Installation Guide

English

Networker

version **6**

DRAFT

399X50081G

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Networker

version 6

Installation Guide

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5124547	5339176	5509561	5652804	5875288	6031932	6159659
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Chapter 1

Introduction

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1.1 CreoScitex Backup Utility

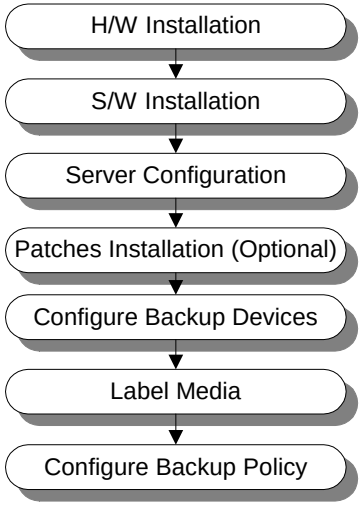
The **CreoScitex Backup Utility** is supplied as a stand-alone application, which automates backup operations performed by the Timna Server/Brisque Server and supports CreoScitex Scheduled Archiving functionality.

This document provides a description of the installation (software and hardware) and configuration procedures, as well as a basic user work flow.

Once installed and configured according to your specific requirements, this application runs automatically (you must verify that the necessary tapes are available). It is highly recommended to monitor the progress of any backup operation and to read the notifications on your mail application on a daily basis.

You can reconfigure the utility at any time and for any reason.

Ensure that you have MacX installed and/or that you can open a x-window on your server terminal.



1.2 Pre-Installation Requirements

1.2.1 Software

- Latest Timna Server/Brisque Server software is installed and operational on your machine.
- TCP/IP is configured and active.
- Verify that the system date is correct; type **smit date** and press **Enter**. Change parameters to match the correct date.



If you are reinstalling the software on the machine where Legato indexes exist, do **not** change time/date.

1.2.2 Hardware

- For **41T/W** or **42T/W** models, you need a free SCSI ID for the on-board SCSI controller.

  For PCI models, connect each device according to its configuration:

  - Connect 4000/4500 Quantum devices to F/W adapter.
  - Connect Q47 Breece Hill machines to an ultra-single SCSI adapter.
  - Connect Q2.15 machines to a single adapter.
  - Connect Qualstar machines to LVD or Ultra SCSI Adapter

Chapter 2

Software Installation and Configuration (New Installation)

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2.1 Installing NetWorker 6

The NetWorker 6 software can be installed in two ways:

- Via SciSmit
- Manual installation

2.1.1 Via SciSmit (Recommended)

Installing Software

1. Insert the *NetWorker Servers, Clients & Storage Nodes Vol.1* CD in the CD-ROM drive.
2. Type **scismit** and press **Enter** (on the Timna server, activate SciSmit via CDE).
3. From the *SciSmit* main menu, execute the following sequence: **Backup and Restore** => **Automatic Backup and Restore** => **Software Installation** and press **Enter**.
4. Press **Enter** in response to "... Are You sure?". The list of available disks is displayed.

   This installation creates a */backup* file system if it does not exist yet. It also extracts files from CD-ROM to a temporary location that will later be erased. User *Backup* is also created.
5. Choose the destination backup disk and press **Enter**.

   While installing NetWorker 6 via SciSmit, you should select the destination for the */backup* file system. This file system can be created on the system disk or on a separate disk that has no volume group assigned to it. The file system size is 50 PP (200MB for 4GB disk, 400MB for 9GB disk, and 800MB for 18GB disk). Refer to *Section 5.5.2 Allocating Extra Space for Online Indexes on page 51* for instructions on how to increase the */backup* file system.
6. Press **[F10]** to exit *SciSmit*. This takes approximately five minutes to complete.

2.1.2 Manual Installation (Optional)

You can install software using the following sequence:

1. Via *Smit* create a mount point for CD - */mnt:*

   #mount /mnt

2. Create a directory on one of the data volumes:

   #mkdir /dataVolumes/rtest10.1.0/networker6

3. Change to this new directory:

   #cd /dataVolumes/rtest10.1.0/networker6

4. Extract the NetWorker 6 software:

   #tar xvpBf /mnt/AIX/NETWORKER.TAR

2.2 Server Configuration

2.2.1 Configuration



Important: While reinstalling NetWorker or upgrading NetWorker 5.1 to 6, you will be asked additional questions (about overwriting the existing files). To all these questions, answer **Yes**.

1. At the command prompt type **scismit** and press **Enter** (or activate SciSmit via CDE on the Timna Server).
2. From the *SciSmit* main menu, select **Backup and Restore** and press **Enter**.
3. Select **Automatic Backup and Restore** and press **Enter**.
4. From the *Automatic Backup and Restore* menu, select **Server Configuration** and press **Enter**.
5. Press **Enter** again at the “Are you sure...?” dialog window.
6. Proceed to answer the questions that appear:
   - **Install NetWorker man pages [yes]?**

     Type **No** and press **Enter.**

     Directory for main pages: [*/backup/man*]NetWorker
   - **Install the aix41 NetWorker programs [yes]**

     Press **Enter** to accept the default.
   - **Directory where aix41 NetWorker programs** should be installed [usr/bin]

     Type in **/backup/bin** and press **Enter**. (“/backup/bin” is the CreoScitex default directory.)

     Important: To set up the NetWorker server you need to supply a directory with enough free space to maintain all the on-line file indexing and media management information.

     To setup NetWorker client, you need to supply a directory for the *nsrexecd* file.

- **Do you wish to continue with nsr_ize?**

  Type **Yes**.

- **Directory to use for server and client information [/dataVolumes/rtest7.2.0/nsr].**

  Type in **/backup/nsr** and press **Enter**.

  The following is a list of tape devices available on your system:

  rmt0 Available 00-00-0S-40 Other SCSI Tape Drive

  rmt1 Available 00-00-0S-30 Other SCSI Tape Drive

- **Enter device name [Return]:**

  Type in your selected device and press **Enter** for each *rmt.* For example, type **/dev/rmt1.1** and press **Enter**.

  Type in the device type **dlt7000** for DLT, **8mm_AIT-2** for AIT.

- **Enter device name [Return]:**

  Press **Enter** to confirm.

  Enter all available devices (rmt0.1, rmt 1.1 etc) and press **Enter** twice. Follow instructions on screen.

- **Enter the first NetWorker server's name (enter the value "all" allowing access to all NetWorker servers) [no more]:all**

  Type **all** and press **Enter** to confirm.

- **Start NetWorker daemons at end of install [yes]: ?**

  Type **No**.


Do NOT start the daemons if you plan to install the patches.

- **Install the NetWorker device drivers [yes].**

  Press **Enter** to confirm.

  NetWorker successfully installed on rtest7

7. Press **[F10]** to exit *SciSmit*.

2.2.2 Patch Installation (Optional)

- See information regarding the latest patches from Scitex Support Zone.
- Install all recommended latest patches if exist (refer to *CreoScitex SupportZone*).

2.2.3 Changing Password for User Backup

To change user Backup password to null:

1. At the command prompt, type **passwd backup** and press **Enter**.
2. Press **Enter** in response to **Backup's new password** in order to enter the null password.
3. Press **Enter** again in response to **Re-enter Backup's new password** (null).

2.2.4 Accessing NetWorker

1. To activate the daemons, from the command line type:

   #nsrd

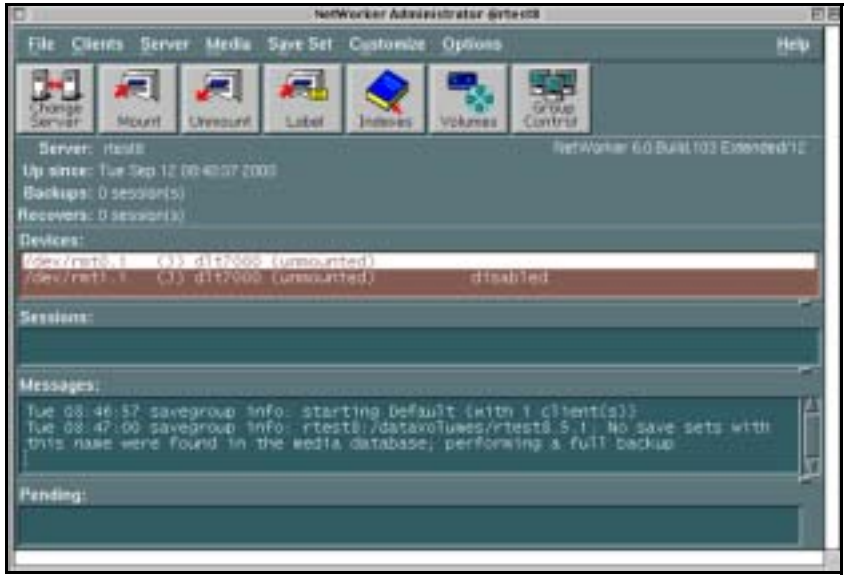
   #nsrexecd

2. To access NetWorker 6 from the Timna Server CDE:

   From the *CDE Launch Pad*, open the **Services** panel, then double click the **Network Admin** icon.

3. Login as **root** and enter your password.

   The *NWAdmin* main window is now displayed:



2.2.5 Setting the Event Notification Mechanism

The *Notifications* mechanism advises the user of events (both pre-configured and user configured) that occur in the NetWorker system. Messages are sent through the electronic mail.

To set the Event Notification system in order to send messages to user Backup, follow these steps:

1. From the main menu, select **Customize** and then **Notifications**.

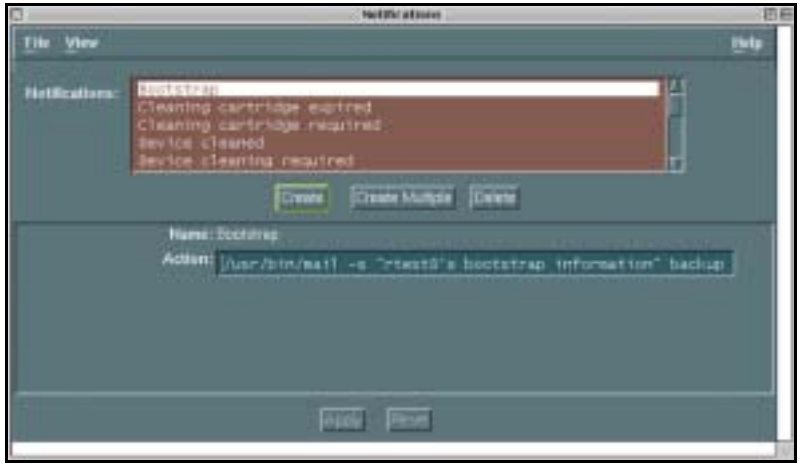
2. In the *Notifications* box, change **Bootstrap** text to:

   /usr/bin/mail –s "ripro1's bootstrap information" backup and click **Apply**. This sends the bootstrap into a separate mail after each automatic backup.

   The user must print out the Bootstrap information daily through the *Helios Mail* from Macintosh.

3. Select all the other notifications one by one from the *Notifications* window.

4. The *Action* text field displays what type of action is to be taken if the operation is mail. Verify that this command line shows the correct destination for the mail.



5. For each *Notification* message, delete the word root at the end of each line and type in **backup**.

6. Click **Apply**. Repeat this procedure for each *Notification* message.

7. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

2.2.6 Changing Server Parameters

To determine the number of devices and sessions per device that can be activated in parallel:

1. From the main menu, execute the sequence **Server => Server Setup**.
2. At the *Parallelism* text field, change the default from 4 to be equal to the number of drives. For example, for TLS-4222i, *Parallelism* = 2; for TLS-46120 with four drives, *Parallelism* = 4; for Quantum 4500 with 1 drive, *Parallelism* = 1.

   Basically, the *Parallelism* should not be bigger than the number of drives that may write simultaneously. For example, if the site has a 4-DLT drive JBX for read only and a 6-AIT drive JBX write/read, then the *Parallelism* should be set to **6**.

3. Click **Apply**.
4. From the *File* menu, select **Exit** to return to the *NWAdmin* window.



The above procedure optimizes the performance for retrieval, rather than for backup/ archive.



Saveset cutoff sizeis irrelevant for NetWorker 6.

2.2.7 Working in the Domain Name Server Environment (DNS)

When installing NetWorker in a DNS environment (DNS is defined in *Smit*), the NetWorker client name will include the DNS name, for example, **rtest9.creoscitex.com**.

To avoid this, you must rename the */etc/resolve.conf* file prior to the NetWorker installation:

#cd /etc

#mv resolve.conf resolve.conf.org

After the NetWorker installation, restore the file:

#mv resolve.conf.org resolve.conf

Chapter 3

Upgrading NetWorker Ver 5.1 to Ver 6 and Higher

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3.1 Preparing for Upgrade

1. From the command line, run **nsrck -F** to ensure indexes' integrity before upgrade.
2. Copy the old indexes to a data volume (see *Appendix F Copying Legato Indexes to Data Volume*).
3. Make sure that you have a backup of the old indexes on the tape and the last bootstrap information printout.
   If not, run **savegrp -O -G Default** to back them up.



There is no backward conversion from NetWorker version 6 to 5.1 index format. If you want to return to NetWorker 5.1, you should recreate indexes from the data volume or the backup tape.

3.2 Verifying Upgrade

Prior and after upgrading Networker from version 5.1 to 6, run the following commands to verify smooth conversion:

Command	To...	Ver 5	Ver 6
mminfo -am[a]	Verify number of media is identical		
mminfo -av | wc -l[a]	Verify number of savesets is identical		
nsrls[b]	Compare the total file indexes size		
du /nsr/mm/mmvolume[c] (for NetWorker 6, **du /nsr/mm/mmvolume6**)	Compare the size of media DB		

a. Numbers should be equal for NetWorker 5.1 and NetWorker 6.
b. Index size will normally decrease after upgrading.
c. Media DB size will normally increase after upgrading.

Normally the total file index size will decrease approximately 30-40%, while media index will increase approximately 50%.

3.3 Removing the Old NetWorker Software

When upgrading NetWorker 5.1 to 6, keep the indexes.

1. At the command prompt, run:

   #nsr_shutdown -q -a
   #nsr_ize -u -s

2. **Remove the NetWorker man pages [yes]?**

   Enter **No**.

