

LEGATO TECHNICAL BULLETINS

Customer Service & Support Dept.



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LEGATO TECHNICAL BULLETIN

001: Managing NetWorker's Index Size (UNIX)

PURPOSE

This technical bulletin describes the difference between purging, deleting, and recycling media volumes. It provides you with some examples on how to control and maintain the size of the NetWorker indexes.

THE NETWORKER INDEXES

NetWorker tracks the files it backs up in two databases, the *file* index and the *media* index. The media index keeps track of information about backup volumes, such as the name of the volume, the backup dates of the save sets on the volume, and the filesystems in each save set. The file index tracks detailed information about the save sets, including which files belong to a save set. Using these two indexes, NetWorker can quickly retrieve your files from your backup volumes.

These indexes will grow as you back up more and more data over time. Naturally, you need a way to keep the sizes of these indexes in check so that they do not grow beyond the space on the disk or overflow into your filesystems.

NetWorker provides an automatic (through retention and browse policies) and a manual way of reducing the size of the indexes. This bulletin describes the manual way of reducing the index size.

PURGING, DELETING, AND RECYCLING VOLUMES

Purging a volume removes all relevant entries for user files on that volume from the appropriate file indexes, but still retains the volume in the media index. Purging a volume does not destroy the contents of the tape. The contents can still be recovered using **scanner(8)**.

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V.N.

Deleting a volume removes its entry from the media index. It also removes all the relevant entries for the user files on that volume from the file index. Deleting a volume does not destroy the contents of the tape. The contents can still be recovered using **scanner**.

Recycling a volume relabels the volume, deletes the volume from the media index and re-initializes the tape. Once a tape is recycled, you cannot use **scanner** to recover the contents.

SAMPLE BACKUP SCHEDULE

Consider a site with a NetWorker server and 5 NetWorker clients. The schedule for this site consists of a "full" backup on the first Monday of every month. A level 5 backup is performed on the other Mondays and incremental backups on Tuesdays through Fridays. No backups are done on Saturdays and Sundays.

The backup requirements are to maintain the three most recent full backups on-line. The older save sets can be deleted from the file index, but if a file were needed from a deleted save set it must be retrievable. For instance, after a full backup is completed on the first Monday of April, on-line index entries for the entire month of January can be deleted to re-use the file index space.

EXAMPLE 1: You have the list of tapes containing January 1994 save sets.

If you wish to "purge" the entries for January's save sets, log in as *root* on the NetWorker server and issue the following command:

```
# mm -d -P <volumename>           For pre- NetWorker Release 4.0
# nsrmm -d -P <volumename>        For post- NetWorker Release 4.0
```

If you wish to "delete" the entries for January's save sets:

```
# mm -d <volumename>             For pre- NetWorker Release 4.0
# nsrmm -d <volumename>          For post- NetWorker Release 4.0
```

If you wish to recycle all of January 1994 tapes:

```
# mm -m -R <volumename>          For pre- NetWorker Release 4.0
# nsrmm -m -R <volumename>       For post- NetWorker Release 4.0
```

where *volumename* is the name of all the tape volumes containing January 1994 save sets.

SPECIAL NOTE ABOUT PURGING

Purging is a two stage process - first you use **mm** (pre- NetWorker Release 4.0) or **nsrmm** (post- NetWorker Release 4.0) or the Volumes window to purge or delete, then you run **nsrck**.

However, you must wait until the purge is completed before running *nsrck* (or performing a recover). The purge may still be running in the background after the **mm** or **nsrmm** command returns. The purge or delete menu items cause the entire purge to run in the background. This gives the impression that the purge/delete has finished, when in fact it has not.

There are two ways to determine if a purge or delete is active:

- 1) The **ps -ax** command indicates more than one **nsrindexd** process
- 2) In the **/nsr/index** directory, there will be files like:

```
<ssid>_<low>_<high>_<clientname>
```

where **<ssid>**, **<low>**, and **<high>** are numbers and **<clientname>** is the name of the client whose indexes are being purged.

EXAMPLE 2: How to determine the list of volumes used during January 1994.

Example 1 assumes that you have the list of volumes that were used in January 1994. If you do not have this list, follow these steps to generate one:

On the NetWorker server, run the following command as **root**:

```
# mminfo -av -o t -t 01/01/94 | egrep 01"/".."/94
```

This will list all the save sets for the month of January 1994. Here's a sample output:

volume	client	date	time	size	ssid	name
jan_94_1	mercury	01/05/94	15:29:10	40550044	17135541	/external
jan_94_1	mercury	01/05/94	17:00:46	150665256	17135556	/usr
jan_94_4	pluto	01/08/94	17:34:27	132014460	17135558	/archive
jan_94_5	saturn	01/08/94	17:34:28	761404	17135555	/var
jan_94_10	mars	01/30/94	20:04:21	434509080	17135564	/home

In this example, only volumes **jan_94_1** through **jan_94_10** contain January's save sets. Use the steps indicated in the section "Example 1" to either delete, purge, or recycle these volumes.

EXAMPLE 3: How to delete specific save sets from a volume.

In some instances, you might have NetWorker tapes that contain save sets from both January and February. Here's a sample output:

```
# mminfo -av -o t 01/01/94 jan_94_11
jan_94_11 mars 01/31/94 18:14:10 59812028 17135559 /nsr/index
jan_94_11 saturn 01/31/94 18:16:30 314717704 17135560 /usr/src
jan_94_11 pluto 02/01/94 18:16:31 6364592 17135562 /usr/src
jan_94_11 mars 02/01/94 18:16:32 1721888 17135561 /var/spool
```

In this example, the volume **jan_94_11** contains save sets from both January 31 and February 1. The relevant save set id (ssid) for the January 94 save sets are 17135559 and 17135560.

If you wish to delete these save sets from the NetWorker indexes, type:

```
# mm -d volumename -S ssid          For pre- NetWorker Release 4.0
# nsrmm -d volumename -S ssid       For post- NetWorker Release 4.0
```

To purge these entries:

```
# mm -d volumename -P -S ssid       For pre- NetWorker Release 4.0
# nsrmm -d volumename -P -S ssid    For post- NetWorker Release 4.0
```

where *ssid* is the save set id for each save set.

The command must be run *once* per *ssid*.

EXAMPLE 4: How to recover a save set from January 1994 once it has been purged.

Let's assume that you want to recover */usr/src* from January 30 1994. If you had "purged" the volume (as opposed to deleting it), *mminfo* will still contain January 1994's information.

To list all the versions of */usr/src* saved in the month of January, type:

```
# mminfo -av -o t -t 01/01/94 -N /usr/src | egrep 01"/".."94
```

This will list all the versions of */usr/src* that were saved in January.

Once you know the save set id (*ssid*) of */usr/src* from January 30, 1994, load the tape which contains the save set and run **scanner** on that tape.

```
#scanner -s ssid /dev/nrst1 | uasm -rv
```

where *ssid* is the save set id and *nrst1* is the name of the "no rewind" tape device.

EXAMPLE 5: How to reclaim the index space after the database entries have been purged or deleted.

When a volume is purged or deleted from the database, the file indexes do not shrink automatically. Instead, the freed index space is used for allocating records that will be added in the future. To reduce the size of the database immediately after purging or deleting index entries, run the following command:

```
# nsrck -F <clientname>
```

In order to reclaim the index space for all clients, change to the */nsr/index* directory and run the command **nsrck -F ***. Refer to the "Special Note about Purging" in this Technical Bulletin for more information about running **nsrck**.

Warning: Large indexes may take up to a few hours to compact with **nsrck**.

Reference - For more details refer to the following man pages:

mm(8), nsrck(8), mminfo(8), scanner(8), nsr(5), nsrmm(8)

LEGATO TECHNICAL BULLETIN

002: Using Directives to Back up Specific Directories (UNIX)

PURPOSE

The purpose of this Technical Bulletin is to describe the process for creating a directive for backing up specific directories.

DIRECTIVES FOR BACKING UP SPECIFIC DIRECTORIES

Several customers have asked how to automatically back up a specific directory, or directories, on one or more client machines.

This can be done using *savegroup*, along with the correct **save directive**. The advantage of using *savegroup* is that the backup will happen automatically at night. The save directive specifies what directories to back up.

BACKING UP A SPECIFIC DIRECTORY ON ONE CLIENT MACHINE

Let's use *sampleclient:/abc/xyz* as an example. We want to save only this directory, and no others. *sampleclient* is already configured as a NetWorker client and is in a *NSR savegroup*. The NSR savegroup is created using the *nsradmin* program or the Groups window.

The save directive for backing up the */abc/xyz* directory looks like this:

```
<< / >>  
uasm: abc
```

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002: Using Directives to Back up Specific Directories (UNIX)

```
skip: *.*
<< /abc >>
uasm: xyz
<< /abc/xyz >>
+uasm: *.*
```

This save directive is placed in a *.nsr* file on *sampleclient*, or specified using **nsradmin** as a directive resource associated with the client resource for *sampleclient*. You can use the Directives window to create a directive and apply it to the *sampleclient* in the Client window.

SAVE DIRECTIVE CONSIDERATIONS

Remember, *skip* doesn't walk directories to see if anything matches further down the tree. Therefore, in */* we use *uasm* on */abc* (skipping everything else), and in */abc* we use *uasm* on */abc/xyz* (again, skipping everything else). By invoking *uasm* directory-by-directory down the path, we are forcing a walk of that part of the filesystem while skipping everything "on the sides."

Important: Notice that *uasm* is listed before *skip*.

SAVING SPECIFIC DIRECTORIES FOR MULTIPLE CLIENTS

If you want to save a specific directory on multiple clients, simply apply the appropriate directive to each client in the Client window or use **nsradmin** to create the NSR resource.

REFERENCES

See the **uasm(8)**, **nsr(5)**, **nsr_client(5)**, **nsr_directive(5)** man pages for details.

LEGATO TECHNICAL BULLETIN

003: NetWorker Security (UNIX)

PURPOSE

The purpose of this Technical Bulletin is to answer some common questions about NetWorker security considerations.

Do I have to be *root* to save or recover files?

No. These are not *operator* functions and can be performed by anyone on an authorized client machine. This is controlled by the `NSR client` list. However, users can only recover their own files.

When do I need to be *root*?

The `nsradmin` program must be run by *root*.

The `networker` program can be run by any user, however, the windows under the Administration menu are available only to users who are on the administrator list for the server. Tape operations in the Console window require the same permissions as the `mm` command.

Other administrative commands can be run by *root*, or by a user in group *operator*, including the `mm` and `savegroup` commands. Normally, however, `savegroup` is run as *root*. A means of allowing `savegroup` to run without requiring open access to client machines as *root* is described below.

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How does the NetWorker server validate access by client machines?

The NetWorker server validates client access by checking the client attribute in the `type: NSR resource` (see `nsr_service(5)`). The server will only accept connections that are initiated from a secure port on the client. Secure ports can only be opened by `root`, so NSR programs run `setuid` to `root`. This access control is similar to that used by the `rsh(1)` command except that, instead of using the `/.rhosts` file, NSR uses the client list in the NSR resource.

Once a connection has been established, the client programs: `save(8)`, `savefs(8)`, and `recover(8)`, set their effective uid to the uid of the user who initiated the program so that all local filesystem and system call access is done as that user. This prevents users from recovering or saving files to which they should not have access. The exception to this rule is that the user name `operator` and users in the group `operator` get filesystem access privileges of `root`. This allows the administrator to set up a login or group for the `operators` who will initiate saves and recovers on behalf of other users, without giving the `operators` `root` access to client machines.

Can client program access be further tightened?

Access control for the client programs can be further tightened by turning off the `setuid` bit. This will restrict the use of these programs to `root` only on the client machines. To allow access by `root` and `operator`, but not by other users, change the group ownership of these programs to `operator`. Set the mode bits to allow execution by owner and group, but not by others.

What permissions does `savegroup` require?

The `savegroup(8)` command initiates the `savefs(8)` command on each client machine in a save group by doing an `rsh(1)` remote command. In order for the `rsh` command to succeed on all of the client machines, the server's hostname must be in either the `/.rhosts` file or the `/etc/hosts.equiv` file for each client. If the `savegroup` command is issued by `operator` instead of `root`, the `~operator/.rhosts` file on each client must be updated to include the server's hostname. See the `hosts.equiv(5)` man page for more information on setting up remote shell access.

Can savegroup avoid using *root* for its rsh access to the NetWorker clients?

Yes, by entering a valid user name in the `NSR client` hidden resource attribute `rcmd user`. When the `rcmd user` attribute is blank, the *root* id is used. In order for the **save** program to run setuid *root* on the client, the user name should be either a member of the group *operator* or the user name *operator*.

To edit the `rcmd user` hidden attribute, you need to use the administrative command **nsradmin**. Either run this command on the machine that serves as your NetWorker server, or specify the server name when you invoke the **nsradmin** program:

```
%nsradmin -s servername
```

Nsradmin will start with a few messages, then displays a prompt. At this prompt type the following:

```
nsradmin> option dynamic
nsradmin> option hidden
```

This makes the `rcmd user` attribute visible. Set the current query to `NSR client` by entering:

```
nsradmin> . type: nsr client
```

(Note that the space - period - space is required to execute this command.)

Use the following command to update the `rcmd user` attribute to the user name that you want:

```
nsradmin> update rcmd user: username
```

The `username` must have an *.rhost file* in its home directory with the server's hostname in it in order for rsh to access the client.

Nsradmin lists each client resource for the server and asks whether you want to update the resource. Answer "Y" if you want to change the `rcmd user` attribute for each client. Answer "N" if you do not want to change the attribute. To quit the **nsradmin** program:

```
nsradmin> q
```


LEGATO TECHNICAL BULLETIN

004: Legato NetWorker Configuration - Example 1 (UNIX)

PURPOSE

This Technical Bulletin is first in a series that provides examples of how to set up and use NetWorker in commonly occurring customer environments. Readers are encouraged to send examples of how they use NetWorker to Legato Customer Support. These “real life” configurations will be turned into future Technical Bulletins to benefit other users.

CONFIGURATION AND REQUIREMENTS

In this example there are 2 NetWorker file servers, called *mars* and *venus*, each with 2 GB of disk space. You will need NetWorker/5 to:

- Perform a backup each Saturday that backs up everything that has changed since the beginning of the backup schedule
- Perform a full backup once every 4 weeks (on Saturday)

The NetWorker server, *mars*, has an 8mm tape drive connected to it.

THE SOLUTION

To meet the above requirements you can set up a NetWorker schedule that combines full, incremental, and level 1 backups. The schedule will be 4 weeks in length. During the week incremental backups will be performed each night. On the first 3 Saturdays of the schedule a level 1 backup will

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be performed, followed by a full backup on the 4th Saturday.

On a typical 4 GB network, the incremental backups for an entire week should fit onto a single 8mm tape. A new tape will be required to perform the level 1 backups on Saturday nights. On the 4th Saturday of the schedule, you may have to change the tapes during the full backup (see below for suggestions on reducing the total volume of your full backups).

Since there is no way to specify a schedule which repeats every 4 weeks, you can create a weekly schedule with overrides for full backups every 4th Saturday.

Using the NetWorker Schedules window:

1. Select “Week” for the Period.
2. Using the pull-down menus, select “incr” for each day of one week (schedule is repeated for all weeks in the month).
3. Select “1” for Saturday.
4. Select a “full” override from the “overrides” menu for each 4th Saturday as far into the future as you want.

Using **nsradmin**, the NSR schedule resource looks like this:

```
type: NSR schedule;
name: 4 week schedule;
administrator: root;
hostname: mars;
period: Week;
action:incr incr incr incr 1;
overrides: full 11/16/91, full 12/14/91, full 1/11/92,
full 2/8/92, full 3/7/92, full 4/4/92;
```

The overrides list varies in length depending upon how far into the future you want to extend the 4 week schedule.

The level 1 backup saves files that have changed since the previous full backup. For example:

- on the first Saturday night of the schedule, every file that has changed during the first week is backed up
- on the second Saturday night, every file that has changed during the preceding 2 weeks is backed up
- on the third Saturday night, every file that has changed during the preceding 3 weeks is backed up

- on the last Saturday of the schedule, the full backup saves all of the files on the clients that have been assigned the “4 week schedule”

The schedule repeats every four weeks.

SUGGESTIONS FOR EASIER OPERATION

There are two ways that the total amount of data you are backing up in this example can be reduced, thus possibly eliminating the need to change tapes even on the Saturday night when a full backup is performed.

First, NetWorker offers you the ability to compress files before they are backed up to tape. Compressing the backup with *compressasm* reduces the space consumed on tape by as much as 50% (actual savings vary). If you use *compressasm* on all the data that is being backed up, a full backup of 4GB may fit onto a single tape.

Second, NetWorker allows you to omit certain files from the backup entirely. For example, *core* files and “.o” files can often be skipped. NetWorker’s *skip save* directive provides an easy way to specify that files such as these be skipped.

Finally, *mars* can be configured with a second 8mm tape drive for use during backups. Before going home, label and mount tapes in both tape drives. NetWorker fills the tape in one tape drive and then automatically fills the tape in the second tape drive. Provided you have enough tape, you can set up the system before going home for the weekend and let NetWorker perform the full backup of the two file servers unattended.

LEGATO TECHNICAL BULLETIN

005: Legato NetWorker Configuration - Example 2 (UNIX)

PURPOSE

This Technical Bulletin is the second in a series that provides examples of how to configure and use NetWorker in commonly occurring customer environments. Readers are encouraged to send examples of how they use NetWorker to Legato Customer Support. These “real life” configurations will be turned into future Technical Bulletins to benefit other users.

CONFIGURATION AND REQUIREMENTS

In this example, NetWorker backs up one fileserver (*mars*) with 2 GB of data. The machine *mars* has an 8mm tape drive and it will be the NetWorker server. NetWorker/5 is required to:

- perform a full backup on the first day of every month
- maintain the backups on-line for 3 months
- maintain several versions of each file on the backup tapes

THE SOLUTION

To meet the above requirements, you can create a NetWorker backup schedule that combines full, Level 8 and Level 9 backups. The period is a month. A full backup is performed on the first day of every month. Level 9 backups are performed for the next 6 days. A Level 9 on the second day

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will save files that have changed since the full. A Level 9 on the third day will also save files that have changed since the day a full backup was performed. A Level 8 backup is performed on day 8. Subsequent Level 9 (for the next six days) will save files that have changed since the Level 8. The Level 8 and Level 9 backups are repeated to complete the month.

Using *nsradmin*, the schedule looks like this:

```
type: NSR schedule;
name: monthly schedule;
administrator: root;
period: Month
action: full 9 9 9 9 9 9
      8 9 9 9 9 9 9
      8 9 9 9 9 9 9
      8 9 9 9 9 9 9
      8 9 9;
```

In order to do a full backup on the first day of every month, the period is `Month`, and `full` is entered as the action for the first day of the schedule.

In order to maintain many versions of every file, Level 9 backups are done during the week. The Level 9 backups will save any file that has changed since either a full or Level 1-9.

Every seven days a Level 8 backup is done, to keep the Level 9 backups from getting too big. The subsequent Level 9 backup will only back up files that have changed since the previous lower level backup (Level 1-8).

Notice that there are 31 entries listed in the schedule, one for each day of the month. During long months, all 31 entries will be used. During a short month only enough entries to cover the month will be used, then the schedule will start over with a full backup on the first day of the month.

You can also create the schedule using the Schedules window.

SUGGESTIONS FOR EASIER OPERATION

You can use *compressasm* and *skipasm* to minimize the total amount of data that you are backing up.

LEGATO TECHNICAL BULLETIN

006: Legato NetWorker Configuration - Example 3 (UNIX)

PURPOSE

This Technical Bulletin is the fourth in a series that provides examples of how to configure and use NetWorker in commonly occurring customer environments. Readers are encouraged to send examples of how they use NetWorker to Legato Customer Support. These “real life” configurations will be turned into future Technical Bulletins to benefit other users.

CONFIGURATION AND REQUIREMENTS

In this example, NetWorker backs up one fileserver - *mars* and 6 desktop machines - *mercury*, *venus*, *earth*, *jupiter*, *saturn* and *pluto*. The fileserver has 4 GB of disk space and each desktop machine has 600 MB of disk space for a total of 7.6 GB. The NetWorker server is *mars*, and it has two 8mm tape drives connected to it. The other machines are NetWorker clients to *mars*. Using NetWorker, users must be able:

- to find and replace a lost file quickly
- to recover a file by mounting not more than one tape
- to recover everything the way it was the previous day, in case of a disk crash
- to recover from a disk crash by mounting 3 or 4 tapes
- to maintain the backups for three months

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THE SOLUTION

It is not convenient to do a full backup on all the machines at the same time, because it would take a long time and require you to mount new tapes as they became full. You can schedule each file server to do a full backup independently of the others and on different days. You can schedule incremental backups between the full backups.

Using **nsradmin**, the schedule for the NetWorker server *mars* would look like this:

```
        type: NSR schedule;
        name: mars;
administrator: root;
        period: Month;
        action: full 9 9 8 9 9 7
              9 9 8 9 9 7 9
              9 8 9 9 6 9 9
              8 9 9 7 9 9 8
              9 9 8;
override: ;
```

The reasoning behind the schedule is as follows:

The *action* has to start with a full backup, to ensure that every file on *mars* is saved at least once onto tape.

On the first day of the month, *mars* will perform a full backup, because the *action* starts with a `full` for full backup and the *period* is `Month`.

Since you are maintaining the backup tapes for at least three months, you will have three different tapes with a full backup of *mars*. You should have more than one tape with a full backup, since tapes can be lost or destroyed.

To minimize the number of tapes needed to recover from a complete disk crash, different levels of backups will be used on the other days of the month. The different levels back up any file that has changed since the last lower save level, ensuring that each file has been backed up twice.

If every day of the cycle had a Level 9 backup, the backups done near the end of the month would contain excessive amounts of data. To minimize the number of tapes needed to recover from a disk crash, you want to use Level 8 and Level 7 backups after Level 9 backups during the monthly cycle. The pattern looks like this:

```
9 9 8 9 9 7
```

This pattern will be repeated for the days in the month to the end of the cycle:

```
action: full 9 9 8 9 9 7
        9 9 8 9 9 7 9
        9 8 9 9 6 9 9
        8 9 9 7 9 9 8
        9 9 8;
```

The action starts over with a full backup on the first day of every month, regardless of the number of days in the month.

The pattern of backups minimizes the amount of data saved and the number of tapes needed to do a recover of a complete disk.

Each modified file will be saved every night, and each version of a file will be recoverable.

You can use the same schedule for *mars* for all the other machines, with one change. Since the desktops have relatively less amount of data to be backed up, you can group 3 desktops within one schedule. By rotating the levels for each day of the month, you can effectively stagger the full backups for each group. For example, *mercury, venus and earth can be assigned the following schedule:*

```
type: NSR schedule;
name: save schedule 1;
administrator: root;
period: Month;
action: 8 full 9 9 8 9 9
        7 9 9 8 9 9 7
        9 9 8 9 9 6 9
        9 8 9 9 7 9 9
        8 9 9;
override: ;
```

Similarly *jupiter, saturn and pluto can be assigned a schedule that would look like this:*

```
type: NSR schedule;
name: save schedule 2;
administrator: root;
period: Month;
action: 9 8 full 9 9 8 9
        9 7 9 9 8 9 9
        7 9 9 8 9 9 6
        9 9 8 9 9 7 9
        9 8 9;
override: ;
```


LEGATO TECHNICAL BULLETIN

007: Unattended Backup using Stackers (UNIX) OBSOLETE

This Technical Bulletin is now obsolete. The *autolabel* and *mmstacker* scripts described here were originally developed as a temporary approach to support stackers. Now that NetWorker supports jukeboxes, these scripts are no longer supported. Contact your Reseller or Legato for information pertaining to the NetWorker Jukebox Module.

PURPOSE

This Technical Bulletin explains how to configure NetWorker for unattended backups using stackers, for example the EXB10™ stacker from Exabyte.

SHELL SCRIPTS

The shell script *autolabel* automatically labels the ten tapes in the stacker sequentially.

The shell script *mmstacker* unmounts and ejects the current tape from the drive and mounts the next tape for NetWorker.

A new notification resource needs to be created to handle the new tape event.

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STEP-BY-STEP INSTRUCTIONS

Copy the shell scripts *autolabel* and *mmstacker* into the directory where the other NetWorker executables reside, for example, */usr/etc*.

Load all the 10 tapes in the stacker and execute the shell script *autolabel*. This shell script will label the 10 tapes *testtape.1* through *testtape.10*. The backup device in this case is */dev/nrst8*.

```
# autolabel /dev/nrst8 testtape.
```

Create the new notification resource for invoking the shell script *mmstacker* when the media is full.

```
type: NSR notification;
name: Move Stacker;
action: /usr/etc/mmstacker/dev/nrst8
event: media;
priority: waiting;
```

As soon as the first tape is full, NetWorker will execute the shell script *mmstacker*.

NOTE: This script allows only unattended backups. Unattended recovery is possible if the tape needed is in the stacker. In this case, NetWorker will find the right tape by sequentially going through all the tapes in the stacker.

a) Copy of shell script *autolabel*

```
#!/bin/sh
# %Z%%M% %I% %E% Copyright (c) 1992, Legato Systems, Inc.
# All rights reserved.
Myname="$0"
Devname="$1"
Label="$2"
Sleep=30
#validate the arguments
if [ $# -ne 2 ]; then
    echo "Usage: $Myname <device-path> <label>" 1>&2
    exit 2
fi
if [ ! -c "$Devname" ]; then
    echo "$Myname: \"\$Devname\" is not a character special device file" 1>&2
    exit 3
```

```
fi
# label the tapes
for i in 1 2 3 4 5 6 7 8 9 10
do
    mm -l -f "$Devname" "$Label"."$i" #labels the tape
    while true
    do
        mt -f "$Devname" rewoffl #rewind, offline and eject
```

(NOTE: For RS/6000, replace `mt -f "$Devname" rewoffl` with `tctl -f "$Devname" offline`

```
        status="$?"
        if [ "$status" -ne 0 ]; then
            continue;
        fi
        break
    done
done
```

b) Copy of the shell script `mmstacker`

```
#!/bin/sh
# %Z%%M% %I% %E% Copyright (c) 1992, Legato Systems, Inc.
# All rights reserved.
Myname="$0"
Devname="$1"
# validate our arguments...
if [ $# -ne 1 ]; then # we need one argument, and only one
    echo "Usage: $Myname <device-path>" 1>&2
    exit 2
fi
if [ ! -c "$Devname" ]; then # it must be a raw special device file
    echo "$Myname: \"$Devname\" is not a character special device file" 1>&2
    exit 3
fi
```

007: Unattended Backup using Stackers (UNIX) OBSOLETE

do this till it works...

while true

do

mm -u -f "\$Devname" # an NSR unmount

mt -f "\$Devname" rewoffl # a OS unmount, rewind, and eject...

**(NOTE: For RS/6000, replace *mt -f "\$Devname" rewoffl* with
*tctl -f "\$Devname" offline***

status="\$?"

sleep 120

if ["\$status" -eq 0]; then

mm -m -f "\$Devname"

status="\$?"

break; # it worked!

fi

done

exit \$status

LEGATO TECHNICAL BULLETIN

008: Support for EX8500 Tapes (UNIX)

PURPOSE

This technical bulletin describes how to use the new 5GB Exabyte tape drive - EX8500™ with NetWorker.

USING EX8500 TAPES AS YOUR BACKUP MEDIA

When the backup media is set as *8mm*, the capacity of the media defaults to 2.0 Gb. NetWorker overrides this default capacity and writes to the end of the tape or until a write error occurs.

No special labeling procedure is required for the EX8500 tapes.

Note that the output from *mminfo* will be misleading when the amount exceeds $2^{*}32 - 1$ bytes.

```
volume      written      read  expires  mounts skips    cap.
newtape.1   1100 MB 25% F none - 02/01/93 19      29      4194 MB
```

The amount and percent written and capacity are inaccurate in the Volumes window and *mminfo -m* output due to a limitation in the *mminfo* command.

However, the “F” that indicates a full tape is accurate.

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LEGATO TECHNICAL BULLETIN

009: Backing up Macs in a NetWorker Environment (UNIX)

PURPOSE

This Technical Bulletin describes a way to back up Macintoshes™ using NetWorker.

USING NETWORKER TO BACK UP MACS

You can use NetWorker to back up Macintoshes in a heterogeneous environment. The Macintoshes do not have to be NetWorker clients; they only need to share files with a NetWorker client. This is often referred to as an “NFS Backup,” where many machines copy their files to a central backup server which then performs a backup to tape.

In Legato’s environment, we provide NFS access to our UNIX file servers for Macintosh machines on our localtalk net. This is accomplished using a Cayman Systems Gatorbox™ (hardware) to physically connect the networks and GatorShare™ software to provide file sharing capability. Macintosh users back up their files to a backup folder on the primary UNIX file server. This appears as a simple copy operation to the Macintosh users, or they can use a Macintosh backup tool of choice if it provides a mechanism for backing up to a file rather than to floppy. NetWorker then backs up the Macintosh files in the backup folder on the UNIX server as part of its regular backup.

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LEGATO TECHNICAL BULLETIN

010: The Host/IP Database: Fixing NetWorker Alias Warnings (UNIX)

BACKGROUND

The NetWorker server keeps an on-line database of the files that each client has backed up. Because host *names* are easier to administer than host *addresses*, NetWorker keeps the on-line index information for each client in a UNIX directory associated with the client's name.

When a new backup is initiated, the NetWorker server simply maps the IP address of the client back to the client's name. This is accomplished via the *gethostbyaddr()* library routine.

In order for the address-to-name mapping to occur properly, the "hosts" database at a customer site must be *correct* and *consistent* between the NetWorker server and its clients. In the typical Sun environment the "hosts" database is the */etc/hosts* file; usually one master */etc/hosts* file is kept on a master YP (NIS) server.

THE PROBLEM

If the hosts database is not configured correctly, the server will experience aliasing problems with its misconfigured clients. Aliasing in this case means that the server keeps more than one database for a client, causing confusion for users who ultimately want their files back.

The NetWorker client detects and complains about potential aliasing problems at save time. When an aliasing problems occurs, the **save** command prints a message:

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```
Warning: <aliasname> is the alias for <primary name>!
```

This occurs when the client's hostname (the results of the *gethostname()* system call or the *hostname* command) does not match the *first* name in the client's associated host entry. The following example illustrates the error condition

```
legato# hostname
legato
legato# ypcat hosts | grep legato
137.69.1.1
legato.legato.com legato loghost mailhost
legato#
```

and produces the message

```
Warning: legato is the alias for legato.legato.com!
```

THE SOLUTION

To fix the problem, make the hostname equal to the primary name. The output of the hostname command must match the first name of the associated hosts database entry. The example above is simply corrected by:

```
legato# hostname
legato
legato# ypcat hosts | grep legato
137.69.1.1
legato loghost mailhost legato.legato.com
legato#
```

Especially note that this rule applies to *all* entries associated with a particular machine. So for a machine whose hostname is *quattro* entries like

```
137.69.1.62      quattro quattro-neta timehost
137.69.2.62      quattro quattro-netb
```

are correct, while entries like

```
137.69.1.62      quattro-neta quattro timehost
137.69.2.62      quattro-netb quattro
```

are unacceptable, since backward mapping different IP addresses for the same machine produces different names for that machine.

HISTORY

Historically, BSD UNIX uniquely named *interfaces* and not *machines*. The uniqueness caused many administration problems. For example, administrators had to put all of a machine's interface names into security files like */etc/hosts.equiv* and *.rhosts*.

By release 4.3 (and SunOS 4.0), this misfeature was recognized and the uniqueness was eliminated. Unfortunately, the damage had already been done. Old configuration files now have to be repaired, and an entire culture of host administration has to be retrained.

LEGATO TECHNICAL BULLETIN

011: Using NetWorker with Tape Drives with Hardware Compression (UNIX)

SUMMARY

By using standard UNIX device drivers, NetWorker is able to work with a wide range of devices. Different devices offer various buffering and compression features that can affect how tape write errors are handled.

On certain tape drives with hardware compression, NetWorker cannot guarantee sufficient buffering of data when a bad tape spot is hit. For maximum data integrity, Legato recommends compressing your backups (using **compressasm** in a backup directive) and turning off hardware compression on the tape drive.

TAPE WRITE ERRORS

When writing to tape, several errors can occur. First, the write can fail because the End-Of-Tape (EOT) has been reached. Second, the write can fail because of a bad spot on the tape or a dirty tape drive. Note that standard UNIX device drivers return the same error for both these situations. This means that NetWorker cannot distinguish between an EOT and bad tape.

Fortunately, modern tape drives can anticipate an EOT and flush their buffer successfully before actually hitting the physical end of tape. In this case, the UNIX driver reports an EOT error.

Unfortunately, tape drives are unable to anticipate a bad spot on tape and

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have no opportunity to flush their buffer. Again, the UNIX driver reports an EOT error.

WRITE-BEHIND BUFFER

To handle EOT errors caused by bad spots on tape, NetWorker maintains an additional (fixed size) write-behind buffer. When NetWorker requests the next tape, it flushes the write-behind buffer. (NetWorker knows how to handle any overlaps between buffers when recovering. Note that the extra write is actually redundant if the error reported by UNIX was caused by an EOT.)

NetWorker's write-behind buffer has a finite size designed to handle non-compressing tape drives. This write-behind buffer will also work with tape drives that compress data as it is written from their buffer onto tape (current Exabyte™, Techmar™, and Wangtek™ compressing drives work this way).

Some compressing drives, however, may compress data as it is copied into the drive's buffer. The drive's buffer therefore represents typically 1.5:1 to 3:1 as much data as it holds byte for byte, and possibly much more (some drives claim compression ratios of 10:1).

NetWorker's write-behind buffer would need to be very large to handle a best case 10:1 compression ratio possible by some drives. Real memory and swap space consumption make this prohibitive. Legato is exploring other alternatives to large in-memory buffers.

CURRENT RECOMMENDATION

For maximum data integrity, unless you are certain of how your tape drive handles compression, do not use your compressing tape drive in compression mode. Instead, compress the backup with NetWorker's **compressasm**. Compressing the backup with **compressasm** also reduces the network load.

LEGATO TECHNICAL BULLETIN

012: Savegroup Swap Space (UNIX) OBSOLETE

PURPOSE

This Technical Bulletin is obsolete with Release 3.0.1.

This Technical Bulletin describes a workaround for a known limitation in NetWorker's **savegroup** command.

In versions of NetWorker prior to and including 3.0, **savegroup** consumes an excessive amount of swap space under certain circumstances.

SAVEGROUP'S FORK () SYSTEM CALLS

The **savegroup** command automatically issues a `fork ()` system call. When a `fork` system call issued by **savegroup** fails, **savegroup** sleeps and tries again. A `fork` can fail because the system-imposed limit on the total number of processes under execution by a machine or under execution by a single user name is exceeded, or because there is insufficient swap space for the new process. During these retries, **savegroup** uses system resources, especially swap space. The swap space used by **savegroup** on these retries is not given up. Due to this swap space usage, a "fork failed: out of memory" error message appears and the **savegroup** either completes or fails, thus hanging the system.

DIRECTIONS FOR WORKAROUND

If you are having a problem with **savegroup** hanging frequently, then

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you can either request a patch from Legato Technical Support or use the following workaround. The workaround turns off the `Restartable` option for savegroup. However, with the `Restartable` option turned off NetWorker will not continue to back up after a server crash.

1. Type `nsradmin` at the system prompt on your NetWorker server to use the tty based editor.
2. When the `nsradmin>` prompt appears, type `option hidden` to display the hidden options.
3. When the `nsradmin>` prompt appears again, type `visual type: nsr group` to display the savegroups for that server.
4. Use the `Next` command to select the name of the savegroup that is consuming swap space and hanging the system.
5. Tab over to the `Edit` command and press `[Return]` to edit the resource.
6. Tab down to the options, place the cursor on the `Restartable` option and press `Return` to remove the brackets and disable the `Restartable` for that savegroup.
7. Press `[ESC]` to stop editing. Select `Yes` to save the changes.
8. Tab over to the `Quit` command and press `[Return]` to go back to the `nsradmin>` prompt.
9. Type `quit` to exit the `nsradmin` program and return to the system prompt.

You have now disabled the `Restartable` option so that the system fork in savegroup does not consume swap space.

LEGATO TECHNICAL BULLETIN

013: Using NetWorker with Byte-Swapped Fonts on Xterminals (UNIX)

PURPOSE

The purpose of this Technical Bulletin is to provide a procedure to convert the fonts that are supplied with Legato NetWorker to byte-swapped fonts which are compatible with Xterminals such as the IBM Xstation™.

CONVERSION PROCEDURE FOR BYTE-SWAPPED XTERMINALS

In order to run NetWorker on an Xterminal that uses byte-swapped fonts such as an IBM Xstation, you must first convert the Legato-supplied fonts to work with the byte-swapped Xterminal using the following procedure:

```
# create a directory containing distribution tape
%nsrtape=/tmp/networker-tape

#create a directory in which we'll put the new fonts
%newfonts=/usr/lpp/x_st_mgr/nsr-fonts

%mkdir $newfonts

%cd $nsrtape/fonts

# byte swap each font file and leave output file in $newfonts
%for file in *.snf
%do /usr/lpp/x_st_mgr/bin/swapcnf $f > $newfonts/$f
%done
```

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013: Using NetWorker with Byte-Swapped Fonts on Xterminals (UNIX)

```
# build the fonts.dir file for the new font directory
%/usr/lpp/x_st_mgr/bin/mkfontdir $newfonts

# finally, add the new font directory to the Xstation's font path
# note: this may cause the Xstation to freeze up for a few seconds
%/usr/lpp/x_st_mgr/bin/xset fp+ $newfonts
```

The /usr/lpp/x_st_mgr/nsr-fonts directory needs to be created on each system being used as an Xstation font server.

LEGATO TECHNICAL BULLETIN

014: Hints for Using NetWorker on an RS/6000 Server (UNIX)

PURPOSE

This Technical Bulletin contains a collection of hints, known limitations, and workarounds for installing and using NetWorker on an IBM RS/6000™ server. This bulletin is an interim solution until the information is published in the next revision of the product documentation. *Make sure you read the Release Notes which are shipped with the NetWorker product!*

SYSTEM STARTUP PROBLEM

Check the `/etc/rc` system startup file after you install NetWorker with the `nsr_ize` command. If there is an “exit 0” line before the lines added by the NetWorker installation script, move the “exit 0” to the end of the `/etc/rc` file. For example:

```
exit 0
# Lines added by NetWorker
```

Should be changed to:

```
# Lines added by NetWorker
exit 0
```

GROUP NUMBER LIMITATION

If a `root` user belongs to more than 16 groups, NetWorker will not function properly. Use the `groups` command to see a list of all the groups to which

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root belongs. If *root* belongs to more than 16 groups, you will need to remove *root* from some of the groups.

INSTALLATION TIP

Before you install NetWorker, make sure there is a */var* directory. If not, create the directory with the **mkdir** command:

