Writing Technical Instructions

The *Wall Street Journal* said that 80 percent of businesses surveyed believe that their employees' biggest problem is written communication.

In 1983, computer manufacturer Coleco wiped $35 million off its balance sheet in one quarter. How? Customers swamped the company with returns of a new product line. There was nothing wrong with the product--the problem was that the instruction manuals were unreadable. The firm went bust.

Some of you will write or be responsible for instructions and procedures as part of your work. Here is something that comes to mind that may be helpful.

We can desire to write clearly but many times I remind myself to write procedures so that they cannot possibly be misunderstood. That's saying a lot, but it's the attitude that is important to take when writing procedures for a specified audience. What may be clear to the writer is not necessarily clear to the audience.

The writer will first make sure that he/she analyses the audience, write and organize the procedures for the audience, present the procedures in an appropriate format, and then test the instructions or procedures with a representative sample of the audience, and make revisions until the instructions or procedures work for the audience.

I have found that a lot of instructions and procedures look good, they are signed off by those who do not use the procedures, and when they don't work, the user needs help which can result in loss of time and resources. Just because writers know how to string sentences and paragraphs together, doesn't mean that the writing should not be tested for usability.

Developing a users manual can be most critical especially in a virtual situation. Many of us can string sentences and paragraphs together and make a document look good. When we analyze our audience, find out how users will use the information in the manual, consider the best presentation, and then revise and test the manual for usability, we can produce a manual that works.

When a manual does not work for the user, they are usually prevented from doing what they are supposed to do. We then end up using trainers, developers, technicians, or other subject matter experts to help do what the manual should do. This adds to the overall cost in instructing the user.

When writing a manual for a technical person, the technical person can work through the presentation because of their knowledge regardless of the quality of the manual. Still, a quality manual will save them time.

When I approach the writing of a technical manual I take the attitude that I will write such that the instructions cannot possibly be misunderstood. While this may never happen, it causes me to do a better job in producing a manual that works. While a lot is learned about the subject of the manual, it is important to recognize the communication techniques that must be used in order for the manual to achieve its purpose.

I have observed that where quality documentation is considered very important, those managers responsible for seeing that it gets done have risen at a faster rate than others.

This causes me to advise all students to not underestimate the value of quality documentation and effective written communication.

In writing technical documentation for Systems Engineers, I have been proud to produce quality documentation for intranet access. Throughout the country, the engineers were able to use the documentation from a laptop with good results.

Writing instructions is a very valuable skill especially when the users find that the instructions you write are easy to follow and really work!

When writing instructions, here is a pattern that I follow:

Start with a paragraph that outlines what is to be accomplished in a procedure and list the objectives.

Number each step to be performed by the reader. This may be referred to as an action step.

After each action step, describe what the reader will see or what the result(s) will be while always making sure that there is only one action step per number as follows:

1. The first action step – Describe what is to be done by the reader.
   In the same step, describe what the reader will see or what the result(s) will be.
2. The next action step - Describe what is to be done by the reader.
   In the same step, describe what the reader will see or what the result(s) will be.
3. The next action step – etc.

There are slight variations on this and you should use illustrations or screen shots if they are available. The illustration is placed in the step where the action on it is stated.

Note: Never use an acronym without first defining it, unless it is widely known to your audience. It is best to define the acronym in all cases, especially in technical, scientific, and business writing. Example:

(Incorrect) The TSC installation is performed after Log on**.**

(Correct) The Terminal Services Client (TSC) installation is performed after Log on.

Once you have defined the acronym, it is okay to use it in the same message.

Test the instructions with a representative sample of the users. Observe the problems that the user may encounter with the instructions and make revisions accordingly. You may have to do this more than once. You will be amazed at what you find that could make the instructions more usable.

This is a method of 'usability testing' that should especially be done with instruction manuals. It is important to make sure that the users of the representative sample understand that the manual is being tested and not them. After the manual has made a final revision, it is best to convert the manual to PDF before putting it on the web server.

The following page is a list and explanation of Computer Systems Document Types.

The document that follows Computer Systems Document Types titled, “Operational Recovery” can be used as an example for writing technical instructions.