3. **Remove the NetWorker programs [yes]**?

   Enter **Yes**.

4. **Directory from which the aix41 NetWorker programs should be removed [/bin]?**

   Enter **/backup/bin**.

5. **Remove the NetWorker device drivers [yes]?**

   Enter **Yes**.

   The following message appears:
   NetWorker successfully removed for upgrade from 'ripro1'.

3.4 Upgrading Ver 5.1 to Ver 6 and Higher



An Upgrade Enabler Code is needed for NetWorker ver 6. No Update Enabler Code is needed for JBX or No. of slots.

1. Insert the **Legato NetWorker CD-ROM Ver 6** into the CD-ROM drive.
2. Type **scismit** and press **Enter** (On the Timna server, activate SciSmit via CDE).
3. From the *SciSmit* main menu, choose **Backup and Restore** => **Automatic Backup and Restore** => **Software Installation** and press **Enter**.
4. Press **Enter** again in response to "... Are You sure?"

5. Refer to *Section 2.2 Server Configuration on page 8* to install new binary programs of Networker 6 and latest patches (optional).
6. Since AIT2 (Qualstar) media type drives were listed as 8 mm and NetWorker 6 has a specific AIT2 driver, do the following:
   - Delete the jukebox and devices from the *NWAdmin.*
   - Run **jbconfig** to redefine Jukebox/drives.

   
   The upgrade does not change either settings of jukebox/ devices or the configuration files. Thus, DLT 4000 or DLT 7000 Libraries/drives do not need to be redefined.
7. Refer to *Chapter 7 Enabling and Authorizing NetWorker* to execute the enabling and authorizing procedure using the update code.

   The global update Enabler Code should be entered as following:

   nsrcap –v –c ee7a70-b70a39-5899b4
8. Reinstall On Bar from the *NetWorker Modules* CD-ROM (BSM), which is included in Legato Media kit as described in *Section 5.7.3 Installation on page 56*.

Chapter 4

Basic Configuration

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4.1 Configuring Tape Parameters

This section describes the configuration procedure for backup devices.

To enable proper NetWorker functioning, drives must be assigned sequential SCSI IDs (for example, 3,4,5,6 and not 3,4,6,7).

1. At the command prompt, type **smit chgtpe** and press **Enter**.
2. Choose the backup device and press **Enter**.
3. Select **Block size** and change the default value **(512)** to **0 (variable length)**.



4. Verify that the default values for **Density Setting #1** and for **Density Setting #2** are both **0**.
5. Set **Timeout for read and write command** as follows:

   9000 - for DLT7000

   900 - for AIT-2
6. Press **Enter**.
7. Change this for all remote devices for multiple drive tapes.

4.2 Configuring Backup Media Devices

1. From the *NWAdmin* main menu, execute the following sequence: **Media => Devices => View => Details**.



When starting NetWorker for the first time, a default 4 mm device is created. You must delete this device from the *Devices* list before creating new DLT or AIT devices.

2. Verify the following fields:

Media Family	Tape
Media Type	DLT7000/DLT/8mm AIT-2[a]
Enabled[b]	Yes
Write Enabled[b]	Yes
Read Only	No
Target Sessions	1 (per device)
Jukebox Device	Yes
Volume Default Capacity	70GB for DLT, 100GB for AIT
Cleaning Required	Yes
Auto Media Management	Yes (No for JB device)
NDMP	No

a. This fielf is read only.
b. The *Enabled* and *Write Enabled* fields appear only after **Apply** is clicked.



Disregard error message:
nwadmin error, no jukebox found

3. Click **Apply** after all changes are complete. Repeat this for all media devices.
4. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

4.3 Jukebox Basic Configuration

➢ Verify that NetWorker is up and running.

1. At the prompt, enter **jbconfig** (under */backup/bin*).
2. The installation script now appears and you are prompted for answers (this is an example only):

   1. Install an Autodetected SCSI Jukebox?

   2. Install a Autodetected NDMP SCSI Jukebox?

   3. Install an SJI Jukebox?

4. Install an STL Silo?

What kind of Jukebox are you installing?

Enter **1.**

The following message appears (example):

1) scsidev @4.6.0: Breece Hill

Which one do you want to install?

Select the JBX you want to configure.

3. **Name you would like to assign for the Jukebox device?**

   Enter **jbx1** (jbx**1** for the first Jukebox, jbx**2** for the second Jukebox, etc.).

4. **A brief description of a Jukebox device [scsidev @4.6.0: Breece Hill]**

   Press **Enter** to confirm default settings.

   Choose the desired SCSI port (the one that matches the Jukebox SCSI ID).

5. **Path name of control port of the Jukebox device?[scsidev @4.6.0: Breece Hill]**

   Press **Enter**.

6. **Do you want automated cleaning support enabled ? [yes/no]**

   Enter **Yes**.

7. **Enter hostname that owns media drive.**

   Enter **rtest8** (in this example).

8. **Enter pathname of media drive.**

   Enter **/dev/rmt0.1** (in this example).

9. **Should this drive be used as NDMP support device?**

   Enter **No**.



For multiple drive Jukeboxes, repeat this command for each device.

10. **Do you want barcode reader support enabled? (yes/no).**

    
    For multiple drive Jukeboxes, repeat this command for each device

    Enter **Yes**.

11. **Do you want volume labels to match barcode labels? (yes/no).**

    Enter **No**.

    The message **Jukebox has been added successfully** is displayed. If the drives were manually added after deletion, the script asks for each drive pathname and type of each drive.

12. **Would you like to configure another Jukebox?[Y/N]**

    Enter **No** (Enter **Yes** if you have another Jukebox).

4.4 Additional Jukebox Configuration

1. From the *NWAdmin* main menu, execute the following sequence: **Media** => **JukeBoxes** => **View** => **Details**.
2. From the *Bar code reader* field, select **Yes**.
3. Fill in the following parameters:

Field	DLT	AIT-2
Eject sleep	90	default
Cleaning delay	60	default
Unload sleep	90	default
Load sleep	30	default

4. From the *Auto clean* field, select **Yes**.
5. In the *Default cleanings* field, change the default to **20** cleanings for DLT and **50** cleanings fo AIT.
6. From the *Auto media management* field, select **Yes**.

   For detailed information on jukebox parameters refer to the *NetWorker 6 Administrator Guide*.

7. Select **Apply** after all changes are complete.

8. For additional Jukebox, repeat the procedure from step1.
9. From the *File* menu, select **Exit** to return to the *NWAdmin* window.
10. Verify the jukebox parameters:

    The *Devices* field should read /**dev/rmt1.1 (J),** where **(J)** represents jukebox and **(status)** is the working status of the jukebox (e.g. unmounted or reading etc.)

    This field is not identical for a single cartridge device or for multiple drive devices.

This completes the software and hardware installation and configuration procedures.

You should now enable and authorize the software.
Refer to *Chapter 7 Enabling and Authorizing NetWorker on page 71*.

Chapter 5

Customizing Setup

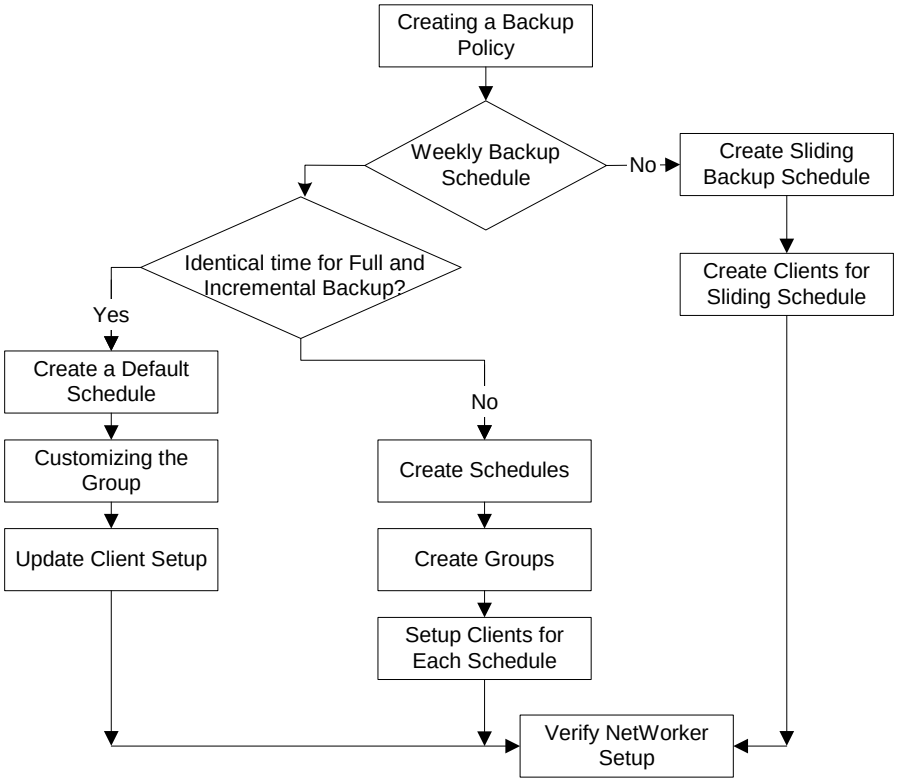
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5.1 Introduction

This section deals with customizing a backup policy that answers the requirements of the specific workflow.

NetWorker backs up each client system according to a backup schedule. The backup schedule specifies what level of backup will be performed for a client on each day of a weekly or monthly period.

The backup policy considerations should be handled as follows:



The above diagram is just a typical example. The exact configuration should be done according to specific needs.

5.2 Scheduled Backup - Basic Configuration

5.2.1 Customizing Schedules

Two main factors in determining the type of backup schedule are:

- Estimating the amount of time that can be dedicated to performing a full backup.
- Capacity of the backup device, where for full backup the device capacity must be equal or more than total data disk capacity.

The optimal time for performing the backup is when the server is acquiescent (with few files open). This is either late at night or over a weekend.

➢ Calculate the necessary backup time for a full backup and then see how this fits into the existing workflow. The rule of thumb for calculating the maximum time for a full backup is:

$$\frac{\textbf{Data disk User Space [GB]}}{\textbf{15GB x No of Drives}} = \textbf{Maximum Backup Time (hours)}$$

In this equation 15GB/hour is the accepted backup rate for DLT7000/AIT-2 Series Magnetic Tape devices. The rate may vary depending on the platform and SCSI type.

Example 1:

For a 180GB RAID and TLS-4222i Jukebox the calculation is as follows:

It is recommended that a weekly Full Backup be performed over the weekend. If the plant works every day in three shifts, a sliding schedule of Full Backups should be planned.

$$\frac{\textbf{180GB}}{\textbf{15GB x 2}} = \textbf{Maximum Backup Time (hours) = 6 hours}$$

Example 2:

For a DLT4000 with a 6GB/hour backup rate and one drive the calculation is as follows:

$$\frac{\textbf{180GB}}{\textbf{6GB}} = \textbf{30 hours}$$

NetWorker provides five pre-configured schedules and the ability to create customized schedules.

The *Default* schedule is *Full Backup* every Sunday and *Incremental Backup* every day. This is the recommended schedule, if no work is done over the weekend.

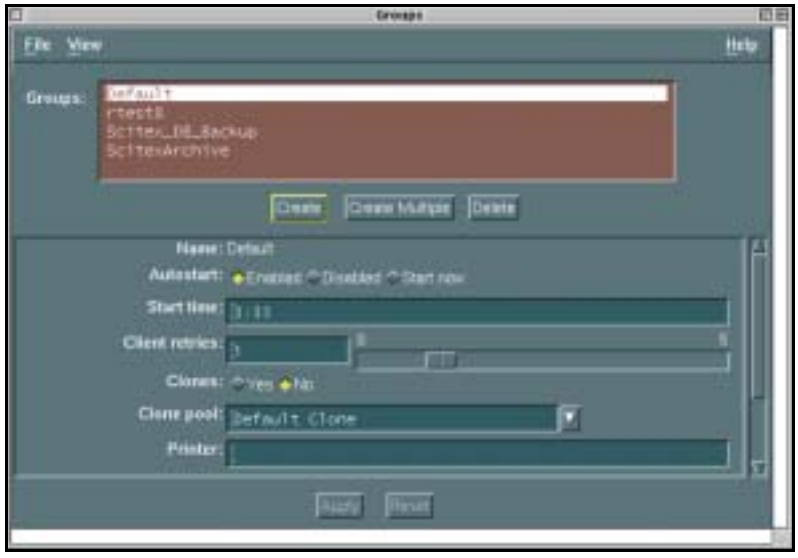
5.2.2 Customizing the Group

You should enable the *Default* group to which the client belongs. When the default group is enabled, NetWorker backs up all clients in the group according to the pre-configured selections.



For further explanations of *Client* and *Group,* refer to ***NetWorker Administration Guide***.

1. From the *NWAdmin* main menu, select **Customize** => **Groups**.
2. From the *Groups* text field, select the required group, in this case, select the **Default** group.
3. Set the *Start time* for the backup according to your requirements. In this case, both *Full* and *Incremental Backups* begin together at the configured time.



