messages to view only those log entries of interest. Specify which message severity type and which jobs to view. Specify the number of entries to display per page and the date where you want to begin viewing.

Severity Types: Error
 Normal
 Warning

Jobs:

- Name
- ArkManager
- svr1nw_users
- svr1nw_data



Select Start Date and Time

Day:

Time:

Number of Messages to Display:

- 2** On the Filter Archive Log page, select one or more Severity Type check boxes next to the message types you want to display in the log.
- 3** (Optional) Set any other filter options on the page.
- 4** Click OK to save the settings, or click Cancel at any time to back out of the filter setting process.

Filtering Log Entries by Job

The job log displays recent messages for all jobs on the selected server. An ArkManager job appears in the list if there are messages that occurred that could not be allocated to a particular job. A filtered log displays messages for only the jobs you select; it filters out all jobs that are unselected.

- 1** On the Archive Log Management page, click Filter.
- 2** Select one or more Job check boxes next to the jobs you want to display in the log.
- 3** (Optional) Set any other filter options on the page.
- 4** Click OK to save settings, or click Cancel at any time to back out of the filter setting process.

Setting Preferences for the Number of Entries to Display Per Page

- 1 On the Archive Log Management page, click Filter.
- 2 Specify the number of log entries to display per page. The default is 10 messages.
- 3 (Optional) Set any other filter options on the page.
- 4 Click OK to save settings, or click Cancel at any time to back out of the filter setting process.

Jumping Directly to Messages by Date and Time

By default, the log displays all job messages with the newest messages first. You can specify the date and time of the first message to display. The log jumps directly to the log entries from that date and time instead of to the newest messages. All messages are still available by using the arrow keys at the bottom of the screen to navigate to newer and older messages.

To view the most recent log entries, click View Newest Log Entries.

To specify a particular date and time for entries to jump to first:

- 1 On the Archive Log Management page, click Filter.
- 2 To specify a date, click the Calendar icon, then select a date by using the arrows to navigate to the correct month and year.
- 3 To specify a time, click the arrows to navigate by hours (double arrows) or by 15-minute increments (single arrows) to the time.
- 4 (Optional) Set any other filter options on the page.
- 5 Click OK to save settings, or click Cancel at any time to back out of the filter setting process.

Resetting the Log Filters

The filter settings are not persistent. They are active only until you use one of the following methods to reset them:


- ◆ Use the Filter to specify new Filter settings.
- ◆ Click Clear Filter on the Archive Log page to return to default settings.
- ◆ Log out of iManager, or close the iManager browser window to return to default settings.

Example Log Display after Filtering



The following example log applies the sample log filter in [Figure 10 on page 91](#) to the sample job log in [Figure 9 on page 88](#) so the Archive Log page displays a filtered job log.

Figure 11 Sample Filtered Archive Log


[Archive Versioning](#) ▶ [Archive Job Control](#) ▶ [Archive Log](#)

Archive Log 

View the error, warning, and normal messages reported by all jobs on the selected server or use the filter to view a subset of log entries. Log entries appear from newest to oldest.

Server:  

Jobs		
Name	Severity	Date
svr1nw_users	error	1/27/05 12:44 PM
Error write the rights info to database		
svr1nw_users	error	1/27/05 12:44 PM
Error write the rights info to database		



Deleting File Versions from the Archive Database

Users can use the NSS File Versions Utility or NetStorage to select a single file and delete all versions of the single file from the archive database. For information, see the *Novell Archive and Version Services 2.0 User Guide for NetWare 6.5*.

Administrators can delete file versions for a variety of reasons:

- ◆ To clear the database of unnecessary data that was versioned prior to applying job filters
- ◆ To delete file versions without compromising the ArkSQL data structure
- ◆ To clear the database of file versions related to a job you plan to delete (See also “[Deleting a Versioning Job](#)” on page 95.)
- ◆ To clear the database of file versions to free space in the archive volume

To delete all of a job’s file versions in ArkManager 2.0:

1 Stop ArkManager.

For information, see “[Stopping ArkManager](#)” on page 77. Wait until ArkManager shutdown is complete to continue with the next step.

2 Modify the Delete policy for the job so that the file and directory purging process repeats in rapid succession.

2a In a text editor, open the sys:\arkManager\arkConfig.xml file.

2b Under the Job element, set the Delete policy’s Maximum Keep Versions to 0 (zero) versions and the Maximum Keep Time to a small non-zero value, such as 2 seconds.

If you set both the Maximum Keep Versions and Maximum Keep Time to zero values, the Delete policy function does not run. Thus, you must select a non-zero value for

Maximum Keep Time for the Delete policy to run with the goal of eventually purging all file versions and directory versions in the archive database that are related to the selected job.

2c Disable Keep Current Copy to disable the job from retaining at least one file version of each job.

2d Save your changes.

3 Modify the Run Schedule so that no new file versions are likely to be added while you are deleting the existing file versions in the archive database for this job.

The goal is to keep the job active, but to not run the file versioning process for a period of time long enough to allow the gradual purging of the existing file and directory versions. The time to wait varies, based on the amount of data in the archive related to this job.

For example, the time to allow for the purging process to complete depends on the complexity of the directory structure as measured by the number and levels of directories, the number of files to version, the frequency that source files were versioned, and the retention time for file versions. The bigger the repository of archived data, the longer it takes to purge files and directories at all levels.

3a [Access the Archive Versioning role in iManager.](#)

3b Click Archive Versioning > Archive Job Control.

3c Select the archive server that hosts the job of interest.

3d (Conditional) ArkManager should still be stopped, but if ArkManager is running, select the Job of interest, then click Stop.

3e Select the Job of interest, then click Start to open the Run Schedule dialog box.

3f Deselect Start Now.

3g Select Time.

3h Do one of the following:

- ◆ Add the <stopped/> tag for the job in the sys:\arkManager\arkConfig.xml file.
- ◆ Set the next Scheduled Run Time for a day and time that allows enough time to ensure that all existing file versions are deleted.

For example, suppose that today is Tuesday and the time is 12:00 p.m. (noon) on your archive server. To set the next job to run about one week from today, set the Run Schedule Time to 11:59 a.m. and set Day of the Week to Tuesday.

4 Start ArkManager.

For information, see [“Starting ArkManager” on page 77.](#)

5 During the next few days to a week, periodically check the availability of file versions to verify that all file versions for the source volume that are related to the selected job have been deleted from the archive server.

5a Log in to a workstation as an administrator user with rights to access all files on the source volume.

5b Use one of these methods to access available file versions for this job:

- ◆ **Novell Storage Services File Version Utility:** Install the File Version Utility on the workstation and map a drive to the archive server location where the file versions for the selected job are stored.

- ◆ **Novell NetStorage:** Activate a network or Internet connection, open a Web browser, then go to your Novell NetStorage server.

For example, go to `https://svr1.domain.com/NetStorage` where you replace `svr1.domain.com` with the actual DNS name or IP address of your NetStorage server.

- 5c Navigate to the root of the source volume, then right-click a directory or file to determine if versions are available for the selected directory or file.

For example, if you click a directory and the Versions option is absent from the menu, no file versions are available below that level.

- 6 After all file versions related to this job have been purged, you can modify the job's versioning properties or delete the job.

For information on deleting a job, see [“Deleting a Versioning Job” on page 95](#).

Deleting a Versioning Job

It is better to stop a job than to delete it. However, if you want to delete the job, it is possible.

Deleting a job from the `sys:\arkManager\arkConfig.xml` file deletes only the job definition; it does not remove the file versions from the archive database. The file versions remain in the archive, according to the existing Delete Policy settings for the job.

Before you delete a job, you might want to delete the file versions associated with it. For information, see [“Deleting File Versions from the Archive Database” on page 93](#).

The job name represents the unique relationship between the archive server and the source volume you want to version; the name persists for the life of the archive server. After you delete an archive job, if you decide to version the source volume on the same archive server in the future, you must create a job with the same name as the original job you configured for that given archive server and source volume combination.

IMPORTANT: If you delete a job, its job name is reserved on the archive server for the original source volume. The job name cannot be reused for a different source volume.

You might consider using a naming convention for jobs or keeping a log of the jobs you create for each archive server, as illustrated in the table below.

Archive Server	Archive Volume	Source Server	Source Volume	Job Name
ark1	ark	data1	usersa2j	data1_usersa2j
		data2	usersk2r	data2_usersk2r
		dev81	projA	dev81_projA

Typically, you will delete the existing file versions before you delete the job. If you do not delete the file versions, you can view any remaining file versions only by re-creating a job with the same job name. If you plan to keep the file versions, it is better to simply stop the job, not to delete it. For information, see [“Stopping a Versioning Job” on page 85](#).

Procedure

- 1 Delete the file versions for the job you want to delete.

For information, see [“Deleting File Versions from the Archive Database” on page 93](#).

- 2 [Access the Archive Versioning role in iManager.](#)

- 3** Select the archive server.
- 4** Click Archive Versioning > Archive Job Control.
- 5** Select the Job check box next to the job you want to delete, then click Delete.

A

XML Elements and Attributes for ArkConfig

This section defines the XML elements and attributes that you use to configure versioning jobs for your Novell® Archive and Version Services 2.0 for NetWare® server. The XML elements have a particular hierarchy that you must keep in mind as you define the Basic element, Defaults element, and multiple Job elements. See [Figure 12 on page 98](#) to understand the parent-child relationships between XML elements defined for the `sys:\arkManager\arkConfig.xml` file.

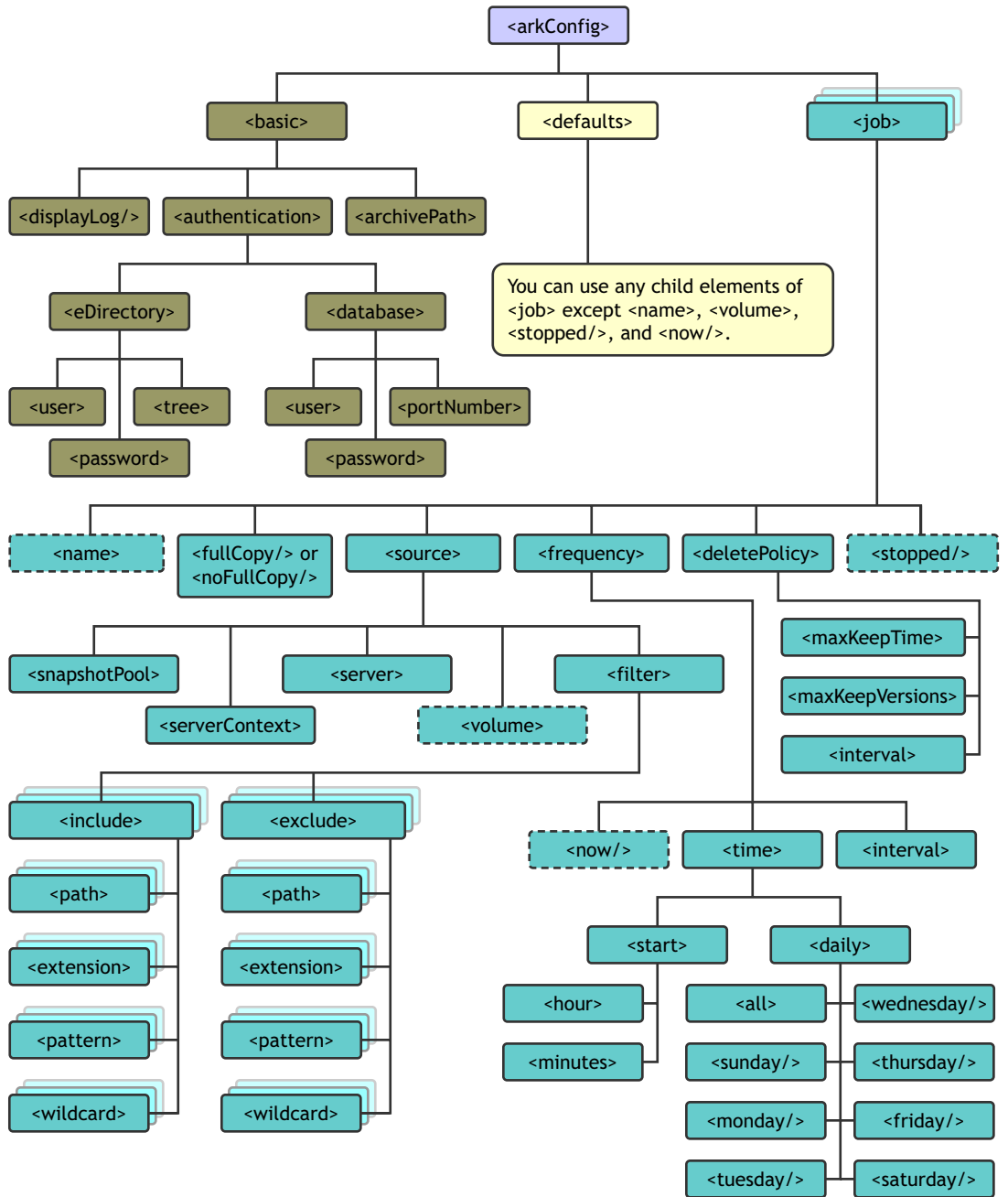
The following table defines the XML elements and attributes that you use in the `sys:\arkManager\arkConfig.xml` file. Some elements appear first as children of elements in the next-higher level of the hierarchy and as parents to their own set of child elements in the next-lower level of the hierarchy.

