Contents

USER'S GUIDE

REPLICA™

for HP SureStore Tape

NetWare® Edition

Stac®

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REPLICA
Introduction

Congratulations. You now have the fastest, most reliable data protection for NetWare servers. Replica™ for HP SureStore Tape provides an entirely new way of solving your NetWare data protection problems with a powerful storage management solution.

Replica Backup protects your data by replicating entire drives. When a disaster strikes, you reinstall the operating system, NetWare, and Replica, then use Replica to recover your data volumes. Traditional backup programs are notorious for failure to restore individual files. Replica lets you mount a tape to easily recover individual files and folders, as well as volumes.

Replica Single Server also replicates the entire server, including DOS, NetWare, security and partition data. As a result, you can completely recover from disasters by recovering the entire server, as well as use all the features included in the Backup version.

Many HP tape devices support HP One-Button Disaster Recovery (OBDR) in which your server restarts using data on the tape itself. Other tape devices use standard Replica Disaster Recovery methods.

Replica treats server data as whole objects, transferring complete volume information to tape or disk without opening and closing files. It also replicates the server's security, partition data, and the non-NetWare partitions. This unique patent-pending method is called Object Replication Technology™. Object Replication Technology makes it possible to use the full speed of your tape drives, no matter how many files are present or whether they are large or small.

Replica offers the fastest, most reliable way to protect your servers. This version of Replica provides even easier features to help you back up and restore data from your desktop.

The Replica Software

Replica uses Object Replication Technology™ to transfer server or volume objects at high speed—as fast as the tape device can receive data. Replica protects your data while users continue to work, caching data as needed to ensure that a true copy of the disk is replicated. You won't have to dismount volumes or shut down the server. All your data is protected, including open files; Replica even protects deleted files if you want.

Working in Windows 95, you can easily replicate server and volume objects and recover the server, volumes, or files when needed. Replica makes it easy to manage your tapes and recover your data. You can also perform many operations directly from the NetWare console.

What Replica can do with your servers and server objects:

- Replica uses Object Replication Technology to protect NetWare 3.12 or 4.11 server or server objects, including NetWare volumes and security. Replica backs up the object to tape or to a volume on the Host Replica Server.
- If you have the Single Server version, Replica can use Disaster Recovery to recover the entire system in less time than it takes to read the instructions for other systems.

- The Replica Backup Configuration Wizard helps you configure a default backup job to protect your data automatically.

- Replica provides Direct Media Access for user controlled nearline storage that allows file access from replicated tapes. Any user can use any software (even Windows Explorer) to access and copy files and execute programs from the tape.
- Replica can recover the entire volume or security or any files from a server or individual volume replication.
- Replica can copy an entire volume to an unused disk volume or unassigned free space on the Host Replica Server.

This table summarizes the recovery capabilities of Replica:

If you replicate	to	Replica can recover ...
An entire host server	Tape	The entire server (with the Single Server version) Any or all storage objects Any file or directory
Security	Tape	The security object
Multiple volumes	Tape	Any volume Any file or directory
One volume	Tape	The volume Any file or directory on it
One volume	Disk	The volume indirectly when you mount the disk

Major Features

Replica provides many features that make it superior to traditional backup products. These features provide the speed and safety you need in today's fast-moving and ever-changing world. This section explains the major features.

Object Replication Technology™

Replica protects an object (server or volume) by doing a logical block-by-block capture of its data to a backup device, usually a tape. The resulting replication is neither an image nor a file-by-file transfer but has the best features of both. The technology is a totally new storage management solution; it uses better techniques to produce faster, more reliable results.

- The live server replication process is faster than any traditional backup method, both in replication and recovery. Replica sends data to the tape as fast as the tape can receive it.

- Replica works with live servers, so it can replicate data while the server is up. The reusable cache lets users write to the disk during replication, so even open files are protected. While the system may be a bit slower, most users won't even know when replication takes place.
- Replica takes each block that contains data and transfers it onto the tape. It doesn't pick and choose among what's there; you get it all. If you want, Replica even includes blocks containing deleted files, so you can use NetWare's utilities to recover previously deleted files from volumes recovered under Replica.
- You can recover entire objects under Replica or directly access files on any volume. Replica mounts a replicated tape as a read-only NetWare volume and gives you access to anything you need. Full NetWare user security is enforced.

7/24 Live Replication

Replica backs up active file systems without disabling user logins or read/write activity. As a result, it eliminates the backup "window" and open file errors. At the moment backup begins, your data is secured; even files deleted during the replication process are protected. Replica captures an entire volume at a specific moment in time. Your business isn't interrupted and the process is so painless you can schedule several backups a day if you want.

Direct Media Access

When you store data on your computer's internal hard disk, you use *online* storage. You can also use *offline* storage, on tapes or on disks, often at another location; replicated disks and tapes serve as offline storage. Now Replica bridges the gap with true *nearline* storage on tape. Tell Replica to mount a volume on the tape for file recovery (Direct Media Access) and Replica makes the volume available.

- Replica mounts the volume on the tape for you. You can use any Windows application or utility, including Windows Explorer, to access, copy, and execute files from the tape.

- You can let your users recover their own data after Replica mounts the tape; it maintains the same security as the original volume.

Disaster Recovery (Single Server only)

Any backup software package can restore one of its backed-up volumes. But what about a complete server? Do you remember installing your operating system (such as DOS) and configuring NetWare?

Replica can recover using only the server backup tape if your tape device and system support HP One-Button Disaster Recovery (OBDR). (See the online help or Chapter 4, *Disaster Recovery*, for details on how to tell if you have the support.) Otherwise it helps you create Disaster Recovery floppy disks; most servers require only two floppy disks.

Just restart your crashed server using the tape device if you can, otherwise use Disaster Recovery Disk 1 and insert additional disks when prompted. In either case, Replica recovers the system from a replication tape and you are back in business.

To be prepared for Disaster Recovery:

- Use Replica regularly to protect your servers.
- If you can't use OBDR, use Replica to create Disaster Recovery disks.

Replica can recover an average 2 GB server from a complete crash in less than an hour using a DAT tape drive.

Quick Easy Features

Replica for HP SureStore Tape provides several ease-of-use features that make protecting data and recovering files painless.

- The **Backup Configuration Wizard** helps you configure or change a regular backup job.
- The **Replica Backup** desktop icon runs the job you configured through the Wizard at your command.

- The **Replica Restore** desktop icon opens the appropriate Replica window, all ready to let you restore files from a volume on the current tape.

Replica Documentation

Replica includes both online help and this electronic manual (in Adobe Acrobat PDF format). Both components show you what to do and help you make choices for protecting your data.

User's Guide

This User's Guide helps you get started, perform the basic procedures, and solve any problems that occur. In addition, it provides information about commands you can use to perform critical Replica operations from the NetWare console.

See Chapter ...	For information on ...
1. Installation	Installing Replica and setting it up to work with NetWare
2. How Replica Works	Using the Windows interface and Quick Easy features
3. Replicating	Replicating volumes
4. Disaster Recovery	Preparing for and using Disaster Recovery
5. Recovering	Recovering individual files and folders, as well as full volumes
6. Status	Monitoring progress of Replica jobs
7. Utilities	Managing tape databases and tapes
8. Console Operations	Using Replica at the NetWare console
9. Troubleshooting	Solving problems with Replica

Online Help

The Replica Windows application includes extensive online help. You can get information on the screens and dialog boxes, as well as detailed How-To procedures for whatever you need to do.

To find out ...	Do this ...
What a field is for or how to enter values	Use TAB or click to select the field, then press F1.
How to accomplish what you want with the information on your screen	Click the Help button.
Information about specific Replica topics	Choose *Contents* or *Search for Help on* from the Help menu.

At the NetWare console, type REPLICA to see a summary of Replica console commands.

REPLICA Environments

You can use Replica to protect servers on NetWare systems that are:

- NetWare 4.11
- NetWare 3.12

Replica for HP SureStore Tape works with many different HP tape drives. Supported devices are listed in your ReadMe file.

Replica supports SNMP alerts that communicate with HP OpenView messaging systems when you have TapeAlert-supported hardware installed. You'll see messages at SNMP management consoles.

The Replica Family

The Replica family includes additional products that give you even more ways to protect all your NetWare and Windows NT servers.

- Replica for HP SureStore Tape is available in Backup and Single Server versions. The Single Server version includes two types of disaster recovery. HP One-Button Disaster Recovery (OBDR) allows recovering a server using only a full server backup tape. Your tape device and system must support it.
- Replica for NetWare and Replica for Windows NT are both available in an Intranetwork Edition, which provides full backup and Disaster Recovery. In addition, they protects remote servers and supports many high-performance tape drives and autoloaders.

To use Replica on multiple tape servers, you'll need multiple licensed copies of Replica. Check with your HP distributor for details.

1 REPLICA Installation

Installing Replica for HP SureStore Tape is very simple. If you had any problems during installation, review this chapter before trying again. The decisions you must make are:

- **Which server will Replica protect?** Replica backs up data to the *Host Replica Server*. To use more than one tape server, you'll need more than one server with an HP supported device installed.
- **From which PC will you administer Replica?** This PC must run Windows 95 and is the one from which you install Replica. We refer to this as the Administrative PC.

Installing Replica on the Administrative PC		**See page ...**
1.	Prepare to install Replica.	**11**
2.	Run SETUP.EXE under Windows 95 from the Stac directory of the CD-ROM.	**12**
3.	Prepare the NetWare console.	**12**
4.	If necessary, create Disaster Recovery disks.	
5.	Use Replica commands from the Start Menu and desktop icons.	**13**

Setup installs the replication engine and software on the appropriate server and the administrative components under Windows 95 on the Administrative PC.

System Specifications

Your system must meet these requirements:

Host Replica Server

You will replicate data to this tape server. It must have a supported HP tape device attached.

- ☐ Novell NetWare 3.12 or 4.11
- ☐ At least 16 MB RAM
- ☐ At least 5 MB free disk space in SYS volume
- ☐ ASPI compliant SCSI controller
- ☐ At least one supported HP SCSI tape drive
- ☐ 1.44 MB floppy disk boot drive

Devices supported include HP SureStore tape devices. The complete device list is in the ReadMe file. You can also replicate any individual volume to a hard disk volume on the Host Replica Server.

Administrative PC

This is the PC from which you install and administer Replica.

- ☐ Windows 95
- ☐ At least 8 MB RAM
- ☐ At least 4 MB free disk space
- ☐ 1.44 MB floppy disk drive
- ☐ Network connection to the servers being protected

Note: *If you use HP OpenView with TapeAlert-supported hardware, you can install Replica on the same Windows workstation as OpenView.*

Multiple Replica Servers

If you install Replica on several NetWare servers, each Administrative PC will be able to see and protect all Host Replica Servers on which Replica for HP SureStore Tape is installed. You can install all from the same computer if you like. When you start Replica at an Administrative PC, you

choose the server to work with and log in. To work with a different NetWare server, exit Replica and restart it.

Getting Ready

Setup asks you several questions. The installation process is easiest if you know the answers before you begin.

Before you run Setup:

- **Decide which PC you will use as the Administrative PC.** This computer must be running Windows 95. You will install Replica at this computer.
- **Decide which tape server will be the Host Replica Server.** You must map a drive letter to the SYS volume for use during installation.
- **Log in as supervisor** (or the equivalent) to the server.

Setup modifies the AUTOEXEC.NCF file in SYS:System to load Replica whenever you restart your server. Setup also creates a file called REPLOAD.NCF that contains the commands needed to load Replica. These are the commands:

```
load stacdai
load re_agent
scan for new devices
load replica
```

SNMP SUPPORT

Note: *If you want support for HP OpenView, type REP_SNMP instead of REPLOAD. It contains the line "load stacsdi -snmp" before "load replica." You can add "load stacsdi -snmp" to AUTOEXEC.NCF just ahead of "load replica" if you like.*

STARTUP.NCF resides on the server's DOS partition in the same directory as SERVER.EXE, usually C:\NWSERVER for NetWare 4.11. Replica requires that a line be added to it. Setup stores a text file called STARTUP.REP on your Administrative PC in the Replica directory containing this line:

```
set reserved buffers below 16 meg = 275
```

Setting Up Replica

Install Replica by running Setup from the CD-ROM at the Administrative PC under Windows 95.

Before starting setup, make sure you are mapped to the server's SYS drive and logged in with Supervisor access rights.

First, install Replica at the Administrative PC

1. Insert the CD-ROM into the drive.
2. From the Windows 95 Start menu, choose Run and use Browse if necessary to start SETUP.EXE from the Stac directory of the CD.
3. Follow the instructions on the screen.

Setup copies Replica files to the appropriate locations. It stores the Replica Windows application on the Administrative PC in C:\replica and the storage management engine on the specified tape server, in SYS:System\replica.

Next, prepare the NetWare console of the Host Replica Server

1. Update STARTUP.NCF through NetWare's INSTALL utility. Make sure it contains this line:

   set reserved buffers below 16 meg = 200

   You can copy STARTUP.REP from the Replica directory on the Administrative PC to the end of STARTUP.NCF or type the command at the end of STARTUP.NCF.
2. To load Replica, restart the NetWare server.

If you have the Single Server version and you can't use HP One-Button Disaster Recovery (OBDR), create Disaster Recovery disks for the server

Note: *See the online help or Chapter 4,* Disaster Recovery, *for information on how to tell if your tape device and system support OBDR.*

You'll need two or three blank 1.44 MB floppy disks for each server.

1. At the Administrative PC, start Windows, if necessary.
2. Start Replica by choosing it from theStart menu.

3. Log into the Host Replica Server.
4. Click the Utilities button on the Replica toolbar.

5. Click the Disaster Recovery tab.

6. Make sure a 3.5" floppy drive is specified in the **Make disks on drive** field, then insert a floppy disk in that drive and click Create Disks. Follow the directions on the screen.
7. Store the Disaster Recovery disks in a safe place.

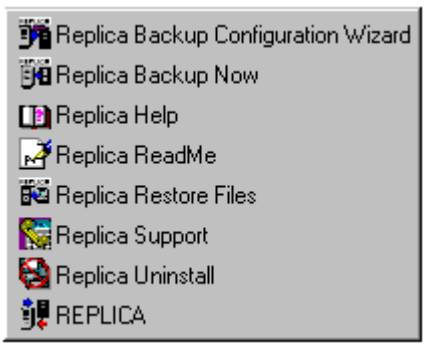
Note: *You'll find more details about creating and using Disaster Recovery disks in Chapter 4,* Disaster Recovery.

Finally, create a job at the Administrative PC

- Run the Backup Configuration Wizard from the Desktop to create a default backup job. Chapter 3 has more details.

The Replica Program Group

In addition to storing files on server and client computers, Setup creates a program group on your Start menu on the Administrative PC. You'll find it easy to start Replica and use its features.



Setup also places new icons on your Windows 95 desktop.

To ...	Use ...
Start Replica	Replica Restore Files
Configure a default backup job	Replica Backup Configuration Wizard
Run your default backup job now	Replica Backup Now
Restore files with Replica	Replica Restore Files
Uninstall Replica	Replica Uninstall
Read the Read Me file	Replica ReadMe
Get Help about Replica	Replica Help
Get information about Replica product support	Replica Support

Chapter 2, *How Replica Works*, provides an overview of Replica and shows how to set preferences.

Chapter 3, *Replicating*, shows you how to protect your system using the fastest, most reliable data protection for NetWare servers.

2 REPLICA
How Replica Works

The Replica Administrative PC makes it easy to manage Replica tasks. From the Windows application, you define and schedule replication jobs, recover volumes or files, manage your tapes, and monitor the status of jobs.

If you have installed this version of Replica on several servers with supported HP tape devices, you can log into any of them when you start Replica from any Administrative PC on the network.

Using Replica Quick, Easy Features

Replica for HP SureStore Tape provides a Backup Configuration Wizard and desktop shortcuts.

- The Backup Configuration Wizard helps you set up a default backup job that may be all you need to protect you data. You choose the volumes to be backed up and when the backup should occur.
- The desktop icons let you run your default job immediately or open Replica to restore files from any backup tape.