4. Set **Autostart** to **enabled.**
5. Click **Apply**.
6. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.2.3 Adding a Policy

Create a 2 weeks policy for the default client:

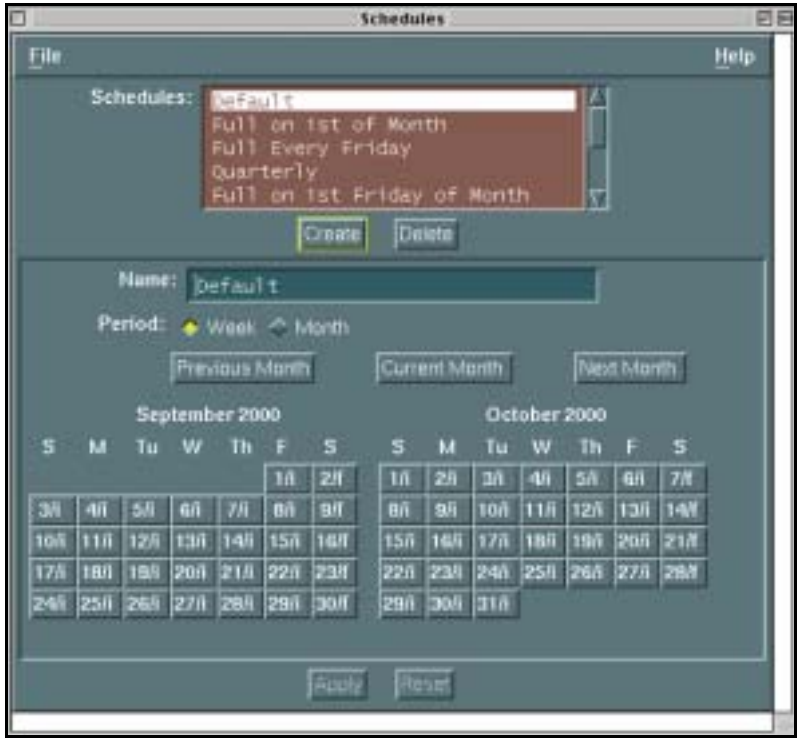
1. From the *NWAdmin* main menu, execute the following sequence: **Customize => Policies => Create**.
2. Select **Week** as the *Period*.
3. In the *Number of periods* field, type **2**.
4. Click **Apply**.

5.2.4 Weekly Backup Schedules

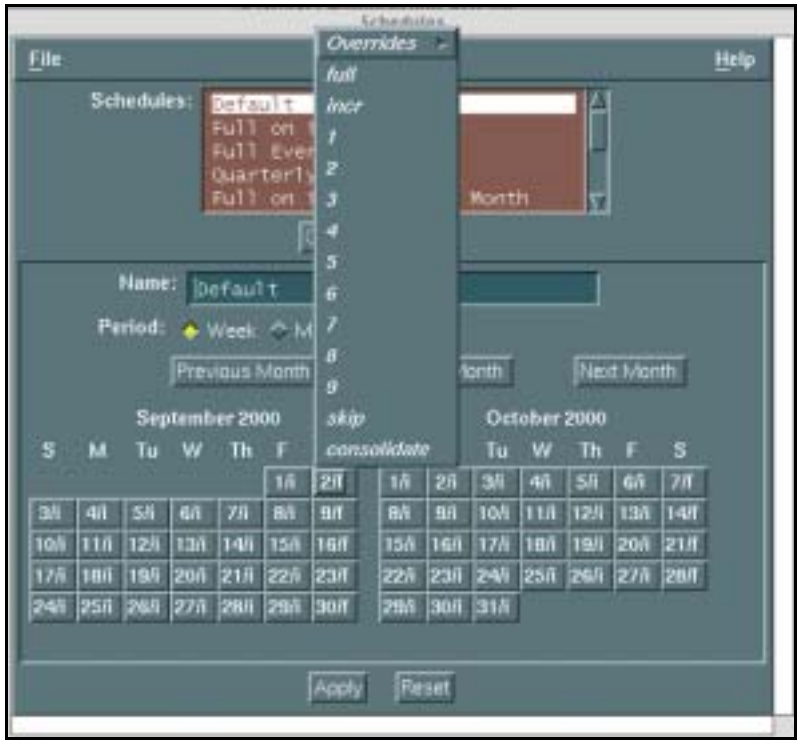
Identical Start Time for Full and Incremental Backup

If you are using the default schedule, *Full Backup every Sunday and Incremental Backup every day*, skip this section.

1. To create a weekly backup schedule, select **Customize** from the menu bar, then select **Schedules** from the pull-down menu.
2. Click **Create**.
3. Enter the name of the schedule into the *Name* text field (e.g., **Full on Saturday**).
4. Select **Week** as the *Period*.



5. To select a day for the full backup, select the specific day of the week from the current month calendar that is displayed and pulls down the *Backup Level* menu.
6. Select **full** from this menu.



7. To ensure that all other days are marked for an Incremental Backup, select the day of the week to begin the Incremental Backup and open the *Backup Level* menu.
8. Select **incr** and click **Apply** to save this new schedule.

➢ If you want no backup at a certain day, select **skip** for that day.

Different Start Time for Full and Incremental Backups

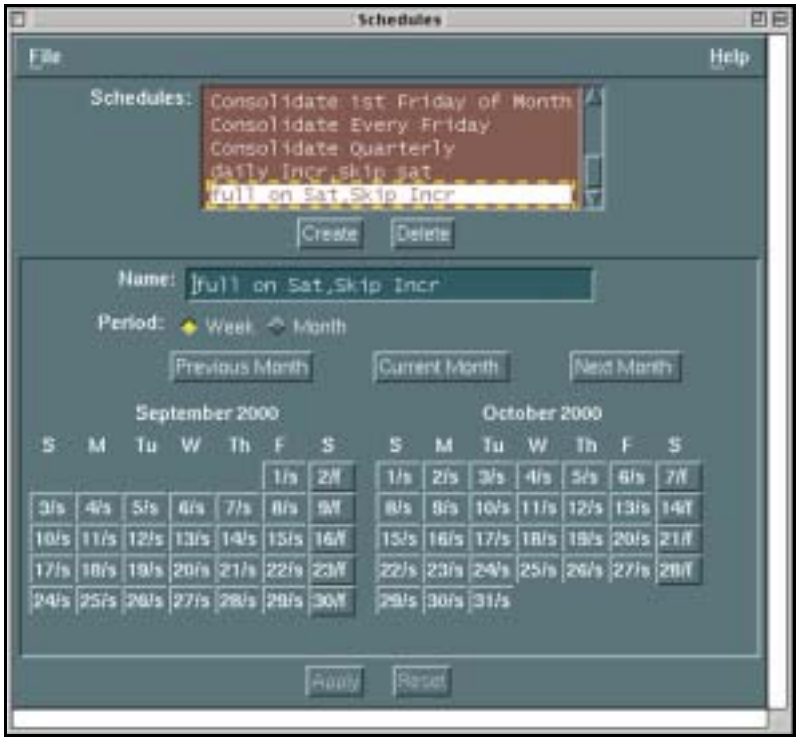
1. To define different *Start times*, you must create different schedules.



Schedule Name	Type
Full on Saturday, Skip Incr	To perform a Full Backup on Saturday and skip a Daily Incremental Backup.
Daily Incr, Skip Sat	To perform a Daily Incremental Backup and skip Full Backup on Saturday.

2. To select a day for the Full Backup (in the first example, Saturday) from the current month calendar displayed, select the specific day of the week and open the *Backup Level* menu.
3. Select **full** from this menu, to mark (**f**) for all Saturdays appropriately.
4. Since there is no Incremental Backup (e.g., day after the Full Backup), open the *Backup Level* menu and select **skip** from this menu for all days but Saturday.

5. Click **Apply** to save this schedule.

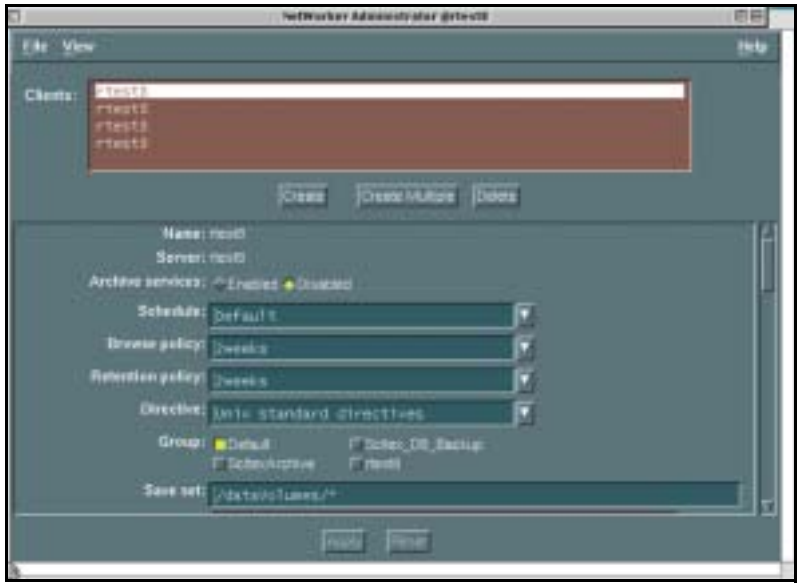


6. For the second schedule, follow the above procedure but select **incr** to determine the days for the Incremental Backup only, and select **skip** for the days for the Full Backup.

5.2.5 Client Setup

Each backup scheme must have a client for the schedule. When NetWorker is installed, it becomes a client of itself.

1. From the *NWAdmin* main menu, select **Clients** => **Client Setup**; The *Clients* dialog box is now displayed.



2. The *Clients* text field displays the server name.

   If you are using the default schedule then proceed from step 6 and update the different policies.

   If you need to create a client, proceed from step 3 (for a Sliding Schedule, refer to *Section 5.3.2 Creating a Sliding Backup Schedule on page 39*).

3. Click the **Create** button.

4. In the *Name* field, type in the name of the client that is to be created; in this case, **rtest8**.

5. Now proceed to fill in the parameters for this client.

6. At the *Schedule* field, select the triangular indicator to display a list of schedules, and then select the schedule you require.

   At the *Browse policy* field, a list of policies can be similarly displayed. The selected Browse policy reflects how long the file entries remain in the file indexes before being automatically removed. The recommended setting is **2 weeks** for backup.

   A Full Backup remains in the on-line index for a period of time equal to the Browse Policy plus one complete backup cycle.

   This setting determines the number of cartridges required.

Calculation (from previous example):

Amount to be backed up (full backup)	180GB
Incremental Backups 10%/day x 6days	108GB
Total Space Required	288GB
No. of Cartridges /week	5 x DLT or 3 x AIT (70GB DLT/100GB AIT-2)
No. of cartridges according to Browse/ Retention Policy	12 DLT or 9 AIT-2 tapes (2 weeks +1 complete backup cycle)

At the *Retention policy* field, a list of policies can be similarly displayed. The selected *Retention policy* reflects how long the save sets on a volume will be recoverable before the volume is available for recycling. The recommended setting is *2 weeks*. It must be equal to the *Browse policy* setting.

At the *Directive* field, a list of policies can be similarly displayed.

The selected *Directive* policy is an instruction set created to maximize the efficiency of a backup and handling of special files. The recommended policy is *Unix standard directives*.



Do not use the *Unix with Compression Directives* option due to hardware compression, which is default.

7. Verify that *Group* is set to **default**.
8. Set the Save set field to **/dataVolumes/* ,/sites/***.



/sites is required only for sites with Timn@web installation.

This enables autorecycling of the backup tapes if no other client has the same saveset selected.

If Timna is installed on your machine and the archive tapes exist, do not change the saveset definition from “All” to “/dataVolumes/*” or vice versa. This may cause all Timna savesets to expire.

9. Click **Apply** when all settings are complete.
10. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

This completes the basic Legato Backup configuration.

5.3 Customizing the Scheduled Backup (Sliding Backup)

5.3.1 Creating a Policy for a Sliding Backup

To create a browse/retention policy:

1. From the main menu bar, choose **Customize**, and then choose **Policies**. The *Policies* window now appears.



2. To create a new policy, click the **Create** button.
3. Enter a name for the policy in the *Name* field.
4. Select a period for the policy. In this example, it should be **2 weeks.**
5. For the *Number of periods* field, use the *Up/Down* arrows to select **2** to indicate that any index entry is automatically removed from the on line index after two weeks.
6. Click **Apply** to execute the selections.

This newly created policy is now available in the client's window and can be selected as both a *Browse Policy* and a *Retention Policy.*

5.3.2 Creating a Sliding Backup Schedule

A sliding backup schedule enables you to perform part of the full backup and the incremental backup every day. This schedule is implemented in those instances where there is no available time to perform a complete weekly backup in one day (for example, the plant works every day including weekends).

Creating a sliding backup schedule includes:

- Creating a full daily backup schedule plus daily incremental schedule for each day of the week (i.e., 7 schedules + 1 incremental).
- Creating a client for each day of the week (i.e., a client for each schedule) = 7 +1 client.
- Each client is allocated a set of file systems that represent 1/7 of all dataVolumes to be backed up (in other words, they represent 1/7 of a complete full backup).
- Creating a client for daily incremental backup.

5.3.3 Creating Clients for a Sliding Schedule

To Create Clients for a Sliding Schedule:

1. Choose **Clients** from the menu bar and then choose **Client Setup**.

   The *Clients* dialog window is now displayed.

2. The *Clients* field displays the server name.

   This must be selected for each new schedule.

3. Press the **Create** button.
4. In the *Name* field, type in the name of the client (equals the server name) that is to be created, in this case, **ripro1.**
5. At the *Schedule* field, select the triangular indicator to display a list of schedules, then select the schedule you require.

   For a sliding schedule, there should be 7 schedules, each representing a weekly backup for a specific day, e.g., *Full on Sunday, Full on Monday* etc.

At the *Browse policy* field, a list of policies can be similarly displayed. The recommended setting is **2 weeks**.

At the *Retention policy* field, a list of policies can be similarly displayed. The recommended setting is **2 weeks**, it cannot be less than the *Browse policy* setting.

At the *Directive* field, a list of policies can be similarly displayed. The recommended policy is **Unix standard directives**.



Do not use the *Unix with Compression Directives* option due to hardware compression, which is default.

6. Check the required *Group* checkbox and verify that the default check box is not checked (e.g., Daily Incremental, Skip Sat, Full on Monday, Full on Sunday)**.**
7. The *Save set* field must be set to the appropriate client file system(s) for the selected NetWorker client.

   For each day client, a list of all dataVolumes to be backed up should be shown (like in **df** command) and then divided up into 7 sets (each set representing a 1/7 of a weekly full backup plus the incremental backup).

