

Disaster Recovery

Option Guide

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Contents

Chapter 1: Introduction

What is Disaster Recovery?	1-1
Alternate Location for DR Information	1-2
Functionality	1-3
Requirements	1-3
Special Requirements for Bootable Tape Based Disaster Recovery	1-4
Special Requirements for Bootable CD-ROM	1-4

Chapter 2: Disaster Recovery of a Windows NT 4.0 System

Disaster Preparation Using the Floppy Boot Method	2-1
Make Copies of the Windows NT Setup Disks	2-2
Create Disks for Floppy Boot Method	2-2
Upgrading Your Floppy Disk for a Specific Machine	2-4
Disaster Preparation Using the Bootable Tape Drive Method	2-5
Recovering from a Disaster Using the Floppy Boot Method	2-6
Recovering from a Disaster Using a Bootable Tape	2-11
Restoring to Volume Sets and Stripe Sets	2-12
Special Considerations for Database Restores	2-14

Chapter 3: Disaster Recovery of a Windows 2000 System

Disaster Preparation Using the Floppy Boot Method	3-1
Make Copies of the Windows 2000 Setup Disks	3-2
Create Disks for Floppy Boot Method	3-2
Upgrading Your Floppy Disk for a Specific Machine	3-4
Disaster Preparation Using the CD Boot Method	3-5
Create CA Bootable Image for CD Boot Method	3-5
Create Floppy Disk for CD Boot Method	3-6
Disaster Preparation Using the Bootable Tape Drive Method	3-7

Recovering from a Disaster Using the Floppy Boot Method	3-8
Recovering from a Disaster Using the CD Boot Method	3-11
Recovering from a Disaster Using a Bootable Tape	3-12
Special Considerations for Database Restores	3-12

What is Disaster Recovery?

When a mission-critical server goes down, only one thing matters: *time*. Each tick of the clock means business lost, opportunities squandered, efforts wasted. You need to get your system back online quickly, accurately, and safely. That's been a difficult proposition – until now. The Disaster Recovery Option (DR) lets you conquer time. DR takes you from boot media, to tape, to up-and-running, faster than any other solution – even a novice user can have an NT server back online in record time. DR protects your local ARCserve server and remote Windows NT/2000 clients backed up by the ARCserve Client Agent. ARCserve provides three boot methods for disaster recovery:

- Floppy Disk
- CD
- Tape

Floppy Boot Method This is the traditional method of disaster recovery. Using a modified version of the Windows NT/2000 setup disks, you can recover any machine using the DR Wizard. You can start up any server, even one with an unformatted hard drive, and fully restore the system using an ARCserve backup tape.

CD Boot Method For Windows 2000, the DR Option has a faster way of booting to the Disaster Recovery Wizard. Instead of using 4 to 5 floppy disks and a Microsoft 2000 CD, you need only one floppy disk and a recovery CD. The Wizard will then restore the system using an ARCserve backup tape.

Bootable Tape Method Instead of booting from a floppy disk drive or CD-ROM, your server can boot from a tape drive. Recovery can be performed directly from the backup tapes. The DR Option will create a bootable backup tape for use with compatible tape drives. It only requires the most recent backup media.

Note: A tape drive will not act as a boot device unless you manually enable it. Each manufacturer varies how to enable the drive.

Alternate Location for DR Information

When you perform a backup using the ARCserve Client Agent on a Windows NT or Windows 2000 machine, the machine specific information is saved on the ARCserve server. In the event of a disaster on the client machine, this information on the server can be used to create a recovery boot disk for the crashed machine.

During the installation process, a dialog is displayed to store this information to an alternate path for added disaster protection. This path can be used to create a recovery boot disk for the ARCserve server in the event of a disaster on that system.

Alternate Location for DR Information

At the end of a full backup, the machine's Disaster Recovery information is saved on the ARCserve server.

To save this Disaster Recovery information to another computer for added Disaster Protection of the ARCserve server, please provide the following information and click OK. To not use this extra level of protection, please uncheck the box and click OK.

Use Alternate path for added Disaster Protection.

Alternate Machine Name:

Domain:

User Name:

Password:

Path(with the share volume Name):

OK Cancel

Note: You can click Config in the Boot Kit Wizard dialog to change this path information before your next backup.

Functionality

The DR Option is a flexible, easy-to-use, enterprise-wide solution. You can create recovery boot media to recover any machine locally or remotely using the storage devices attached to your ARCserve server. Disaster Recovery supports:

- full RAID and tape/optical library restore procedures
- multiple session and spanned tapes
- multiple tape drives and host adapters
- use of tape drives in autochangers
- MTF (Microsoft Tape Format) tapes
- Storage Area Network Option (Fibre Channel)
- Bootable CD-ROM support
- Bootable tape support
- Remote Disaster Recovery

DR works with regular tape backups. Wizards help create recovery boot disks, partition and format hard drives, scan sessions, and begin restores. You can recover any machine using a variety of methods: floppies, CD-ROM or bootable tape drive.

Requirements

If you meet the requirements for ARCserve 2000, the DR Option will install and run properly. See the following sections for special requirements for Bootable Tape Based Disaster Recovery and Windows 2000.

Disaster Recovery is subject to the following restrictions:

- Disaster Recovery can only restore a full session. Individual files cannot be restored through Disaster Recovery.
- DR supports only NTFS and FAT partitions, and FAT32 on Windows 2000.

Please consult the Disaster Recovery *Release Notes for ARCserve* to obtain the most current updates on product limitations.

Special Requirements for Bootable Tape Based Disaster Recovery

Hardware	Software
Any server using a SCSI controller which supports CD-ROM drives as a boot device	ARCserve 2000 version 7.0
A bootable tape drive	

Special Requirements for Bootable CD-ROM

The following additional requirements must be met in order to use the CD Boot method:

Hardware	Software
Any server using a SCSI controller which supports CD-ROM drives as a boot device	ARCserve 2000 version 7.0

Disaster Recovery of a Windows NT 4.0 System

To prepare for a disaster, which is defined as the loss of at least the server's Windows NT system volume, you can use the DR process described in this chapter in a Windows NT 4.0 environment to conquer time. The DR process is a two-step process – preparation and recovering. DR takes you from disk, to tape, to up-and-running, faster than any solution – ever.

The following sections describe how you can create boot media to bring your server back online quickly. You can create them at any time, even after the workstation has crashed, however, the machine had to be backed up by an ARCserve server, and that the ARCserve Server is up. To protect your ARCserve server, you must create boot media before a disaster occurs or use the alternate location feature described in chapter 1.