```
% mkdir /var
```

DUPLICATE DIRECTORIES IN THE RECOVER WINDOW

When viewing your filesystem in the Recover window, you may see duplicate folders or directories with the same name. You may ignore this discrepancy and rest assured that you will be able to recover the files.

CORRECTION TO THE EVALUATION AND INSTALLATION GUIDES

Use the following command instead of the **rehash** command documented in the *Legato NetWorker Evaluation Guide* and *Legato NetWorker Installation Guide*, October 1991 versions.

If *root*'s command search path is set in *root*'s *.profile*, use:

```
# . /.profile
```

If *root*'s command search path is set in *.kshrc*, use:

```
# . /.kshrc
```

FONTS AND THE IBM XSTATION™

The Xstation requires its fonts to be byte-swapped with respect to the fonts used by the native RS/6000 X server.

Use the script shown below to make the Legato-supplied fonts compatible with the Xstation:

```
# directory containing the distribution tape
nsrtape=/tmp/networker_tape
# directory for the new fonts
newfonts=/usr/lpp/x_st_mgr/nsr-fonts
mkdir $newfonts
cd $nsrtape/fonts
# byte swap each font file and leave output file in $newfonts
for file in *.snf
```

```
do /usr/lpp/x_st_mgr/bin/swapcnf $f > $newfonts/$f
done
# build the fonts.dir file for the new font directory
/usr/lpp/x_st_mgr/bin/mkfontdir $newfonts
# add the new font directory to the Xstation font path
# note: this may cause the Xstation to freeze for a few seconds
/usr/lpp/x_st_mgr/bin/xset fp+ $newfonts
```

You must create the `/usr/lpp/x_st_mgr/nsr-fonts` directory for each system used as an Xstation font server.

INSTALLING NETWORKER ON A CLIENT FROM A REMOTE MACHINE

In order to extract the NetWorker software “over the wire” to a client’s local disk, you must first change the block size for the client. Use this command to change the block size:

```
/etc/chdev -l device -a block_size=64512
```

Now use the `tar` command to extract the software:

```
tar xvf /dev/device
```

GRAYSCALE DISPLAY LIMITATION

If you are using an RS/6000 320H running AIX 3.1.6 with the IBM GrayScale display (which is only 4 bits deep), NetWorker exits with the following error message:

```
XView warning: xv_rop: can't handle drawables of different depth
```

For the time being, there is no workaround for this limitation.

TAPE DRIVE ERRORS

Before using NetWorker to back up the clients on your network, you must set the tape device block size to 10240 and use EXTENDED file marks.

Use SMIT to make these configuration changes. For example:

```
% smit
```

1. Choose “Devices.”
2. Choose “Tape Drive.”
3. Choose “Change/Show Characteristics of a Tape Drive.”

014: Hints for Using NetWorker on an RS/6000 Server (UNIX)

Change the block size to 10240. Make sure the device uses EXTENDED file marks.

Or, you may accomplish the same task by entering the following at the system prompt:

```
% chdev -l rmt0 -a block_size=10240 -a extfm=yes
```

LEGATO TECHNICAL BULLETIN

015: NetWorker Help File Patch #001 (UNIX) OBSOLETE

PURPOSE

This Bulletin is obsolete with Release 3.2.

This Technical Bulletin describes a limitation to the NetWorker on-line Help facility and describes an available patch. This bulletin applies only to the UNIX version of NetWorker.

PROBLEM

If you are running NetWorker Release 3.0.1, you may have trouble accessing the Help menus in the graphical user interface.

There is no problem with the Help menus in the Backup and Recover windows.

However, if you try to use Help from the Main window, you may see this message:

```
Could not open 'networker.help'.
```

SOLUTION

There is a software patch available on tape for the RS/6000, SPARC, DEC VAX, ULTRIX, MIPS, HP-UX, and Sony platforms.

This patch contains a replacement for the program which accesses the Help file. This patch applies to Release 3.0.1 for the NetWorker/5, NetWorker/25, NetWorker/100, and NetWorker/200 products.

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015: NetWorker Help File Patch #001 (UNIX) OBSOLETE

Simply use the **tar** command to extract the appropriate patch from the tape and overwrite the old program.

First use the **tar** command to list the contents of the patch tape:

```
tar tvpbf 126 /dev/<device_name>
```

where you substitute the name of the device you are using to extract the patch for *<device_name>*. You will see a list of programs for each platform.

Then use the **tar** command to extract the patch for your particular platform:

```
tar xvpbf 126 /dev/<device_name> <your_platform>
```

(For example, substitute *sun4* for *<your_platform>* if you have a SPARC system).

Please note that this patch does not work with Release 3.0.

You may request the patch by contacting Legato Technical Support at (415) 329-7878 or sending email to support@legato.com.

LEGATO TECHNICAL BULLETIN

016: NetWorker Parsing Limitation (UNIX) OBSOLETE

PURPOSE

This Bulletin is obsolete with Release 3.2.

This Technical Bulletin describes a limitation to the way NetWorker parses the resource file and suggests a workaround for the problem.

PROBLEM

NetWorker may occasionally corrupt a resource file after you have made changes to it by using either the `nsradmin` program or the graphical user interface.

You will not become aware that the resource file was corrupted until you re-start the NetWorker daemons (by re-booting the server, for example).

You will see an error message telling you which resource was corrupted and a comment in the resource file (`nsr.res`). An example of the error message is shown below:

```
nsrd: can't initialize resource files:
/etc/nsr.res: NSR client, NSR device, NSR directive, NSR
group, NSR notification, NSR, NSR schedule, NSR save cycle,
NSR save group;

nsrd: RAP error, unterminated value list (35021)
nsrd: error initializing resource file.
```

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A.G.

The “nsrd: RAP error, unterminated value list (35021)” line may vary depending on the type of error in the file.

SOLUTION

You cannot use `nsradmin` to edit the corrupted resource because you may not be able to re-start the NetWorker daemons.

Follow these steps to repair the damaged `nsr.res` file:

1. Remove the `nsr.res` file.
2. Restart `nsrd`.
3. Configure a device resource for one tape drive.
4. Recover the latest version of `nsr.res`. You should recover the file into `/tmp`, kill `nsrd` (using `nsr_shutdown`), copy the recovered `nsr.res` to `/etc`, then restart `nsrd`.

You should check your NetWorker configuration carefully to be sure you have fully recovered your configuration.

LEGATO TECHNICAL BULLETIN

017: NetWorker Patch #002 (NetWare) OBSOLETE

PURPOSE

This Bulletin is obsolete with Release 2.0.

This bulletin applies to all customers running software release 1.00 of the NetWare version of NetWorker.

This bulletin describes the software patch available from Legato which resolves some problems in software release 1.00 and updates your software to release 1.01.

To obtain the software distribution floppies containing the patch, please contact Legato Technical Support at (415) 812-6100.

This patch can also be downloaded from CompuServe.

MORE TAPE DRIVE SUPPORT

Two new tape drives are supported: the HP DAT⁺ drive and the WangDAT⁺ 3200. **When using the HP DAT drive, make sure there is a tape in the drive each time you power on the drive to ensure that the drive initializes properly.** Currently, NetWorker will use the drive as it is configured – either in disabled or enabled compression mode.

RESOLUTIONS AND ENHANCEMENTS

This section describes the release 1.01 corrections.

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- Errors during a recovery

Problems can result when files are backed up from very large NetWare directories (for example, a directory containing more than several hundred files). The error occurs at the time you attempt to browse or recover these files. The files themselves are backed up properly and can always be recovered. However, in some circumstances the name of the file(s) must be explicitly entered in the Recover window by using the Change Selection option before the file entries become visible.

You'll know right away if you encounter this problem, since the following message will appear: "Error: cannot find continuation record for <filename>". This error message indicates that some entries in the affected directory will not be recovered from a backup tape, except through explicit file by file reference. This problem is fixed in release 1.01. When the affected directory is backed up with release 1.01, the problem resolves itself.

- Recovering a bindery

Bindery recovery has always worked properly. However, now NetWorker will always prompt for a confirmation to overwrite the existing bindery when you recover a bindery.

- Incorrect clock times on a client

Previously, if a client machine's time was set incorrectly into the future, NetWorker could not complete an incremental backup after the client's time was corrected, and would display error messages. For example, if a client's time is set incorrectly ten days in advance, a backup which takes place on June 3 will be recorded by NetWorker as taking place on June 13. Any incremental changes to the file between June 3 and June 13 would therefore be missed by NetWorker. If a client's time was incorrectly set to a year in the future, NetWorker would not be able to back up the client for an entire year.

With this software patch, NetWorker will back up the client according to the schedule even if the client's clock is set incorrectly.

- Tape drives

Occasionally NetWorker would not recognize a tape drive or report an incorrect tape drive (for example, a WangDAT' instead of an Exabyte'). This limitation has been fixed.

Two new tape drives are supported: the HP DAT' drive and the

WangDAT 3200. When using the HP DAT drive, make sure there is a tape in the drive each time you power on the drive to ensure that the drive initializes properly. Currently, NetWorker will use the drive as it is configured – either in disabled or enabled compression mode.

- Using the NETUTIL program

If you tried to load the NETUTIL program without first loading NWSTART, the fileserver would crash. Now NetWorker will display warnings about unresolved symbols instead of crashing the fileserver.

- Using the Archive command

Previously, NetWorker would truncate the displayed file names after backing them up to an archive volume. This limitation has been fixed in release 1.01.

INSTALLING THE PATCH

Follow the steps below to update the software to release 1.01:

1. Make sure there are no backups or restores taking place, and unload all NetWorker NLMS on the server.
2. Find a DOS system from which you can install the patch on NetWare servers with NetWorker 1.00.
3. Move the file called *X100-101.EXE* to an empty temporary directory.
4. Execute **X100-101**. This extracts the patch files into the temporary directory.
5. Log in as *supervisor* to the NetWorker server to be patched. Determine the network drive mapped to the SYS: volume.
6. Run batch file *P100-101.BAT*.

If you originally installed NetWorker 1.00 in the default location on the SYS: volume, enter the following:

P100-101 <drive>:

where <drive> is the network drive mapped to the SYS: volume on the server you wish to patch. For example, *P100-101 M:*.

If you selected a non-default location to install NetWorker, enter the following:

P100-101 <system_drive>: <custom_path>

where *<system_drive>* is mapped to the SYS: volume and *<custom_path>* describes the drive and directory where you installed NetWorker. For example, *P100-101 M: N:\NETWORKR* means your system files are on the M: drive and NetWorker is installed in the NETWORKR directory on the volume mapped to your N: drive.

The update will take several minutes to complete. Execute the patch on all other systems on which you originally installed NetWorker.

7. When you are finished installing the patch for every NetWorker server or client, remove the temporary directory on the DOS system.

You now have a fully updated NetWorker 1.01 release.

LEGATO TECHNICAL BULLETIN

018: Instructions for CompuServe Access (UNIX | NetWare)

PURPOSE

This bulletin is for all NetWorker customers who are using both the NetWare and UNIX versions of NetWorker. Legato is pleased to announce its forum on CompuServe. You may use this forum for dialogs involving technical questions and to download software patches, Technical Bulletins, and other useful information.

Software Patch 002 for the NetWare version of NetWorker is currently available via CompuServe. The instructions in this bulletin show you how to download Patch 002 from CompuServe.

INSTRUCTIONS FOR DOWNLOADING THE PATCH

Follow the instructions below to download the patch:

1. Log on to CompuServe.

```
CompuServe TOP
1 Access Basic Services
2 Member Assistance (FREE)
3 Communications/Bulletin Bds.
4 News/Weather/Sports
5 Travel
6 The Electronic MALL/Shopping
7 Money Matters/Markets
8 Entertainment/Games
9 Hobbies/Lifestyles/Education
```

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- 10 Reference
- 11 Computers/Technology
- 12 Business/Other Interests

2. Enter this choice:

! go legato

You will see the following messages:

```
Computing Support PCVEND
One moment please...
Welcome to PC Vendor D Forum, V. 2G(41)
Hello, Legato Systems
Last visit: 18-May-92 16:32:59
Forum messages: 30678 to 32685
Last message you've read: 30677
Section(s) Selected: [ 1 3 4 6 7 8 9 10 11 12 13 14 15 ]
```

3. Press the [Enter] key at the prompt:

<CR> ! <CR>

You will see the following list:

```
PC Vendor D Forum Menu
1 INSTRUCTIONS
2 MESSAGES
3 LIBRARIES (Files)
4 CONFERENCING (0 participating)
5 ANNOUNCEMENTS from sysop
6 MEMBER directory
7 OPTIONS for this forum
```

4. Enter choice number 3:

! 3

You will see the following list:

```
PC Vendor D Forum Libraries Menu
0 Vendor Library
1 Dell Computer
2 Legato Systems
3 Brightwork Dev.
4 TECH III
6 Cumulus Corp
7 CSI
8 TIMESLIPS Corp.
9 Hyperkinetix
10 Magma Systems
11 GammaLink
```


12 Procom Technology
13 CTJ
14 Pacific Data Prod.
15 BLOC Publishing

5. Enter choice number 2:

! 2

You will see the following display:

```
PC Vendor D Forum Library 2
Legato Systems
1 BROWSE Files
2 DIRECTORY of Files
3 UPLOAD a File (FREE)
4 DOWNLOAD a file to your Computer
5 LIBRARIES
```

6. Enter choice number 4:

! 4

Enter the name of the file to be downloaded. For example, "patch2".

File name: **patch2**

You will see the following display:

```
Library Protocol Menu
Transfer protocols available -

1 XMODEM
2 CompuServe B+ and original B
3 DC2/DC4 (Capture)
4 YMODEM
5 CompuServe QB (B w/send ahead)
6 Kermit
0 Abort transfer request
```

7. Enter choice number 1:

! 1

You will see the following display:

File PATCH2.ZIP, 135680 Bytes, Lib 2

Starting XMODEM send.
Please initiate XMODEM receive and press <CR> when the
transfer is complete.

8. After the transfer is complete, press the [Enter] key (<CR>).

! bye

At this point, the patch file has been downloaded.

LEGATO TECHNICAL BULLETIN

019: Using NetWorker with AIX 3.2 (UNIX)

PURPOSE

This Technical Bulletin is for NetWorker users who are using the UNIX version of NetWorker on IBM RS/6000™ systems running the AIX version 3.2 operating system. It addresses a known problem and offers a workaround.

BACKGROUND

Some users have experienced difficulty using NetWorker on the RS/6000 running AIX 3.2. Although NetWorker worked properly under AIX 3.1, under AIX 3.2 the `nsrd` daemon may die and the NetWorker window will disappear.

THE SOLUTION

IBM introduced a new version of `malloc` in AIX 3.2. This `malloc` is not compatible with NetWorker version 3.0.1 and below. Until a new version of NetWorker is released, the temporary solution is to set the `malloc` type back to how it was in AIX 3.1. Follow the instructions below.

If you are using the Korn shell, add this line to the `.profile` file:

```
export MALLOCTYPE=3.1
```

If you are using the C shell, add this line to the `.cshrc` file:

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019: Using NetWorker with AIX 3.2 (UNIX)

```
setenv MALLOCCTYPE 3.1
```

Please refer to Technical Bulletins 013 and 014 for other helpful hints in using NetWorker with the RS/6000.

LEGATO TECHNICAL BULLETIN

020: NetWorker and Tape Capacities (UNIX)

PURPOSE

This Technical Bulletin is for all NetWorker users who use a tape drive for backing up data. It describes a known limitation to the tape capacity and suggests a workaround. This bulletin applies only to version 3.0 of the UNIX version of NetWorker.

PROBLEM

NetWorker may stop writing data to a tape with an advertised capacity of 5 Gigabytes. This behavior may be caused by the situations described below.

If you have upgraded from an Exabyte 8200 to an Exabyte 8500 tape drive, you may find that NetWorker cannot write more than 2 Gigabytes of data to the tapes you previously used with the Exabyte 8200.

The Exabyte 8500 automatically determines the format of the data on the tape cartridge. If the tape format is Exabyte 8200, the Exabyte 8500 will write in the native format and only write up to 2 Gigabytes, which is the Exabyte 8200 capacity. (The Exabyte 8500 can read tapes written in Exabyte 8200 format, but the opposite is not true.)

If you have updated your Sun operating system to version 4.1.2, NetWorker may not be able to back up more than 1 Gigabyte of data per backup session.

This is due to a change in SunOS 4.1.2 which allows only 1 Gigabyte of

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data to be written between an open and close of a file.

SOLUTION

To solve the SunOS 4.1.2 tape capacity limitation, update your NetWorker software to version 3.0.1. This version closes a file after approximately 1 Gigabyte of data is written, then re-opens it.

To solve the Exabyte upgrade problem, you may do any of the following:

- Configure your Exabyte 8500 tape drive as a high-density device. For example, use `/dev/nrst8 - /dev/nrst15` instead of `/dev/nrst0 - /dev/nrst7`.
- After upgrading from an Exabyte 8200 to an Exabyte 8500, use new tapes for the NetWorker backups.
- Write any data to a tape which was previously used with the Exabyte 8200. For example, use the `tar` command to write the current date on each tape:

```
tar cvf /dev/exb8500 /etc/date
```

This will cause the Exabyte 8500 to use the new format on the tape from now on, allowing NetWorker to fill it to capacity (5 Gigabytes).

LEGATO TECHNICAL BULLETIN

021: SPX Timeout Problem (NetWare)

PURPOSE

This Technical Bulletin is for all NetWorker users running the NetWare version of NetWorker. This bulletin describes two SPX-related error messages, their causes, and suggested workarounds.

THE ERROR MESSAGES

If you see either of the following error messages, they may be caused by SPX timeout problems:

```
The transport mechanism has failed!  
rpc error, unknown error (20025)
```

THE CAUSE

The above error messages are caused by either of the following situations:

- The remote SPX server or client has crashed.
- The “SPX Watchdog Abort timeout” value was exceeded.

THE SOLUTION

If the error message is “The transport mechanism has failed!” and the system has not crashed, then the cause is that the SPX connection created

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by the “Storage Management Services” (SMS) to the client “Target Service Agent” (TSA) has timed-out. This usually happens on a heavily loaded network or when the path to the client is through a bridge or router.

The solution is to increase the value of the “SPX Watchdog Abort timeout,” by using the loadable module SPXCONFIG. This module is described in the manual entitled *NOVELL NetWare Version 3.11 System Administration*, on pages 298-299. The timeout which will work best for your environment depends on many different factors so we cannot recommend a value. You will have to keep increasing the value until the errors stop.

Do not set “SPX Watchdog Abort timeout” to its maximum value (5400), as this will cause abort packets to be sent about every 3 milliseconds on some Token-ring networks, flooding the network and servers with abort packets and causing connections to terminate. This is usually seen as “The transport mechanism has failed!” or assorted RPC errors.

Suggested values:

SPX Watchdog Verify timeout

default: 54
try: 108

SPX Watchdog Abort timeout

default: 540
try: 10-20 times the SPX Watchdog Verify timeout

This solution will also work for the “rpc error, unknown error (20025)” error message. However, if you are currently running TCP, we recommend switching NetWorker to the TCP protocol. See “Using TCP” below.

USING TCP

To make use of TCP, edit the file `SYS:ETC/RPCNET.CFG`, and remove the comments for the `tcp` and `udp` entries (remove the leading ‘#’ and white space), and move these lines to the beginning of the file. You must then reboot the server to make the change take effect.

LEGATO TECHNICAL BULLETIN

022: SQL Backup Support Program (NetWare)

PURPOSE

This Technical Bulletin is for NetWorker users running the NetWare version of NetWorker.

Version 3.0 of Novell NetWare SQL is shipped with a Target Service Agent (TSA) which allows you to back up “named” databases. In order to use this TSA you must have version 2.0 (or greater) of the NetWare version of NetWorker.

To use the Backup Support Program you must first install and have running the TSA as described in Chapter 3, “Using NetWare SQL Utilities,” in the manual entitled *NetWare SQL Installation and Operation* (pages 3-35 through 3-38).

Once the TSA is running you then need to configure a NetWorker client with the same name as the “bindery_name” supplied to the TSA. Refer to the section entitled “Configuring the Server’s Clients” in the *Legato NetWorker Administrator’s Guide, NetWare Version*.

You can now configure this TSA as you would any other NetWorker client.

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C.R.

LEGATO TECHNICAL BULLETIN

023: Prestoserve 2.3 and Sun 600 Series (Prestoserve)

PURPOSE

This Technical Bulletin describes various installation and performance issues surrounding Legato's Prestoserve NFS accelerator board (software version 2.3) installed on a Sun 600 series machine (sun4m) running SunOS 4.1.2.

ARCHITECTURE TYPE

During the software installation, the installation scripts will ask if you are extracting or installing the "sun4c" architecture by default on a sun4m architecture machine. The sun4c version of the Prestoserve driver supports both SBus and VMEbus versions of Prestoserve and is compatible with the sun4m architecture. Therefore, whenever the installation scripts ask if you want to extract or install "sun4c" files, you should press the [Return] key to accept the default.

SBUS PRESTOSERVE

There are no special software installation requirements for the SBus version of Prestoserve on a 600 Series machine, but there are some special hardware requirements you should know about. You should also refer to the Sun Microsystems manual entitled *Installing SBus Cards in Deskside and Data Cabinet Systems* for information about installation.

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The hardware installation steps specific to an SBus Prestoserve board are listed below:

1. Remove the plastic retaining bracket (“handle”) on the SBus board and discard it.
2. Remove the adapter bracket that is located on the top of the back panel of the SBus board. Discard the adapter and screws.
3. Remove the 2 screws holding the back panel, and save these screws and panel.
4. Remove the top flister screws from the standoffs that are located on both sides of the SBus connector on the CPU (save the screws).
5. Install the board, positioning the back panel plate between the SBus board and the CPU back panel. Check the alignment, and seat the SBus board in the connector.
6. Replace and tighten the top flister screws on the standoffs.
7. Loosely install the 2 screws (from step 4) from the back panel through the CPU back plane, through the SBus Prestoserve back panel, and into the mounting bracket. Center and adjust board and back panel, and tighten the screws.

VMEBUS PRESTOSERVE

There are no special hardware installation requirements for the VMEbus version of Prestoserve 2.3 on a 600 Series machine, but there are some special software installation issues. The complete software installation instructions are documented in the *Prestoserve User's Manual*. You should refer to those instructions for context before doing the following:

After you install the software using the `presto_chango` command, (and before you install the Prestoserve board), change directories to `<sys>/sun4m/conf` to edit the configuration files.

Add the following lines to the `GENERIC` and `<sysname>` configuration files:

```
device ps0 at vme16d16 ? csr 0x4c00
device pr0 at vme24d32 ? csr 0x800000
```

In addition, if your system has any SBus SCSI disks, then you will need to set up the system to use `BOUNCEIO` for the SCSI disks to avoid a hang caused by a deficiency in the Sun SCSI driver when enabling VMEbus

Prestoserve on an SBus SCSI disk:

Edit the file `<sys>/sundev/prSD.c` and change the line:

```
#ifdef OPENPROMS
```

to

```
#if defined(OPENPROMS) && !defined(sun4m)
```

Now rebuild a new kernel with the modified configuration information and install the new kernel for testing:

```
# config <sysname>
# cd ../<sysname>
# make
# cp vmunix /vmunix.<sysname>.presto
```

PERFORMANCE

In a sequential write test made using the `mkfile` program writing large NFS files, the following improvements were measured when using Prestoserve on a Sun 600 Series machine running SunOS 4.1.2:

Prestoserve board type	Drive type	Results
SBus	VMEbus IPI	8.9 times faster
VMEbus	VMEbus IPI	7.6 times faster
SBus	SBus SCSI	5.1 times faster
VMEbus	SBus SCSI	3.7 times faster

LEGATO TECHNICAL BULLETIN

024: Prestoserve Release 2.4 (Prestoserve)

PURPOSE

The purpose of this bulletin is to announce that Legato is now shipping Prestoserve Release 2.4.

If you are already running Prestoserve Release 2.3, you do *not* need to update to Prestoserve Release 2.4. Prestoserve Release 2.4 simply resolves installation issues which do not apply if you are successfully running Release 2.3. Only new customers will benefit from Release 2.4.

WHAT'S NEW IN 2.4

Prestoserve Release 2.4 “officially” handles the sun4m architecture. The installation procedure recognizes sun4m machines and is easier to complete on most SunOS 4.1.1 (or later) systems.

Please note that Prestoserve Release 2.4 has been tested on SunOS releases 4.0.x through 4.1.2. Prestoserve Release 2.4 will not work with SunOS 5.x (Solaris 2.x).

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J.M.

LEGATO TECHNICAL BULLETIN

025: Subscriptions to Technical Bulletins (UNIX | NetWare | NT)

PURPOSE

The purpose of this bulletin is to announce the availability of Legato Technical Bulletins in hard-copy from Legato.

These bulletins are also available electronically from the sources listed in the box at the bottom of this page.

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LEGATO TECHNICAL BULLETIN

026: Database ASM Requests (ALL) OBSOLETE

To obtain the latest information about Legato solutions for backing up databases, please contact Legato's 24-hour FaxWorker interactive FAX server. The phone number is 415-812-6156. Follow the instructions supplied by FaxWorker, or simply request document 1014, "Legato Solutions for Backing Up Databases."

PURPOSE

Legato is receiving an increasing number of requests for database Application Specific Modules (ASMs). This bulletin is our direction statement regarding database ASMs.

Legato's NetWorker product has an extension mechanism called an Application Specific Module or ASM. NetWorker includes ASMs for compressing and translating data and for performing other functions, including full and incremental backups of NetWorker's internal databases. A database ASM would, for instance, synchronize the backup with the database manager to insure a valid backup.

Many NetWorker users have asked that ASMs be written to back up standard databases such as SyBase™, Oracle™, and Informix.

Sybase

A SybaseASM product is available today from DataTools, Inc., Menlo Park, California, (415) 617-9100. This product is called SQL-BackTrack.

Oracle

An OracleASM product, developed in cooperation with Oracle, has been announced by Legato and will ship in the third quarter '94.

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Obsolete 10/24/93
D.M.

Informix and Other Databases

A generic “*dbasm*” toolkit is available that can be configured to back up Informix and other databases. The *dbasm* includes facilities for backing up raw partitions. It is a toolkit, meaning that it must be configured for the database environment. As a service, Legato’s Consulting group will supply, install at your site, configure, disaster-test, and provide one year of telephone support for *dbasm*. The cost is \$25,000 for one database server. Please note that *dbasm* is **not** supported via Legato’s Technical Support.

For more information, call Darrell Miller at Legato, 415-812-6000.

LEGATO TECHNICAL BULLETIN

027: WangDAT 3200 Switch Settings (UNIX)

PURPOSE

This bulletin provides the switch settings for maximum performance of the WangDAT™ 3200 tape drive (DAT 4000 SSe) connected to a Sun™ or SPARC™ system running SunOS 4.1.x.

SWITCH SETTINGS

Use the following switch settings for the WangDAT tape drive:

SW 1:

- 1 - on Buffered mode
- 2 - on Data compression (hardware)
- 3 - on SCSI 1/2
- 4 - off Cassette load
- 5 - off Reserved
- 6 - off Reserved
- 7 - off Reserved
- 8 - off Reserved

SW 4:

- 1 - on Parity
- 2 - off SCSI ID setting
- 3 - off SCSI ID setting
- 4 - off SCSI ID setting

Check your WangDAT documentation for the various settings.

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R.R.

LEGATO TECHNICAL BULLETIN

028: Installing SMS Upgrade on NetWare Servers (NetWare)

PURPOSE

This bulletin applies to the NetWare™ version of NetWorker. It describes what you need to do if you have installed only the SMS upgrade on your NetWare 3.11 server. Installing the SMS upgrade allows the NetWare server to become a NetWorker client and be backed up by the NetWorker server.

INSTALLING THE SMS UPGRADE ONLY

If you selected the SMS Upgrade Only installation option, you did not copy all of the needed NLMs to your system. To finish the installation, log in to the server as *supervisor* from a DOS machine, change directory to the SYS:SYSTEM directory and follow the steps below. For the steps below, assume that SYS:SYSTEM is mapped to drive L:, and that the disk drive on your PC is drive A.

First, change the “read-only” flag for the following NLMs:

```
L:\SYSTEM> flag ipxs.nlm -ro
L:\SYSTEM> flag spxs.nlm -ro
L:\SYSTEM> flag streams.nlm -ro
L:\SYSTEM> flag tcpip.nlm -ro
L:\SYSTEM> flag tli.nlm -ro
```

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028: Installing SMS Upgrade on NetWare Servers (NetWare)

Next, insert the software distribution diskette labeled “1” into the drive and copy the following NLM:

```
L:\SYSTEM> copy a:\ipxs.nlm .
```

Next, insert the software distribution diskette labeled “3” into the drive and copy the following NLMs:

```
L:\SYSTEM> copy a:\spxs.nlm .
```

```
L:\SYSTEM> copy a:\streams.nlm .
```

```
L:\SYSTEM> copy a:\tcpip.nlm .
```

```
L:\SYSTEM> copy a:\tli.nlm .
```

Finally, change the flags for the NLMs:

```
L:\SYSTEM> flag ipxs.nlm +ro +di +ri +s
```

```
L:\SYSTEM> flag spxs.nlm +ro +di +ri +s
```

```
L:\SYSTEM> flag streams.nlm +ro +di +ri +s
```

```
L:\SYSTEM> flag tcpip.nlm +ro +di +ri +s
```

```
L:\SYSTEM> flag tli.nlm +ro +di +ri +s
```

Reboot your server to make sure the changes take effect.

LEGATO TECHNICAL BULLETIN

029: Using Prestoserve with MetaDisk (Prestoserve)

PURPOSE

This Technical Bulletin describes how to configure Prestoserve in order to use it with Sun Microsystems MetaDisk product, DiskSuite™.

PROBLEM

Because the MetaDisk device is not a standard Sun disk controller, it has to be explicitly listed for the `presto_chango` command to accelerate it.

To accelerate the MetaDisk, run the following command:

```
#presto_chango -i -p md
```

Unfortunately, we do not recommend that you accelerate the MetaDisk because there is a limitation in the MetaDisk driver which causes the system to hang during re-boot. The system hang occurs because the MetaDisk driver does not return an error message when Prestoserve tries to flush its dirty buffers to the MetaDisk before it is configured.

WORKAROUND

The workaround for this limitation is to accelerate the underlying disks. By doing this, you remove DiskSuite from the loop, so that the Prestoserve driver can flush the buffers to the disk by going directly to the `sd`, `id` or appropriate disk driver.

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A.G.

029: Using Prestoserve with MetaDisk (Prestoserve)

For example, if your DiskSuite uses SCSI disks, your */etc/rc.local* file should have an entry like the following:

```
presto -u /dev/sdnx /dev/sdnx . . . .
```

where *n* is the SCSI disk number and *x* is the partition of the disk. (For example, */dev/sd0a*.)

LEGATO TECHNICAL BULLETIN

030: Savegroup Error Message (UNIX)

PURPOSE

This Technical Bulletin describes an error message which may appear on your console during a scheduled backup due to a shortage of swap space or memory. It applies to the UNIX version of NetWorker.

PROBLEM

The error message is similar to the one shown below:

```
jupiter:/nsr /usr/networker/nullasm: Not enough memory
jupiter:/nsr compressasm: cannot invoke external ASM 'nullasm'
jupiter:/nsr /nsr/mm/mmvolume was not successfully saved
jupiter:/nsr save: external ASM 'compressasm' exited with code 1
jupiter:/nsr /nsr/. was not successfully saved
jupiter:/nsr save: save of /nsr to jupiter failed
jupiter:/nsr saveefs: save of /nsr failed, exit code 210
```

This message means that NetWorker was unable to back up the indexes during the scheduled backup because the system ran out of swap space during the backup.

SOLUTION

We recommend 30 Mbytes of swap space in order to run NetWorker.

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L.S.

030: Savegroup Error Message (UNIX)

Use the `pstat -s` command to check how much swap space the system has available. Increase the amount of swap space, and re-start the scheduled backup to ensure that you back up the indexes.

LEGATO TECHNICAL BULLETIN

031: Disabling the Saveindex Hard Copy (UNIX)

PURPOSE

This bulletin describes how to stop NetWorker from printing a hard copy of the *bootstrap* save set identification number. It applies to the UNIX version of NetWorker.

SOLUTION

Each time NetWorker completes a scheduled backup, it backs up the server's index. The server's index is named *bootstrap* and assigned a save set id number. Typically, system administrators file this hard copy information in case they ever need to recover from a major disk crash.

If you prefer not to have a hard copy of this information sent to the printer, you may disable this feature.

There are three places you need to check in order to disable the printer:

First, invoke NetWorker in the expert mode so that you can see the hidden attributes:

```
# networker -x
```

Bring up the Groups window and make sure the attribute Printer has a non-existent name in the field.

Second, check the **saveindex** script which is installed in the same directory as your other NetWorker programs. Using a text editor, search for "lpr"

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A.G.

031: Disabling the Saveindex Hard Copy (UNIX)

and comment out all the input to “lpr.”

Third, check *root*'s environment and make sure “PRINTER=” is empty.

FINDING THE BOOTSTRAP INFORMATION

If you have deleted the backup volume from the media pool, use the **scanner** command to display the contents of the backup volume and look for the *bootstrap* save set id number. You may then recover the *bootstrap* with the **recoverindex** command.

LEGATO TECHNICAL BULLETIN

032: Enabling Fast Search for Exabyte 8500 Tape Drives (UNIX)

PURPOSE

This Technical Bulletin provides you with a method to enable the fast search capability for Exabyte 8500 tape drives in the SunOS 4.1.2 kernel.

ENABLING THE FAST SEARCH CAPABILITY

1. Edit the following file:

```
/sys/scsi/targets/st_conf.c
```

2. Find the Exabyte 8500 section of this file. It looks like this:

```
/* Exabyte 8mm 5GB cartridge */
{
  "Exabyte EXB-8500 8mm Helical Scan", 16, "EXABYTE EXB-8500",
  ST_TYPE_EXB8500, 1024,
  (ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE),
  5000, 5000,
  { 0x14, 0x00, 0x8C, 0x8C },
  { 0, 0, 0, 0 }
},
```

3. Locate the line that looks like this:

```
(ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE),
```

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R.S.

If you have not made any changes to the file, it will be line 126. Add the following to the line shown above: | **ST_KNOWS_EOD**

It now looks like this:

```
(ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE | ST_KNOWS_EOD),
```

4. Regenerate the kernel using **config(8)**, if needed, and **make(1)**.
5. Install the new kernel (saving the old one) and reboot the system.

This enables the fast search capability for Exabyte 8500 tape drives. Depending upon the files being recovered and their placement on the tape, the actual time to do a recover will be significantly reduced due to faster tape positioning.

LEGATO TECHNICAL BULLETIN

033: How the Jukebox Chooses Backup Volumes (UNIX)

PURPOSE

This Technical Bulletin explains how NetWorker selects backup volumes in a jukebox during a backup. It applies to the UNIX version of NetWorker.

SELECTING BACKUP VOLUMES

If you are running Release 3.2 (or later) of NetWorker, the Jukebox Module will select a backup volume during a backup as follows:

1. Volumes are chosen in alphabetical order.
2. Any volume with any space left on it will be used for the backup.
3. Any volume eligible for recycling will be automatically re-labeled and loaded.

If you are running an older release of NetWorker, the Jukebox Module will select backup volumes as follows:

1. Volumes are chosen in alphabetical order.
2. Any volumes which are filled more than 80% and have less than 100 Mbytes of space available are not used for a backup.

If you are running an older version of NetWorker, please contact Legato for an update to your software.

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R.R.

LEGATO TECHNICAL BULLETIN

034: NetWorker, NetWare Version, Support for DOS Clients (NetWare)

PURPOSE

This bulletin applies to all users with the NetWare Version of Legato NetWorker™, Release 2.00. This bulletin announces the availability of DOSWORKR, new software to support DOS SPX clients.

You can retrieve DOSWORKR from Legato's CompuServe library section as DOSWKR.ZIP. DOSWKR.ZIP contains 10 files: seven updated NetWare Loadable Modules (NLMS), a README.TXT file, and two files required by client workstations. The NLMS are updated versions of previously supplied NetWare Loadable Modules.

In order for the NetWorker server to back up and recover the DOS client's data, DOSWORKR.EXE and NETWORKR.HLP must be accessible to the client. The README.TXT file contains information about installation and notices of interest to you. DOSWORKR interacts via SPX with the NetWorker server's NLM. Novell is scheduled to deliver a DOS Target Service Agent (TSA) in the very near future.

DOSWORKR will be included as part of the software distribution for Release 2.10 of NetWorker, NetWare Version, scheduled for November 1992. In the meantime, DOSWORKR is available to Release 2.00 customers via Legato's CompuServe forum (go legato).

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J.S.

LEGATO TECHNICAL BULLETIN

035: Computing Save Set Size with the *mminfo* Command (UNIX)

PURPOSE

The **mminfo** command in NetWorker Release 3.2 may display confusing information regarding save set size when a save set spans multiple volumes.

This Technical Bulletin describes how to compute the correct save set size.

Computing Save Set Size

When a save set spans multiple volumes, **mminfo** will display multiple lines of output for the same save set. To find the true size of the save set add the individual lines of output for the save set.

For example, enter the **mminfo -av** command at the system prompt. Your output will look similar to the output below.