Computer Systems Document Types

Documentation	Description
1. Requirements Analysis	This document describes what the system must do in order to perform the business functions of concern. It basically describes features and benefits of the system, why the system should exist, who will use it, where it is to be used, when it is to be used, and how it fits into the business as a tool to solve the business problem
2. Functional Specifications	This document describes what the input screens and output screens must look like in conformance with the Business Requirements Analysis. It includes the format of the screen design, menu items, the output forms, the type of storage, and the processing required to produce the outputs from designated inputs specified by item 1.
3. Technical Specifications	This document describes what hardware and software must be used to design the input screens, perform the processing, and produce the output screens and reports in conformance with the Functional Specifications. This describes the programming language, software, and the hardware required to satisfy item 2. It includes the System Architecture, that includes the type of database program (Sybase, Oracle, SQL Server, etc.), Network Configuration, and connections among other things.
4. Programming/Coding	This documentation includes the algorithms, pseudocode, flowcharts, and the actual coding in conformance with the Technical Design Specifications. The program, using the specified program languages, is designed and coded to function as required in item 2.
5. Integration/Testing	This document describes the hardware and software that is used with the basic system. It also describes how the other software and hardware, that is to operate with the main system, is integrated and tested with the main system.
6. Implementation/Testing	This document describes the system installation and test procedures using test data.
7. User Documentation	A User's Guide is used to guide the end-user in the operation of the system. A Program Developer's Guide, and an Administrator's Guide may also be put in this category.
8. Configuration Management (Audit and change Control)	This documentation describes how to control and document the functional and physical characteristics of software or hardware. It also documents the control of the changes to the characteristics and the recording and reporting of the change processing and implementation status.

This page intentionally left blank.

Operational Recovery for Windows NT

Table of Contents

Purpose

This document will detail the steps required to recover a Windows NT server from a complete failure. The following assumptions are made in this document:

There is a current full backup of the system (Arcserve 6.x or higher)

There is a tape device locally connected
OR
There is a tape device network connected

The Windows NT Server setup CD-ROM
OR
A Windows NT Server distribution CD-ROM

Audience

The audience for this topic is any individual assigned the responsibility of performing this procedure.

Assumptions

This topic assumes the catastrophic failure of a Windows NT 4.0 server at the home office.

Tasks

1. Create Disaster Recovery Diskettes.
2. Insert installation CD-ROM
3. Insert the Cheyenne Disaster Recovery Disk
4. Scan tape backup sessions.
5. Start Disaster Recovery
6. Create Volume Set
7. Format Volume Set
8. Restore Data

Procedure for Locally Connected Tape Device

Create Disaster Diskettes

1.	Create the Disaster Recovery (DR) diskettes: There are four diskette images on: \\WCH1D002\INSTALL\NTSRV40\BOOTDISK. cheydr01.dsk cheydr02.dsk cheydr03.dsk cheydr04.dsk To Create the diskettes, run **disaster.bat**.
2.	(Assuming the restore is happening on the same physical hardware) Recreate the system as a new hardware unit (see Compaq Proliant xxxx Server Installation Procedures - for your specific hardware platform).
3.	Boot the system with the Windows NT Server setup disk #1 (cheydr01.dsk image diskette) (created above). *You are prompted to insert the Windows NT Server setup diskette #2.*
4.	Insert the Windows NT Server setup disk #2 (cheydr02.dsk image diskette) (created above). *You will be prompted to select the setup type – Express or Custom*
5.	Press the C key to select a custom setup. (This allows us to specify partition information during setup. Express will create a C: partition with the maximum amount of disk space available). *You are prompted to automatically scan for mass storage devices or specify your own.*
6.	Press **Enter** to automatically detect. *You are prompted to insert the Windows NT Server setup disk #3.*
7.	Insert the Windows NT Server setup disk #3 (cheydr03.dsk image diskette). *After the hardware detection is complete, a list of mass storage devices that have been detected is displayed.*
8.	Press **Enter** to continue. *You are shown a list of hardware (video, mouse, etc) that setup has detected. Do not change the settings.*
9.	Press **Enter** to continue. *You are prompted to insert the Windows NT Server CD-ROM.*