Floppy Boot Method

This method consists of disks. The disks contain a modified version of the Windows NT setup software and configuration information for a specific machine. These disks let you start up any server, even one with an unformatted hard drive, and fully restore the system using an ARCserve backup tape or MTF tape. The Windows NT CD is required during the recovery process.

Bootable Tape Method

This method consists of an ARCserve Bootable Tape. This bootable tape also contains a full backup. It allows you to start up any server, even one with an unformatted hard drive, and fully restore the system without any CD or disks.

Disaster Preparation Using the Floppy Boot Method

This section describes how you can protect your local machine from a potential disaster by creating boot disks. You can create them at any time, even after the workstation has crashed.

The DR boot disks consist of four or five disks, depending on the method chosen. Three of the disks contain a modified version of the Windows NT setup software. A fourth disk contains the ARCserve Disaster Recovery software. The final disk is used only when the "Specific to a Computer" method is chosen, contains configuration information for a specific machine.

Generic Floppy Disk Method

This method is used to create a generic boot disk, which can be used universally to perform a local disaster recovery on any machine.

Specific to a
Computer Method

This method is used to create a boot disk for a specific machine. It will be used to automatically partition your hard disk into the original configuration. If a local tape drive is detected, a local recovery will be performed. Otherwise, a remote recovery will be performed. This set of disks can only be used to perform a disaster recovery on this machine.

Note: This is the preferred method.

We recommend that you read the section “Recovering from a Disaster Using the Floppy Boot Method” in this chapter thoroughly. It contains important information and procedures required to recover your data. If you review this material and have a practice disaster recovery session, you will be well prepared for any circumstances, should a real life disaster occur.

Make Copies of the Windows NT Setup Disks

You must create copies of the three Windows NT setup disks (Windows NT Server Boot Disk, Disk 2, and Disk 3). To do this, use the WINNT32 utility. This can be run from the network directory containing the master files for Windows NT, or you can run this utility from the Windows NT CD-ROM. The command for creating the setup disks is as follows:

```
WINNT32 /OX
```

You can also create these disks by running WINNT under DOS. For more information about how to create Windows NT setup disks, see the Microsoft Windows NT Server *Installation Guide*.

Note: At the time that you recover your system you will be required to use the Windows NT CD-ROM.

Create Disks for Floppy Boot Method

In addition to the Windows NT Setup disks, you must generate one or two disks to be used for recovery. This section describes that procedure.

Important! Before you proceed, you must have:

- Two formatted high-density disks. Label the disks as follows:

ARCserve Disaster Recovery Disk

ARCserve Network DR Disk

Note: The ARCserve Network DR disk is only used for the Specific to a Computer method.

- A full backup of your machine using ARCserve.

Follow these steps:

1. Select Create Boot Kit from the ARCserve Program Group and choose Create Boot Disks. Click Next.



2. The Select ARCserve Server dialog appears, containing a list of available ARCserve servers. Choose the appropriate server and click OK.
3. The Wizard displays a list of machines that have been backed up by ARCserve. If ARCserve has not backed up a machine, the panel will be blank. Choose a machine and click OK.
4. Select the Generic Floppy Disk method if you are generating a generic boot disk or select the Specific to a Computer method if you are generating boot disks for a specific machine. Click Next.

Note: If you are generating boot disks for a remote machine for remote DR or if you are using an autochanger or a RAID device on the machine for which you are planning to create boot disks, you can only use the Specific to a Computer method.

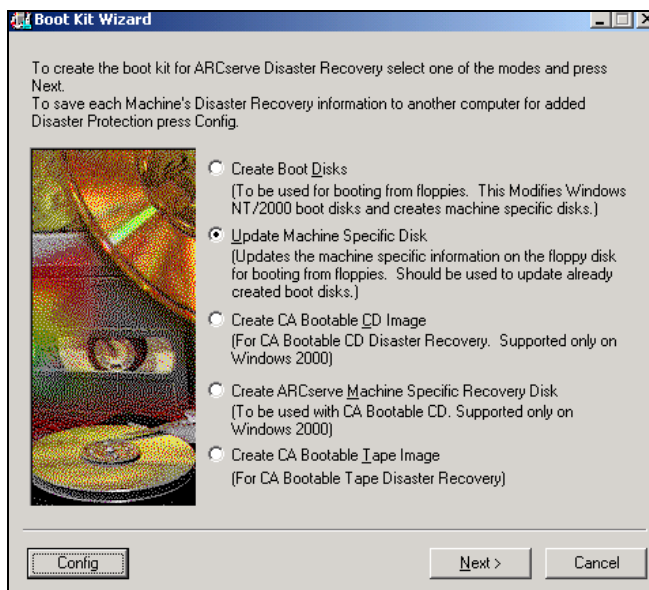
5. Click Next again. The Wizard will prompt you to insert the blank, formatted disk labeled ARCserve Disaster Recovery into Drive A. Click Start. The boot disk utility copies all necessary disaster recovery files to the disk.
6. After the ARCserve Disaster Recovery disk is complete, you will be prompted to insert the disk labeled Windows NT Setup Boot Disk. Press Start.
7. You will then be prompted to insert the disk labeled Windows NT Setup Disk 2. Press Start.
8. You will then be prompted to insert the disk labeled Windows NT Setup Disk 3. Press Start.

9. If you selected the Generic Floppy Disk method in step 4, go to Step 10. If you selected the Specific to a Computer method in step 4, you will be prompted to insert the disk labeled ARCserve Network DR to create the disk for recovering your specific machine. Press Start.
10. Click Finish. The DR Wizard has finished creating a set of Disaster Recovery disks that you can use in the event of a disaster.

Upgrading Your Floppy Disk for a Specific Machine

Once the hardware or your machine configuration is changed, such as changing your network card, it is essential to run a full backup again and use the DR Wizard to update all the boot disks created.