```
zydeco% mminfo -av
```

```
volume      client   date      time      size      ssid      flags level name
serendip    zydeco   9/18/92   15:40:18  5.0 MB    21604187  tb      /
serendip    zydeco   9/18/92   15:40:18  3.0 MB    21604187  mb      /
arcadia     zydeco   9/18/92   15:40:18  1.0 MB    21604187  hb      /
```

Notice that the output shows three entries for **ssid** (save set identification number) 21604187 because the save set spans two volumes: *serendip* and *arcadia*. To compute the total size of the save set 21604187, add the sizes listed for each occurrence of the **ssid**.

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035: Computing Save Set Size with the mminfo Command (UNIX)

In this example, the total size for ssid 21604187 is 5.0 MB + 3.0 MB + 1.0 MB = 9MB.

LEGATO TECHNICAL BULLETIN

036: Obtaining NetWorker UNIX Patches Electronically (UNIX)

PURPOSE

This bulletin describes how NetWorker for UNIX users can obtain software patches electronically from Legato. Refer to Legato Technical Bulletins 037 and 113 for a list of current NetWorker patches. Refer to Legato Technical Bulletin 149 on how to access Legato FTP site and directories that are publicly available.

OBTAINING PATCHES VIA THE LEGATO REQUEST SERVER

To get a list of the available patches, the machine architectures they apply to, a brief description of what limitation they correct, and the subject lines needed to request them, send mail to `request@legato.com` with a subject line of `send networker patches`. Follow this form for the names of the patch files as specified on the subject line:

```
patch_<architecture>_<release>-<patch number>
```

The variables in this subject line are described below:

- **Architecture** is the type of machine. For example, for SPARC (SunOS 4.x) patches, enter `sun4` for `<architecture>`; for RS/6000 patches, enter `ibmrs6000` for `<architecture>`; for Solaris 2.X patches, enter `solaris` for `<architecture>`; for SCO patches, enter `sco` for `<architecture>`.
- **Release** is the release number of NetWorker to which patch applies. The current NetWorker release is 4.1. Enter 4.1 for `<release>` at this time.

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T.L.

- Patch number is the identification number of the patch in the list of patches. Enter the 3-digit id number of the patch for `<patchnumber>`.

For example, to obtain patch number 001 for the RS/6000, use the following subject line:

```
send networker patch_ibmrs6000_4.02-001
```

The requested patch, if available, will automatically be returned to you by e-mail.

The files sent by the request server contain a brief description of what limitation the patch corrects, instructions for installing the patch, and (usually) the compressed, **uuencoded** executable for the patch.

OBTAINING PATCHES VIA ANONYMOUS FTP

To obtain patches via *anonymous ftp*, log in to *anonymous ftp* using the following instructions and enter the responses at the system prompt:

```
ftp to legato.com; log in as "anonymous"
%ftp legato.com
220 FTP server (SunOS4.1) ready
Name ():anonymous
Guest login ok, send ident as password
Password: your username@your site
ftp>
```

When the `ftp>` prompt appears, follow these step-by-step instructions to obtain a patch. This example uses patch #4.02-001 for the `ibmrs6000`:

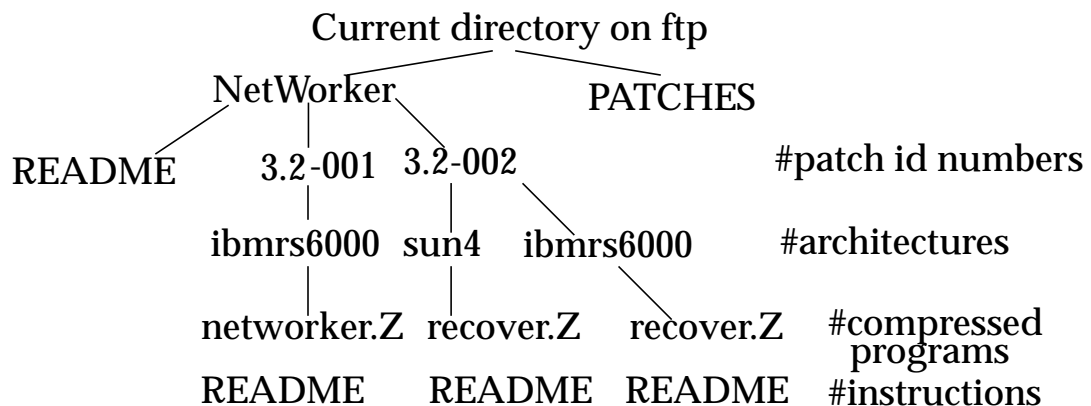
```
ftp>cd NetWorker
ftp>cd 4.02-001
ftp>cd ibmrs6000
ftp>binary #set to binary (image) mode
ftp>get README [local name] #get the instructions
ftp>get savegroup.Z [local name] #get the compressed executable for patch
ftp>quit #quit ftp
```

Note that you can rename the `README` file and the `.Z` executable file with a local name to identify it by patch number and type of architecture.

DIRECTORY STRUCTURE

The file `PATCHES` within the current directory on *ftp* describes the general layout of the directory named `NetWorker` that contains the patches. The `NetWorker` directory contains a subdirectory for each patch and a `README` file that summarizes each patch. The names of these subdirectories reflect the NetWorker release that the patch applies to and the serial number of the patch. Each subdirectory for a patch contains one or more subdirectories with the names of machine architectures. The architecture subdirectory contains a compressed (`.z`) version of the patch (if appropriate), along with a `README` file that contains instructions on how to apply the patch.

The following diagram illustrates a portion of the directory structure:



There are more patch id numbers, architectures, compressed programs, and `README` files in the actual directory than are shown above. To request an electronic list of all Legato Technical Bulletins, e-mail your request to `request@Legato.COM` with a subject line of `send bulletins index`. Or e-mail your request to CompuServe (`go Legato`). For a hard copy subscription, see Technical Bulletin #025 and FAX your request to (415) 812-6034.

LEGATO TECHNICAL BULLETIN

037: NetWorker Release 3.x for UNIX Patches (UNIX)

PURPOSE

This bulletin lists the current NetWorker Release 3.X patches for the UNIX environment, the Technical Bulletins that describe them, and the machine architectures that the patches apply to.

These patches represent Legato's best effort to quickly respond to reported problems with NetWorker. In spite of the severity of some of these problems, they have not been widely encountered. Since the patches have not been exposed to thorough quality assurance testing, we recommend that they only be installed in sites experiencing identical or similar symptoms.

Patch ID#	Description	Technical Bulletin #
3.2-001	NetWorker GUI Patch	038 (replaced by 3.2-009 for ibmrs6000 only)
3.2-002	NetWorker Recover Patch	039 (replaced by 3.2-011)
3.2-003	Jukebox Hang Patch	040
3.2-004	Client Full Save Patch	041
3.2-005	Saveset Delete Patch	042
3.2-006	Savegroup Hang Patch	043

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T.L.

Patch ID#	Description	Technical Bulletin #
3.2-007	Lost Directives Patch	044
3.2-008	Nsrindexd Exiting Patch	045 (replaced by 3.2-012)
3.2-009	Hi-Res Display for AIX/6000	063 (replaces 3.2-001 for ibmrs6000 only)
3.2-010	File Icon Overlap Patch	064
3.2-011	Recovering Links Patch	065 (replaces 3.2-002)
3.2-012	Nsrck Patch	066 (replaces 3.2-008)
3.2-013	NetWorker Hanging Patch	067
3.2-014	Tape Overwrite Patch	068
3.2-015	Jukebox Labeling Patch	069
3.2-016	Double Filemark Patch	084
3.3-001	Savegroup Patch	088
3.3-002	RAPD Patch	089
3.3-003	Timezone Patch	090
3.3-004	Auspex Patch	093

PATCHES AND THE CORRESPONDING ARCHITECTURES

Following is a list of the current available patches and the architectures they apply to:

3.2-001 decsystem, decvax, hp-mc68k, hp-pa,mips, newsmips,newsmot, sgi, sun3, sun4

3.2-002 decsystem, decvax, hp-mc68k, hp-pa, ibmrs6000, mips, newsmips, newsmot, sgi, sun3, sun386, sun4

3.2-003 ibmrs6000, sun4

3.2-004 ibmrs6000, sun4

3.2-005 ibmrs6000, sun4

3.2-006 ibmrs6000, sun4

3.2-007 decsystem, decvax, hp-mc68k, hp-pa, ibmrs6000, mips, newsmips, newsmot, sgi, sun3, sun386, sun4

3.2-008 sun4

3.2-009 ibmrs6000

3.2-010 decsystem, decvax, hp-mc68k, hp-pa, ibmrs6000, mips, newsmips, newsmot, sgi, sun3, sun4

3.2-011 decsystem, decvax, hp-mc68k, hp-pa, ibmrs6000, mips, newsmips, newsmot, sgi, sun3, sun386, sun4

3.2-012 ibmrs6000, sun4

3.2-013 ibmrs6000, sun4

3.2-014 ibmrs6000, sun4

3.2-015 ibmrs6000, sun4

3.2-016 ibmrs6000, sun4

3.3-001 ibmrs6000, sun4

3.3-002 sun4

3.3-003 ibmrs6000

3.3-004 ibmrs6000, sun4

NOTE: The names used for the machine architectures in the list above are the correct names to be used when requesting a patch either through the request server or through *anonymous ftp*.

LEGATO TECHNICAL BULLETIN

038: NetWorker GUI Patch (UNIX Patch 3.2-001)

PURPOSE

This bulletin describes the NetWorker for UNIX Patch ID# 3.2-001, NetWorker GUI Patch. This patch was replaced by NetWorker for UNIX Patch ID# 3.2-009 for the AIX/6000 system only. Refer to Technical Bulletin #063.

This patch corrects four problems with the NetWorker GUI (Graphical User Interface):

1. The **networker -x** option for the Motif version does not display the hidden attributes. This affects all UNIX platforms except SPARC (Sun4), Sun 386i, and Sun3.
2. Labeling blank tapes in a jukebox does not work. The labeling operation for blank tapes terminates with the following error message: I/O ERROR. This occurs only with new tapes that have not been previously written to.
3. All windows on the Administration pull-down menu, except for the Schedules window, are blank.
4. The Mode window, for changing the mode of a volume, selected from the Volume Management menu appears "greyed out." This applies to the Motif version only.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **networker** for all architectures (except ibmrs6000)

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T.L.

NOTE: Install the NetWorker GUI Patch on both server and client machines.

WORK-AROUNDS

For sites not installing the NetWorker GUI Patch, we recommend the following work-arounds:

1. For users of the Motif version who wish to display the hidden attributes without using the **networker -x** option: Invoke the **nsradmin** program from the server and turn on the hidden options. Refer to the **nsradmin(8)** man page for information on using **nsradmin** to configure the server.
2. To label blank tapes in a jukebox, enter the following command at the command line:

```
mars# nsrjb -L -S[range]
```

where range is the range of the slots in the jukebox containing blank tapes to be labeled.

Refer to the **nsrjb(8)** man page for more information.

3. For the blank Administration windows problem, use the **nsradmin** program. Refer to the **nsradmin(8)** man page for information on using **nsradmin** to configure the server.
4. For the “greyed-out” Mode window in the Motif version, use the **mm** command from the command line to change the mode of a volume. Refer to the **mm(8)** man page for more information.

LEGATO TECHNICAL BULLETIN

039: NetWorker Recover Patch (UNIX Patch 3.2-002)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID #3.2-002, NetWorker Recover Patch. This patch was replaced by NetWorker for UNIX Patch ID #3.2-011, Recovering Links Patch, which is described in Technical Bulletin #065.

This patch fixes a problem with the recover program where the recover operation fails to retrieve some files that are marked for recovery if the Change Browse Time command (or changetime command for command line users) is invoked after the files are marked. At the end of the recover operation the following error message appears:

```
recover: Didn't recover requested files <file names>
```

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **olrecover** for all architectures running OPENLOOK; **mrecover** for all architectures running Motif

NOTE: Install the NetWorker Recover Patch on both server and client machines.

WORK-AROUND

For sites not installing the NetWorker Recover Patch, we recommend the following work-around:

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T.L.

039: NetWorker Recover Patch (UNIX Patch 3.2-002)

The recover will proceed normally if you issue any recover command, such as **ls**, from the **Recover** program command line (at the `Networker>` prompt) before starting the recover. Refer to the **recover(8)** man page for information about the recover commands for command line usage.

LEGATO TECHNICAL BULLETIN

040: Jukebox Hang Patch (UNIX Patch 3.2-003)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-003, Jukebox Hang Patch.

This patch fixes a problem with the Jukebox Module where occasionally the **nsrjb** command hangs when attempting to change tapes.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **nsrjb** for SPARC (sun4) and RS/6000 (ibmrs6000)

NOTE: Install the Jukebox Hang Patch on server machines only.

WORKAROUND

For sites not installing the Jukebox Hang Patch, we recommend the following workarounds:

Assuming that the NetWorker executables are installed in */usr/etc*, enter the following commands at the *root* system prompt:

```
#cat >/usr/etc/nsrjb.notification  
#!/bin/sh  
/usr/etc/nsrjb -M $* >/dev/null 2>&1
```

Press **CTRL-D** to exit.

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T.L.

040: Jukebox Hang Patch (UNIX Patch 3.2-003)

```
#chmod +x /usr/etc/nsrjb.notification
```

After you have entered the above commands, change the Jukebox request action field to execute **nsrjb.notification**. Open the Notifications window and scroll to select Jukebox request. Change the action field for Jukebox request from the following:

```
/usr/etc/nsrjb -M
```

to

```
/usr/etc/nsrjb.notification
```

LEGATO TECHNICAL BULLETIN

041: Client Full Save Patch (UNIX Patch 3.2-004)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-004, Client Full Save Patch.

Occasionally during **savegroup** processing, some clients always perform full saves. This can occur even when the schedule calls for incremental or level saves.

This may occur when the client machine has a different record of its primary name than the backup server. Thus, the client's attempt to query the **nsrmmdbd** daemon to find the last save level will fail.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **nsrmmdbd** for SPARC (sun4) and RS/6000 (ibmrs6000)

NOTE: Install the Client Full Save Patch on server machines only.

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LEGATO TECHNICAL BULLETIN

042: Saveset Delete Patch (UNIX Patch 3.2-005)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-005, Saveset Delete Patch.

When invoked from the command line, the **mm** command fails to delete single savesets, although it indicates that it will.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **mm** for SPARC (sun4) and RS/6000 (ibmrs6000)

NOTE: Install the Saveset Delete Patch on server machines only.

WORK-AROUND

Invoke the **nsradmin** program and turn on the hidden options. Use the attributes in the NSR resource to delete savesets one at a time. Refer to the **nsradmin(8)** man page for more information.

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LEGATO TECHNICAL BULLETIN

043: Savegroup Hang Patch (UNIX Patch 3.2-006)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-006, Savegroup Hang Patch.

In situations where the NetWorker online index is extremely large, the **savegroup** command will appear to hang. In this circumstance, **savegroup** is waiting for the **mminfo** command to complete so that a bootstrap information page can be printed. Because of the large index, both the **mminfo** command and **nsrmmdbd** daemon are thrashing, giving the illusion of a hang. This patch corrects this problem by improving the **mminfo** query code.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **mminfo** for SPARC and RS/6000

NOTE: Install the Savegroup Hang Patch on server machines only.

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LEGATO TECHNICAL BULLETIN

044: Lost Directives Patch (UNIX Patch 3.2-007)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-007, Lost Directives Patch.

When using the “Default with Compression” directive and then subsequently trying to specify other directives, the subsequent directives are sometimes lost. This patch corrects this problem by replacing the **compressasm** program.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **compressasm** for all architectures

NOTE: Install the Lost Directives Patch on both server and client machines.

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LEGATO TECHNICAL BULLETIN

045: Nsrindexd Exiting Patch (UNIX Patch 3.2-008)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-008, Nsrindexd Exiting Patch. This patch was replaced by NetWorker for UNIX Patch ID# 3.2-012, the Nsrck Patch, which is described in Technical Bulletin #066.

If the NetWorker online index is reaching its capacity and the **nsrindexd** daemon attempts to issue a warning message concerning the lack of space, the **nsrindexd** daemon may sometimes die. This patch corrects this problem by replacing the **nsrindexd** executable.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable file affected: **nsrindexd** for SPARC (sun4)

NOTE: Install the Nsrindexd Exiting Patch on server machines only.

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LEGATO TECHNICAL BULLETIN

046: Incremental Backup Patch (NetWare Patch 2.1-001)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-001, Incremental Backup Patch.

This patch corrects a problem that occurs intermittently when NetWorker performs incremental backups. Approximately 50% of the time, a full backup will be completed instead of the scheduled incremental backup. This problem is considered serious since it can result in longer backup cycles and larger indexes.

The patch consists of a replacement NSRLIB.NLM. Before you install NetWorker Release 2.1 or ClientPak III, simply copy the new NSRLIB.NLM onto your NetWorker installation disk #3.

If you already have installed NetWorker, flag the current NSRLIB.NLM to permit its replacement, copy NSRLIB.NLM into the directory where you have installed NetWorker (typically, SYS:NSR/BIN), then flag the new file to secure it.

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J.S.

LEGATO TECHNICAL BULLETIN

047: NWCLTNAM Naming Utility Patch (NetWare Patch 2.1-002)

PURPOSE

This Technical Bulletin describes NetWorker, NetWare version Patch ID #2.1-002, the DOSWORKR naming utility (NWCLTNAM.EXE). It applies to users running Release 2.1 of NetWorker, NetWare version.

NetWorker tracks the data it backs up for each system by creating a database for each system and using the system name. This is why the first time users invoke DOSWORKR, NetWorker prompts them for the name of the machine. The name of the machine must be entered into the Set Client Name dialog box. NetWorker attaches the machine name to its unique address on the system's network adapter card, and uses the machine name for a database it creates for the client. Once NetWorker has "named" the machine, you cannot change this name.

The utility provided in this patch provides the network supervisor the ability to display, add, and delete workstation names created by DOSWORKR. Run this utility from a DOS workstation.

Follow the syntax below to use NWCLTNAM:

- | | |
|--------------------------------|--|
| C:\>NWCLTNAM [ENTER] | lists all bound NetWorker client names for the server to which you are logged in |
| C:\>NWCLTNAM /V [ENTER] | lists all bound NetWorker client names and hardware addresses |
| C:\>NWCLTNAM /A <name> [ENTER] | names the current DOS machine with |

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J.S.

047: NWCLTNAM Naming Utility Patch (NetWare Patch 2.1-002)

	the specified <name>
C:\>NWCLTNAM /D [ENTER]	deletes the name of the current NetWorker client. "Current client" is the machine to which you are currently logged on.
C:\>NWCLTNAM /D <name> [ENTER]	deletes the specified NetWorker client name if you are <i>supervisor</i> or <i>supervisor</i> equivalent
C:\>NWCLTNAM /H [ENTER]	provides help

NOTES

Your network number and *mac_address* (machine access control) is stored in the BINDERY with the name and object of type OT_RPC_SERVER. SMS and TIRPC use objects of this type to associate a client name with a machine. NetWorker finds UNIX machines by using the */etc/hosts* file, and finds NetWare machines by using the BINDERY. The NWCLTNAM /D command only deletes NetWare BINDERY objects of type OT_RPC_SERVER, hence you cannot delete NetWare and UNIX clients this way – only DOS clients.

LEGATO TECHNICAL BULLETIN

048: 2/10 Capacity Patch (NetWare Patch 2.1-003)

PURPOSE

This bulletin describes NetWorker, NetWare version Patch ID #2.1-003, 2/10 Capacity Patch. It applies to users running Release 2.10 of NetWorker, NetWare version.

NetWorker 2/10 is intended to back up 10 workstations, two of which can be NetWare servers. Due to an undetected limitation, this product only permits one NetWare server to be backed up.

This patch replaces NSRD.NLM and corrects the limitation. Go to the directory where you have installed the NetWorker software, and replace the existing NSRD.NLM with the new one provided in this patch.

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LEGATO TECHNICAL BULLETIN

049: Notes for Disaster Recovery (NetWare)

PURPOSE

This bulletin applies to users running the NetWare version of NetWorker, Release 2.10, and provides additional information on disaster recovery. Chapter 7, "Recovering from a Disk Crash" in the November 1992 version of the *Legato NetWorker Administrator's Guide* describes disaster recovery procedures.

PROBLEM

After recovering data for a disk which has been lost due to a crash, the NetWorker media index will not have an entry for the bootstrap, and neither the media index or file index will have entries for themselves. The *Administrator's Guide* suggests you use the Recover Volume command to add the bootstrap to the file index, but this method will also lead to duplicate entries in the file index.

If you mark the server's media and server file indexes for a recovery (usually, these are in SYS:NSR/), NetWorker may ask for more backup volumes than you expect. (See page 218 of the *Administrator's Guide* for details.) For example, if you know you used the tape with the last full backup for recovering the disk, you may wonder why NetWorker is requesting a different tape.

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SUGGESTION

Follow the steps below to recover the disk:

1. Use the `Recover from a Disaster` command to recover the NetWorker indexes.
2. Manually recover the disk volume where you installed the NetWorker software – the default location is `SYS:NSR/`. Mark the `SYS` volume, then expand it and unmark the `NSR/` directory.
3. Expand the `NSR/` directory.
4. Expand the `INDEX/` directory.
5. Mark every directory in `INDEX/` except the one with the name of the NetWorker server.
6. Use the `Required Volumes` command to check the list of backup tapes you will need.
7. Start the recovery.

NOTE: Any time NetWorker requests backup volumes which you do not expect, unmark directories in the `Recover` window and use the `Required Volumes` command to list the backup volumes NetWorker will need for the recovery.

LEGATO TECHNICAL BULLETIN

050: Name Space Error Message (NetWare)

PURPOSE

This technical bulletin applies to users running the NetWare version of NetWorker, Release 2.10. It provides more information on the following NetWare error message:

```
GetOriginalNameSpace could not find the originating name
space
```

DESCRIPTION

The NetWare 3.11 filesystem supports a number of name spaces that can coexist on one disk volume, including DOS, NFS, MAC, HPFS and FTAM. In order to properly back up a file, any backup application needs to determine the name space under which a file was created. Novell's SMS architecture, which Legato uses, is no exception, and makes a system call to gather this information about each file it backs up. Any complete backup application, whether or not it uses SMS, will need to make this system call to gather this important information about the file.

Unfortunately, there is a limitation in the NetWare 3.11 filesystem which in rare cases causes this system call to fail. Some backup applications (which do not use SMS) do not make this system call, so the limitation may not be apparent, but the inconsistency will still be present in your filesystem.

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There is a version of VREPAIR that fixes the problem. It is available from NetWare as part of patch pt311d.zip (or higher). Or, if you update your NetWorker software to Release 2.11, the patch is included in the installation diskettes.

We have not seen any serious problems related to the error message described in this bulletin, although it is not clear if the file causing this error message is being backed up properly.

SUGGESTION

Here are some guidelines to follow if you see the error message and do not install the patch:

1. Try running VREPAIR on your filesystem.
2. Use the NetWorker command `Verify Files` to check that your backups have been successful. If you find a file that will not verify, and causes the error message to appear when you back up the file using the `Manual Backup` command, try copying the file to another location, deleting the original one, then copying the file back to its original location.
3. If you are still concerned about the error message, you can re-format your disk and use NetWorker to recover the files on the disk. Before you re-format your disk, back it up and use `Verify Files` to check the success of the backup. Remember, this is a limitation to NetWare and may recur at any time.

Legato is not the only vendor to experience the problem described in this bulletin. Other product vendors have described this problem in the developer's forum on CompuServe.

LEGATO TECHNICAL BULLETIN

051: New PROMs for the AHA 1740 (NetWare)

PURPOSE

This Technical Bulletin applies to users running any release of the NetWare version of NetWorker. It describes a limitation with using the Adaptec™ AHA 1740 EISA card in enhanced mode, and suggests a solution.

PROBLEM

If you are using the AHA 1740 in enhanced mode, you may be experiencing random tape drive or adaptor hangs or odd SCSI problems, or the Verify Files command fails, indicating that NetWorker is unable to back up data to media.

Try the following:

1. Verify that the synchronous negotiation transfer rate is set to 5 Mbytes/second for all targets on the bus, or disable synchronous negotiation by using the EISA configuration utility.
2. Verify that you are using the latest 1740 driver (version 3.5 or later).
3. Make sure that all SCSI targets have unique addresses.
4. Make sure the bus is properly terminated.

If you still experience SCSI problems, ask for the new PROMs they have released for the 1740. (If you already have these PROMs on your 1740, there is no point in doing this.) Call Adaptec at 1-800-442-7274, and ask for the

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051: New PROMs for the AHA 1740 (NetWare)

new BIOS PROM, part number 450216-00A, checksum DC00, and the new microcode PROM, part number 45113-00D, checksum B7D6.

If you do install the new PROMs from Adaptec, note that you still need to set the transfer rate to 5 Mbytes/second and that the 1740 in enhanced mode still uses interrupt 11, so you will need to ensure that no other devices use interrupt 11.

There is a bug in pre-rev "D" proms which may cause volumes to dismount under heavy loads.

LEGATO TECHNICAL BULLETIN

052: Parallelism/Index Corruption Patch (NetWare Patch 2.1-004)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-004, Parallelism/Index Corruption Patch. It replaces INDEXD.NLM.

This patch prevents a NetWorker hang in any of the following situations:

1. You have set the parallelism value to a number greater than or equal to 8.
2. You are displaying index statistics using NETUTIL.
3. You are currently backing up with NetWorker, and purging index entries at the same time. Previously, NetWorker would lead you to believe the backup was successful, but if you tried to recover a file that was purged during a backup, you would see a "missing ssid" message.

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LEGATO TECHNICAL BULLETIN

053: DOSWORKR Performance Patch (NetWare Patch 2.1-005)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-005, DOSWORKR Performance Patch. It replaces DOSWORKR.EXE.

This patch corrects the following situations:

1. Increases DOSWORKR throughput. Previously, the throughput might be paradoxically lower on fast machines and higher on slow machines.
2. Reduces the number of connections DOSWORKR makes to the NetWorker server, thus allowing more DOSWORKR users to have access to the NetWorker server at a time.
3. Allows DOSWORKR to run from a read-only network drive. Previously, the drive from which DOSWORKR was run had to be writable.

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LEGATO TECHNICAL BULLETIN

054: Miscellaneous Savegroup Patch (NetWare Patch 2.1-006)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-006, Miscellaneous Savegroup Patch. It replaces the SAVEGRP.NLM.

This patch corrects the following situations:

1. Prevents a savegroup from reporting a failed group backup in the group log file, when in fact the group backup succeeded.
2. Reduces the number of file marks written onto the backup media, which results in better performance and less waste of backup media.
3. Prevents savegroup from starting the index accounting NLM (NSRIM.NLM) while other backups are in progress. This results in a less severe peak demand on server memory.
4. Speeds up the savegroup time-out when savegroup is trying to contact failed or crashed clients for a backup.

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LEGATO TECHNICAL BULLETIN

055: Tape Hang, 2/10 Capacity Patch (NetWare Patch 2.1-007)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-007, Tape Hang, 2/10 Capacity Patch. It replaces the NSRD.NLM.

This patch corrects a rare situation where NetWorker would hang when trying to back up clients when there was no backup volume mounted in the device.

This patch contains two fixes. It includes patch 2.1-003, (described in Technical Bulletin Number 048: 2/10 Capacity Patch) and the fix described here for the tape hang problem.

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LEGATO TECHNICAL BULLETIN

056: Simultaneous Connections Patch (NetWare Patch 2.1-008)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.1-008, Simultaneous Connections Patch. It replaces RPCBIND.NLM.

This patch allows a NetWorker server to support more simultaneous connections. A connection does not necessarily mean an active client is backing up or recovering data.

With support for more simultaneous connections:

1. Very large savegroups can be run with many active clients.
2. More clients can back up or recover data simultaneously.
3. More administrators may monitor or administer the NetWorker server simultaneously.

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LEGATO TECHNICAL BULLETIN

057: NetWorker for NetWare Release 2.x Patches (NetWare)

PURPOSE

This bulletin lists the current NetWorker patches for the NetWare environment and the Technical Bulletins that describe them.

These patches represent Legato's best effort to quickly respond to reported problems with NetWorker. In spite of the severity of some of these problems, some have not been widely encountered. Since the patches have not been exposed to thorough quality assurance testing, we recommend that they only be installed in sites experiencing identical or similar symptoms, or where there is a need for the patch. Please note that these are ZIPped files.

Patch ID #	Technical Bulletin #, Description	CompuServe Library #	File Size
2.1-001	046: Incremental Backup Patch	PN21.001	67,741
2.1-002	047: NWCLTNAM Naming Utility	PN21.002	12,340
2.1-003	048: 2/10 Capacity Patch	PN21.003	67,604
2.1-004	052: Parallelism/Index Corruption Patch	PN21.004	68,076
2.1-005	053: DOSWORKR Performance Patch	PN21.005	234,330
2.1-006	054: Miscellaneous Savegroup Patch	PN21.006	36,755

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057: NetWorker for NetWare Release 2.x Patches (NetWare)

Patch ID #	Technical Bulletin #, Description	CompuServe Library #	File Size
2.1-007	055: Tape Hang, 2/10 Capacity Patch	PN21.007	62,812
2.1-008	056: Simultaneous Connections Patch	PN21.008	45,624
2.11-001	084: NetWorker, NetWare Version, Patch 2.11-001	P211.001	273,311
2.11-002	085: NetWorker, NetWare Version, Jukebox Patch 2.11-002	Not available on CompuServe ¹	104,957
2.2-001	095: NetWare for UNIX Patch 2.2-001	PN22.001	65,205
2.2-002	099: SAVEGRP Patch 2.2-002	PN22.002	69,182
2.2-003	100: SPXWORKR Patch 2.2-003	PN22.003	556,160
2.2-004	102: NSRLIB Patch 2.2-004	PN22.004	

1. Contact Legato Technical Support at (415) 812-6100

LEGATO TECHNICAL BULLETIN

058: Time Differences and “Login Denied” Messages (NetWare)

PURPOSE

This Technical Bulletin applies to customers using the NetWare version of NetWorker, Release 2.10 or later. It describes a problem with NetWare servers running with different times.

PROBLEM

When a user logs in to a TSA, the user name and password is both encrypted and time stamped before going electronically across the network. If the time stamp is out of range, the login will be denied. This results in “login denied” error messages.

SUGGESTION

If you are experiencing many “login denied” messages, check the following:

1. Make sure you entered the correct password in the Login dialog box. Use the F9 key to erase the password and re-enter it.
2. Verify that the times are the same for both client and server machines.

We have found that NetWare tolerates a range of 15 minutes to 24 hours of difference in time between systems.

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058: Time Differences and “Login Denied” Messages (NetWare)

3. Verify that the timezones are set correctly for both machines.

LEGATO TECHNICAL BULLETIN

059: External Caches on NetWare Servers (NetWare)

PURPOSE

This Technical Bulletin applies to customers using the NetWare version of NetWorker, Release 2.10 or later. It describes a problem with NetWare servers running with an external cache.

PROBLEM

If you have NetWorker running on a NetWare server with an external cache, you may experience Abends with a random General Processor Protection Exception (GPPE). This is a hardware problem and can be traced to a design flaw in either the external cache or the Adaptec™ controller card. This problem may appear with any “Master-Mode DMA” controller.

SOLUTION

If you experience GPPE Abends on a server with any “Master-Mode DMA” controller and the server has an external cache, you should disable the external cache before proceeding with any further de-bugging.

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LEGATO TECHNICAL BULLETIN

060: DOSWORKR Log Files and Cross-links (NetWare)

PURPOSE

This Technical Bulletin applies to users running the NetWare version of NetWorker, Release 2.1. It describes a problem with DOSWORKR and cross-linked files.

PROBLEM

During a backup, DOSWORKR creates a log file that records the progress of the backup. If your DOS hard disk is corrupted so that other files are cross-linked to the DOSWORKR log files, the other files may be corrupted (typically with duplicate log information).

SOLUTION

You should run CHKDSK periodically to verify the integrity of your filesystem. If any cross-linked files are reported, you should remove them as CHKDSK /f does not correct cross-linked files.

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LEGATO TECHNICAL BULLETIN

061: Installing Solaris Clients (UNIX)

PURPOSE

This Technical Bulletin describes the procedure for installing the Legato NetWorker client software on SPARC systems running the Solaris™ 2.1 operating system.

INSTALLING SOLARIS CLIENTS

To install the NetWorker client programs on SPARC clients running the Solaris 2.1 operating system, use this procedure:

1. From a shell prompt logged in as *root* enter the following command:

```
mars# touch /etc/rc.local
```

This is necessary because the *nsr_ize* installation program requires there to be a file */etc/rc.local* to install and Solaris does not have such a file. Next, create a link in */usr/bin* to the file */usr/ucb/arch*. Enter the following command:

```
mars# ln -s /usr/ucb/arch /usr/bin/arch
```

This allows the *nsr_ize* installation program to determine that the machine is a SPARC.

2. Follow the installation procedures in the *ClientPak I Installation Guide* for installing a SPARC NetWorker client. When prompted for the directory in which to place the NetWorker executables, enter */usr/sbin*, rather than the default of */usr/etc*. This is done so that the

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executables will be placed in a directory that is in the standard search path.

3. Finally, move and rename the file `/etc/rc.local` into the directory `/etc/rc2.d` giving it the name `S95networker`, by entering the following command:

```
mars# mv /etc/rc.local /etc/rc2.d/S95networker
```

This allows the system to automatically start the NetWorker daemon at every reboot.

4. To remove NetWorker, enter the `nsr_ize -r` command from `/usr/sbin` (the installation directory) as you would for a normal removal. Then enter the following commands to reverse the changes made in steps 1 and 2 above:

```
mars# rm /usr/bin/arch  
mars# rm /etc/rc2.d/S95networker
```

KNOWN LIMITATIONS

Following is a description of known limitations in the software:

- Only the local filesystems of the Solaris client can be backed up.

LEGATO TECHNICAL BULLETIN

062: Hints for Backup Directives (NetWare)

PURPOSE

This Technical Bulletin applies to all users running NetWorker, NetWare version. It further explains how backup directives work and offers some examples of how to use backup directives to include or exclude files from the scheduled backups.

INTRODUCTION

This section uses an example to explain what happens to a directory and its files when it is backed up by NetWorker. You need to understand this example to better understand the information in the next sections.

For the sake of this example, suppose *directory D* contains two files, *file 1* and *file 2*. When NetWorker backs up *directory D*, the following two things take place:

- The names *file 1* and *file 2* are recorded as belonging to the attributes of *directory D*.
- The attributes of *file 1* and *file 2* (for example, its size and modification time) are recorded as the elements of *directory D*.

When *directory D* is backed up with a full backup, copies of the data in *file 1* and *file 2* are saved to a backup tape. For example:

```
file 1      1024 bytes, modified January 13
file 2      2024 bytes, modified January 15
```

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Suppose *file 1* changes on January 16 and an incremental backup is scheduled. An entry for *directory D* is added to the index, since *D* itself has changed, and a new entry for *file 1* is added to the index since *file_1* has changed. Only the data in *file 1* is copied to a backup tape. For example:

```
file 1      1026 bytes, modified January 16
```

At this point, *directory D*, *file 1*, and *file 2* would appear in the Recover window, and the most recent versions of *file 1* and *file 2* are automatically displayed in the window.

```
file 1      1024 bytes, modified January 16
file 2      2024 bytes, modified January 15
```

Now suppose you delete *file 1* and an incremental backup takes place. An entry for *directory D* is added to the index, since its contents have changed. No data is copied to a backup tape, since the contents of *file 2* has not changed and *file 1* is gone.

At this point, only *directory D* and *file 2* will appear in the Recover window. If you want to see *file 1* in the Recover window, use the Change Browse Time command to view the index before you deleted *file 1*. Or use the Versions command to view previous versions of *file 1*. You may also use the Change Selection command to explicitly find *file 1* in the index – it will search through all the entries in the index and locate the most recent saved version of the file regardless of whether *directory D* contains the file or not.

FILE SELECTION AND EXCLUSION VIA BACKUP DIRECTIVES

NetWorker offers a very powerful and flexible method for selective file backup. This is accomplished through a “backup directive.”

A backup directive is a list of instructions written in a strict syntax that tells NetWorker how files should be backed up. Files are backed up through the use of an Application Specific Module (ASM), which could be nothing more than a conduit that passes the backup data to the server unchanged, or something quite sophisticated that could encrypt data, or filter the data in a very large file (for example, a database) and save only the data that has changed.

Directives instruct NetWorker which ASM should be applied to particular files or groups of files. Inclusion and exclusion of files are simply special cases of how to back up files. In this case, “how” is answered by either “back up” or “skip.” NetWorker is shipped with several built-in ASMs which facilitate this. These are:

- skip** - do not back up the specified files, and back up the directory containing the skipped files as if the files had been deleted. You will not see the files in the *Recover* window. However, if you backed up the file at some time in the past, you can change the browse time, use the *Versions* command, or use the *Find* command to locate the file. You should not use the skip ASM unless you will not need to recover the file (for example, you can skip temporary files), since it is no longer obvious how to recover previously backed-up versions of the file.
- nullasm** - do not back up the specified files, and back up the directory containing the files as if the files were still in the directory. This is similar to an incremental backup on a directory which contains files that are not backed up because they have not been modified. The most recent version of the file that was backed up to tape will still appear in the *Recover* window. NetWorker uses nullasm to back up the indexes during a scheduled backup. When NetWorker finds the indexes, it first backs up the index directory but not all the entries in it. After all the files are backed up according to the scheduled backup, NetWorker then backs up the index with the new entries in it for the newly-saved files.
- always** - always back up the specified files, ignore the scheduled level
- nwasm** - back up according to the scheduled level (this is the default)

NOTE: The skip ASM should only be used in cases where the files should never be seen in the *Recover* window. For example, only temporary files should be skipped during a backup.

Directives are accessed through the Administration menu. Refer to the *Legato NetWorker Administrator's Guide, NetWare Version, (November 1992)* manual for more details on creating and managing directives.

FILE EXCLUSION EXAMPLES

To avoid backing up specific files, NetWorker is told to skip them up by applying the "skip" ASM to the file. The first line tells NetWorker where the

file is, the second line tells NetWorker to skip the files “file1,” “file2,” and “file3”:

```
<< "SYS:SYSTEM" >>
    skip: file1 file2 file3
```

Directives only apply to the specified directory, unless they begin with the character “+”. The following directive will skip backing up all files in all directories that match the pattern “*.nlm”.