To run the Backup Configuration Wizard

1. From the desktop or Start Menu, choose Backup Configuration Wizard in the Replica program group.

2. Follow the directions on the screen as the Wizard steps you through the configuration process.

Note: *Replica supports one default backup job. You can modify it through the Backup Configuration Wizard at any time.*

To use the desktop shortcuts

After the standard replication job has been configured using the Wizard, you can use the desktop icons or Start menu commands to protect or recover data.

- Use the **Replica Backup** icon to start the replication job that you configured using the Wizard. Replica starts backing up the objects you selected to the tape in the device. The Replica application opens the Status window so you can see the progress of the job. Chapter 6, *Status*, provides more information on the Status window.

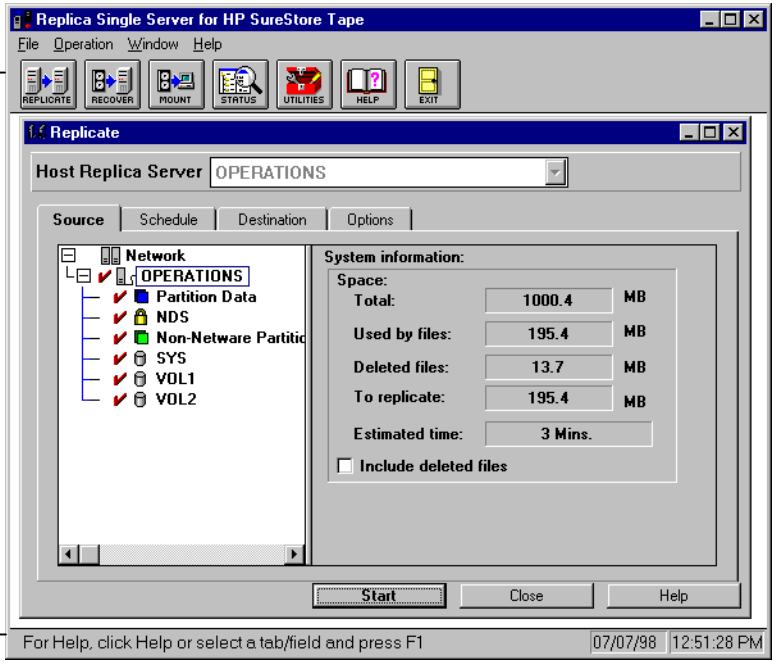
- Use the **Replica Restore** icon to recover files that were backed up. Replica opens the Mount window, discussed in detail in Chapter 5, *Recovering*. You can choose the volume to recover and the tape to recover it from.

Starting the Replica Application

The Replica Windows interface makes it easy for you to protect your data. You can set up and schedule replication jobs, recover volumes, access files on tape, manage your tape databases and set up tape rotations, even monitor the progress of jobs.

To start Replica at any Administrative PC

1. From the Start Menu program group, choose REPLICA.
2. Choose the Host Replica Server from the list and log in.

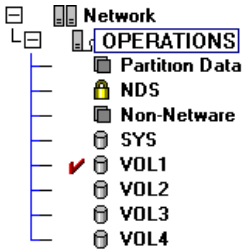


- The toolbar gives you access to Replica functions: Replicate, Recover, Mount Tape, Status, and Utilities. You can also open the online Help or exit Replica.
- The network list lets you choose what to back up or recover. Partition Data and Non-NetWare Partitions are available only when Replica supports Disaster Recovery.

Selecting Objects

The Replicate, Recover, and Mount Tape functions let you use the network list to select network objects such as security or volumes for processing.

The network list shows the Host Replica Server that you logged into when starting Replica.



- For replicating (backing up) objects, you can choose any volumes or security. You can click the entire server (which selects all its objects) or any set of objects to replicate. See Chapter 3, *Replicating*, for details.
- For choosing an object to recover, all objects that have been replicated on the current Host Replica Server are available. See Chapter 5, *Recovering*, for details.

When the list first appears in the Replicate window, the current Host Replica Server is opened and all its components are selected; these are the server's storage management objects. Each object is indicated by an icon. A check indicates the currently selected objects. You expand and collapse objects in the network list by clicking on the ⊞ and ⊟ symbols.

Icon ...	Indicates ....
	Network
	Server
	Partition data
	Non-NetWare partitions
	NDS or Bindery
	Volume (mounted or unmounted)
	Free space not yet assigned to a volume
	Tape (appears in Recover lists only)
	Tape that does hardware compression

Replica Functions

When you choose any Replica operation from the toolbar or Operation menu, the resulting window contains tabs that give you immediate access to additional information.

They are covered in detail in chapters 3 through 6.

REPLICATE

Replica can back up a complete NetWare file server to a tape device attached to that server. If you have the Backup version, you get all the NetWare volumes and the Security. If you have the Single Server version, Replica also backs up the boot and partition information, NetWare and non-NetWare volumes, and NDS or Bindery. You can use a full server replication tape for disaster recovery (Single Server version only), volume recovery, or file recovery. Replica can also backup individual NetWare volumes or security to tape.

Replica can copy a single disk volume to free space or a disk volume on the Host Replica Server, so it can be available immediately in case of emergency.

You can schedule replication jobs and specify how Replica should handle the volumes during the process. For example, you can let Replica process a volume, including protecting open files, while the disk is in use and tell it to automatically mount a volume from the tape when it is finished.

Chapter 3, *Replicating*, explains how to use the Replication process.

RECOVER

Replica can recover any server object from tape. Just choose the backed up object and the tape it is on.

Chapter 5, *Recovering*, explains how to recover volumes or security from the Administrative PC.

MOUNT TAPE

You use any replication tape to recover files from any replicated volume. You can even let users access their own replicated files. Just tell Replica to mount a volume on a replication tape as a read-only NetWare volume. The volume retains the same access rights as the original, so valid users can access, recover, even execute any file.

Chapter 5, *Recovering*, explains how to recover individual directories and files.

STATUS

You can monitor any device queue, see the status and progress of any job, rearrange jobs in the queue, and see the listing of past Replica job and error messages.

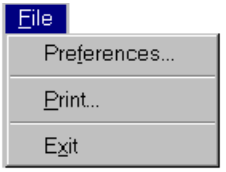
Chapter 6, *Status*, explains how to use the Replica Status window.

UTILITIES

Replica provides utilities to help you manage your tapes and tape devices, as well as keep the tape databases on the Host Replica Server up to date. If you have the Single Server version, another utility creates Disaster Recovery disks for you if you need them. Many HP tape devices support HP One-Button Disaster Recovery, which doesn't require disks.

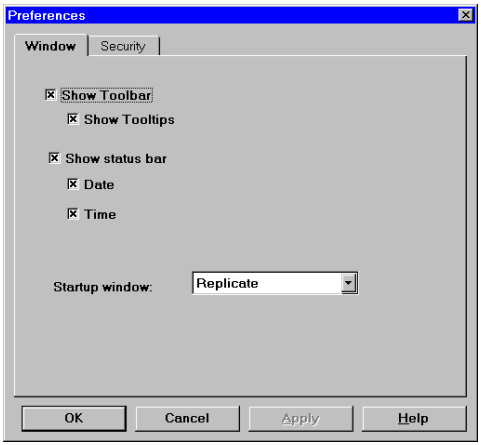
Chapter 7, *Utilities*, explains how to use Replica utilities.

Preferences



You can set preferences from the File menu to control which Replica window appears when you open Replica and how often you must enter a server password while using Replica.

When you choose Preferences from the File menu, you see this dialog:



Window Preferences

Window

On the Window tab, you can control how Replica operation windows look and act.

To ...	Use this field ....
Display or hide the toolbar	Show Toolbar
Show information about a displayed tool when your pointer rests on it	Show Tooltips
Display or hide the status bar	Show status bar
Include the date in the status bar	Date
Include the time in the status bar	Time
Specify the initial window	Startup window

When you first install Replica, it is set to display the Replicate window whenever Replica starts. Later on, you may want to start with the Status window, for example, to see how jobs are going.

To change the initial window

1. On the File menu, choose Preferences.

2. On the Window tab, open the **Startup window** drop-down list.
3. Choose the window you want to see.

   You can choose from Replicate, Recover, Mount Tape, Status, Utilities, Last, and None.

Security Preferences

This feature is not available in this version of Replica. In some Replica versions, you can ask Replica to require a password whenever you change to a different Host Server or access a different server. By default, Replica remembers passwords. While Replica is open; it doesn't ask for a password again for that server within the Replica session.

3 REPLICA Replicating

Replicating your data makes it possible to recover security, individual volumes, and individual files and directories. You can replicate data by using the Backup icon to run the job defined by the Backup Configuration Wizard or use the Replica program to define additional backup jobs. This chapter explains the details. This page gives the essentials of replication.

Replicating a server or some of its components		See page ...
	1. Start Replica.	
	2. Click REPLICATE.	
Source	3. Choose the objects to replicate.	30
Schedule	4. Schedule the job; run it immediately or specify the interval.	31
Destination	5. Choose the tape or disk to hold the replicated object.	34
Options	6. Change the options, if necessary.	36
Start	7. Start the job or submit it to the queue.	39

Replica can recover individual volumes from full server or volume backup tapes. It also lets you recover individual files from any backup tape. Chapter 5, *Recovery*, includes the details. Chapter 4, *Disaster Recovery*, shows how to do Disaster Recovery using HP One-Button Disaster Recovery or the standard Disaster Recovery method.

To configure or modify your default backup job, use the Backup Configuration Wizard. You can use the Replica Backup icon from your desktop to run this job immedidately rather than waiting for the scheduled time.

What is Replication?

Replica uses Object Replication Technology to make a logical copy of the source object on a destination tape or disk volume. It captures all blocks that contain data and places them unchanged on the destination. Replica doesn't have to look at attributes, file name, or file type; it captures everything.

You replicate data so that you can recover it if necessary. Replica can recover data in several ways:

- **Disaster recovery**. If you have the Single Server version and use Replica to protect the full server, you can use Disaster Recovery to recover it.
- **Volume or security recovery.** If you use Replica to replicate the full server or the individual object to tape, you can use Replica to recover it.
- **File or directory recovery.** Whether you replicated the full server or an individual volume to tape, Replica can mount the tape and gain access to individual files, multiple files, even full directories.

Replica can also create a new copy of a volume on the Host Replica Server.

If you choose ...	Replica ...
An existing disk volume	Overwrites any previous data on the disk
Free space on the disk	Creates a disk volume with the name you specify

When you choose what to replicate, Replica decides what destination media are available to you. If you have the Single Server version, Replica may select additional components that will make disaster recovery possible.

Selecting ...	also selects ...	to...
Server	all components	tape
All components	server	tape
Partition data	SYS, NDS, and non-NetWare partitions	tape
Non-NetWare partition	SYS, NDS, and partition data	tape
NDS or Bindery		tape/ disk
One volume		tape/ disk
Multiple volumes		tape

If you have the Single Server version, Disaster Recovery is possible if your backup includes partition data, security, non-NetWare partition, and the SYS volume.

Using Backup Configuration Wizard

Replica for HP SureStore Tape provides an easy way to configure or change your default backup job. The Wizard is self-explanatory. This section explains some effects and limitations.

To run the Backup Configuration Wizard

1. Choose it from the Desktop or the Replica group on the Start Menu.
2. Choose the server and log in.

   You can choose from all NetWare servers on your network that have Replica for HP SureStore Tape installed.
3. Confirm the tape device to use.

   The default job always uses your primary supported HP tape device. You can use the Replica application to send jobs to this device as well as to other supported devices.

4. Choose the objects to back up.

   The Wizard won't let you choose more than it estimates will fit on the tape in compressed form. Replica will warn you if the data might overfill the tape. (If you have the Single Server version and want to be able to do Disaster Recovery from the tape, choose Partition Data and Replica will select any other required components.)

5. Choose the schedule for the backups.

   You can use the Backup desktop icon to run this job immediately whenever you want. It will also run on the schedule you set.

6. Click Finish when you see the Backup Summary.

This job differs from backups you create using the standard Replica application in several ways.

- It uses only the primary supported tape device. You can choose from all installed supported devices in the Replicate Destination tab.
- It always overwrites data on the tape, so each default job uses the whole tape. You can choose to append data to a replication tape in the Replicate Options tab.

Using REPLICATE

To set up a replication job through the Replica application, you have to tell Replica what to replicate, when to run the job, where to store the replicated objects, and what option settings to use if you don't want the defaults.

If you set a schedule for a replication job, it will run on that schedule until you change the schedule or delete the job from the queue. Every replication for a scheduled job is done the same. Daily and weekly replications are identical; the only difference is when tapes are scheduled to be reused.

By default, Replica processes the selected items immediately, using the tape you specify (or the first one in its list) as the destination. You can use the Options tab to control whether Replica overwrites or appends data to the tapes, whether it checks tape labels, whether it verifies data

written to tape, how it handles volumes during replication, and whether it should process any special commands before or after replication. See page 36 for information on setting the options.

7/24 Live Server Replication

By default, Replica backs up data while the server is in use, working with a flexible cache so it can back up open files. If the server has exceptionally heavy usage, Replica may not be able handle all the caching needed. In that case, you may want to choose one of the other options.

You can choose **Limited live server replication**, in which the server stays live unless and until the cache overflows. At that point, user access is partially suspended until the replication is complete. Access is restored automatically.

For the very quickest replication and lowest memory usage, you can choose **Dismount volume before replication**. Then Replica dismounts each volume in turn, backs it up, and mounts it again.

Additional Replication Job Processing

Suppose you want additional actions taken before or after a replication job. The Replica options let you specify processing.

- Before the job, Replica can run a NetWare NCF file.
- After the job, Replica can automatically mount a volume on the resulting tape on the server and/or run a NetWare NCF file.

NetWare NCF File

You may want additional processing before or after a replication job. For example, you may want to:

- Close a particularly active database.
- Dismount or mount a particular volume on a server before replication begins.
- Unload or reload an NLM that uses a great deal of server memory.
- Unload or reload a different backup application.

You can create an NCF file containing the commands you want executed; an NCF file is equivalent to a batch file and is run at the NetWare console. Use NetWare standard 8.3 file names and store any NCF files you create for Replica in the SYS:System directory.

When creating the Replica backup job, you can tell Replica to process the file just before or just after replicating the data. By default, Replica starts processing NCF files one minute before or after the job. You can change the timing in the replica.ini file. It contains these lines:

```
PreNCFRunTime=1    (runs NCF file one minute before job)
PostNCFRunTime=1   (runs NCF file one minute after job)
```

You can specify a larger number to start the NCF file a larger number of minutes before the Replica job starts or ends. The value you specify in the replica.ini file applies to all Replica jobs.

Automatic Mounting of Tapes

Replica can automatically mount a volume from a replication tape as a read-only NetWare volume as soon as the job is complete. You can use Replica Restore or choose MOUNT to mount a volume later. In either case, you or your users can access the mounted volume directly through Network Neighborhood or use any utility to map a drive letter to the mounted tape.

You choose the automatic mounting option and name the volume to be mounted when you schedule the job. Chapter 5, *Recovering*, explains how to use the MOUNT operation.

Automatic Dismounting of Tapes

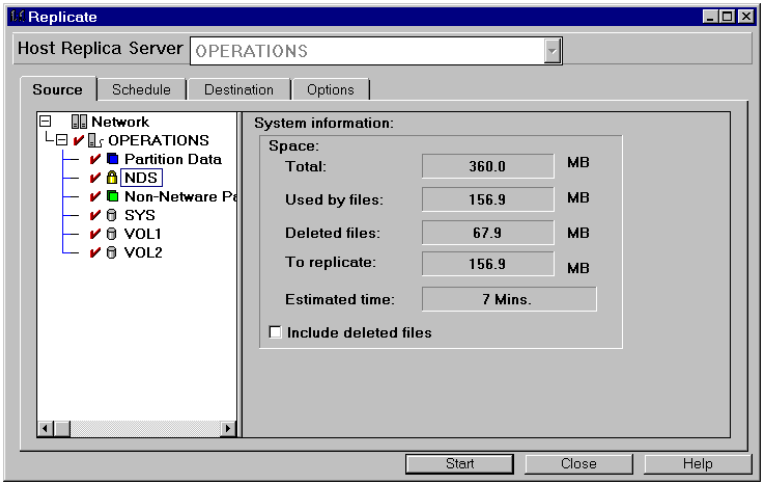
Of course, only one job can use a given tape device at a time. By default, Replica automatically dismounts any mounted tape in the device before starting the replication. Replica will follow your other instructions to overwrite or append data to the tape.