1. Select Create Boot Kit from the ARCserve Program Group and choose Update Machine Specific Disk. Click Next.

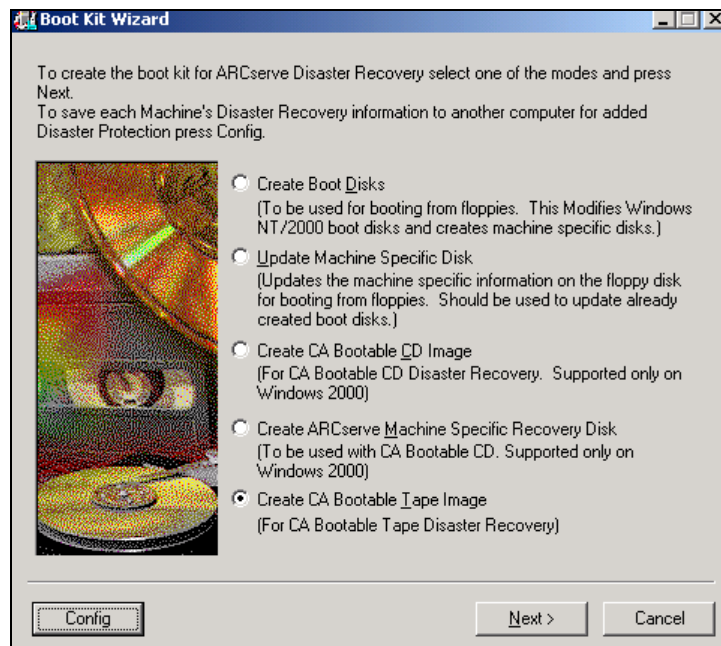


2. You will be prompted to insert the disk labeled Windows NT Setup Disk 3 and press Start.
3. After the copying is complete, you will be prompted to insert the disk labeled ARCserve Network DR and click Start.
4. After the copying is complete, click Finish. The DR Wizard has finished updating your set of disaster recovery disks.

Disaster Preparation Using the Bootable Tape Drive Method

Bootable Tape Based DR is designed to be used by backup administrators who have suffered a loss of their system volumes on their Windows NT production servers, without using any boot floppies or CD ROM. This option can only be used to protect your local ARCserve machine.

1. Select Create Boot Kit from the ARCserve Program Group and choose Create CA Bootable Tape Image. This option will be greyed out if a bootable tape drive is not detected. Click Next.



2. The Boot Kit Wizard displays “Welcome to CA Bootable Tape Disaster Recovery” in the dialog. Click Next.
3. You will be prompted to insert the Windows NT CD. Click OK.
4. When the utility has completed creating your DR Boot Kit, click Finish.
5. Format a media using the ARCserve Device Manager or Wizard. This copies the image to the tape.
6. Do a full backup of the local ARCserve server using the tape just formatted.

Note: If any configuration has changed (i.e., network card or SCSI card), a new boot image needs to be created and another full backup needs to be run.

Recovering from a Disaster Using the Floppy Boot Method

To recover from a disaster, you need all the items on the following list:

- A set of ARCserve disaster recovery boot disks. These are the disks that you created, per the instructions in the previous section, “Disaster Preparation Using the Floppy Boot Method”.
- A Microsoft Windows NT CD that matches the version used to create the boot disks.
- A backup device connected to the server (can be a remote ARCserve server) with an ARCserve backup tape or MTF (Microsoft Tape Format) tape, containing the data you want to restore in the drive. The tape must contain at least one full backup session.

Note: Special partitions such as EISA or ISA, which can be seen from fdisk or windisk.exe, should be configured properly before the DR process, using utilities provided by the vendor. DR will not back up and recover these partitions.

***Important!** If you created a set of boot disks for a specific machine using five disks, upon recovery, DR will automatically partition your hard disk into the original configuration. This set of disks can only be used to perform a disaster recovery on this machine. If a local tape drive is detected, a local recovery will be performed.*

If you created a generic boot disk using four boot disks, DR can use this set of disks universally to perform a local disaster recovery on any machine.

Follow these steps:

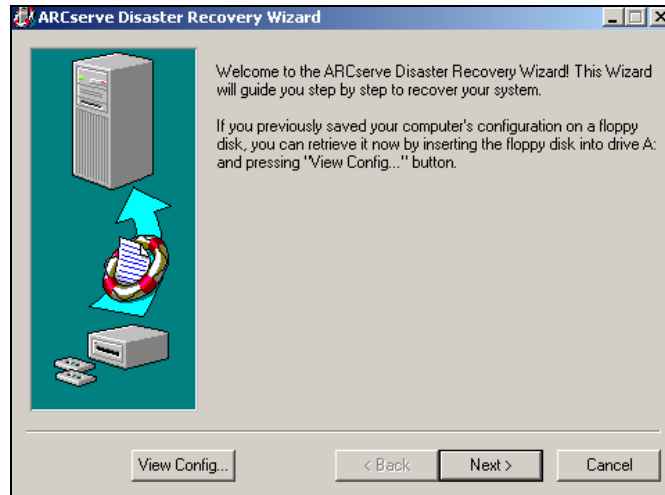
1. Boot up the machine you want to recover, with the Windows NT Setup Boot disk that you prepared in the previous section.
2. Insert the Windows NT Setup Disk 2 when prompted.
3. Choose the setup method:
 - **Express Setup** is the fastest way to recover your system. It will automatically detect your system drivers and partition information.
 - **Custom Setup** allows you to specify particular drivers for the devices controlled by your server. Custom may be required if your system uses drivers not included in the NT Setup program (such as OEM drivers). It also allows you to create or modify your partition information and/or change the file system being used (NTFS or FAT).

Note: This is the recommended method.

Tip: If you are using Express Setup and your system cannot locate your CD-ROM drive, start the recovery process again using Custom Setup.

4. Insert the Windows NT Setup Disk 3 when prompted.
5. Insert the ARCserve Disaster Recovery Disk when prompted.

6. Insert the Windows NT CD when prompted. Setup will copy files to your hard disk.
7. You will be informed that Setup has completed successfully.
8. Remove all disks and CDs and press Enter to reboot your system, the DR Wizard appears:



- **View Config**— This will show you the partition information.

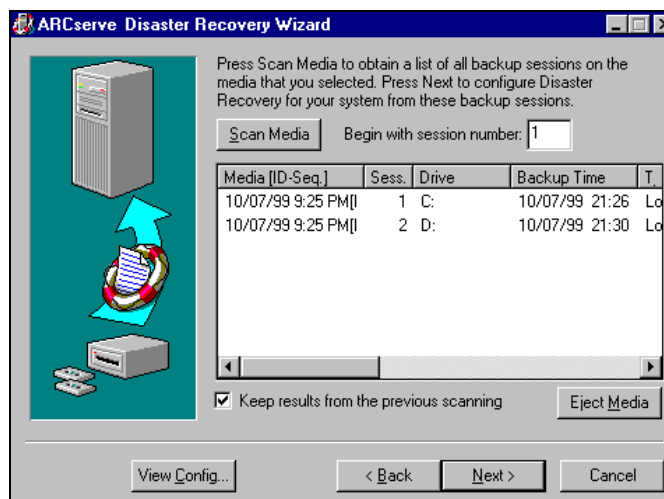
Tip: When the first DR Wizard screen shows up after rebooting, press Ctrl and Shift while double-clicking on the bitmap in the left screen. Open a DOS prompt window; this should allow the operations from the command line to run most of the 32-bit windows program such as windisk.exe, regedit.exe.