```
<< / >>
    +skip: *.nlm
```

To skip all *.EXE files under the PUBLIC directory and back up everything else:

```
<< "SYS:PUBLIC">>
    skip: *.exe
```

To skip all files and directories under the PUBLIC directory:

```
<< "SYS:PUBLIC" >>
    +skip: *
```

To skip all files and directories under the /PUBLIC/TEST directory:

```
<< "SYS:PUBLIC/TEST" >>
    +skip: *
```

Other “wild card” patterns are:

- ? Matches one character.
- * Matches all characters (for example, “file*” or “*.nlm”).

FILE INCLUSION EXAMPLE

The complement of file exclusion is to back up only a specific set of files in a directory. You start by excluding everything, then specify which files to back up. For example,

```
<< "SYS:SYSTEM" >>
    nwasm: file1 file2 file3
    skip: *
```

The above example will back up only the files “file1,” “file2,” and “file3” in the directory SYS:SYSTEM. It will not affect the subdirectories under SYS:SYSTEM since a “+” was not included before the directives.

LEGATO TECHNICAL BULLETIN

063: High Resolution Display for AIX/6000 Systems (UNIX Patch 3.2-009)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-009, the High Resolution Display for AIX/6000 Systems Patch. This patch replaces UNIX Patch ID# 3.2-001 for the AIX/6000 only.

DESCRIPTION

Previously, when using IBM AIX/6000 Systems with high resolution displays, the end-user had to specify 75dpi fonts in the font path to run NetWorker. This patch corrects this problem so that the end-user no longer has to specify 75dpi fonts.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable file affected: **networker** for AIX/6000 (ibmrs6000)

NOTE: Install this patch on both server and client machines.

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LEGATO TECHNICAL BULLETIN

064: File Icon Overlap Patch (UNIX Patch 3.2-010)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-010, the File Icon Overlap Patch.

DESCRIPTION

When expanding a directory containing a large number of files, the file display portion of the Backup and Recover windows will sometimes overlap the file icons. This patch corrects this problem.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable files affected: **mbackup, mrecover, olbackup, olrecover** for all architectures

NOTE: Install the File Icon Overlap Patch on both server and client machines.

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LEGATO TECHNICAL BULLETIN

065: Recovering Links Patch (UNIX Patch 3.2-011)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-011, the Recovering Links Patch. This patch replaces UNIX Patch ID# 3.2-002.

DESCRIPTION

This patch corrects the following problem that occurs with NetWorker for UNIX Patch ID# 3.2-002: When recovering a directory that contains files with hard links, NetWorker does not receive all of the files in the directory. This is because NetWorker is not re-creating hard links.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable files affected: **recover** for all architectures

NOTE: Install the Recovering Links Patch on both server and client machines.

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LEGATO TECHNICAL BULLETIN

066: Nsrck Patch (UNIX Patch 3.2-012)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-012, the Nsrck Patch. This patch replaces NetWorker for UNIX Patch ID# 3.2-008.

DESCRIPTION

The **nsrck** program incorrectly determines that savesets in progress are incomplete savesets and removes them from the index. This patch corrects this problem in **nsrck** by accurately determining which savesets are in progress and which are incomplete, and then removes only the incomplete savesets from the index.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable files affected: **nsrindexd**, **nsrck** for SPARC (sun4) and AIX/6000 (ibmrs6000)

NOTE: Install the Nsrck Patch on servers only.

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LEGATO TECHNICAL BULLETIN

067: NetWorker Hanging Patch (UNIX Patch 3.2-013)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-013, the NetWorker Hanging Patch.

DESCRIPTION

This patch fixes the following problems with NetWorker:

- An “unknown location” message is returned when displaying the versions of a file in the Recover window.
- An “unable to connect to master” message is returned when starting a save.
- Discrepancies in client naming where the server and client systems resolve client names differently. The **nsr** client resource now has a hidden attribute called “aliases” that is used to specify a client system’s aliases. The server recognizes the client by any of the names specified in the aliases hidden attribute. Use **networker -x** or **nsradmin** to edit the nsr client resource. An example of a common alias is short vs. long hostnames, or *jupiter* vs. *jupiter.legato.com*.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

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067: NetWorker Hanging Patch (UNIX Patch 3.2-013)

Executable file affected: **nsrd** for SPARC (sun4) and AIX/6000 (ibmrs6000)

NOTE: Install the NetWorker Hanging Patch on servers only.

LEGATO TECHNICAL BULLETIN

068: Tape Overwrite Patch (UNIX Patch 3.2-014)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-014, the Tape Overwrite Patch.

DESCRIPTION

This patch fixes the following four problems:

- For SPARC (Sun4) machines running SunOS 4.1.x, there is a problem with the SCSI driver that causes NetWorker tapes to be overwritten. This does not affect SBUS-SCSI devices. It does affect VME and on-board SCSI machines such as the Sun 690.
- Faulty entries in the media index (*nsrmmdbd*) prevent recoveries. This patch prevents the faulty entries from being stored in the media index and has a work-around for the faulty entries already stored in the media index.
- Orphan *nsrmmmd* daemons are created when an unmount is requested during a backup, causing multiple daemons.
- Tapes may be left unusable if being written to when the NetWorker server crashes. This patch marks these unusable tapes as full.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer

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068: Tape Overwrite Patch (UNIX Patch 3.2-014)

to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable file affected: **nsrmmd** for SPARC (sun4) and AIX/6000 (ibmrs6000)

NOTE: Install the Tape Overwrite Patch on servers only.

LEGATO TECHNICAL BULLETIN

069: Jukebox Labeling Patch (UNIX Patch 3.2-015)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-015, the Jukebox Labeling Patch.

DESCRIPTION

This patch corrects a problem with the jukebox labeling operation that causes the labeling process to hang and the windows to be disabled.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically. Refer to *Technical Bulletin 037: Current NetWorker for UNIX Patches* for a list of all available patches for NetWorker for UNIX.

Executable file affected: **nsrjbd** for SPARC (sun4) and AIX/6000 (ibmrs6000)

NOTE: Install the Jukebox Labeling Patch on servers only.

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LEGATO TECHNICAL BULLETIN

070: Prestoserve/Solaris Position Statement (Prestoserve)

PURPOSE

This Technical Bulletin describes Legato's position on Prestoserve technology in its relation to Sun Microsystems' operating systems.

Since 1990 when Sun initially licensed the Prestoserve technology, it has focused on developing and distributing Prestoserve for the high-end server and workstation markets. Consistent with this focus, Sun intends to support Prestoserve on Solaris. Legato is working closely with Sun to ensure the success of this strategy. Details of targeted platforms and scheduled availability will be announced shortly by Sun.

Legato will continue to support Prestoserve for Sun/OS but will not support Prestoserve for Solaris. Legato is working with Sun to provide a solution for Legato Prestoserve Sun/OS customers who are interested in upgrading to Solaris.

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LEGATO TECHNICAL BULLETIN

071: Notes for NetWorker Release 2.11 (NetWare)

PURPOSE

This Technical Bulletin describes changes to the NetWare Version of NetWorker, Release 2.10. Release 2.11 has many software improvements, includes new patches from Novell, and support for new tape devices.

In addition to the fixes described below, Release 2.11 incorporates patches 2.1-001 through 2.1-008, currently available on CompuServe.

ADDITIONAL IMPROVEMENTS

The list below describes the improvements to NetWorker in this release.

- This release corrects unusual index errors, such as “index retrieve error” messages and client indexes which disappeared after a short time.
- NetWorker servers with many clients would time out on administrative queries or commands. The time-out for these queries has been increased to eliminate this problem.
- The index management NLM (NSRIM.NLM) has reduced memory requirements, now enabling index management to work on machines with less available memory.
- Savegroup would occasionally hang due to communication failures between workstations. You may now manually terminate a

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savegroup operation with the Stop Group Now command when a scheduled backup is hung due to a problem.

- Savegroup performance is now enhanced to support very large backup groups (for example, more than 50 clients) without consuming as much CPU time.
- It is much easier to set up DOSWORKR clients now, because active SPX clients are no longer checked for a correct name when you add them as clients to the NetWorker server.
- Occasional ABENDs when administering a UNIX jukebox with a NetWare server have been fixed.
- NetWorker now has a screen saver mode which automatically starts when no commands or keystrokes are entered for five minutes. When in screen saver mode, clients do not poll the NetWorker server, thus significantly reducing network traffic and facilitating the start of a scheduled backup. If a client already has a NetWorker file protection password, and invokes DOSWORKR with the *-p* option, then the client must provide the password in order to stop the screen saver mode on that client.
- In rare cases, an “invalid semaphore passed to kernel” would cause an ABEND. This has been corrected.
- Occasionally, a scheduled backup of filesystems with deep directories would cause a stack overflow resulting in an ABEND. This has been corrected.
- Occasionally the message “Invalid or inactive server/services specified!” would appear during multiple connections to the server or TSA. In most cases this was caused by the bindery being closed for a backup. NetWorker will now retry the call before giving up.
- The *nsrjb -H* command to reset the jukebox would not always initialize the jukebox to the correct state. This has been corrected.
- Novell has released a new NetWare patch, SPXLISFX.NLM. We provide this patch in order to improve the performance of active or passive SPX clients.
- An ABEND due to “AES Sleep Process” may be corrected by a patch released by Novell (CLIBP003.NLM) to the rev-D C library. Legato has tested this patch and experienced no problems, however, it is not officially released by Novell. Contact Legato immediately if you install

this patch and experience the ABEND described here. Please note that this patch will not work with any version of CLIB.NLM other than rev-D (supplied with NetWorker).

- DOSWORKR now backs up RAM drives.
- Occasionally, NetWorker would place successful savesets under an unsuccessful heading. This has been corrected.
- When a “skip” backup is scheduled, NetWorker will not contact clients at all. (A “skip” used to back up the client indexes, now it does nothing.) This suppresses the error messages associated with contacting clients which are down for maintenance.
- NetWorker now returns more memory to the system when it is done using the memory, allowing other system tasks to work on limited-memory machines.
- During backups, streams may consume large amounts of memory. The new version of SPXS.NLM from Novell (supplied with NetWorker) will solve this problem.

NEW DEVICE SUPPORT

NetWorker now includes support for the BusLogic ISA and EISA SCSI cards. NetWorker does not include drivers for these cards; contact your reseller to obtain the necessary drivers. When you install a BusLogic card to use with NetWorker, first install the card and BusLogic ASPI driver according to your reseller’s directions. Then select the ASPI option when you install the NetWorker devices.

The lists below include the tape drives currently supported by Legato NetWorker. New devices are added to these lists on an on-going basis; contact Legato for the most current list of supported devices.

Please note that many resellers private-label these drives. Contact Legato or your reseller if you have any questions about support for your drives.

8 mm drives:

- Exabyte 8200
- Exabyte 8500
- Exabyte 8500C
- Exabyte 8505

4 mm drives:

Wang DAT 1300
Wang DAT 2600
Wang DAT 3200
Wang DAT 5260
Wang DAT 6200
Archive Python
HP DAT model 35480

QIC drives:

Archive VIPER model 2525
Tandberg 3600
Tandberg 3800
Tandberg 4100
Tandberg 4200
Archive Anaconda

DLT drives:

Cipher

Autochangers:

ADIC DAT autochanger
Exabyte 10i autochanger

PATCHES

Release 2.11 includes the current patches from Novell in the support directory. These patches are also available from the Novell forum on CompuServe. Legato strongly recommends that you load these patches. If for some reason you have experienced problems with a given patch, NetWorker may still perform correctly if you omit it.

Legato in no way takes responsibility for the integrity of these patches; we only make the observation that in our experience, running with these patches solves many serious problems, some of which may lurk in your system undetected for a long time.

If you decide not to load the other patches, be aware that Legato Technical Support may ask you to load them should you experience problems.

LEGATO TECHNICAL BULLETIN

072: Save Sets Larger than Four Gigabytes (UNIX | NetWare)

PURPOSE

This Technical Bulletin describes how to recover files contained in save sets larger than four gigabytes. It also describes a way to prevent creating save sets larger than four gigabytes. This information applies to servers running NetWorker for UNIX releases prior to 4.0 (released in 1993), or NetWorker for NetWare releases prior to 4.0 (released in 1996).

This problem does not occur on servers running NetWorker for UNIX or NetWorker for NetWare release 4.0 or greater.

LARGE SAVE SETS

NetWorker for UNIX server releases prior to 4.0 have a maximum save set size of four gigabytes. Normally, save sets larger than four gigabytes do not occur, since typical 32-bit UNIX systems have a fundamental four gigabyte limit. But if you are using products that support large virtual disks (for example, Sun's Online disk suite), save sets larger than four gigabytes may occur.

Save sets larger than four gigabytes backed up by a NetWorker for UNIX server release prior to 4.0 may appear to back up successfully. However, the reported save set size in the savegroup completion mail is incorrect and some of the files will not be recoverable using NetWorker.

Following are the error messages you may receive if you attempt to recover an unrecoverable file from a save set larger than four gigabytes on a server running a NetWorker release prior to 4.0:

```
internal mmd error
Error encountered on the following files
filenames...
```

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072: Save Sets Larger than Four Gigabytes (UNIX | NetWare)

```
Received X files from NSR server `server_name`
```

In addition, you may receive the following message in the Messages display of the NetWorker Main window:

```
save set high too large
```

RECOVERING FILES FROM SAVE SETS LARGER THAN FOUR GIGABYTES

If you need to recover a file or directory from a save set larger than four gigabytes and have received the error messages shown above, use the **scanner** and **uasm** commands as a workaround:

```
scanner -s ssid /dev/nrstX | uasm -rv pathname...
```

where *ssid* is the save set id for the save set as obtained with the **mminfo -v** command and *pathname* is the full pathname of every file or directory you want to recover.

Refer to the **mminfo(8)**, **scanner(8)**, and **uasm(8)** man pages for more information on using these commands.

BACKING UP FILESYSTEMS LARGER THAN FOUR GIGABYTES

Legato previously required that you break up filesystems larger than four gigabytes into smaller save sets before saving them with NetWorker. This restriction was removed in release 4.0.

For NetWare versions of NetWorker prior to 4.0, refer to “Backing up Large Save Sets” in Appendix B of the *Legato NetWorker Administrator’s Guide, NetWare Version*, shipped with your software, for instructions on how to handle save sets larger than four gigabytes.

For UNIX versions of NetWorker prior to 4.0, follow this procedure to back up save sets larger than four gigabytes:

1. First, determine how to break up a large filesystem into separate save sets so that each save set will not exceed four gigabytes. Then, create a directive using the Directives window that excludes one or more large directories when backing up a large filesystem. Following is the syntax for a directive that excludes directories from a filesystem:

```
<</bigfs>>  
nullasm: dir2 dir4
```

This causes NetWorker to skip *dir2* and *dir4* when backing up the */bigfs* filesystem, which will reduce the size of the save set containing */bigfs*.

2. Then change the Save sets field in the Clients window (or the Client resource) to back up the skipped directories.

First, delete “All” from the Save sets field and then list every local filesystem for this client. Next, list the full pathnames for all of the directories that will be skipped during the backup of */bigfs*. The Save sets list will look similar to the following example:

072: Save Sets Larger than Four Gigabytes (UNIX | NetWare)

Save sets:

```
/
/usr
/var
/home
/bigfs
/bigfs/dir2
/bigfs/dir4
```

NOTE: After you delete All from the Save sets field, you must list every local filesystem for this client to ensure a complete backup.

LEGATO TECHNICAL BULLETIN

073: Formats for WangDAT 4-mm Tape Drives (UNIX)

PURPOSE

This Technical Bulletin describes how to use the two common tape formats for 4mm tape drives.

TAPE FORMATS

There are two possible formats that 4mm tapes can be written in using a WangDAT 4mm tape drive: Digital Data Storage (DDS) and Group Compression Format (GCF). Once a tape has been written in one of these formats, it will remain in that format.

For new tapes that have not been previously written to, the position of Switch #2 on the WangDAT 4mm tape drive will determine what format the tape is written in. With Switch #2 off, a new tape will be written in DDS. With Switch #2 on, a new tape will be written in GCF.

You can discern the format of previously written tapes by the color of the cassette-present light on the tape drive. If the light is amber, the tape has been written in DDS format. If the light is green, it has been written in GCF format.

This information applies to WangDAT 2000 and 2600 tape drives using firmware version 1.3 or higher.

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USING MULTIPLE TAPE DRIVES

If you are using multiple WangDAT tape drives, the recommended format is GCF since compression saves tape.

However, if you are using multiple tape drives from different vendors including WangDAT 4mm tape drives, the recommended format is DDS, since it is compatible across tape drives. While WangDAT supports GCF, not all tape drive vendors support GCF.

DEGAUSSING TAPES

Care should be taken when degaussing (de-magnetizing) tapes, as the tape format may not be removed.

LEGATO TECHNICAL BULLETIN

074: Troubleshooting Tips for NetWorker (UNIX)

PURPOSE

This Technical Bulletin describes miscellaneous troubleshooting tips for the UNIX version of NetWorker.

BEFORE YOU CALL TECHNICAL SUPPORT

To obtain more efficient technical support, please be prepared to provide the following information when you call Legato Technical Support:

1. The software version of NetWorker.
2. The version of the operating system you are running.
3. Your hardware configuration.
4. How to reproduce the problem you have seen.
5. The exact error messages.
6. How many times you have seen the problem.
7. Was the NetWorker command successful before you made any changes, and if so, what changes did you make?

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FREQUENTLY ASKED QUESTIONS AND COMMON PROBLEMS

This section contains a collection of frequently-asked questions and common error messages from NetWorker.

- Why are my backup tapes filling up sooner than I expect?

The tape may have a bad spot on it – try a new tape or data grade tapes.

The tape drive may have dirty tape heads; try cleaning the tape drive.

Check the operating system of the NetWorker server. If it is SunOS 4.1.2, make sure the device is `/dev/nrst[8-15]`.

- If you see the error message:

```
savefs: command not found
```

it could mean that the path for the NetWorker executables is not set, or the *root* default shell on the client machine is *ksh* or *bsh*.

Solution:

Add the directory which contains the NetWorker executables into the PATH variable for *cs*.

Or use the `nsradmin` command to change the hidden attribute for the executable path under *nsr client*.

- If you see the error messages:

```
mach_name:/home has been inactive for 33 minutes since  
<date_time>
```

it could mean that NetWorker is trying to access an NFS-mounted filesystem and the NFS server is down. Therefore, all requests to that filesystem will hang.

The message

```
mach_name:/home is being abandoned by savefs
```

means that NetWorker is traversing a filesystem which has little or no changes to it. The `savegroup` command may interpret this inactivity as a failed backup. You may ignore this message.

Solution:

If NetWorker can finish the backup, it will. The `savefs` and `save` processes will not be killed. Check the client machine to see if the `save` and `savefs` processes are still running.

- NetWorker will not display on the machine.

Solution – use the following commands:

```
setenv DISPLAY hostname:0.0 for csh
```

```
export DISPLAY=hostname:0.0 for ksh or bsh
```

where *hostname* is the machine the user initially logged into.

```
xhost machine_name OR xhost +
```

where *machine_name* is the machine that you are currently logged into or are going to log in to.

- To obtain technical bulletins or patches electronically, use the following:

```
mail request@legato.com
```

with the subject “send bulletins index.”

You will receive a listing of all available bulletins and patches and an explanation of how to obtain them electronically.

- How can I configure multiple interfaces on one machine?

Solution:

Set up a secondary alias for all the interfaces for the machine that are the same. For example:

```
1.1.1 machine_a sample_alias
```

```
1.1.2 mach_a_ip2 sample_alias
```

```
1.1.3 mach_a_ip3 sample_alias
```

- NetWorker runs out of disk space for */nsr/index*.

Solution: symbolically link client or server index(es) to other filesystems. Follow these steps:

1. Copy the index to new location:

```
uasm -s -i <client_index_dir_name> | (cd target_dir; uasm -r)
```

2. Remove the old directory.

3. Create a symbolic link from the index directory to the name of the client (you must run this command from */nsr/index*):

```
ln -s <client_index_dir_name> client_name
```

- A backup volume deletion operation was interrupted and zero length temporary files still exist.

Solution: To clean up and complete the deletion, follow these steps:

1. Remove temporary files with the UNIX `rm` command.
2. If the volume still exists in the media database then delete the volume by using the `mm` command:

```
mm -d volume_name
```
3. If the volume does not exist in the media database, use the `nsrck -X` command to remove the index entries.

- You want to send the *bootstrap* information to a different printer on the network.

By default, NetWorker sends a hard copy of the *bootstrap* information to the printer “lp.” If you want to specify a different printer, follow these steps:

1. Use the `nsradmin` command or `networker -x` command to edit the NetWorker configuration file.
 2. In the NSR Group resource, change the printer variable to the name of the printer to which you want the *bootstrap* information to be sent.
- To recover files from one machine to another machine, first set the recover access for machine “a” to allow machine “b” to recover files. For example, if the server’s name is *jupiter*, and the client’s name is *pluto*, add *jupiter* to *pluto*’s recover access list to allow *jupiter* to recover *pluto*’s files to *jupiter*.
 - If you are installing NetWorker, and the `nsr_ize -i` command fails with these error messages:

```
rapd: Can not initialize configuration file serv.res
rapd: SYSTEM error, Permission denied (15013)
nsr_ize: unexpected return code 1
```

Solution:

Create the directory `/var/rap`.

- About recycling tapes:

In a jukebox, tapes will automatically be re-labeled when the retention policies have been met.

Without a jukebox, you will need to manually re-label tapes.

- About the **nsrck** command and required disk space:

The **nsrck -F** command needs space available on the server machine approximately the size of the index it is checking.

LEGATO TECHNICAL BULLETIN

075: Installation Tips for NetWorker (UNIX)

PURPOSE

This Technical Bulletin describes miscellaneous installation tips for both SPARC and RS/6000 NetWorker servers.

LOCATION FOR THE SOFTWARE

The NetWorker executables are installed into the following directories:

For the NetWorker Evaluation Kit:

SPARC version: */usr/etc*

RS/6000 version: */usr/sbin*

For the NetWorker for SPARC and RS/6000 Server Packages, you may choose the installation directory. If you allow NetWorker to install in the default directories, they are:

SPARC version: */usr/etc*

RS/6000 version: */usr/sbin*

NetWorker installs the on-line man pages by default, in the directory */usr/man*. The subdirectories under */usr/man* are *man3*, *man5*, and *man8*.

Or, you may choose a different location for the on-line man pages.

During installation, NetWorker checks for a location with the most space for the executables, presents you with three possible locations, and allows

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you to make a choice. It will then create the directory `/nsr` and place the executables there. Then, it will create a symbolic link from `/nsr` to the location where the executables are installed. For example, suppose the location with the most space is `/usr/etc`. NetWorker will create the directory `/usr/etc/nsr`, and then symbolically link `/nsr` to `/usr/etc/nsr`. This allows users to access the NetWorker executables no matter where they have been placed.

NetWorker installs the `nsr.res` file in `/etc`. The `nsr.res` file contains all the NetWorker configuration information.

NetWorker creates the directory `/var/rap`, where it places NetWorker database information maintained by the Resource Application Program (RAP).

NetWorker also changes the following files:

SPARC system:

<code>/etc/rc.local</code>	to automatically start NetWorker when you reboot
<code>/etc/syslog.conf</code>	to enable NetWorker error reporting

RS/6000 system:

<code>/etc/rc.nsr</code>	this is referenced by <code>/etc/inittab</code>
<code>/etc/inittab</code>	to automatically start NetWorker when you reboot; references <code>rc.nsr</code>
<code>/etc/syslog.conf</code>	to enable NetWorker error reporting

LEGATO TECHNICAL BULLETIN

076: Using NetWorker with NFS and Automounted Filesystems (UNIX)

PURPOSE

This Technical Bulletin describes how to use NetWorker with UNIX NFS filesystems and the automount feature.

USING NETWORKER WITH NFS FILESYSTEMS

NetWorker will back up and recover remote filesystems using the method described in this bulletin. However, remote filesystems are not recommended for optimal performance of NetWorker. Refer to the NFS(4) and automount(8) UNIX man pages for instructions and information on NFS mounted filesystems and automounted filesystems.

BACKING UP REMOTE FILESYSTEMS

The procedure for backing up remote filesystems is identical for NFS mounted and automounted filesystems.

This example assumes the following configuration:

```
NetWorker Server: Jupiter
NetWorker Client: Jupiter
Directory to backup: /home/mars/harper NFS mounted on jupiter
from mars
```

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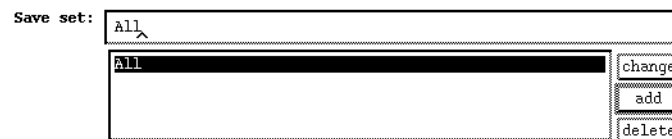
Updated

H.M.

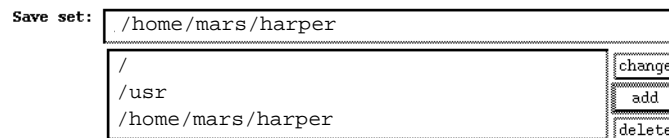
To back up the remote directory */home/mars/harper*, delete the default value of All from the Save set field in the Clients window for *Jupiter*. List *Jupiter*'s filesystems individually in the Save set field, including the local filesystems and the remote filesystem, */home/mars/harper*.

Example:

Delete All from the Save set field.



Enter *Jupiter*'s local and remote filesystems.



NOTE: List the directories pointed to by symbolic links individually in the Save set field of the Clients window. NetWorker does not back up across symbolic links.

RECOVERING REMOTE NFS FILESYSTEMS

After the filesystems have been backed up according to *Jupiter*'s backup schedule, the NFS filesystem will be listed in the Indexes window with the save set name of */home/mars/harper*. If you are not using the *automounter*, recover the files in */home/mars/harper* normally using the Recover window.

RECOVERING AUTOMOUNTED NFS FILESYSTEMS

When recovering files from an automounted filesystem, the filesystem will be located in the `Recover` window in `/tmp_mnt/home/mars/harper`, because that is where they were backed up from. The location of the filesystem, `/tmp_mnt`, is created by the *automounter*, but is not included as part of the save set name.

When recovering files in an automounted filesystem, use the `Relocate` command to relocate the files to `/home/mars/harper`. Otherwise, NetWorker will attempt to recover them into `/tmp_mnt/home/mars/harper`. You will receive an error message that the directory was not found, since it is mounted only when the *automounter* is activated from `/home/mars/harper`.

NOTE: When recovering a remote filesystem (automounted or not), be sure to select the client system that originally backed up the file in the `Recover` window. In the Example, select *Jupiter* from the Client pull-down menu in the `Recover` window. Otherwise, NetWorker will attempt to recover the files from the remote system and you will receive a “*remote system_name* is not a registered Client” error message.

LEGATO TECHNICAL BULLETIN

077: Problems with Virus Scanning Programs (NetWare)

PURPOSE

This Technical Bulletin describes a problem with virus scanning programs. It applies to the NetWare version of NetWorker.

PROBLEM

Legato has experienced some problems with virus scanning programs. These programs, when loaded, change the dates or archive bits on the files, causing incremental backups to become very large, almost reaching the size of a full backup.

If you feel that your virus scanning program causes the dates of your files to be changed, you should contact the software company that makes that software. These programs should only check your files; not change the dates on them.

One way to check if the dates on your files have been changed is to use the following NetWare command from your DOS workstation:

```
F:\> NDIR /DATES
```

This command displays the dates NetWare stores for your files. Any strange dates could indicate the archive bits on your files have been changed.

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T.H.

LEGATO TECHNICAL BULLETIN

078: Installation Notes for the SCO Client (UNIX | NetWare)

PURPOSE

The purpose of this bulletin is to inform you of changes to the installation instructions for SCO clients documented in the *Legato NetWorker ClientPak II Installation Guide, January 1993* revision. It applies to both UNIX and NetWare servers running NetWorker.

PROBLEM

The documentation instructs you to extract the software from the distribution tape either from a tape drive attached to the SCO client, or remotely from another system with a tape drive.

Do *not* attempt to extract the software from a tape drive attached to the SCO client, using the `tar` command. Instead, use a tape drive attached to another system and use the `rcmd` command below for the remote extraction:

```
rcmd machine_name -n "dd if=device bs=20b" | tar xvpf - sco
```

where *machine_name* is a system on the network with a tape drive attached to it.

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USING SCO NFS

SCO NFS is *not* required in order to install and run NetWorker on the SCO client. If SCO NFS is not running on the client, you will see the following error message when you use the `nsr_ize` command to install the software:

```
can't register service: unable to send; error = connection
refused
```

```
RAPD: unable to register RAP on UDP
```

```
nsr_ize unexpected return code 1
```

```
Installation failed!
```

You may ignore this message. The installation has *not* failed, and the client will be able to run NetWorker for backups and recovers.

DOCUMENTATION ISSUES

The command described on page 18 of the *ClientPak II Installation Guide, January 1993* revision for completing a remote extraction will *not* work for the SCO client. This is due to the fact that the `rsh` command is not supported on a SCO, and the `tar` command with the **B** flag is not supported under SCO OS 3.2.4.

Use the `rcmd` command described in this bulletin to complete a remote extraction.

LEGATO TECHNICAL BULLETIN

079: Notes for Installing DOSWORKR (NetWare)

PURPOSE

This Technical Bulletin includes notes for installing DOSWORKR on a client.

STARTING DOSWORKR

After installing DOSWORKR on the client, enter the following at the DOS prompt:

```
C:\ DOSWORKR -s <networker_server_name>
```

If you see the message

```
You are not registered on server "xxx." You need to enter a
client name in order to continue.
```

it means that you need to give your machine a name so that NetWorker can recognize it.

NetWorker will then display a dialog box so that you may enter a name for your machine. Enter a client name and press the [Enter] key.

If you then see the message

```
Error
```

```
Server 'xxx': You are not a client of this server
```

follow the steps below.

1. Go to your NetWorker server and open the Clients window (in the [F4]

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T.H.

Administration pull-down menu).

2. Press [F8] to Create a client.
3. Enter the client name, and choose DOS directive for the Backup directive, and choose Active SPX for the Backup method.
4. Leave the Remote user, Password, and Executable path blank. Save your changes by pressing the [Enter] key.

If you need to add, delete, or display DOS client names, use the NWCLTNAM.EXE utility. This utility was shipped with Release 2.10. If you don't have it, you may obtain it from CompuServe by downloading PN21.002 from the LIBRARIES section of the Legato forum (GO LEGATO).

Use "pkunzip" to un-compress the patch. You will see two files, NWCLTNAM.EXE and the Technical Bulletin which explains how to use the .EXE file.

Be sure to log in as *supervisor* on the NetWorker server from your DOS client when you use NWCLTNAM.EXE. This patch is documented in detail in Technical Bulletin 047, "NWCLTNAM Naming Utility Patch."

NWCLTNAM allows you to add, delete, and display DOS client names. For example:

```
NWCLTNAM [Enter]           lists all bound NetWorker client
                           names

NWCLTNAM /D [Enter]       deletes the name of the current
                           NetWorker client

NWCLTNAM /A <name> [Enter] adds the specified NetWorker client
                           name
```

Make sure the DOS clients are running the Scheduled Backup command with NetWorker so that they can be backed up according to the schedule. The following command will start NetWorker, connect to the specified NetWorker server, run the Scheduled Backup command, and exit once the backup is finished:

```
C:\> NETWORKR -KBS -S <server_name> -Y
```

(You may add the above command to the batch file for the client.)

LEGATO TECHNICAL BULLETIN

080: Scheduled Backups and “Login Denied” Messages (UNIX | NetWare | NT)

PURPOSE

This Bulletin applies to all users running the NetWare version of NetWorker. The purpose of this Bulletin is to explain why you may see “login denied” messages during a scheduled backup, and offers a solution.

DESCRIPTION

During a scheduled backup, the NetWorker server logs on to each client that it must back up and copies the data from the client to backup media. In order for the NetWorker server to have access to the client’s data, the Remote user field in the Editing Client window for the client must include the *supervisor* (or equivalent) name and password. If this field is empty or incorrect, NetWorker will not be able to back up the client and you will see a “cannot make TSA connection login denied” message in the NetWorker Main window.

FIRST SOLUTION

If you have a UNIX or NT backup server, you must first grant temporary permission for the NetWare client to administrate. From the server:

1. Open Server setup.
2. Add “*/*” and/or “*root@novell_client_name*” to the administrator list.

This will allow remote administration of NetWorker from any client.

NOTE: Remember to remove these permissions when you are finished with this procedure!

Then, from the NetWare client:

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B.W., V.W.	

1. Press [F4] to bring down the Administration menu.
2. Press the [C] key to display the Clients window.
3. Highlight the name of the client for which the "login denied" messages appear.
4. Press the [Return] key to open the Editing Client window.
5. Use the arrow keys to page down to the Password field.
6. Press the [F9] key to clear the field.
7. Enter *supervisor* (or equivalent) for Novell 3.x or "admin" or ".cn=admin.o=<organization>" for Novell 4.x into the field and press the [Tab] key.
8. Enter the password into the Password field of the dialog box.
9. Press [Return] and you will be prompted to verify the password.

Now try to back up the client from the server. If you are running NetWorker Release 2.10 or later, follow these steps:

1. Press [F3] to bring down the Operation menu.
2. Press [P], the speed key for Group Status.
3. Highlight the name of the client (or group to which the client belongs) in the Group Status window.
4. Press [F8] to bring up the Options for Group window.
5. Press [S], the speed key for Start Group Now.

Check the Main window for messages about the client backup. If the client backup is still failing, try the second solution described below.

SECOND SOLUTION

Check SYSCON for the maximum number of connections *supervisor* (or equivalent) is allowed on the client. The backup may fail if there are too many users already logged in as *supervisor* on the client. Either increase the number of allowed connections, or make it unlimited.

LEGATO TECHNICAL BULLETIN

081: NetWorker and Solaris 2.x Executable Path Notes (UNIX)

PURPOSE

This Technical Bulletin describes a problem with the location of the NetWorker executables on a Solaris 2.X client and suggests a work-around.

PROBLEM

The NetWorker executables are currently installed in `/usr/sbin` on Solaris 2.X machines. This is a logical location for the executables, because by default only `root` has `/usr/sbin` in its search path. The problem is that the `rsh` command hard codes the search path, and the search path varies between operating system versions.

A group backup is initiated by a `rsh` command from a NetWorker server machine. If you start a group backup on a server machine that does not have `/usr/sbin` in the search path for `root` the backup will fail on a client machine that has its NetWorker executables in `/usr/sbin`. This is because the `savefs` command will not be in the search path.

SOLUTION

The best solution is to set the NetWorker hidden attribute "executable path" for a client that has this problem. This can be done by running the

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G.W.

081: NetWorker and Solaris 2.x Executable Path Notes (UNIX)

networker -x command and putting the path of the executables, */usr/sbin*, in the Executable path field of the Client window.

Another solution is to modify the search path for *root* on the NetWorker server machine to include */usr/sbin* even though it may not exist locally.

LEGATO TECHNICAL BULLETIN

082: Creating Groups on a UNIX Server from a NetWare Client (UNIX | NetWare)

PURPOSE

This Technical Bulletin applies to all ClientPak III customers. It Describes a problem when you complete over the network administration from a NetWare 3.11 client to a UNIX NetWorker server.

PROBLEM

When you create a group on a UNIX NetWorker server from a NetWare client, the hidden attribute "Level" for that backup group gets a bad value.

SYMPTOM

When the scheduled backup of the group completes, the NetWare clients in the group will fail while the UNIX clients will succeed. The savegroup completion notification will look similar to this:

```
--- Unsuccessful Save Sets ---  
  
draco:SYS: level=full, save as of Wed Dec 31 19:00:00 GMT-0500  
  
* draco:SYS: type: NSR client description;  
  
* draco:SYS: version: 2.10;  
  
* draco:SYS: save set: path="SYS:", level=full, time="Wed Dec  
31 19:00:00 GMT-0500 1969", diskno=1 ;
```

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082: Creating Groups on a UNIX Server from a NetWare Client (UNIX | NetWare)

```
* draco:SYS: parallelism: 1
--- Successful Save Sets ---
comet: /lls/nsr/index/draco level=incr, 1 KB 00:00:34 3 files
NetWorker savegroup: (notice) Test completed, 1 client (draco
Failed)
```

where *comet* is a UNIX client and *draco* is a NetWare client.

The NetWorker Main window console will report the following message:

```
Mar 3 09:41:41 comet syslog: NetWorker savegroup: (info)
starting Test (with 1 client)

savegroup: draco:probe unexpectedly exited.
```

SOLUTION

There are two ways to solve this problem.

1. Start up **nsradmin** on the UNIX NetWorker server. Turn on the hidden options.
2. Edit each group created from the NetWare Client take out the double quotes (“”) for “Level.”

Or

1. Delete all the groups you created remotely from the NetWare client.
2. Re-create the same groups from the UNIX NetWorker server.

LEGATO TECHNICAL BULLETIN

083: NetWorker for NetWare Patch (NetWare Patch 2.11-001)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.11-001. This patch fixes the previous limitations described below.

INSTALLING THE PATCH

Follow the steps below to install the patch:

1. From a DOS machine, log in to the NetWorker server as *supervisor*.
2. Change directories to the location where you installed the NetWorker software. Usually, this is `SYS:\NSR\BIN`.

3. Change the “read-only” flags:

```
C: FLAG *.* -RO
```

4. Run `P211-001.EXE` to start the patch installation. Answer “yes” to all the “overwrite? Y/N” questions.

```
C: P211-001.EXE
```

5. Change the flags back to “read-only.”

```
C: FLAG *.* +RO
```

6. On the server, unload NetWorker by entering [0] at the NetWare operations screen.

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7. Load NWSTART to start NetWorker.

RCMDSRV.NLM and ACTIVECL.NLM

These NLMs sometimes issued a “usage error” when passed a set of directives on the command line, causing the active SPX 3.11 clients to fail a group backup. The active SPX DOS clients were not affected.

SAVEGRP.NLM

The savegroup NLM did not recognize the “remote execution path” client resource. This affected UNIX clients that did not have default paths to NetWorker executables set up. Also, clients with long names were always marked failed, even if they succeeded the backup.

The symptom is that a group backup running on NetWare server would attempt to start a backup running on a UNIX machine which failed due to a failure to find the “savefs” executable on the UNIX machine.

NSRD.NLM

On rare occasions, indexes would be marked as purged when the browse policy had not expired.

INDEXD.NLM

Labeling or deleting a previously-labeled tape while a backup was in progress would cause some index entries to be lost.

RAP.NLM

In rare cases, during a backup, the SAVEGROUP.NLM or NSRD.NLM would produce a GPE (General Processor Exception) ABEND message.

ENHANCEMENTS TO NETUTIL.NLM

A new feature in the Manage Backup Volumes command allows you to now duplicate a tape, provided that you have two tape drives and the capacity of the second tape drive is greater than or equal to the capacity of the first drive. Use the Duplicate Volume command in the Backup Volume Manager menu to duplicate a

tape. NetWorker will then prompt you for the names of the source and destination tape drives.

The Test command in the Device Manager menu (from the Manage Backup Volumes command) no longer reports a failure on ISA machines with more than 16MB of RAM.

LEGATO TECHNICAL BULLETIN

084: Double Filemark Patch (UNIX Patch 3.2-016)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.2-016, Double Filemark Patch. It applies to both the SPARC and RS/6000 NetWorker servers.

The problem which necessitates the patch is due to:

- Peculiar AIX tape semantics for RS/6000 servers
- SPARC servers utilizing non-SBUS SCSI controllers. This includes the SPARCserver690™.

PROBLEM

Current NetWorker releases in the configurations listed above write double filemarks on tapes on approximately one gigabyte boundaries. On tapes which have been repositioned, NetWorker advances to the end of tape by counting filemarks. Because of the duplicate filemarks, NetWorker may occasionally fail to properly reposition rewind tapes prior to appending new data. As a result, NetWorker may without notification overwrite previously backed-up data on the tape. If this happens, it is usually the NetWorker index which is overwritten, which can be re-created using the `scanner` command. However, because actual backed-up data can be overwritten, it is imperative that this patch be installed immediately, and your entire filesystem be backed up as soon as possible.

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B.L.

084: Double Filemark Patch (UNIX Patch 3.2-016)

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

Executable files affected: **scanner** and **nsrmmd** for SPARC and RS/6000

NOTE: Install the Double Filemark Patch on server machines only.

LEGATO TECHNICAL BULLETIN

085: NetWorker Jukebox Patch (NetWare Patch 2.11-002)

PURPOSE

This bulletin describes the NetWorker, NetWare version Patch ID #2.11-002.

If the jukebox tries to mount a tape which has not been inventoried, it will crash the NetWorker server. This patch fixes this problem.

This patch replaces NSRJBD.NLM.

OBTAINING THE PATCH

You may obtain this patch by calling Legato Technical Support at (415) 329-7878. This patch will not be available on CompuServe, but will be available to all registered users who have purchased the Jukebox Module.

INSTALLING THE PATCH

Follow the steps below to install the patch:

1. From a DOS machine, log in to the NetWorker server as *supervisor*.
2. Change directories to the location where you installed the NetWorker software. Usually, this is SYS:\NSR\BIN.

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J.K.

3. Change the “read-only” flags:

```
C: FLAG *.* -RO
```

4. Run P211-002.EXE to start the patch installation. Answer “yes” to all the “overwrite? Y/N” questions.