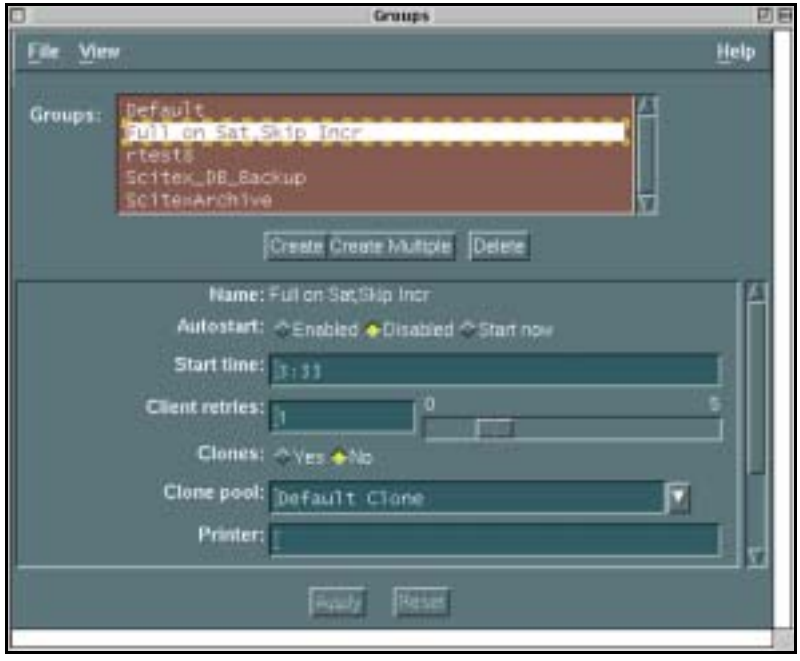
   For Daily Incremental, a **/dataVolumes/*** should be selected.

5.3.4 Creating Groups for Different Full/Incremental Start Time

To create a group for each schedule and to adjust the start time accordingly:

1. From the *NWAdmin* main menu, execute the following sequence: **Customize** => **Groups => Create**.
2. Type in the name of the group in the *Name* field (e.g., Daily Incremental, Skip Sat, Full on Monday, Full on Sunday).
3. Set *Autostart* to **enabled.**
4. Set the *Start time* according to your requirements.
5. Click **Apply.**

6. Create a second group (e.g., Full on Sat, Skip Incr), and set the *Start time* accordingly. Ensure that *Autostart* is checked as **Enabled**.
7. Click **Apply**.
8. From the *File* menu, select **Exit** to return to the *NWAdmin* window.



5.3.5 Set up Clients for Different Full/Incremental Start Time

1. From the *NWAdmin* main menu, execute the following sequence: **Clients** => **Client Setup**.
2. The *Clients* field displays the server name.
3. Click the **Create** button.
4. In the *Name* field, type in the name of the client that is to be created; in this case, **ripro1.**
5. Now proceed to fill in the parameters for this client.

   At the *Schedule* field, select the triangular indicator to display a list of schedules, and then select the schedule you require.

At the *Browse policy* field, a list of policies can be similarly displayed. The recommended setting is **2 weeks**.

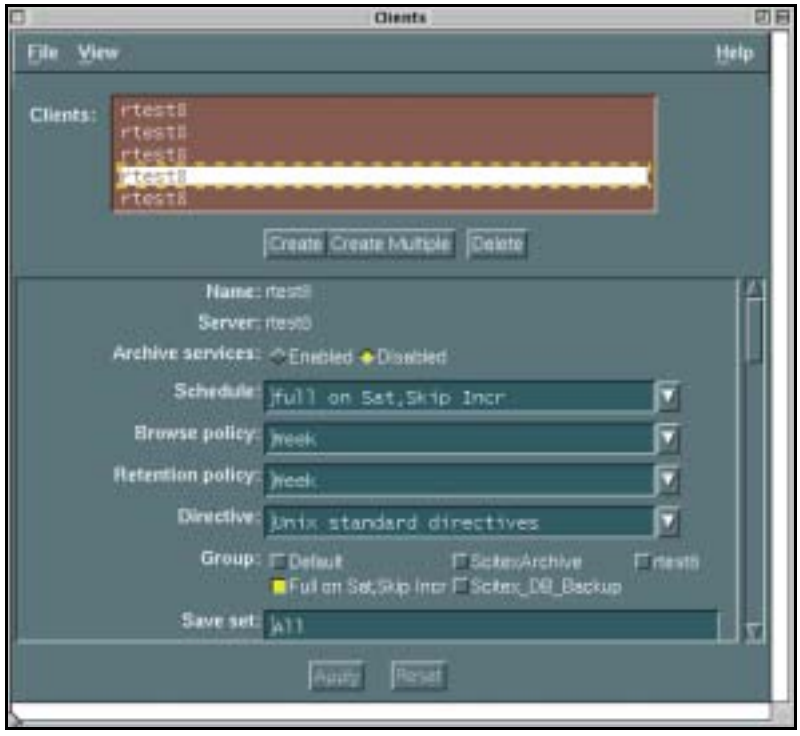
At the *Retention policy* field, a list of policies can be similarly displayed.The recommended setting is a **2-week** period; it cannot be less than the *Browse policy* setting.

At the *Directive* field, a list of policies can be similarly displayed.The recommended policy is **Unix standard directives**.



Do not use the *Unix with Compression Directives* option due to hardware compression, which is default.

6. Check the required *Group* checkbox (e.g., Daily Incr, skip Sat) and verify that the default check box is not checked.
7. Set the *Save set* text field to the appropriate client file system(s) for the selected *NetWorker* client and change the default setting **All** to **/dataVolumes/<volumename>**. Then click the **Change** button.
8. Click **Apply** when all settings are complete.
9. Repeat this procedure for the second group created.
10. From the *File* menu, select **Exit** to return to the *NWAdmin* window.
11. Repeat this procedure to create the schedule *Full Saturday, skip daily.*



12. Click **Apply** when all settings are complete.

This procedure must be repeated until all the schedules have been set to cover a complete week.

13. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.4 Scheduled Archiving with Timna

5.4.1 Customizing Legato NetWorker

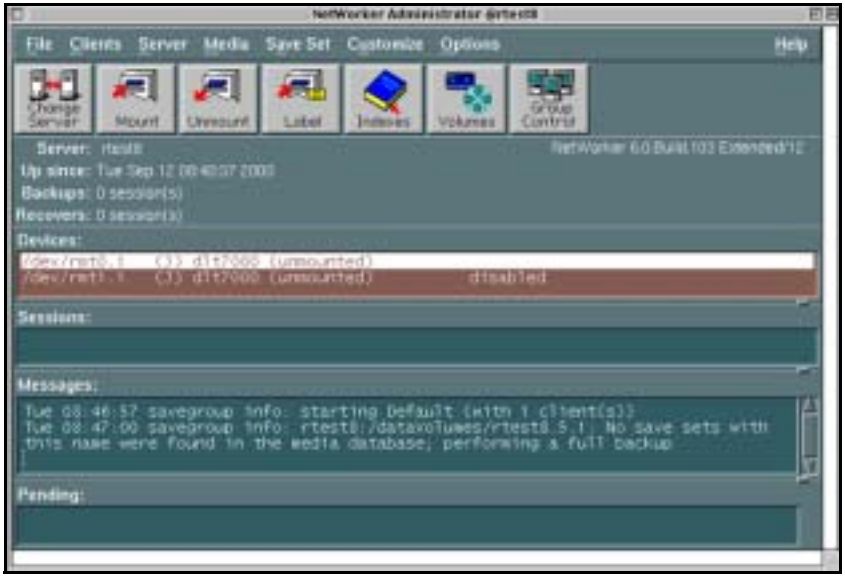
Accessing Legato NetWorker

Legato NetWorker can be accessed from:

- Timna Server CDE
- Macintosh Front End client

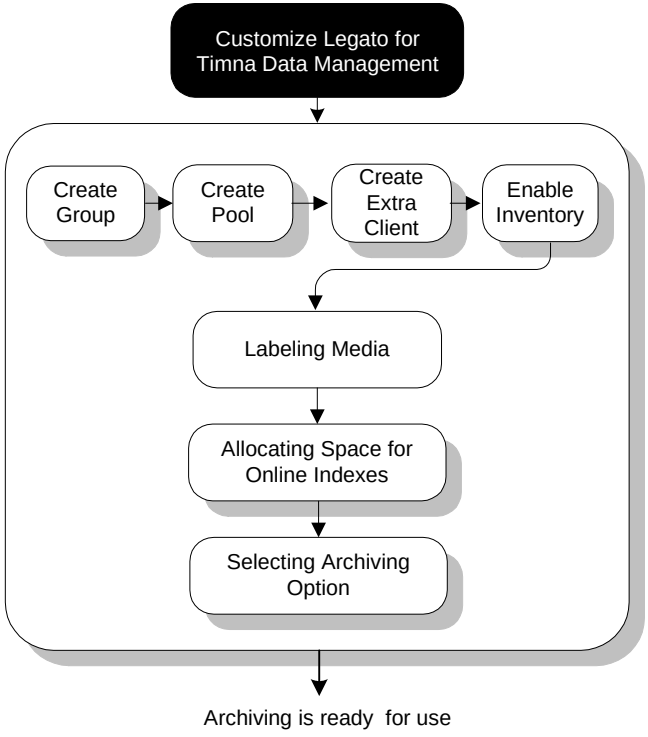
➢ To access the NetWorker applications from the Timna Server CDE, from the CDE *Launch Pad*, open the **Services** panel, then double click the **Network Admin** icon.

➢ To access the NetWorker from the Macintosh Front End, run **nwadmin** (NetWorker Administrator), which is located in the *Backup&Archive Legato docs* folder in the *Scitex Timna* folder.



Customizing Legato NetWorker should be completed prior to using the Archive/Retrieve option and the CreoScitex Cloning utility. This procedure includes the following steps:

- Creating Groups, Pools, Clients, and enabling Inventory in Legato NetWorker.
- Labeling Media.
- Allocating space for the online indexes.
- Selecting Archiving option



5.4.2 Creating a Group

To create a Group:

1. From the menu bar, select **Customize**, then **Groups**.
2. Click **Create** and type into the empty text field **ScitexArchive**, and then click **Apply**.

   Do not change any other parameters.
3. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.4.3 Creating the Scitex Archive Pool

To create the Scitex Archive Pool:

1. From the menu bar, select **Media** and then **Pools**.
2. Select **Create** and type into the empty text field **ScitexArchive**.
3. At *Pool Type* leave the default - **Backup**.
4. At the *Label Template* text field, select **Archive**.
5. At the *Groups* text field, select the **ScitexArchive** check box.
6. Scroll the window until you reach the *Levels* text field and select **Full**.
7. Click **Apply**.
8. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.4.4 Create New Policy

To create a new Policy:

1. From the menu bar, select **Customize** => **Policies** => **Create**.
2. In the *Name* field, type **SciArchive**.
3. In the *Period* field, type **Years**.
4. In Number of Periods, type **20**.
5. Click **Apply**.

5.4.5 Create New Client

To create a new Client:

1. From the main menu bar, select **Client**, then **Client Setup** and **Create** from the following submenus.
2. In the *Name* field, type the <*hostname*>.
3. In the *Browse policy* field, select **SciArchive**.
4. In the *Retention policy* field, select **SciArchive**.
5. In the *Group* field, click **ScitexArchive**.
6. In the Save Set field, select All.

   If Timna is installed on your machine and the archive tapes exist, do not change the saveset definition from “All” to “/dataVolumes/*” or vice versa. This may cause all Timna savesets to expire.
7. Click **Apply**.
8. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.4.6 Enable Inventory

The Inventory command allows you to update the Timna database, including the status of the media.



This procedure should be performed **after** installing or upgrading Timna or Legato Networker.

To enable Inventory:

1. Exit Legato NetWorker.
2. From the Timna server CDE, invoke **SciSmit**.
3. From the *SciSmit* main menu, execute the following sequence: **Backup and Restore => Automatic Backup and Restore => Enable Inventory (Scitex Archiver)**.
4. Exit *SciSmit*.

5.4.7 Installing CreoScitex Cloning (BOM)

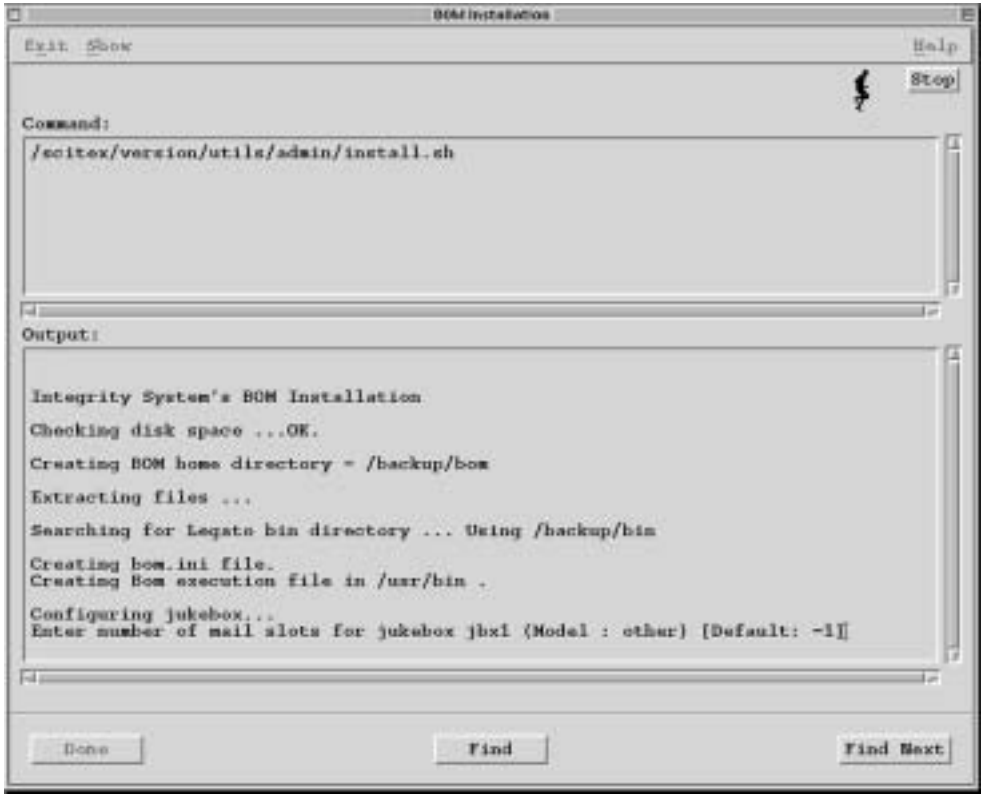
To install the Scitex Cloning application:

1. From the CDE *Launch Pad*, double click the *SciSmit* icon, and then login as **root.**
2. From the *SciSmit* main menu, execute the following sequence: **Backup and Restore => Automatic Backup and Restore => BOM Installation.**

   The pop-up window appears with note:

   Legato software must be installed before BOM installation.