The examples provided for the elements are sample code to illustrate how the configured properties appear in the XML file. You must modify the properties to meet your specific needs as you create your `arkConfig.xml` file.

At a minimum, you must configure the authentication information in `arkConfig.xml` for ArkManager to run. For a sample of the basic configuration, see [“Sample of a Basic Configuration for ArkConfig.xml” on page 120](#).

For a sample of the full configuration, see [“Sample of a Full Configuration for ArkConfig.xml” on page 121](#).

Figure 12 Hierarchical Parent-Child Relationships between XML Elements Used in the arkConfig.xml File



Parent Element	Child Elements and Attributes	Description
<arkConfig> (Root element)	<basic>	<p>A single Basic tag set surrounds the management information that applies to all jobs. Its child elements specify where to display the log, the authentication information, and the storage location where the archive data (versions) reside.</p> <p>At a minimum, configure the <authentication> information for ArkManager 2.0 to run.</p> <p>For information about its child elements, see <basic> in the Parent Element column of this table.</p>
	<defaults>	<p>A single Defaults tag set surrounds the child elements that define the default settings to use if the elements are not set in individual jobs.</p> <p>Each job uses the values configured in the Defaults element only for those values that are not otherwise set for that job.</p> <p>For information about its child elements, see <defaults> in the Parent Element column of this table.</p>
	<job>	<p>A Job tag set surrounds the child elements that define the settings for a given job. Create one job for each unique information set that you want to version. An archive server can version a given source volume with only one job. If you want to create multiple jobs for a source volume, you must create the jobs on different archive servers.</p> <p>The values configured in a given job override the default settings only for that job. If a value is not set in the Job element, the default settings apply for only that element.</p> <p>Use the attributes optionally to indicate whether the job is to be added, modified, or deleted from the archive server.</p> <p>For information about its child elements, see <job> in the Parent Element column of this table.</p>

Parent Element	Child Elements and Attributes	Description
<basic> (Child to <arkConfig>)	<displayLog/>	<p>(Optional) If this tag is included in the arkConfig.xml file, it prints log entries for all jobs to the server's console screen in addition to their normal display in the Archive / Version Log.</p> <p>This is an empty element. It has no child elements and defines no data values. Either the shortened version or the long version of this element is valid. For example:</p> <pre><displayLog/></pre> <p>or</p> <pre><displayLog></displayLog></pre>
	<authentication>	<p>Contains child elements that provide information about the administrator user. This user must have rights to all servers being accessed by this archive server. Child elements also define the ArkSQL database user, password, and port number. The ArkSQL user needs server-specific ArkSQL rights.</p> <p>The <authentication> information must be set before ArkManager can run.</p> <p>For information about its child elements, see <authentication> in the Parent Element column of this table.</p>
	<archivePath>	<p>Specifies the local path to the NSS volume in the archive server where the archive database of file versions is stored.</p> <pre><archivePath>volume_name:\directory\</archivePath></pre> <p>Placing a backslash between the colon and the directory name, as shown in in this example, is optional.</p> <p>If you are setting up an active-passive clustered solution for the archive server using Novell Cluster Services™, make sure to specify the path to the virtual storage location.</p>
<defaults> (Child to <arkConfig>)	<fullCopy/>	For information about these child elements, see the Job element (<job>) in this table.
	<noFullCopy/>	
	<source>	The Defaults element can contain any tags that you use in a Job element, except for <name> , <volume> , <stopped/> , and <now/> .
	<frequency>	Although you can have multiple Job elements, only a single Defaults element appears in the arkConfig.xml file.
	<deletePolicy>	

Parent Element	Child Elements and Attributes	Description
<code><job></code> (Child to <code><arkConfig></code>)	<code><name></code>	<p>Specifies the unique name of this versioning job. This name can contain spaces.</p> <p>You might want the job name to reflect information about the data that is being versioned. For example, if you have a job that versions data for a user1 volume on the svr1 server, you might name the job:</p> <pre><name>user1[svr1]</name></pre> <p>Use the <code><name></code> tag as a child only of the Job element; it is invalid in the Defaults element.</p>
	<code><fullCopy/></code>	<p>(Optional) If used, sets a flag so that the job copies all files that pass the filter from the source volume to the archive database the first time the job runs or if a full copy runs but did not finish previously.</p> <p>In any given Job element or Defaults element, use <code><fullCopy/></code> or use <code><noFullCopy/></code>, not both. If neither one is specified, <code><fullCopy/></code> is the default software setting.</p> <p>This is an empty element; it has no child elements and no data values.</p>
	<code><noFullCopy/></code>	<p>(Optional) If used, sets a flag so that the job does not copy all files that pass the filter from the source volume to the archive database the first time the job runs.</p> <p>This is an empty element; it has no child elements and no data values.</p>
	<code><source></code>	<p>Contains child elements that define the specific server context, server, paths, directories, or file types to be archived for this job.</p> <p>For information about its child elements, see <code><source></code> in the Parent Element column of this table.</p>
	<code><frequency></code>	<p>Contains child elements that define the start time and intervals for versioning in this job.</p> <p>For information about its child elements, see <code><frequency></code> in the Parent Element column of this table.</p>
	<code><deletePolicy></code>	<p>Contains child elements that specify when to delete a version, such as by age of the version (elapsed time of creation), by the number of versions that exist (oldest deleted first), or by the interval of time before the next versioning process.</p> <p>For information about its child elements, see <code><deletePolicy></code> in the Parent Element column of this table.</p>
	<code><stopped/></code>	<p>Specify this parameter to define the job but leave it in a Stopped state until you manually activate the job. If the stopped parameter is not used, the job starts, according to the Run Schedule settings, the next time ArkManager runs.</p> <p>Use the <code><stopped/></code> tag as a child only of the Job element; it is invalid in the Defaults element.</p>

Parent Element	Child Elements and Attributes	Description
<authentication> (Child to <basic>)	<eDirectory>	<p>Contains child elements that specify the Novell eDirectory™ authentication information, including the administrator user, the password, and the eDirectory tree.</p> <p>For information about its child elements, see <eDirectory> in the Parent Element column of this table.</p>
	<database>	<p>Contains child elements that contain information about the archive server's ArkSQL database. This user must have server-specific rights to the ArkSQL server.</p> <p>For information about its child elements, see <database> in the Parent Element column of this table.</p>
<eDirectory> (Child to <authentication>)	<user>	<p>Specifies the Novell eDirectory Common Name of the administrator user who has the appropriate rights to the original data location and to the archive server's data location. For example:</p> <pre><user>admin.server_context</user></pre>
	<password>	<p>Specifies the password for the specified administrator user. For example:</p> <pre><password>your_admin_pwd</password></pre> <p>The first time that you run arkManager, the arkConfig.xml file must contain a <password> element with the correct password for the administrator user. If arkManager finds a <password> element, it reads the password, encrypts it, then stores the encrypted password in a local store. It removes the password from the arkConfig.xml file, then saves the file.</p> <p>IMPORTANT: The password is stored initially in arkConfig.xml unencrypted. Until the password is moved to an encrypted store, the arkConfig.xml file is protected from unauthorized access by the NSS file system rights that apply to the sys:\arkManager directory and the arkConfig.xml file itself.</p> <p>The <password> element is not necessary unless you need to change the saved password. ArkManager refers to the encrypted password whenever you use the arkStart command. If you change the administrator user's password on the network, you must also change the password that arkManager uses when it starts. ArkManager cannot restart until you pass it the correct password in the arkConfig.xml file.</p> <p>If you need to change the password, stop ArkManager (arkstop), add an eDirectory <password> element to the arkConfig.xml file with the new password, then start (arkstart) the ArkManager.</p>
	<tree>	<p>Specifies the tree of the specified administrator user account. For example:</p> <pre><tree>site1_tree_name</tree></pre>

Parent Element	Child Elements and Attributes	Description
<database> (Child of <authentication>)	<user>	The username of the ArkSQL database administrator. For example: <user>root</user>
	<password>	The password of the ArkSQL database administrator. For example: <password>arksql_password</password> The first time that you run arkManager, the arkConfig.xml file must contain a <password> element with the correct password for the MySQL root user. If arkManager finds a <password> element, it reads the password, encrypts it, then stores the encrypted password in a local store. It removes the password from the arkConfig.xml file, then saves the file. IMPORTANT: The password is stored initially in arkConfig.xml unencrypted. Until the password is moved to an encrypted store, the arkConfig.xml file is protected from unauthorized access by the NSS file system rights that apply to the sys:\arkManager directory and the arkConfig.xml file itself. The <password> element is not necessary unless you need to change the saved password. ArkManager refers to the encrypted password whenever you use the arkStart command, which also starts ArkSQL. If you change the root user's password for MySQL, you must also change the database password that arkManager uses when it starts. ArkManager cannot restart until you pass it the updated password in the arkConfig.xml file. If you need to change the password, stop ArkManager (arkstop) and ArkSQL , add a database <password> element to the arkConfig.xml file with the new password, then start (arkstart) the ArkManager.
	<portNumber>	The port number used for ArkSQL database communications. For example: <portNumber>3306</portNumber>

Parent Element	Child Elements and Attributes	Description
<source> (Child to <defaults> and to <job>)	<snapshotPool>	<p>Specifies the name of the destination pool where a snapshot of the source volume is created temporarily at the beginning of each versioning. For example:</p> <pre><snapshotPool>pool_name</snapshotPool></pre> <p>Snapshots make it possible to save point-in-time versions of all eligible source files, even if a file is open at the time. Eligible files are those files that exist at the end of the epoch, changed during the epoch, and met the filter requirements.</p> <p>By default, if no snapshot pool is specified, ArkManager copies the eligible source files directly from the source volume. Exclusively open files cannot be versioned and data might be inconsistent.</p> <p>If the specified snapshot pool is inactive or otherwise not available when a versioning job begins, the job copies the files directly from the source volume.</p>
	<serverContext>	<p>Specifies the unique name of the context of the server that hosts the source volume (contains the data that the job versions and saves to the archive database).</p> <p>Type the server context in the Novell common dot format, from lowest to highest level. For example:</p> <pre><serverContext>grp1.dept1.site1.company_name</serverContext></pre>
<server>	<p>Specifies the unique name of the server in the specified context where the original data is stored. For example, to specify a server named srv1:</p> <pre><server>srv1</server></pre> <p>Use the <server> tag as a child only of the Job element; it is invalid in the Defaults element.</p>	
<volume>	<p>Specifies the unique name of the NetWare 6.5 or later NSS volume in the specified source server where the original data is stored.</p> <p>For example, to specify user1 as the source volume:</p> <pre><volume>user1</volume></pre> <p>Do not place a colon after the name of the source volume.</p> <p>Use the <volume> tag as a child only of the Job element; it is invalid in the Defaults element.</p>	
<filter>	<p>(Optional) Contains child elements and attributes that specify the criteria for filtering data so that only selected data is versioned.</p> <p>Use the attributes optionally to indicate whether the filter is to be used in combination with filters set in the Defaults element (false) or if the filter is to be used in place of the filters set in the Defaults element (true).</p> <p>For information about its child elements, see <filter> in the Parent Element column of this table.</p>	
	<filter overrideDefaults="false">	
	<filter overrideDefaults="true">	