```
C: P211-002.EXE
```

5. Change the flags back to “read-only.”

```
C: FLAG *.* +RO
```

6. On the server, unload NetWorker by entering [Q] at the NetWare operations screen.

7. Load NWSTART to start NetWorker.

LEGATO TECHNICAL BULLETIN

086: De-installing the AAP or Parity Driver (UNIX)

PURPOSE

This Technical Bulletin refers you to the documentation provided by AAP for instructions on de-installing an AAP driver. If you cannot obtain a copy of the instructions, this bulletin provides some information to help you de-install the AAP or Parity driver.

IMPORTANT NOTE

The “de-installation” script in the Parity driver contains a bug in that it does not check the validity of the values in the PSC.config file. In order for the de-installation script to work correctly you need the correct PSC.config file.

The PSC.config file is created in the installation directory when you run the **install** command. The third field in the file is the architecture of the machine and the seventh field contains the name of the kernel configuration file. These values must match the system where you plan to run the de-installation script, otherwise, some important files under `/sys` will be deleted. If you have deleted the installation directory from where you installed the Parity driver or if you are not sure whether the PSC.config file is correct it is safe to manually de-install the driver as explained in this bulletin.

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R.R., V.N., V.S.

DE-INSTALLING THE AAP DRIVER

Please refer to the *SJI Installation and Reference* manual for de-installation instructions for the AAP driver. The instructions are listed at the end of each “Installation” section in the manual. De-installation instructions are provided for both loadable module and kernel configurable drivers. If no such instructions exist in your version of the manual, contact AAP for assistance.

If you used the de-installation instructions from AAP, then loaded your Parity driver and experienced problems, you probably did not have a “clean” de-installation. Follow the instructions in the next section to manually “clean up” the driver code.

1. Files modified by parity driver
2. Files modified by AAP driver (automated script install)
3. Other stuff to cleanup
4. Regenerating the clean kernel
5. Deinstall of AAP loadable driver

FILES MODIFIED BY THE PARITY DRIVER

This section shows you how to manually fix the Parity driver. This example is taken from an installation on a sun4m running SunOS 4.1.3

Use the `cat /etc/motd` command to find your kernel configuration file. This file contains the installation-specific information about devices. In this example, it is `/sys/sun4m/conf/PSC`.

Remove this line from the file:

```
disk psc0 at scsibus0 target 6 lun 0 # PSC SCSI disk
```

Un-comment this line:

```
#disk sr0 at scsibus0 target 6 lun 0 # CD-ROM device
```

where “6” means that the jukebox mechanism is at SCSI ID 6. You should verify that the entries for the tape drive are included and correct.

Now find the C-language source code file which contains the definitions of the switches `cdevsw` and `bdevsw`, as well as a bit of initialization infrastructure for the installed devices. In this example, the file is `/usr/sys/sun/conf.c`

Remove the following from the file:

```
#include "psc.h"
#if NPSC > 0 extern int pscopen(), pscclose(), pscstrategy(), pscread(),
pscwrite(); extern int pscdump(), pscsize(), pscioctl();
#else
#define pscopen nodev
#define pscclose nodev
#define pscstrategy nodev
#define pscread nodev
#define pscwrite nodev
#define pscdump nodev
#define pscioctl nodev
#define pscsize 0
#endif
```

Also remove the following:

```
{
pscopen, pscclose, pscread, pscwrite, /*108*/
pscioctl, nullddev, seltrue, 0,
0,
},
```

Where "108" is the index in the *cdevsw* array and hence the */dev/psc0* has major 108.

The file below provides configuration information on where to find the source code for the kernel and its drivers:

```
/usr/sys/sun4m/conf/files [uname -m or arch -k = sun4m kernel arch. ]
```

Remove the following from the file:

```
sundev/psi.c optional psc scsibus
sundev/psi_sun.c optional psc scsibus
sundev/psc_sun.c optional psc scsibus
sundev/psc_err.c optional psc scsibus
sundev/pscioctl.c optional psc scsibus
sundev/psc_conf.c optional psc scsibus
```

In sun3, sun3x and sun4 systems there are modifications to the file */usr/sys/sundev/sc_conf.c*.

Remove the modifications listed below:

```
#include "psc.h"

#if ((NSC > 0) || (NPSC > 0) || (NSI > 0) || (NSE > 0) || (NSW
> 0) || (NWDS > 0) || (NSM > 0))
```

Remove "+ NPSC" from this line:

```
struct mb_device *sinfo[NSD + NST + NSR + NPSC];
```

Remove these lines:

```
#if NPSC > 0 int pscattach(), psi_start(), psi_mkcdb(),
psi_intr(), pscunitptr();
#endif

#if NPSC > 0 { pscattach, psi_start, psi_mkcdb, psi_intr,
pscunitptr, "PSC", },
#else
{ (int (*)())0, (int (*)())0, (int (*)())0, (int (*)())0, (int
(*)())0,
(char *)0},
#endif
};
```

FILES MODIFIED BY THE AAP DRIVER (AUTOMATED)

This section explains how to manually "clean up" the files if you used the de-installation script from AAP. This example is taken from an installation on a sun4m running SunOS 4.1.3

Use the `cat /etc/motd` command to find the kernel configuration file which contains the installation specific information about devices – in this example, it is `/sys/sun4m/conf/AAP`.

Remove the following from the file:

```
disk juke0 at scsibus0 target 6 lun 0 # SCSI optical juke
```

Un-comment this line:

```
#disk sr0 at scsibus0 target 6 lun 0 # CD-ROM device
```

where the "6" represents the jukebox mechanism is at SCSI ID 6. You should verify that the entries for the tape drive are included and correct.

Now find the C-language source code file which contains the definitions of the switches `cdevsw` and `bdevsw`, as well as a bit of initialization infrastructure for the installed devices. In this example, the file is `/usr/sys/sun/conf.c`

Remove the following from the file:

```
[/%ENTSTART_AAPSJI%*/
#include "juke.h"
#if NJUKE > 0
```

```
extern int jukeopen(), jukestrategy(), jukeioctl(), jukesize(),
jukeclose();
#else
#define jukeopen nodev
#define jukeclose nodev
#define jukestrategy nodev
#define jukeioctl nodev
#define jukesize 0
#endif NJUKE > 0
/*%ENTEND_AAPSJI%*/
```

Also remove the following:

```
/*%CDVSTART_AAPSJI%*/
/*108*/
{
jukeopen, jukeclose, nulldev, nulldev,
/* $CDEVNO */
jukeioctl, nulldev, seltrue, 0,
0, 0,
},
/*%CDVEND_AAPSJI%*/
```

The file below provides configuration information on where to find the source code for the kernel and its drivers:

```
/usr/sys/sun4m/conf/files [uname -m or arch -k = sun4m kernel arch. ]
```

Remove the following:

```
scsi/targets/juke.c optional juke scsibus
scsi/targets/juke_conf.c optional juke scsibus
```

In sun3, sun3x and sun4 systems there are modifications to the file */usr/sys/sundev/sc_conf.c*.

Remove the modification listed below:

```
#include "juke.h"
```

Remove "(NJUKE > 0)" from the following line:

```
#if ((NSC > 0) || (NJUKE > 0) || (NSI > 0) || (NSE > 0) || (NSW
> 0) || (NWDS > 0) || (NSM > 0))
```

Remove "+ NJUKE" from the following line:

```
struct mb_device *sdinfo[NSD + NST + NSR + NJUKE];
```

Remove the following:

```
#if NJUKE > 0
int jukeattach(), jukestart(), jukemkcdb(), jukeintr(),
```

086: De-installing the AAP or Parity Driver (UNIX)

```
jukeunitptr();  
#endif NJUKE > 0
```

Remove the following:

```
#if NJUKE > 0  
{ jukeattach, jukestart, jukemkcdb, jukeintr, jukeunitptr,  
"juke", },  
#else  
{ (int (*)())0, (int (*)())0, (int (*)())0, (int (*)())0, (int  
(*)())0,  
(char *)0},  
#endif NJUKE > 0
```

MISCELLANEOUS CLEANUP

Another approach is to recover the original pre-AAP or Parity files saved by the installation process instead of editing the files as explained previously.

The naming convention for Parity is *<file>.PSC_ORIG*

The naming convention for AAP is *<file>.09:53:42*

Then remove the following from the Parity file:

```
/sys/sundev/psc_conf.c  
/sys/sun4m/OBJ/psc_sun.o  
/sys/sun4m/OBJ/psc_err.o  
/sys/sun4m/OBJ/psciioctl.o  
-rf /usr/sys/sun4m/PSC  
/sys/sun4m/conf/PSC (assuming PSC was the kernel configuration file)  
/dev/psc*  
/dev/sjid*
```

Remove the following from the AAP file:

```
/sys/sun4m/OBJ/juke.o  
/sys/sundev/SJI_auth.h  
/usr/sys/sun4m/AAP  
/sys/sun4m/conf/AAP (assuming PSC was the kernel configuration file)  
/dev/juke*  
/dev/sji*
```

Then remove the following from the */etc/rc.local* file:

```
SJIDIR=/lls/aap  
if [ -f $SJIDIR/makesji ]; then  
echo "Loading the SJI Driver"  
cd $SJIDIR  
./loadsji
```

```
fi;
```

RE-GENERATING A CLEAN KERNEL

This section shows you how to generate a new kernel, assuming the clean kernel configuration file is named `GENERIC` in the directory `/sys/sun4m/conf` or `/usr/etc/config`.

```
cd ../GENERIC
make
mv /vmunix /vmunix.old
cp vmunix /vmunix
/etc/halt
boot vmunix
```

Your system should now be completely de-installed of the Parity or AAP driver.

DE-INSTALLATION OF THE AAP LOADABLE DRIVER

First determine if the loadable AAP driver is installed by using the `modstat` command. The Mod Name column will display `sjdrv` and `jukedrv` if the driver is installed.

To unload the driver and kill the daemon `sjdaemon`, change directories to where the driver is installed and enter:

```
# /bin/unloadsji
```

Use the `modstat` command to make sure the drivers are unloaded.

Now remove the following from `/etc/rc.local`:

```
SJIDIR=/lls/aap
if [ -f $SJIDIR/makesji ]; then
  echo "Loading the SJI Driver"
  cd $SJIDIR
  ./loadsji
fi;
```

And remove the following:

```
/sys/sundev/SJI_auth.h
/dev/juke*
/dev/sji*
```


LEGATO TECHNICAL BULLETIN

087: Supported Sun Platforms for Prestoserve (Prestoserve)

PURPOSE

The purpose of this Bulletin is to describe which Sun platforms are supported by Legato and which platforms are supported only by Sun Microsystems.

SYSTEMS NOT SUPPORTED BY LEGATO

Legato does not support Prestoserve on any platform running Solaris 2.x. Sun Microsystems recently announced support for Prestoserve on SPARC platforms running Solaris 2.x. Included in this announcement was a Solaris 2.x upgrade kit for those customers who already have Prestoserve for the SunOS environment. Sun is making this upgrade kit available to both Sun and Legato customers. If you are interested in purchasing a Solaris 2.x upgrade for your existing Prestoserve, please contact your local Sun salesperson to order part number SPRE-PF.

Sun also supports NVRAM-SIMM Prestoserve modules for SPARCstation 10s running Solaris 2.2 or higher and for "sun4d" SPARCcenter 1000/2000 machines. Note that all "sun4d" systems run only Solaris 2.x.

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N.M., J.M.

SYSTEMS SUPPORTED BY LEGATO

Legato supports Sun systems running SunOS 4.1.x (Solaris 1.x). We recommend Prestoserve Release 2.4, but you may also use Release 2.3. (See Legato Technical Bulletin #24 for Prestoserve Release 2.4 notes.)

SPARCstation/SPARCserver-10's running SunOS 4.1.3 (SBus Prestoserve only)

The SBus Prestoserve board operates only as an SBus slave and can be plugged into any free SBus slot in the system. Below is an overview of the basic SBus board installation procedure. For more details, refer to the section that describes the 4Bus Slot SPARCstation in the Sun manual entitled *Installing SBus Cards in Desktop SPARCstations*.

1. Turn off the power to the system, but keep the power cord plugged in. The Sun SBus documentation states that the power cord should be left plugged in to a grounded power outlet to provide the ground path necessary so that you can safely install and remove SBus circuit boards. To avoid personal injury, be sure that the system's power is turned off. The switch should be in the "off" position, the light in front of the chassis should not be on, and the power supply fan should not be running.
2. Open the system unit. Be sure to attach a grounding strap to your wrist and to the metal casing of the power supply.
3. Identify the slot you want to use, using the lower bus slots first. Remove both sets of screws and washers that secure the SBus filler panel to the outside of the system unit for that slot. Remove the panel.
4. Remove the two screws that attach the adapter bracket on top of the SBus Prestoserve to the backplate. Remove the plastic SBus back retainer.
5. Slide the SBus Prestoserve board at an angle into the back panel of the system unit. Hook the card backplate under the lip on the back panel.
6. Push the SBus Prestoserve board against the back panel. Align the plug with the socket slot. Gently press the plug into the socket slot by pressing on the corners of the board. Using excessive force may bend or damage the pins. Push the rear card retainers forward over the edge of the SBus card.

7. Secure the SBus card to the back panel using the screws you removed earlier and close the system unit.

Prestoserve Release 2.3

Prestoserve Release 2.3 can be used on a SPARCstation 10 running SunOS 4.1.3. During the software installation, the installation scripts will ask if you are extracting or installing the “sun4c” architecture by default on a sun4m architecture machine. The sun4c version of the Prestoserve driver is compatible with the sun4m architecture. Therefore, whenever the installation scripts ask if you want to extract or install “sun4c” files, you should press the [Return] key to accept the default.

SPARCserver 600 series running SunOS 4.1.2 or SunOS 4.1.3

This system can be used with either SBus or VMEbus Prestoserve.

See Bulletin #23 for:

- notes about installing SBus Prestoserve hardware.
- notes about using Prestoserve Release 2.3 for sun4m.
- VMEbus software work-arounds for Prestoserve Release 2.3.

SPARCstation/SPARCserver-1, 1+, 2, IPC (all sun4c machines with SBus expansion)

Only systems running SunOS 4.x and SBus Prestoserve are supported.

Other sun3, sun3x, and sun4 machines with a VMEbus (including SPARCstation/server 300 & 400 series)

Only systems running SunOS 4.x and VMEbus Prestoserve are supported.

LEGATO TECHNICAL BULLETIN

088: Savegroup Patch (UNIX Patch 3.3-001)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.3-001, Savegroup Patch. It applies primarily to the RS/6000 NetWorker servers, but may also apply to SPARC servers. It applies to NetWorker Release 3.3.

PROBLEM

A scheduled backup starts but does not complete. The symptoms are as follows:

- The `ps axwwl` command on the NetWorker server displays only one process named "savegroup."
- This process has no child processes and is in a waiting state (S, I, or IW in the "STAT" or "S" column).
- No special messages are displayed in the Main window.
- The resource "NSR group" still contains a worklist.

This patch fixes a bug in `savegroup` so that it keeps better track of the save set backups that complete, and tracks the process identifiers of `savegroup`'s children that monitor the progress of individual backups.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

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D.C.

LEGATO TECHNICAL BULLETIN

089: RAP Daemon Patch (UNIX Patch 3.3-002)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.3-002, RAPD Patch. It applies to NetWorker Release 3.3 for SPARC NetWorker servers.

PROBLEM

During installation, you may receive the following error messages after invoking the `nsr_ize -i` command:

```
rapd: unable to register on udp
nsr_ize: unexpected return code 10
```

The messages mean that even though the NetWorker executables have been installed, the NetWorker daemons have not started. This problem will only show up if the SPARC system has a network interface that has an address from a protocol other than the Internet Protocol (IP) listed before its IP interface. The work-around is to start the daemons with the `nsrd` command:

```
# nsrd
```

This patch fixes this problem by properly ignoring non-IP network interfaces.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

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B.N., A.G.

LEGATO TECHNICAL BULLETIN

090: Timezone Patch (UNIX 3.3-003)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.3-003, Timezone Patch. It applies only to NetWorker Release 3.3 for RS/6000 NetWorker servers.

PROBLEM

If you are running release 3.3, the **savegroup** command interprets overrides in Greenwich Mean Time instead of the local time zone. This can cause the wrong level of backup to be performed if the **savegroup** is run when the local date is different than the date in Greenwich Mean Time.

For example, if you are in the Pacific Time Zone with Daylight Savings Time in effect, and a scheduled backup begins between 5 p.m. and midnight, and there is an override scheduled, NetWorker will use the next day's schedule since to NetWorker the time is 12 a.m. on the following day.

SOLUTION

The work-around is to make sure the scheduled network-wide backup starts at a time when the local date is the same as it is in Greenwich Mean Time

Patch # 3.3-003 fixes this problem.

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A.G.

090: Timezone Patch (UNIX 3.3-003)

NOTE: This patch should be installed on the server only.

Refer to *Technical Bulletin 036: Obtaining NetWorker UNIX Patches Electronically* for instructions on obtaining this patch electronically.

LEGATO TECHNICAL BULLETIN

091: Notes for SPARC Solaris Servers (UNIX)

PURPOSE

This bulletin describes two limitations for NetWorker SPARC servers running the Solaris operating system and provides workarounds.

PROBLEM - LIBRARY COMPATIBILITIES

To successfully run NetWorker release 3.3 on SPARC Solaris 2.2 servers, you must have the binary compatibility libraries installed (**Sun package SUNWbcp**) on the server.

You will not be able to run NetWorker without this package installed on the server. If you try to start NetWorker, you will see error messages about not being able to find the libraries.

To find out if you have the libraries installed, use the **pkginfo** command:

```
# pkginfo | grep SUNWbcp
```

PROBLEM - OPENWINDOW WARNING MESSAGE

You may notice the following message after you try to start NetWorker:

```
System Warning: No such file or directory, extra menu files
/usr/lib/.text_extra_menu (textsw package)
```

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V.N.

The workaround is to use the following command to link the following two files:

```
# ln -s /usr/openwin/lib/locale/C/xview/.text_extras_menu  
/usr/lib/.text_extras_menu
```

In order to run NetWorker under OpenWindows on a SPARC (Solaris 2.2) server, you must install the Sun package **textsw** on the server.

LEGATO TECHNICAL BULLETIN

092: Serial Port Jukebox and NetWorker Server (UNIX)

PURPOSE

This Technical Bulletin outlines the steps you will need to follow to connect a jukebox (via serial port) to a NetWorker server. This bulletin applies to the UNIX servers only.

INSTRUCTIONS

Below is a list of what you will need in addition to the computer and jukebox:

- a serial cable
- a SCSI cable
- a power cord for the jukebox
- a SCSI terminator
- the Jukebox Module enabler

Before you begin make sure the computer is powered on and running.

NOTE: Because the jukebox is connected via a serial port, you *do not* need to install the drivers as described in the *Installation and Maintenance Guide*.

1. Remove the shipping tape (on the jukebox) over both drive doors and the express door. In order to accomplish this, you have to open

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G.W.

the jukebox and remove the carousel, if it has one. If applicable, remove all the packing material as well.

2. Set the dip switches on the back of the jukebox according to the hardware instructions which were shipped with the jukebox. It is very important that you set these properly.

Make sure you have set the SCSI ID switches so that they make a unique SCSI ID.

3. Shut down the computer system.
4. Plug in the jukebox power cord and the SCSI cable.
5. Terminate the other end of the SCSI cable.
6. Power on the jukebox.

Check to see the “on-line” light comes on, or if the LED display indicates that the jukebox has power.

If not, you must contact the jukebox vendor to resolve this problem before using NetWorker with the jukebox.

7. Boot the computer.
8. Configure tape devices for the two tape drives in the jukebox.

If any of these steps fail, do not continue. You should not proceed until you can complete Step 8 successfully.

Now you may continue the installation.

1. Connect a serial cable from the jukebox to the computer. This cable should be an RS232 DTE cable.
2. Create (if you need to) a *tty* device that is associated with the serial port to which the jukebox is connected. For example, */dev/tty0* and serial port 1 (S1). Do not enable the port.
3. Install and enable NetWorker and the jukebox module as described in the *Installation and Maintenance Guide*.
4. Use the *jbexercise* command to test the jukebox.

If it does not prompt you right away for the name of the first no-rewind device, the serial cable does not have the correct pin configuration. You will need to correct this before NetWorker will “talk” to the jukebox.

LEGATO TECHNICAL BULLETIN

093: Auspex Patch (UNIX Patch 3.3-004)

PURPOSE

This bulletin describes NetWorker for UNIX Patch ID# 3.3-004, Auspex Patch. It applies only to NetWorker Release 3.3 for UNIX NetWorker servers.

PROBLEM

This patch applies to all Auspex systems running Release 3.3 of Legato NetWorker. There is a bug in some versions of Auspex's operating system that causes some programs in NetWorker 3.3 to hang indefinitely. Specifically, the affected programs are save and all the ASMs (uasm, compressasm, mailasm, etc.).

The symptom is that the save command and any of the ASMs will hang in a "disk wait" state when run on an Auspex machine. You will know that the process is in disk wait state by using the `ps aux` command to look at the STAT field. If the state of the save command and ASM processes is "DW," you are probably experiencing this bug. If you are experiencing different symptoms, you may have a different problem with the system.

The bug is present only in Release 3.3. Running the Release 3.2.x save command and ASM binaries on your Auspex machine should work correctly, so reverting to version 3.2.x of the save command and ASM binaries is an alternative to applying this patch. (By applying this patch,

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D.B.

however, you will get bug fixes and new functionality that are present in Release 3.3.)

The 3.3 server software is not affected by this bug. Running NetWorker Release 3.3 server software on an Auspex machine should work without incident.

Auspex has indicated to Legato that they will fix this bug in a future release of their operating system (please contact Auspex for details). In the meantime, Patch 3.3-004 is available, with new versions of the **save** command and ASM binaries. Simply replace **save** and all the ASMs on your Auspex machines with these new binaries. Remember that at most installations, **save** is installed setuid *root*; see the **nsr(8)** man page for more details. (Be sure to keep the un-patched 3.3 binaries elsewhere, just to be safe.)

The binaries are fully compatible with SunOS, so you may export the patched binaries to other SunOS clients as well.

If you have any problems with the patch, please contact Legato Technical Support.

BUG DETAILS

The following information explains the bug in detail. If you are not interested in the nature of the bug, do not read this section.

For Release 3.3, Legato took advantage of a special **ioctl(2)** that exists only in SunOS 4.1.2 and later. The **ioctl** allows NetWorker to reset a file's last access time (**atime**) without changing its last change time (**ctime**). Normally, a backup of a file would cause the file's **atime** to update, since the file was being read by NetWorker.

If Legato subsequently tried to reset the file's **atime**, the file's **ctime** would update. By invoking this **ioctl** after reading the file, NetWorker is able to restore the **atime** of the file without updating its **ctime**. This leaves files with precisely the same times after the backup as before the backup.

Although the **ioctl** does not exist in SunOS 4.1.1, any attempt to use the **ioctl** under SunOS 4.1.1 results in an error being returned to **save** and the ASMs. NetWorker catches this error, and since this is not a critical function, NetWorker disables the feature for the remainder of the session.

Unfortunately, the **ioctl** does not behave the same way in SunOS as it does in Auspex's OS. Under Auspex's OS, invoking the aforementioned **ioctl** causes

the process to sleep indefinitely rather than get an error. This is apparently because the `ioctl` collides with another `ioctl` Auspex used for other purposes.

This patch disables the “atime reset” feature completely. This means that the access times of files backed up will be updated, the same as in NetWorker releases 3.2.x and earlier (and the same as on other operating systems that lack this special `ioctl`).

LEGATO TECHNICAL BULLETIN

094: Uninterruptible Power Supply (NetWare)

PURPOSE

This Technical Bulletin applies to NetWorker 2.2 for NetWare.

PROBLEM

If you have an Uninterruptible Power Supply (UPS) that relies on software that issues a DOWN command to shut down the disks if a power failure is detected, you should not leave any NetWorker administration windows or NETUTIL running when you are done configuring or monitoring NetWorker. Make sure you exit NetWorker or NETUTIL with the [Exit] command. (Note: Do not use the [q] command to quit the program, use [Exit] to leave the user interface tool.)

To bring the Main window back up, enter the LOAD NETWORKR command at the system prompt.

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J.K.

LEGATO TECHNICAL BULLETIN

095: NetWare for UNIX Patch (NetWare Patch 2.2-001)

PURPOSE

This Technical Bulletin describes Patch 2.2-001 and applies to all NetWare servers running NetWorker 2.2.

PROBLEM

If you have a UNIX system which is *both* a NetWorker for UNIX server *and* a NetWare for UNIX server, then a NetWare filesaver running NetWorker for NetWare or ClientPak III will fail to connect to the NetWorker for UNIX server.

The symptoms are:

- the NetWare system is unable to find a NetWorker server
- when you try to change NetWorker servers, you will see an “invalid authentication” message

SOLUTION

Patch 2.2-001 provides a new version of RAPNLM, which first checks that the remote system accepts the NetWare authentication, and if not, uses the UNIX authentication. This patch is available from the Legato forum on CompuServe (GO LEGATO).

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C.R.

LEGATO TECHNICAL BULLETIN

096: NSRMMD Patch (UNIX Patch 4.0-001)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SPARC, RS/6000, and SCO servers running NetWorker.

PROBLEM

If the file or filesystem (save set) you are backing up is greater than 2 Gigabytes, NetWorker may shut down due to `nsrmmd` dumping *core*. You can verify this problem by checking for *core* files in `/nsr/cores/nsrmmd`.

SOLUTION

Patch 4.0-001 gives you a new version of `nsrmmd` which allows you to back up files or filesystems which are larger than 2 Gigabytes. This patch is available electronically from our request server or CompuServe (see below).

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R.R.

LEGATO TECHNICAL BULLETIN

097: How the Jukebox Chooses Backup Volumes (NetWare)

PURPOSE

This Technical Bulletin explains how NetWorker selects backup volumes in a jukebox during a backup. It applies to the NetWare version of NetWorker.

SELECTING BACKUP VOLUMES

If you are running Release 2.2 (or later) of NetWorker, the Jukebox Module will select a backup volume during a backup according to the following algorithm:

1. The oldest appendable volume with any space left on it will be used for the backup.
2. If Step 1 fails, the oldest volume eligible for recycling will be automatically re-labeled and loaded.
3. If Step 2 fails, NetWorker requests a writable backup volume and you will have to load new tapes in the jukebox.

“Oldest” means the tape which is labeled earliest in time. NetWorker distinguishes between archive and backup volumes. That is, if NetWorker needs an archive volume, it will only consider the archive volumes in the jukebox. If it needs a backup volume, it will only consider the backup volumes in the jukebox.

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B.K.

LEGATO TECHNICAL BULLETIN

098: Auspex Operating System Requirements (UNIX)

PURPOSE

This Bulletin describes the operating system requirements if you are running NetWorker on an Auspex system.

DESCRIPTION

If you are running NetWorker Release 3.3 for UNIX or above on an Auspex system running the AIX operating system, the AIX operating system must be version 3.2.4, *not* version 3.2.3 with patches, nor the Extended version. Load NetWorker *after* installing the operating system. If you were running NetWorker before upgrading the operating system to version 3.2.4, simply re-load NetWorker after upgrading the operating system.

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LEGATO TECHNICAL BULLETIN

099: SAVEGRP Patch (NetWare Patch 2.2-002)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 2.2 for NetWare and offers a patch to overcome the limitation.

DESCRIPTION

If the name of a backup group exceeds seven characters, the SAVEGRP.NLM may randomly overwrite memory when backing up a group of clients. This results in Random "INT 3" crashes of the NetWare file server.

Patch 2.2-002 provides a new SAVEGRP.NLM to fix the problem, and is available electronically from CompuServe (GO LEGATO). Install this NLM in your SYS:NSR\BIN directory or the directory where you installed NetWorker.

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Updated

C.R.

LEGATO TECHNICAL BULLETIN

100: SPXWORKR Patch (NetWare Patch 2.2-003)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 2.2 for NetWare and offers a patch to overcome the limitation.

DESCRIPTION

If you are running the old style NetWare DOS shell (for example, NETX or EMSNET) as opposed to the newer DOS requestor or VLM-style, then the version of SPXWORKR included with Release 2.2 will only work if you have a valid logged-in connection. If you do not have a valid logged in connection SPXWORKR will be unable to determine your workstation name and will constantly request a new client name.

Patch 2.2-003 provides a new SPXWORKR.NLM that allows you to start SPXWORKR in end-user mode without having a logged-in connection. This patch is available electronically from CompuServe (GO LEGATO). and you should install it in your PUBLIC directory.

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C.R.

LEGATO TECHNICAL BULLETIN

101: How NetWorker Selects Files for Backup (NetWare)

PURPOSE

The purpose of this Bulletin is to explain how NetWorker selects files for backup in the DOS and NetWare environment.

GENERAL BACKUP RULES

This section describes the general backup rules.

1. A full (f) is equivalent to level 0; an incremental (i) is higher than any other level. Levels between full and incremental (1 through 10) are called differential levels.
2. The time that a save set backup starts is used as the archive time for all files in that session.
3. A file is backed up (modulo directives):
 - a) always if a full or manual save
 - b) always if the archive bit is set
 - c) if the maximum of (modify, create, archive times) > *lastbackuptime*

lastbackuptime refers to the last time the save set containing the file was backed up at a level less than the current level (or less than or equal to the current level if an incremental backup is done).

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J.K.

HOW THE ARCHIVE BIT IS USED

If a file has changed, the archive bit should be set by NetWare, and we back up the file, clear the archive bit, and set the archive time.

If we back up the file only because of rule (3c) and the archive bit is clear, we do not change the archive time. This makes it possible for differential backups to continue to base their decisions correctly using rule (3c).

If the file has not changed, but the archive bit is set, we view this as the same as a change to the file and clear the archive bit and set the archive time. This can happen if the administrator simply sets the archive bit from a workstation, or when a file is recovered or copied using some copy utilities.

On DOS workstation files, the scenario is a little different because DOS has no archive or create times. As files are changed, DOS sets the archive bit and changes the modify time (if the file is being recovered or copied however, only the archive bit is set and the modify time is unchanged).

When we do a full save, we back up all files and clear the archive bit. When we do an incremental or differential save and the archive bit is set, we do not clear the archive bit. Thus, if you change file A and do incrementals (i) on it, A will get picked up by each incremental until the next full save clears the archive bit. The reason for this is that, lacking archive times, there is no other way to ensure that differential backups work properly in DOS. Thus, if you do a level 3 followed by a level 5, the level 5 will pick up all changes.

This method is conservative in the sense of trying to preserve level semantics at all costs, thus sometimes backing up redundant data. For customers who would like to only do *fiiiiiiii* style backups, this is probably not the semantics they want, and a future release of DOSWORKER may have an option to enable the archive bit to be cleared on incremental backups.

A note: when recovering a file, the archive bit is set by the system so that a newly-recovered file will always be backed up on the next save at any level.

LEGATO TECHNICAL BULLETIN

102: NSRLIB Patch (NetWare Patch 2.2-004)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 2.2 for NetWare and offers a patch to overcome the limitation.

DESCRIPTION

If you try to recover files that had been backed up with compression you may eventually run out of memory, causing your system to freeze.

Patch 2.2-004 provides a new NSRLIB.NLM to correct this problem. This patch is available electronically from CompuServe (GO LEGATO). Install this NLM in your SYS:NSR\BIN directory or the directory where you installed NetWorker.

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J.K.

LEGATO TECHNICAL BULLETIN

103: Notes for Updating from 2.11 to 2.2 (NetWare)

PURPOSE

This Bulletin provides notes for updating NetWorker Release 2.11 for NetWare to Release 2.2.

If you are updating the NetWorker software on a live system, you may have the 1.2 Novell TSA loaded. If the 2.0 Novell TSA is also loaded, an attempt to back up your system with NetWorker may cause an ABEND.

Use the NetWare MODULES command to inspect the loaded TSAs and unload any old versions of SIDR.NLM, TSA.NLM and TSA-311.NLM before starting NetWorker and before loading the 2.0 Novell SMS modules.

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J.K.

LEGATO TECHNICAL BULLETIN

104: JBM_ENABLER Patch (UNIX Patch 4.0-002)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and a patch to correct the limitation.

DESCRIPTION

If you purchased the optional Jukebox Module and run the `jbm_enabler` program to configure the jukebox, the program may dump `core`.

Patch 4.0-002 provides a new `jbm_enabler` program and is available electronically via our request server (see below). Install this patch in the same directory where you installed all your NetWorker software (typically, `/bin/nsr`).

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J.K.

LEGATO TECHNICAL BULLETIN

105: Media Pools Patch (UNIX Patch 4.0-003)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and a patch to correct the limitation. It applies to NetWorker running on all UNIX servers.

DESCRIPTION

The server (`nsrd`) program may not sort your backups to the correct volume pool. The symptom is that data from manual backups, immediate network-wide backups, and backups from old (pre-4.0) clients may end up in the wrong volume pool. This limitation occurs most often at sites with multiple backup groups and multiple pools enabled.

Patch 4.0-003 provides a new `nsrd` program and is available electronically via our request server (see below). Install this patch in the same directory where you installed all your NetWorker software.

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Updated

R.R.

LEGATO TECHNICAL BULLETIN

106: SPARC Solaris and Exabyte Tape Drives (UNIX)

PURPOSE

This Bulletin describes a limitation to the SPARC Solaris operating system that makes a NetWorker server unable to support certain Exabyte drives. It applies to SPARC servers running the Solaris version 2.2 operating system.

DESCRIPTION

Solaris OS version 2.2 does not support Exabyte 8500c or 8505 tape drives. There is no know way to patch the operating system. The present work-around is to obtain a firmware patch from Exabyte Technical Support (800-445-7736).

Patch #	Comments
2038CE-0203.bin	Firmware to make 8500c look like an 8500
8SE-0214.bin	Firmware to make 8505 look like an 8500
8CE-0010.bin	Firmware to put back to 8500c
8SE-0010.bin	Firmware to put back to 8505

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Updated

M.E.

106: SPARC Solaris and Exabyte Tape Drives (UNIX)

The 8500c with firmware patch 8CE0010 install will still write in compressed mode. To obtain patches from Exabyte contact Kris Anthony at (303) 447-7446.

LEGATO TECHNICAL BULLETIN

107: Scanner -i Patch (UNIX Patch 4.0-004)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and a patch to correct the limitation. It applies only to NetWorker running on SCO and SPARC (Solaris) servers.

DESCRIPTION

The **scanner -i** command may not recover all the file entries when you are re-building an index. The symptom is a “interrupted system call” message when you use the **scanner** command.

Patch 4.0-004 provides a new **scanner** program and is available electronically via our request server (see below). Install this patch in the same directory where you installed all your NetWorker software (typically, */bin/nsr*).

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Updated

G.W.

LEGATO TECHNICAL BULLETIN

108: GUI Remove Volume Patch (UNIX Patch 4.0-005)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and a patch to correct the limitation. It is a limitation to the graphical user interface and applies to all UNIX NetWorker servers and clients.

DESCRIPTION

You cannot use the `Remove` command in the Volume Management window to delete a backup volume from the NetWorker collection of backup volumes.

When you use the `Mount` button to mount a tape in the jukebox, the cursor changes to a clock to indicate NetWorker is busy. After the mount operation is finished, the clock cursor does not change back to its normal state. Starting another NetWorker operation re-sets the cursor.

Patch 4.0-005 provides a new version of `networker` to correct this limitation and is available electronically via our request server (see below). Install this patch in the same directory where you installed all your NetWorker software (typically, `/bin/nsr`).

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PRINTING HISTORY

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Updated

H.M.

LEGATO TECHNICAL BULLETIN

109: NetWorker Jukebox Hint (NetWare)

DESCRIPTION

If you have a jukebox such as the Exabyte-10i and have difficulty having it recognized by NetWorker, bring down the NetWorker server, turn the power off to both the jukebox and the server, then turn the power on to the server *before* turning the power on to the jukebox.

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Updated

J.K.

LEGATO TECHNICAL BULLETIN

110: NSRADMIN Patch for SCO Servers (UNIX Patch 4.0-006)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SCO servers running NetWorker.

PROBLEM

If you use the `nsradmin` program to configure the server, the cursor does not move to the next field when you use the [Tab] key. If you ignore the cursor and enter text into the field, the text appears in the correct location even though the cursor position is wrong.

SOLUTION

Patch 4.0-006 gives you a new version of `nsradmin` which corrects this limitation. This patch is available electronically from our request server or CompuServe (see below).

Legato Technical Bulletins are available electronically from:

- World Wide Web (<http://www.legato.com>)
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H.M.

LEGATO TECHNICAL BULLETIN

111: Tapeexercise and Exabyte 8500 Drives (UNIX Patch 4.0-007)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris) servers running NetWorker.

PROBLEM

If you use the **tapeexercise** program to test your tape drive, you will see the following error message:

```
./tapeexercise: could not open 'device_name' for reading &  
writing, errno xx, Device busy
```

SOLUTION

Patch 4.0-007 gives you a new version of **tapeexercise** which corrects this limitation. This patch is available electronically from our request server or CompuServe (see below). Install it in the same location as the NetWorker software.

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G.W.

LEGATO TECHNICAL BULLETIN

112: Jukebox Installation Patch (UNIX Patch 4.0-008)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 and 4.0.1 for UNIX and offers a patch to solve the problem. It applies to the following NetWorker SPARC servers:

Server	Operating system
sun4d	Solaris 2.2
sun4d	Solaris 2.3
sun4	Solaris 2.3
sun4c	Solaris 2.3
sun4m	Solaris 2.3

PROBLEM

You cannot install the jukebox driver on the servers listed above.

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R.R., A.G.

SOLUTION

Patch 4.0-008 gives you a new version of the *sjdriver* directory and all the programs in the directory. This patch is available electronically from our request server or CompuServe (see below). Install it in */nsr*.

LEGATO TECHNICAL BULLETIN

113: NetWorker Release 4.x for UNIX Patches (UNIX)

PURPOSE

This bulletin lists the current NetWorker release 4.x patches for the UNIX environment, and the Technical Bulletins that describe each problem in detail.

Legato provides these patches as a quick interim response to reported problems with NetWorker. These problems have not been widely reported.

Since the patches have not been through quality assurance testing, we recommend they be installed only in sites experiencing symptoms identical or similar to those described in the bulletins.

The patches and their related Technical Bulletins are available electronically from:

- World Wide Web (<http://www.legato.com>)
- CompuServe (GO LEGATO)
- <ftp.legato.com>, Internet address 137.69.200.1 (log in as *anonymous*)
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Use the machine architectures names listed in the following table when you request a patch through the request server or *ftp*.

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V.N.W.

113: NetWorker Release 4.x for UNIX Patches (UNIX)

Patch ID#	Architecture	Technical Bulletin #	Description
4.0-001	ibmrs6000, sun4, sco	096	NetWorker nsrmmd Patch
4.0-002	ibmrs6000, sun4	104	NetWorker jbm_enabler Patch
4.0-003	ibmrs6000, sun4, sco	105	NetWorker nsrd Patch for Media Pools
4.0-004	sco	107	NetWorker scanner -i Patch
4.0-005	ibmrs6000, sun4, sco	108	GUI Remove Volume Patch
4.0-006	sco	110	NetWorker nsradmin Patch for SCO Servers
4.0-007	sun4	111	NetWorker tapeexercise Patch (Exabyte 8500 Drives)
4.0-008	sun4	112	Jukebox Installation Patch
4.0-009	ibmrs6000, sun4, sco	114	NetWorker nsrmmdbd (<i>localhost</i>) Patch
4.0-010	ibmrs6000, sun4, sco	115	NetWorker savegroup -p Patch
4.0-011	ibmrs6000, solaris, sun4, sco	117	NetWorker scanner Patch
4.02-01	solaris	130	SPARC (Solaris) Jukebox Driver – OBSOLETE
4.02-01	ibmrs6000, solaris, sun4	165	Savegroup Exceeds Parallelism Patch
4.02-02	ibmrs6000, solaris, sun4, sco	166	NetWorker nsrindexd Patch
4.02-03	ibmrs6000, solaris, sun4, sco	167	NetWorker nsrmmdbd Patch
4.02-04	ibmrs6000, solaris, sun4, sco	169	NetWorker nsrd Patch
4.02-05	ibmrs6000, solaris, sun4, sco	170	NetWorker nsrjb Patch for Multiple Media Requests
4.02-06	ibmrs6000, solaris, sun4, sco	178	NetWorker recover Patch
4.02-07	sco	179	NetWorker SCO Server Hang Patch
4.02-08	ibmrs6000, solaris, sun4, sco	180	NetWorker savefs Patch
4.02-09	ibmrs6000, solaris, sun4, sco	181	NetWorker nsrmmd Patch
4.02-010	solaris, sun4	189	NetWorker nsrexecd Patch
4.02-011	ibmrs6000, solaris, sun4, sco	206	NetWorker nsrd Patch
4.02-012	ibmrs6000	213	NetWorker savefs Patch

Patch ID#	Architecture	Technical Bulletin #	Description
4.1-001	ibmrs6000, solaris, sun4	172	NetWorker nsrjb Patch - OBSOLETE
4.1-002	ibmrs6000, solaris, sun4	173	NetWorker nsrd Patch - OBSOLETE
4.1-003	ibmrs6000, solaris, sun4	174	NetWorker nsrindexasm Patch - OBSOLETE
4.1-004	ibmrs6000, solaris, sun4	175	NetWorker nsrmmmd Patch
4.1-005	ibmrs6000, solaris, sun4	188	NetWorker nsrjb and jbxercise Patches
4.1-006	ibmrs6000, solaris, sun4	198	NetWorker SAVE ASM Mandatory Lock Patch
4.1-007	ibmrs6000, solaris, sun4	199	NetWorker nsrd Patch
4.1-008	ibmrs6000	200	NetWorker nsrmmmd Patch
4.1-009	ibmrs6000, solaris, sun4	203	Timeout on nsrjb During EXB-120 Inventory
4.1-010	ibmrs6000, solaris, sun4	205	NetWorker nsrd Patch
4.1-011	ibmrs6000, solaris, sun4	207	NetWorker ansrd Patch
4.1-012	ibmrs6000, solaris, sun4	220	NetWorker asavegroup and save Patch
4.13-001	ibmrs6000, solaris, sun4	225	NetWorker nsrd, nsrexecd, and nsrindexd Patch
4.13-002	ibmrs6000, solaris, sun4	226	NetWorker psc Driver Patch for ADIC VLS
4.13-003	ibmrs6000, solaris, sun4	228	NetWorker ansrd Patch
4.13-004	solaris	247	NetWorker nwrecover Patch
4.13-005	solaris	248	NetWorker nsrmmmd and scanner Patch
4.13-006	ibmrs6000, solaris, sun4	249	NetWorker nsrmmmd and nsrd Patch
4.13-007	ibmrs6000	250	NetWorker psc1pp Patch
4.13-008	ibmrs6000, solaris, sun4	251	NetWorker nsrd Patch
4.13-009	decsystem, solaris, sun4	252	NetWorker retrieve Enhancements Patch
4.13-010	hp-ux, solaris, sun4	253	NetWorker mminfo Patch
4.2-001	ibmrs6000, solaris, sun4	244	NetWorker nsrck and nsrindexasm Patch
4.2-002	ibmrs6000, solaris, sun4	263	NetWorker nsrjb Patch
4.2-003	ibmrs6000, solaris, sun4	264	NetWorker savegrp Patch
4.2-004	ibmrs6000, solaris, sun4	270	NetWorker Jumbo Patch
4.2-005	ibmrs6000, solaris, sun4	271	NetWorker nwrecover, recover, and uasm Patch
4.2-006	ibmrs6000, solaris, sun4	282	NetWorker save Patch

LEGATO TECHNICAL BULLETIN

114: Localhost Patch (UNIX Patch 4.0-009)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris), SCO, and RS/6000 servers running NetWorker.

PROBLEM

On some systems you cannot perform operations that update the media database, because the IP loopback address does not always get resolved to the name *localhost*. This is most evident on Domain Network Service (DNS) systems, where the address 127.0.0.1, the loopback address, often resolves to *localhost.your.full.domain* instead of just *localhost*. This limitation does not affect versions of NetWorker before Release 4.0.

Examples of operations that fail are labeling a tape or starting a backup (starting a backup allocates a new save set id, which causes NetWorker to update the media database).

This limitation causes a message like this:

```
Access violation - non-local client, or perhaps /etc/hosts
problem?
```

to be sent to */nsr/logs/daemonlog* whenever you try to perform a NetWorker operation that updates the media database. If NetWorker is completing a backup, the message

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D.C.

114: Localhost Patch (UNIX Patch 4.0-009)

```
save: error, cannot create new ss record (-1)
```

appears in your **save** (or **savegroup** completion) output.

You may be able to work around the problem by using **nsradmin** to add a name of the form *localhost.your.full.dom.ain* (for example, *localhost.mars.com*), to the NetWorker server's client resource *aliases* hidden attribute.

SOLUTION

Patch 4.0-009 gives you a new version of **nsrmmdbd** which corrects this limitation. This patch is available electronically from our request server or CompuServe (see below). Install it in the same location as the NetWorker software.

LEGATO TECHNICAL BULLETIN

115: Savegroup -p Patch (UNIX Patch 4.0-010)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris), SCO, and RS/6000 servers running NetWorker.

PROBLEM

The **savegroup** command may dump *core* when probing its clients for filesystem information. This problem occurs only if you have NetWorker clients with full domain names (for example, a client whose name is "mars.com" instead of "mars"). If you do not have clients with full domain names, this limitation will not affect you. If you do have clients with full domain names, even if **savegroup** does not dump *core*, memory may still be corrupted.

If this problem is affecting you, you will not receive **savegroup** completion mail, and the **savegroup -p <groupname>** command will dump *core*, where *<groupname>* is the name of a group containing such a client.

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D.C.

SOLUTION

Patch 4.0-010 gives you a new version of **savegroup** which corrects this limitation. This patch is available electronically from our request server or CompuServe (see below). Install it in the same location as the NetWorker software.

LEGATO TECHNICAL BULLETIN

116: NetWare Resource Constraints (NetWare)

PURPOSE

This Technical Bulletin describes a work-around to address a common NetWare resource constraint.

PROBLEM

If you notice huge amounts of packet receive buffers being consumed during a backup, repair index or compress index operation, this could be due to routing packets not being processed by NetWare during periods of heavy CPU load. Novell has addressed this issue in release 4.0.1, but there is no perfect solution in 3.12 or 3.11.

If this happens to you, here are some steps you can take:

1. Set maximum packet receive buffers to 2000 (the maximum).
Note that you should be prepared to have this much memory available (if your packet receive buffer size is 4202, this will be approximately 8 MB; if your packet receive buffer size is 1504, this will be approximately 3 MB.)
2. Consider removing the backup server from the network during a repair index or compress index operation. If you do this, make sure you plug in a network terminator.
3. If the problem occurs during backups, reduce the parallelism and make sure that no more than one backup group is running at a time.

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J.K.

LEGATO TECHNICAL BULLETIN

117: Scanner Patch (UNIX Patch 4.0-011)

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0 for UNIX and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris), SCO, and RS/6000 servers running NetWorker.

PROBLEM

If you used the **scanner** command to recover the index entries for a backup volume you previously removed, the output from the **mminfo** command may be different for some save sets after the volume has been removed from the indexes and scanned in. The flags on the original save sets in most cases were *cb* (complete and browsable), while the flags on the scanned save sets occasionally say *ca* (complete and aborted). The size of the save set may also vary.

Some save sets are not recoverable after the tape has been scanned in. The **recover** command may list all of the files on the client's screen without recovering any of them. On the server, this message may appear in the Messages panel of the Main window:

```
"media emergency: save set high too large"
```

In addition, you may start a recovery and see this message:

```
"recover: Didn't recover requested file 'file_name'"
```

for all of the files that should have been recovered.

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R.R., L.S.

SOLUTION

Patch 4.0-011 gives you a new version of **scanner** which corrects this limitation. This patch is available electronically from our request server or CompuServe. Install it in the same location as the NetWorker software.

If you are running Release 4.0.1, this patch is already included in your software version.

LEGATO TECHNICAL BULLETIN

118: Upgrading NetWorker Products (UNIX)

PURPOSE

This Bulletin describes how to use your enabler code to upgrade NetWorker SingleServer to NetWorker, or NetWorker to NetWorker Advanced, or NetWorker SingleServer to NetWorker Advanced.

INSTRUCTIONS

If you are already running a NetWorker server product and are upgrading to a more powerful NetWorker product, you will have purchased a new enabler code.

To upgrade your new NetWorker server product, use the `nsrcap` command with the `-u` flag (for *upgrade*). Follow these steps:

1. Find the NetWorker or NetWorker Advanced enabler code in your package.
2. Become *root* on the NetWorker server.
3. Use the `nsrcap -v -u` command at the system prompt to enter the enabler code:

```
marsh# nsrcap -v -u xxxxxx-xxxxxx-xxxxxx
```

where you substitute xxxxxx with your 18-digit code number.

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J.S.

LEGATO TECHNICAL BULLETIN

119: Changing NetWorker Fonts and Colors (UNIX)

PURPOSE

This Technical Bulletin describes how to change the fonts, background, and foreground colors. Please note that NetWorker does not merge the contents of the *app-defaults* directory and fallback resources; it replaces one with the other.

SETTING COLORS

To change (or set) the background and foreground colors, create a file called *Networker* in the */usr/lib/X11/app-defaults* directory, and add the following lines to the file:

```
Networker*XmLabelWidget.marginWidth: 1
Networker*XmLabelWidget.marginHeight: 1

Networker*fontList: lucidasanstypewriter-12,
Networker*XmLabelGadget.fontList: lucidasanstypewriter-bold-
12,

Networker*XmList.visibleItemCount: 5
Networker*XmText.rows: 6
Networker*XmText*translations: #override \n
Networker*XmTextField*translations: #override \n
Networker*Statistics*XmScale*translations: #replace \n

Networker*background: color
Networker*foreground: color
```

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V.N., H.M.

119: Changing NetWorker Fonts and Colors (UNIX)

```
mrecover*background: color
mrecover*foreground: color
mbackup*background: color
mbackup*foreground: color
```

For example:

```
Networker*background: yellow
Networker*foreground: pink
mrecover*background: yellow
mrecover*foreground: pink
mbackup*background: yellow
mbackup*foreground: pink
```

CHANGING FONTS

To change (or set) the fonts, add lines to the file called “Networker” in the `/usr/lib/X11/app-defaults` directory specifying the type of font you want. For example:

```
Networker*fontList: lucidasanstypewriter-10
Networker*XmLabelGadget.fontList: lucidasanstypewriter-bold-10
```

Please note that this is only an example and you need to create your own font definition.

EXAMPLES

This section contains examples of Xresource Fonts. These apply only to NetWorker Release 4.0 or later.

Following is the list of resources that NetWorker defaults to if no other resources are defined. If you add the following to X resources, or an app-defaults file (*Networker*), the fonts will be corrected. Please refer to the X-Windows documentation for more information on fonts.

To revise the X-window resource called “fontlist” follow these steps:

1. Add *n*fontlist* to the `.Xdefaults` file, where *n* is *Networker*, *mbackup*, or *mrecover*. You need an entry for each one. For example, *mbackup*fontlist*.
2. Add a value for an available font after the entry.
3. Enter the `xrdb -merge .Xdefaults` command at the system prompt.

There are a lot of other fonts that can be changed.

All the resources should begin with [*Networker, mbackup, mrecover*]*fontlist to avoid setting fonts for all X applications. For example: *Networker*fontlist, mbackup*fontlist, mrecover*fontlist.*

```

/*
* generic resource set:
*/
*fontList:--courier-medium-r-*--*-120-75-75-*--*-iso8859-1
*KeylistLab.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*AttrLab.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*RowCol*XmlLabelGadget.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1

/*
* resources for console window:
* All labels in the Console window are of Console_label class.
* All the list (Devices, Sessions, Messages, Pending) are Console_list.
*/
*Label*XmlLabelGadget.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1
*Jukebox Labeling*XmlLabelGadget.fontList:
--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Label_Vol_label.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1
*Devices.fontList:--courier-medium-r-*--*-120-75-75-*--*-iso8859-1

/*
* resources for volume window:
*/
**Set Location*XmlLabelGadget.fontList:
--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*label.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*list.fontList:--courier-medium-r-*--*-120-75-75-*--*-iso8859-1
*title.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1

/*
* resources for schedule window:
*/
*Schedules*XmlLabelGadget.fontList:
--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*S_Name.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Period_label.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Month_label.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1

/*
* resources for index windows:
*/
*Indexes*Clients.fontList:
--courier-medium-r-*--*-120-75-75-*--*-iso8859-1
*Indexes*Client_label.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1

```

119: Changing NetWorker Fonts and Colors (UNIX)

```
*Indexes*Saveaset_label.fontList:
--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Indexes*Saveasets.fontList:
--courier-medium-r-*--*-120-75-75-*--*-iso8859-1
*Indexes*Name.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Size.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Used.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Cycles.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Progress.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
*Server_label.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-1
/*
* resources for jukebox windows:
*/
*Jb_mount_server_l.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1
*Jb_mount_device_l.fontList:--courier-bold-r-*--*-120-75-75-*--*-
iso8859-1
*Jb_mount_vol_l.fontList:--courier-bold-r-*--*-120-75-75-*--*-iso8859-
1
*Jb_mount_vol.fontList:--courier-medium-r-*--*-120-75-75-*--*-iso8859-
1
*Jb_vol_list_hdrs.fontList:--courier-medium-r-*--*-120-75-75-*--*-
iso8859-1
*Jb_vol_list.fontList:--courier-medium-r-*--*-120-75-75-*--*-iso8859-1
```


LEGATO TECHNICAL BULLETIN

120: Updating to NetWorker Release 4.0.1 (UNIX)

PURPOSE

This Technical Bulletin describes an error you may see when updating your NetWorker software to Release 4.0.1. It applies to NetWorker on any UNIX platform.

DESCRIPTION

While updating to NetWorker 4.0.1, the installation script may display the following error message:

```
/tmp/nsr-extract savegroup does not have right permissions.  
Expected mode bits of `rws-x-x', but found this:  
`-rwxr-xr-x savegroup'
```

SOLUTION

Log in as *root*, and use the UNIX **chmod** command to change the *savegroup* mode:

```
chmod 4711 savegroup to setuid to `-rws--x--x'
```

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V.N.

LEGATO TECHNICAL BULLETIN

121: Moving a NetWorker Server (UNIX)

PURPOSE

This Technical Bulletin describes how to move NetWorker from one server to another one. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3 or earlier.

Follow the steps below:

1. Using NetWorker, perform a full backup of all the filesystems on the old NetWorker server.
2. Shut down the NetWorker daemons on the old server, using the **nsr_shutdown -a** command.
3. Copy the entire */nsr* directory tree from the old server to the new server. (Note: Make a **tar** tape of the */nsr* directory and reload it on the new server. If */nsr* is a symbolic link on the old server, make sure the new server has the */nsr* symbolic link setup also.)
4. Shut down your old server, and disconnect all the backup devices.
5. Shut down the new machine, add the hardware devices to the new server, and restart both machines. Start up the old machine first, then the new one.
6. Using the NetWorker distribution media, load the NetWorker software on the new server.
7. Use the **nsr_ize -i -s** command to install NetWorker on the new server.

NOTE: If you have a jukebox, then do not start the NetWorker daemons. Refer to the instructions in the *Installation and Maintenance Guide* for jukebox device driver installation and testing.

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S.T.

121: Moving a NetWorker Server (UNIX)

Since you created a new host, the index entry for the new host has to be correctly defined before you start the NetWorker daemons. There are two ways to correct the index entry:

- Name the new server with the same hostname as the old server at the operating system level before you modify client resources.
- Create a new hostname for the new server with the same configuration choices as the old server.

To create a new hostname for the new server, follow these steps:

1. Create a new hostname for the new server with the same configuration choices as the old server.
2. Delete the hostname entry for the old server.
3. Shut the down the NetWorker daemons.

```
# nsr_shutdown -a
```

4. Change to the directory containing the old server index entry.

```
# cd /nsr/index
```

You will also see an entry for the new server hostname. This entry is empty.

5. Delete the entry for the new server hostname. For example:

```
# rmdir new_hostname
```

Note: This entry must be removed or the next step will create a subentry for the new server instead of the correct entry.

6. Rename the old index directory to the new server hostname.

```
# mv old_hostname new_hostname
```

The NetWorker daemons should start up on the new server (make *sure* you have shut down NetWorker on the old server!).

You should see the following messages on the new server:

```
new_server syslog: NetWorker Server: (notice) started
new_server syslog: NetWorker Registration: (notice) invalid auth codes
detected.
new_server syslog:
new_server syslog: The auth codes for the following licenses enablers are
now invalid.
new_server syslog: The cause may be that you moved the NetWorker server
to a new computer.
new_server syslog: You must re-register these enablers within 15 days to
obtain new codes.
new_server syslog:
new_server syslog: License enabler #xxxxxxx-xxxxxxx-xxxxxxx (NetWorker
Advanced/10)
```

Re-register your new NetWorker server. After moving NetWorker from one system to another, you have 15 days to register the new server with Legato.

To re-register your new server, follow these steps:

1. Open the Registration window by selecting the Registration command in the Administration pull-down menu of the Main window.
2. Select Tabular from the View pull-down menu to display the tabular view of the window.
3. Select Print from the File pull-down menu and enter a print command to send a copy of the Registration window to a printer.
4. FAX this printout along with your name, company, and telephone number to Legato Customer Support at (415) 812-6031.

Legato will then send you a Legato NetWorker Host Transfer Affidavit which you must complete and return to Legato. Once a signed affidavit is returned to Legato, you will receive a new authorization code, which you must enter into the Auth code field of the Registration window.

Finally, follow these steps after successfully moving your server:

1. Verify that all the clients are included in the scheduled backups.
2. Use the Recover window to make sure all the client indexes are visible and therefore “recoverable.”
3. Back up the indexes on the new server by entering **saveindex -l full** at the system prompt. (Or, if you prefer, perform a full backup of the new server as soon as possible.)

If you want to set up the old server as a client, first run **nsr_ize -r -s** on the old server to remove all the NetWorker software, and then run **nsr_ize -i -c** to install the NetWorker client software.

LEGATO TECHNICAL BULLETIN

122: Installation Notes – NetWorker on Sun4 Servers (UNIX)

PURPOSE

This Technical Bulletin describes an error message you may see during an installation of NetWorker on a Sun4 system and provides a solution.

PROBLEM

During installation, you may see an error message similar to the one shown below after running the `nsr_ize -i -s` command:

```
NetWorker(TM) - Release 4.0
Copyright (c) 1990-1993 Legato Systems, Inc. All rights
reserved.
This product includes software developed by the University of
California, Berkeley and its contributors.

NetWorker is not supported for server configurations on sun4
machines.

nsr_ize is about to install NetWorker client software on
client machine `machine_name'.
```

SOLUTION

The error message indicates that the NetWorker daemon `nsrd` is missing from the architecture directory (for example, `/usr/tmp/extract/sun4`).

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V.N.

The `nsr_ize` command determines if the product name is supported on the server architecture by checking if `nsrd` exists in the software extraction directory. If `nsrd` exists, the installation script installs NetWorker as a server, but if `nsrd` does not exist, a client installation takes place.

Verify that `nsrd` exists in the directory where you have extracted the NetWorker software from the distribution media. If it does not exist, re-extract the NetWorker software from the distribution media. Then use the `ls` command to make sure `nsrd` is present in the directory before running the `nsr_ize` command to install the software on the server.

LEGATO TECHNICAL BULLETIN

123: NetWorker, NetWare Version 2.2 Patches (NetWare)

PURPOSE

This Technical Bulletin describes Patch 2.2-005 and applies to all NetWare servers running NetWorker 2.2. This patch includes the previously-released patches 2.2-001 through 2.2-004. You may download this patch from CompuServe (PN22.005), It is a self-extracting compressed file which unzips into several patches which address previous limitations to NetWorker. These limitations are described in the "Limitations Fixed" section below.

AVAILABILITY

This patch is available on CompuServe in the PC Ven D Forum, Legato Systems Section. To get to this location enter GO LEGATO from any CompuServe prompt. The patch is also available through alternative means. Contact Legato Technical Support for more information. Many of the patches that come as a part of PN22.005 are also available as single files on CompuServe. If you are in need of a particular file for a fix then you may want to browse the available files on-line to determine if the specific patch you want is available.

EXTRACTING THE PATCHES

From the DOS command line, enter **nn01** to extract the README and the patches. The following files will be extracted:

```
readme
spxworkr.exe
smsworkr.exe
savegrp.nlm
tsa311.nlm
```

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D.D., B.W.

123: NetWorker, NetWare Version 2.2 Patches (NetWare)

```
nwscsi.nlm  
rap.nlm  
networkr.nlm  
nsrlib.nlm  
indexd.nlm  
nwstart.nlm  
tsa312.nlm  
clib.nlm
```

INSTALLING THE PATCHES

Follow the steps below to install the patches:

1. From a DOS machine, log in to the NetWorker server as *supervisor*.
2. Change directories to the location where you installed the NetWorker software and the NetWare system software. Usually this is SYS:\NSR\BIN for NetWorker *.nlm files, SYS:\SYSTEM for NetWare *.nlm files (TSA31X and CLIB) and SYS:\PUBLIC for *.exe files. The TSA31X.NLM should be copied to two place: SYS:\SYSTEM and SYS:\SYSTEM\TSA. (Note: this is for a default installation only – if you installed these in a different location, you will need to install the patches in the same location.)

3. Disable the “read-only” flags:

```
System> FLAG *.* -RO
```

4. Manually copy the needed patches over to the directory that contains the old versions. If you are prompted to “Overwrite (Yes/No/All)?” enter [a] for “All.”

5. Change the flags back to “read-only.”

```
System> FLAG *.* +RO
```

The next time NetWorker is invoked on the server, it will use the new patches.

LIMITATIONS FIXED

The table below lists each file in the patch and the limitation it fixes.

File	Previous limitation
NSRLIB.NLM and RAP.NLM	Solves a problem with authentication errors when run against a UNIX machine using NetWare for UNIX (portable NetWare)
NSRLIB.NLM (Note: NSRLIB.NLM and RAP.NLM must be at the same revision level – 2.21)	Solves a problem where files that have been backed up with compression, when recovery is run on them it will cause the server to possibly run out of memory and cause your system to freeze.
SAVEGRP.NLM	Solves a problem with Abends that may occur when using group names greater than or equal to eight characters.

File	Previous limitation
NWSCSI.NLM	Solves a problem with rare Abends which may occur while using some non-Adaptec ASPI drivers.
INDEXD.NLM	Prevents the media index from causing indexes to be deleted when NSRIM runs or when indexes are compressed.
SMSWORKR.EXE and SPXWORKR.EXE	Solves a problem with files of a specific size or multiple thereof (65536kb) from being backed up. Solves a problem with remote administration. Permits use as an end user without having a logged in connection unless using VLM-style DOS requesters.
TSA311.NLM and TSA312.NLM	Solves a problem with sparse files being properly backed up and recovered. (Beta code from Novell)
CLIB.NLM	Required for use with TSA311.NLM. (Beta code from Novell)

LEGATO TECHNICAL BULLETIN

124: X Window Key Symbols (UNIX)

PURPOSE

This Technical Bulletin provides a file that defines key symbols for the Motif window interface.

PROBLEM

While running NetWorker (UNIX version), you may see messages similar to the following on your X Windows:

```
Warning cannot convert string "key Insert Char"  
Warning cannot convert string "key Delete Char"  
Warning cannot convert string "key Insert Line"  
Warning cannot convert string "key Delete Line" to type  
virtual binding
```

Not all of these keysyms exist on all systems. You need to add the ones specified by the error message. For example, if you see the message:

```
Warning cannot convert string "key Insert Char"
```

you need to add "InsertChar" to the *XkeysymDB* file.

The file */usr/lib/X11/XKeysymDB* defines Key Symbols for Motif. The above messages mean that this file has probably changed for X11R5 and no longer defines the older R4.

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SOLUTION

You need to edit `/usr/lib/X11/XKeysymDB` and add the entries you need for the missing keysyms to the file. Following is an example of an `XKeysymDB` file.

OSF keysyms

```
!  
osfBackSpace      : 1004FF08  
osfInsert         : 1004FF63  
osfDelet          : 1004FFFF  
osfCopy           : 1004FF02  
osfCut            : 1004FF03  
osfPaste          : 1004FF04  
  
osfAddMode        : 1004FF31  
osfPrimaryPaste  : 1004FF32  
osfQuickPaste    : 1004FF33  
  
osfPageUp        : 1004FF41  
osfPageDown      : 1004FF42  
  
osfEndLine       : 1004FF57  
osfBeginLine     : 1004FF58  
  
osfActivate      : 1004FF44  
  
osfMenuBar       : 1004FF45  
  
osfClear         : 1004FF0B  
osfCancel        : 1004FF69  
osfHelp          : 1004FF6A  
osfMenu          : 1004FF67  
osfSelect        : 1004FF60  
osfUndo          : 1004FF65  
  
osfLeft          : 1004FF51  
osfUp            : 1004FF52  
osfRight         : 1004FF53  
osfDown          : 1004FF54
```

DEC specific keysyms

```
!  
DRemove          : 1000FF00
```

HP specific keysyms

```

!
Reset          : 1000FF6C
System         : 1000FF6D
User           : 1000FF6E
ClearLine      : 1000FF6F
InsertLine     : 1000FF70
DeleteLine     : 1000FF71
InsertChar     : 1000FF72
DeleteChar     : 1000FF73
BackTab        : 1000FF74
KP_BackTab     : 1000FF75
hpModelock1    : 1000FF48
hpModelock2    : 1000FF49

XK_mute_acute   : 0x100000a8
XK_mute_grave   : 0x100000a9
XK_mute_asciicircum : 0x100000aa
XK_mute_diaeresis : 0x100000ab
XK_mute_asciitilde : 0x100000ac
XK_lira         : 0x100000af
XK_guilder      : 0x100000be
XK_Ydiaeresis   : 0x100000ee
XK_IO           : 0x100000ee
XK_longminus    : 0x100000f6
XK_block        : 0x100000fc

```

Apollo specific keysyms

```

!
apLineDel      : 1000FF00
apCharDel      : 1000FF01
apCopy         : 1000FF02
apCut          : 1000FF03
apPaste        : 1000FF04
apMove         : 1000FF05
apGrow         : 1000FF06
apCmd          : 1000FF07
apShell        : 1000FF08
apLeftBar      : 1000FF09
apRightBar     : 1000FF0A
apLeftBox      : 1000FF0B
apRightBox     : 1000FF0C
apUpBox        : 1000FF0D
apDownBox      : 1000FF0E
apPop          : 1000FF0F

```

124: X Window Key Symbols (UNIX)

```
apRead      : 1000FF10
apEdit      : 1000FF11
apSave      : 1000FF12
apExit      : 1000FF13
apRepeat    : 1000FF14
apKP_parenleft : 1000FFA8
apKP_parenright : 1000FFA9
```

Apollo-specific keysyms as they were in the share-mode server. These are needed for compatibility with old Apollo clients.

```
!
LineDel     : 1000FF00
CharDel     : 1000FF01
Copy        : 1000FF02
Cut         : 1000FF03
Paste       : 1000FF04
Move        : 1000FF05
Grow        : 1000FF06
Cmd         : 1000FF07
Shell       : 1000FF08
LeftBar     : 1000FF09
RightBar    : 1000FF0A
LeftBox     : 1000FF0B
RightBox    : 1000FF0C
UpBox       : 1000FF0D
DownBox     : 1000FF0E
Pop         : 1000FF0F
Read        : 1000FF10
Edit        : 1000FF11
Save        : 1000FF12
Exit        : 1000FF13
Repeat      : 1000FF14
KP_parenleft : 1000FFA8
KP_parenright : 1000FFA9
```


LEGATO TECHNICAL BULLETIN

125: Prestoserve Installation Notes 1 (Prestoserve)

PURPOSE

This Technical Bulletin describes a problem you may encounter while installing Prestoserve and provides a solution. It applies to IBM RS/6000 servers.

PROBLEM

There are two phases to installing Prestoserve. You must complete Part 1 successfully before you can continue with Part 2.

After finishing Part 1 of the installation, you need to shut down the system, install the Prestoserve board, and reboot. After rebooting, you need to enter the `prinstall` command to continue with Part 2 of the installation. If you see the following message at this point, you have a problem:

```
Please reboot to configure the Prestoserve adapter.
```

You may also notice that `/dev/pr0` is in the `<defined>` instead of `<available>` state.

CAUSE

The probable cause is the ODM attribute bug which shows up on systems with scarce resources (this shows on most systems running 3.2.5). In Prestoserve Release 1.0 the attribute "size" is of type "M" instead of "R"

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which tries to grab memory and may cause the configuration method to fail at boot time. The *prfile* is created only on a successful completion of configuration method at boot time. These values can be edited using *odme*.

WORKAROUND

In Prestoserve Release 1.0 the type of attribute “size” in the PdAt has been assigned an incorrect value of “M”. This usually leads to failure of Prestoserve to come up “available” after Part 1 of the installation (after rebooting).

Follow the procedure below to fix this problem after you have completed Part 1 of the installation.

1. Enter the following command at the system prompt:

```
odmget -q "uniquetype = adapter/mca/pr" PdAt > /tmp/odm1
```

2. Edit the file */tmp/odm1* and modify the stanza *PdAt* as follows:

```
uniquetype = "adapter/mca/pr"  
attribute = "size"  
deflt = "0x100000"  
values = "0x100000"  
width = "0x100000"  
type = "M"  
generic = "D"  
rep = "nl"  
nls_index = 2
```

and change width, type and rep to

```
width = ""  
type = "R"  
rep = "n"
```

3. Save the file.
4. Enter the following at the system prompt:

```
odmdelete -o CuAt -q "name = pr0"  
odmdelete -o CuDv -q "name = pr0"  
odmdelete -o PdAt -q "uniquetype = adapter/mca/pr"  
odmadd /tmp/odm1
```

5. Reboot the system and it should come back with *pr0* in the *<available>* state.
6. Enter the *prinstall* command to complete Part 2 of the Prestoserve installation.

LEGATO TECHNICAL BULLETIN

126: Prestoserve Installation Notes 2 (Prestoserve)

PURPOSE

This Technical Bulletin describes a problem you may encounter while installing Prestoserve and provides a solution. It applies to IBM RS/6000 servers which have two Prestoserve boards installed.

PROBLEM

There are two phases to installing Prestoserve. You must complete Part 1 successfully before you can continue with Part 2.

You may notice a system hang during Part 1 of the installation.

Part 1:

Install the card according to the manual as follows:

1. Install the software using SMIT.
2. Power down the system and install the hardware.
3. Run the `prinstall` program.
4. Reboot the system when you are prompted to "Please reboot to configure prestoserve adapter"

If you have two Prestoserve boards, the system may hang on "905" during system boot, and you may see an error message similar to:

```
"could not install because prfile does not exist. LED
```

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```
display on 905"
```

CAUSE

Two Prestoserve boards in one fileserver does not make the fileserver more efficient.

WORKAROUND

Follow the procedure below to fix this problem after you have completed Part 1 of the installation.

1. Completely de-install Prestoserve.
2. Run the command `/etc/presto.cleanup`.
3. Enter the following commands at the system prompt:

```
'odmdelete -o CuDv -q "name = `pr1`"'
'odmdelete -o CuAt -q "name = `pr1`"'
'odmdelete -o CuVPD -q "name = `pr1`"'
```

4. Run the `diag -a` command.
5. Reboot the system.
6. Re-install Prestoserve.

NOTE: Make sure that you use `pr0`, and **NOT** `pr1`.

LEGATO TECHNICAL BULLETIN

127: Installing NetWorker on Hewlett-Packard Clients (UNIX)

PURPOSE

This Technical Bulletin describes a problem with the installation script that installs NetWorker on an HP client and provides a work-around. It applies only to NetWorker releases 4.0 and 4.01 for UNIX.

PROBLEM

A bug in the installation program `nsr_ize` may cause one of the following problems:

- The command `nsr_ize -i -c` will not copy the start-up command from `nsrexecd` into the `/etc/rc` file, so the client will not have the advantage of the security features that this program supports.
- The command `nsr_ize -r` removes the `/etc/rc` file.

SOLUTION

Follow the steps below before you install the NetWorker client software:

1. Find the `nsr_ize` installation script. It will be in the temporary directory you created to extract the software (usually `/usr/nsr_extract`).
2. Use a text editor (for example, `vi`) to set the variable "svrc" to "n" in the block of script that sets HP-specific variables.

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D.B.

The block starts at line 195 in the 4.0 version of `nsr_ize`:

```
if [ -f /hp-ux -o X"$bin_type" = Xs200 ]; then
if [ X"$bin_type" = Xs200 ]; then
    myarch=hp-mc68k
else
    myarch=hp-pa
fi
hpux=y
fmt="cat"
no_rewind_example=/dev/rmt/0hn
rewind_example=/dev/rmt/0h
bsd_echo=false
default_bin=/usr/local/bin
```

Insert a statement "`svrc=n`" in the block of code after the "fi". For example:

```
if [ -f /hp-ux -o X"$bin_type" = Xs200 ]; then
if [ X"$bin_type" = Xs200 ]; then
    myarch=hp-mc68k
else
    myarch=hp-pa
fi
hpux=y
svrc=n
fmt="cat"
no_rewind_example=/dev/rmt/0hn
rewind_example=/dev/rmt/0h
bsd_echo=false
default_bin=/usr/local/bin
```

If you already installed the software, and you want to place the `nsrexecd` start-up in `/etc/rc`, you may do so. Follow the steps below.

IMPORTANT: Make sure you use the modified `nsr_ize` file for both steps.

1. Remove the NetWorker client software with the command `./nsr_ize -r`.
2. Re-install with the command `./nsr_ize -i -c`.

LEGATO TECHNICAL BULLETIN

128: Correcting Poor Tape Drive Performance (UNIX)

PURPOSE

This Technical Bulletin provides a work-around if you are experiencing very poor (for example, 9 KB per second) transfer rates on a WangDAT tape drive connected to a SPARC (SunOS 4.1.X) NetWorker server. You probably have a kernel that is not configured to support your tape drive in buffered mode.

SOLUTION

Follow the steps below to improve the transfer rates:

1. In the file `/sys/scsi/targets/stdef.h` add the following line after the last device:

```
#define ST_TYPE_EXABYTE 0x28 /* Exabyte */ (existing line)
#define ST_TYPE_WANGDAT 0xN /* WangDAT */
```

where N is the next available number in hexadecimal.

2. In the file `/sys/scsi/targets/st_conf.c` add the following paragraph:

```
/* WANGDAT 3400DX */
{
    "WANGDAT 4mm drive", 8, "WangDAT ",
    ST_TYPE_WANGDAT, 10240,
    (ST_VARIABLE | ST_BSF | ST_BSR | ST_LONG_ERASE |
    ST_AUTODEN_OVERRIDE),
    6000, 6000,
```

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J.K.

128: Correcting Poor Tape Drive Performance (UNIX)

```
{ 0x00, 0x00, 0x00, 0x00 },  
{ 0, 0, 0, 0 }  
},
```

In this example, “WangDAT “(note the space after T) comes from the SCSI inquiry string from the tape drive. This string can often be found in the *dmesg* information (e.g., *st0: <WangDAT Model 3400DX>*) next to a device name.

The number 8 preceding this string refers to the number of characters to match on (note: this is a case-sensitive match).

The other parameters are fairly standard or do not matter for variable-blocksize devices like 4mm and 8mm drives but the key is *not* to use the *ST_NOBUF* flag.

3. Create a new kernel, install it, and reboot.

- a. **cd** /sys/sun4?/conf
- b. **/usr/etc/config** <KERNEL FILE>
- c. **cd** /sys/sun4?/<KERNEL FILE>
- d. **make**
- e. **cp** /vmunix /vmunix.old
- d. **cp** vmunix /vmunix

LEGATO TECHNICAL BULLETIN

129: Obtaining Authorization Codes without X Windows (UNIX)

PURPOSE

This Technical Bulletin describes how to obtain an authorization code from Legato if you are not running X Windows. It applies to all UNIX versions of NetWorker.

SOLUTION

After enabling your NetWorker product with the `nsrcap` command, you need to send your registration information to Legato in order to authorize (and permanently enable) your product. If you do not have an X Windows console, follow the steps below to send your registration information to Legato:

1. At a system prompt, enter the `script` command followed by a file name to capture the output of the screen:

```
# script file_name
```

2. Enter the `nsradmin` command:

```
# nsradmin
```

3. Enter the following command to display the NetWorker registration information:

```
# print type: NSR license
```

4. Now exit from `nsradmin` with the `quit` command followed by [Control]-

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K.W.

129: Obtaining Authorization Codes without X Windows (UNIX)

d:

```
# quit
```

```
# [Control]-d
```

5. Send the *file_name* output to your printer. For example:

```
# lpr file_name
```

6. FAX this output to Legato Customer Support at (415) 812-6031 and do not forget to include your name, company name, address, and telephone number.

LEGATO TECHNICAL BULLETIN

130: SPARC Solaris Jukebox Driver Patch (UNIX Patch 4.02-001) OBSOLETE

PURPOSE

This Bulletin describes a limitation to NetWorker Release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to SPARC (Solaris 2.2 and 2.3) servers running NetWorker.

PROBLEM

During the installation of the jukebox driver on systems with multiple SCSI controllers or multiple processors, you may experience system crash.

SOLUTION

Patch 4.02-001 for this Technical Bulletin no longer exists and has been replaced with a different patch.