The Replicate Window

When you first start Replica, the Replicate window appears by default. If it isn't displayed, click the REPLICATE button on the toolbar. The **Host Replica Server** field at the top of the window shows the current server. To change to a different server, exit Replica and restart it. You'll be able to log on to any NetWare server that has Replica for HP SureStore Tape installed.

The Replicate window has four tabs (Source, Schedule, Destination, and Options) to make it easy for you to prepare, submit, and administer replication jobs and devices.

If you have the Backup version, you won't be able to choose all these objects.



Replication Scenario

Suppose you want to replicate your server now so that you can restore any volume or any specific file. If you have the Single Server version, you'd like to use the tape for disaster recovery.

What you do:

1. Make sure the tape you want to use is in the device.

2. Start Replica at the Administrative PC. Log into a Host Replica Server.
3. If necessary, click REPLICATE on the toolbar.

4. On the Source tab in the network list, make sure the server is checked.
5. If you want to replicate deleted files, check **Include deleted files.**

6. On the Destination tab, choose a tape device in the **Target Drives** list.
7. Click a tape name from the **Tape Library** list, or click New Tape and label a new one.

8. Click Start, then enter a Job Name when asked.

What Replica does:

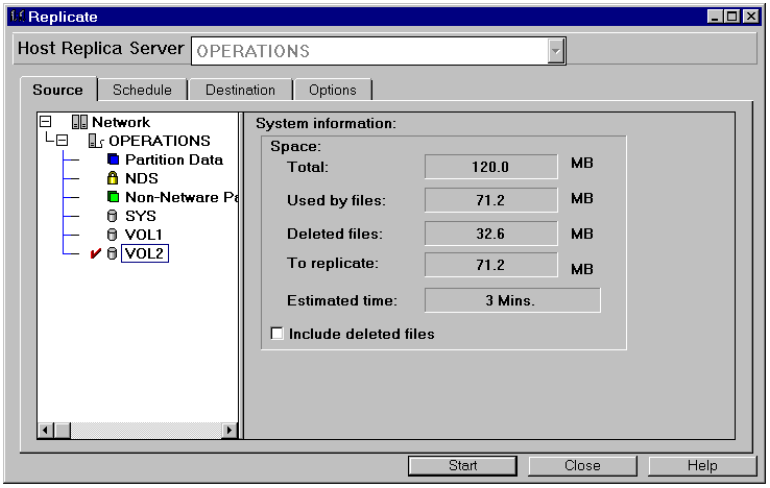
1. Asks for a job name and description so you can identify the job.
2. Begins replicating the server, using the tape you specified and any default options.

   By default, Replica uses 7/24 Live Server Replication to allow full server access during the process with no open file errors. You don't have to close files or log off.
3. Opens the Status window so you can see the job's progress.

Choosing the Source

The Replicate Source tab lets you specify what to replicate. You can choose any or all objects on a single server.

- Choose the objects to replicate from the network list. What you choose here determines how Replica works and what you can recover. For full disaster recovery potential, choose the server itself.



- See the **System information** pane on the right for details.
- To conserve tape space, leave **Include deleted files** unchecked.

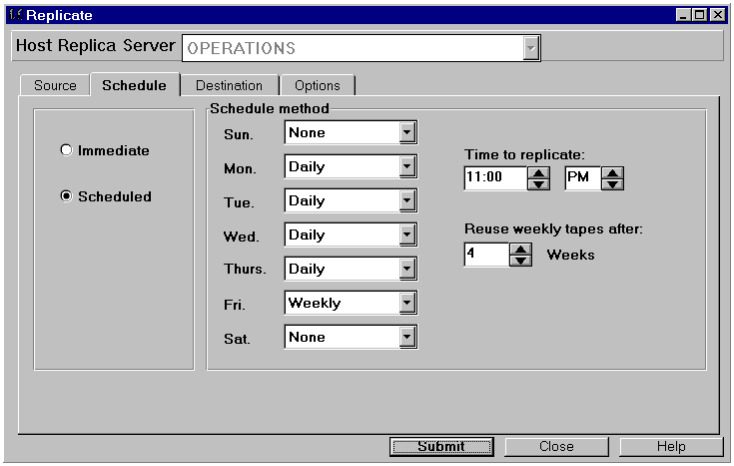
To ...	Do this ....
Select a second object to replicate	Click the next object.
Clear (uncheck) an object	Click the object.
See how large the replication will be or how long it will take	Examine the values in the **System information** pane.
Protect data in files that may have been deleted	Check **Include deleted files**.
Minimize the size of the replication result	Leave **Include deleted files** unchecked.
Replicate data to disk	Select a single volume on a server and choose a disk volume or free space as the destination.
(Single Server version only) Prepare for full disaster recovery and allow for any other type of recovery as well.	Select the server itself.

Choosing the Schedule

Schedule

The Replicate Schedule tab lets you specify when to run the replication job. The default is immediately; the job will start as soon as the device is available.

Scheduled jobs run repeatedly on the schedule you specify. If you schedule a job that you want run just once, be sure to use the Replica Status window to delete it from the queue after it is completed. Chapter 6, *Status*, includes full details.



- Choose **Immediate** (default) or **Scheduled**.
- When you select **Scheduled**, the Schedule method pane appears.
  - Choose Daily, Weekly, or None for each day. Each job can include only one Weekly tape. What you choose determines how tapes are rotated: Daily tapes are reused every week, while Weekly tapes are reused at the interval you choose. Replica handles the labeling of tapes for you.
  - Choose the time to run the job. Set the rotation period for weekly tapes.

To ...	Do this ...
Run the job now	Click **Immediate.**
Replicate the source only once a week	Click **Scheduled**. Then choose **Weekly** for the day you want and **None** for all the others.
Replicate the source every day at 4 AM, including weekends, saving the Saturday tapes for six weeks.	Click **Scheduled**. Choose **Weekly** for Saturday and **Daily** for every other day. Change the time to 4 AM. Change the **Reuse weekly tapes** field to 6.
Replicate a server twice a day, at 9 AM and 9 PM.	Schedule two separate jobs through Replica, one for each time.

Scheduling Jobs in 12-hour Time

Replica for NetWare uses 12-hour time for scheduling jobs. If your Administrative PC uses 24 hour time, change it to 12-hour time.

To change to 12-hour time

1. Open the Regional Settings icon in the Control Panel.
2. On the Time tab, change the uppercase "H" in the Time style field to lowercase "h".

Tape Labels

If you choose **Scheduled**, Replica creates a tape label in the form "*jobname_scheduled*" to use each time it runs the job. The label for a job named DBvolume scheduled to run on Thursdays would be "*DBvolume_THURSDAY*". A weekly job with a rotation of two weeks would have tape labels of "*DBvolume_WEEKLY1*" and "*DBvolume_WEEKLY2*" in alternate weeks.

Replica expects you to make sure the correct tape is available in the device before each job runs. However, you can have Replica verify that

the correct tape is in the device. See *Choosing Options* on page 36 for details.

If you choose **Immediate**, you can choose an existing tape as labeled or relabel the current tape by clicking the New Tape button on the Destination tab. If there is no label, Replica creates one in the format *REPLICA date time*.

Note: *The job you configure using the Wizard starts with the tape label "Backup Wizard" with a special character at the beginning and end. Scheduled Wizard jobs include the day of the week as part of the label.*

Replication Queues

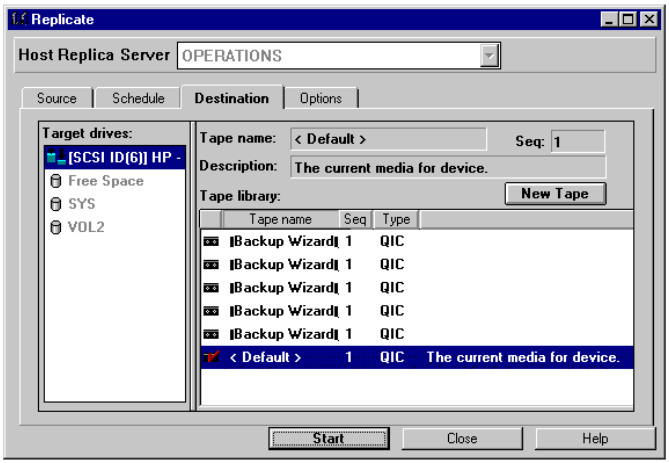
When you schedule a job, Replica adds it to the queue waiting for the destination device. If the device is free when the scheduled time arrives (or immediately), the job begins. If the device is currently in use by another job, your job waits until it is available. You can ask Replica (on the Options tab) to automatically dismount a tape mounted as a NetWare volume, but you can't bypass any other recovery, replication, or utility jobs, although you may be able to cancel them.

Replica lets you control jobs in the queue for any device. Chapter 6, *Status*, includes full details.

Choosing the Destination

The Replicate Destination tab lets you specify the device where the selected source object is sent. You can choose any supported device. For an immediate job, you can choose a tape listed for that device or relabel the current tape. If the source is a single volume, you can choose free space or any available disk volume on the Host Replica Server.

The Source and Schedule determine what appears on the Replicate Destination tab.



Note: *The symbol in the tape name represents a special internal character that tells Replica this is a Wizard job.*

- The **Target Drives** list shows the available tape devices. If a single volume is selected on the Source tab, the list includes disk volumes and free space on the Host Replica Server that are at least as large as the source volume. You won't be able to select the SYS volume as a destination, because that volume is in use. Any existing data on a destination tape volume is lost if **Overwrite** (the default) is selected on the Options tab; existing data on a destination disk volume is always lost.
- If you choose Free Space, Replica asks you for a name and creates a volume from the free space before it starts the job. If you choose a mounted disk volume, Replica asks if you want to overwrite it, then dismounts the volume before replicating to it.
- If you select the tape drive and this is an Immediate job, you can choose an appropriate tape from the database or create (label) a new tape for the database. Of course, you'll have to make sure the tape is available in the device when the job runs. Click any column head to sort the tapes by that field. Resize the columns by dragging the vertical lines that divide the column heads.

To ...	Do this ...
Select a disk volume as the target drive	Make sure a single volume is selected on the Source tab, then select a disk in the Target drives list on the Destination tab.
Choose a specific tape for a replication	Make sure the Schedule tab shows Immediate. Then on the Destination tab, select a tape drive, and choose the tape from the list.
Force Replica to start at the beginning of the tape	On the Options tab, make sure **Overwrite** is selected. **Verify tape labels** prevents the job from running if the wrong tape is in the drive.
Relabel the current tape (you won't be able access any previous data)	While preparing an Immediate job, click New Tape.

Choosing Options

Options

The Replicate Options tab lets you control features related to the job and its destination. They apply to all replication jobs you create until you change the options.

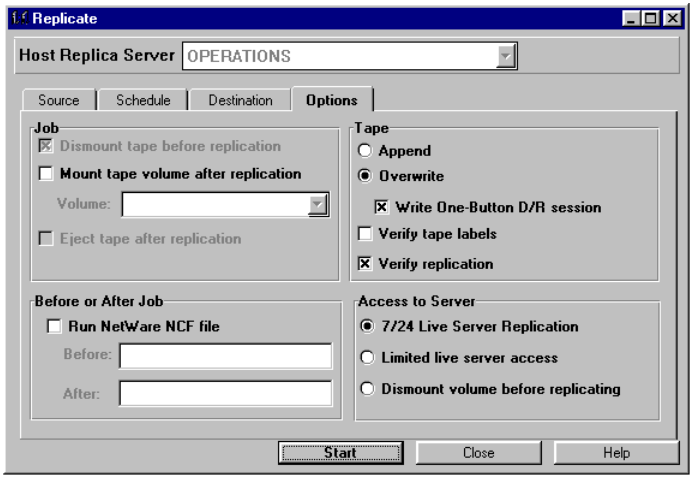
Server Access

Replica defaults to **7/24 Live Server Replication**, which allows users read and write access to server volumes during replication. It backs up data as it is at the time replication begins, caching changes as needed. This method requires an additional control block at the end of the tape.

- For quicker tape mounting for file recovery, choose **Limited live server access** instead. If the write buffers are filled with this method, Replica suspends access until the job is complete.

- For ever quicker tape mounting, choose **Dismount volume before replicating**; this also requires less memory than either other access option.

Tapes produced using either **Limited live server access** or **Dismount volume** mount more quickly because they store file and directory information at the beginning of the tape.



Additional Job Processing

You can specify additional processing to take place before or after Replica runs a replication job.

To have Replica ...	Check ...
Mount a volume on this tape after the job completes	**Mount tape after replication** and choose the volume name.
Process NetWare NCF file before replication	**Run NetWare NCF file** and type the filename in the **Before** field
Process NetWare NCF file after replication	**Run NetWare NCF file** and type the filename in the **After** field

Tape Options

The Options tab also lets you control how Replica handles tapes as it replicates data. By default, it overwrites data, starting at the beginning of the current tape for each job; **Overwrite** is on and **Append** is off. If you check **Verify tape labels**, Replica won't overwrite or append data when the current label does not match the one assigned to the job, so the job may not run successfully.

If the current tape device supports HP One-Button Disaster Recovery, the **Write One-Button D/R session** field is visible. It is checked whenever **Overwrite** is selected and the replication job is capable of disaster recovery. If Partition Data is not selected for backup or if **Append** is selected, the field is not available.

To have Replica ...	Do this ...
Verify that the replicated data is readable	Check **Verify replication.**
Physically unload the tape	Check **Eject tape after replication**.
Start at the beginning of the current tape and label it	Select **Overwrite** and uncheck **Verify tape labels**.
Start at the beginning of the tape you specify	Select **Overwrite** and check **Verify tape labels**.
Omit the HP One-Button Disaster Recovery information from the tape (you would do so only if your system doesn't support OBDR)	Uncheck **Write One-Button D/R session**. (Checked by default when Overwrite is selected and the job supports it)
Append jobs to the end of the current tape	Select **Append** and uncheck **Verify tape labels**.
Append jobs to the end of the tape you selected	Select **Append** and check **Verify tape labels**.

Submitting the Replication Job

The Replicate window includes one of three buttons:

If you chose ...	You'll see ...
Immediate on the Schedule tab	
Scheduled on the Schedule tab	
Edit in the Status window	

After you submit a job, Replica opens the Status window so you can see your job's progress in the device queue.

Every replication job creates a Backup Report (SUMMARY.TXT) in your LOGFILES directory (a subdirectory of the system\replica folder on the server). This report shows the job name and details what objects are backed up and the whether they completed successfully. This file is replaced for every replication job.

The Replica History log gives you full information about the job's progress. If you aren't sure if a job started or ran correctly, check the History tab in the Status window and read the messages related to that job. Chapter 6, *Status*, includes the details.

Replication Examples

This section shows examples of five replication jobs.

- **Running the default job**

  Shows how to run your scheduled default job immediately
- **Full replication**

  Shows how to specify a comprehensive replication that lets you recover the entire server, volumes, and files
- **Replicating volumes to tape**

  Shows how to specify a replication that allows you to recover volumes or files

- **Replicating one volume to disk**
  Shows how to replicate data to a disk volume that can be mounted when needed.
- **Multiple-job replication system**
  Shows how to design a schedule with different types of replications.

Running the Default Job

Suppose you have a job scheduled through the Backup Configuration Wizard, but you want to run it an extra time—right now.

How to do it

1. Make sure the tape you want to use is inserted into the drive.
2. Click Replica Backup on the desktop.
3. Examine the Status window, or close Replica.

What happens in Replica

- Replica starts backing up the objects specified in the job.
- Replica opens a Status window so you can see this job's progress in the queue. Chapter 6, *Status*, includes information on the Status window.