Insert Installation CD-ROM

1.	Insert the installation CD-ROM for Windows NT.
2.	Press **Enter** to continue. *You are prompted to specify a destination for the files to be installed. Create the C and D drive partitions as follows:*
3.	Select (using ↑↓ keys) the Unpartitioned Space line and press C to create a partition. You will be prompted to enter the size of the partition to create (by default, setup will enter the maximum available space to the partition).
4.	Use Backspace key to erase default amount 4044 and enter 502.
5.	Press **Enter** to continue. *You are returned to the previous selection screen.*
6.	Again, select the unpartitioned space and press C to create another partition. This partition will be 1502 in size.
7.	Press **Enter** to continue. *You are returned to the previous selection screen.*
8.	Select the C: (502MB) partition and press **Enter** to install Windows NT on that partition. *You are prompted to format the partition as either FAT or NTFS.*
9.	Select FAT (default) and press **Enter** to format the drive. *You are prompted to insert the Cheyenne Disaster Recovery Diskette.*

Insert Recovery Disk

1.	Insert the Cheyenne Disaster Recovery Disk (cheydr04.dsk image diskette).
2.	Press **Enter** to continue. *(File copy will now begin). You will be prompted when the file copy process completes to remove any diskette and CD-ROM from the drives.*
3.	Remove the Windows NT CD-ROM and the Cheyenne Disaster Recovery Diskette.

4. Press **Enter** to reboot the server. (*The server reboots*). At this time, there should be a locally attached tape device installed with the current full backup of the system inserted in the drive.
The Cheyenne disaster recovery wizard is displayed (Figure 1).

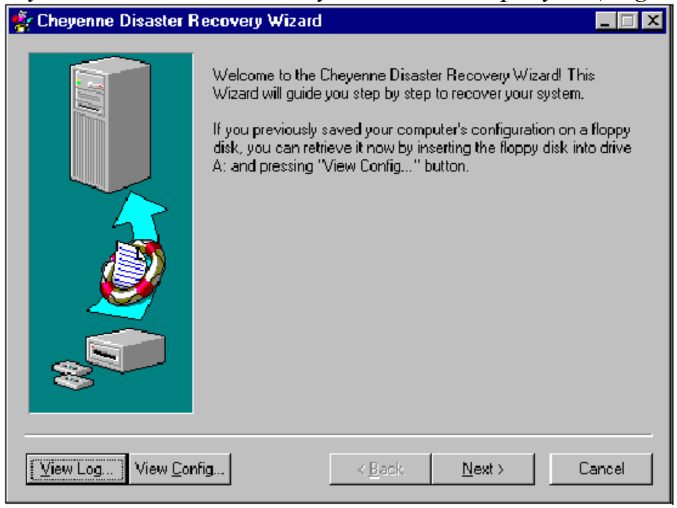


Figure 1. Cheyenne Disaster Recovery Wizard.

5. Confirm that the current full backup tape is inserted into the tape drive.

6. Click **Next** to continue. *The Tape devices and ,media dialog is displayed (Figure 2).* This will show you all locally attached tape devices that were detected and any media that is in the device.

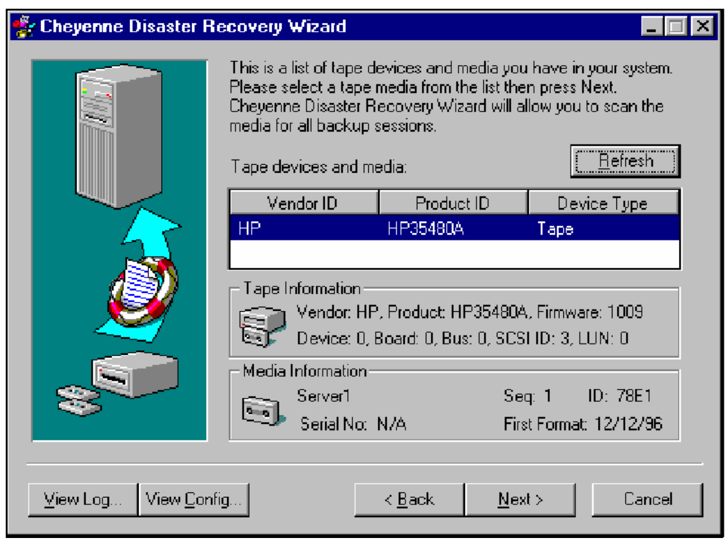


Figure 2. Cheyenne Recovery Wizard Showing System Tape Devices and Media.