Patch 4.02-001 gives you a new version of **LGTOpsc.pkg** which corrects this limitation. Use **pkgadd** or **pkgtrans** to load the file. This patch is available electronically from our request server or CompuServe. Install it in the same location as the NetWorker software.

This package supersedes any previous Standard Jukebox Interface jukebox drivers you may have already installed. If you have already installed the Legato PSC driver, this package will try to remove it. If you need to remove the old driver manually, see the last section in this Bulletin, "Removing the Old Driver."

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D.B.

If you are removing this version of the driver, use the **pkgrm** command.

INSTALLING THE NEW DRIVER

Download Patch 4.02-001, and decode it or uncompress it according to the instructions provided with the patch.

Use the **pkgadd** command to install the driver:

```
# pkgadd -d LGTOpsc.pkg
```

Note: Use the absolute pathname of the LGTOpsc.pkg file or the installation will fail.

When you see the following prompt, press [Return] to accept the default:

```
Select package(s) you wish to process (or "all" to process all
packages) [default:all] [Return]
```

When you see the following prompt, enter [y] for "yes."

```
Do you want to continue with the installation of this package
[y,n,?] y
```

You should see the following message at the end of your installation:

```
Installation of <LGTOpsc.pkg> was successful.
```

NOTE: If you manually removed the old driver, you may see a message informing you that the installation was only partially successful. If this happens, remove the new driver with **pkgrm**, then re-install it.

You should now refer to the section "Testing the Device Driver Installation" in the *Installation and Maintenance Guide*.

REMOVING THE OLD DRIVER

To remove an old version of the PSC driver, follow the steps below:

1. **rem_drv** psc
2. **rm -f** /usr/kernel/drv/psc.conf
3. **rm -f** /usr/kernel/drv/psc
4. **rm -f** /usr/man/man1m/pscinfo.1m
5. **rm -f** /etc/pscinfo
6. **rm -f** /dev/psc?
7. **rm -f** /dev/sjid?u1

8. Now delete all lines with the string “psc” in the file */etc/devlink.tab*.

LEGATO TECHNICAL BULLETIN

131: SCO Clients and SCO NFS Runtime (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 4.0 (and above) for UNIX and describes a work-around.

PROBLEM

In order to run the NetWorker program `nsrexecd` on a SCO client, the client must also be running the SCO NFS Runtime System Package. To verify that the SCO client has SCO NFS Runtime System Package, use either the `custom` or `swconfig` command.

The SCO NFS Runtime System Package includes:

- Entire Network File System Runtime Set
- Base Network File System (NFS)
- Network Lock Manager (NLM)
- Remote Execution (REX)
- Base Network Information System (NIS)

If the SCO NFS Runtime System Package is not installed, you will see error messages similar to the ones below when NetWorker tries to start `nsrexecd`:

```
cannot register service unable to send error no =  
connection
```

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```
refused nsrexecd unable to register (SHPROG) version 1 on TCP.
```

WORK AROUND

To successfully install NetWorker on a SCO client, you must:

- Install SCO NFS Runtime System Package and run **nsrexecd**
or
- Enable the **rcmd** command by configuring the */.rhosts* or *host.equiv* file on the SCO client

Follow the steps below to enable the **rcmd** command:

1. Enter the long *hostname* of the NetWorker server into the SCO client's */.rhosts* file.
2. Test **rcmd** by issuing the **rcmd** or **rsh** command from the UNIX NetWorker server to the SCO client. For example:

```
% rcmd client_name savefs -s server_name -T 1800 -p -l incr -R -v
```

3. Now enter the SCO client's long *hostname* into the */.rhosts* file and test **rcmd** by issuing the **rcmd** command from the client to itself. For example:

```
rcmd client_name echo hello
```

This command will return "hello" if it succeeds.

If these tests are successful, then the NetWorker server will be able to back up the SCO client on a scheduled backup.

If your NetWorker server is a NetWare fileserver, issue the following command from the SCO client to test if the NetWorker server can back up the SCO client's files:

```
% rcmd client_name savefs -s server_name -T 1800 -p -l incr -R -v
```


LEGATO TECHNICAL BULLETIN

132: Expiration Time Defaults to January 1970 (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 4.0 (and above) for UNIX and provides a solution.

PROBLEM

If you experience a power outage or system crash your NetWorker server may become disabled and you will see the message "The server is disabled." The Registration window will display "Jan 30, 1970" as the expiration date, and the jukebox information and enabler codes will be gone. If you are running NetWorker Advanced, the window will display an enabler code but no authorization code.

SOLUTION

You need to recover the most recently backed-up version of the *nsr.res* file. This file contains all the configuration information for the NetWorker server.

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LEGATO TECHNICAL BULLETIN

133: Support Level Supplement for SCO Servers (UNIX)

PURPOSE

This Technical Bulletin applies to all SCO servers running NetWorker and the enhanced SCSI tape driver SLS UOD376A or higher.

If you received a Support Level Supplement from Legato, you should obtain the latest update from the SCO *ftp.sco.com* forum. The current version available from SCO may differ from the one listed below.

Follow these steps to obtain SCO's latest update:

1. Log on to SCO's *ftp* server.
ftp ftp.sco.com
2. Change to the SLS directory.
cd SLS
3. Download the files and uncompress them. Follow the online instructions provided.
get uod376c.1tr.Z
get uod376c.Z

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V.N.W.

LEGATO TECHNICAL BULLETIN

134: Copy Violation Error (UNIX)

PURPOSE

This Technical Bulletin describes a problem encountered on systems with multiple network interfaces that causes the NetWorker server to disable after updating your NetWorker for UNIX server software. The Bulletin applies to NetWorker for UNIX, release 4.0.2 or release 4.1 and above, and offers a workaround to solve the problem.

PROBLEM

On systems with multiple network interfaces, you cannot use the NetWorker server after updating to NetWorker release 4.0.2 or release 4.1 and above. This problem only occurs after updating to these releases.

The information displayed in the Registration window indicates that all your NetWorker products are enabled and the authorization code is intact. However, you cannot use the server because NetWorker “thinks” that there are multiple servers with the same enabler code. The NetWorker server is disabled and will not allow you to complete operations such as labeling and mounting tapes, or backups and recovers.

Messages similar to the following display in the Messages and Pending panels of the administrative program GUI:

```
registration info event: server is disabled (copy violation).
```

On some systems, the IP loopback address does not always get resolved to *localhost*. This is most evident on systems using the Domain Name Service (DNS) protocol, where the address is 127.0.0.1. The loopback often resolves to *localhost.your.full.domain* instead of just *localhost*.

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V.N.W., R.P.

SOLUTION

Use one of the following two procedures to access the Aliases entry field, then continue with “Resolving the Copy Violation.”

NetWorker release 4.0.2

1. Start the NetWorker administration program in expert mode as *root*.

```
# networker -x -s server_name &
```
2. Select Clients from the Administration menu.
3. Select the name of the server on the Clients list.
4. Continue with the section, “Resolving the Copy Violation.”

NetWorker release 4.1 and above

1. Start the NetWorker administration program as *root*.

```
# nwadmin -s server_name &
```
2. Select Client Setup from the Clients menu in the NetWorker Administrator window.
3. Select Details from the View menu in the Clients window.
4. Continue with the next section, “Resolving the Copy Violation.”

Resolving the Copy Violation

1. Use the scroll bar to move the window display down to the Aliases entry field.
2. Enter all qualified aliases for the server in this field; click Add after each new entry.

Important: If you use the **nsradmin** command to update the client aliases, be sure to separate each alias name with a comma.

3. Enter the name of the Ethernet interface, if present, in the Server network interface entry field just above the Aliases entry field.
4. Click Apply to save the changes made to this client setup.
5. Kill the NetWorker **nsrd** daemon by entering the **nsr_shutdown -a** command.
6. Restart the daemon entering the **nsrd** command.

Note: If the copy violation error still exists, use the **save -s server_name** command to list the two names NetWorker thinks belong to the same server. Enter these names in the server Aliases field as described in steps 1 through 4. If the copy violation has been resolved, **save** completes successfully.

7. If the copy violation message still appears, edit the host database file, for example */etc/hosts*, on the NetWorker server. For IP address 127.0.0.1, assign *localhost* as the primary name and *loopback* as the secondary name, following this example:

```
127.0.0.1 localhost loopback
```

LEGATO TECHNICAL BULLETIN

135: Recovering Files Not Found in the Index (UNIX)

PURPOSE

This Technical Bulletin offers a review of how to recover files that are no longer in the NetWorker file index, and therefore no longer browsable. For more detailed information, refer to the *Legato NetWorker Administrator's Guide*, and the **scanner**, **mminfo**, and **uasm** man pages.

SUMMARY

NetWorker tracks the files it backs up in two databases, the *file* index and the *media* index. The media index keeps track of information about backup volumes, such as the name of the volume, the backup dates of the save sets on the volume, and the filesystems in each save set. The file index tracks detailed information about the save sets, including which files belong to a save set. Using these two indexes, NetWorker can quickly retrieve your files from your backup volumes.

These indexes will grow as you back up more and more data over time. Naturally, you need a way to keep the sizes of these indexes in check so that they do not grow beyond the space on the disk or overflow into your filesystems.

NetWorker provides an automatic (through retention and browse policies) and a manual way of reducing the size of the indexes. This bulletin describes the process required to recover files that have been removed from the file index.

If a file is no longer browsable, it means that its save set has been purged from the file index. If the save set containing the file has been purged from the file index but is still tracked in the media index, then you need to find the backup volume containing the save set (with the file you want) and replace the save set in the file index using the **scanner** command.

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The retention policy may have removed the backup volume or save set from the file and media indexes, or they may have been removed manually. Whether automatically or manually removed, you need to use the **scanner** command to replace the entries in either the file or media index, or both indexes, so that you can later recover the file.

You need to know which backup volume contains the file you want – you will have to make an educated guess, probably based on the adhesive label you placed on the backup volume. If the backup volume is still in the media index, the **mminfo** command will give you detailed information of the contents of the backup volume. If the backup volume is not in the media index, the **scanner** command will provide detailed information of the contents of the backup volume. This information includes:

- the name of the backup volume
- the name of the save set that contains the file you want
- the name of the client to which the file belongs
- the date and time the file was backed up

Case 1 – Save Set is Still in Media Index but Not in File Index

Follow the steps below if the file is not browsable, but its save set is still tracked by NetWorker in the media index.

1. Run the **mminfo** command:

```
mminfo -a -v volume_name
```

2. From the **mminfo** output, find the save set id which you believe contains the file you want. **Make sure it is not the bootstrap save set id.**
3. Once you have the proper save set id, replace the save set entry in the file index with the **scanner** command:

```
scanner -i -s save_set_id device_name
```

where *device_name* is

/dev/nsrst9 for SunOS

/dev/rmt/0mbn for Solaris

/dev/rmt1.1 for RS/6000

/dev/NrStp0 for SCO

and *save_set_id* is the save set id you obtained from the **mminfo** command.

Please make certain that **if the save set in question spanned over a tape boundary that all tapes are read** from by the following scanner command, or the online file index will not become fully rebuilt, making it impossible to perform an online recovery of the files desired from this save set.

4. You can now use the **recover** command to mark the file for recovery.

Case 2 – File is Neither in File Index Nor in Media Index

Follow these steps if the save set containing the file is not browsable (not in the online file index), nor is the save set represented in the media index.

1. Run the **scanner** command on the backup volume you believe contains the file you want (make a guess based on the adhesive label on the tape).

```
scanner device_name
```

where *device_name* is typically

/dev/nsrst9 for SunOS

/dev/rmt/0mbn for Solaris

/dev/rmt1.1 for RS/6000

/dev/NrStp0 for SCO

2. The **scanner** command displays detailed information about the contents of a backup volume. This information should help you decide whether or not this is a volume you want to re-introduce into the online indexes. By careful examination, you can determine if the save set you want to rebuild is on this tape. You must also locate *all* tapes that contain this save set id.
3. Once you have determined which volume(s) to re-introduce into the online indexes, run the **scanner** command below:

```
scanner -i device_name
```

where *device_name* is typically

/dev/nsrst9 for SunOS

/dev/rmt/0mbn for Solaris

/dev/rmt1.1 for RS/6000

/dev/NrStp0 for SCO

The **scanner** command keeps asking for a new volume until you terminate it. Make certain you have rebuilt the indexes completely by scanning in *all* tapes containing this save set id.

4. You should now be able to use the **recover** command to browse the index for the file you are trying to recover.

Case 3 – Recover an Entire Save Set (to the NetWorker Server only)

If you want to recover an entire save set directly to your disk volume, then use the following **scanner** command:

```
scanner -s save_set_id device_name | uasm -rv
```

This command will read all the information associated with the save set id from the backup volume and place a copy of this data on the NetWorker server in the exact way that it is stored on the backup volume. In other words, the backup volume may contain files for a client, but will be recovered to the NetWorker server's hard drive.

135: Recovering Files Not Found in the Index (UNIX)

If you want to be sure this action is correct before you do it, add the **-n** flag to the *uasm* command. This will send the output from **scanner** to */dev/null*, but list all the filenames contained in the save set.

Case 4 – Recover an Entire Save Set (to a NetWorker Client)

Alternatively, you could use **rsh** (or its equivalent on other platforms) in conjunction with the following command in order to recover the save set to the client (if the save set originated on a NetWorker client instead of the NetWorker server).

```
scanner -s ssid device_name | rsh client "(cd destdir; /pathto/uasm -rv)"
```

Case 5 – Recover One File Directly from Tape

To recover a single *filename* from a volume, run one of these commands:

```
scanner -s save_set_id device_name | uasm -rv filename
```

or

```
scanner -s save_set_id device_name | uasm -rv -m source=dest filename
```

The **-m** option of *uasm* indicates that the recovered file should be mapped (relocated) from the *source* to the *destination* directory.

LEGATO TECHNICAL BULLETIN

136: Sending Information to Legato Technical Support (ALL)

PURPOSE

This Technical Bulletin uses an example to describe the recommended way for customers to send files (for example, text, log, or resource files) to Legato Technical Support. You may assume that Legato Technical Support has the following tools: **uudecode**, **uncompress**, and **tar**.

In the example below, the group of files you want to send to Legato are designated as "all_files." Suppose you want to send three files to Legato.

1. Make a directory called "Text."

```
mkdir Text
```

2. Place the three files you are sending to Legato in the directory *Text*.

3. Use the following **tar** command:

```
tar cvf all_files.tar Text
```

4. Compress the files:

```
compress all_files.tar
```

5. Encode the files:

```
uuecode all_files.tar.Z all_files.tar.Z > all_files.tar.Z.uu
```

6. Mail the files to the Legato:

```
mail -s "incident_code all_files.tar.Z.uu" support@legato.com <  
all_files.tar.Z.uu
```

where you replace *incident_code* with your incident code number.

At Legato we follow the procedure below to uncompress and decode the files.

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136: Sending Information to Legato Technical Support (ALL)

1. We save the mail file.
2. We delete the lines in the file above “begin” and after “end.”
3. We then use the commands below to extract the files.

uudecode *all_files.tar.Z.uu*

uncompress *all_files.tar.Z*

tar xvf *all_files.tar*

If you send only one file, you can skip the step where you use the **tar** command. Please describe what you are sending.

We prefer that you use the **mail** command rather than the mail *tool* (OpenLook) because when you use the mail tool we do not always receive the attachments.

LEGATO TECHNICAL BULLETIN

137: Support for Exabyte 10 Series (UNIX)

PURPOSE

This Bulletin is to inform you that NetWorker on a SCO server *does* support Exabyte 10e jukeboxes, but only if the Exabyte 10e is configured to emulate an Exabyte 10i.

Consult your Exabyte documentation to find out how to configure a 10e to emulate a 10i if you have a 10e connected to your NetWorker server.

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K.W.

LEGATO TECHNICAL BULLETIN

138: How to Rename a NetWorker Client (UNIX)

PURPOSE

This Technical Bulletin describes a procedure to follow if you want to rename a NetWorker client.

The list below describes what you can and cannot do regarding renaming or moving clients.

- You can rename a UNIX NetWorker client. Refer to the *Installation and Maintenance Guide* for this procedure.
- You can move the UNIX NetWorker server from one machine to another UNIX machine. See Technical Bulletin #121 for this procedure.
- You can rename a UNIX NetWorker server. This procedure is described in this bulletin.
- You cannot move a UNIX NetWorker client from one UNIX NetWorker server to a *brand-new* UNIX NetWorker server.
- You cannot move a UNIX NetWorker client from a pre-existing UNIX NetWorker server to another pre-existing NetWorker server. This procedure would require merging and/or splitting of the file and/or media indexes, which is difficult, error-prone, and not recommended.

INSTRUCTIONS FOR RENAMING A CLIENT

Follow the steps below to rename a NetWorker client.

1. For each client (including the server) you wish to rename, you will have to create a new name in NIS or DNS (for example, a new entry in */etc/hosts* or a new

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138: How to Rename a NetWorker Client (UNIX)

DNS CNAME). When you do this, make the old name an alias to the new name (for example, the new name may be the primary *hostname*, but the old name will be a secondary *hostname* for the primary one).

2. For each client you wish to rename (including the server), use the graphical user interface to create a client with the new name, and at the same time, add a client alias to the old name in this new client resource.
3. Delete all the old clients except the server using the graphical user interface.
4. Bring NetWorker down using the **nsr_shutdown** command.
5. Rename (use the **mv** command) the old-named client indexes (including the server) to the new name. These indexes are typically */nsr/index/client_name/db*, where *client_name* is the *hostname* of the NetWorker client. Do NOT rename the media database in any way. You will need to be *root* to do this step.
6. This step (Step 6) applies only if you are renaming the NetWorker server itself. Using a text editor, edit the *nsr.res* file and remove the client entry for the server.
7. Restart NetWorker by using the **nsrd** command. The **nsrmmdbd** daemon will automatically rename the client indexes internally.

LEGATO TECHNICAL BULLETIN

139: Updating with the Device Supplement (UNIX)

PURPOSE

We strongly urge customers with the NetWorker, UNIX version 4.02 product to upgrade their device drivers with the Legato NetWorker Device Support Supplement, UNIX Version.

This is especially important for SPARC machines running Solaris, and may resolve rare system panics involving the jukebox driver.

You can tell if you have the *old* driver if you see system boot-up messages like the one below:

```
May 12 14:36:47 ssc-sac2 unix: psc_attaching..
```

The *new* driver prints out messages similar to these:

```
psc0 (sjidlul) at esp2 target 1 lun 0
psc0: Vendor <HP> Product <C1718C> Revision <1.26>
psc1 (sjid2ul) at esp2 target 4 lun 1
psc1: Vendor <ARCHIVE> Product <Python 29279-XXX> Revision <4.99>
psc2 (sjid3ul) at esp3 target 6 lun 0
psc2: Vendor <EXABYTE> Product <EXB-210> Revision <2.02>
```

Please note that for SPARC (Solaris), the driver is in */usr/lib/nsr/sjdriver*, NOT in */nsr/sjdriver*. This is a change from release 4.0.1, and different for SunOS.

If you are unable to test the jukebox by using the **jbexercize** command, DO NOT attempt to install and run NetWorker. You must be able to run **jbexercize** first.

If you have a 6/630 and see the message "Target 6 rejects our NOP message" on the console, please contact Legato and indicate whether or not you have an SBus expansion box on your machine. At the present time, we do not believe that this message indicates a problem, and we are not able to reliably reproduce this message.

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LEGATO TECHNICAL BULLETIN

140: Backing Up NFS-Mounted Filesystems (UNIX)

PURPOSE

This bulletin lists several common problems with backing up remote filesystems over an NFS connection.

DESCRIPTION

Backups over NFS are not recommended for the platforms for which Legato provides client software, but for machine types or data types that Legato does not currently provide client software, you can include the data in NetWorker's scheduled backups over an NFS connection. However, you may encounter the following problems:

- If the remote machine crashes or hangs, the NFS connection can hang, such that you cannot cancel the NFS connection. When the NFS connection hangs, savegroup resources are consumed until the remote machine is back on line.
- NetWorker performance suffers in the following cases:
 - When you back up and recover files that are accessed over NFS, the data might have to move across the network twice, which increases the system and network load and decreases performance. During backup, for example, data would travel from the remote machine to the NetWorker client. If the client resource is not on the NetWorker server machine, the data has to travel across the network again to get to the NetWorker server.
 - Incremental performance will suffer due to the need to stat (get modification times) all files remotely.
 - During large recover operations, performance can suffer due to NFS's write requirements and the additional network load.
 - When you use NFS to back up holey files, NetWorker cannot take

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J.K.

advantage of any operating system facilities that help determine where there are holes in files, so every byte of the file must be read over the network.

- NFS does not have a notion of “All” in the export list, so many changes to the set of mounted filesystems must also include changes to the exports for correct backup.
- NFS does not preserve all attributes of data, and special filesystems (such as raw partitions used for databases) may not be able to be backed up as they would with ASM technology running on the client. For example, NetWorker supports many ACLs. It can back up and restore a filesystem that includes ACLs in a local backup operation, but if the data is backed up over an NFS mount, the ACL cannot be restored.
- When the data for one machine is saved via NFS, NetWorker can provide no help in finding the data at recover time. You must remember which NetWorker client mounted the remote filesystem and supply the right client index for NetWorker to search. To find the files backed up via NFS, explicitly specify a `-c client` option to force the correct index to be browsed, then specify the path that was used on the NetWorker and NFS client machine to originally backup the data.

SOLUTION

To optimize NetWorker’s performance and reduce potential problems, define one or more NetWorker client resources on each machine in your network and back up only the local filesystems from each machine. But in cases where no NetWorker client software is available for the machine with the filesystems to be backed up, you must back up remote filesystems mounted using NFS.

LEGATO TECHNICAL BULLETIN

141: WangDAT 3400DX Configuration Settings (UNIX | NetWare)

PURPOSE

This Technical Bulletin includes the configuration switch settings for the WangDAT 3400DX tape drive, which is part of the ADIC/VLS 4mm jukebox.

If you use the default switch settings of the WangDAT 4mm drives, you may find that they prevent the IBM RS/6000 system from booting.

This bulletin is based upon a Technical Bulletin provided by WangDAT.

Unfortunately, the switch settings WangDAT recommends for SCO and the RS/6000 leave the drives in the state of SCSI LOAD/UNLOAD commands. This makes it somewhat difficult for these drives to work in the ADIC/VLS jukebox.

The following switch settings will work for SPARC (Solaris), SPARC (SunOS), SCO, and a variety of NetWare platforms.

S3							
N/C	PE	SCSI2	OPT1	OPT2	OPT3	OPT4	OPT5
1	2	3	4	5	6	7	8
OFF	ON	ON	ON	OFF	OFF	OFF	OFF

The following switch settings will work for RS/6000 systems.

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141: WangDAT 3400DX Configuration Settings (UNIX | NetWare)

S3							
N/C	PE	SCSI2	OPT1	OPT2	OPT3	OPT4	OPT5
1	2	3	4	5	6	7	8
OFF	ON	OFF	ON	ON	ON	OFF	OFF

LEGATO TECHNICAL BULLETIN

142: Adding Unsupported Tape Devices to Solaris Systems (UNIX)

PURPOSE

This bulletin explains how to get an example configuration file for setting up your kernel to work with tape devices not directly supported by Sun Microsystems.

DESCRIPTION

This bulletin includes pointers to files for SPARC and X86 Solaris 2.3, SPARC Solaris 2.4, and SPARC Solaris 2.5 systems. Use these files to add support for nominally unsupported tape devices to your SPARC system.

SOLUTION

Updated *st.conf* files are available from the Legato FTP server in the following location:

ftp.legato.com:/NetWorker/Unix/Solaris

The currently available files are:

st.conf-solaris2.5.1

st.conf-solaris2.5

st.conf-solaris2.4

st.conf-solaris2.3

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M. J., S. A.

LEGATO TECHNICAL BULLETIN

143: Relocating Binaries Installed with PKGADD (UNIX)

PURPOSE

This Technical Bulletin explains a limitation to the *pkgadd* installation program for SPARC (Solaris 2.x) systems and provides instructions for manually relocating the NetWorker binaries *before* you install them with *pkgadd*.

This bulletin applies only to SPARC (Solaris 2.x) systems.

DESCRIPTION

During the *pkgadd* installation the NetWorker programs are installed in the directories */usr/bin*, */usr/sbin*, and */usr/lib/nsr*.

If you want to install the NetWorker programs in locations other than the ones listed above, you need to follow the procedure below to make sure that the *pkgadd*, *pkginfo*, *pkgchk*, and *pkgrm* programs can find the location for the NetWorker program files.

The *pkgadd* program uses the file *default* in the directory */var/sadm/install/admin* to determine where it will install products. The steps below show you an example of how to edit the file, create the appropriate symbolic links, and change the environment so that you can relocate the NetWorker binaries.

In the following example, assume you are relocating the NetWorker binaries to the directory */usr/nsr_dir*.

1. Make a copy of the file named *default*.
2. Edit the file and change the line that reads

```
basedir=default  
  
to
```

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143: Relocating Binaries Installed with PKGADD (UNIX)

```
basedir=/usr/nsr_dir
```

3. Edit the path variable for *root* to include the following:

```
/usr/nsr_dir/usr/bin  
/usr/nsr_dir/usr/sbin
```

For example, if your shell is *csh*:

```
set path=(/usr/nsr_dir/usr/bin /usr/nsr_dir/usr/sbin $path)
```

If your shell is *sh*:

```
PATH=/usr/nsr_dir/usr/bin /usr/nsr_dir/usr/sbin:$PATH;export PATH
```

4. Create the following symbolic links:

```
ln -s /usr/nsr_dir/usr/lib/nsr /usr/lib/nsr  
ln -s /usr/nsr_dir/usr/sbin/nsr_ize /usr/sbin/nsr_ize  
ln -s /usr/nsr_dir/usr/sbin/nsr_shutdown /usr/sbin/nsr_shutdown  
ln -s /usr/nsr_dir/usr/sbin/nsrd /usr/sbin/nsrd  
ln -s /usr/nsr_dir/usr/sbin/nsrjb /usr/sbin/nsrjb
```

Now you can use *pkgadd* to install the NetWorker software in the directory you chose. Refer to the *NetWorker Installation and Maintenance Guide* for complete instructions on how to finish the software installation.

5. Replace the file named *default* from step 1 so that your other applications will not be installed in the wrong location.

NOTE: The **saveindex** and **recoverindex** commands are actually program scripts, and contain a hard PATH variable. Therefore, once you relocate these to their correct locations, you need to add “\$PATH” to the string in **saveindex** and **recoverindex** (using your favorite text editor). Or, edit these scripts to include the exact location for the NetWorker binaries. Also, add */usr/lib/nsr* to the scripts, so that NetWorker can locate the appropriate ASMs.

Following is an example of a **saveindex** path:

```
PATH=/usr/ucb:/bin:/usr/bin:/etc:/usr/etc:/usr/bsd:/usr/sbin:/usr/lib/nsr
```

Following is an example of a **recoverindex** path:

```
PATH=/usr/ucb:/bin:/usr/bin:/etc:/usr/etc:/usr/bsd:/usr/sbin:/usr/lib/nsr
```

If you want the NetWorker man pages to be accessible, the MANPATH environment variable must include the new NetWorker man page location – using the example above, */usr/nsr_dir/usr/man*.

LEGATO TECHNICAL BULLETIN

144: Hewlett-Packard C1533A and C1553A Switch Settings (UNIX | NetWare)

PURPOSE

This Technical Bulletin provides the switch settings for the HP C1533A tape drive and the HP C1553A autoloader.

The settings apply to SPARC systems running SunOS 4.1.x or Solaris 2.3 or later, IBM RS/6000 workstations running AIX 3.2.x or later, Novell NetWare systems running NetWare 3.1.x or later, and HP workstations running HP-UX 8.x or later, and with firmware variant 9503 or greater. Systems with Solaris 2.2 need to use a firmware upgrade to emulate another manufacturer.

Drive Switch Settings

The following settings, recommended by Hewlett-Packard, apply to these drives:

- HP C1533A and HP SureStore Tape 6000
- HP C1533A and HP SureStore Tape 12000e

For systems running SunOS 4.1.x or Solaris 2.3 or later, use these settings:

Note: If you want to enable Media Recognition System (MRS), set SW 8 to ON.

Drive Switch Setting	Configuration
SW 1, 2, 3, 4, 5, 8 = ON SW 6, 7 = OFF	Everything is Immediate mode (where relevant) Write Delay = 0, equivalent to an infinite timeout
SW 1, 2, 3, 5, 6 = ON SW 4, 7, 8 = OFF	Allows <i>no</i> data phase disconnects Performance mode enabled Data Compression control allowed via device files
SW 1, 2, 5, 6 = ON SW 3, 4, 7, 8 = OFF	Allows data phase disconnects Performance mode enabled Data Compression control allowed via device files

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For systems running AIX 3.2.x or later, use these settings:

Note: If you want to enable MRS, set SW 8 to ON.:

Drive Switch Setting	Configuration
SW 1, 2, 4, 5, 8 = ON SW 3, 6, 7 = OFF	Allows <i>no</i> data phase disconnects Performance mode enabled
SW 1, 2, 3, 5, 6 = ON SW 4, 7, 8 = OFF	Allows <i>no</i> data phase disconnects Performance mode enabled Data Compression control allowed via device files
SW 1, 2, 5, 6 = ON SW 3, 4, 7, 8 = OFF	Allows data phase disconnects Performance mode enabled Data Compression control allowed via device files

For HP 9000/3000, 400, 700, 800 workstations running HP-UX 8.x or later, use these settings::

Drive Switch Setting	Configuration
SW 1, 2, 4, 5, 6, 7, 8 = ON SW 3 = OFF	Allows <i>no</i> data phase disconnects MRS enabled
SW 1, 2, 4, 5, 7, 8 = ON SW 3, 6 = OFF	Allows <i>no</i> data phase disconnects Ignores non-immediate filemarks

For systems running NetWare 3.1.x or later, use these settings::

Drive Switch Setting	Configuration
SW 1, 2, 4, 5, 6, 7, 8 = ON	Allows <i>no</i> data phase disconnects
SW 3 = OFF	MRS enabled

Autoloader Switch Settings

The following settings apply to the C1553A and HP SureStore Tape 12000e.

- For systems running SunOS 4.1.x or Solaris 2.3 or later, use these settings:
 - SW 1, 3 = ON
 - SW 2, 4 = OFF
 - Value = 5h
- For systems running AIX 3.2.x or later, NetWare 3.1.x or later, or HP700, use these settings:
 - SW 1, 2, 3 = ON
 - SW 4 = OFF
 - Value = 7h

144: Hewlett-Packard C1533A and C1553A Switch Settings (UNIX | NetWare)

- For systems running HP 800, use these settings:

SW 2, 3 = ON

SW 1, 4 = OFF

Value = 6h

LEGATO TECHNICAL BULLETIN

145: Remote Extraction for pkgadd Installation (UNIX)

PURPOSE

This Technical Bulletin describes how to complete a remote software extraction if you do not have the appropriate tape drive connected to your SPARC (Solaris 2.x) NetWorker server.

SOLUTION

In this example, the system with the appropriate tape drive is a SPARC (SunOS) machine, and its tape drive device name is `/dev/nrst8`. The example uses this remote system to extract the NetWorker software to the SPARC (Solaris) system which does not have the appropriate drive. Once the software is extracted, you may use **pkgadd** to install it on the SPARC (Solaris) system.

Follow the steps below:

1. From the SPARC (SunOS) system, use the **mt** command to skip forward on the software distribution tape to where the SPARC (Solaris) NetWorker programs are located. (The distribution media contains both SPARC (SunOS) and SPARC (Solaris) programs.)

```
# mt -f /dev/nrst8 fsf      Note the device name is the non-rewinding name.
```

2. Use the **dd** command to extract the file from the media.

```
dd if=/dev/nrst8 of=filename bs=20b      Filename is the name you assign to the file  
you are extracting.
```

3. Use the **rcp** command to copy the extracted file to the `/tmp` directory on the SPARC (Solaris) machine.

```
rcp filename solaris_machine: /usr/tmp/nsr_extract
```

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145: Remote Extraction for pkgadd Installation (UNIX)

Now you can install the software on the SPARC (Solaris) system. Use the command below at the shell prompt to install the NetWorker programs from the directory, using the full *pathname*.

```
# pkgadd -d /usr/tmp/nsr_extract/filename
```

Please refer to your *Legato NetWorker Installation and Maintenance Guide* for complete installation instructions.

LEGATO TECHNICAL BULLETIN

146: Adding Unsupported Tape Devices to SunOS Systems (UNIX)

PURPOSE

This bulletin shows you how to set up your kernel to work with tape devices not supported by Sun Microsystems. This bulletin provides a pointer to a file for the SPARC SunOS 4.1.1 (or later).

DESCRIPTION

Please read the installation notes below before copying the kernel file to your system.

- This file works for Sun machines running SCSI architectures, SunOS releases 4.1.1 through 4.1.4. This means the following model numbers do *not* work here *unless* the CONSULT-SCSA package from Sun has been installed:
4/1XX, 4/2XX, 4/3XX, 4/4XX (where XX may be 10, 20, 40, 60 or 80).
- The kernel rebuild area (physically at `/usr/kvm/sys`, but should be reachable from `/usr/sys` or `/sys`) installed when you installed your Sun machine. This kernel rebuild area is there for pre-installed or quickinstall systems and is a “strongly recommended” choice for the custom install choices.
- We assume no other third party tape driver software is installed on top of the standard SunOS release. If there have been previous modifications to `/usr/sys/scsi/targets/st_conf.c`, or you have installed a tape driver from another software vendor, these instructions will not work. Check with your tape drive vendor to determine the appropriate kernel changes.

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SOLUTION

This section contains instructions and the file to update the kernel for SPARC (SunOS) machines.

1. Download the contents of the *NetWorker/Unix/SunOS* directory from the Legato FTP server (*ftp.legato.com*).

2. Copy this file to */usr/sys/scsi/targets*. For example:

```
cp st_conf_legato.h /usr/sys/scsi/targets
```

You will probably have to become *root* (have superuser privileges) to do this.

3. Make the file */usr/sys/scsi/targets/st_conf.c* writable. You will probably have to become *root* (have superuser privilege) to do this:

```
chmod +w /usr/sys/scsi/targets/st_conf.c
```

4. Use your favorite plain text editor to insert the following line into the file */usr/sys/scsi/targets/st_conf.c* after the line “`struct st_drivetype st_drivetypes[] = {“:`

```
#include <scsi/targets/st_conf_legato.h>
```

For example, the sequence

```
/bin/ed /usr/sys/scsi/targets/st_conf.c
/struct st_drivetype/
a
#include <scsi/targets/st_conf_legato.h>
.
w
q
```

would work. A “?” printed after you enter the line */struct st_drivetype/* indicates a syntax error or permissions error. Check for *root* privilege.

5. As *root*, configure and build a new kernel. For example:

```
cd /usr/sys/`arch -k`/conf
config GENERIC
cd ../GENERIC
rm -f st_conf.o
make
```

should configure and build a new kernel. A successful build should leave the last line of a lot of output with the new binary size of the rebuilt kernel, for example:

```
....
loading vmunix
rearranging symbols
text    data    bss      dec      hex
1277952 447832  91112    1816896 1bb940
```

6. Save the old kernel, copy the new one in place, and reboot. You should be *root*.

```
cp /vmunix /vmunix.save
cp /usr/sys/`arch -k`/GENERIC/vmunix /
reboot
```

If the reboot fails, you can boot off of the old kernel (for example, at the PROM prompt, enter:

```
boot vmunix.save
```

and restore it to be */vmunix*. (Steps 5 and 6 are documented fairly extensively by Sun).

LEGATO TECHNICAL BULLETIN

147: Configuring Python Drives for Solaris Systems (UNIX)

PURPOSE

This Technical Bulletin describes how to configure certain unsupported variants of Conner (Archive) Python series DAT drives for SPARC (Solaris) systems.

PROBLEM

In recent releases of Solaris, some versions of the Conner (formerly Archive) Python series DAT drives have been supported by Sun Microsystems. However, special firmware has been made for these drives to work with the Sun driver software.

Similar DAT models, when attached to SPARC systems, appear to not work as the Sun-specific models. The Diamondback series of DAT autoloaders that come as options to the Compaq ProLiant Server series, as well as the Conner 43X6 series of DDS2 DAT drives appear to have this problem. The problem appears to be in the usage by the Sun tape driver of specific density codes. These work for the Sun-specific models, but not for the more generic DAT drives.

TEST FOR THE PROBLEM

To find out if you have the problem, follow the steps below:

1. Insert a tape into the drive in question, and wait for the tape to load to BOT (beginning of tape – typically this takes a minute to complete).
2. Use the **mt(1)** command to test the status of the drive. For example:

```
mars# mt -f /dev/rmt/0bn stat
```

You will see a messages similar to this:

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147: Configuring Python Drives for Solaris Systems (UNIX)

```
/dev/rmt/0bn: No tape loaded or drive offline
```

3. Now use the low density tape device name to open the tape drive. That is, add the letter "l" to the device name. For example:

```
mars# mt -f /dev/rmt/0lbn stat
```

You may then see a message similar to this:

```
Archive Python 4mm Helical Scan tape drive  
sense key(0x5)= Illegal Request...
```

Using the low density device name opened the device and displayed an error message associated with step 2 above. It means you have encountered the problem described in this bulletin.

The Sense Key of 0x5 (illegal request) indicates that the Sun tape driver was attempting to set a density on this particular DAT drive which did not have the special Sun firmware to allow the setting.

SOLUTION

Use the low density tape device name. In the example above, the tape device name with the letter "l" solved the problem. For example, use `/dev/rmt/0lbn` instead of `/dev/rmt/0bn`.

LEGATO TECHNICAL BULLETIN

148: Mixing SCSI Controllers under NetWare (NetWare)

PURPOSE

This Bulletin describes how Distributed Processing Technology (DPT) SCSI controllers interact with SCSI controllers from other vendors under NetWare.

PROBLEM

Distributed Processing Technology distributes several software modules to use with NetWare. One of these modules is the specific board host adapter driver module (for example, PM11NW311.DSK). Another module provides some DPT-specific library functions (DPTSIM.DSK). A different module is the ASPI interface module layer (provided in the module ASPITRAN.DSK).

As long as you use only DPT SCSI host adapters, your hardware and software should be compatible. If however, you try to mix the DPT host adapters with host adapters from different vendors, you may encounter problems. In particular, Legato has tested interactions between DPT host adapters and Adaptec host adapters. These boards from different vendors seem to be hardware compatible, but are not software compatible.

Both DPT and Adaptec distribute an ASPI interface module (with the same name and exporting the same symbols). Which one should you use?

RECOMMENDATION

If you use the ASPITRAN.DSK provided by DPT, the Adaptec host adapters cannot be seen.

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148: Mixing SCSI Controllers under NetWare (NetWare)

However, if you use the ASPITRAN.DSK provided by Adaptec, both the host adapters from Adaptec and the host adapters from DPT will be seen and can be used.

Another complication is that if you attempt to load the host adapter driver for either vendor, it attempts to autoloading any module named ASPITRAN in the NetWare search path. To avoid uncertainty about which ASPITRAN module will be loaded, we recommend you edit your AUTOEXEC.NCF file and load the ASPITRAN module you want to load by giving an explicit load path *prior* to loading the drivers. For example:

```
load c:\server.311\adaptec\aspitran
load c:\server.311\adaptec\aha1740 slot=4
load c:\server.311\dpt\pm12nw311 slot=3
load c:\server.311\dpt\dptsim
```

The above example establishes an environment under NetWare 3.11 which allows both an Adaptec 1740 and one of either a DPT 2022 or DPT D122 to coexist and NetWorker will successfully use both boards.

LEGATO TECHNICAL BULLETIN

149: Using the Legato FTP Site (UNIX)

PURPOSE

This Bulletin describes how NetWorker users can get patches, Technical Bulletins, Device Support Supplements, and unsupported programs from the Legato ftp site via *anonymous ftp*.

HOW TO ACCESS FTP

To log in, enter the following at your system prompt:

```
legato% ftp ftp.legato.com
```

When you are prompted for your name, enter *anonymous*. When prompted for the password, enter your user name and site. For example:

```
legato% ftp ftp.legato.com
Connected to legato.Legato.com.
220 legato FTP server (SunOS 4.1) ready.
Name (ftp.legato.com:your_name): anonymous
331 Guest login ok, send ident as password.
Password: your_username@your_site
```

Once you are logged in, you should see the welcome message:

```
Welcome to the LEGATO ftp site
The following directories are publicly available

-NetWorker           NetWorker patches and Read this First
-Bulletins           NetWorker Technical Bulletins
-DeviceSupp          NetWorker Device Support Supplement
-Unsupported          Unsupported Programs
```

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149: Using the Legato FTP Site (UNIX)

Some files available via ftp are also available via the email request server. For instructions on the request server, send email to *request@legato.com* with the subject line of “help.”

Please read the file *README.ftp* file for information regarding specific directories and features. When the ftp> prompt appears, follow the instructions to obtain the file(s) you want.

Uuencoded, tape archive (tar), compressed, text, and PostScript™ files are named using the following conventions.

Specified Filename	Action
<filename>	no action needed
<filename>.Z	uncompress <filename> after transmitting
<filename>.Z.uu	uudecode and uncompress after transmitting
<filename>.tar	use tar xvpf to extract file after transmitting
<filename>.tar.Z	zcat <filename>.tar.Z tar xvpf -
<filename>.tar.Z.uu	uudecode, zcat <filename>.tar.Z tar xvpf -
<filename>.txt	no action needed
<filename>.ps	no action needed

EXAMPLES

This section contains several examples to illustrate how to download information via ftp.

Example 1

This example illustrates downloading the Solaris Device Support Supplement (*solaris.DeviceSupp*) from the DeviceSupp directory.