Full Replication

Suppose you have to be prepared for any crisis. Every day you want a complete replication that you can use to recover everything possible in the event of a disaster. You also want to be able to recover individual volumes and files as needed. You want one replication each week kept for several weeks. Other tapes can be reused weekly.

You'll accept most of the default options, but you want DOFIRST.NCF processed just before the job begins.

How to do it

1. Start Replica.
2. Click REPLICATE, if necessary, to open the Replica window.
3. On the Source tab, choose the server.
4. On the Schedule tab, set one day to Weekly and the rest to Daily.
5. On the Destination tab, choose the destination device, if necessary.
6. On the Options tab, check **Run NetWare NCF file** and type DOFIRST.NCF in the **Before:** field.
7. Click Submit and enter a job name.

What happens in Replica

- Replica asks for a job name so you can recognize your job in status reports.
- Replica opens a Status window so you can see job's progress in the queue. Chapter 6, *Status*, includes full information on the Status window.
- At the appropriate time, Replica sends data to the destination tape.

Using the replicated server tape

- If you have the Single Server version, recover the entire server from a disaster. See Chapter 4, *Disaster Recovery*, for details.
- Recover security or any volume from the server using Replica Recover. See Chapter 5, *Recovering*, for details.
- Access any individual file after Replica mounts the tape. See Chapter 5, *Recovering*, for details.

Replicating Volumes to Tape

Suppose you want several of your server volumes backed up to tape for safe offsite storage.

How to do it

1. Start Replica.
2. Click REPLICATE, if necessary, to open the Replica window.
3. Choose the volumes you want replicated as the source.
   You can also choose the NDS or Bindery security object.
4. Choose **Immediate** or set the schedule.
   Make sure the right tape is inserted before each job begins.
5. Choose the current tape as the destination.
6. Click Start or Submit and enter a job name when asked.

What happens in Replica

- Replica asks for a job name so you can recognize your job in status reports.
- Replica opens a Status window so you can see this job's progress in the queue. Chapter 6, *Status*, includes information on the Status window.
- At the appropriate time, Replica sends data to the destination tape.

Using the volume replication tape

- Recover any volume on the server from the tape using Replica Recover. Chapter 5, *Recovering*, includes the details.
- Access any file after Replica mounts the tape. Chapter 5, *Recovering*, includes the details.

Replicating One Volume to Disk

Recovering volumes from tape, even with a high-speed system such as Replica, takes time. Users may need immediate access to their data, even when a server is in trouble. Replica can copy a server volume to a disk (volume or free space) located on the Host Replica Server, where it is available immediately.

You'll have to process each volume individually.

How to do it

1. Start Replica.
2. Click REPLICATE, if necessary, to open the Replicate window.
3. Choose the volume you want replicated as the source.
4. Choose **Immediate** or set the schedule.
5. Choose one of the available disk volumes or free space as the destination.

   Replica lists all disk volumes and free space that are at least as large as the source volume. If you choose a mounted volume, Replica dismounts it before replicating data. If you choose free space, Replica creates a volume the same size as the source volume.
6. Click Start or Submit and enter a job name when asked.

What happens in Replica

- Replica asks for a job name so you can recognize the job in messages and reports.
- Replica opens a Status window so you can see this job's progress in the queue. Chapter 6, *Status*, includes full information on the Status window.
- At the appropriate time, Replica dismounts the destination disk, if necessary, and writes data to it.

Using the replicated disk

- Mount it and access data just as with any other NetWare volume.

Multiple-Job Replication

Suppose your replication needs are more complex. You want a full replication on Saturday morning at 5 a.m. Every weekday at 6 p.m., you want the SYS volume and two of your server's data volumes replicated to

disk for quick access. And every weekday at 5 a.m. you want a third data volume (named CUSTS) replicated to tape and automatically mounted after it is ready. You submit five separate jobs that automatically protect your data the way you want.

Job 1: Full replication

1. Choose the server as the source.
2. Schedule Weekly for Saturday and set the time at 5 a.m. Choose None for each other day.
3. Click Submit and enter a job name when asked.

Jobs 2, 3, and 4: Daily replications to disk

1. For the source, choose SYS or a data volume.
2. Schedule Daily for Mon, Tues, Wed, Thurs, and Fri. Choose None for each other day. Set the time at 6 p.m.
3. Select the appropriate disk for the destination.
4. Click Submit and enter a job name when asked.
5. Do the same for the other volumes.

Jobs 5: Daily replication to tape and automatic mounting

1. For the source, choose the server, then the CUSTS volume.
2. Schedule Daily for Mon, Tues, Wed, Thurs, and Fri. Choose None for each other day. Set the time at 5 a.m.
3. Select the appropriate disk for the destination.
4. On the Options tab, check **Mount tape volume when job completes** and type CUSTS in the text field.
5. Click Submit and enter a job name when asked.

Replica schedules and runs each job independently. Together, they produce a protection system that meets your needs.

4 REPLICA Disaster Recovery

IMPORTANT! This chapter applies only to the Single Server version. The Backup version does not include Disaster Recovery.

Replica supports two Disaster Recovery methods. If your tape drive and system support the latest technology, use HP One-Button Disaster Recovery (OBDR). Otherwise use standard Replica Disaster Recovery.

Using HP One-Button Disaster Recovery	See page
1. Do regular full backups with OBDR session enabled.	
2. To recover, turn off the server and tape drive, then restart them while pressing the tape drive's Eject button.	48
3. Follow the instructions on the screen.	

For standard Disaster Recovery, you have to create Disaster Recovery disks before the disaster occurs, then use them to restart the server.

Creating Disaster Recovery disks	See page
1. At the Administrative PC, start Replica.	
2. Click UTILITIES, then choose the Disaster Recovery tab.	49
3. Choose the server and then click Create Disks.	49

Recovering a Host Replica Server	See page
1. Insert the full server replication tape into the Host Replica Server's tape drive.	
2. Restart the crashed server with its Disaster Recovery Disk 1; insert other disks as needed.	50
3. Let Replica recover the Host Replica Server's data automatically	

The Disaster Recovery Process

Disasters come in many forms. A server disaster may be caused by fire, flood, hurricane, or earthquake, as well as carelessness and deliberate sabotage. Disasters can also occur as part of the natural aging process of hard disk drives and other hardware involved.

Replica can recover your server's contents after it is corrupted or destroyed. You can even recover to a new or different server, it it has a supported HP tape device and if you have a replication tape containing at least the server's essential components.

IMPORTANT! *After performing any kind of Disaster Recovery, you will not be able to immediately recover volumes or files from that job or later jobs on the same tape. If you find it necessary, you can use Replica Utilities to Import the tape into the Replica databases. Then you'll be able to use the tape as before.*

How Replica handles Disaster Recovery depends on the type of tape drive you have and what your system supports.

- Many HP tape drives support HP One-Button Disaster Recovery (OBDR). If your system supports it as well, continue with this section. It shows what you have to do in detail, as well as how to tell if your system supports this simple, elegant method.
- All HP tape drives support standard Replica Disaster Recovery. The following section (see page 49) shows how to prepare for and use that method.

IMPORTANT! *On the next page, you'll see how to tell if your tape device and system support HP One-Button Disaster Recovery. If you are still not sure, create a set of standard Replica Disaster Recovery disks as described on page 49 to ensure you will be able to recover your server in case of a disaster.*

OBDR

HP One-Button Disaster Recovery

This is the most convenient way to recover a server.

To prepare for disasters:

- Just do regular full backups.

For HP One-Button Disaster Recovery:

- Power down the server and tape drive.

Internal drive:

- Press tape eject button and turn on server.
- Release the eject button and immediately insert the recovery tape.
- Follow the directions on the screen.

External drive:

- Press tape eject button and turn on the tape drive.
- Release the eject button and turn on the server.
- Immediately insert the recovery tape.
- Follow the directions on the screen.

OBDR

Does Your Tape Device Support OBDR?

The easiest way to tell if your tape device supports HP One-Button Disaster Recovery is to check it out in Replica. In the Replicate window,

1. On the Source tab, choose anything.
2. On the Destination tab, choose the tape device.
3. On the Options tab, see if the **Write One-Button D/R session** field is available.

If the field is available, the tape device supports OBDR.

Can Your System Support OBDR?

Some systems are not equipped to handle HP One-Button Disaster Recovery, even with a supported HP tape drive. They cannot handle a bootable CD-ROM or a tape drive that can use this feature.

To tell if your system can use OBDR

1. Create a full backup and leave the tape in the drive. See Chapter 3, *Replicating*, for details.
2. Turn the server and the tape drive completely off.
3. Press the tape eject button and turn on the tape drive.

   This causes the tape drive to initialize in OBDR mode.
4. Release the eject button and start the server. Watch the boot prompts on the screen.

   If the system supports OBDR, it will boot from the tape drive and NOT from the hard disk.
5. At the first full information screen, you are asked if you want to continue. You are doing a trial run, so press N.

   This cancels OBDR mode and restores the tape drive to normal usage.
6. Restart the server normally.

If your system does not support OBDR, use Replica's standard Disaster Recovery features. See page 49 for details.

Preparing for HP OBDR

By default, every full backup to a tape drive that supports OBDR includes the information Replica needs to perform HP One-Button Disaster Recovery. If you want to turn it off, go to the Replicate Options tab and uncheck **Write One-Button D/R session**.

Performing HP One-Button Disaster Recovery

1. Turn the server and the tape drive completely off.
2. Hold down the eject button on the tape drive while you restart the server and the tape drive. If you have an external drive, turn on the tape drive while pressing eject, then immediately turn on the server.

   This causes the tape drive to start up in OBDR mode.

3. Insert a recent full backup tape.

   The server will boot from the tape drive and NOT from the hard disk.

4. Follow the instructions on the screen.

Standard Disaster Recovery

Replica's standard Disaster Recovery process starts when you use Replica Disaster Recovery floppy disks to restart the server. Host Replica Server recovery is automatic. The Disaster Recovery disks start the process and use the tape in the tape drive.

Preparing for Standard Disaster Recovery

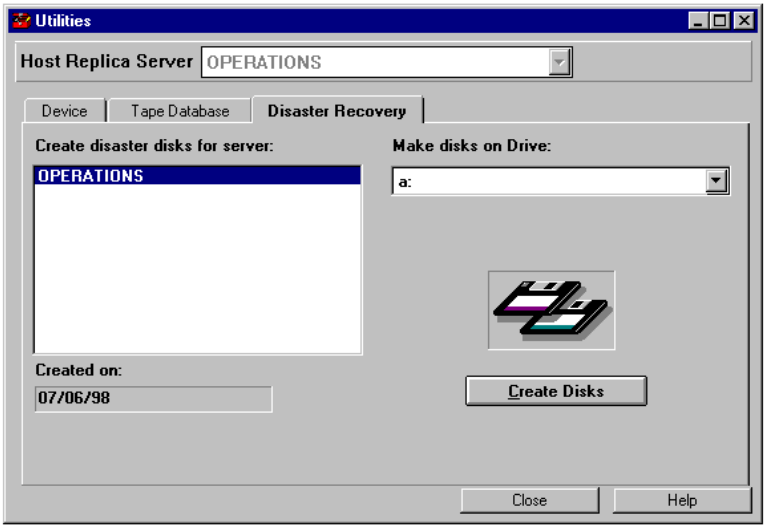
Before you can use the Replica Disaster Recovery process, you must be prepared with:

- A set of Replica Disaster Recovery floppy disks.
- A complete server replication to tape.
  (See Chapter 3, *Replicating*, for details.)

Creating Disaster Recovery Disks

You create Replica Disaster Recovery disks using the Utilities operation and the Disaster Recovery tab.

Note: *You'll need two or three floppy disks. Replica will format them for you.*



To create Disaster Recovery floppy disks

1. Start Replica in Windows.
2. Click UTILITIES in the toolbar.

3. Choose the Disaster Recovery tab.
4. Choose a floppy disk drive.

5. Click Create Disks.
6. Follow the directions on the screen.

Label your floppy disks and store them securely.

IMPORTANT! *Recovering a server rebuilds the entire system. Any existing partition and volume information is destroyed, then recovered from the tape using the partition data there.*

Recovering from a Disaster

When the inevitable occurs, you are ready if you created Disaster Recovery disks for your server and replicated the entire server regularly. Replica can do a full disaster recovery to the time of the last full server

backup. You must recover each server separately, just as you replicated them separately.

This section shows you how to use Disaster Recovery disks and a full server tape replication to completely recover a server.

To recover a Host Replica Server

1. Insert the tape containing the replicated data into the device. Replica uses that tape to recover the server based on the system data on the tape, including:
    - Partition data
    - Non-NetWare partitions
    - NetWare volumes
    - Security (NDS or Bindery)

2. Restart the server using Replica Disaster Recovery Disk 1 at the NetWare console.
3. Insert additional disks when prompted.

That's all there is to it. You'll just have to tell Replica to continue.

Note: *If the Host Replica Server has a non-NetWare proprietary utility partition, as Hewlett-Packard and Compaq servers do, Replica offers to recover it. If you are recovering the same server you backed up, let Replica recover the partition. If you are recovering to a different server, use the manufacturer's instructions to rebuild the proprietary partition after Replica is finished.*

Standard Disaster Recovery Example

This section shows how to use Disaster Recovery disks and a full Host Replica Server replication tape to completely recover the server from disaster.

If you created Disaster Recovery disks and replicated the entire Host Replica Server regularly, Replica can do a full disaster recovery to the time of the last full server backup in case of a server disaster. You must recover each server separately, just as you replicated them separately.

How to do it

1. Insert the full Host Replica Server replication tape into its tape drive.

2. Restart the server using Replica Disaster Recovery Disk 1. Insert additional disks when asked.
3. If necessary, choose which tape drive to use.

Note: *You can use the same technique to recover the essential components of a server from a tape that contains them.*

What happens in Replica

- Replica restarts DOS, the NetWare server, and Replica from the Disaster Recovery disks. Then it uses the current tape.

Replica recovers the server and its volumes to their original locations.

5 REPLICA Recovering

You use Replica to recover servers, volumes, and files. This chapter explains the details of recovering files and volumes. This page gives the essentials.

Recovering files or directories	See page
 1. Click Restore Files or start Replica and click MOUNT in the toolbar.	
 2. Choose the or volume and tape.	55
 3. Click the Mount button.	56
4. If necessary, map a drive letter to the volume.	

Recovering a volume or security	See page
1. Start Replica.	
 2. Click RECOVER.	
 3. Choose the object and tape.	58
 4. Choose where to recover the data.	59
 5. Click Start to recover the volume or security immediately.	

Recovering Objects

The Replica Recover operation can recover:

- The system volume.
- Any data volume.
- Security (NDS or Bindery)

The Replica Mount operation can recover:

- Any file.
- Any directory on a replicated tape.

You tell Replica what you want to recover by specifying the storage management object (security or volume) and the tape. Then you tell Replica where to recover it. If you choose a different location than the original, it must be at least as large as the original object.

Once you start Recover, Replica opens the Status window so you can see where the job is in the queue. Chapter 6, *Status*, explains how to use the Status window.

Note: *Replica completely overwrites security or a volume during recovery. The previous object is replaced.*

The process of recovering individual files from a tape is similar. However, instead of telling Replica to start Recover, you tell it to Mount a particular volume on the tape as a NetWare volume. If necessary, you can map it to a drive letter after the volume is mounted.

Then you or any user can recover individual files or entire directories from any replicated tape volume that is contained entirely on a single tape. The mounted tape volume retains the same login security rights as the original replicated volume.