7. If the dialog shows the proper tape and device, click **Next** to continue. *The tape session dialog is displayed (Figure 3).*

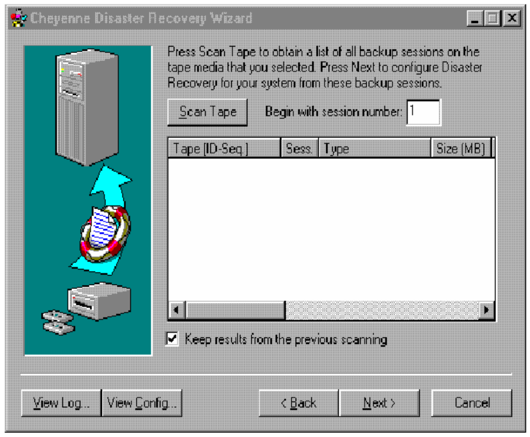


Figure 3. Wizard with Tape Session Dialog Displayed.

Scan Tape For Backup Sessions

1. Click the scan tape button to scan the tape for all backup sessions. (This will take a few minutes).

2. *After the scan Is complete, confirm that the correct sessions were detected (Figure 4).*

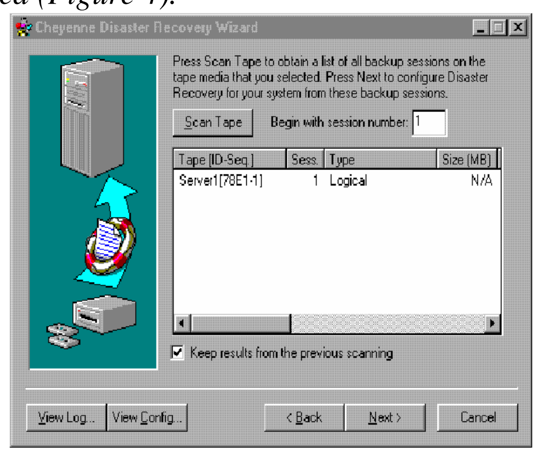


Figure 4. Wizard with Detected Session Displayed.

3. Click **Next** to continue. *The session assignment dialog is displayed*. (The purpose of this dialog is to assign the detected backup sessions to the appropriate disk drive and then proceed with the restore process).

4. Left-click on the (Unformatted 1502MB) partition to select it.

5.	Click the Drive Letter button. *The Drive Letter Assignment dialog is displayed.*
6.	Click Assign drive letter and select D.
7.	Click OK to continue. *You are returned to the session assignment dialog.*
8.	*Left*-click once on the C: partition (502MB) to select it.
9.	Next, click the **Assign** button. This will open the list of sessions that were found on the tape.
10.	Click on the backup session of the C drive to be restored.
11.	Click **OK** to continue. *You are returned to the session assignment dialog.*
12.	Left-click once on the D partition (1502MB) and click the **Assign** button.
13.	Left-click once on the backup session of the D drive that you want to restore.
14.	Click **OK** to continue. *You are returned to the session assignment dialog.*
15.	Click the **Next** button to continue. *The Start disaster recovery dialog is displayed.*

Start Disaster Recovery

1.	Click the **Start Disaster Recovery** button to begin the restore process. *A dialog is displayed stating that you need to restart the machine.*
2.	Click OK. (*The server will reboot*). After the reboot, the restore wizard automatically starts restore process. (*Wait patiently*).
3.	When the restore process completes, look for a message at the top in the restore wizard stating that the restore finished successfully.
4.	Click **Finish.** A dialog is displayed: *"If you restored Windows NT system to a partition which is physically different than the partition it was located originally, you need to modify the corresponding entries of boot.ini. Do you wish to modify it now?".*

5. Click **Yes** to continue. Confirm that the **boot.ini** that is opened looks exactly as listed below (make changes accordingly):

boot.ini file:

```
[boot loader]
timeout=5
default=multi(0)disk(0)rdisk(0)partition(4)\WINNT
[operating systems]
multi(0)disk(0)rdisk(0)partition(4)\WINNT="Windows NT Server Version 4.00"
multi(0)disk(0)rdisk(0)partition(4)\WINNT="Windows NT Server Version 4.00 [VGA mode]" /basevideo /sos
multi(0)disk(0)rdisk(0)partition(3)\WINNT="Disaster Recovery"
multi(0)disk(0)rdisk(0)partition(3)\WINNT="Disaster Recovery [VGA mode]" /basevideo /sos
C:\="MS-DOS"
```

6. After reviewing the **boot.ini**, click **Save** to save the file *(even if changes have not been made)*.
A dialog is displayed stating that the file was successfully saved.

7. Click **OK** to continue. (*The server will reboot*).

8. When the server restarts, select the "**Disaster Recovery**" option from the boot menu and Press **Enter** to continue.