Parent Element	Child Elements and Attributes	Description
<filter> (Child to <source>)	<include>	<p>(Optional) Contains child elements that specify traits of data you want to include in the job.</p> <p>For information about its child elements, see <include> in the Parent Element column of this table.</p>
	<exclude>	<p>(Optional) Contains child elements that specify traits of data you want to exclude in the job.</p> <p>For information about its child elements, see <exclude> in the Parent Element column of this table.</p>
<include> (Child to <filter>)	<path>	<p>(Optional) Specifies the relative path of directories in the specified volume that you want to include in the versioning process. If you want to include eligible files only in the specified paths, make sure to exclude the root path in an exclude path statement.</p> <p>For example, to specify a relative path of the volume_name:\dept1\data directory that contains data you want to include:</p> <pre><include> <path>\dept1\data\</path> </include></pre> <p>Repeat this element for each directory path in the specified volume that contains data that you want to version.</p>
	<extension>	<p>(Optional) Specifies the extension of files in the specified volume that you want to include in the versioning process. Use the preceding dot followed by the characters of the file extension.</p> <p>Repeat this element for each file extension type that you want to version.</p> <p>For example, to specify that you want to version only .xxx and .yyy files:</p> <pre><include> <extension>.</extension> <!--No extension.--> <extension>.xxx</extension> <extension>.yyy</extension> </include></pre>

Parent Element	Child Elements and Attributes	Description
<include> (cont'd.)	<pattern>	<p>(Optional) Specifies the regular expression pattern to match for files that you want to include in the versioning process.</p> <p>For example, to set criteria to include only files with names that start with the letter "a":</p> <pre><include> <pattern>.*\ a.*</pattern> </include></pre> <p>Repeat this element for each pattern that you want to match to identify files for versioning.</p> <p>This element does not support the full set of PERL regular expressions. For more information, see "Pattern Elements" on page 31.</p>
	<wildcard>	<p>(Optional) Functions like a wildcard in directory searches. Replace characters with an asterisk (*) to search for files that match. For example, to include files that start with d of type .sxi:</p> <pre><include> <wildcard>d*sxi</wildcard> </exclude></pre>
<exclude> (Child to <filter>)	<path>	<p>(Optional) Specifies the relative path of directories in the specified volume that you want to exclude from the versioning process.</p> <p>For example, to specify a relative path of the volume_name:\dept1\apps directory that contains application data you want to exclude from versioning:</p> <pre><exclude> <path>\dept1\apps\</path> </exclude></pre> <p>Repeat this element for each directory path in the specified volume that contains data that you do not want to version.</p>
	<extension>	<p>(Optional) Specifies the extension of files in the specified volume that you want to exclude from the versioning process. Use the preceding dot followed by the characters of the file extension.</p> <p>Repeat this element for each file extension type that you do not want to version.</p> <p>For example, to specify that you want to exclude .zzz files from versioning:</p> <pre><exclude> <extension>.zzz</extension> </exclude></pre>

Parent Element	Child Elements and Attributes	Description
<code><exclude></code> (<i>cont'd.</i>)	<code><pattern></code>	<p>(Optional) Specifies the regular expression pattern to match for files that you want to exclude from the versioning process.</p> <p>For example, to set criteria to exclude files with names that start with the letter "a":</p> <pre><exclude> <pattern>.*\ a.*</pattern> </exclude></pre> <p>Repeat this element for each pattern that you want to match to identify files to be excluded from versioning.</p> <p>This element does not support the full set of PERL regular expressions. For more information, see "Pattern Elements" on page 31.</p>
	<code><wildcard></code>	<p>(Optional) Functions like a wildcard in directory searches. Replace characters with an asterisk (*) to search for files that match. For example, to exclude files that start with d of type .tmp:</p> <pre><exclude> <wildcard>d*tmp</wildcard> </exclude></pre>

Parent Element	Child Elements and Attributes	Description
<frequency> (Child to <defaults> and to <job>)	<time>	<p>(Conditional) Contains child elements that specify the start time, based on a 24-hour local time scale, of jobs that are scheduled to occur on specified days of the week.</p> <p>Use either the Time element or Interval element, but not both in the same Job element.</p> <p>You can use the Time element in combination with the Now element to have the job start immediately after you startArkManager, then at specified startup times thereafter.</p> <p>For example, to start the versioning now and at 11:15 p.m. every day of the week:</p> <pre> <frequency> <now/> <time> <start> <hour>23</hour> <minute>15</minute> </start> <daily> <all/> </daily> </time> </frequency> </pre> <p>For information about its child elements, see <time> in the Parent Element column of this table.</p>

Parent Element	Child Elements and Attributes	Description
<frequency> (cont'd.)	<now/>	<p>(Optional) If used, begins the job immediately when you start ArkManager. Otherwise, the job is scheduled to run for the first time at the next scheduled startup time for this job.</p> <p>This is an empty element; it has no child elements and no data values.</p> <p>The Now element must be used in combination with the Time element or the Interval element. For example, to start the job immediately and every 6 hours thereafter:</p> <pre><frequency> <now/> <interval unit="hours">6</interval> </frequency></pre> <p>Use the <now/> tag as a child only of the Job element; it is invalid in the Defaults element.</p>
	<interval> <interval unit="seconds"> <interval unit="minutes"> <interval unit="hours"> <interval unit="days">	<p>(Conditional) Specifies the elapsed time between scheduled versions in seconds, minutes, hours, or days.</p> <p>You must use one of the attributes in the Interval tag to specify the units of the integer value you specify as the interval of time to wait between when the versioning begins. For example, to specify an interval of 30 minutes:</p> <pre><interval unit="minutes">30</interval></pre> <p>You must specify a non-zero value for the interval or the job cannot start. If no interval value is set, 0 (zero) is the default setting.</p> <p>If no interval unit is set, seconds are the default unit setting.</p> <p>Use either the Time element or Interval element, but not both in the same Job element.</p> <p>You can use the Interval element in combination with the Now element to have the job start immediately after you start theArkManager, then at specified intervals thereafter.</p>
<time> (Child to <frequency>)	<start>	<p>Contains child elements that specify the hour and minutes that the job is scheduled to run on the specified days of the week.</p> <p>For information about its child elements, see <start> in the Parent Element column of this table.</p>
	<daily>	<p>Contains child elements that specify the days of the week that the job is scheduled to run. You must specify at least one day or the job cannot start.</p> <p>For information about its child elements, see <daily> in the Parent Element column of this table.</p>

Parent Element	Child Elements and Attributes	Description
<start> (Child to <time>)	<hour>	<p>Specifies the hour of the day that the job begins, based on a 24-hour clock. A valid hour entry is an integer value ranging from 0 to 23. For example, to set the hour to 10 p.m.:</p> <pre><hour>22</hour></pre> <p>If no hour is set, midnight (00) is the default hour setting.</p>
	<minute>	<p>Specifies the minutes of the hour in the day that the job is scheduled to begin. A valid minutes entry is an integer value ranging from 0 to 59. For example, to set the minutes after the hour to 45 minutes:</p> <pre><minute>45</minute></pre> <p>If no minute value is set, zero (00) is the default minute setting.</p>
<daily> (Child to <time>)	<monday/>	<p>Specify one or more of the child elements as the days of the week you want to schedule the versioning to occur. If no <daily> value is set, the job cannot start.</p>
	<tuesday/>	
	<wednesday/>	<p>For example, to specify versioning to occur on Tuesday, Friday, and Sunday of each week:</p>
	<thursday/>	
	<friday/>	<pre><daily></pre>
	<saturday/>	<pre> <tuesday/></pre>
	<sunday/>	<pre> <friday/></pre>
	<all/>	<pre> <sunday/></pre>
	<pre></daily></pre> <p>Use the <all/> tag to specify all seven days of the week. For example:</p> <pre><daily></pre> <pre> <all/></pre> <pre></daily></pre> <p>Each of the <daily> child elements is an empty element; it has no child elements and no data values.</p>	

Parent Element	Child Elements and Attributes	Description
<deletePolicy> (Child to <defaults> and to <job>)	<maxKeepTime>	Use one of the unit attribute values in the <maxKeepTime> tag to specify the units of the integer value you specify as maximum lifetime of a version.
	<maxKeepTime unit="seconds">	
	<maxKeepTime unit="minutes">	If no maxKeepTime value is set, file versions are retained indefinitely.
	<maxKeepTime unit="hours">	If a value is specified without a unit attribute, "seconds" is the default unit of the value specified.
	<maxKeepTime unit="days">	
	<maxKeepTime keepCurrentCopy="true">	Use the keepCurrentCopy attribute to designate that at least one file version of current files remains in the database, even if the maxKeepTime elapses.
<maxKeepTime keepCurrentCopy="false">	<p>If keepCurrentCopy is set to True (default), the archive keeps an existing file version as long as its source file is current on the source volume, beyond the maxKeepTime. After the user deletes the current source file, the deletion is noted at the next scheduled epoch. If the file version's age is within the maxKeepTime, the archive database retains a copy of the file version until its maxKeepTime elapses. When the file version's age exceeds the maxKeepTime, the archive deletes the file version at the next scheduled delete time.</p> <p>If keepCurrentCopy is set to False, the archive deletes a file version when it exceeds the maxKeepTime, even if the file version is the only one in the archive database for a given source file, and whether the source file is current or deleted.</p> <p>The keepCurrentCopy attribute is optional. If the keepCurrentCopy attribute is not otherwise specified, the default value is True.</p> <p>For example, to keep versions for 90 days before purging, to keep at least the most current version, and to schedule the purging of versions with 1-hour intervals:</p> <pre> <deletePolicy> <maxKeepTime unit="days " keepCurrentCopy="true">90</maxKeepTime> <interval unit="hours">1</interval> </deletePolicy> </pre>	
<maxKeepVersions>	<p>Specifies the maximum number of versions of each file to keep in the archive. As the number of versions exceed this integer value, the oldest version is deleted.</p> <p>For example, to keep up to 1000 versions of each file before purging and to schedule the purging of versions to begin at the default interval of 24 hours before the next scheduled versioning process:</p> <pre> <deletePolicy> <maxKeepVersions>1000</maxKeepVersions> </deletePolicy> </pre>	