Using the Replica Restore Icon

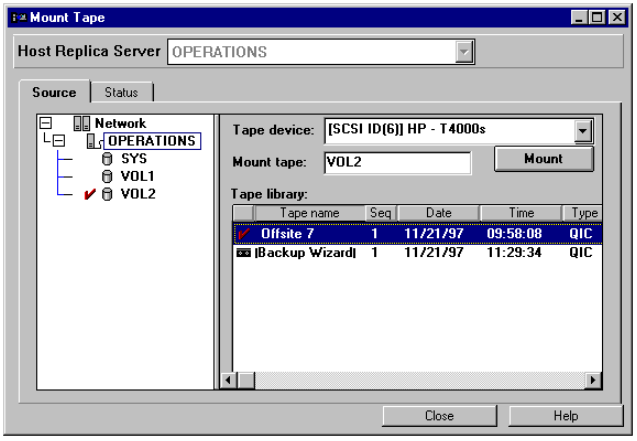
The easiest way to restore files is through the Restore Files desktop icon. Just click and Replica starts automatically for you to choose a volume for mounting from the tape in the device. Click Mount Tape and the volume you selected is mounted for your use through NetWork Neighborhood.

Once Replica is opened, you can use it for any other functions as well.

Recovering Files and Directories

More often than recovering a complete volume, you'll be asked to help recover an individual file, a directory, or a collection of files and directories. Replica provides Direct Media Access technology to make these recoveries easy. Just tell Replica to mount the tape containing the data as a NetWare volume.

Note: *If the replication job included the* ***Mount tape volume after replication*** *option, the tape you specified is mounted automatically.*



You or any user can access the data needed through NetWork Neighborhood; you can map a drive letter to the mounted volume if you want. Replica maintains the volume's original security rights. If NetWare doesn't have enough server memory available for the volume's cache, Replica won't mount the tape as a NetWare volume.

Note: *If you clicked Restore Files on the desktop, the tape in the drive is selected. Just choose a volume from the network list.*

To use Direct Media Access through Replica

1. On the Replica toolbar, click MOUNT.

2. On the Source tab, choose the volume and specify the tape that contains the data.

   Make sure the tape is inserted in the current device.

3. In the **Mount tape** field, type the name to be used for the mounted volume. Replica adds a caret (^) at the beginning of the name you supply.

4. Click the Mount button.

   The button name changes to Dismount. When mounting is complete, you can access files on the volume through Network Neighborhood.

5. You can map a drive letter to the volume using Windows Explorer or another utility. Use any application to access the files you want from the read-only volume.

To check the Status of the tape volume

1. Choose the Status tab on the Mount Tape window.

   The Mount Status field changes to *Mounted* when the volume is ready.

2. Use the Status window for more information.

Note: *The Status tab affects this mounted tape only until you close the Mount Tape window or end your Replica session. After that, use the Status window to dismount the tape.*

Accessing the Mounted Tape

Any network user can do this

Users at any PC can access data from the read-only tape volume. They can copy files, even entire directories to their hard disks or other network locations. They can even view files or execute programs directly from the tape. The same NetWare security that applied to the original replicated volume applies to the mounted tape.

In Windows 95 you can access the mounted tape volume directly through Network Neighborhood without mapping it.

Note: *Replica includes a special console NetWare command you can use for efficient copying of files from the mounted tape. Directions for using REPCOPY are included in Chapter 8,* Console Operations.

Recovering a Volume

Volumes are available in the Recover server list if they have been previously replicated to the current Host Replica Server; you can't use Replica to recover data that it didn't process. To recover data to a Host Replica Server from a tape replicated on a different Host Replica Server, first import the tape into the database using the Replica Device utility. Chapter 7 includes the details.

IMPORTANT! *To recover the SYS volume to its original location, you'll have to work at the NetWare console. See "Recovering the SYS Volume" in Chapter 8,* Console Operations*, for details.*

To recover a volume

1. Start Replica and click RECOVER.

2. On the Source tab, choose the object to recover.
3. Choose the tape that contains the replicated object.

   Make sure the tape is in the device. Replica won't start recovery unless the tape you selected is available when you start.

4. On the Destination tab, choose the destination.

   It need not be the same as the original.

5. Click Start.

What happens in Replica

- Replica opens the Status window.
- When the device is available, Replica starts the recovery.

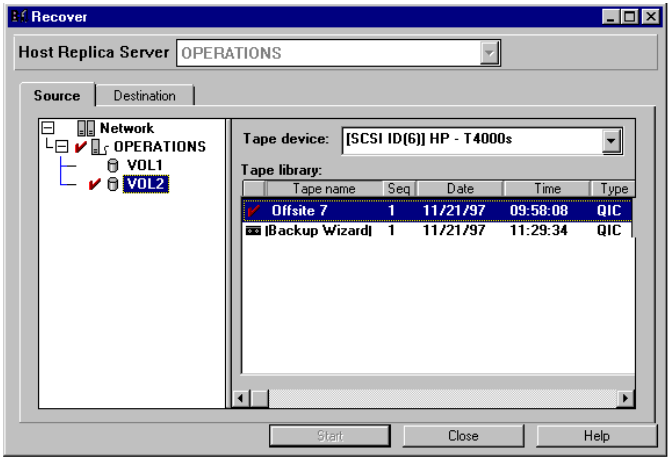
- If the tape you selected is not loaded, Replica cannot recover the volume. Check the History tab in the Status window to see if the job completed successfully. Chapter 6, *Status*, has the details.

Choosing the Source

Source

You choose what to recover on the Source tab. You can choose any listed object, such as a NetWare volume or NetWare security (NDS or Bindery).

After you choose an object to recover, Replica checks its tape database and lists all the tapes that include a replication of the selected object. Highlight the tape from which you want Replica to recover data before continuing to the Destination tab. You'll have to insert that tape before starting the job.



To ...	Do this ....
Recover from a specific server	Choose the appropriate Host Replica Server when logging in.
Recover from a specific tape	Choose the object(s) from the list, and click the tape in the **Tape library** list. Load the tape in the device.

To ...	Do this ....
Recover a server's security	Choose NDS or Bindery. Then select a tape that contains it and specify the destination.

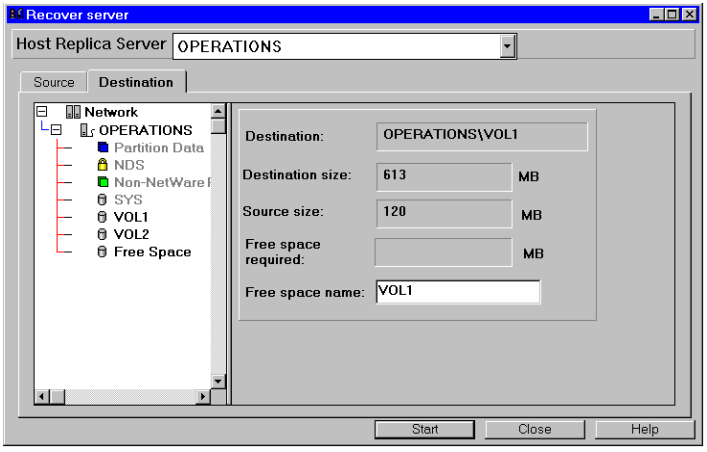
If you are sure a specific tape exists but it doesn't appear in the list, here are some things you can do to locate it:

- Change to a different **Tape device** if the data was replicated on a different supported device.
- Import a tape if data was replicated on a different tape server. Chapter 7, *Utilities*, includes details.
- Recover Replica databases if they have been damaged on the current server. Chapter 9, *Troubleshooting*, includes details.

Choosing the Destination

Destination

You must tell Replica where to put the object being recovered. The server list on the Destination tab lets you make your choices. You won't be able to choose the SYS volume or any volume or free space that is smaller than the original replicated volume. Once Replica knows the destination, the size information appears on the screen.



- Replica recovers the object to the location you specify. It overwrites any data currently on that volume. If the source includes more than one data volume, you must recover them to their original locations.
- If you choose a mounted disk volume, Replica dismounts it for the recovery process, then mounts it again. Disk volumes are completely overwritten during recovery.
- The SYS volume is not available as a destination. To recover SYS to its original location, you must work from the NetWare console. See "Recovering the SYS Volume" in Chapter 8, *Console Operations*, for details.
- If you choose free space, the **Free Space name** field is available. Replica creates a volume with the unique name you supply, but doesn't mount it for you.

To ...	Do this ....
Recover a volume or other server object	Choose the volume as the source, select the tape, then choose where to put it on the Destination tab.
Recover a volume to a new volume created from free space	Choose Free Space as the destination. Provide a unique name in the **Free Space name** field.

Note: *If the recovered data was replicated without the* ***Include deleted files*** *field checked, and you expect to use Salvage to recover files that are deleted later from the volume, you must use Purge right after recovery to tell NetWare that previously deleted files are not available.*

Recovery Examples

This section shows examples of recovery jobs.

- **Recovering a single file from tape** shows how to mount a tape for use as a NetWare volume.
- **Recovering a volume from tape** shows how to use a full server or volume replication tape to recover a volume.

Recovering a Single File from Tape

A departing employee seriously damaged the company's support database (MASSIVE.DB). You need to recover it from last week's full server replication.

Restore

How to make it available

1. Click Replica Restore on the Desktop.

   OR

   Start Replica and then click MOUNT on the Replica toolbar.

2. On the Source tab, choose the volume that contains the file to be recovered.
3. Choose the tape device and tape that contain the volume.
4. Accept the default volume name or type a new one in the **Mount tape** field.

   Replica adds ^ to the beginning of the name; SYS becomes ^SYS.

5. Click the Mount button.

   When the volume is mounted, you can map the volume to a drive letter, if necessary, and access the files.

What happens in Replica

- Replica mounts the tape session as a write-protected NetWare volume and maps it to the drive letter you chose.
- The job appears as *Mounting* in the Device Status tab of the Status window. As soon as the volume is ready for access, the status changes to *Mounted*. (The status values also appear in the Status tab of the Mount Tape window.)

- The tape remains available until you tell Replica to dismount it. If you leave the Mount Tape window open, you can click Dismount here. Otherwise, open the Status window, select the *Mounted* job, and click Dismount to free up the tape device for other jobs.

What you can do with mounted tape

1. Map any available drive letter to it using any tool.
2. Copy MASSIVE.DB to the volume that needs it.

Recovering a Volume from Tape

Suppose a volume on the server is corrupt. You can recover it from any tape replication that includes the volume, whether it is a complete server replication or any other job that included that volume.

How to recover a volume

1. Delete the old or corrupted volume, if necessary.
2. Click RECOVER on the Replica toolbar.

3. Choose the volume on the Source tab.
4. Choose the tape from which to recover it.

5. Choose the location where you want it on the Destination tab.

6. Click Start to run the recover job.

What happens in Replica

- Replica starts the recovery immediately if the tape device is available.
- Replica opens a Status window so you can see how this Recovery job appears in the job list. Chapter 6, *Status*, includes full information on the Status window.
- When the data is recovered, the job leaves the job list and appears in the History log as completed.

6 REPLICA Status

Whenever you start or submit a replication or recovery job, Replica opens the Status window so you can see how the job is progressing. You can monitor and control the status of Replica jobs at any time. This chapter explains the details. This page shows the essentials.

Job list for tape device

See page 64

1. Start Replica and log into a Host Replica Server.
2. Click STATUS.
3. Choose the device.
4. Change status or dismount tape.

Details for current job

See page 65

- On the job list screen, click Progress.

Information on past jobs and errors

See page

1. Start Replica and log into a Host Replica Server.
2. Click STATUS.
3. Choose the device.
4. Click the History tab. 66

   Or

   Click the Error Log tab. 68

Tracking the Jobs

Replica keeps track of its replication and recovery jobs. Replica Status lets you see where jobs are in each device's job list. You can also examine details about the running job or check out the history of jobs run on any Host Replica Server.

Device Status

Only one job is *Active* at a time—the replication, recovery, or utility job currently using the device. You can change the **Host Replica Server** field or the **Device** field to see the status of jobs for a different server or device. A job with *Mounting* or *Mounted* status indicates a tape is being used for file recovery. When a device is free, a waiting job may run immediately. Other waiting jobs await the scheduled time. You can put any waiting job on hold until you are ready.

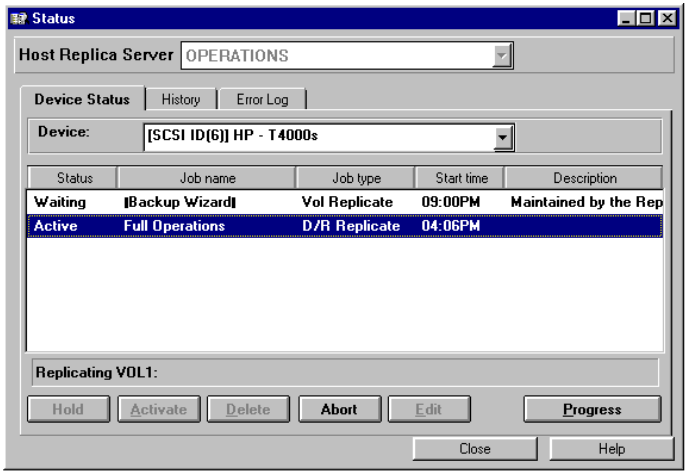
IMPORTANT! *If a job is scheduled with* ***Dismount tape before replication*** *checked, any* Mounted *tape on that device is automatically dismounted when time comes to run that job. The new job will run using that tape unless* ***Verify tape labels*** *is checked. Choose* ***Append*** *to avoid losing data.*

The status listing includes some utility jobs, such as Import tape, as well as replication or recovery jobs started at the server console. Such jobs are never scheduled, but run as soon as the device is available.

The Device Status tab shows enough information about each job in the queue so that you can identify it. Jobs remain in the list until they are completed or removed from the system. The Progress button gives you information about the *Active* job.

You can edit any replication jobs that are *Waiting* or *Holding*. When you click Edit, Replica shows you the Replicate window for the selected job. You can change values on any of the tabs. When you are ready, click the Resubmit button to place the job back in the queue. If you have changed the job name, Replica creates a new job; you can delete the original one if you wish.

Note: *To change jobs defined through the Backup Configuration Wizard, run the Wizard again. You can't edit jobs submitted through the NetWare console. They always run immediately.*



If the job status is ...	You can use ...
Active	Abort
Mounting...	Abort
Mounted	Dismount or map a drive letter to it.
Listing tape	Abort
Testing tape	Abort
Scanning media	Abort
Waiting	Edit, Hold, or Delete
Holding	Edit, Activate, or Delete

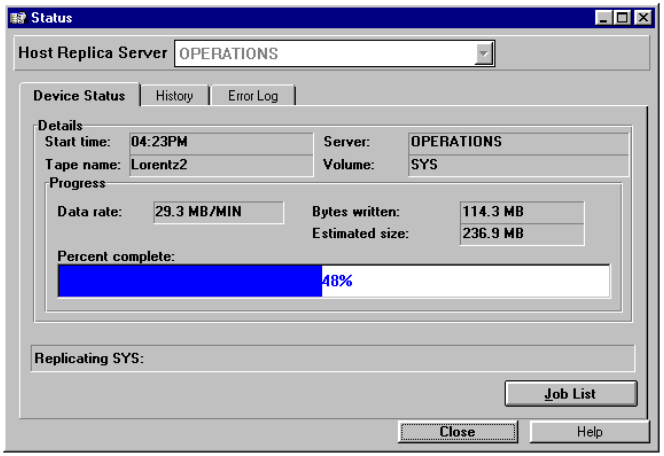
Note: *To change a recovery job, delete it, then set up a new recovery operation.*

The message in the status bar in the window always shows the current operation, Replicating VOL1 in this example.

Progress

Progress

You can get more information on the active replication or recovery job by clicking the Progress button.



Job List

Click Job List to return to the Device Status job list.