9. Login to Windows NT with an administrative equivalent ID.

Create Volume Set

1. From the Start Menu, select **Programs -> Administrative Tools (Common) -> Disk Administrator**. *A graphical view of the logical and physical disks is displayed (Figure 5).*

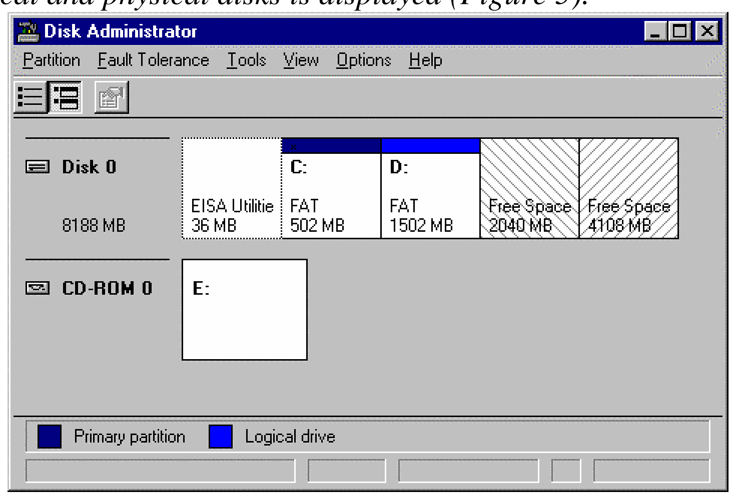


Figure 5. Logical and Physical Disk display.

2. Press and hold the Ctrl key while clicking on both of the sections labeled "Free Space".

3. Right click on the selected partitions and select "Create Volume Set"
A dialog is displayed prompting for the amount of disk space to allocate to the volume set (Figure 6).

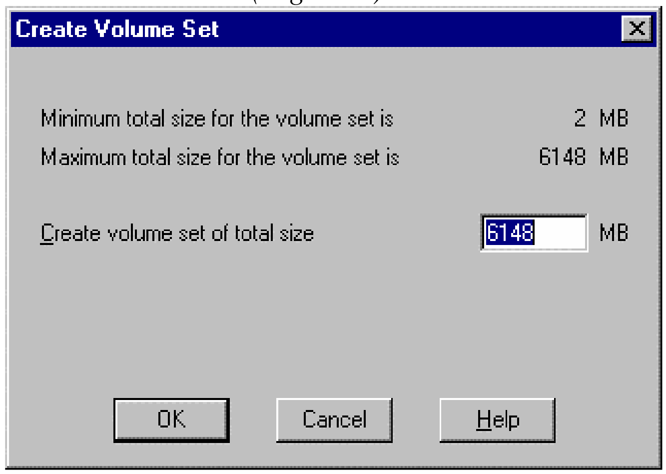


Figure 6. Create Volume Set Dialog.

4. Accept "Create volume set of total size" default (all available disk space) and press **Enter** to continue.

Format Volume Set

1. Right-click on the newly created volume set and click on the "Commit Changes Now" menu option. Three messages are displayed:
The Confirm window (Figure 8) prompts you that the disk configuration has changed - click **Yes** to save the changes.

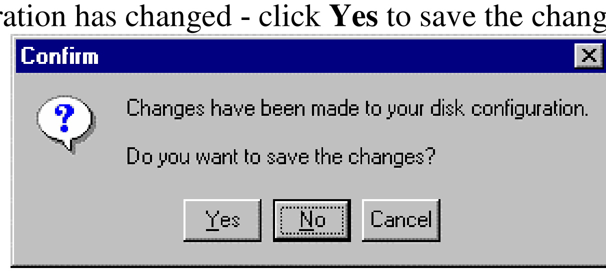


Figure 8. Confirm Window.

2. The Disk Administrator message 1 (Figure 9) informs you that disks were updated successfully and you need to update the repair disk – click **OK**.

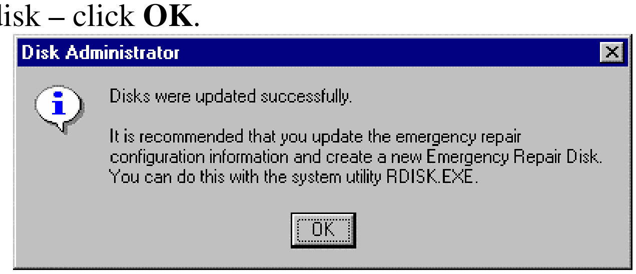


Figure 9. Disk Administrator Message 1.