   Click **OK** to confirm**.**
3. Click **OK** in response to "Are you sure…"; the *BOM Installation* window appears.



5.5 Enabling Legato Archive Module

4. In response to **“Enter number of mail slots in jukebox jbx1 (Model: Breece Hill [Default: 0]”,** type the number of mail slots and press **Enter.**
   - For DLT4500 and Q215 select **0,**
   - For Qualstar Q47 and ATL P1000 select **1,**
   - For ATL 7/100 select **4.**
5. In response to **“Enter starting mail slot number [Default: 0],** type **1** (for NetWorker 6) or **0** (for NetWorker 5.1) and press **Enter**.
6. After a few seconds **“Installation Completed”** appears on the screen.

   Now you can access the *CreoScitex Cloning* application from CDE or from your Macintosh.

To update System Configuration:

After the CreoScitex Cloning installation, the system configuration should be updated to reflect the library configuration.

1. From the CDE *Launch Pad*, double click the **CreoScitex Cloning** icon and login as a **root**. The *BOM* window appears.



2. From the *File* menu, select **Update System Configuration**.The following message appears after a few seconds:

   System configuration files were updated.
   You need to restart BOM!!

3. Click **OK**. The *CreoScitex Cloning* application will logout automatically.

4. Restart the *CreoScitex Cloning* application.

📖 For instructions on how to use CreoScitex Cloning refer to *Scitex Timna Data Management User Guide, chapter 4, Scitex Cloning (BOM), Cat. No. 399Z1M095A.*

5.5.1 Labeling Media (for Archive Volumes Only)



Important: Labeling Archive media should be done by using the CreoScitex Cloning application (BOM) only.

For instructions on labeling Scitex Archive Media refer to *Scitex Timna Data Management User Guide, Chapter 4, Scitex Cloning, Cat. No. 399Z1M095A.*

5.5.2 Allocating Extra Space for Online Indexes

When *backup* or *Schedueled Archiving* is performed, an approximately 0.5K additional space is taken up in the online index for each copied file.

The system allocates approximately 200MB for the online index, both for *backup* and for *Scheduled Archiving* activities. This means that there is space for about 400,000 index entries.

It is recommended to increase this capacity according to the number of user files on the data volumes.

For example:

If the user has 100,000 files on the EtherShare volumes, the total number will be approximately 200,000 files including *.rsrc* files. Suppose, the user selects the 2 weeks browse policy with *full weekend* plus *daily incremental* schedule. In this case, each file is kept in the indexes 3 times, resulting in 200,000 x 3 = 600,000 index entries, which require 300MB disk.

To increase the index space:

1. At the command prompt, type **chfs -a size=+200000 /backup**.
2. Press **Enter**.

   This procedure will increase the */backup* file size by 100MB.

   If additional space is required and the capacity of the system disk is not sufficient, then an additional disk must be added.

5.5.3 Select Archiving Option

The **Archiving Options** utility allows the system administrator to select a level of Archive assurance. Archive assurance ensures a level of reliably for data retrieval from the DLT.

The following options are available:

- Selected option
- Archive Only
- Verify after Archive
- Automatic Saveset Clone

A trade-off exists between the level of assurance and the Archive time and tape space. The higher the level of assurance, the more tape space and time is required.

To select the desired level:

1. From the SciSmit main menu, execute the following sequence: **SciSmit => Backup and Restore => Automatic Backup and Restore => Archiving Options.** The *Choose Archiving Options* window opens.
2. To check the currently selected option, click **OK.**
3. To change the option, use the arrows to the right of the *Archiving Options* field and then click **OK**.

Archive only

Performs a regular Archive operation.

Verify after Archive

This option ensures that the archived data can be read. This operation includes 2 steps:

- Archiving data to the media.
- Verifying that the archived data is readable (“dummy read”).

The “dummy read” operation significantly slows archiving, but does not require an extra tape.

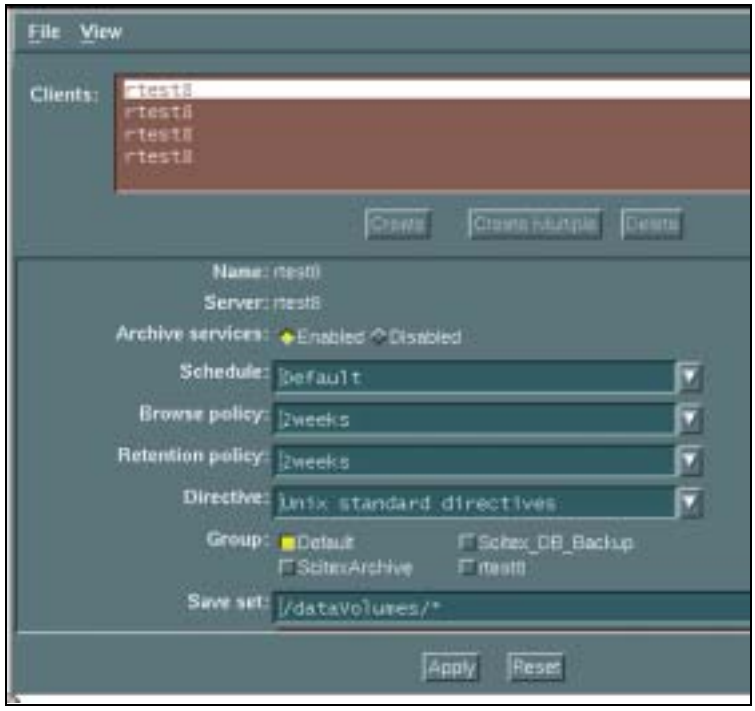
Automatic Saveset Clone

Refer to *Section 5.9.3 Automatic Saveset Cloning on page 64.*

5.6 Enabling Legato Archive Module

Not to be used on Timna**.**Refer to *Chapter 7 Enabling and Authorizing NetWorker on page 71* for authorization.

1. From the main menu bar, execute the sequence **Clients => Clients Setup**.
2. The *Clients* window appears.



3. To use the *Legato Archive* module, change **Archive Services** to **enable**.
4. Add **macuser** to the *Archiver User* option.
5. Click **Apply**.
6. To activate the Legato Archive /Retrieve options, from the command line run:

   # nwarchive &
   # nwretrieve &

5.7 On Bar for Timna Database

5.7.1 Introduction

On Bar is an automatic **On**-line **B**ackup **A**nd **R**ecovery solution for the Informix databases. **On Bar** utilizes NetWorker for scheduled and triggered database backup. This utility is a combination of the Informix **On Bar** and the Legato NetWorker Business Suite module for Informix™. **On Bar** is included in the Scitex Timna software and requires authorization by Legato to activate its additional Business Suite module.

The Legato NetWorker Business Suite module performs fast on-line backup and restoration of the database. You can define a date and time of a backup from which you wish to restore the database. Logical logs backup is triggered when the logical logs are filled up to more then 50%.

On Bar performs database backup to the *Default* pool (the same tapes are used for the scheduled data backup).

On Bar is a complementary utility to the manual database backup. It is still possible to use manual backup to DAT via the Timna Administrator.



The *Database Archiving History* in the Timna Administrator displays the last successful database archive to DAT, but does not display information about an automatic backup done by **On Bar**.

5.7.2 Prerequisites

The following prerequisites should be met before installing **On Bar**:

- Legato Networker version 6 or higher.
- Jukebox library installed and configured.
- Timna installed and configured.

5.7.3 Installation

1. Insert the *Networker Modules* CD-ROM into the CD drive (this CD-ROM is included in Legato Media kit).
2. From the *SciSmit* main menu, execute the following sequence: **Backup and Restore => Automatic Backup and Restore => BusinesSuite Installation.**
3. Click **OK** in response to "Are you sure…" to start the installation.
4. Wait for message **Informix Business Suite properly installed**, which indicates the successful installation.
5. Remove the *Networker Modules* CD-ROM from the CD drive.

5.7.4 NetWorker Configuration for On Bar

To customize the Group:

1. Launch the Legato **NetWorker Administrator** application.
2. From the *Customize* menu, execute the following sequence: **Customize => Groups => Create**.
3. In the *Groups* window, enter the following:

Field	Entity
Name	Scitex_DB_Backup
Autostart	Enable
Start Time	**02:00** (choose a time that does not clash with the autostart for the Default group)

4. Click **Apply.**

To set up weekly backup schedules:

1. Launch the Legato **NetWorker Administrator** application.
2. From the *Customize* menu, execute the following sequence: **Customize => Schedules => Create**.

3. In the *Schedules* window, enter the following:

Field	Entity
Name	Scitex_DB_Backup
Period	Week

4. Select **Full** backup for all the days.


Incremental backup is not allowed.

5. Click **Apply.**

To set up Client:

1. Launch the Legato **NetWorker Administrator** application.
2. From the *Client* menu, execute the following sequence: **Clients => Client Setup => Create**.
3. In the *Clients* window, enter the following:

Field	Entity
Name	<Station name>
Archiving Services	disable
Schedule	Scitex_DB_Backup
Browse	Week
Retention	Week
Group	Scitex_DB_Backup
	Uncheck the **Default** check box
Save set	INFORMIX:/ids_server
	Remove **ALL** from the list
Backup Command	nsrdbmi

4. Click **Apply.**

5.7.5 Networker Registration for On Bar

To enable On Bar:

1. From NWAdmin, execute the following sequence: **Server** => **Reqistration** => **Create**.
2. In the *Authcode* field, type the enabler code: **cc494e-872811-52f796**

   Or, from the command line, run: **nsrcap –v –c cc494e-872811-52f796**

You should request enabler and authorization codes from your local CreoScitex Service Center.

5.7.6 Logical Log Backup

Logical Logs backup device is set to */dev/dummy* automatically during the **On Bar** installation.

When logical logs are filled up to more than 50%, the system will automatically run a backup. An appendable backup tape that belongs to the Default pool must be available in the jukebox, otherwise the logical logs may filled up over 85%, which will then turn the database off-line until the logical logs are backed up.

5.7.7 Manual Database Backup to DLT

1. Make sure that the Timna database in on-line mode.
2. Launch the Legato **NetWorker Administrator** application.
3. From the *Server* menu, execute the following sequence: **Server** => **Group Control** => **Scitex_DB_Backup** => **Start**.
4. Wait for messages:

   Database Backup to DLT started.

   Database Backup to DLT successfully completed.



Additional information about On Bar activity can be found in the *SCI_LOGS/bar_act.log* file.

5.7.8 Restoring the Database via On Bar

1. Use Timna Administration to change the Timna database mode to off-line.
2. From the SciSmit main menu, execute the following sequence: **SciSmit => Database => Administration** => **Restore/Load Database => Restore Database via On BAR.**
3. There are two options:

   Restore from the last archive – restoring the database from its last backup.

   Restore database to specific date – defining a specific date and time of a backup from which you wish to restore the database. Note that the selected date should be shorter that the browser/ retention policy, i.e. one week.
4. Once a restoration is successfully completed, you should immediately back up the Timna database.

5.7.9 Limitation

A database that has been restored from a backup by **On Bar**, cannot be restored from a given time again between this restoration and the next backup. After the database has been restored, it should be immediately backed up again.

5.8 Daily Full Index Backup

5.8.1 Overview

Index files can become corrupted in different ways, for example, if the system crashes while the file is open. In this case, the disaster recovery can be done only from the last full backup.

Legato indexes are backed up at the end of any automatic scheduled backup, but only at the corresponding level (e.g. incremental or full).

A **daily full index backup** allows you to perform a disaster recovery without the need of a daily full data backup.

5.8.2 Configuring NetWorker

Legato NetWorker should be configured for daily full index backup. Legato indexes are backed up to a separate pool and cassette (additional cassette is required). This allows, in case of disaster, to retrieve indexes from this specific tape from any previous day (up to 20 years if required).

The configuration procedure includes creating of a new pool, label template, group, schedule and client:

1. From the *NWAdmin* main menu, execute the following sequence: **Customize => Label Template => Create**.

   In the *Name* field, type **Index**.

   In the *Fields* field, type **Index** and click **add**.

   In the *Fields* field, type **001-999** and click **add**.

   In the *Separator* field, select **.** (period), then click **Apply**.

   Leave the *next* field empty.

   Click **Apply**, then choose **File => Exit** to return to the *NWAdmin* window

2. From the *NWAdmin* main menu, execute the following sequence: **Customize => Groups => Create**.

   In the *Name* field, type **Index**.

In the *Autostat* field, type **Enable**.

In the *Start Time* field, type **02:00**.



Choose a time that does not clash with the autostart for the default groups or **On Bar**, (a 2GB index backup will take about 5 minutes on DLT7000/ AIT-2).

Click the **Apply** button, then choose **File => Exit** to return to the *NWAdmin* window.

3. From the *NWAdmin* main menu, execute the following sequence: **Customize => Schedule => Create**.

   In the *Name* field, type **Index**.

   Select **Full for every day**.

   Click **Apply**, then choose **File => Exit** to return to the *NWAdmin* window.

4. From the *NWAdmin* main menu, execute the following sequence: **Media => Pools => Create**.

   In the *Name* field, type **Index**.

   In the *Pool Type* field, select **Backup**.

   In the *Label Template* field, select **Index**.

   In the *Groups* field, select **Index**.

   In the *Levels* field, select **Full**.

   Click **Apply**, then choose **File => Exit** to return to the *NWAdmin* window.

5. From the *NWAdmin* main menu, execute the following sequence: **Client => Client Setup => Create**.

   In the *Name* field, type <**Station Name** >.

   In the *Schedule* field, select **Index**.

   In the *Browse Policy* field, select **SciArchive** (20 years).

   In the *Retention Policy* field, select **SciArchive** (20 years).

In the *Groups* field, select **Index**.

In the *Saveset* field, type **/nsr/res** (delete **ALL**).

Click **Apply**, then choose **File => Exit** to return to the *NWAdmin* window.