History

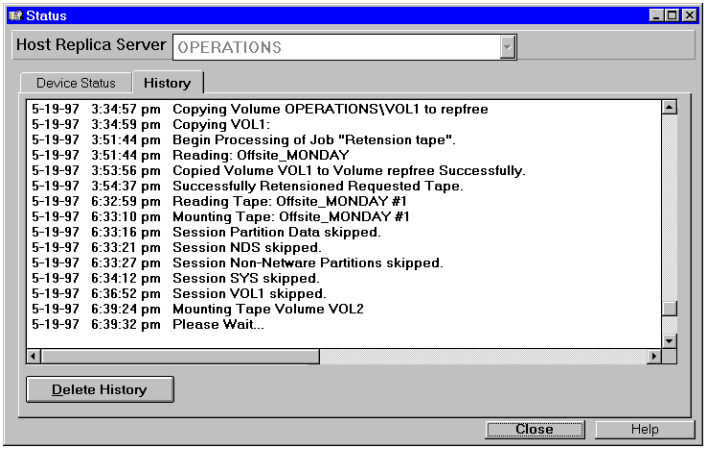
History

Replica maintains a file (REPLICA.LOG) in the Replica directory on the SYS volume of each server. This file contains messages, including the start and stop time, of jobs processed through the Replica application or at the NetWare console. The History tab displays REPLICA.LOG so you can see the progress, past or present, of jobs.

You can track replication and recovery jobs, as well as utilities. You'll see messages about tape label changes, mounting tapes, erasing tapes, and importing tapes, as well as testing, listing, or scanning tapes.

The history log accumulates until you delete it. You can't edit the log or delete individual entries through Replica. The Print command on the File menu lets you print or save the file.

Note: *As REPLICA.LOG gets larger, it requires more NetWare resources to transfer the data to the Administrative PC. Deleting the History frees up the resources for other uses.*



To ...	Do this ...
Save the history log information	Rename REPLICA.LOG in Sys\Replica\Logfile on the server.
Print the history log	Choose Print from the File menu.
Clear the server history log	Delete History

What's in the History Log?

In the history log, you'll find details on every job run on the Host Replica Server. For example, this set of messages resulted from an immediate backup of the SYS volume:

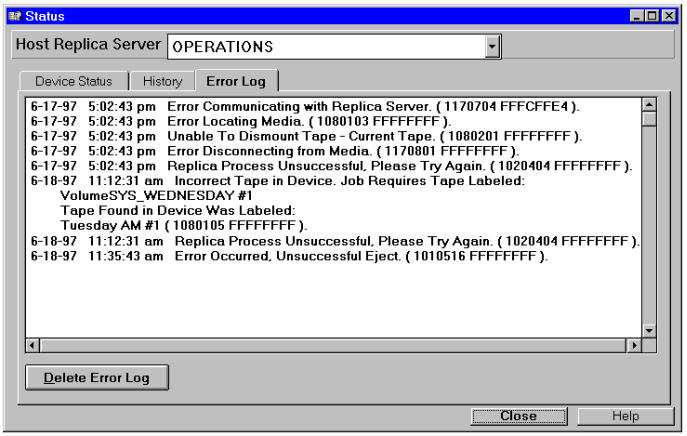
```
5-17-97   12:33:25 pm   Initializing Replica...
5-17-97   12:34:03 pm   Command Line Options are Now Operational
5-17-97   12:47:51 pm   Begin Processing of Job "Morning SYS".
5-17-97   12:47:51 pm   Reading: Current Tape
5-17-97   12:48:00 pm   Mounting Tape: Daily SYS #1
5-17-97   12:48:05 pm   Labeling Tape: Daily SYS #1
5-17-97   12:48:34 pm   Analyzing Volume SYS
5-17-97   12:48:36 pm   Open Session: NetWare Volume SYS
5-17-97   12:48:36 pm   Replicating SYS:
5-17-97   12:52:58 pm   Open Session: Replica Database Files
5-17-97   12:52:59 pm   Replicating Replica Database Files:
5-17-97   12:53:06 pm   Replica Process Completed Successfully.
5-17-97   12:53:06 pm   Dismounting Tape: Daily SYS #1
5-17-97   12:53:06 pm   Total MBytes Processed 68.8
```

Tip! *The History log is your primary tool for troubleshooting Replica. It indicates whether or not jobs complete successfully.*

Error Log

Error Log

Replica maintains ERROR.LOG in the Replica\Logfile directory on the SYS volume of each server. This file contains error messages that Replica has sent to the NetWare console; it may also contain messages generated by commands such as REPLICA STOP ACTIVITY. The Error Log tab displays the messages and lets you print or delete the file.



To ...	Do this ...
Save the error log information	Rename ERROR.LOG in Sys\Replica\Logfile on the server.
Print the error log	Choose Print from the File menu.
Clear the error log	Delete Error Log

The error log contains error messages sent by REPLICA.NLM; many of these also appear in the history. It does not contain NetWare messages.

Note: *As ERROR.LOG gets larger, it requires more NetWare resources to transfer the data to the Administrative PC. Deleting the Error Log frees up the resources for other uses.*

SNMP SUPPORT

If you have TapeAlert-supported hardware and HP OpenView installed, you'll see SNMP messages at the management console.

7 REPLICA Utilities

The Replica utilities help you manage the tapes in use and control your tape devices. This chapter explains the details. This page gives the essentials.

Managing Replica tapes

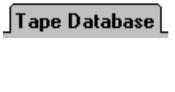
See page 70

1. Start Replica and click UTILITIES.
2. Choose the Device tab and select the device.
3. Select the tape and click Eject, Erase, Label, Retension, or Import Tape.

Managing the tape database

See page 72

1. Start Replica if necessary.
2. Click UTILITIES, then choose the Tape Database tab.
3. Select a device and tape, then click Delete or Details.



Single Server version only, without OBDR support

Creating Disaster Recovery Disks

See page 74

1. Click UTILITIES, then choose the Disaster Recovery tab.
2. Click Create Disks.
3. See Chapter 4, *Disaster Recovery*, for full details.

Replica Utilities

Replica provides several utilities that make it easy to maintain your system. You can manage Replica databases and control tapes on tape drives.

Replica Databases

Replica maintains a set of database files for (and on) each server. It uses them to maintain information about the server and how it has used Replica. One database tracks scheduled jobs. Another database keeps track of tapes, so Replica knows what tapes are available, their names, what is stored on each, when it was placed there, even how much each tape has been used. Replica maintains server information, so it knows at all times what parts of the server have been replicated and what jobs are stored on each replication tape. In addition, it knows what recovery has been done and what utilities have been run.

Replica saves all the current databases for that server as part of each replication job. So each replication includes the Replica databases for the entire server as they were at the time the job was run.

If the databases on the server are damaged, Replica lets you recover them from tape at the NetWare console. See Chapter 9, *Troubleshooting*, for more information on recovering databases.

Managing Tapes

Replica automatically handles labeling of tapes for scheduled jobs. You can modify default labels for immediate jobs. Modifying the label on a tape makes any data that was on the tape unavailable and removes the old label from the tape database.

Changing tape labels

- You can label the current tape, whether it is old or new, from the Utilities Device tab.
- When preparing an immediate job, you can choose New Tape on the Replicate Destination tab to relabel the current tape.

Changing tapes in the database

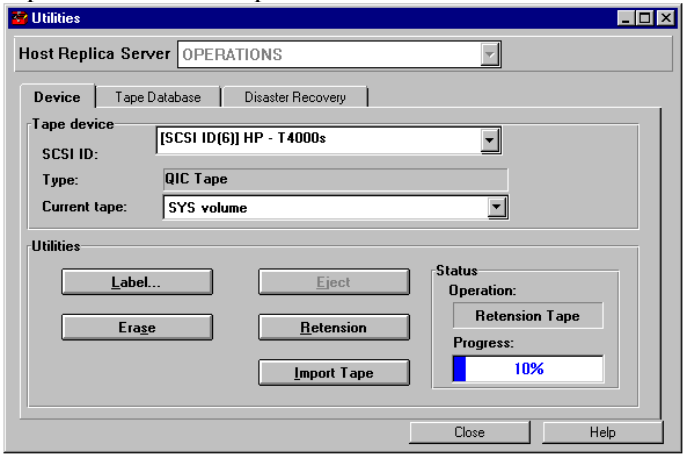
- Labeling a tape adds it to the tape database. If the tape was in the database under its former name, that entry is removed.
- You can add a tape label to the database by importing the tape through the Utilities Device tab (Import Tape button).
- To remove a tape from the Replica tape database, delete it through the Utilities Tape Databases tab (Delete button).

Tape rotation

- You set your schedule and rotation through the Replicate Schedule tab. Each replication from the same scheduled job is done exactly the same way.
- There is no difference between a Daily and Weekly replication except for the tape label and the rotation plan. The latest tape created contains your latest data.

Device

The Device tab lets you manage tape devices attached to the current Host Replica Server and all tapes for those devices.



The **SCSI ID** field shows the current tape drive. If you have more than one tape device, you can choose another.

The **Current Tape** field shows the name of the tape currently inserted in the current tape drive.

The buttons let you get information and perform operations on the current tape. The Status fields tell you about the operation in progress.

- **Operation** shows which task is currently running on the device or was most recently completed. It shows replication and recovery operations at the console as well.
- **Progress** shows how much of the operation is complete for processes that can be measured.

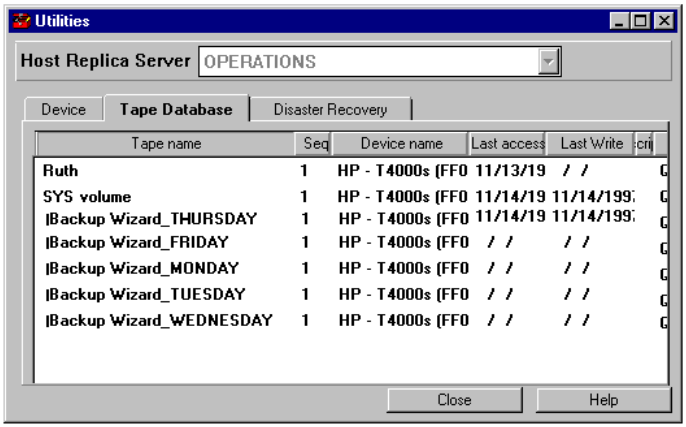
To ...	Use ...
Change or assign a tape label for the current tape. Labeling a tape erases the previous contents and the old database entry.	
Erase the current tape completely. This also removes the tape from the database.	
Eject the current tape. Replica will dismount it first, if necessary. Will not be available if device requires physical eject.	
Add the loaded tape (perhaps created on a different Replica server) to the database on the current server so it appears in the tape list. If you have trouble accessing a file from a tape, import the tape and try again. Importing the tape replaces any earlier tape description with "Tape Imported into Replica System".	
Adjust the tape spool tension on a QIC (Quarter-Inch Cartridge) tape.	

Tape Database

Replica maintains a database of tapes used to replicate data on each device on each server. Each time Replica runs a replication job, it copies its current databases to the tape so that each tape contains this information.

Tape Database

The Tape Database tab lets you examine the tape database on the Host Replica Server. You can delete any tape no longer in use or get additional details, including the type of replication and how much the tape has been used since being entered into the database.



To ...	Do this ...
Remove a tape from the database	Highlight it, then Delete
See usage information for a tape	Highlight it, then Tape Details
Print the current tape database	Use Print from the File menu.

Remove tapes from the database if they become damaged or lost. If you remove a tape in error, you can insert the tape into the device, then use Import Tape on the Device tab to enter it into the tape database again. If you erase a tape through the Device tab, Replica also removes it from the tape database.

Note: *If the Replica databases become damaged, you can recover them from any replication tape, using the REPLICA RECOVER DATABASES command at the NetWare console. Chapter 8,* Console Operations*, explains how to use a Replica load option to make this command available. Chapter 9,* Troubleshooting*, explains how to recover the databases.*

Disaster Recovery

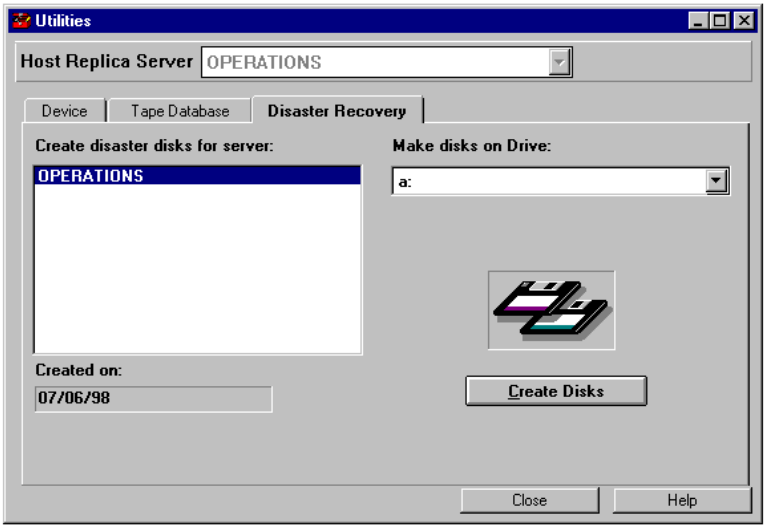
Disaster Recovery

Replica Backup for HP SureStore Tape does not support Disaster Recovery. You'll see a message about upgrading if you click on the Disaster Recovery tab. Replica Single Server for HP SureStore Tape supports two types of Disaster Recovery.

OBDR

If your tape device and system support HP One-Button Disaster Recovery, you won't ever need Disaster Recovery disks. Just follow the instructions in Chapter 4 and do regular full backups.

If you need standard Disaster Recovery, however, use this tab to create the needed Disaster Recovery disks. You use these disks to restart a server after a disaster strikes. Replica then continues to recover the entire server using the tape in the current device.



See Chapter 4, *Disaster Recovery*, for full details.

IMPORTANT! *Store a set of your Replica Disaster Recovery disks onsite and another offsite! There are many kinds of disasters.*

8 REPLICA Console Operations

If you prefer to work at the Host Replica Server's NetWare console, you can control the major Replica operations with console commands.

Replica Command	Brief Description
REPLICA SECURITY [TO *tape-label*]	Replicate server security
REPLICA SERVER [TO *tape-label*]	Replicate all possible objects
REPLICA *volume* [TO *tape-label*]	Replicate a single volume
REPLICA COPY [*server*\]*volume1* TO *volume2*	Copy volume to another disk
REPLICA DISMOUNT ^*volume*	Dismount a tape volume
REPLICA [HELP]	Summary of commands
REPLICA IMPORT	Import tape into database
REPLICA LIST TAPE	List contents of current tape
REPLICA MONITOR	Display device queue status
REPLICA MOUNT *volume1* [USING *volume2*]	Mount a tape for file access
REPLICA RECOVER DATABASES	Recover Replica databases
REPLICA RECOVER SECURITY	Recover server security
REPLICA RECOVER v*olume1* [TO *volume2*]	Recover volume from tape
REPLICA SCAN FOR NEW DEVICES	Scan SCSI bus for devices
REPLICA STOP ACTIVITY	Stop current running job
REPLICA UTILITIES	Label, eject, erase, unconditional format, or retension tape List tape labels or test tapes

Loading Replica

If Replica startup commands are in AUTOEXEC.NCF, Replica loads whenever you restart your server. If you have to load Replica separately, use these commands:

Host Replica Server

```
REPLOAD
```

or

```
LOAD STACDAI
SCAN FOR NEW DEVICES
LOAD REPLICA
```

REPLICA.NLM has two load options you may wish to use in special situations.

-REMOVEQ Clears the device queues for all tape devices for the server. You might use LOAD REPLICA -REMOVEQ if your job queue is corrupted.

-NOCLIENTS Locks out any client computers (workstations). Lets you use console commands while locking out any client access to the server. Makes the RECOVER DATABASES console command available so you can recover databases from any replicated tape. Replica won't see this server from an Administrative PC.

If you will use HP OpenView, use REP_SNMP instead at your Host Replica Server or use these commands:

```
LOAD STACDAI
SCAN FOR NEW DEVICES
LOAD RE_AGENT
LOAD STACSDI -SNMP
LOAD REPLICA
```

To unload Replica, use REP_STOP.

Copying from a Mounted Tape

You can always copy files normally at the Administrative PC from a mounted Replica tape if you have access to it. However, Replica provides an additional NLM that you can use at the server if you prefer.

REPCOPY.NLM lets you copy files quickly from a mounted Replica tape to a location on the server's hard disk. REPCOPY parses the tape to locate the sectors that contain each file before copying the file.