9. For DR of a Specific Machine only, you will be prompted to insert the ARCserve Network DR Disk. After the file copying completes, it will reboot back to the DR Wizard.
10. For remote recovery only, you must enter the ARCserve server name, user name, and password in order to connect to the ARCserve server.
11. Select the A: drive and choose the file. After making your selection, click Close and then Next. This will bring up a File Open window so that you can view the Disaster Recovery Information File (DRIF) data. Once you have selected the DRIF file, the Configuration window appears, displaying the partition information.

Important! If you are recovering a local RAID, tape, optical, or virtual library, this step must be performed at the DR Wizard Information screen.

12. Click Add sessions to list to copy the session information associated with the DRIF file (the last full backup) to the DR Wizard. If you do this, you will not need to scan the tape. Click Close.

13. The DR Wizard scans the machine for any backup devices connected and reports drive and media information. Select a device from the list and click Next.
14. If you did not select Add sessions to list, click Scan Media to read the tape contents.

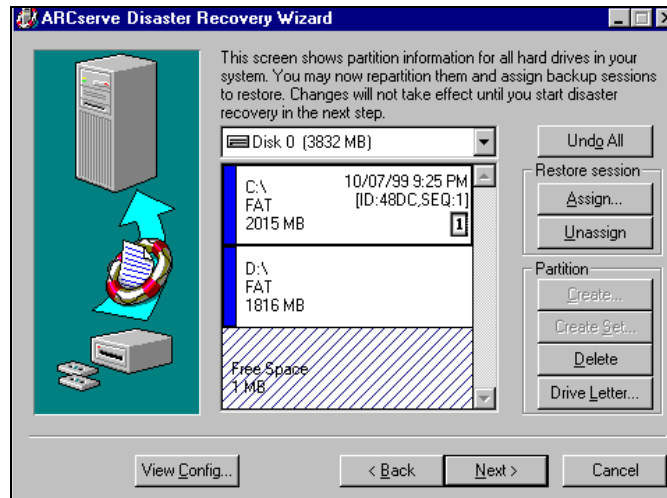


Each backup session on the tape will appear on the screen as it is found. If you know the session number, enter the number in the Begin with session number field. This will reduce the time needed to scan the tape, particularly if you have large capacity tapes with many sessions on them.

Also, if you are not sure which tape contains the last full backup, the DRIF file will indicate the tape ID and allow you to locate the correct tape quickly. After scanning, this window shows the backup sessions that are on the tape, along with important session information.

To scan a second tape, insert the tape and click Scan Tape again. Current partition information for all the hard drives on your system is shown.

15. With the session information in place click Next to advance to the partition screen. You can manually recreate the partitions shown in this configuration window.
16. Click Next to continue. Disk space is displayed in three forms:
 - Formatted partitions – space that is partitioned and formatted. They are formatted when a session is assigned to them.
 - Unformatted partitions – space that is partitioned but not formatted. They are formatted when a session is assigned to them.
 - Free space – disk space that is not formatted and not partitioned. Free space is created when a partition is deleted. To assign a drive letter to free space, you must first partition it.



Tip: Partitions can only be created on free space. To turn formatted partitions or unformatted partitions into free space, click on them and choose Delete under the Partition field.

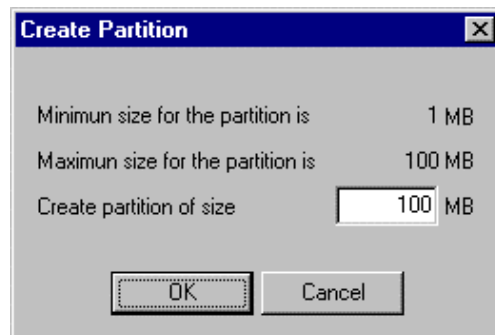
The DR Wizard allows you to customize the partitioning of all your drives prior to restoring. You can:

- Retain your current partitions.
- Modify the size and/or drive letters of your current partitions.
- Create new partitions.
- Create volume sets, stripe sets, and stripe sets with parity.
- Use any combination of the above.

Note: MTF Information! If you are using an MTF (Microsoft Tape Format) tape, the DR option cannot distinguish between full and partial backups. Therefore, you must know which sessions are full sessions, and select a full session for restore.

Restore Using New or Modified Partitions

Select the disk you wish to restore to from the drop-down box. Highlight an area of free space and click Create. The Create Partition dialog opens:



Specify a partition size. Minimum size is 1 MB; Maximum size is the amount of free space available on the drive.

Click OK. The Wizard will display the new partition as unformatted space. Repeat the previous three steps to create additional partitions.

Important! *None of the disk modifications made at this time will take effect until the Start Disaster Recovery button is clicked.*

Assign a Drive Letter to the Partition

Highlight the partition and click Drive Letter. Select a drive, and click OK. The drive letter will appear on the partition information screen.

Choose the partition you wish to restore to by clicking on it. Click Assign. Select a backup session from the list and click OK. The session number appears in the partition information window. To change a selection, click Unassign, then choose again.

Repeat these steps for each partition you are restoring to.

Restore to Unformatted Space Using It as Is

Select the disk you wish to restore to from the drop-down box. Highlight the unformatted space you wish to restore to and click Drive Letter. Select a drive letter and click OK. The drive letter will be displayed on the partition information screen.

Click Assign. Select a backup session from the list and click OK. The session number will appear in the partition information window. To change a selection, click Unassign, and then choose again. The unformatted space will automatically be formatted as part of the restore process.

Repeat these steps to restore to additional unformatted space.

17. To restore using the existing partition information, select the drive you wish to restore to from the drop-down box.
18. Click on the partition you wish to restore to.
 - If the size of a backup session is larger than the partition, you can assign that session to the partition, but the recovery may not be complete.
 - For Image backup sessions, if the size of the session is smaller than the partition, the partition can be truncated to the size of the session, and an additional area of free space will be created. This free space will be added to any existing free space, and can be reformatted into an empty partition. Alternately, you can restore the session as is, and any remaining space will become empty disk space on the new partition.
 - If you are restoring on a system that uses Volume Sets or Stripe Sets, please refer to the section Restoring to Volume Sets and Stripe Sets later in this chapter for additional information.
19. Click Assign. Select a backup session from the list and click OK. The tape ID and session number will appear in the partition information window.

20. Repeat the previous three steps for any other drives or partitions you wish to restore to. To change a selection, click Unassign, and then choose again. After making all necessary partition selections and modification, click Next.
21. The Wizard is ready to begin recovery for each partition to which you assigned a backup session. If you are restoring to the active partition, you will be prompted to insert the Windows NT CD in the CD-ROM drive at this time. To start the recovery process, click Start Disaster Recovery.