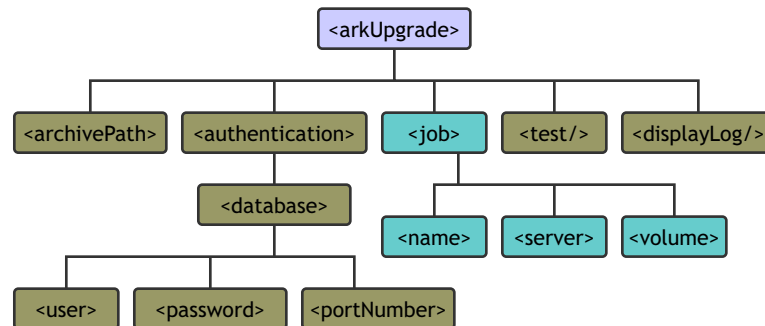
Parent Element	Child Elements and Attributes	Description
<deletePolicy> (cont'd.)	<interval> <interval unit="seconds"> <interval unit="minutes"> <interval unit="hours"> <interval unit="days">	<p>The interval represents the amount of time to wait from the time a Delete process ends until another Delete process begins. If a value is not specified, 24 hours is the default delete policy interval. The time involved in deleting file versions varies with the amount and complexity of data stored in the archive server. The Delete Schedule operates separately from the Version Schedule.</p> <p>For example, suppose you set the Delete Schedule to 2 days. When you activate the job, the Delete process begins. When it is done, it sets an interval timer. After two days elapse, the Delete process runs. The timer is inactive while the process runs. When the delete process ends, the interval timer begins again. The process repeats until the job is deactivated.</p> <p>For example, to keep up to 100 versions of each file before purging and to schedule the purging of versions with a 2-hour interval:</p> <pre> <deletePolicy> <maxKeepVersions>100</maxKeepVersions> <interval unit="hours">2</interval> </deletePolicy> </pre> <p>If an attribute is not specified for the <interval> tag, "seconds" is the default unit of the value specified.</p> <p>If the <interval> element is not specified in either the Defaults element or the Job element, the default interval is 24 hours.</p>

B

XML Elements and Attributes for ArkUpgrade

This section defines the XML elements and attributes that you use to configure the upgrade of your Novell® Archive and Version Services 2.0 for NetWare® server. ArkUpgrade converts your existing archive databases from ArkManager 1.0 format to ArkManager 2.0 format, which uses ArkSQL to organize and host the archive database. The XML elements have a particular hierarchy that you must keep in mind as you create your arkUpgrade.xml file for the upgrade process. See [Figure 13](#) to understand the parent-child relationships between XML elements defined for the sys:\arkManager\arkUpgrade.xml file.

Figure 13 Hierarchical Parent-Child Relationships between XML Elements Used in the arkUpgrade.xml File



To configure the arkUpgrade.xml file, see [“Upgrading an Archive Server from ArkManager 1.0 to 2.0” on page 65](#).

The following table defines the XML elements and attributes that you use in the sys:\arkManager\arkUpgrade.xml file. Some elements appear first as children of elements in the next-higher level of the hierarchy and as parents to their own set of child elements in the next-lower level of the hierarchy.

The examples provided for the elements are sample code to illustrate how the configured properties appear in the XML file. You must modify the values to meet your specific needs as you create your arkUpgrade.xml file. For a sample of this configuration file, see [“Sample of the Upgrade Configuration for ArkUpgrade.xml” on page 119](#).

Parent Element	Child Elements and Attributes	Description
<arkUpgrade> (Root element)	<test/>	<p>(Conditional) Include this tag to test the upgrade process without actually altering the data files.</p> <p>If the <test/> tag is presented, ArkUpgrade analyzes the data and logs all possible errors; no actual conversion occurs. If this tag is not presented, arkUpgrade performs the actual conversion.</p> <p>View the conversion messages in the convert.log and the error messages in the error.log files to determine if the upgrade ran properly. The logs are in the directory you specified as the path to the archive database. For example,</p> <pre>ark:\archive\convert.log</pre> <pre>ark:\archive\error.log</pre> <p>Replace <i>ark:\archive</i> with your archive path. Open the log files in a text-based word processor such as Notepad.</p>
	<displayLog/>	<p>(Optional) If used, prints log entries for all jobs to the server's console screen in addition to their normal display in the convert.log or error.log files.</p> <p>This is an empty element. It has no child elements and defines no data values. Either the shortened version or the long version of this element is valid. For example:</p> <pre><displayLog/></pre> <p>or</p> <pre><displayLog></displayLog></pre>
	<archivePath>	<p>Specifies the local path to the storage location in the archive server where the archive database of file versions is stored.</p> <pre><archivePath>volume_name:\directory</archivePath></pre> <p>If you are setting up an active-passive clustered solution for the archive server using Novell Cluster Services™, make sure to enter the path to the virtual storage location.</p>
	<authentication>	<p>Child elements define the ArkSQL database user, password, and port number. The ArkSQL user needs server-specific ArkSQL rights.</p> <p>For information about its child elements, see <authentication> in the Parent Element column of this table.</p>
	<job>	<p>A Job tag set surrounds the child elements that define the job name, source server name, and source volume name for an existing ArkManager 1.0 job. Create one job for each existing job that you need to upgrade to the ArkSQL format.</p> <p>For information about its child elements, see <job> in the Parent Element column of this table.</p>

Parent Element	Child Elements and Attributes	Description
<authentication> (Child to <arkUpgrade>)	<database>	Contains child elements with information about the archive server's ArkSQL database. This user must have server-specific rights to the ArkSQL server. For information about its child elements, see <database> in the Parent Element column of this table.
<database> (Child to <authentication>)	<user>	The username of the ArkSQL database administrator. For example: <code><user>root</user></code>
	<password>	The password of the ArkSQL database administrator. For example: <code><password>arksql_password</password></code>
	<portNumber>	The port number used for ArkSQL database communications. For example: <code><portNumber>3306</portNumber></code>
<job> (Child to <arkUpgrade>)	<name>	Specifies the unique name of the versioning job that you want to upgrade. This name can contain spaces.
	<server>	Specifies the unique name of the server in the specified context where the original data is stored. For example, to specify a server named <code>srv1</code> : <code><server>srv1</server></code>
	<volume>	Specifies the unique name of the volume in the specified server where the original data is stored. For example, to specify <code>user1</code> as the name of the source volume: <code><volume>user1</volume></code> Do not place a colon after the source volume name.

C

Sample Configuration Files

This section illustrates the use of XML and CNF files used to configure Novell® Archive and Version Services 2.0 for NetWare®. For your convenience, all sample files can be found in the `sys:\arkManager` directory of your archive server. Use the following table to determine which samples to use.

If You Need To	View This Sample File	Sample File (sys:\arkManager)
Configure ArkSQL.cnf with the MySQL database properties to work with ArkManager 2.0.	Sample of the Database Configuration for ArkSQL.cnf (page 117)	arkSQL_sample.cnf
Configure properties to upgrade from Archive and Version Services 1.0 for NetWare 6.5 to Archive and Version Services 2.0 in NetWare 6.5 SP1 and later. You must run arkUpgrade to convert an ArkManager 1.0 archive database for each job before the job can run in ArkManager 2.0.	Sample of the Upgrade Configuration for ArkUpgrade.xml (page 119)	arkUpgrade_sample.xml
Configure authentication information for the archive server. This is the minimum configuration information in the arkConfig.xml file that is needed to use the Archive Versioning plug-in for Novell iManager. Of course, you must continue to define the other elements to run jobs.	Sample of a Basic Configuration for ArkConfig.xml (page 120)	arkConfig_sample_basic.xml
Configure all properties for the archive server, individual jobs, and default job settings in the arkConfig.xml file.	Sample of a Full Configuration for ArkConfig.xml (page 121)	arkConfig_sample_full.xml

Sample of the Database Configuration for ArkSQL.cnf

Novell Archive and Version Services 2.0 uses the ArkSQL.cnf file to configure the ArkSQL settings. Use the `sys:\arkManager\arkSQL_sample.cnf` file as a guide to configure the `sys:\arkManager\arkSQL.cnf` file.

For information about configuring ArkSQL.cnf, see [“Installing and Configuring the ArkSQL Server” on page 52](#).

```
#This is the sample file to configure the MySQL server instance for ArkManager use.
#Copy the contents to sys:\arkManager\arkSQL.cnf, and modify it accordingly.
# The MySQL server
[mysqld]
port          = 3306
```

```

datadir          = Ark:/archive
default-table-type=InnoDB
lower_case_table_names=1
skip-locking
set-variable     = key_buffer=32M
set-variable     = max_allowed_packet=5M
set-variable     = table_cache=512
set-variable     = sort_buffer=2M
set-variable     = read_buffer_size=1M
set-variable     = net_buffer_length=16K
set-variable     = query_cache_size=32M
#log-bin
server-id       = 1
thread_cache_size = 8
# thread cache
# thread concurrency
# Point the following paths to different dedicated disks
#tmpdir         = /tmp/
#log-update     = /path-to-dedicated-directory/hostname      # deprecated
# Uncomment the following if you are using BDB tables
#set-variable   = bdb_cache_size=4M
#set-variable   = bdb_max_lock=10000
# Comment the following if you are using Innobase tables
#skip-innodb
# Uncomment the following if you are using Innobase tables
innodb_data_file_path = ibdata1:400M:autoextend
#innodb_data_home_dir = Ark:/archive/
innodb_log_group_home_dir = Ark:/archive/
innodb_log_arch_dir = Ark:/archive/
set-variable = innodb_mirrored_log_groups=1
set-variable = innodb_log_files_in_group=3
set-variable = innodb_log_file_size=5M
set-variable = innodb_log_buffer_size=8M
innodb_flush_log_at_trx_commit=1
innodb_log_archive=0
set-variable = innodb_buffer_pool_size=16M
set-variable = innodb_additional_mem_pool_size=2M

```

```
set-variable = innodb_file_io_threads=4
set-variable = innodb_lock_wait_timeout=50
set-variable = transaction_isolation=READ_COMMITTED
```

Sample of the Upgrade Configuration for ArkUpgrade.xml

ArkManager 2.0 uses MySQL to organize and host file versions. It is not compatible with the database format used in ArkManager 1.0. ArkUpgrade converts your existing data to the ArkManager 2.0 format. Use the `sys:\arkManager\arkUpgrade_sample.xml` file as a guide to configure the `sys:\arkManager\arkUpgrade.xml` file to upgrade existing jobs.

For information about upgrading, see [“Upgrading an Archive Server from ArkManager 1.0 to 2.0” on page 65](#).

For information about the XML elements and their usage, see [Chapter B, “XML Elements and Attributes for ArkUpgrade,” on page 113](#).

```
<!-- This is the sample file to use if you want to upgrade from ArkManager 1.0 (NetWare 6.5
release) to ArkManager 2.0 (NetWare 6.5 Support Pack 1 and later release). Copy it to a file
named of sys:\arkManager\arkUpgrade.xml, and modify it accordingly.
```

```
-->
```

```
<arkUpgrade>
```

```
  <test/>  <!-- Optional; include for testing the arkUpgrade process. -->
```

```
  <displayLog/>  <!-- Optional; include to also print messages to the server console. -->
```

```
  <archivePath>ark:archive</archivePath>
```

```
  <authentication>
```

```
    <database>
```

```
      <user>root</user>
```

```
      <password>pass_word</password>
```

```
      <portNumber>3306</portNumber>
```

```
    </database>
```

```
  </authentication>
```

```
  <job>
```

```
    <name>server1_volume1</name>
```

```
    <server>server1</server>
```

```
    <volume>volume1</volume>
```

```
  </job>
```

```
</arkUpgrade>
```

Sample of a Basic Configuration for ArkConfig.xml

Before ArkManager 2.0 can run, you must configure the `sys:\arkManager\arkConfig.xml` file with basic authentication information for Novell eDirectory™ and MySQL. Use the `sys:\arkManager\arkConfig_sample_basic.xml` file as a guide for configuring the minimum set of elements needed to run ArkManager.

Use the full example in the `sys:\arkManager\arkConfig_sample_full.xml` file to configure default jobs settings and one or more individual versioning job. For information, see [“Sample of a Full Configuration for ArkConfig.xml” on page 121](#)

For information about the elements and their usage, see [Chapter A, “XML Elements and Attributes for ArkConfig,” on page 97](#).