Format:

LOAD REPCOPY *source destination*

Examples:

LOAD REPCOPY ^sys:data\bigfile.dbf sys:temp
LOAD REPCOPY ^vol2:apps*.dbf sys:temp

Explanation:

source is the mounted tape. Specify ^*volume:*[*path*][*files*]; may include wildcards.

destination is a server disk. Specify *volume*:[*path*][*file*]; the path must exist.

Directory and file names must be specified in 8.3 (DOS) form. In most cases, any long file names will be copied along with the short names and the data, but the display shows only the 8.3 name. However, if you specify a destination file name, REPCOPY will not copy a long file name for the source file.

If *source* ends with a directory name, then all files in that directory are copied. *Source* can include wildcards in specifying files. If it does, then *destination* must end with a directory name.

Compressed NetWare 4.x File Systems:
Set Convert Compressed to Uncompressed Option to 0 to keep files in a compressed state.

NetWare 3.12 Servers:
REPCOPY uses the Direct File System from Novell. You will need to update any NetWare 3.12 servers with the Novell patch NW3DFS.EXE before loading Repcopy. You can get the file from Novell's web site (www.novell.com).

Recovering the SYS Volume

Because the SYS volume is in active use while a server is running, you can't recover it to the original location from the Administrative PC. You can recover it at the NetWare console, however. In most cases, you'll want to make sure no clients try to access the server during the process.

To recover the SYS volume

1. Insert the tape containing the backed up SYS volume into the tape drive.
2. At the console type these commands:
   UNLOAD REPLICA
   LOAD REPLICA -NOCLIENTS
   REP RECOVER SYS
3. Confirm the tape drive, job, and session if asked. Then let it recover the SYS volume.
4. Restart the server.

The SYS volume is recovered and users can access it.

Selecting a Command

When you control Replica with NetWare console commands, messages prompt you for the tape device if you have more than one. Replica uses the tape currently loaded in that device rather than its tape databases

when you control it from the NetWare console. However, Replica updates the databases when you run a job, so they are up-to-date no matter where you need them.

Note: *Replica console commands let you replicate and recover data for that Host Replica Server only.*

The following tables help you decide what command to use. For the full syntax and effects of Replica commands, see the Reference Section later in this chapter. All commands begin with REPLICA, which you can shorten to REP.

Replicate Operations

Replica uses the tape in the device to replicate the Host Replica Server object immediately. If you don't specify otherwise, data is appended to the tape when you replicate data at the console. If you specify "TO *tape-label*," Replica labels the tape and overwrites any prior data.

To Replicate ...	Use this command ...
All possible objects on the Host Replica Server	REPLICA SERVER [TO *tape-label*]
The security portion of the Host Replica Server (NDS or Bindery)	REPLICA SECURITY [TO *tape-label*]
Any single volume on the Host Replica Server to tape	REPLICA *volume* [TO *tape-label*]

IMPORTANT! *Omit "*TO tape-label" *to append data to the tape. Use "*TO tape-label" *to completely overwrite the tape. Replica asks before relabeling the tape with the name you supply.*

Recovery Operations

Replica uses the tape currently in the device to recover data to the Host Replica Server. Before recovering data, it looks for the replicated volume you requested. Replica skips other volumes on the tape. When Replica

finds a volume of the type you specified, it asks if that is what you want. When you respond with Yes, Replica begins to recover data.

To Recover ...	Use this command ...
This Host Replica Server	Restart with the Disaster Recovery disks and follow the prompts
The security portion of the current server (NDS or Bindery)	REP RECOVER SECURITY
Files by mounting a tape for Direct Media Access	REP MOUNT *volume1* [USING *volume2*] (USING *volume2* caches to *volume2* rather than SYS.)
An entire volume from tape	REP RECOVER *volume1* [TO *volume2*] (Recovers to original volume unless you use "TO *volume2.*")
A volume from another volume or server	REP COPY [*server*\]*volume1* TO *volume2*

Utility and Status Operations

Replica uses the tape currently in the device. Before performing any operation, it asks you if the next volume on the tape that matches what you specified is what you want. When you respond with Yes, Replica completes the requested operation.

To do this ...	Use this command ...
Recover (replace) databases on the Host Replica Server with those on the current tape	REP RECOVER DATABASES (Available only if you specified the -NOCLIENTS option when loading REPLICA.)
Import a tape into the Host Replica Server database, adding to the existing database	REP IMPORT

To do this ...	Use this command ...
Dismount a tape volume that was used for recovering files	REP DISMOUNT ^*volume* (*volume* names the tape volume). It must start with ^.
Check for new tape devices	REP SCAN FOR NEW DEVICES
Display information about objects replicated on the current tape	REP LIST TAPE
Display the status of all device queues	REP MONITOR
Erase, label, or retension a tape	REP UTILITIES
Completely erase and reformat a tape	REP UTILITIES (Choose Unconditional Format)
List the label on the current tape	REP UTILITIES (Choose List Media)
Verify that a tape device is able to replicate and recover data, while completely overwriting a tape	REP UTILITIES (Choose Test Tape)
Stop the currently running session	REP STOP ACTIVITY

Reference Section

This section lists Replica console commands. It includes an explanation of each command, an explicit statement of any assumptions, and how to perform the equivalent operation using the Windows interface, if possible. You can shorten REPLICA to REP if you prefer.

REPLICA SECURITY [TO *tape-label*]

Replicates the security components (NDS or Bindery) of the Host Replica Server to the current tape in the current tape device. If you omit "TO *tape-label*" Replica appends the data. Otherwise it labels the tape as you request (after you confirm) and overwrites any prior data. If no tape is available, Replica notifies you.

Windows Equivalent Use REPLICATE to specify NDS or Bindery as the source, then choose a destination, schedule, and any options.

REPLICA SERVER [TO *tape-label*]

Replicates security and all possible volumes of the Host Replica Server to the current tape. If you omit "TO *tape-label*" Replica appends the data. Otherwise it labels the tape as you request (after you confirm) and overwrites any prior data. If no tape is available, Replica notifies you.

By default, Replica allows full access with 7/24 Live Server Replication.

Windows Equivalent Use REPLICATE to specify the server as the source, then choose a destination, schedule, and any options.

REPLICA volume [TO *tape-label*]

Replicates the named *volume* (such as SYS) on the Host Replica Server to the current tape. If you omit "TO *tape-label*" Replica appends the data. Otherwise it labels the tape as you request (after you confirm) and overwrites any prior data. If no tape is available, Replica notifies you.

By default, Replica allows full access with 7/24 Live Server Replication.

Windows Equivalent Use REPLICATE to specify one volume as the source, then choose a tape destination, schedule, and any options.

REPLICA COPY *volume1* TO *volume2*

Replicates the entire *volume1* to a disk volume or free space on the Host Replica Server that you name as the destination. Include the server name if *volume1* resides on a remote server supported by a Replica Server Agent, rather than on the Host Replica Server. You'll have to log into that server after entering the command.

If *volume2* exists, Replica asks if it should overwrite the data, then dismounts the disk if necessary. If *volume2* doesn't exist, Replica asks if it should create a free space volume if enough free space is available.

Windows Equivalent Use REPLICATE to specify a single volume as the source, then choose a disk destination, schedule, and any options.

REPLICA DISMOUNT ^*volume*

Dismounts the tape volume you name. You must include the ^ symbol, because it is the first character of the mounted tape volume name. If the volume is not mounted at the time, Replica ignores the command.

Windows Equivalent. Use STATUS, select the Mount Tape job, then click Dismount.

REPLICA [HELP]

Displays a brief summary of the console commands.

No exact Windows Equivalent. Use HELP or the Help menu online.

REPLICA IMPORT

Imports database information from the current tape into the Replica database. If no tape is available or the tape is already in the database, Replica ignores the command.

Windows Equivalent Use UTILITIES, Device tab, and the Import Tape button.

REPLICA LIST TAPE

Displays a list of all the objects replicated to the current tape. Replica can recover any of these objects.

Windows Equivalent None. The objects listed at the console are available when you try to recover any of them through Replica.

REPLICA MONITOR

Displays the status of each device queue (the tape device, as well as the disk volumes and free space) on the Host Replica Server.

Windows Equivalent Use STATUS, Device Status tab.

REPLICA MOUNT *volume1* [USING *volume2*]

Mounts the named volume *(volume1)* on the tape in the current tape drive. You can accept or reject any volume of that name on the tape. The mounted volume name begins with the ^ character. Once mounted, you can map any drive letter to it from any workstation and use Direct Media Access.

Replica creates a temporary cache on the SYS volume when it mounts a tape for Direct Media Access. USING *volume2* tells Replica to use the *volume2* for the cache instead. If you don't have much free space on your SYS volume, you may want to use this feature by specifying a different volume as the cache location.

Windows Equivalent Use MOUNT and provide a volume name. Click the Mount Tape button.

REPLICA RECOVER DATABASES

(Available only if you specified the -NOCLIENTS option when loading REPLICA.) Recovers the Replica databases with the databases stored on the current tape. This completely replaces the previous Replica databases on your server. Replica shows you the job name, date, and time for each version of the databases on the tape. You'll be able to confirm from which job on the tape databases are recovered.

For detailed steps on preparing for and recovering databases, see page 94 in Chapter 9, *Troubleshooting*.

After recovering the databases, be sure to unload Replica and load it again without the -NOCLIENTS load option to allow workstation access.

Windows Equivalent None.

REPLICA RECOVER SECURITY

Recovers the NDS or Bindery information on the current tape (after you confirm) to the Host Replica Server. If no tape device or tape is available, Replica notifies you.

Windows Equivalent Use RECOVER and choose NDS or Bindery as the Source and Destination.

REPLICA RECOVER *tape-volume* [TO *target-volume*]

Recovers the data in the named replicated volume on the current tape to the volume of the same name or the named target volume on the Host Replica Server. If you name an existing *target-volume*, Replica dismounts it if necessary, recovers the data, then mounts it if it was mounted originally. If you name a *target-volume* that doesn't exist, Replica creates a volume from free space if it can. If either volume is not available, Replica notifies you. If you don't specify a *target-volume*, Replica recovers data to its original volume.

Windows Equivalent Use RECOVER to specify the source and destination.

REPLICA SCAN FOR NEW DEVICES

Scans the SCSI bus to locate any available tape devices and notifies Replica that they exist. Normally, this occurs when you load Replica. You can use it to update the Replica device list without restarting the server.

No Windows Equivalent.

REPLICA STOP ACTIVITY

Immediately terminates the currently running session on the current tape device. If no session is running on the current device, Replica ignores the command. If you have multiple tape devices, you'll see a list from which to choose.

Windows Equivalent Use STATUS, Device Status tab, select the running job and click Abort.

REPLICA UTILITIES

Lets you manipulate, test, or identify the current tape. You can choose to label, erase, retension, or unconditionally format the current tape.

Choose Test tape to verify that the drive and media can replicate and recover data; Test tape destroys any existing data on the tape. Choose List Media to display the label of the current tape or the labels of all tapes loaded in an autoloader or other tape changer.

Windows Equivalent To erase, label, or retension a tape, use UTILITIES, Device tab. Unconditional format, Test tape, and List media have no Windows equivalent.

9 REPLICA Troubleshooting

Any complex software requires occasional troubleshooting. This chapter can help you solve most problems that may arise while installing or using Replica for HP SureStore Tape.

Replica Memory Requirements

All NLMs require server memory. Replica requires a minimum of 4 MB of additional memory to run on your system. If your system runs low on server memory, you'll see a NetWare message.

NetWare uses memory for each NLM that is running as well as each volume that is mounted. A mounted tape volume for file recovery uses the same amount of volume memory as mounting a NetWare disk volume of the same size.

When Replica starts, it makes sure the server has sufficient memory to replicate data. If there is not enough memory, a message lets you know how much more you need to run REPLICA. You will need additional memory if you mount volumes for recovering files and directories.

IMPORTANT! *If your Host Replica Server is NetWare 4.11, make sure that Replica jobs aren't scheduled to run at the same time as NetWare compression. Both use cache memory.*

Installation Problems

This section tells you what to do if Setup is interrupted. The files Setup places on the PC from which you install Replica and on the server being protected are listed in the README.WRI file.

Setup Interruptions

If some interruption, such as a power outage, occurs before you finish setting up Replica, you can easily recover. Remove any directories Setup added to the server or the Administrative PC, then start Setup again.

On the Administrative PC

- Delete the Replica directory (C:\REPLICA) and any subdirectories. You can ignore any files Setup placed in the Windows/System directory.

On the Server

- Delete the REPLICA directory in SYS:System. If Setup copied any other files to SYS:System, just ignore them.

Replica Loading Problems

If AUTOEXEC.NCF contains the appropriate commands, Replica loads whenever you restart your Host Replica Server. If you asked Setup not to modify AUTOEXEC.NCF, you may have to load Replica separately at the NetWare console. Use this command:

```
REPLOAD
```

The file REPLOAD.NCF includes these commands:

```
LOAD STACDAI
SCAN FOR NEW DEVICES
LOAD REPLICA
```

To unload Replica, use this command:

```
UNLOAD REPLICA
```

To unload all Replica components, use this command:

```
REP_STOP
```

If you want Replica to communicate with HP OpenView and you have TapeAlert-supported hardware, use one of these instead:

```
REP_SNMP
```

The file REP_SNMP.NCF includes these commands:

```
LOAD STACDAI
SCAN FOR NEW DEVICES
LOAD RE_AGENT
LOAD STACSDI -SNMP
LOAD REPLICA
```

To unload Replica when in this mode, use REP_STOP or use these commands, in this order:

```
UNLOAD REPLICA
UNLOAD STACSDI
```

Loading Replica

If Replica or one of its components won't load, these are the most common causes:

No tape device present.

Make sure a tape device is installed and turned on at the Host Replica Server. Replica uses the first tape drive it detects as the default device. The ReadMe file contains a list of the supported devices. Use LIST DEVICES at the console to see the currently attached devices.

Valid ASPI SCSI driver not loaded.

Make sure you have a supported ASPI driver for the SCSI controller being used. Make sure the SCSI chain is properly configured and terminated.

Insufficient RAM in server.

Add RAM if necessary.

Outdated API Calls on NetWare 4.11

While NetWare loads STACOSM.DSK or RE_AGENT.NLM, you'll see a message like this:

```
This module is using n outdated API calls.
You should upgrade to a later version.
```

You can safely ignore this message. It refers to APIs that Replica calls for NetWare 3.12.

Undefined Dynalink Error

If you see a message like this when Replica is loading, your system may have a MPC250.DLL conflict. Many applications use MFC250.DLL, which resides in the Windows\System directory. A few applications include another copy of this DLL which resides in the application directory.

To solve the problem, remove MPC250.DLL from any application directories. The application will use Windows\System\MPC250.DLL.

Problems Using Replica

On rare occasions, you may have difficulty using Replica. This section includes solutions for problems you may encounter.

Server Login Errors (NetWare 4.11)

If you have Replica installed under NetWare 4.*x*, you may occasionally encounter problems logging in to servers. If you get an "Invalid Password" message, log in using the full context name, as in CN=ADMIN.OU=OPERATIONS.O=STAC or ADMIN.OPERATIONS.STAC.

You can use Novell's CX.EXE utility at the workstation to identify the user's context.

You may experience problems logging into a NetWare 4.11 Server that does not have Bindery Emulation Mode enabled. Type the user's full context name to log in to the server.

Note: *You need Bindery Emulation for the full benefits of Replica in a network that depends on the bindery for communication. To make a 4.11 server appear in the Replica network list on this type of network, set a bindery emulation context for the server. See your NetWare documentation for details.*

Memory Errors during Replication (NetWare 3.12)

If you see Memory Init errors on the NetWare 3.12 console while replicating objects, you probably have very large hard disks and medium to low memory. To use less memory, have Replica dismount volumes rather than use Live Volume Replication.

To dismount volumes during replication:

1. Specify the source and destination as usual.
2. On the Options tab, check Dismount volume before replicating.
3. Start or submit the job as usual.

Communications Problems

If your network has a mixture of 4.*x* and 3.12 servers, communications problems between servers may cause Replica to behave erratically or to abort when replicating or recovering data. You can solve the problem by adjusting some SPX parameters on a 4.11 server.