The DR Wizard copies the data from the specified sessions to the specified partitions. A progress bar shows the progress of the restore process. Upon completion of the restore, your machine will reboot and return to the exact condition it was in at the time the backup tape was created.

Note: A directory named DRBOOT.TMP is created during the restore process. It will be deleted the next time you start the ARCserve Tape Engine.

Important! You can stop the recovery by clicking Abort and then Cancel. However, we strongly recommend you complete the recovery or the results are unpredictable. Also, in some circumstances you may be asked to reboot the server at this point. The recovery process will then pick up where it left off when the machine restarts.

Recovering from a Disaster Using a Bootable Tape

You can retrieve the lost data on the server using the bootable tape feature if both of the following conditions are met:

- A disaster occurs which causes the loss of at least the server's Windows NT system volume so the server no longer boots up.

- The server was backed up using the Create CA Bootable Tape Option to a tape drive capable of acting as a bootable device.

Follow these steps:

1. Remove all media from the bootable floppy drive and/or CD drive.
2. Power up the tape drive in boot mode.
3. Insert the bootable tape backup media into the tape drive. The server is powered on, diagnostics are performed, and the server locates the tape drive as its boot device.
4. The booting process begins and all boot data is read from the tape. The hard disk partitions are recreated. After the necessary Windows NT files have been copied to the server, the Windows NT setup program will ask you to reboot the server.
5. The server is rebooted, and will boot from its hard disk.
6. After the server is up and running, it will automatically run ARCserve's Recovery Wizard to begin restoring the rest of the data to the partitions. After the data is restored, you will be asked to reboot the server once more. The server will be back to its original configuration and contain the data it had as of its last complete backup.

Restoring to Volume Sets and Stripe Sets

Note: Bootable Tape Based DR does not support Fault Tolerance; therefore this section does not apply to DR using the bootable tape drive feature.

Windows NT allows for the creation of volume sets and stripe sets:

- Volume set— is created by combining space on a physical drive or drives into a logical volume. The logical volume is treated like a single partition: that is, it appears as one drive letter.
- Stripe set— similar to a volume set, but each partition is of a similar size to allow data to be written in stripes across each partition. Stripe sets require at least two physical drives.

For further details on volume sets and stripe sets, please see the Windows NT documentation.

Follow these steps:

1. Follow the restore instructions in the section Recovering from a Disaster Using Floppy Boot Method earlier in this chapter, up to and including step 8 and then return here.

Tip: To create a volume set or stripe set, you must have free space available.

2. To create free space, choose a drive, click on a partition, and click Delete. If you delete more than one partition, the disk space combines into a single free space area.
3. Select the areas of free space that will be combined into a volume set or stripe set, as follows:
 - a. Click on the areas of free space you wish to partition and then click Create Set. You can click on two areas of free space on the same drive (Volume Set only), or switch to other drives and select free space. The Create Set dialog appears.
 - b. Choose the type of set you wish to create: Volume Set, Stripe Set, or Stripe Set with Parity (requires at least 3 physical disks).
 - c. In the Free Space Items window, click the free space you wish to use. You must choose at least two physical drives to create a stripe set. Click OK when done.
 - d. When the Set Size window appears, enter the size for the total set. For example, if you are creating a Volume Set on two hard drives and enter 1000 MB, you will create one 500 MB partition on each of the two hard drives, totaling 1000 MB. (The size per partition will not always be exactly the same.) Click OK when done.

The set will appear as formatted space in the Disaster Recovery window, with the type of set listed. The set will appear the same on all the physical drives.

4. After making all necessary partition selections and modifications, you must assign a session to restore. Click on a partition, and then click Assign.
5. Select a backup session from the list and click OK.
6. When your selections are complete, click Next.

The Wizard is now ready to begin recovery for each partition to which you assigned a backup session.

7. To start the recovery process, click Start Disaster Recovery. The DR Wizard copies the data from the specified sessions to the specified partitions.

A progress bar will show the progress of the restore process. Upon completion of the restore, your machine will reboot and return to the exact condition it was in at the time the backup tape was created.

Note: You can stop the recovery by clicking Abort and then Cancel. However, we strongly recommend you complete the recovery process, or the results are unpredictable.

Special Considerations for Database Restores

ARCserve has special backup agent options available to back up databases such as Oracle, Microsoft SQL and Exchange, and Lotus Notes. If you have backed up one or more of these databases using ARCserve, it cannot be restored using the DR option.

When ARCserve backs up a database, an additional tape session is created, apart from the rest of the backup. This database session is **not** a full backup, and therefore cannot be seen in the DR session list. However, after restoring the rest of the server using the DR option, it is a simple process to start ARCserve and begin a normal database recovery procedure.

Disaster Recovery of a Windows 2000 System

To prepare for a disaster, which is defined as the loss of at least the server's Windows 2000 system volume, you can use the DR process described in this chapter in a Windows 2000 environment to conquer time. The DR process is a two-step process – preparation and recovering. DR takes you from disk, to tape, to up-and-running, faster than any solution – ever.

The following sections describe how you can create boot media to bring your server back online quickly. You can create them at any time, even after the workstation has crashed, however, the machine had to be backed up by an ARCserve server, and that the ARCserve Server is up. To protect your ARCserve server, you must create boot media before a disaster occurs or use the alternate location feature described in chapter 1.

Floppy Boot Method	This method consists of disks. The disks contain a modified version of the Windows 2000 setup software and configuration information for a specific machine. These disks let you start up any server, even one with an unformatted hard drive, and fully restore the system using an ARCserve backup tape. The Windows 2000 CD is required during the recovery process.
CD Boot Method	This method consists of the ARCserve Disaster Recovery CD and one machine-specific disk containing configuration information. This CD and floppy disk set let you start up any server, even one with an unformatted hard drive, and fully restore the system using an ARCserve backup tape.
Bootable Tape Method	This method consists of an ARCserve Bootable Tape. This bootable tape also contains a full backup. It allows you to start up any server, even one with an unformatted hard drive, and fully restore the system without any CD or disks.

Disaster Preparation Using the Floppy Boot Method

This section describes how you can protect your local machine from a potential disaster by creating boot disks. You can create them at any time, even after the workstation has crashed.

The DR boot disks consist of five disks. Four of the disks contain a modified version of the Windows 2000 setup software. A fifth disk contains configuration information for that specific machine.

Specific to a
Computer Method

This method is used to create a boot disk for a specific machine. It will be used to automatically partition your hard disk into the original configuration.