`<!-- This is the sample file to configure the Basic elements for arkConfig.xml. Basic element configure authentication for the archive server and the MySQL server instance. Copy it to sys:\arkManager\arkConfig.xml, and modify it accordingly.`

```
-->
<arkConfig> <!-- Root element -->
  <basic> <!-- Start Basic element -->
    <displayLog/>
    <authentication> <!-- Administrator and database authentication information -->
      <eDirectory> <!-- eDirectory Administrator User information -->
        <user>admin.xyz_inc</user> <!-- Use the eDirectory Common Name. -->
        <password>pass_word</password>
        <tree>archive_tree</tree>
      </eDirectory>
      <database> <!-- MySQL Administrator User information -->
        <user>root</user>
        <password>pass_word</password>
        <portNumber>3306</portNumber>
      </database>
    </authentication>
    <archivePath>archive_volume:</archivePath>
  </basic> <!-- End Basic element -->
</arkConfig>
```


Sample of a Full Configuration for ArkConfig.xml

The `sys:\arkManager\arkConfig.xml` file contains basic settings, default job settings, and individual job settings. Use the `sys:\arkManager\arkConfig_sample_full.xml` file as a guide for configuring jobs for your archive server.

For information about the elements and their usage, see [Chapter A, “XML Elements and Attributes for ArkConfig,” on page 97](#).

```
<!-- This is the sample file to configure jobs manually.
```

```
Copy it to sys:\arkManager\arkConfig.xml, and modify it accordingly.
```

```
-->
```

```
<arkConfig> <!-- Root element -->
```

```
  <basic> <!-- Start Basic element -->
```

```
    <displayLog/>
```

```
    <authentication> <!-- Administrator and database authentication information -->
```

```
      <eDirectory> <!-- eDirectory Administrator User information -->
```

```
        <user>admin.xyz_inc</user> <!-- Use the eDirectory Common Name. -->
```

```
        <password>pass_word</password>
```

```
        <tree>archive_tree</tree>
```

```
      </eDirectory>
```

```
      <database> <!-- ArkSQL Administrator User information -->
```

```
        <user>root</user>
```

```
        <password>pass_word</password>
```

```
        <portNumber>3306</portNumber>
```

```
      </database>
```

```
    </authentication>
```

```
    <!-- Location of the archive of versioned files -->
```

```
    <archivePath>archive_volume:</archivePath>
```

```
  </basic> <!-- End Basic element -->
```

```
  <defaults> <!-- Start Defaults element -->
```

```
    <source> <!-- Location of the data that you want to version -->
```

```
      <serverContext>xyz_inc</serverContext>
```

```
      <filter>
```

```
        <!-- By default, everything on the source volume is eligible for file versioning.
```

```
        This example filter includes everything on the volume (by default), except for
        the files with extension .tmp, or under \dir1\dir2 directory, or matches pattern
        .*[uU]2.* (such as 1U2.exe), or matches wildcard abc* (such as abcd.c).
```

```
        -->
```

```
      <exclude>
```

```

        <extension>.tmp</extension>
        <path>\dir1\dir2</path>
        <pattern>.*[uU]2.*</pattern>
        <wildcard>abc*</wildcard>
    </exclude>
</filter>
</source>
<frequency> <!-- Schedule for versioning data -->
    <time>
        <start>
            <hour>12</hour>
            <minute>30</minute>
        </start>
        <daily>
            <saturday/>
        </daily>
    </time>
</frequency>
</defaults> <!-- End Defaults element -->
<job> <!-- Begin a Job element -->
    <name>server1_volume1</name>
    <frequency>
        <now/>
        <interval unit="seconds">20</interval>
    </frequency>
    <source>
        <server>server1</server>
        <volume>volume1</volume>
        <snapshotPool>snapPool</snapshotPool> <!-- (Optional) Use NSS pool snapshots. -->
        <filter overrideDefault="true"> <!-- Override default filter. -->
            <!-- This filter excludes everything on the source volume, except for the files
            with no extension (such as README), or files with extension .doc, .wpd, .ppt.
            Then exclude any files in \temp directory, except for files under \temp\system
            directory, or named \temp\download.lst, or matches wildcard pattern
            \temp\import*.exe (such as \temp\import1.exe)
            -->
            <exclude>

```

```

        <path>\</path>
    </exclude>
    <include>
        <extension>.</extension> <!-- path with no extension -->
        <extension>.doc</extension>
        <extension>.wpd</extension>
        <extension>.ppt</extension>
    </include>
    <exclude>
        <path>\temp</path>
    </exclude>
    <include>
        <path>\temp\system</path>
        <path>\temp\download.lst</path>
        <wildcard>\temp\import*.exe</wildcard>
    </include>
</filter>
</source>
</job> <!-- End Job element for server1_volume1 -->
<job> <!-- Begin another Job element for server2_volume2. -->
    <name>server2_volume2</name>
    <frequency>
        <now/> <!-- Run version process immediately after starting server -->
        <interval unit="minutes">15</interval>
    </frequency>
    <source>
        <server>server2</server>
        <!-- &, <, and > are special characters in XML, and must be enclosed by CDATA.
        In this example, volume2& must be enclosed in the CDATA command. -->
        <volume><![CDATA[volume2&]]></volume>
    </source>
    <deletePolicy> <!-- How many and how long to keep versions in the archive -->
        <interval unit="days">2</interval>
        <maxKeepVersions>2</maxKeepVersions>
        <maxKeepTime unit="days" keepCurrentCopy="true">90</maxKeepTime>
    </deletePolicy>
</job> <!-- End another Job element -->

```

```
    <!-- Add a Job element for every volume that has data you want to version. -->
</arkConfig> <!-- End Root element -->
<!-- End of arkConfig.xml -->
```

D

Configuring Versioning Jobs with iManager (NetWare 6.5 SP2)

In Novell® Archive and Version Services for NetWare 6.5 Support Pack 3, the Archive Options task in the Archive Versioning plug-in to Novell iManager is no longer available for configuring jobs. Versioning jobs should be configured, using the `sys:\arkManager\arkConfig.xml` file. For information, see [Chapter 7, “Configuring Jobs in ArkConfig,” on page 71](#).

However, if you are upgrading an existing archive server from NetWare 6.5 Support Pack 2, the Archive Options task might appear in your Archive Versioning options. You can continue to use the Job Control task in iManager to configure versioning jobs, but this task is no longer supported.

This section discusses the following tasks available from the Archive Options page:

- ◆ [Configuring Archive Server Information \(NetWare 6.5 SP2\) \(page 125\)](#)
- ◆ [Configuring Default Job Settings \(NetWare 6.5 SP2\) \(page 128\)](#)
- ◆ [Viewing a List of Individual Jobs \(NetWare 6.5 SP2\) \(page 129\)](#)
- ◆ [Configuring Individual Jobs \(NetWare 6.5 SP2\) \(page 130\)](#)
- ◆ [Viewing or Modifying Job Properties \(NetWare 6.5 SP2\) \(page 131\)](#)
- ◆ [Viewing a Job Summary \(NetWare 6.5 SP2\) \(page 132\)](#)
- ◆ [Filtering the Source Volume Data \(NetWare 6.5 SP2\) \(page 133\)](#)
- ◆ [Activating or Deactivating a Job \(NetWare 6.5 SP2\) \(page 134\)](#)
- ◆ [Deleting File Versions \(NetWare 6.5 SP2\) \(page 134\)](#)
- ◆ [Deleting a Job \(NetWare 6.5 SP2\) \(page 136\)](#)

Configuring Archive Server Information (NetWare 6.5 SP2)

This section discusses the following tasks:

- ◆ [Configuring the Authentication Information for Your Archive Server with XML](#)
- ◆ [Configuring Archive Server Information with iManager](#)

Configuring the Authentication Information for Your Archive Server with XML

Before you run ArkManager for the first time, you must manually configure the mandatory Novell eDirectory authentication information for ArkManager and MySQL database authentication information for ArkSQL in the `sys:\arkManager\arkConfig.xml` file.

The `sys:\arkManager\arkConfig_sample_basic.xml` file provides an example of the minimum set of XML elements to configure. To view an annotated version of the `arkConfig_sample_basic.xml` file, see [“Sample of a Basic Configuration for ArkConfig.xml” on page 120](#).

The following are mandatory elements:

- ◆ <arkConfig>
- ◆ <basic>
- ◆ <authentication> and its child elements:
 - ◆ <eDirectory> and its child elements: <user>, <password>, and <tree>
 - ◆ <database> and its child elements: <user>, <password>, and <portNumber>

The <displayLog/> tag is optional. For information, see [Chapter A, “XML Elements and Attributes for ArkConfig,” on page 97](#).

In the arkConfig.xml file, replace the example settings with your actual eDirectory and ArkSQL settings.

- 1** Copy the contents of the sys:\arkManager\arkConfig_sample_basic.xml file to sys:\arkManager\arkConfig.xml.
- 2** Modify the settings for each of the mandatory elements with the actual values of your system.
- 3** Save the sys:\arkManager\arkConfig.xml file.
- 4** When you are done, you can configure all other arkConfig elements through the Web-based management interface in the Archive Versioning iManager plug-in.

Configuring Archive Server Information with iManager

After you have configured the authentication information in the sys:\arkManager\arkConfig.xml file, you can manage the archive server in iManager.



To view information about the archive server:

- 1** [Access the Archive Versioning role in iManager.](#)
- 2** Select the archive server to manage.
Wait for the page to refresh before continuing.
- 3** Click Archive Server Information.
The Archive Server Information page opens.

Figure 14 Sample of the Archive Server Information Page

[Archive / Version Management](#) ▶ Configuration

Configuration ?

Server:  

Status:

Archive Server Information | Individual Jobs | Default Job Settings

Specify the volume and path on the archive server where you want to store file versions. Check the checkbox to also display log entries on the archive server's console. View the admin usernames for the server's arkConfig.xml file and MySQL database.

Volume:

Path:

Display Archive Log entries on the server's console

Authentication

eDirectory:
User Name: admin.novell

Database:
User Name: root
Port:

- 4 If the location of the archive data has not been previously specified for the selected archive server, specify the volume (mandatory) and path (optional) on the archive server where you want to store file versions.

IMPORTANT: If the volume is not configured, the archive database is not populated and jobs defined for the archive server never run.

Typically, you set the volume and path location when you initially configure the archive server and the values do not change. If you modify the volume or path after individual jobs exist, the existing jobs no longer run and the related data in the archive database at the old location is no longer accessible to users. You must manually delete the data in the old location.

- 5 Do one of the following:
 - ♦ **Enable Display Archive Log Entries:** Select the check box if you want to display the error, warning, and normal messages for all jobs on the server's Logger screen, in addition to recording them in the archive log.
 - ♦ **Disable Display Archive Log Entries:** Deselect the check box if you want to record messages in the archive log, but to not display them on the server's Logger screen.
- 6 If it is not set, modify the port number to match the port number you used for the arkSQL instance of MySQL.

Use the same port number as the number you specified in the arkSQL.cnf file.

- 7 When you are done, click Apply, then click OK.

Configuring Default Job Settings (NetWare 6.5 SP2)

Default job settings for an archive server apply to all jobs on the server. A particular job incorporates default settings in the job by enabling defaults in the job properties.

IMPORTANT: If you modify the default settings while jobs are active and running on the archive server, the changed settings apply at the next scheduled run of each job.

1 Access the Archive Versioning role in iManager.

1a Click Archive Versioning > Archive Options.

The Archive Options page opens to the Individual Jobs tab.

1b If it is not already selected, select the archive server.

Wait for the page to refresh before continuing.



2 Click Default Job Settings.

The Default Job Settings page opens. For an example, see [Figure 15](#).

Figure 15 Sample of the Default Job Settings Page

[Archive / Version Management](#) > Configuration























Configuration ?

Server:  

Status: Running

Archive Server Information | **Individual Jobs** | **Default Job Settings**

Specify the default settings to use if the properties are not set in an individual job. The job name and volume properties cannot be set as default settings. Individual jobs can define filters that override or apply in addition to the default filter settings.