We use a dummy backup of **nsr/res** to automatically save bootstrap. The directive is used to copy the holly index structure properly onto the tape.

6. To label a new tape, choose **Pool => Index**.

   Select **Manual recycle**.

To run a full index backup manually:

- From the *NWAdmin* main menu, execute the following sequence: **Server => Group Control => Index => Start**.

  Check the bootstrap info.

5.8.3 How to Restore

The indexes can be restored using **nsrck -L7** command. For details refer to *Appendix A. Disaster Recovery* for disaster recovery.

The bootstrap info is automatically saved when a scheduled backup is launched, but always with the level of the backup (incremental or full). Print the Bootstrap information daily from the mail for user backup. The bootstrap info is required to restore the index via **mmrecov** from the index pool.

5.9 Cloning options

The following Cloning options are available:

- NetWorker cloning.
- CreoScitex (BOM) cloning for a full archive volume.
- Automatic saveset cloning (recommended option for archive volumes).

5.9.1 NetWorker Cloning

You can clone a full or partially full volume via *Legato NWAdmin*.

To clone a volume:

1. From the *NWAdmin* main menu, execute the following sequence: **Media** => **Clone Volume**.
2. Select the volume to be cloned and click **Clone**.
3. In the *Clone Pool* field, type the name of the destination pool, for example **ScitexDefaultClone**.
4. Click **Start**.



A customer should label a new tape for the cloning pool which will be used.

5.9.2 BOM Cloning for a Full Volume

In the Timna environment, a customer can clone full Scheduled Archiving tapes using the *CreoScitex Cloning (BOM)* utility. This requires creating the *CreoScitex Cloning Pool*.



For instructions on how to install CreoScitex Cloning (BOM), refer to *Section 5.4.7 Installing CreoScitex Cloning (BOM) on page 48.*

To create the CreoScitex Cloning Pool:

1. From the *Media* menu, execute the following sequence: **Media** => **Pools** => **View** => **Details** => **Create**.

2. In the *Pools* window, enter the following:

Field	Entity
Name	SciClone
Enabled	yes
Pool Type	Backup Clone
Label Template	Default Clone
Stored Index Entries	No
Auto media verify	No
Recycle to other pools	No
Recycle from other pools	No

3. Click **Apply**.
4. From the *File* menu, select **Exit** to return to the *NWAdmin* window.

5.9.3 Automatic Saveset Cloning

An **Automatic Saveset Cloning** (see *Section 5.5.3 Select Archiving Option on page 52*) immediately creates a duplicate clone copy of the archived data. This ensures that the archived data can be reliably retrieved from the tape even if the master copy is damaged.

This operation involves 2 steps:

- Archiving data to the DLT.
- Automatic cloning of a saveset (an archive job) to the *ScitexDefaultClone* pool.

The cloning operation significantly slows down the archiving and requires extra tapes and an extra DLT drive.

To activate the Automatic Saveset Cloning:

1. From the SciSmit main menu, execute the following sequence: **SciSmit => Backup and Restore => Automatic Backup and Restore => Archiving Options.** The *Choose Archiving Options* window opens.
2. Select **Automatic Saveset Cloning** and click **OK**.

To create the *ScitexDefaultClone* pool:

1. Launch the Legato **NetWorker Administrator** application.
2. From the *Media* menu, execute the following sequence: **Media => Pools => Create**.
3. In the *Pools* window, enter the following:

Field	Entity
Name	ScitexDefaultClone
Enabled	yes
Pool Type	Backup Clone
Label Template	Default Clone
Levels	unchecked
Stored Index Entries	No
Auto media verify	No
Recycle to other pools	No
Recycle from other pools	No

4. Click **Apply.**

For the **Verify_after_Archive** and **Automatic_Saveset_Clone** options, if the second step fails, the entire Legato Archive operation fails. You should look for the relevant messages in the *Failed Jobs* list in Queue Manager.

Chapter 6

Media Labelling

Jukebox Labelling 68
Single Cartridge Magnetic Tape (DLT/AIT-2) 70

6.1 Jukebox Labelling



Relabeling a volume destroys all records of its contents under the old label.

In case of a system crash and when a new Legato NetWorker installation is performed, new cassettes must be labeled differently from the used cassettes, that were labeled before the crash.

The default label template is used to label backup volumes loaded in the jukebox.

1. To open the *Jukebox Labeling* dialog box, verify that the device in the *Devices* field is highlighted and then click the **Label** button on the speedbar.
2. The *Jukebox Labeling* dialog box opens and displays the name of the NetWorker server and the pathname previously selected for the designated jukebox device.
3. The *Starting with* field displays the server label and number.
4. *First* and *Last* slots display the range of slots containing backup volumes to be labeled, according to the label template selected in the *Pools* window (default).
5. Click **OK** to begin labeling.

   During the labeling process, a progress message appears in the dialog box. The time duration varies according to the drive speed.

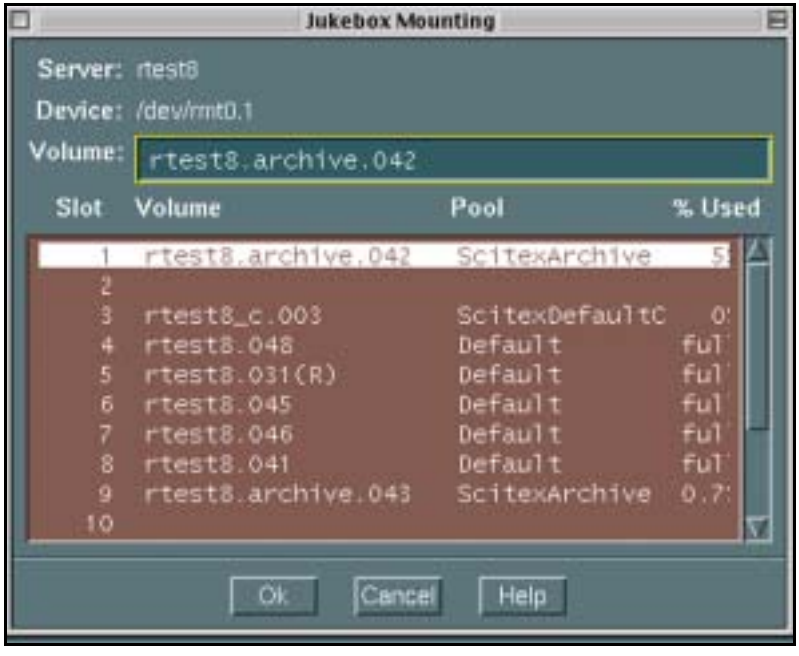
   At the end a notice appears:

   Finished Labeling Volumes
6. Select **Cancel** to close this dialog window.



7. To verify the labeling, click the **Mount** button from the speedbar.

The *Jukebox Mounting* window opens displaying the labeled cartridges, including the cleaning cartridge (and number of cleaning periods remaing before replacement).





- **For Archive on the Timna Server only:** During the labeling process, the cartridges are entered into the database inventory.
- On the *Volumes* window, check proper cartridges' labeling and definition.

6.2 Single Cartridge Magnetic Tape (DLT/AIT-2)

To use the backup volume for recovering or backing up files, it must first be labeled and mounted.

1. Highlight the backup device in the *NWAdmin* window.
2. Click the **Label** button on the speedbar. The *Label* window is displayed.

   Verifying media label... appears in the *Volume Name* text field. Wait for this message to disappear.

   The *Volume name* text entry field displays the name of the volume currently mounted in the drive, if it is named, otherwise it remains blank.
3. Check **Default** for *Pool*.
4. If necessary, delete the contents and type in a new name for this volume.
5. Check **Mount after labeling** if you do not intend to label more media and you intend to use this media for next backup.
6. Click **OK** after each volume is labeled and/or mounted.
7. Click **Cancel** to cancel the operation.

Chapter 7

Enabling and Authorizing NetWorker

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Authorization 74

7.1 Enabling NetWorker Products

Once the installation and configuration of the NetWorker server is complete, the enabling and registration of the backup utility must also be completed. If the software is not enabled and registered within the specified time, it disables itself. The software is defined as "Evaluation" until it is enabled and authorized.

The following steps provide an overview of the enabling and registration process:

1. Enter required company and product information in the Registration form provided.
2. Enable all NetWorker products installed (from a specific kit).
3. Send the contents of the completed Registration form to your local CreoScitex Service Center to register your NetWorker and to receive the authorization codes.
4. Enter the authorization codes provided by your local CreoScitex Service Center to authorize the NetWorker and additional modules.

To enable the NetWorker:

1. Login as **root** and press **Enter**.
2. Type in the command **'nsrcap -v -c xxxxxx-xxxxxx-xxxxxx'**and press **Enter**. The **xxxxxx-xxxxxx-xxxxxh** represents the enabler code printed on the *Enabler Certificate, Server Edition for Solaris and AIX* supplied with your software.
3. To enable an autochanger, perform the same procedure and enter the enabler code from the *Enabler Certificate, Autochanger Software Module for 1-256 slots* supplied with your software.

   This step is based on the assumption that the autochanger has been defined and configured (refer to section *Section 4.1 Configuring Tape Parameters on page 20*).

7.2 Registration

1. Fill in the attached form and fax it with a copy of each Enabling Certificate (see above graphic as an example) to your local CreoScitex Service Center.
2. Forwarding this form and a copy of each Enabling Certificate will permit you to receive the authorization codes from the CreoScitex Service Center.

Registration Form for Backup Utility User **Fill in and fax, with a copy of each Enabling Certificate, to your local CreoScitex Service Center.**	
Machine ID	
Contact Person	
Company	
Street Address	
City/Town	
State/Province	
Zip/Post code	
Country	
Phone	
Fax	
Modem Tel #	
CompuServe address	
Purchase date	
Product serial number	
Machine type	
Backup device	
Disk size	
Backup policy	

7.3 Authorization

This procedure is performed when you receive the authorization codes from the CreoScitex Service Center.

1. From the *NWAdmin* main menu, choose **Server** => **Registration**.
2. From the *Registration* window, select the module to be registered from the *Registration* list box and enter the *authorization code* into the blank *Auth code* field.
3. Select **Apply**.
4. Repeat this for each module for authorization.



Verify that the expiration date is now “null” and that evaluation marking no longer appears.

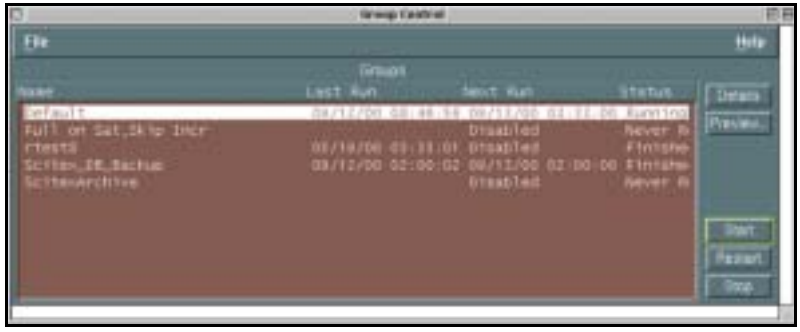
Chapter 8

Verifying NetWorker Setup (ATP)

To verify that NetWorker installation and setup were successful, you should perform a backup:

1. Choose the **Group Control** button from the speedbar.

   The *Groups Control* window opens with information about all of the backup groups known to the NetWorker.



2. Select the group for backup and click the **Start** button.
3. Select **OK** on the *Notice* message window to commence the backup.



The status of the backup is shown in the *NWAdmin* window in the *Messages* section.

Chapter 9

NetWorker Client Installation on Brisque

9.1 Creating NetWorker Client File System on Brisque

1. Run the following commands to identify the system disk:

   #lsvg - to check and locate the system disk.

   #lsvg rootvg - to check if there is enough free space on the disk.

2. To create a file system for the NetWorker Client software, execute the following sequence:

   Smit => System Storage Management => File Systems => Add / Change / Show….. => Journaled File Systems => Add A Journaled File System => Add A Standard Journaled File System.

3. Select the **rootvg** volume group.

4. Set the following settings:

Volume group name	**rootvg**
SIZE of file system (in 512-byte blocks)	[**163840**][a]
MOUNT POINT	[**/backup**]
Mount AUTOMATICALLY at system restart?	**yes**
PERMISSIONS	**read/write**
Mount OPTIONS	[]
Start Disk Accounting?	**no**
Fragment Size (bytes)	**4096**
Number of bytes per inode	**4096**
Allocation Group Size (MBytes)	**8**

a.This creates the 80MB file system.

   Do not change any of other settings.

5. Press **Enter**.

6. Run **mount /dev/lv01**.



Note: If you need a larger/smaller file system, calculate as follows:
Number of MB's wanted x 2 x1024 = size in 512-byte blocks
For example, 120MB x 2 x 1024=245760

9.2 Installing NetWorker Client on Brisque



Note: On the Brisque, the NetWorker Client installation can be performed only manually.