3. The Disk Administrator Message 2 (Figure 10) informs you that the partition information has changed and you need to update the **boot.ini** file – click **OK**.

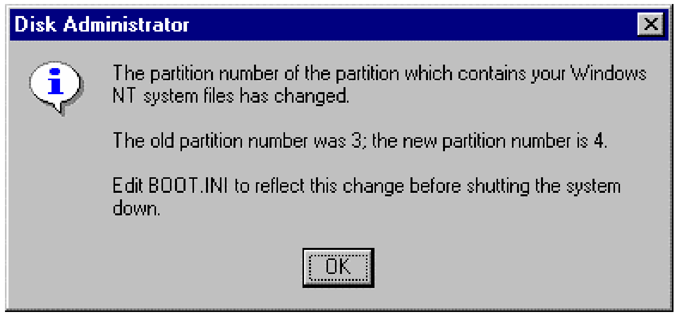


Figure 10. Disk Administrator Message 2.

Now the partition needs to be formatted.

4. Right-click on the **F**: to display popup menu (Figure 11).

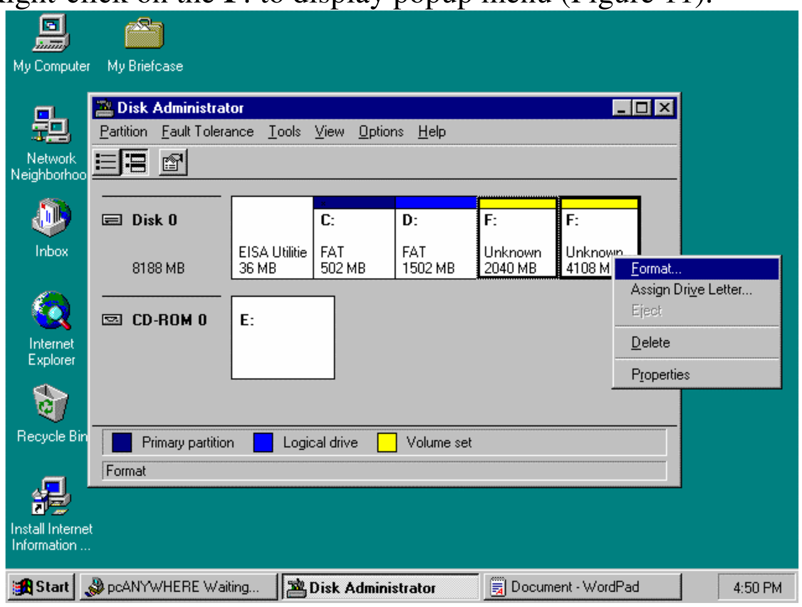
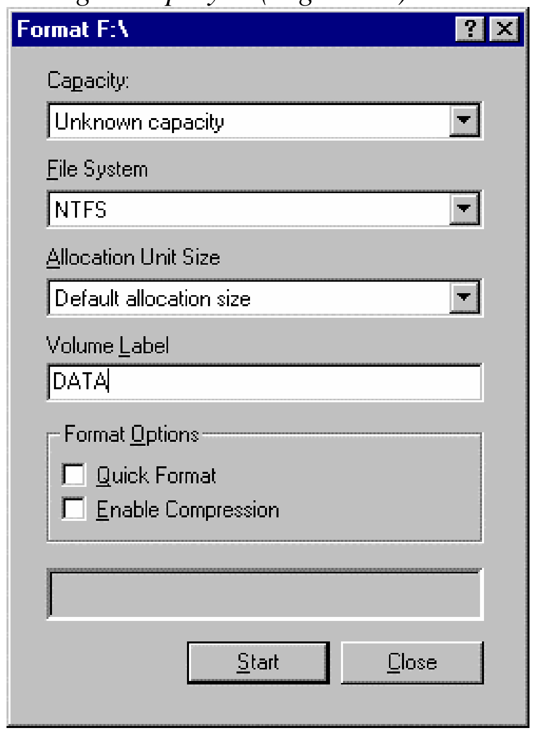


Figure 11. Disk Administrator Display with Popup Menu.