<p>Job Information</p> <p><input checked="" type="checkbox"/> Copy all files first time the job is run</p> <p>Filter</p> <p>Include:</p> <p>Path: <input type="text"/>   </p> <p>Extension: <input type="text"/>   </p> <p>Pattern: <input type="text"/>   </p> <p>Exclude:</p> <p>Path: <input type="text"/>   </p> <p>Extension: <input type="text"/>   </p> <p>Pattern: <input type="text"/>   </p>	<p>Run Schedule</p> <p><input type="radio"/> Every: <input type="text"/> Minutes <input type="text"/></p> <p><input type="radio"/> Time: <input type="text"/>    </p> <p><input type="checkbox"/> Days</p> <p><input type="checkbox"/> Sunday <input type="checkbox"/> Thursday</p> <p><input type="checkbox"/> Monday <input type="checkbox"/> Friday</p> <p><input type="checkbox"/> Tuesday <input type="checkbox"/> Saturday</p> <p><input type="checkbox"/> Wednesday</p> <p>Delete Policy</p> <p>Schedule:</p> <p>Every: <input type="text"/> Seconds <input type="text"/></p> <p>Maximum Keep:</p> <p>Time: <input type="text"/> Seconds <input type="text"/></p> <p>Versions: <input type="text"/></p> <p><input type="checkbox"/> Keep current copy</p>
--	---

OK Cancel Apply

3 Modify the properties, as desired.

IMPORTANT: Modifications you make to default job settings apply to all jobs that use defaults in their job definition.

For information about how to set properties, see “Understanding Job Properties” on page 27.

4 When you are done, click Apply, then click OK.



Viewing a List of Individual Jobs (NetWare 6.5 SP2)

In iManager, after you **select an archive server to manage**, click Archive Versioning > Archive Options. The Configuration page opens to the Individual Jobs tab, which displays a list of versioning jobs for the archive server. To control the order of job entries in the list, click the Sort arrow next to the column heading you want to sort entries by.

Figure 16 Sample of the Individual Jobs List

Archive / Version Management > Configuration

Configuration ?

Server:  

Status: Running

Archive Server Information | **Individual Jobs** | Default Job Settings

Define at least one individual job. Create a job for each volume that you want to archive file versions for. If a job property is set, its setting automatically overrides the default setting. If a job property is not set, the default setting applies only for that property. The default filter settings can apply in addition to the job filter settings.

Jobs				
<input type="checkbox"/>	Name	Server	Volume	Frequency
<input checked="" type="checkbox"/>	svr1_user	svr1.novell	user	15 Seconds

The list displays the following information for each versioning job:

Job Information	Description
Jobs	Select a Job check box to select the job. Select the check box in the heading row to select all jobs.
Name	The administrator-specified name of the job. For example, svr1_user or svr3_data.
Server	The Server object name of the source server where the data to be versioned is located. For example, svr1_finance. The source server must be in the same Novell eDirectory tree as the archive server.
Volume	The name of the source volume on the specified source server that contains the files you want to version. For example, user or data.

Job Information	Description
Frequency	<p>The scheduled job frequency is one of the following:</p> <ul style="list-style-type: none"> ♦ Scheduled Interval: The elapsed time between the beginning of versioning processes for a job. Valid units are seconds, minutes, hours, and days. For example, 45 seconds, 1 minute, 15 minutes, or 12 hours. ♦ Run Schedule: The scheduled start time when the job's version process begins on a daily basis. For example, 00:00 AM. Valid values for the days of the week include one or more of the following: all, Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday.

Configuring Individual Jobs (NetWare 6.5 SP2)

The Individual Jobs task allows you to configure archive servers to systematically save file versions from selected network volumes to the archive database.

Before you configure individual jobs, make sure you have configured the following information:

- ♦ **Archive Server Information:** Configure key information for your archive server. For information, see [“Configuring Archive Server Information \(NetWare 6.5 SP2\)” on page 125.](#)
- ♦ **Default Job Settings:** Configure the default settings to use if the properties are not set in an individual job. For information, see [“Configuring Default Job Settings \(NetWare 6.5 SP2\)” on page 128.](#)

If your implementation plan calls for multiple archive servers, you must configure each with its own set of versioning jobs.

To create a job:

1 [Access the Archive Versioning role in iManager.](#)

1a Click Archive Versioning > Archive Options.

1b If it is not already selected, select the archive server.

1c Click Archive Server Information to verify the settings for the server.

IMPORTANT: If the archive database volume is not configured, the archive database is not populated and jobs defined for the archive server never run.

For information, see [“Configuring Archive Server Information \(NetWare 6.5 SP2\)” on page 125.](#)

2 Click Default Job Settings to verify and modify the settings, as desired.

For information, see [“Configuring Default Job Settings \(NetWare 6.5 SP2\)” on page 128.](#)

3 To open the Create New Job page, click Individual Jobs, then click New.

Figure 17 Sample of the Create New Job Page

Create New Job ?

New Job

For a selected source volume, specify the property settings to use when archiving file versions. The job name and volume must be set. If other properties are not set, the default settings apply.

Job Information

Name:

State:

Copy all files first time the job is run

Use defaults

Source Server Information

Server:

Volume:

Snapshot:

Filter

Also use default filter

Include:

Path:

Extension:

Pattern:

Exclude:

Path:

Extension:

Pattern:

Run Schedule

Start now

Use defaults

Every:

Time:

Days

Sunday Thursday

Monday Friday

Tuesday Saturday

Wednesday

Delete Policy

Use defaults

Schedule:

Every:

Maximum Keep:

Time:

Versions:

Keep current copy

- 4 Configure the job properties, then click OK.

For information, see [“Understanding Job Properties” on page 27](#).

To view or modify the properties of an existing job, see [“Viewing or Modifying Job Properties \(NetWare 6.5 SP2\)” on page 131](#).

To view the complete set of job properties, which includes the individual job settings and default job settings, see [“Viewing a Job Summary \(NetWare 6.5 SP2\)” on page 132](#).

Viewing or Modifying Job Properties (NetWare 6.5 SP2)

You can modify job properties, as needed, to meet your versioning requirements, but you cannot change the job name. The job name represents the unique relationship between the archive server and a given source volume and persists for the life of the archive server.

IMPORTANT: If you modify a job’s properties while the job is active and running on the archive server, the changed settings apply at the next scheduled run of the job.

- 1 [Access the Archive Versioning role in iManager.](#)
- 2 If it is not already selected, select the archive server.

- 3 Click Archive Versioning > Archive Options > Individual Jobs.
- 4 To open the Job Properties page, select the Job check box next to the job you want to view or modify, then click Properties.

Figure 18 Sample of the Job Properties Page

[Archive / Version Management](#) > [Configuration](#) > [Properties](#)

Job Properties: svr1_user ?

For a selected source volume, modify the property settings to use when archiving file versions. The job name and volume must be set. If other properties are not set, the default settings apply.

<p>Job Information</p> <p>Name: svr1_user</p> <p>State: Active</p> <p><input checked="" type="checkbox"/> Copy all files first time the job is run <input type="checkbox"/> Use defaults</p>	<p>Run Schedule</p> <p><input type="checkbox"/> Start now</p> <p><input type="radio"/> Use defaults</p> <p><input checked="" type="radio"/> Every: <input type="text" value="20"/> Hours</p> <p><input type="radio"/> Time: <input type="text"/> <input type="button" value="⏪"/> <input type="button" value="⏩"/> <input type="button" value="⏴"/> <input type="button" value="⏵"/></p> <p>Days</p> <p><input type="checkbox"/> Sunday <input type="checkbox"/> Thursday <input type="checkbox"/> Monday <input type="checkbox"/> Friday <input type="checkbox"/> Tuesday <input type="checkbox"/> Saturday <input type="checkbox"/> Wednesday</p>
<p>Source Server Information</p> <p>Server: svr1.novell</p> <p>Volume: user</p> <p>Snapshot: <input type="text"/></p>	<p>Delete Policy</p> <p><input checked="" type="checkbox"/> Use defaults</p> <p>Schedule:</p> <p>Every: <input type="text"/> Seconds</p> <p>Maximum Keep:</p> <p>Time: <input type="text"/> Seconds</p> <p>Versions: <input type="text"/></p> <p><input type="checkbox"/> Keep current copy</p>
<p>Filter</p> <p><input checked="" type="checkbox"/> Also use default filter</p> <p>Include:</p> <p>Path: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p> <p>Extension: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p> <p>Pattern: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p> <p>Exclude:</p> <p>Path: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p> <p>Extension: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p> <p>Pattern: <input type="text"/> <input type="button" value="⊕"/> <input type="button" value="⊖"/> <input type="button" value="🔍"/></p>	

- 5 Modify the properties, as desired.
For information about how to set properties, see [“Understanding Job Properties” on page 27](#).
- 6 When you are done, click Apply, then click OK.

Viewing a Job Summary (NetWare 6.5 SP2)

The Job Summary combines information from the individual job properties and the default job properties to provide a complete definition for the job.

- 1 [Access the Archive Versioning role in iManager.](#)
- 2 If it is not already selected, select the archive server.
- 3 Click Archive Versioning > Archive Options > Individual Jobs.

- 4 To open the Job Summary page, select the Job check box next to the job you want to view, then click Summary.

Figure 19 Sample of the Job Summary Page

[Archive / Version Management](#) ▶ [Configuration](#) ▶ **Summary**

Job Summary: svr1_user ?

For a selected source volume, view the property settings and the default settings used when archiving file versions.

Job Information Name: svr1_user Path: ark State: Active Copy all files first time the job is run: On	Run Schedule Start now: Off Every: 15
Source Server Information Server: svr1.novell Volume: user Snapshot: sndata	Delete Policy Schedule: Every: Maximum Keep: Time: Versions: Keep current copy: Off
Filter Include: Path: Extension: Pattern: Exclude: Path: Extension: Pattern:	

For information, see [“Understanding Job Properties” on page 27](#).

- 5 When you are done, click OK.

Filtering the Source Volume Data (NetWare 6.5 SP2)

You can filter out files in the source volume that you do not want to version by using a series of Include and Exclude elements. The order of the Include and Exclude elements determines what data is eligible for versioning. After configuring a job, always check the sequence of filter elements in the `sys:\arkManager\arkConfig.xml` file to make sure the order is adequate to achieve the desired filtering outcome.

IMPORTANT: In iManager, the Filter task for Individual Jobs or Default Job Settings only lists the filter entries; it does not convey the sequence of the filter in the `sys:\arkManager\arkConfig.xml` file. Whenever you modify Filter settings in iManager, verify the sequence by reviewing the xml file.

The Include and Exclude elements can contain multiple Path, Extension, and Pattern elements, in any order. For information, see [“Filter” on page 30](#).

Activating or Deactivating a Job (NetWare 6.5 SP2)

When you want to temporarily pause versioning for a job, you can deactivate the job instead of deleting it. You can activate and deactivate jobs, as needed.

- ♦ **Activate:** Activate starts an inactive job. Active jobs report a state of Running or Scheduled.
- ♦ **Deactivate:** Deactivate suspends the job until you manually restart it. Inactive jobs report a state of Stopped.

- 1** [Access the Archive Versioning role in iManager.](#)
- 2** If it is not already selected, select the archive server.
- 3** Click Archive Versioning > Archive Options > Individual Jobs.
- 4** Select the Job check box next to one or more jobs that you want to manage, then click Activate or Deactivate.

Deleting File Versions (NetWare 6.5 SP2)

Users can use the File Versions Utility from their workstations to select a file and delete all versions of the file from the archive database.

Administrators can delete file versions for a variety of reasons:

- ♦ To clear the database of unnecessary data that was versioned prior to applying job filters
- ♦ To delete file versions without compromising the ArkSQL data structure
- ♦ To clear the database of file versions related to a job you plan to delete (See also [“Deleting a Job \(NetWare 6.5 SP2\)” on page 136.](#))
- ♦ To clear the database of file versions to free space in the archive volume

To delete all of a job’s file versions in ArkManager 2.0:

- 1** [Access the Archive Versioning role in iManager.](#)
- 2** If it is not already selected, select the archive server.
- 3** Click Archive Versioning > Archive Options > Individual Jobs.
- 4** To stop the job while you are modifying it, select the Job check box next to the job of interest, then click Deactivate.
- 5** To access the Job Properties page, select the Job check box next to the job that you want to delete file versions of, then click Properties.
- 6** Modify the Run Schedule so that no new file versions are likely to be added while you are deleting the existing file versions in the archive database for this job.