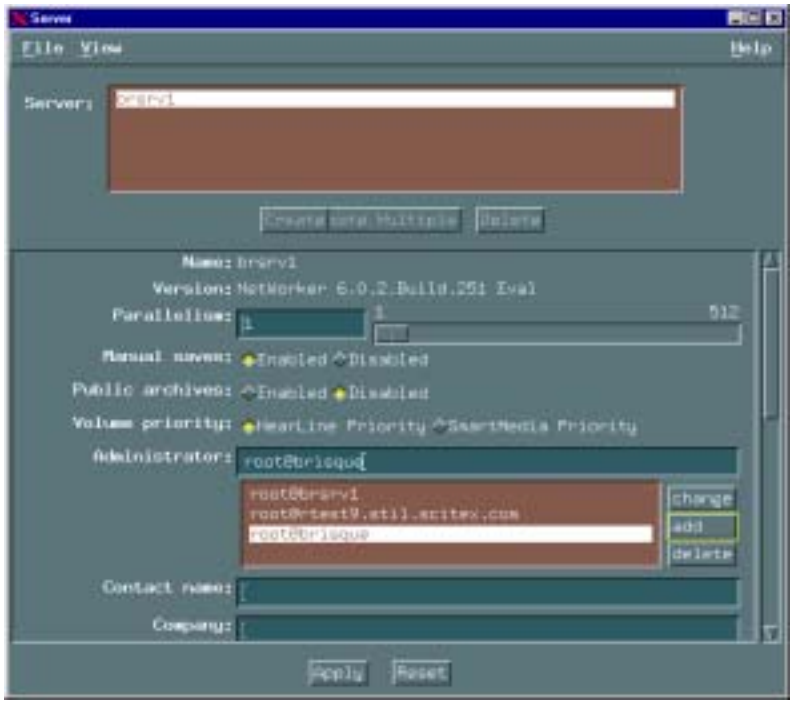
1. Create a mount point /mnt using smit.
2. Insert the “NetWorker 6.x Servers, Clients & Storage Node Vol1” CD into the drive.
3. Mount **/mnt** and change directory to **/AIX**.
4. Run **ls** to locate the **NETWORKR.TAR** file.
5. Copy the **NETWORKR.TAR** file to a data volume, as follows:

   cp –rp * /dataVolumes/brisquesCSE_PS.1.0
6. Change directory to **/dataVolumes/brisquesCSE_PS.1.0.**
7. Run **tar xvf NETWORKR.TAR** to untar the software on disk.
8. Run **nsr_ize -i -c** to install software as described in the *NetWorker Installation Guide*.
9. Run **nsrexecd** to start the client software.

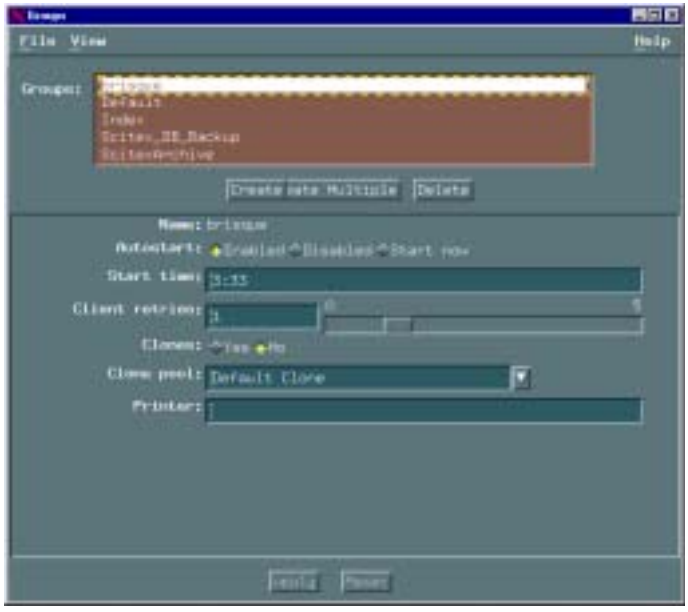
   

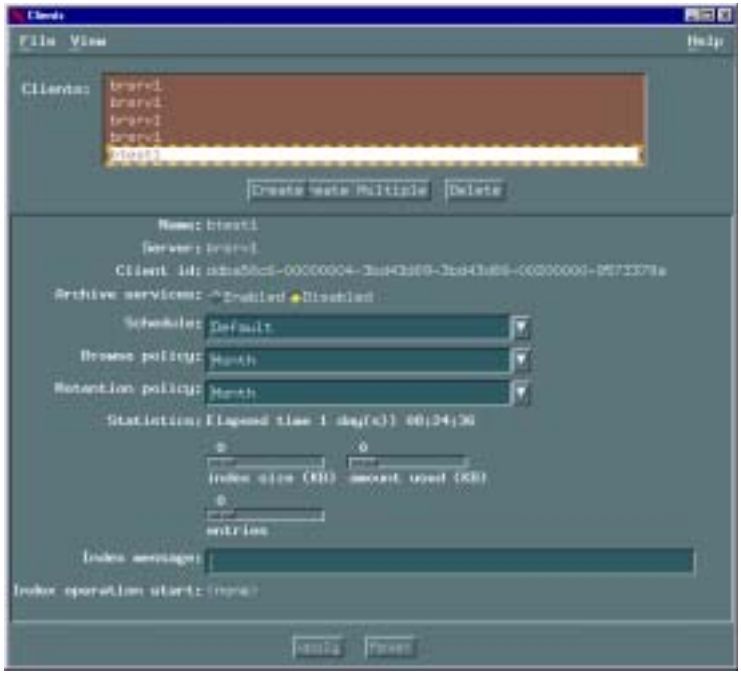
   Note: nsrd daemon runs on Server only.
10. On the Server/BrisqueServe, open the *NWAdmin* main window.

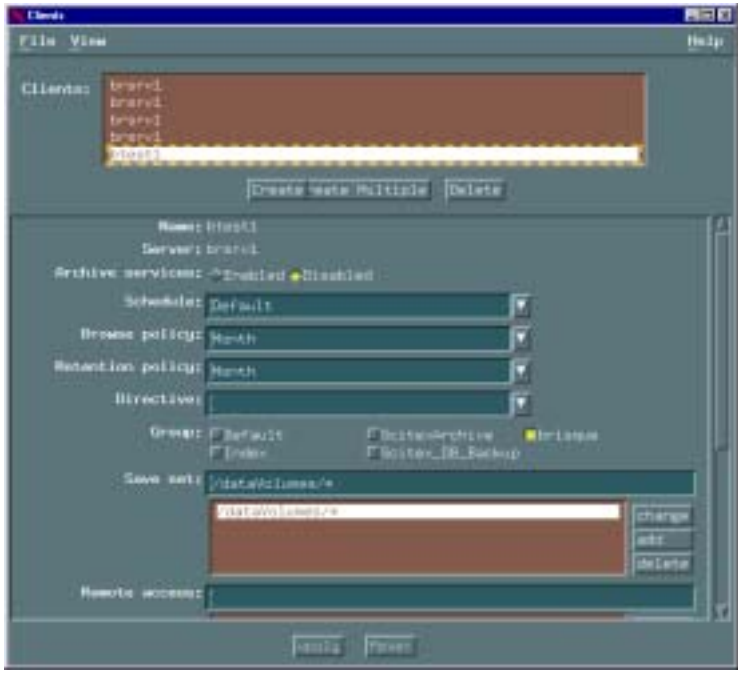
11. From the *Server* menu, select **Server Setup**.
12. To add the Brisque (client) to the Administrator list, in the *Administrator* field, type <root@Brisque host name> and click **Add**.



13. On the Brisque, run **nwadmin** to open the server *NWadmin* application.
14. From the *NWAdmin* main window, click the **Change Server** icon to connect to the NetWorker server.
15. Create group, schedule, and client on the NetWorker server as shown on the following pictures (for details see *Chapter 5 Customizing Setup on page 27*).


File View
Help
Groups:
Default
Create Delete Multiple
Delete
Name:
Autostart:
Start time:
Client retries:
Cloned:
Clone pool:
Default Clone
Printer:


File View
Help
Clients:
Create Delete Multiple
Delete
Name:
Server:
Client id:
Archive services:
Disabled
Schedule:
Default
Browse policy:
Month
Retention policy:
Month
Statistics:
Index size (KB)
Amount used (KB)
entries
Index messages:



16. Start backup to check functionality.

Chapter 10

Working in Legato NetWorker Environment

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Monitoring the Backup 90

10.1 NWRecover

10.1.1 General

To restore (recover) backed up files/directories/dataVolumes:

1. From the CDE *Launch Pad*, open the *Services* panel and double click the **NWRecover** icon.

   The *NWRecover* window is now displayed.

2. Select the items for recovery, then select the white square and double click to mark it or choose **Mark** from the menu bar. The *Selection* field displays the selected path.

   Marking a data volume or directory marks all files below it. This is not recommended due to hidden files such as *.rsrc, .def, .rfs.* Only folders within main dataVolumes or Jobs folders should be marked.

3. Click **Start** to execute the recover process.



4. When **Start** is selected the *Conflict Resolution* window opens.



5. Leave the default settings or change them as required and click **OK** to proceed.

10.1.2 Changing time

1. To change the items for recovery to an earlier version. For example, choose **Change => Browse Time** from the menu bar.

   This will restore a *Full True Image* resembling the specific time selected.



2. Select required the date from the calendar and click **OK**.

10.1.3 Changing Destination

This may be needed if original dataVolumes do not have enough capacity for recovery.

1. To change the destination for the recovered items, choose **Options => Relocate** from the menu bar.
2. Type in the new destination in the text field and click **OK**.

10.1.4 Recovering DataVolumes



Recovery of entire data volumes level is not recommended since it may couse problems on the Helios level (Desktop).

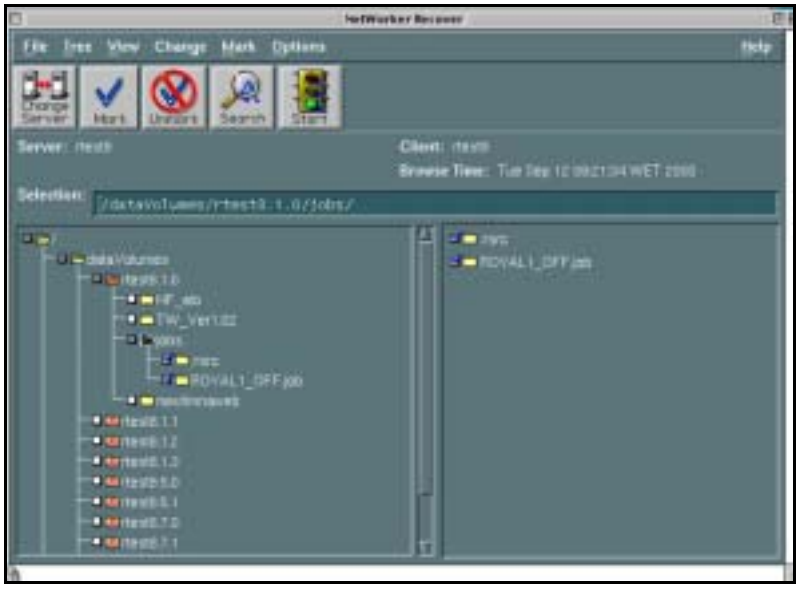
1. The  icon marks filesystems. Select the filesystem for recovery.
2. Click **Start** to execute the recover process.

10.1.5 Recovering Mac Files

Macintosh files can be recovered by recovering both the file and its resource file (***.rsrc***).

1. Expand the dataVolume until you reach the level where the specific file is displayed.
2. Select the file and open the ***.rsrc*** directory on the same level.

   Select the file of the same name under the *.rsrc* directory.

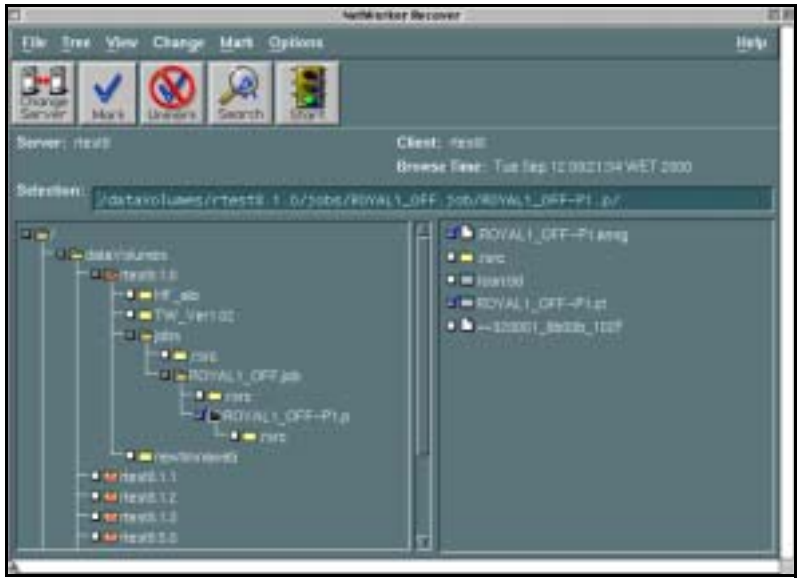


3. To change the destination for the recovered files, choose **Options => Relocate** from the menu bar.
4. Type in a new temporary destination to a different path or a different data volume in the text field and click **OK**.
5. Click **Start** to execute the recover process.

10.1.6 Recovering Whisper Files/Pages/Jobs

Whisper files can be recovered as complete jobs **(.j)** or pages (**.p**), or as individual files (**CT, LW**).

1. To recover *Whisper* jobs, open **/dataVolumes/ripro1.1.0/jobs** and select those jobs which have **.j** as a suffix.
2. To recover Whisper pages, open a job and select pages under the job which have **.p** as a suffix.
3. To recover whisper files, open the page and select items that have **CT** or **LW** as a suffix.



4. Select **Start** to execute the recover process.

When selecting individual files, either CT or LW as defined in the .rfs file and in order to retain the links between the files on a page after recovery, a new page layout must be performed (reset page) on the Whisper.

10.2 NWBackup

1. Access the NwBackup application in the same way as the NwAdmin application was accessed. Refer to section *Accessing Legato NetWorker on page 44*. The *NWBackup* window is now displayed.



2. When performing the backup, only dataVolumes (file systems) and not less are backed up in order to ensure data integrity.

   The file systems are marked with the  icon.

3. From the *NwBackup* window, select the file systems for backup.
4. To select the filesystems, click the white square adjacent to the file system; this selects the filesystem and everything below it.
5. To expand the file system to display all the other files below it, double click the icon, or select the icon and choose **Tree** from the menu bar. Then choose the level of expansion.

10.3 Monitoring the Backup

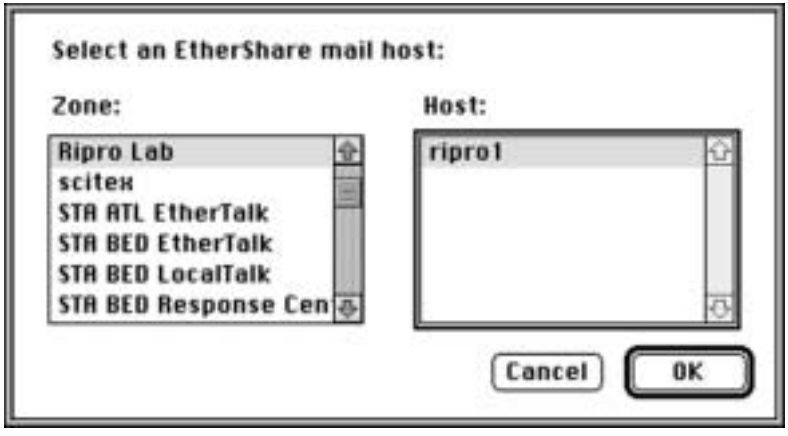
Check the *Ripro Mail* daily to verify that the backup was successful or if there are any failure messages.