5.	Select the **Format** menu option. *The Format dialog is displayed (Figure 12).*  Figure 12. Format Dialog Display.
6.	Format the disk with the NTFS file system and enter DATA as the label name. <u>NOTE: DO NOT Enable Compression!</u>
7.	Click **Start**. A WARNING message is displayed.
8.	Click **OK**. After the format is complete, a dialog is displayed stating the format operation is complete.
9.	Click **Close** in the Format dialog box. *You are returned to the Disk Administrator window.*
10.	Close the Disk Administrator window. *You are returned to the Windows Desktop.*

Restore Data

1.	The data from the F drive needs to be restored to the partition. (This section assumes ARCserve 6.0 is installed – see later section for instructions on ARCserve 6.5).

2. From the **Start Menu**, select **Programs** -> ARCserve for Windows NT -> ARCserve Manager.
*The **Quick Access** menu is displayed (Figure 13).*

Figure 13. Quick Access Menu.

3. Click on the **Restore** button.
The Restore manager window is displayed (Figure 14).

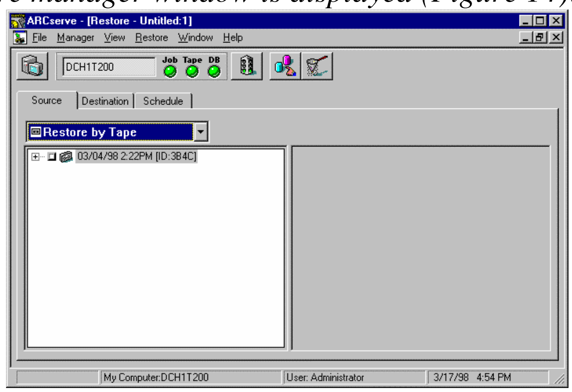


Figure 14. Restore Manager Window Source Tab.

4. From the **Source** tab, change the restore from List to Restore by Tape.

5. Click the **"+"** to expand the tape sessions on the selected tape as shown in Figure 15.

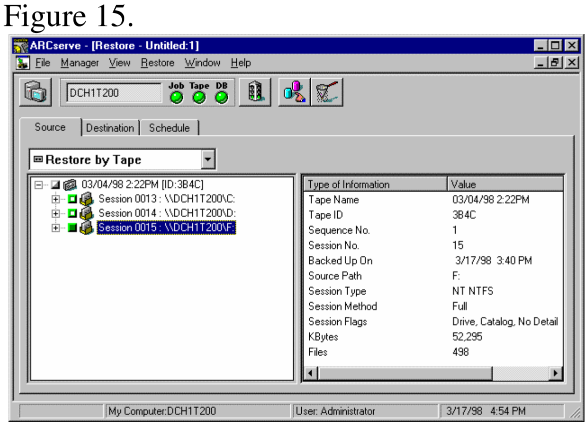


Figure 15. Restore Manager Window Tape Sessions.

6. Click the green box next to the most recent session for the F drive that you want to restore.

7. Click the Destination tab (Figure 16). By default, the Restore files to their original location(s) should be checked (check it if it is not).

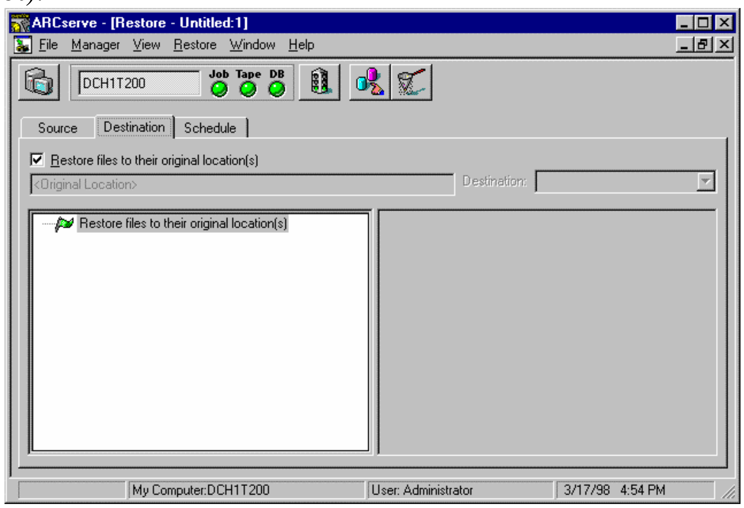


Figure 16. Restore Manager Window Destination Tab.

8. Click the Schedule tab. The default is **Run Now** is displayed.

9. From the **Restore** menu, select **Run/Schedule**. The session user name and password dialog is displayed (Figure 17).