The goal is to keep the job active, but to not run the file versioning process for a period of time long enough to allow the gradual purging of the existing file and directory versions. The time to wait varies, based on the amount of data in the archive related to this job.

For example, the time to allow for the purging process to complete depends on the complexity of the directory structure as measured by the number and levels of directories, the number of files to version, the frequency that source files were versioned, and the retention time for file versions. The bigger the repository of archived data, the longer it takes to purge files and directories at all levels.

- 6a** Deselect the Start Now check box.

- 6b** Select Time, then set the next schedule run time for a time and day that allows enough time to ensure that all existing file versions are deleted.

For example, suppose that today is Tuesday and the time is 12:00 p.m. (noon) on your archive server. To set the next job to run about one week from today, set the Run Schedule Time to 11:59 a.m. and set Day of the Week to Tuesday.

- 7** Modify the Delete Policy so that the file and directory purging process repeats in rapid succession.
- 7a** Deselect the Use Defaults check box to make the Delete Policy options available.
- 7b** Set the Delete Policy's Maximum Keep Versions to 0 (zero) versions and the Maximum Keep Time to a small non-zero value, such as 2 seconds.
- If you set both the Maximum Keep Versions and Maximum Keep Time to zero values, the Delete Policy function does not run. Thus, you must select a non-zero value for Maximum Keep Time for the Delete Policy to function run with the goal of eventually purging all file versions and directory versions in the archive database that are related to the selected job.
- 7c** Deselect the Keep Current Copy check box to disable the job from retaining at least one file version of each job.
- 8** Set the State to Active.
- 9** When you are done, click OK.
- 10** During the next few days to a week, periodically check the availability of file versions to verify that all file versions for the source volume that are related to the selected job have been deleted from the archive server.
- 10a** Log in to a workstation as an administrator user with rights to access all files on the source volume.
- 10b** Use one of these methods to access available file versions for this job:
- ♦ **Novell Storage Services File Version Utility:** Install the File Version Utility on the workstation and map a drive to the archive server location where the file versions for the selected job are stored.

Use your file browser to navigate to the root of the source volume. Right-click a directory or file to determine if versions are available for the selected directory or file. For example, if you click a directory and the Versions option is absent from the menu, no file versions are available below that level.
 - ♦ **Novell NetStorage:** Activate a network or Internet connection, open a Web browser, then go to your Novell NetStorage server.

For example, go to `https://DNSname-or-IPaddress/NetStorage` where you replace *DNSname-or-IPaddress* with the actual DNS name or IP address of your NetStorage server. Get this information from your system administrator.

Use the browser in NetStorage to navigate to the root of the source volume. Right-click a directory or file to determine if versions are available for the selected directory or file. For example, if you click a directory and the Versions option is absent from the menu, no file versions are available below that level.
- 11** After all file versions related to this job have been purged, you can modify or delete the job.
- For information on modifying job properties, see [“Viewing or Modifying Job Properties \(NetWare 6.5 SP2\)” on page 131](#).
- For information on deleting a job, see [“Deleting a Job \(NetWare 6.5 SP2\)” on page 136](#).

Deleting a Job (NetWare 6.5 SP2)

The delete function only deletes the job definition; it does not remove the file versions from the archive database. The file versions remain in the archive, according to the existing Delete Policy settings for the job.

The job name represents the relationship between the archive server and the source volume you want to version, and persists for the life of the archive server. After you delete an archive job, if you decide to version the source volume on the same archive server in the future, you must create a job with the same name as the original job you configured for that given archive server and source volume combination.

IMPORTANT: The job name represents the unique relationship between the archive server and a given source volume and persists for the life of the archive server. If you delete a job, its job name is reserved for the original source volume.

It is a good idea to use a naming convention for jobs or to keep a log of the jobs you create for each archive server, as illustrated in the table below.

Archive Server	Archive Volume	Source Server	Source Volume	Job Name
ark1	ark	data1	usersa2j	data1_usersa2j
		data2	usersk2r	data2_usersk2r
		dev81	projA	dev81_projA

Typically, you will delete the existing file version. If you do not delete the file versions, you can view any remaining file versions only by recreating a job with the same job name. If you plan to keep the file versions, it is better to simply deactivate the job, not delete it. For information, see [“Activating or Deactivating a Job \(NetWare 6.5 SP2\)” on page 134](#).

Procedure

- 1 Delete the file versions for the job you want to delete.
For information, see [“Deleting File Versions \(NetWare 6.5 SP2\)” on page 134](#).
- 2 [Access the Archive Versioning role in iManager.](#)
- 3 If it is not already selected, select the archive server.
- 4 Click Archive Versioning > Archive Options > Individual Jobs.
- 5 Select the Job check box next to the job you want to delete, then click Delete.

E

Troubleshooting

This section discusses potential issues and workarounds for Novell® Archive and Version Services.

- ◆ “Upgrade Issues” on page 137
- ◆ “MySQL Issues” on page 138

Upgrade Issues

This section discusses known issues and workarounds for upgrading.

Missing Parameter in the ArkSQL.cnf File after Upgrading from NetWare 6.5 SP1

Problem: The Transaction Isolation parameter in the sys:\arkManager\arkSQL.cnf file is missing or is set to the wrong value after you upgrade from NetWare 6.5 SP1 to any later versions of NetWare. Data corruption is possible.

Possible Cause: The Transaction Isolation parameter in the sys:\arkManager\arkSQL.cnf file is not set to READ_COMMITTED or is missing from the file.

Action: If you upgrade directly from NetWare 6.5 SP1 to any later version of NetWare, you must modify the sys:\arkManager\arkSQL.cnf file. To prevent possible data corruption, set the Transaction Isolation parameter to Read_Committed before restarting ArkManager after the upgrade.

- 1** Stop ArkManager 2.0.
- 2** Upgrade the server to NetWare 6.5 Support Pack 3 or later.
- 3** Verify that the server is operating as expected, but do not start ArkManager.
- 4** Compare and modify values of non-system-specific information in sys:\arkManager\arkSQL.cnf with the ones defined in sys:\arkManager\arkSQL_sample.cnf. Most importantly, add the following variable setting to the end of the file:

```
set-variable = transaction_isolation=READ_COMMITTED
```
- 5** Start ArkManager 2.0.

If you are configuring a new archive server after the upgrade, this setting is part of the updated sample arkSQL.cnf file, sys:\arkManager\arkSQL_sample.cnf. Use the updated sample file as a guide when setting up additional archive servers.

MySQL Issues

This section discusses known issues and workarounds for the MySQL database.

Possible File Lock Conflicts in the Archive Database

Problem: Users experience errors when deleting or restoring file versions.

Possible Cause: The errors might be caused by file lock conflicts in the archive database.

Action: To disable database locks:

1 To stop ArkManager: At the server console, enter

```
arkstop
```

2 To stop the MySQL server: At the server console, enter

```
mysqladmin -p shutdown --port=value
```

Replace *value* with the port number where the ArkManager instance of MySQL server is running, such as 3308.

3 To disable database locks: Edit the `sys:\arkManager\arkSQL.cnf` file by adding the following line to the end of the file:

```
set-variable = innodb_table_locks=OFF
```

4 To restart the MySQL server: At the server console, enter

```
mysqld_safe --defaults-file=sys:\arkmanager\arksql.cnf
```

5 To restart ArkManager: At the server console, enter

```
arkstart
```

F

Documentation Updates

This section contains information about documentation content changes made to the *Novell Archive and Version Services Administration Guide for NetWare 6.5* since the initial release of NetWare® 6.5. If you are an existing user, review the change entries to readily identify modified content. If you are a new user, simply read the guide in its current state.

Refer to the publication date, which appears on the front cover and the Legal Notices page, to determine the release date of this guide. For the most recent version of the *Archive and Version Services Administration Guide*, see [Novell documentation \(http://www.novell.com/documentation/lg/nw65/arc_admin/data/front.html\)](http://www.novell.com/documentation/lg/nw65/arc_admin/data/front.html).

In this section, content changes appear in chronological order, according to the publication date. Within a dated entry, changes are grouped and sequenced, according to where they appear in the document itself. Each change entry provides a link to the related topic and a brief description of the change.

This document was updated on the following dates:

- ◆ “December 19, 2003” on page 139
- ◆ “May 14, 2004” on page 141
- ◆ “July 2, 2004” on page 142
- ◆ “August 8, 2004” on page 146
- ◆ “December 20, 2004” on page 146
- ◆ “February 16, 2005” on page 148

December 19, 2003

Updates were made to the following sections. The changes are explained below.

- ◆ “Overview of Archive and Version Services” on page 140
- ◆ “Planning for Archive and Version Services” on page 140
- ◆ “Installing and Upgrading Archive and Version Services” on page 140
- ◆ “Configuring Jobs in iManager” on page 140
- ◆ “Configuring Jobs in an XML Configuration File” on page 140
- ◆ “Appendix A: XML Elements and Attributes for ArkConfig” on page 140
- ◆ “Appendix B: XML Elements and Attributes for ArkUpgrade” on page 141
- ◆ “Appendix C: Sample Configuration Files” on page 141

Overview of Archive and Version Services

The following changes were made to this section:

Location	Change
Key Concepts of Archive and Version Services	Added information about the following: <ul style="list-style-type: none">♦ The Archive Database and the ArkSQL.cnf File♦ ArkUpgrade and the ArkUpgrade.xml File♦ Versioning Jobs♦ Job Schedules♦ NSS File Version Utility for Native Windows File Retrieval and Restoration
What's Next	Added information about using iManager to configure jobs.

Planning for Archive and Version Services

The [Planning for Archive and Version Services](#) section is new in this release. It expands on information formerly included in the chapters on configuring jobs.

Installing and Upgrading Archive and Version Services

The [Installing and Configuring Archive Servers](#) section is new in this release.

Configuring Jobs in iManager

The [Configuring Versioning Jobs with iManager \(NetWare 6.5 SP2\)](#) section is new in this release.

Configuring Jobs in an XML Configuration File

The following changes were made to this section:

Location	Change
Planning for Archive and Version Services	Expanded information in this topic and moved it to its own chapter.
Configuring the ArkConfig.XML File	Updated the graphic to include new tags that support the use of MySQL for the archive database.

Appendix A: XML Elements and Attributes for ArkConfig

The [XML Elements and Attributes for ArkConfig](#) section is now an appendix. The introduction of an iManager interface for configuring jobs allows you to configure jobs without an in-depth knowledge of the ArkConfig XML tags.

Appendix B: XML Elements and Attributes for ArkUpgrade

The [XML Elements and Attributes for ArkUpgrade](#) section is new in this release.

Appendix C: Sample Configuration Files

The following changes were made to this section:

Location	Change
Sample of the Database Configuration for ArkSQL.cnf	Added an example to support the conversion of an existing archive database to use MySQL.
Sample of the Upgrade Configuration for ArkUpgrade.xml	Added an example to support the upgrade of an existing archive database to use MySQL.
Sample of a Basic Configuration for ArkConfig.xml	Added an example of the minimum configuration needed to create a new archive database, followed by job configuration using iManager.
Sample of a Full Configuration for ArkConfig.xml	Modified the full example to support the use of MySQL for the archive database.

May 14, 2004

Updates were made to the following sections. The changes are explained below.