We recommend that you read the section “Recovering from a Disaster Using the Floppy Boot Method” in this chapter thoroughly. It contains important information and procedures required to recover your data. If you review this material and have a practice disaster recovery session, you will be well prepared for any circumstances, should a real life disaster occur.

Make Copies of the Windows 2000 Setup Disks

You must create copies of the Windows 2000 setup disks. To do this, use the MAKEBT32 utility. This can be run from the network directory containing the master files for Windows 2000, or you can run this utility from the Windows 2000 CD. The command for creating the setup disks is as follows:

MAKEBT32

You can also create these disks by running MAKEBOOT under DOS or Windows 9x. For more information about how to create Windows 2000 setup disks, see the Microsoft Windows 2000 *Installation Guide*.

Note: At the time that you recover your system you will be required to use the Windows 2000 CD.

Create Disks for Floppy Boot Method

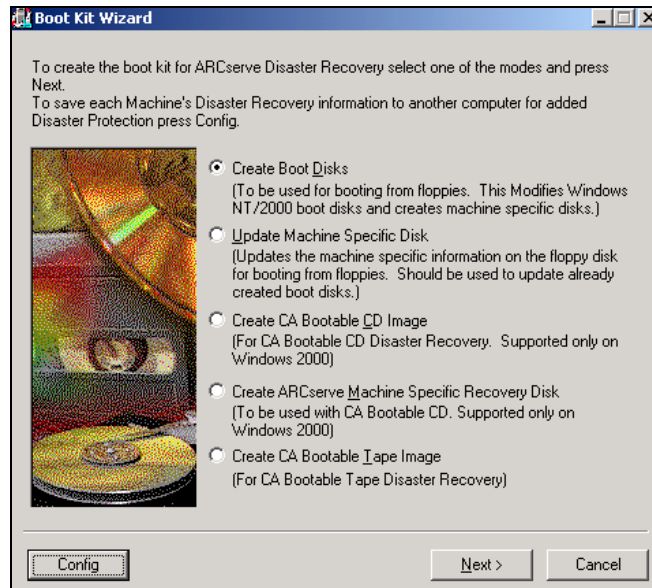
In addition to the Windows 2000 Setup disks, you must generate two disks to be used for recovery. This section describes that procedure.

Important! Before you proceed, you must have:

- Two formatted high-density disks. Label the disks as follows:
 - ARCserve Recovery Disk
 - DR Patch Disk
- A full backup of your machine using ARCserve.

Follow these steps:

1. Select Create Boot Kit from the ARCserve Program Group and choose Create Boot Disks. Click Next.



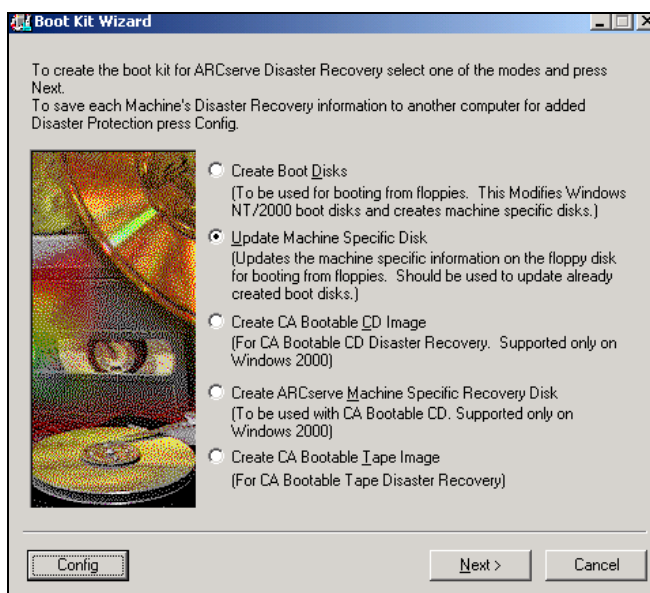
2. The Select ARCserve Server dialog appears, containing a list of available ARCserve servers. Choose the appropriate server and click OK.
3. Select the Specific to a Computer method. Click Next.

Note: The Generic Floppy Disks method is **not** available for Windows 2000.
4. The Wizard displays a list of machines that have been backed up by ARCserve. If ARCserve has not backed up a machine, the panel will be blank. Choose a machine and click OK.
5. Click Next again. The Boot Kit Wizard Information dialog appears.
6. Click Next again. The Wizard will prompt you to insert the disk labeled Windows 2000 Setup Boot Disk into Drive A. Click Start. The boot disk utility copies all necessary disaster recovery files to the disk.
7. After the Windows 2000 Setup Boot disk is complete, you will be prompted to insert the disk labeled Windows 2000 Setup Disk 4. Click Start.
8. You will then be prompted to insert the disk labeled ARCserve Recovery Disk. Click Start.
9. You will then be prompted to insert the disk labeled Disaster Recovery Patch Disk. Click Start.
10. Click Finish. The DR Wizard has finished creating a set of Disaster Recovery disks that you can use to recover this machine in the event of a disaster.

Upgrading Your Floppy Disk for a Specific Machine

Once the hardware or your machine configuration is changed, such as changing your network card, it is essential to run a full backup again and use the DR Wizard to update all the boot disks created.

1. Select Create Boot Kit from the ARCserve Program Group and choose Update Machine Specific Disk. Click Next.



2. You will be prompted to insert the disk labeled Windows 2000 Setup Disk 4. Click Start.
3. After the copying is complete, you will be prompted to insert the disk labeled ARCserve Recovery Disk (machine specific disk). Click Start.
4. After the copying is complete, click Finish. The DR Wizard has finished updating your set of disaster recovery disks.

Disaster Preparation Using the CD Boot Method

For Windows 2000, the DR Option has a faster way of booting from the DR Wizard. Instead of using 4 or 5 floppies and a Microsoft 2000 CD, you need one floppy and a CD.

Important! Before you proceed, you must have:

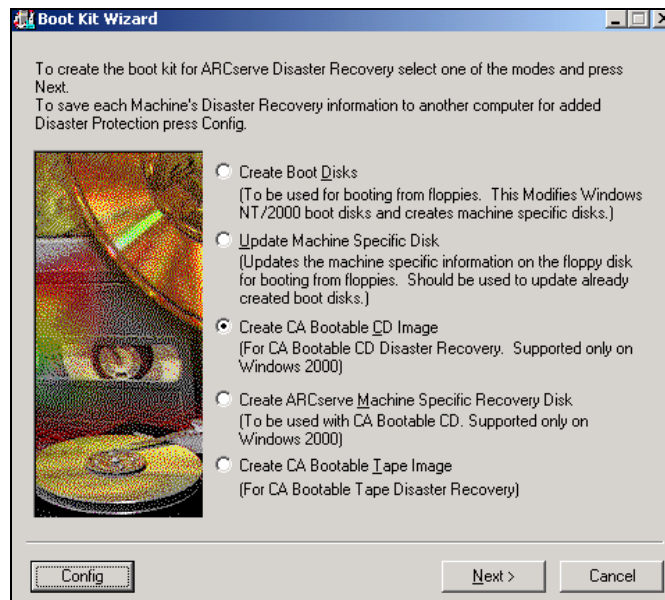
- One blank formatted high-density disk. Label the disk as follows:
ARCserve Recovery Disk (Machine Specific Disk)
- A full backup of your machine using ARCserve.