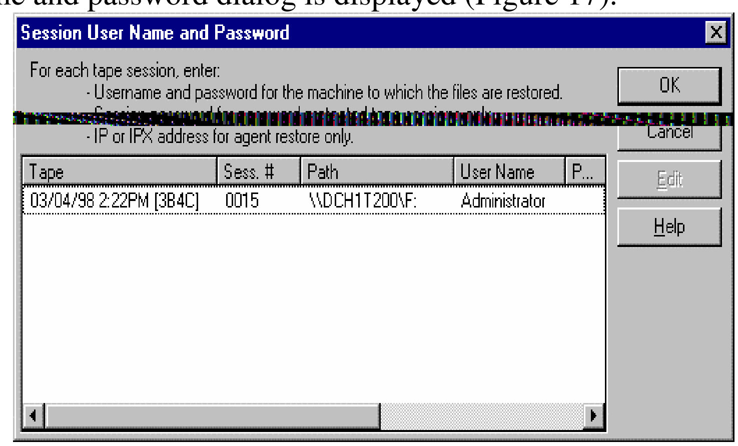


Figure 17. Session User Name and Password.

- If you are logged on as an Administrator equivalent, you will not need to change any information – click **OK** to continue.
- If you are not logged on as an Administrator equivalent, click the session to select it and click **Edit**. A dialog will appear, prompting you to enter a user name and password.

10. A summary dialog is displayed (Figure 18).

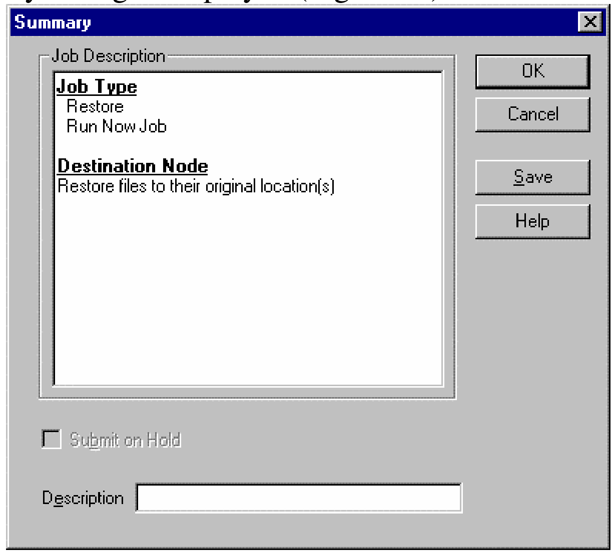


Figure 18. Summary Dialog.

11. Click **OK** to continue if all the information is correct. The Restore process will begin. (Figure 19).

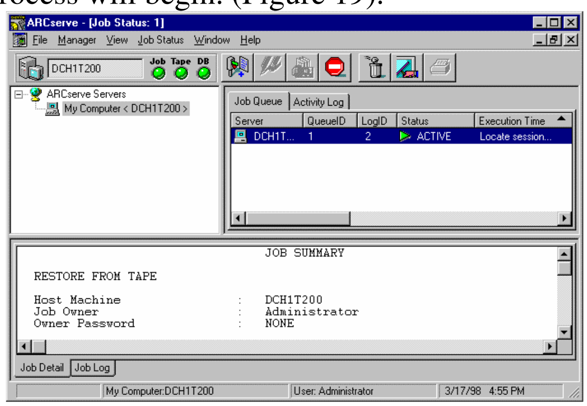


Figure 19. Job Status Window

12. After the restore has completed, a Job Status Window is displayed with the status of the restore job indicated (Figure 20).

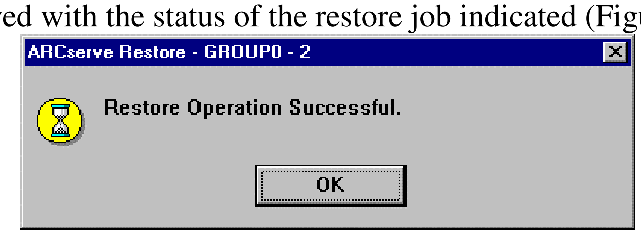


Figure 20. Restore Operation Successful Window.

13. Close ARCserve.

14. From the **Start** Menu, select **Shutdown -> Restart the computer.**

15. Click **OK** to complete the restore process.