Make sure the bootstrap information is printed **daily** via Mail.

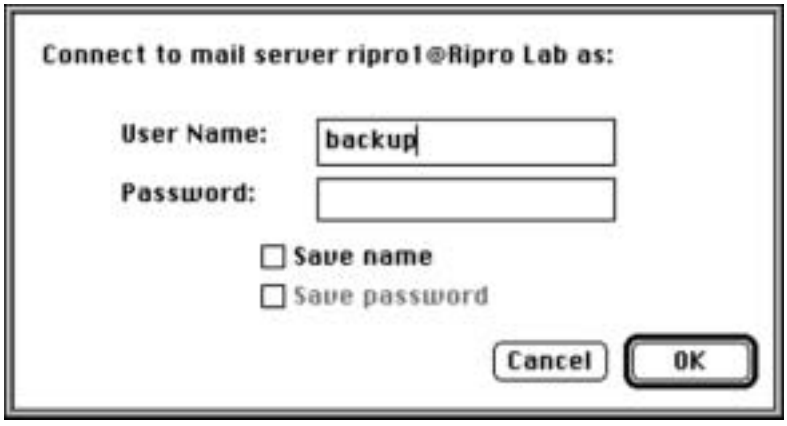
To open the Mail:

1. To open *Helios Mail* on the Mac, select the zone and the server.
2. Login to the server as **backup**.
3. Select *EtherShare Applications* and click **OK**.
4. From your desktop, open the *EtherShare Applications* volume and then open the *Helios Mail* folder.
5. Open the *Helios Mail* file and launch the *Helios Mail* application.
6. Choose the sequence **File => Login** from the menu bar.

   The following screen appears:



7. Select your *EtherShare* mail host and click **OK**.
8. Login again as **backup** to connect to the mail server.



9. You can scroll the file to display all messages received concerning the backup utility.

10. Select an entry and double click it to display the journal regarding the particular entry.



11. Print the mail daily. Use the local printer or change to another printer if necessary.

    This information is necessary in case of a system crash or other failures.

Appendix A

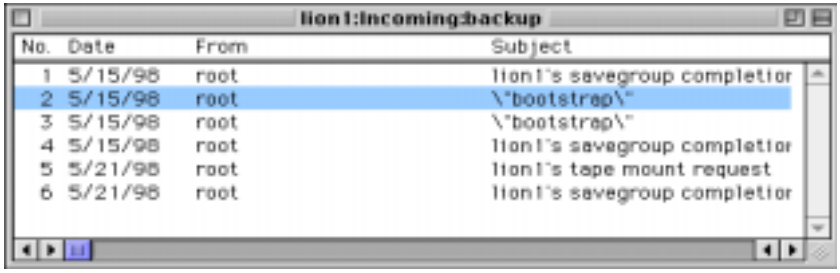
Disaster Recovery

Legato Disaster Recovery. 94
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Sample Recovery Session 97

A.1 Legato Disaster Recovery

In case of a loss of Legato indexes on the system disk, follow the procedure described below:

1. Connect to Helios Mail as a backup user and see the following:



2. Double-click **bootstrap** to see the following:

May 15 09:31 1998 lion1's bootstrap information Page 1

date	time	level	SSID	FILE	RECORD	VOLUME
5/15/98	9:31:19	full	30985	15	0	lion1.001

If the customer is saving his bootstrap information daily, the scanner command in the second page, which takes a long time, does not have to be executed. The next command, **mmrecov**, is quicker as long as the **ssid**, file number and record number are used.

A.2 Recover the NetWorker Server Bootstrap

This section describes how to recover the NetWorker server bootstrap. These files can be recovered using the mmrecov command.

To recover the NetWorker server bootstrap:

1. From the command line, run :

   # mmrecov

   This will recover the NetWorker server bootstrap (media index and configuration files) independent of the server file index.

   The following output appears (for example):

   mmrecov: Using madrid.spain.com as server

   Important: The **mmrecov** command overwrites the server media database. It does not overwrite the resource files, as mmrecov recovers them to the resource directory *res.R*.

   Refer to **mmrecov** and **nsrck** reference pages in the *Legato Command Reference Guide*, which can be found on your Documentation Suite CD or at *www.legato.com* under manuals/documentation, for the syntax and options for this program.

2. If the following message appears, enter the name of the device you are using for the recovery (this message only appears if the server has multiple devices that are configured and enabled).

   What is the name of the device you plan on using [/dev/rmt0.1]?

   Enter **[/dev/rmt0.1]**.

3. If the following message appears, enter the save set ID for the latest bootstrap. If you are recovering a cloned version of the bootstrap, specify the save set ID associated with the clone.

   Enter the latest bootstrap save set ID []:

   Enter **30985** (for example).

4. When the following message appears, enter the file number to begin the recovery. If unknown, press Enter.

   Enter starting file number (if known) [0]:

Enter **15** (for example).

5. When the following message appears, enter the first record number to begin the recovery. If unknown, press Enter.

   Enter starting record number (if known) [0]:

   Enter **0** (for example).

6. When the following message appears, follow the prompt:

   Please insert the volume on which save set id 30985 started into /dev/rmt0.1.

   Once you have loaded the appropriate volume, the following message appears:

   Scanning /dev/rmt0.1 for save set 30985; this might take a while...

   NetWorker then scans the volume for the appropriate save set and recovers it.

7. Use the **nwadmin** program to monitor the recovery of the server indexes and configuration files.

   Networker is now ready for a saveset retrieval. For a file retrieval proceed to step 2.

8. Once the media database and resource files are recovered, recover the indexes with the **nsrck** command (with the level 7 flag in NetWorker 6.x and later releases:)

   nsrck -L7

A.3 Sample Recovery Session

mmrecov (retrieving the indexes in case of disaster)Legato6, broken into 2 stages:

- mmrecov, for the bootstrap configuration files
- nsrck –L7 for online indexes.

root@ripro1:/backup/bin 79 > mmrecov

(mmrecov: Using ripro1 as server)



mmrecov is used to recover the NetWorker server's media index andresource files from media (backup tapes or disks) when any of this critical NetWorker data has been lost or damaged. Note that this command will overwrite the server's existing media index. mmrecov is not used to recover NetWorker clients' on-line indexes; normal recover procedures may be used for this purpose. See the mmrecov(8) and nsr_crash(8) man pages for more details.

/dev/rmt1.1

/dev/rmt2.1

What is the name of the device you plan on using [/dev/rmt1.1]?

Enter the latest bootstrap save set id: 3758751745

Enter starting file number (if known) [0]: 51

Enter starting record number (if known) [0]: 0

Please insert the volume on which save set id 3758751745 started

into /dev/rmt1.1.

When you have done this, press RETURN:

Scanning /dev/rmt1.1 for save set 3758751745; this may take a while...

scanner: scanning dlt tape ripro1.006 on /dev/rmt1.1

/nsr

/nsr: file exists, overwriting

/backup/nsr/res.R/nsr.res

/backup/nsr/res.R/nsrla.res

/backup/nsr/res.R/nsrjb.res

/backup/nsr/res.R/

scanner: ssid 3758751745: scan complete

scanner: ssid 3758751745: 83 KB, 7 file(s)

nsrmmdbasm -r /backup/nsr/mm/mmvolume6/

/backup/nsr/mm/

/dev/rmt1.1: Mount operation in progress

/dev/rmt1.1: verifying label, moving backward 2 file(s)

/dev/rmt1.1: verifying label, moving backward 1 file(s)

/dev/rmt1.1: mounted dlt tape ripro1.006 (write protected)

If your resource files were lost, they are now recovered in the 'res.R' directory. Copy or move them to the 'res' directory, after you have shut down the service. Then restart the service.

Otherwise, just restart the service.

If the on-line index for ripro1 was lost, it can be recovered using the nsrck command.

root@ripro1:/backup/bin 81 > nsrck -L7

nsrck: checking index for 'ripro1'

nsrck: The file index for client 'ripro1' will be recovered.

nsrck: Recovering index savesets of 'ripro1' from 'ripro1'

Recover completion time: Fri Apr 20 11:41:43 2001

nsrck: completed recovery of index for client 'ripro1'

nsrck: /backup/nsr/index/ripro1 contains 279061 records occupying 54 MB

nsrck: Completed checking 1 client(s)

shutdown the networker & restart the services

#nsr_shutdown –qa

#nsrexecd

#nsrd

Appendix B

Legato Linemode Commands

mminfo = displays status of last backups

-mv = displays media status

-av ripro1.archive.456 = displays savesetids per volume

-s ripro2 –av –q “suspect” ripro2.archive.002

-q “volume=ripro2.archive.021,ssid=12777” –r ”cloneid,name,ssid,volume”

-av | grep archive | grep cE = brouse all SA savesets which are expired

-av –g “pool=ScitexArchive,name=Archive.75” -r ”volume,pool,name,savetime,ssid,sumflags”

-av |grep archive | grep cr = brouse all SA savesets which are recycleble

-av –g “name=Archive150.266” –r ”savetime, ssid,volume” = selective query per saveset

-s ripro2 -av -q "volume=ripro2.archive.036" -r "name,ssid,savetime,volume,sumflags,mediafile,copies"
= filenumber, N0 of copies (was cloned ?), etc.

-av | grep archive | grep cr |grep -v SC = browse all SA savesets which are recycleble

-av ripro2.archive.010 | awk '{sum+=$5} END{print sum}' = sums all savesets

su -backup = enables login as backup user to read it’s mail

tail -50 /backup/nsr/logs/messages = displays last 50 messages from the log file.

nsrjb = enables jukebox management

-EI -v -j jbx1 & = shows inventory verbose of jbx1

-HE -v = resets the jukebox + element

-h = shows history

-l ripro1.003 = loads and mounts cassette

-u ripro1.003 = unloads cassette

-S 60 -U 20 = sets cleaning cassette in slot 60 to 20 **uses**

-L -S 35 -f /dev/rmt3.1 ripro5000.010 = labels cassette with a non-default label

-U 20 -j jbx1 -S 60 = sets cleaning cassette

nsradmin = enables nwadmin in linemode commands

nsrwatch = enables offline application monitoring

nsr_shutdown -qa => **nsrd** => **nsrexecd** = restarts the application processes

nsrmm -m -l ripro1.004 = loads, mounts and labels a volume

-u = unmounts the volume

-l -b default -v -f /dev/rmt2.1 -y = label without confirmation

-o recyclable ripro5000.031 = make recyclable

nsrls = lists Legato DBspaces

savegrp = activates default savegroup

save /dataVolumes/ripro1.2.3 & = saves in background

nsrck -F = verifies and compresses Indexes Dbase

nsrck -F -T /dataVolumes/ripro1.2.0/legatotemp = nsrck with TEMP dir relocation

scanner -n -v /dev/rmt1.1 = verifies tape

-i/dev/rmt1.1 = adds index from this cassette to an existing index

-B /dev/rmt1.1 = scans for the last bootstrap record position

-i-s <bootstrap-ssid> /dev/rmt1.1 = recovers latest index

-f 139 -S 7226 -pv /dev/rmt0.1 & = scan specific file and ssid

nohup scanner -i -v /dev/rmt1.1 2>&1 >/dataVolumes/ripro2.1.0/scanner_log &

mmlocate = lists all known volumes

nsr_support => **/tmp/lev** = creates a full report about configuration

mmrecov = rebuilds all indexes from a cassette

nsrim –v = displays index info verbose

-v | grep archive = veryifyes browsing status

recover = enables interactive index browsing and files recovery

nsr_ize -i –s = reinstalls legato

-u = uninstalls, keeps indexes

nsrinfo -v ripro1 -n ScitexArchive |grep 897911918 = browses index by pool and timestamp

-v -t 9876523 ripro1 = browses by timestamp

jbexercise -c /dev/scsidev@0.2.1 -m "Quantum DLT/Digital DLT" = exercise tape

mt -f rmt1 status = gives tape parameters setting

nsrclone –b SciClone ripro2.archive.002 = clone tape

Appendix C

Removing Completely the NetWorker Software

This procedure is **not necessary** for upgrading NetWorker version 5.1 to 6 and higher.



Warning:
This procedure also removes the Legato indexes.

To remove completely the Networker software:

1. At the command prompt type:

   #nsr_shutdown –a

   #nsr_ize –r –s

2. Answer **Yes** to all questions.
3. Reboot the system.
4. At the command prompt type:

   #umount /backup

   #rmfs –r /backup

   #rm –rf /nsr

Appendix D

Index and Media Database Changes for 6.0

Appendix E

Legato Commands New Syntax

Appendix F

Copying Legato Indexes to Data Volume

To copy Legato indexes to a data volume:

1. From command line, run:

   #nsr_shutdown -qa

   #mkdir /dataVolumes/rtest10.1.0/legato

   #cd /backup/nsr

   #uasm -s -i ./index | (cd /dataVolumes/rtest10.1.0/legato ; uasm -r -iY)

   #uasm -s -i ./mm | (cd /dataVolumes/rtest10.1.0/legato ; uasm -r -iY)

2. Copy the configuration files:

   #cp -rp res /dataVolumes/rtest10.1.0/legato

To restore Legato indexes from a data volume:

You may need to copy indexes back from the data volume to its original location:

1. From command line, run:

   #nsr_shutdown -qa

   #rm -r /backup/nsr/index

   #rm -r /backup/nsr/mm

   #cd /dataVolumes/rtest10.1.0/legato

   # uasm -s -i ./index | (cd /backup/nsr; uasm -r -iY);

   # uasm -s -i ./mm | (cd /backup/nsr; uasm -r -iY);

2. Restore the configuration files:

   #cp -rp res /backup/nsr

3. To restart Legato daemons, run **nsrd, nsrexecd**.