Create CA Bootable Image for CD Boot Method

This selection is used to create a bootable CD for the CD Boot Method.

Procedure

1. Select Create Boot Kit from the ARCserve Program Group and choose Create CA Bootable CD Image. Click Next.



2. The Wizard will prompt you to insert the Windows 2000 CD. Click Next.
3. A file called CDBOOT.ISO is created in the ARCserve home directory.
4. You must burn this image on a blank CD with a CD burner.

Create Floppy Disk for CD Boot Method

This selection is used to create a disk to be used with the CD Boot Method. The disk is used to perform disaster recovery on this specific machine.

Procedure

1. Select Create Boot Kit from the ARCserve Program Group and choose Create ARCserve Machine Specific Recovery Disk. Click Next.

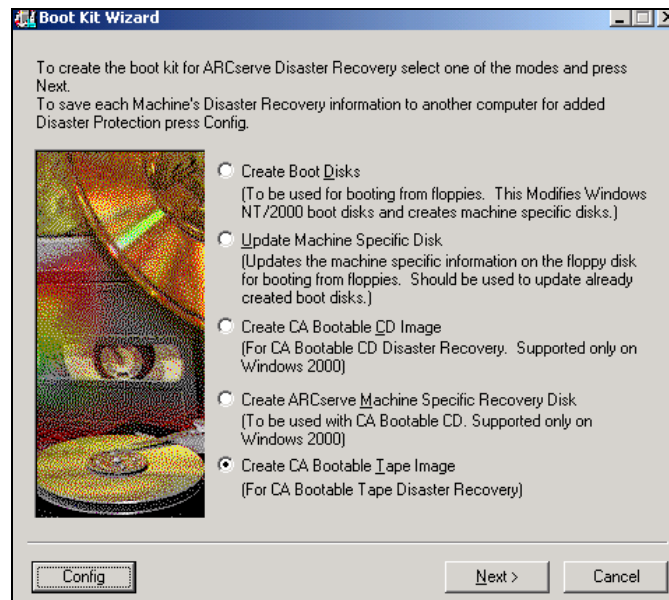


2. The Wizard will prompt you to insert the blank, formatted disk labeled ARCserve Recovery Disk (Machine Specific Disk) into Drive A. Click Start. The boot disk utility copies all necessary disaster recovery files to the disk.
3. Click Finish. The DR Wizard has finished creating a DR disk that you can use to recover this machine in the event of a disaster.

Disaster Preparation Using the Bootable Tape Drive Method

Bootable Tape Based DR is designed to be used by backup administrators who have suffered a loss of their system volumes on their Windows 2000 production servers, without using any boot floppies or CD ROM. This option can only be used to protect your local ARCserve machine.

1. Select Create Boot Kit from the ARCserve Program Group and choose Create CA Bootable Tape Image. This option will be greyed out if a bootable tape drive is not detected. Click Next.



2. The Boot Kit Wizard displays “Welcome to CA Bootable Tape Disaster Recovery” in the dialog. Click Next.
3. You will be prompted to insert the Windows 2000 CD. Click OK.
4. When the utility has completed creating your DR Boot Kit, click Finish.
5. Format a media using the ARCserve Device Manager or Wizard. This copies the image to the tape.
6. Do a full backup of the local ARCserve server using the tape just formatted.

Note: If any configuration has changed (i.e., network card or SCSI card), a new boot image needs to be created and another full backup needs to be run.

Recovering from a Disaster Using the Floppy Boot Method

To recover from a disaster, you need all the items on the following list:

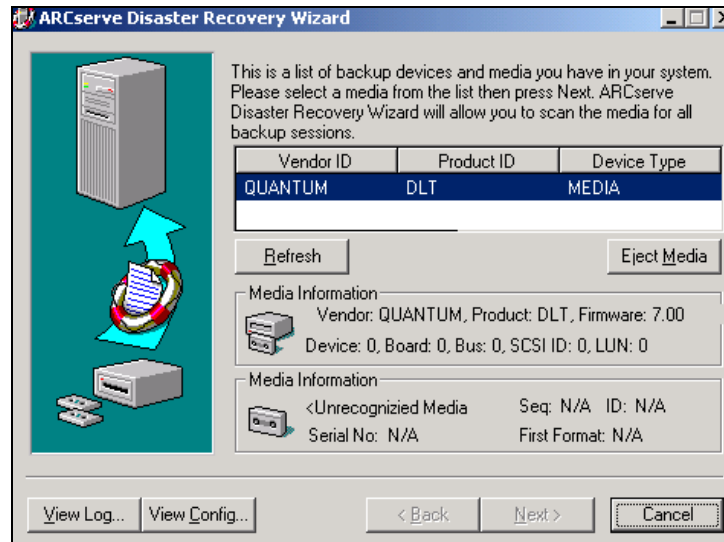
- A set of ARCserve disaster recovery boot disks. These are the disks that you created, per the instructions in the previous section, “Disaster Preparation Using the Floppy Boot Method”.
- A Microsoft Windows 2000 CD that matches the version used to create the boot disks.
- A backup device connected to the server (can be a remote ARCserve server) with an ARCserve backup tape containing the data you want to restore in the drive. The tape must contain at least one full backup session.