- ◆ [“Installing and Upgrading Archive and Version Services” on page 141](#)
- ◆ [“Configuring Jobs in iManager” on page 142](#)
- ◆ [“Managing Archive and Version Services Jobs” on page 142](#)
- ◆ [“Appendix D: Documentation Updates” on page 142](#)

Installing and Upgrading Archive and Version Services

The following changes were made to this section:

Location	Change
Installing and Configuring an Archive Server Cluster	The procedure now includes a step to modify the autoexec.ncf file and a step to move the relevant MySQL command to the cluster load script.

Configuring Jobs in iManager

The following changes were made to this section:

Location	Change
Configuring Archive Server Information (NetWare 6.5 SP2)	The procedure now includes more details about how to complete the volume (mandatory) and path (optional) information.
Filter	<p>You can include or exclude files by path, extension, or pattern, as described in the following table. Currently, iManager inserts the entries in the order they are entered then adds any filters you apply from the Default Job Settings. This as-entered sequence is unlikely to be in the correct order required to achieve the filtering results you seek. After you enter filters in the list and save the job, you must verify the sequence of the filter elements in the <code>sys:\arkManager\arkConfig.xml</code> file. You can add additional filters directly in the <code>arkConfig.xml</code> file, or return to iManager to add more filtering properties. Arrange the sort order directly in the <code>arkConfig.xml</code> file. We recommend that you save a backup copy of your preferred filter settings for future reference.</p> <p>IMPORTANT: Always verify the sequence of filter entries in the <code>sys:\arkManager\arkConfig.xml</code> file after adding, modifying, or deleting filters from iManager in the Individual Job Properties or in the Default Job Settings.</p>

Managing Archive and Version Services Jobs

The following change was made to this section:

Location	Change
Filtering Messages in the Archive Log	To view the most recent log entries, click View Newest Log Entries.

Appendix D: Documentation Updates

The [Documentation Updates](#) section is new in this release.

July 2, 2004

Updates were made to the following sections. The changes are explained below.

- ◆ [“Overview of Archive and Version Services”](#) on page 143
- ◆ [“Planning for Archive and Version Services”](#) on page 143
- ◆ [“Installing and Upgrading Archive and Version Services”](#) on page 144
- ◆ [“Configuring Jobs in iManager”](#) on page 145
- ◆ [“Appendix A: XML Elements and Attributes for ArkConfig”](#) on page 145
- ◆ [“Appendix C: Sample Configuration Files”](#) on page 145

Overview of Archive and Version Services

The following changes were made to this section:

Location	Change
Key Concepts of Archive and Version Services	The following information was added for clarification: IMPORTANT: Archive and Version Services requires that the archive server, archive database, and the source volumes being archived reside on NetWare 6.5 or later servers.
NSS File Version Utility for Native Windows File Retrieval and Restoration	The NSS File Version Utility, nwver.exe, is provided on the <i>Novell NetWare 6.5 Products CD</i> in the \tools\nsstools directory for Support Pack 2 or later. For information about using the utility, see the <i>Novell Archive and Version Services 2.0 User Guide for NetWare 6.5</i> .

Planning for Archive and Version Services

The following changes were made to this section:

Location	Change
Designing the Archive and Version Services Topology	This section was divided into two topics: Designing the Archive and Version Services Topology and Prerequisites and Guidelines for the Archive Server.
Network Architecture Prerequisites and Guidelines	Information in this section was reorganized for clarity.
Server Prerequisites and Guidelines	This section was renamed and reorganized. The following information was added for clarification: <ul style="list-style-type: none">Both the archive server and the source server must be NetWare 6.5 or later servers.Make sure the archive server and source servers are running the latest NetWare 6.5 upgrades.
Fault Tolerance Guidelines	This section was renamed.
Storage Media Prerequisites and Guidelines	This section was renamed and reorganized.
Job Guidelines	A job name must be unique to the archive server. You can define only one job for a given source volume on a given archive server. The job persists for the life of the archive server and its job name cannot be used to represent a relationship between the archive server and a different volume, even if the original source volume ceases to exist.
Schedule Guidelines	This section was renamed.
Prerequisites for Using the NSS File Version Utility	This section is new.

Location	Change
Prerequisites for Using the NetStorage Archive Function	This section is new.
Known Issues for Configuring and Managing the Archive Server	This section is new.
Prerequisites and Guidelines for Retrieving File Versions	This section is new.
Guidelines for Availability of File Versions	This section is new.

Installing and Upgrading Archive and Version Services

The following changes were made to this section:

Location	Change
Prerequisites and Guidelines	<p>The following prerequisites were clarified:</p> <ul style="list-style-type: none"> ◆ The archive server and its source servers, which contain the data to be versioned, must be NetWare 6.5 or later servers with the latest upgrades installed and working properly. ◆ The source volume must be a NetWare 6.5 or later Novell Storage Services™ (NSS) volume.
Prerequisites and Guidelines	<p>The following prerequisite was clarified:</p> <p>(Conditional) If your source servers are not NetWare 6.5 or later servers, perform the following operating system upgrades on your source servers.</p> <ul style="list-style-type: none"> ◆ Install NetWare 6.5 or later on your source servers. For information, see the NetWare 6.5 Overview and Installation Guide. ◆ (Conditional) If you are upgrading from NetWare 5.x to NetWare 6.5 or later, you must run the Volume Copy Upgrade utility to upgrade your existing NetWare 5.x volumes to NetWare 6.5 NSS volumes. For information, see “Upgrading NetWare 5 Volumes to NetWare 6.x NSS Volumes Using Volume Copy Upgrade” in the Novell Storage Services File System Administration Guide for NetWare 6.5.

Configuring Jobs in iManager

The following changes were made to this section:

Location	Change
Job Information	<p>The following information was clarified in the introduction:</p> <p>The Job Information section identifies the unique name of the job that represents a unique relationship between an archive server and a source volume.</p> <p>IMPORTANT: You can define only one job per source volume on any given archive server.</p> <p>The following information was added in the table Job Name entry:</p> <p>A job name can be up to 64 ASCII characters.</p> <p>The job name persists for the life of the archive server and represents the relationship between the archive server and a specific source volume. You cannot reuse the name for any other archive server and volume relationship.</p>
Source Server Information	<p>The following sentence was reworded for completeness:</p> <p>The Source Server information identifies the NetWare 6.5 server and NSS volume that contain the information to be versioned and where temporary snapshot pools are stored during the versioning process.</p>
Source Server Information	<p>In the description for volume, the following sentence was added:</p> <p>Type only the volume name, without appending a colon. For example, type users, not users:.</p>
Deleting a Job	<p>This section was expanded to explain the consequences of deleting a job.</p>

Appendix A: XML Elements and Attributes for ArkConfig

The following change was made to this section:

Location	Change
<source>	The following sentence was reworded for completeness:
<volume></volume>	Volume specifies the unique name of the NetWare 6.5 or later NSS volume in the specified server where the original data is stored.
</source>	

Appendix C: Sample Configuration Files

The following change was made to this section:

Location	Change
Sample of the Database Configuration for ArkSQL.cnf	<p>The following command was added at the end of the sample ArkSQL.cnf file:</p> <pre>set-variable = transaction_isolation=READ_COMMITTED</pre>

August 8, 2004

Updates were made to the following section. The changes are explained below.

- ◆ [Planning for Archive and Version Services](#)

Planning for Archive and Version Services

The following change was made to this section:

Location	Change
Filenames and Case Sensitivity	Even though NetWare does not recognize case differences in filenames, Archive and Version Services considers filenames to be case sensitive. Using the Rename command to modify the case of any letters in a filename has the same effect as actually changing the name itself to ArkManager. At the end of an epoch, ArkManager creates a new version set under the changed name. Multiple sets of file versions exist for the file. When searching for file versions, users need to be aware of the case-sensitivity of versioned files to locate multiple version sets for a specified file.

December 20, 2004

Updates were made to the following sections. The changes are explained below.

- ◆ [“Overview of Archive and Version Services” on page 146](#)
- ◆ [“What’s New” on page 147](#)
- ◆ [“Planning for Archive and Version Services” on page 147](#)
- ◆ [“Prerequisites and Guidelines” on page 147](#)
- ◆ [“Installing and Configuring Archive Servers” on page 148](#)
- ◆ [“Upgrading Archive Servers” on page 148](#)
- ◆ [“Configuring Jobs with iManager” on page 148](#)
- ◆ [“Managing the Archive Server” on page 148](#)
- ◆ [“Managing the Versioning Jobs” on page 148](#)
- ◆ [“Appendix D: Configuring Versioning Jobs with iManger \(NetWare 6.5 SP2\)” on page 148](#)

Overview of Archive and Version Services

The following change was made to this section:

Location	Change
Archive Versioning Plug-In for Novell iManager	This section is new.

What's New

The What's New section is new.

Planning for Archive and Version Services

The following changes were made to this section:

Location	Change
Understanding Archive Server Properties	This information was relocated here from the Configuring Jobs with iManager section.
Understanding Job Properties	This information was relocated here from the Configuring Jobs with iManager section.
Prerequisites and Guidelines for the Archive Server	This information was moved to the Prerequisites and Guidelines section, “Network Architecture Prerequisites and Guidelines” on page 35 .
Prerequisites for Using the NSS File Version Utility to Restore Versions	This information was moved to the Prerequisites and Guidelines section, “Prerequisites for Using the NSS File Version Utility” on page 43 .
Prerequisites for Using NetStorage to Restore Versions	This information was moved to the Prerequisites and Guidelines section, “Prerequisites for Using the NetStorage Archive Function” on page 44 .
Known Issues for Configuring and Managing the Archive Server	This information was moved to the Prerequisites and Guidelines sections: <ul style="list-style-type: none">◆ “Server Prerequisites and Guidelines” on page 36◆ “Storage Media Prerequisites and Guidelines” on page 36◆ “MySQL Prerequisites and Guidelines” on page 38◆ “ArkSQL Guidelines” on page 38◆ “Fault Tolerance Guidelines” on page 41◆ “Job Guidelines” on page 42◆ “Schedule Guidelines” on page 43
Prerequisites for Retrieving File Versions	This information was moved to the Prerequisites and Guidelines section, “Prerequisites and Guidelines for Retrieving File Versions” on page 44 .
Caveats on Availability of File Versions	This information was moved to the Prerequisites and Guidelines section, “Guidelines for Availability of File Versions” on page 45 .

Prerequisites and Guidelines

This section is new. It contains information previously located in the Planning for Archive and Version Services section. For information, see the documentation updates noted in [“Planning for Archive and Version Services” on page 147](#).

Installing and Configuring Archive Servers

This section was updated to include installation and configuration information only for new archive servers as single servers or in clusters. The upgrade scenarios were moved to [“Upgrading Archive Servers” on page 63](#).

Upgrading Archive Servers

This section is new and contains information previously located in the Installing and Upgrading Archive Servers section.

Configuring Jobs with iManager

This section was divided into the following sections:

- ◆ [Managing the Archive Server \(page 77\)](#)
- ◆ [Managing the Versioning Jobs \(page 83\)](#)
- ◆ [Configuring Versioning Jobs with iManager \(NetWare 6.5 SP2\) \(page 125\)](#).

The Archive Options page is disabled in NetWare 6.5 SP3 and removed for redesign. Related material is available here for users with NetWare 6.5 SP2. However, configuring the `sys:\arkManager\arkConfig.xml` file is the preferred method for defining versioning jobs in NetWare 6.5 SP3.

Managing the Archive Server

This section is new. For information, see [“Configuring Jobs with iManager” on page 148](#).

Managing the Versioning Jobs

This section is new. For information, see [“Configuring Jobs with iManager” on page 148](#).

Appendix D: Configuring Versioning Jobs with iManger (NetWare 6.5 SP2)

This section is new. For information, see [“Configuring Jobs with iManager” on page 148](#).

February 16, 2005

Updates were made to the following section. The changes are explained below.

- ◆ [“Appendix E: Troubleshooting” on page 148](#)

Appendix E: Troubleshooting

This section is new. For information, see [“Troubleshooting” on page 137](#).