Use SPXCONFG.NLM to change the parameters listed below on a 4.11 server. These settings will work fine with your other software as well.

Parameter	Set to ...
SPX watchdog abort timeout	540
SPX watchdog verify timeout	110
SPX ack wait timeout	1500
SPX default retry count	50
Maximum concurrent SPX sessions	1000

Replica at Administrative PC

Replica at the Administrative PC (client workstation) interacts with the Replica software on the server, as well as with NetWare itself. This section shows you how to locate servers, objects, or tapes that Replica may not list.

Network list doesn't show the server you want, or server isn't available for selection

- If the server isn't listed, make sure that the server's LAN driver is loaded. Make sure any NetWare 4.11 servers use bindery emulation mode.
- If you have the Replica Single Server for HP SureStore Tape installed, you should see servers with this version as well as servers with Replica Backup for HP SureStore Tape.
- If you can't select the server, make sure the correct version of Replica is loaded on that server.

If you can't select the server in the Recover window, make sure it was replicated. Only servers on which at least one object was replicated are available for recover operations.

Recover Source tab doesn't list all replicated volumes

Any objects that you replicated to the current Host Replica Server are available for selection on the Recover Source tab.

Here are two possible problems:

1. You haven't selected the correct Host Replica Server. If necessary, change to the appropriate one.

2. From within Windows, Replica uses its databases on the server to identify which volumes have been replicated. If the databases are corrupt or missing, Replica can't locate the information. You can recover the databases from the NetWare console.

To recover Replica databases

1. Close Replica on the Administrative PC.
2. At the NetWare console, type UNLOAD REPLICA.
3. Type LOAD REPLICA -NOCLIENTS to load Replica and prevent client use.
4. Insert a replication tape that was created when the databases were available.
5. Type REPLICA RECOVER DATABASES and follow the instructions on the screen to let Replica restore the databases from the tape.
6. Unload Replica and load it normally with LOAD REPLICA.

At the Administrative PC, start Replica under Windows again. All replicated volumes should be available on the Recover Source tab.

Recover Source tab doesn't list all tapes containing the selected object

When an object (either a server or a volume) is selected, Replica lists all media on which it was replicated. Only media valid in the current tape device are available for selection. If the tape was replicated on a different Replica system, import the tape into the database.

Replica at the NetWare Console

You use Replica console commands (see Chapter 8) at the NetWare console. Status and error messages are also displayed on the console. See Console Error Messages on page 103 for help dealing with NetWare error messages.

Your monochrome monitor doesn't display Replica screens well

To force the NetWare console screens to display in monochrome, use the -M option. You can change the LOAD REPLICA line in your AUTOEXEC.NCF and REPLOAD.NCF files to read LOAD REPLICA -M.

Replica at the NetWare Console or PC

Replica may occasionally have problems that become apparent at either the NetWare console or the Administrative PC. Here are some solutions.

Problem deleting a queued job

Normally, you can delete jobs in the queue that are waiting to run or on hold. You can abort the job that is currently running, then delete it. In rare cases, a job may not delete correctly from the queue. If this situation occurs, try these steps, in order.

1. In the Status Window, Device Status tab, select the job, then click the Delete or Abort button.

2. Close Replica on the Administrative PC, then unload Replica and load it again at the console. Start Replica again at the Administrative PC and try step 1 again.

3. As a last resort, you can use the -REMOVEQ load option to clear the device queues for all devices for the server, including the tape device and any disk volumes or free space. If you want to erase all active, waiting, and holding jobs, use this option. You'll have to unload Replica first, then use LOAD REPLICA -REMOVEQ at the console. After you are finished, unload Replica again and load it normally.

   IMPORTANT! *When you use -REMOVEQ, all your Replica schedules are erased. You'll have to schedule your server replications again.*

Unable to access server resources during replication

If you see this message while using Replica, the Administrative PC is not able to communicate with the Host Replica Server. See the section *Communication Problems* on page 92.

Excluded deleted files

When you delete files from the server, your system records information about those files in directories and in the FAT. Replica relies on the FAT entries to decide what data to replicate. When you check **Include deleted files** field while replicating data, you can salvage deleted files after recovering the volumes.

When Replica does not include deleted files, FAT entries are cleared but directory entries in the replicated volume may still point to previously deleted files. These directory entries are no longer valid after you recover a volume that didn't have **Include deleted files** checked when you replicated it.

If you expect to use SALVAGE or FILER in the future to recover files deleted after recovery, you must purge the files as soon as the recovery is complete to remove pointers to formerly deleted files that have not been replicated.

1. At the Administrative PC, map a drive letter to the root directory of the volume.
2. Change to the SYS:PUBLIC directory.
3. At a command line, type PURGE *x*:\ /A

   This command purges all traces of formerly deleted files from the drive named as *x*:

Problem locating tape devices

Replica is a NetWare loadable module; it depends on NetWare to work correctly. If NetWare can't identify a disk volume or tape device, neither will Replica.

The ReadMe file contains a list of tape devices that Replica supports.

Suppose Replica doesn't find a supported tape device that you know exists. Here's what to do:

1. At the tape server console, type REP SCAN FOR NEW DEVICES, then type LIST DEVICES.

   If the tape device is listed, start Replica from Windows again and you will find the device in the dropdown list.

2. If Replica still cannot locate the device, you may have a hardware problem.

Tape media problems

If you have problems with a tape, the problem is probably with the tape itself. Use standard techniques to verify that the tape is valid.

- Make sure the tape is good. An old tape used extensively in any tape drive may be worn out or unusable.
- Use Utilities to retension the cartridge spool.
- Check the write-protect switch on the tape cartridge.
- Use a tape-cleaning cartridge to clean the heads.

Tape won't eject

Most QIC tape devices don't respond to software ejection. Manually remove the tape.

Disaster Recovery Problems

For standard Disaster Recovery with Disaster Recovery disks only.

Your Disaster Recovery disks get your server up and running so that Replica can communicate with it. By themselves, they don't recover anything to the server.

You hope never to need the Replica disaster recovery feature. But if you do, you want it to work. This section shows how you can make absolutely certain your Disaster Recovery disks contain all the files

needed to restart your NetWare server. It also shows how you can manage if your Disaster Recovery disks are damaged or missing.

Creating your Disaster Recovery Disks

When creating Disaster Recovery disks, Replica formats disks that aren't yet formatted. Replica deletes files on used disks and verifies the format.

If the Create Disks process fails during the formatting, you may have a bad disk or its formatting may be a bit off. Try a new disk or try this:

1. Format the disk under Windows or using the DOS FORMAT command.
2. Click Create Disks in the Replica Disaster Recovery utility.

Verifying Disaster Recovery Disks

On some occasions, Disaster Recovery disks need information that Replica doesn't recognize when it creates the disks. For example, if your LAN drivers are loaded through SNMP CFG files, you'll have to add the LOAD and BIND commands and the drivers to Disk 2 of your Disaster Recovery disks after Replica creates them.

It's a good idea to occasionally verify that your disks contain the correct information. You can also modify a set of disks to recover a server with a different configuration.

Most servers require two disks. The first contains the files needed to bring up DOS and get the process started. Later disks load NetWare modules. The last disk loads the rest of the NetWare modules and starts recovering data from the current tape.

You can check one file on each disk that follows the first to make sure your Disaster Recovery disks contain the needed files. The AUTOEXEC.2 and later files load the drivers that start up NetWare on your server. You can see what drivers are loaded and which options are specified. These are text files, so you can modify or add lines as needed. AUTOEXEC.2 loads drivers included on disk 2. If your server requires a third disk,

AUTOEXEC.3 loads drivers included on that disk. If you add a LOAD command, be sure to add the driver to the same disk.

Note: *If you want to use your Disaster Recovery disks to start recovery of a server with a different configuration, you can modify the AUTOEXEC.n file on each disk after the first. Make sure that all disk, LAN, and SCSI drivers are loaded for the server you wish to recover.*

Example for Host Replica Servers

Here's a sample AUTOEXEC.2 file for a set of Disaster Recovery disks:

```
LOAD CLIB.NLM
LOAD NWPA.NLM
LOAD NWPALOAD.NLM
LOAD ASPITRAN.DSK
LOAD AHA1540.DSK port=330 int=B dma=5
LOAD STACDAI.DSK
LOAD CSLSTUB.NLM
LOAD IPXR
LOAD MSM.NLM
LOAD ETHERTSM.NLM
LOAD TOKENTSM.NLM
LOAD EXP16.LAN port=300 frame=ethernet_802.3 name=exp_1
BIND ipx to exp_1 net=f000
LOAD TLI.NLM
LOAD SPXS.NLM
LOAD SMDR.NLM
LOAD RE_AGENT.NLM -DR
SCAN FOR NEW DEVICES
LOAD STACSDI.NLM
LOAD MATHLIB.NLM
LOAD REPLICA.NLM -RECOVER
REM STOP
```

Note: *The -RECOVER load option appears on the last Disaster Recovery disk; it tells Replica to immediately recover the full server using the currently loaded full server replication tape.*

Recovering from Disasters

ESSENTIAL: If you don't have a set of Disaster Recovery disks, you won't be able to recover the server automatically. You can still recover the data after reinstalling DOS, NetWare, and Replica.

This section describes what to do if:

- You have a server replication tape but no Disaster Recovery disks.
- You have Disaster Recovery disks but they are out of date or don't match the new hardware or configuration of the target server. (You didn't make new Disaster Recovery disks since you upgraded your server or changed your configuration.)

To recover a Host Replica Server with no Disaster Recovery disks, but a full server replication tape

The first four steps bring up the server and Replica.

1. Reformat and repartition the hard disk if necessary.
2. Reinstall the operating system (DOS).
3. Reinstall NetWare and any upgrades.
4. Reinstall Replica from the Administrative PC.
5. Update the STARTUP.NCF file as specified in Setup and then restart the server.

IMPORTANT! *If you want the complete server to be exactly as it was at the time of the last full server replication, do steps 5, 6, and 7. To leave the results of steps 2 through 4 intact and recover only NetWare volumes, ignore steps 5, 6, and 7, and then continue with step 8.*

5. At the NetWare console, load Replica with REPLOAD.
6. At the Administrative PC, start Replica and create new Disaster Recovery disks.
7. Close Replica, return to the NetWare console, and do a full Disaster Recovery, starting with your disks.

IMPORTANT! *To recover NetWare volumes if you didn't use step 5, continue with step 8. You won't be able to recover data in the non-NetWare partition.*

8. At the tape server console, type UNLOAD REPLICA if it is loaded, then reload it with LOAD REPLICA -NOCLIENTS
9. Insert the tape that contains the full server replication and type REP RECOVER SYS to recover the SYS volume from the tape.
10. Type REP RECOVER DATABASES so Replica will know what was previously replicated.
11. Unload Replica completely by typing REP_STOP at the NetWare console, then restart it with REPLOAD.
12. At the workstation, use Replica to recover any remaining individual volumes.

    Note: *If you prefer, you can recover the NetWare volumes on your Host Replica Server with console commands.*

If your Disaster Recovery disks are out of date

It is possible that the changes you made to your system will not affect the disaster recovery process.

1. Try to recover your server using the disks you have and your latest full server replication tapes.
2. If any changes to your system are not included in the recovered server, make any upgrades again.
3. Once the server is recovered or rebuilt, create a new set of Disaster Recovery disks.

If the procedure above does not recover your server, manually modify or update your disks as described earlier in this section.

Disaster Recovery of Server with Corrupted Partition Table

If your server's disk has a corrupted partition table, you won't know it until the disaster recovery process is well underway. The Disaster

Recovery disks start up the server and Replica starts the recovery from the tape. However, Replica won't be able to create the non-NetWare partition. You can clear up the problem, then run the Disaster Recovery procedure again, successfully.

Disk Type	How to fix
SCSI	• Run a low-level format on the hard disk before restarting with the Disaster Recovery disks.
IDE	• Run FDISK to delete all partitions. • Use FDISK to create a small DOS primary partition. • Format the DOS partition and make it bootable. • Confirm that you can boot the system into DOS.

Finally, start the disaster recovery process again with the first Disaster Recovery disk. This time, the process will work.

Uninstalling Replica

Occasionally, you may want to uninstall Replica, then install it again in a different location or with different options. Replica includes an uninstall utility to help.

To remove Replica from your system

1. At the Administrative PC, click REPLICA Uninstall in the Windows Start menu.
2. Follow the directions on the screen.

Uninstall removes files it placed on the Administrative PC during Setup. If you added any files while using Replica, Uninstall won't remove them. If the Replica directory remains on your PC, delete it and all of its subdirectories.

Uninstall also removes files it placed on the server. If the SYS:System\Replica directory remains, delete it and all of its subdirectories.

If any of these files remain in the SYS:System directory, delete them:

DBE.NLM
RE_AGENT.NLM
REP_STOP.NCF
REPCHECK.NLM
REPCOPY.NLM
REPLICA.MSG
REPLICA.NLM
REPLOAD.NCF
STACDAI.DSK
STACOSM.DSK
STACSDI.NLM

Console Error Messages

While loading or using Replica, you'll see messages from NetWare as well as from Replica modules. Many of these messages are self explanatory. If something is missing, for example, make sure it exists before trying again.

This section lists messages that may occur and provides suggested solutions to each problem.

MESSAGE

Loader cannot find public symbol: AspiEntry

Possible Cause

- No ASPI-compliant SCSI tape driver is loaded.

Suggested Solution

- Run MODULES at the server console to see if the required modules are loaded.

- Check with your SCSI controller manufacturer to make sure you have the latest drivers for the version of NetWare you are using.

MESSAGE

Loader cannot find public symbol: ASPI_Entry
Loader cannot find public symbol: DAI_DeviceSupportsTapeAlert
Loader cannot find public symbol: DAI_ReturnChangersInfo
Loader cannot find public symbol: DAI_DeviceHadErrors

Possible Cause

- STACDAI NetWare driver is not loaded.
- No SCSI tape device is found.

Suggested Solution

- Make sure STACDAI is loaded. Run REPLOAD again to make sure.
- Check to see if the tape device you are using is supported by Replica, properly connected, and powered up.
- Check for unique SCSI ID settings and proper SCSI termination.

MESSAGE

***volume server_name*/SYS almost out of disk space** (while mounting a replicated tape volume)

Possible Cause

- Replica writes a cache file to disk while mounting a tape volume. The SYS volume on your server does not have enough space available to create the cache file.

Suggested Solution

- Remount the tape so it will write the cache to a different volume. Use the following command at the NetWare console:

  REPLICA MOUNT *tape-volume-name* USING *cache-volume-name*

MESSAGE

Short term memory allocator is out of memory. # attempts to get more memory failed. Error initializing memory.

Cause

- Your server does not have enough free memory to complete the current Replica operation.

Solution

- Replica requires 4 MB of available RAM to load and function properly. You may be able to unload unnecessary NLMs or dismount unneeded volumes.
- Restart the server (power-down, then back up) to free resources, then try again.
- If you can't free up enough memory, you'll have to add more memory to your system.

MESSAGE

Device *xxxxx* deactivated due to device failure

Possible Cause

- Defective tape device
- Defective tape media

Suggested Solution

- Try using a new or different tape.
- If that does not solve the problem, use a cleaning cartridge in your tape drive.
- If cleaning does not solve the problem, your tape drive may need servicing.

MESSAGE

Error recovering object *nnnnn* (during recovery of NetWare Directory Services NDS)

Possible Cause

- Replica is trying to recover objects to NDS that no longer exist.
- NDS is corrupted.

Suggested Solution

- If the object in question no longer exists, disregard the error message.
- Otherwise, run NetWare's DSREPAIR.NLM utility before replicating to fix any possible problems with NDS before replicating the object.

MESSAGE

Mirrored copies of the FAT don't match. Volume *xxxxx* not mounted (after replication to disk or recovery)

Possible Cause

- The volume may be corrupt.

Suggested Solution

Run the NetWare utility VREPAIR.NLM on the volume. If this does not resolve the problem, repeat the replication or recovery operation.

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