***Important!** Upon recovery, DR will automatically partition your hard disk into the original configuration. This set of disks can only be used to perform a disaster recovery on this machine.*

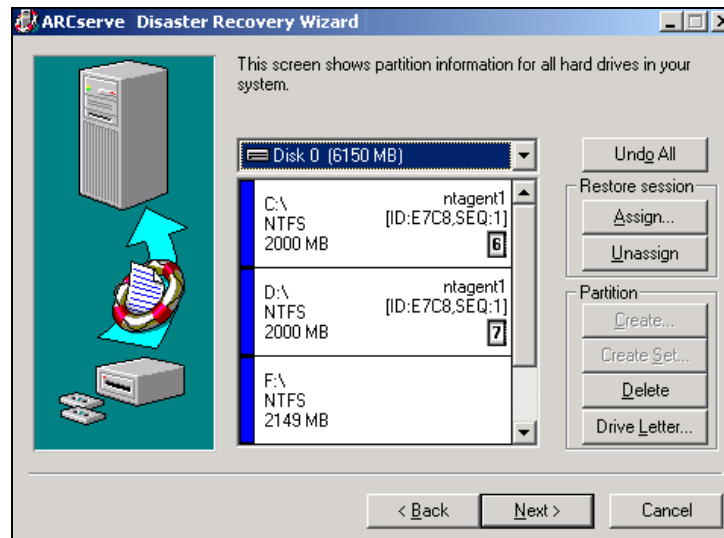
Follow these steps:

1. Boot up the machine you want to recover, with the Windows 2000 Setup Boot disk that you prepared in the previous section.
2. Insert the Windows 2000 Setup Disk 2 when prompted.
3. Insert the Windows 2000 Setup Disk 3 when prompted.
4. Insert the Windows 2000 Setup Disk 4 when prompted.
5. Insert the Windows 2000 CD when prompted. Setup will copy files to your hard disk.
6. Choose the first hard drive partition (usually C:) to install the temporary operating system to perform Disaster Recovery.
7. You will be prompted to insert the ARCserve 2000 Disaster Recovery CD.
8. Insert the Windows 2000 CD when prompted. Setup will copy files to your hard disk.
9. You will then be informed that Setup has completed successfully. Remove all disks and CDs and press Enter to reboot your system.
10. The machine will boot to a DOS window, and prompt you to insert the Disaster Recovery Patch disk. Type \DRPatch at the a: prompt. The machine will reboot back to the DR Wizard.
11. Click Next and you will be prompted for the ARCserve Recovery Disk.
12. You will then be prompted to reboot the machine.
13. Click Next. You may be required to perform steps 11 and 12 up to three times depending on your original hard disk configuration.

14. The screen displays all of the available devices on the local machine or remote ARCserve server:



15. Click Next to continue. The original hard disk configuration is now restored and displayed in the following dialog:



- Formatted partitions — space that is partitioned and formatted. They are formatted when a session is assigned to them.
- Unformatted partitions — space that is partitioned but not formatted. They are formatted when a session is assigned to them.
- Free space — disk space that is not formatted and not partitioned. Free space is created when a partition is deleted. To assign a drive letter to free space, you must first partition it.

16. Click Next. The Wizard is ready to begin recovery for each partition to which a backup session is assigned.
17. To start the recovery process, click Start Disaster Recovery.



The DR Wizard copies the data from the specified sessions to the specified partitions. A progress bar shows the progress of the restore process. Upon completion of the restore, your machine will reboot and return to the exact condition it was in at the time the backup tape was created.

18. Click Finish to complete the Disaster Recovery process and boot back to your machine's original configuration.

Note: A directory named DRBOOT.TMP is created during the restore process. It will be deleted the next time you start the ARCserve Tape Engine.

Important! You can stop the recovery by clicking Abort and then Cancel. However, we strongly recommend you complete the recovery or the results are unpredictable. Also, in some circumstances you may be asked to reboot the server at this point. The recovery process will then pick up where it left off when the machine restarts.

Recovering from a Disaster Using the CD Boot Method

For Windows 2000, DR has a faster way of booting to the DR Wizard. Instead of using 4-5 floppies and Microsoft 2000 CD, we now use only one floppy and a CD. To recover from a disaster using the CD Boot Method, you will need the following items:

- One ARCserve Recovery Disk. This is the disk that you created, per the instructions in the previous section, Create Disk for CD Boot Method.
- ARCserve Disaster Recovery CD— As prepared in the previous section.

Follow these steps:

1. To boot from the CD, you must put the CD in the CD-ROM drive and reboot the machine. Upon booting from the CD, you will be warned that DR is about to install a temporary Windows 2000.

```
The system has detected a Computer Associates Windows 2000 Disaster Recovery
bootable CD in your CD-ROM drive.

Booting from this CD will install Computer Associates Disaster Recovery
Wizard for the purpose of performing a Disaster Recovery.

To perform a successful Disaster Recovery for Windows 2000, you will need a
ARCserve Machine specific floppy for this machine and a full backup.
You can create this floppy by running the Create Boot Kit Wizard on your
ARCserve server.

In the event that you do not have a full backup or the ARCserve Machine
specific floppy for this machine, the Disaster Recovery process might be
incomplete - Failing to perform a complete system recovery.

To boot from the CD for doing Disaster Recovery insert the ARCserve Machine
specific floppy in the floppy drive and press 'y' or 'Y'.

Press any other key, to continue booting from the Hard disk.
```

2. Press “Y” or “y”.

Important! In the event that you do not want to do DR, or a full backup or DRIF floppy is not available, you should not perform this step.

3. DR will now install the temporary OS.
4. You will be prompted to reboot the machine. Take out all the media and reboot the machine.
5. Continue from Step 9 of the floppy boot method procedures in this chapter.

Recovering from a Disaster Using a Bootable Tape

You can retrieve the lost data on the server using the bootable tape feature if both of the following conditions are met:

- A disaster occurs which causes the loss of at least the server's Windows 2000 system volume so the server no longer boots up.
- The server was backed up using the Create CA Bootable Tape Option to a tape drive capable of acting as a bootable device.

Follow these steps:

1. Remove all media from the bootable floppy drive and/or CD drive.
2. Power up the tape drive in boot mode.
3. Insert the bootable tape backup media into the tape drive. The server is powered on, diagnostics are performed, and the server locates the tape drive as its boot device.
4. The booting process begins and all boot data is read from the tape. The hard disk partitions are recreated. After the necessary Windows 2000 files have been copied to the server, the Windows 2000 setup program will ask you to reboot the server.
5. The server is rebooted, and will boot from its hard disk.
6. After the server is up and running, it will automatically run ARCserve's Recovery Wizard to begin restoring the rest of the data to the partitions. After the data is restored, you will be asked to reboot the server once more. The server will be back to its original configuration and contain the data it had as of its last complete backup.

Special Considerations for Database Restores

ARCserve has special backup agent options available to back up databases such as Oracle, Microsoft SQL and Exchange, and Lotus Notes. If you have backed up one or more of these databases using ARCserve, it cannot be restored using the DR option.

When ARCserve backs up a database, an additional tape session is created, apart from the rest of the backup. This database session is **not** a full backup, and therefore cannot be seen in the DR session list. However, after restoring the rest of the server using the DR option, it is a simple process to start ARCserve and begin a normal database recovery procedure.