```
ftp> cd DeviceSupp
ftp> binary          #set to binary (image) mode
ftp> get README.dss [local name]    #get the instructions
You may want to go over the instructions before getting the driver.
ftp> get solaris.DeviceSupp [local name]
ftp> quit            #quit ftp
```

Example 2

This example assumes you have logged in and are ready to get files.

```
ftp> get filename [local name]
```

You need only to place the file in the appropriate location.

Example 3

This example requires you to uncompress and uudecode the file.

```
ftp> get filename.Z [local name]
uncompress <filename.Z> after transmitting
ftp> get filename.Z.uu [local name]
```

After transmitting:

1. Uudecode the file to produce <filename.Z>, for example, “uudecode foo”.
2. Uncompress <filename.Z>, this will create a file named <filename>.

Example 4

This example uses tape archive.

```
ftp> get filename.tar [local name]
```

After transmitting:

1. Run **tar xvpf filename.tar** to extract the file.
2. If the file is in uuencoded and/or compressed format, follow the examples for uudecode and uncompress above.

Another example of tape archive:

```
ftp> get filename.tar.Z [local name]
```

After transmitting:

```
zcat <filename>.tar.Z | tar xvpf -
```

Example 5

This file is uuencoded and compressed:

```
ftp> get filename.tar.Z.uu [local name]
```

After transmitting:

1. Uudecode <filename>.tar.Z.uu
2. Uncompress the file with `zcat <filename>.tar.Z | tar xvpf -`

Example 6

This file is a PostScript file.

```
ftp> get filename.ps [local name]
```

After transmitting, you will need a PostScript printer to print the file.

Example 7

This is an ASCII text file; all you need to do is copy it to the appropriate location.

149: Using the Legato FTP Site (UNIX)

```
ftp> get filename.txt [local name]
```

For your convenience, technical questions about the functionality of NetWorker can be submitted via e-mail to *support@legato.com*.

Questions about the ftp server should be directed to *ftp@legato.com*.

LEGATO TECHNICAL BULLETIN

150: NetWare 4.0x and Short-term Memory Problems (NetWare)

PURPOSE

This Technical Bulletin describes possible causes of and solutions to short-term memory loss in NetWare 4.0X machines running Legato NetWorker client software.

PROBLEM

If your NetWorker client is a NetWare 4.0X system, and running out of short-term memory, there may be more than one cause for the problem. The two most common causes and solutions are:

- If the client is running SNMP, you should consider disabling (or unloading) it.
- There may be a STREAMS problem that shows up if the client has more than 16 Mbytes of memory and uses active SPX. Using passive SPX can help mitigate the problem. Use MONITOR to check if STREAMS message blocks are increasing rapidly. Obtain SPX4X.EXE from Novell and apply these patches.

If neither of the solutions above help you, there may be other reasons for the short-term memory problems with 4.0X NetWare. Please send Legato Technical Support details on what you were doing, how much memory you have, what patches you have on the system, and any other information that can help us solve your problem.

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LEGATO TECHNICAL BULLETIN

151: Creating a NetWare NDS Client on a NetWorker UNIX Server (UNIX)

PURPOSE

This Technical Bulletin describes how to create a client for Novell's NetWare Directory Services (NDS) so UNIX-based NetWorker servers can perform a manual or scheduled backup of the NDS. These procedures apply to servers running NetWorker for UNIX release 4.0 or greater.

PROCEDURE

1. Load TSANDS.NLM on one of the NetWare 4.x servers. Choose the server where your Master Replica resides. Add the following line to the AUTOEXEC.NCF file in the SYS:SYSTEM directory for one server per NDS tree:

```
LOAD TSANDS.NLM
```

Make sure the program loads successfully before proceeding.

2. On the NetWorker server, stop all network information services (NIS) and domain name systems (DNS).
3. Create a "fake" IP address and machine name for the NDS client in the NetWorker server */etc/hosts* file. This enables NetWorker to recognize the NDS client. Make sure the IP address you create is a unique number. For example:

```
137.69.2.77          nds=<tree_name>          # this is the fake address
137.69.2.20         <NetWare_fileservername>
137.69.2.45         <NetWorker_servername>
```

Note: The *<tree_name>* is displayed in the upper left-hand corner of Monitor on NetWare 4.1 clients.

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151: Creating a NetWare NDS Client on a NetWorker UNIX Server (UNIX)

4. Create the NDS client resource in NetWorker by using the graphical user interface (GUI) or the **nsradmin** command (for the command line interface). Instructions for both methods follow.

Creating an NDS Client from the NetWorker for UNIX GUI

This section describes how to create an NDS client using the NetWorker for UNIX administrative program GUI.

1. From the main window of the administrative program, select Client Setup from the Clients pull-down menu.
2. In the Clients window, click Create.
3. Enter the NDS client name in the Name field. Use the exact name that you placed in the */etc/hosts* file.
4. Select a Schedule, Browse policy, and Retention policy.
5. Select NetWare standard directives from the Directive choices.
6. Choose a Group for the NDS client.
7. In the Remote access field, enter the name of the NetWare fileserver. This is the Novell NDS server with TSANDS.NLM loaded on it.
8. In the Remote user field, enter the name of the user you want to perform scheduled backups. We suggest that you use the fully-qualified name, for example, *.cn=admin.o=legato*.
9. Enter the user password in the Password field.
10. Click Apply to add the new client. The first time you click Apply, an error message similar to the following appears:

```
"nds=<tree_name>" is down or unreachable, re-apply to create it anyway  
Click Apply again to ignore the message and add the client.
```

Creating an NDS Client from the NetWorker for UNIX Command Line Interface

This section describes how to create an NDS client using the **nsradmin** command.

1. Enter the **nsradmin** command at the system prompt. (You may need to be *root* to do this.)

```
# nsradmin
```

2. Enter **visual** for the visual mode of **nsradmin**.

```
nsradmin> visual
```

Use the [Tab] key to navigate each screen, and use the [Enter] or [Return] key to select and toggle options.

3. Choose [Create] to create the NDS client.
4. Choose NSR client from the "type" choices.

5. Enter the name of the NDS client into the “name” field, exactly as you created it in the */etc/hosts* file.
6. Select a Schedule, Browse policy, and Retention policy.
7. Select NetWare standard directives from the Directive choices.
8. Choose a Group for the NDS client.
9. In the Remote access field, enter the name of the NetWare fileserver. This is the Novell NDS that has TSANDS.NLM loaded on it.
10. In the Remote user field, enter the name of the user you want to perform scheduled backups. We suggest that you use the fully-qualified name, for example, *.cn=admin.o=legato*.
11. Enter the user password in the Password field.
12. Press the [Esc] key to add the new client. The first time you press [Esc], an error message similar to the following appears:

```
"nds=<tree_name>" is down or unreachable, re-apply to create it anyway
```

Press the [Esc] key again to ignore the message and add the client.

Performing a Manual Backup

Follow these steps to perform a manual backup of the NDS:

1. Press F3-->Backup on the NetWare server.
2. Select the client name from the list of clients. If it does not appear on the list, press [F8] and enter the name in the field.
3. Verify your *username* and *password*.
The root of your NDS tree appears.
4. Select the tree and start the backup.

Setting up Scheduled Backups

If you want to perform scheduled backups of your NDS, follow these instructions:

1. Make sure that TSANDS.NLM is loaded on the NetWare server.
2. Make sure one of the following NLMs for your version of the NetWorker ClientPak for NetWare is loaded:
 - For ClientPak release 3.0x or earlier, ACTIVECL.NLM.
 - For ClientPak release 3.1x or later, RCMDSRV.NLM.

151: Creating a NetWare NDS Client on a NetWorker UNIX Server (UNIX)

3. Set up a **cron** job or other scheduling agent on the UNIX server, and have it call the following command:

```
rsh <netware_server_name> "savefs -c nds=<tree_name> -U  
<netware_user_name> -P <password> -s <networker_unix_server>"
```

netware_server_name = the name of the NetWare 4.x server
tree_name = the name of your NDS tree previously specified
netware_user_name = the name of the user you specified
password = the password entered during client setup
networker_unix_server = the name of your NetWorker UNIX server

LEGATO TECHNICAL BULLETIN

152: Fixing the Save and Recover Commands for Solaris 2.x Systems (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to the installation program for SPARC (Solaris) NetWorker servers and provides a workaround. It applies only to SPARC systems running Solaris 2.X.

PROBLEM

The *pkgadd* installation program should install the NetWorker **save** and **recover** commands in */usr/sbin* and symbolically link these commands to */usr/bin*. Occasionally, these programs are installed in the wrong location or the symbolic link does not take place. You will know this happened if the scheduled backup was unsuccessful and you see error messages similar to these:

```
--- Unsuccessful Save Sets ---
* backfire:/ save: No such file or directory
* backfire:/ savefs: exec failed on: save -s blackwidow -f - -q -m
backfire -l full -L -W 78 -g Default /
* backfire:/usr save: No such file or directory
* backfire:/usr savefs: exec failed on: save -s blackwidow -f - -q -m
backfire -l full -L -W 78 -g Default /usr
* backfire:/opt save: No such file or directory
* backfire:/opt savefs: exec failed on: save -s blackwidow -f - -q -m
backfire -l full -L -W 78 -g Default /opt
```

SOLUTION

Remove */usr/sbin/recover* and */usr/sbin/save* and link them correctly. Follow the steps below:

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152: Fixing the Save and Recover Commands for Solaris 2.x Systems (UNIX)

1. Remove the **save** and **recover** programs:

```
# rm /usr/sbin/recover  
# rm /usr/sbin/save
```

2. Link the **save** and **recover** programs:

```
# ln -s /usr/bin/recover /usr/sbin/recover  
# ln -s /usr/bin/save /usr/sbin/save
```

NOTE: If you relocated your NetWorker binaries make sure you link these from the relocated directory to */usr/sbin*. Refer to Technical Bulletin 143.

LEGATO TECHNICAL BULLETIN

153: Device Support Supplement and HP Optical Autochanger (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to the Device Support Supplement, Release 4.0.2 and the HP Optical autochanger. It applies only to SunOS and Solaris operating systems.

PROBLEM

The 4.0.2 Device Support Supplement optical device driver will only work with certain SunOS and Solaris operating systems due to an incompatibility with the disk device driver from Sun Microsystems.

Our Device Support Supplement will not work with the following operating systems:

- SunOS 4.1.1
- Solaris 2.2

The Device Support Supplement has been tested and works with the following:

- SunOS 4.1.2
- SunOS 4.1.3
- Solaris 2.3

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LEGATO TECHNICAL BULLETIN

154: NetWorker and NetWare 4.01 MONITOR NLM (NetWare)

PURPOSE

This Bulletin describes a problem that you may experience on a NetWare 4.01 system running the MONITOR.NLM.

PROBLEM

The normal idle CPU utilization on a NetWare 4.01 server is approximately 0 - 10%. The CPU utilization can climb to 100% on an idle system, locking up the server and keeping users from logging on to the fileserver.

SOLUTION

Follow the suggestions below to fix the problem.

- When CPU utilization starts climbing, unload and reload the MONITOR.NLM.
- Do not load the MONITOR.NLM unless absolutely necessary.
- If you load MONITOR.NLM, make sure it is the last NLM you load.

There are many other software applications that experience the problem described in this bulletin.

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B.W.

LEGATO TECHNICAL BULLETIN

155: Notes for the OS/2 Client (UNIX | NetWare)

PURPOSE

This Bulletin describes an error message you may see when backing up an OS/2 client and suggests a work-around.

PROBLEM

After a scheduled backup, NetWorker displays messages similar to the ones shown below in the Group Status Details window or in **savegroup** completion mail:

```
Aug 9 04:10:50 zydeco syslog: --- Unsuccessful Save Sets ---
Aug 9 04:10:50 zydeco syslog:
Aug 9 04:10:50 zydeco syslog: * antlia:E:\ E:\ARCMAN\AMDOS.EXE: unable to
read ACLs: 2227
Aug 9 04:10:50 zydeco syslog: * antlia:D:\ D:\NETWARE\NET.CFG: unable to read
ACLs: 2227
Aug 9 04:10:50 zydeco syslog: * antlia:C:\ C:\IO.SYS: unable to read ACLs:
2227
```

SOLUTION

Follow the suggestions below to solve the error condition:

- If you have IBM LAN Server/Requestor installed on this client, start it.
- If you previously had IBM LAN Server on this machine but no longer do, look for the file NETAPI.DLL in the \IBMLAN\NETLIB directory. If it exists, rename or delete it.
- Look for the NETAPI.DLL in the library search path. Find this search path by

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looking at the line "set libpath=" in CONFIG.SYS Rename or delete this file or remove it from the library search path by editing the CONFIG.SYS or simply moving the file out of this search path.

LEGATO TECHNICAL BULLETIN

156: OS/2 SPXWORKR Patch (NetWare Patch 3.00-001)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker releases 3.00 and 3.01 for the OS/2 client and offers a patch to overcome the limitation.

DESCRIPTION

When you try to recover OS/2 client files, the following error message is displayed:

```
Unable to perform null RPC call to NSR service on server_name.  
Index not available.
```

SOLUTION

Patch 3.00-001 provides a new SPXWORKR.EXE to correct this problem. This patch is available electronically from CompuServe (GO LEGATO). Install this executable in your C:\NETWORKR directory or the directory where NetWorker is installed.

An alternate solution is to exit and then restart NetWorker from the client. If you are running version 2.10 of Novell's OS/2 Requestor, you might receive a "TRAP 000d" error when you exit NetWorker.

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B.W.

LEGATO TECHNICAL BULLETIN

157: OS/2 TCPWORKR Patch (ClientPak Patch 3.02-002)

PURPOSE

This Technical Bulletin describes a limitation to ClientPak Release 3.02 for the OS/2 client and offers a patch to overcome the limitation.

DESCRIPTION

The following error messages are displayed when you try to recover OS/2 client files:

```
Unable to perform null RPC call to NSR service on server_name.  
Index not available.
```

The temporary work-around is to exit from NetWorker on the client and then restart NetWorker.

Recovering data from the client may take a very long time.

SOLUTION

Patch 3.02-002 provides a new TCPWORKR.EXE to correct this problem. This patch is available upon request. Install this executable in your C:\NETWORKR directory or the directory where you installed NetWorker.

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B.W.

LEGATO TECHNICAL BULLETIN

158: Using the HP Optical C1718C (UNIX)

PURPOSE

This Technical Bulletin describes the driver suitable for the HP Optical C1718C device. The information applies to the C1718C model which is equivalent to models 20LT or 10LC.

DESCRIPTION

We recommend you install the NetWorker 4.0.2a (or 4.0.2b) Device Support Supplement to use NetWorker with the C1718C. Later releases of NetWorker will include support for this device.

If you are using revision level 4.0.2 of the Device Support Supplement you need the FlexStor driver from Introl.

Under any of the circumstances below you will get "No Device Match" error messages or have problems using the optical device:

- You are using the FlexStor driver from Introl *in conjunction* with Device Support Supplement version 4.0.2a (or 4.0.2b).
- You are using Device Support Supplement version 4.0.2 *without* the FlexStor driver.
- You have only the FlexStor driver and *no* Device Support Supplement.
- You do not have the Device Support Supplement.

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V.N., M.J.

SOLUTION

Install the Device Support Supplement release 4.0.2a (or 4.0.2b).

NOTE: When creating the device for the optical jukebox, you should use the raw device name of the device. For example, use `/dev/rsd1c` instead of `/dev/sd1c`.

For SunOS, the C1718C will be converted to a DIRECT ACCESS device and show up where you might have normally configured a SCSI disk.

For Solaris, the C1718C will be converted to a DIRECT ACCESS device and show up where you might normally have configured a SCSI disk. For example, it might appear as `/dev/rdisk/c0t1d0s2`. Any time you install a new device under Solaris, you will need to reconfigure and reboot the system.

For AIX, the C1718C will be converted to a DIRECT ACCESS device, and show up as an “other SCSI disk” if you reboot the system. You can also configure it after installation via SMIT. The name of the device to use in this case will be `/dev/rhdiskN`, where `N` is assigned by the system (and is visible via SMIT).

LEGATO TECHNICAL BULLETIN

159: Limitation to COMPRESSASM (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker 4.0.X and the *compressasm*, and suggests a work-around. It applies to all UNIX systems running NetWorker.

PROBLEM

In some circumstances, the “skip” directive may cause an external ASM to dump core. The example below illustrates an example of a directive that causes this problem.

```
<< /var >>
logasm: *
<< /var/atmp >>
skip: .
```

In the example above, the */var/atmp* directory is really */usr/tmp* symbolically linked to */var/atmp*. It is this combination that causes *logasm* to dump core or exit.

The completion mail may display messages similar to the ones shown below:

```
*****Unsuccessful Save Set *****
* columba:/ compressasm: logasm died with signal 11
* columba:/ compressasm: The following files in /var/ were not successfully
saved:
* columba:/atmp crash yp tmp spool preserve log adm
* columba:/ save: external ASM `compressasm' exited with code 1
* columba:/ save: /. was not successfully saved
columba:/ level=full, 7.8 MB 00:03:35 667 files

* columba2:/ compressasm: logasm died with signal 11
* columba2:/ compressasm: The following files in /var/ were not successfully
saved:
```

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159: Limitation to COMPRESSASM (UNIX)

```
* columba2:/ atmp crash yp tmp spool preserve log adm
* columba2:/ save: external ASM `compressasm' exited with code 1
* columba2:/ save: /. was not successfully saved
columba2:/ level=full, 9.4 MB 00:01:43 666 files
columba2:/export level=full, 0 KB 00:02:23 0 files
columba2: /columba/u2 level=full, 670 MB 02:22:13 2202 files
columba2: /columba/u3 level=full, 44 MB 00:41:54 1263 files
columba2: /var/tmp level=full, 0 KB 00:02:24 0 files
jukebox: /nsr/index/columba2 level=full, 2.0 MB 00:00:55 6 files

* rr3:/ compressasm: logasm died with signal 11
* rr3:/ compressasm: The following files in /var/ were not successfully saved:
* rr3:/ atmp crash yp tmp spool preserve log adm
* rr3:/ save: external ASM `compressasm' exited with code 1
* rr3:/ save: /. was not successfully saved
rr3: / level=full, 9.6 MB 00:02:54 688 files
```

SOLUTION

The work-around for this problem is to replace the “skip: .” directives with “nullasm: .” This will give you the same result without the risk of a potential core dump or exit.

LEGATO TECHNICAL BULLETIN

160: Problem with the *getcwd* Routine During Backup (UNIX)

PURPOSE

This Technical Bulletin describes a limitation in how NetWorker handles special directories like */usr/spool/mail*, and provides a work-around. It applies to UNIX systems running NetWorker.

PROBLEM

When NetWorker starts a backup, the NetWorker **save** program traverses the filesystem and parses the directives to determine which directories need special attention. During this time, it visits directories to determine names and locations. At some point it calls the **getcwd** function, which for some reason gives an error.

Usually the problem occurs with the */usr/spool/mail* directory, which is included in the default directives that ship with the NetWorker software. When the **getcwd** routine searches for the child *mail* in the parent directory */usr/spool*, it fails with this message: "save: getcwd failed, savefs: save of filesystem failed exit code 1."

You will know you have this problem if you check the savegroup completion mail and find error messages similar to the ones below:

```
--- Unsuccessful Save Sets ---
* client_name:/ save: getcwd failed
* client_name:/ savefs: save of / failed, exit code 1
* client_name:/usr save: getcwd failed
* client_name:/usr savefs: save of /usr failed, exit code 1
* client_name:/var save: getcwd failed
* client_name:/var savefs: save of /var failed, exit code 1
* client_name:/opt save: getcwd failed
* client_name:/opt savefs: save of /opt failed, exit code 1
* client_name:/work save: getcwd failed
```

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160: Problem with the `getcwd` Routine During Backup (UNIX)

```
* client_name:/work saveefs: save of /work failed, exit code 1
* client_name:/usr/local save: getcwd failed
* client_name:/usr/local saveefs: save of /usr/local failed, exit code 1
* client_name:/export/home0 save: getcwd failed
* client_name:/export/home0 saveefs: save of /export/home0 failed, exit code 1
```

WORKAROUND

Please follow these suggestions and run the program below to pinpoint the problem.

First remove the problematic directive from NetWorker, and run a backup to see if that solves the problem. For example, remove the following two lines:

```
<</usr/spool/mail>>
mailasm:.
```

Then determine whether or not you need to back up this directory. If so, make sure the directory is specified in some save set. Then create a `.nsr` directive file in the directory to override the NetWorker directive that triggers the problem. In the example above, create the file `/usr/spool/mail/.nsr` containing one line:

```
mailasm:.
```

This executes **mailasm** for that directory without calling the **getcwd** function.

You can further narrow down the point of failure by running **truss** (Solaris 2.X systems) or **trace** (SunOS 4.1.X systems) on the **save** or **saveefs** processes. For example:

```
% truss save -s server_name
```

or

```
% trace save -s server_name
```

On other platforms you may run **save** or **saveefs** with several **-v** (for verbose) flags to follow the progress (and failure) of the processes. For example:

```
% save -vvvvvvv -s server_name
```

If you know how to read the “trace” or “truss” output, you may contact Sun with the information and open an incident and/or file a bug with them. If you do not know how to read the “trace” or “truss” output, you may open an incident with Legato Technical Support by sending e-mail to support@legato.com or FAXing to (415) 812-6173.

We believe this behavior is a bug in the operating system, although at this point we are not sure why some customers are getting it and others are not. We think this problem may be tied to the online disk suite or some odd filesystems and the **getcwd** function call.

Here is a test program that might give you the information you need to narrow down the problem. Run this program on your machine, and send the output to your operating system vendor.

```
[] #include <sys/param.h>
>[] #include <unistd.h>
>[] #include <stdio.h>
>[] extern char *getwd();
>[] extern char *getcwd();
```

```

[]
[] #define GETCWDgetcwd
[]
[] char Home[MAXPATHLEN];
[]
[] char *Dirs[] = {
[]     ".",
[]     "/",
[]     "/tmp",
[]     "/export/swap",
[]     "/nsr",
[]     "/nsr/logs",
[]     "/var",
[]     "/usr/adm",
[]     "/usr/spool",
[]     "/usr/spool/mail",
[]     "/usr/mail",
[]     NULL
[] };
[]
[] void
[] doit(dir)
[]     char *dir;
[] {
[]     int i;
[]     char *where;
[]     char here[MAXPATHLEN];
[]
[]     (void) fprintf(stderr, "%s - ", dir);
[]     i = chdir(dir);
[]
[]     if (i == 0) {
[]         where = GETCWD(here, sizeof (here));
[]         if (where == NULL) {
[]             /* this is not good! We are lost! */
[]             perror("getpwd failed");
[]         } else {
[]             /* OK ! */
[]             (void) fprintf(stderr, "%s\n", where);
[]         }
[]     } else {
[]         /* this ok, usually */
[]         perror("");
[]     }
[]
[]     i = chdir(Home);
[]     if (i != 0) {
[]         (void) fprintf(stderr, "\nCannot go home - %s;", Home);
[]         perror("chdir");
[]         exit(2);
[]     }
[] }
[]
[] /*
[] * Usage: testcwd <dir1> <dir2> ...

```

160: Problem with the getcwd Routine During Backup (UNIX)

```
[ ] */
[ ] int
[ ] main(argc, argv)
[ ]     int argc;
[ ]     char *argv[];
[ ] {
[ ]     int i;
[ ]     char *dir;
[ ]
[ ]     dir = GETCWD(Home, sizeof (Home));
[ ]     if (dir == NULL) {
[ ]         (void) fprintf(stderr, "%s: cannot start: ", argv[0]);
[ ]         perror("getcwd");
[ ]         exit(-1);
[ ]     }
[ ]
[ ]     for (i = 0; (dir = Dirs[i]) != NULL; i++) {
[ ]         doit(dir);
[ ]     }
[ ]     for (i = 1; i < argc; i++) {
[ ]         dir = argv[i];
[ ]         doit(dir);
[ ]     }
[ ]
[ ]     return (0);
[ ] }
[ ]
```


LEGATO TECHNICAL BULLETIN

161: Copying Tapes Using NETUTIL (NetWare)

PURPOSE

This Bulletin provides information on the NETUTIL tape duplication feature. It applies to NetWare file servers running NetWorker.

DESCRIPTION

The NETUTIL feature provides a raw tape copy facility – it copies from the source tape to the destination tape until it hits the end of tape on *either* tape.

If the destination tape is of the same or greater capacity than the source tape, there is no problem with tape duplication.

However, slight manufacturing irregularities in tapes can cause two apparently identical tapes to have different capacities. NETUTIL can only copy 100% correctly if the destination tape is greater than or equal to the size of the source tape, and if you use two apparently identical tapes, there is about a 50% chance that the tape copy will terminate prematurely.

SOLUTIONS

Use mirrored tape drives (available from some manufacturers) to produce 2 copies of the same data.

Ensure that you copy onto a tape with more capacity. For example, you can copy a 90 meter source tape onto a 120 meter destination tape. Or, you can copy from a DAT tape to 8mm.

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J.K.

LEGATO TECHNICAL BULLETIN

162: Notes on Using Compressasm (UNIX | NetWare)

PURPOSE

This Bulletin provides information on using *compressasm*. It applies to UNIX and NetWare systems running NetWorker.

DESCRIPTION

Using *compressasm* involves significant CPU usage. If you have a large CPU, and performance monitors such as *perfmeter* during backup do not indicate that the CPU is overused, *compressasm* will compress data before it goes over the wire to the server.

This reduces network traffic, as *compressasm* typically achieves 2:1 compression (your mileage may vary). Note that in NetWare servers, data compression reduces network traffic for active clients only. For passive clients, the data is compressed after it reaches the server for the backup.

There is no harm in using *compressasm* in conjunction with a compressing tape drive, but the drive will probably not achieve much compression on the data.

If you are deciding between *compressasm* and a compressing drive solely to increase the amount of data on a tape, get the compressing drive – the hardware on the drive will compress faster than our software and place *no* load on the CPU due to the compression.

SUGGESTIONS

Use *compressasm* to minimize network bandwidth if you have available CPU power.

Use compressing drives to get more data on a tape.

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162: Notes on Using Compressasm (UNIX | NetWare)

Any generic compressing algorithm typically achieves 2:1 compression and tape drives are no exception. Sometimes you get more, sometimes less.

Compressing already compressed data has no effect (and may even expand the data!)

Do not use compressasm if you have a compressing drive and no networked clients.

You may use compressing drives *and* compressasm, but do not expect additional compression on the tape.

LEGATO TECHNICAL BULLETIN

163: STACCATO.EXE and STACC310.DLL Patch (Staccato Patch 3.1-001)

PURPOSE

This Technical Bulletin describes a few limitations to Staccato Release 3.1 and offers a patch to overcome the limitations.

DESCRIPTION

Patch 3.1-001 fixes the following problems in Staccato:

- If you change to the OS/2 name space while browsing in the Recover window and use the Find command to locate a file, it will fail with an error message.
- If you have more than 6500 files in a directory, Staccato cannot display them in the Backup or Recover windows. Expanding such a large directory will cause a general protection fault.
- Occasionally, while using the mouse to mark or unmark files, if you select another application icon on your workstation and then return to Staccato, it will cause a general protection fault.
- When viewing the backup history of a directory with the Versions command, the window will blink. Also, you cannot cancel the operation with the Cancel button.

SOLUTION

Patch 3.1-001 provides a new STACCATO.EXE and STACC310.DLL to correct these problems. An updated help file is also included, STACCATO.HLP. This patch is available electronically from CompuServe (GO LEGATO). Install this patch by

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163: STACCATO.EXE and STACC310.DLL Patch (Staccato Patch 3.1-001)

replacing these three files with the files from the patch. Then exit and restart any Staccato windows you were using. You do not need to shut down or restart the server.

LEGATO TECHNICAL BULLETIN

164: Using Compressasm and Sparse or Holey Files (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to using compressasm. It applies to all UNIX servers running NetWorker release 4.0.2 or lower.

DESCRIPTION

If you back up your data using compressasm, when you recover sparse files, all the holes will be filled. If you want to preserve the holes, do not back up sparse files using compressasm.

This limitation has been fixed in NetWorker release 4.1. Release 4.1 preserves all the holes when you back up sparse files with compressasm and later recover the data.

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LEGATO TECHNICAL BULLETIN

165: Savegroup Exceeds Parallelism Patch (UNIX Patch 4.02-001)

PURPOSE

This Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to overcome the limitation. It applies to AIX, Solaris, and SunOS systems.

PROBLEM

Occasionally, if you run several **savegroup** process at once, some clients may fail to back up because there are too many client processes attempting to start new saves that consume system resources on the NetWorker server.

SOLUTION

Patch 4.02-001 gives you a new version of **savegroup** which checks the current number of total saves on the server each time it tries a new save. If the system parallelism is at its limit, **savegroup** waits longer before trying again, so it does not consume resources trying to launch new backups. Both of these enhancements help **savegroup** enforce the server's parallelism.

This patch is available electronically from our request server, *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

166: NetWorker nsrindexd Patch (UNIX Patch 4.02-002)

PURPOSE

This Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, SCO, and AIX servers running NetWorker.

PROBLEM

NetWorker assigns an internal ID number to track the entries in the file index. In a large environment where a NetWorker server is backing up a very large number of client machines, the probability increases where NetWorker may assign the same number to two different client entries. If this happens, the index entries may become corrupted.

If you have this problem, messages similar to the ones below appear in the `/nsr/logs/messages` file or **savegroup** completion mail:

```
NetWorker index: (warning)
Cannot initiate session for client_name; db permission denied
```

SOLUTION

Patch 4.02-002 gives you new version of **nsrindexd** which corrects this limitation. This patch is available electronically from our request server, *anonymous ftp*, and CompuServe.

If you have a Solaris system, make sure that you first apply Sun Patch 101316-01 before applying the NetWorker **nsrindexd** patch. The Sun patch makes the socket library safe.

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LEGATO TECHNICAL BULLETIN

167: NetWorker nsrmmdbd Patch (UNIX Patch 4.02-003)

PURPOSE

This Bulletin describes a limitation in NetWorker Release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, SCO, and AIX servers running NetWorker.

NetWorker has an upper limit of approximately 2500 save sets that it can track to a single backup volume.

The failure usually causes similar messages to be placed in Savegroup Completion output and `/nsr/logs/messages`:

```
NetWorker media: (emergency) update_volume failed
last message repeated 4 times
syslog: NetWorker media: (emergency) update_volume failed
last message repeated 3 times
syslog: NetWorker media: (emergency) update_volume failed
syslog: NetWorker media: (emergency) update_volume failed
syslog: NetWorker media: (emergency) update_volume failed
syslog: NetWorker media: (emergency) update_volume failed
```

Patch 4.02-003 gives you a new version of **nsrmmdbd** which corrects this upper limit. This patch is available electronically from our request server, *anonymous ftp*, and CompuServe.

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LEGATO TECHNICAL BULLETIN

168: Examples for Configuring Pools (UNIX)

PURPOSE

This Technical Bulletin provides examples of how to configure media pools for daily and offsite backups. It applies to SunOS, Solaris, AIX, and SCO systems running NetWorker release 4.0.2 for UNIX.

The examples in this bulletin describe how to separate full backups to a full pool, incremental backups to an incremental pool, and offsite backups to an offsite pool. Follow the steps below.

1. Login to the NetWorker server as *root* and bring up NetWorker in an expert mode (**networker -x**).
2. Create three label templates, using the Templates window.

full_template

(Make these selections – Fields: server, full, 001-999; Separator: .)

incr_template

(Make these selections – Fields: server, incr, 001-999; Separator: .)

offsite_template

(Make these selections – Fields: server, offsite, 001-999; Separator: .)

3. Create two schedules, using the Schedules window.

daily_schd

Select fulls and incrementals depending on the volume of data at your site

offsite_schd

Skip the backup on all days except the full backup on the day you want the offsite full backup.

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4. Create two groups, using the Groups window.

Configure the groups so that the offsite group overrides the schedule for the daily group. In other words, the offsite group has precedence over the daily group.

daily_grp

Enable it and leave the Schedule field blank.

offsite_grp

Enable it and enter “offsite_schd” into the Schedule field.

5. Create three pools, using the Pools window.

The levels are very important when you are configuring the pools. If the pools are not configured properly then the backups may end up in a Default pool and you may see messages similar to “NetWorker media: (waiting) backup to pool ‘Default’ waiting for 1 writable backup tape.”

full_pool

Select the following values for the *full_pool*:

group: *daily_grp*

label template: *full_template*

level: full

incr_pool

Select the following values for the *incr_pool*

group: *daily_grp*

label template: *incr_template*

level: incr, 9

(level 9 means the indexes are always backed at level=9 for incremental backups)

offsite_pool:

Select the following values for the *offsite_pool*

group: *offsite_grp*

label template: *offsite_template*

level: DO NOT SELECT ANY LEVEL

In the above example media pools are configured based on groups. That is, clients are associated with groups, and groups are associated to pools. In this way you can send your daily level backups to *incr_pool* and your full backups to *full_pool* and the offsite backups to *offsite_pool*.

LEGATO TECHNICAL BULLETIN

169: NetWorker nsrd Patch (UNIX Patch 4.02-004)

PURPOSE

This technical bulletin describes a limitation in NetWorker release 4.0.2 for UNIX, and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris), SCO, and RS/6000 servers running NetWorker.

PROBLEM

Some customers report that even when NetWorker is configured properly, save sets occasionally end up in the wrong pool. The save sets had to be created in sorted order, and the fix was to sort them before selecting a pool.

SOLUTION

Patch 4.0.2-004 provides a new version of **nsrd** that corrects this limitation. The patch is available electronically from Legato's request server, and also by means of *anonymous ftp* and CompuServe.

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LEGATO TECHNICAL BULLETIN

170: NetWorker nsrjb Patch for Multiple Media Requests (UNIX Patch 4.02-005)

PURPOSE

This technical bulletin describes a limitation to NetWorker release 4.0.2 for UNIX, and offers a patch to solve the problem. It applies to SPARC (SunOS and Solaris), SCO, and RS/6000 servers running NetWorker.

PROBLEM

In some circumstances, only one instance of **nsrjb** can run at a time. For example, if a backup request occurs when a drive is not available, no other requests will be processed, since the original **nsrjb** locks out other requests indefinitely.

Also, the jukebox unload operation assumes an eject operation will not return until the tape ejects and the drive door opens. Unfortunately, not every driver behaves this way, causing some unload operations to fail with the "drive door closed" message.

SOLUTION

Patch 4.0.2-005 provides a new version of **nsrjb** that corrects both of these limitations. The patch is available electronically from Legato's request server, and also by means of *anonymous ftp* and CompuServe.

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LEGATO TECHNICAL BULLETIN

171: Installing NetWorker 3.0 on NetWare 4.02 (NetWare)

PURPOSE

This technical bulletin describes how to install NetWorker for NetWare version 3.0 on a NetWare 4.02 system.

DESCRIPTION

NetWorker for NetWare version 3.0 was designed to be installed on a NetWare 4.01 system. Therefore, during the install process, some patches that do not apply to NetWare 4.02 will be placed in the AUTOEXEC.NCF file. Other than the initial install process, no additional changes need to be performed to make NetWorker 3.0 run correctly on a NetWare 4.02 system.

SOLUTION

Delete the following lined from the AUTOEXEC.NCF file:

```
load pm401
load spxddfix
```

These are the patches that apply to NetWare 4.01 but not to NetWare 4.02.

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B.W.

171: Installing NetWorker 3.0 on NetWare 4.02 (NetWare)

The following lines may be commented out as well:

```
load streams
load clib
load dsapi
```

The line that loads TLI.NLM will autoloading STREAMS.NLM and CLIB.NLM, and the line that loads TSA400.NLM will autoloading DSAPI.NLM, so they do not need to be loaded again. The TSA might either be loaded from the AUTOEXEC.NCF file if this is a minimal, passive client install, or from the NETWORKR.NCF file when the rest of the NetWorker NLMs are loaded.

The pertinent lines of the AUTOEXEC.NCF file might end up looking like this:

```
##BeGiN## NetWare NLMs required by NetWorker ###
### Do NOT change anything between marks, including marks.
#load pm401
#load streams
#load clib
load tli
load ipxs
load spxs
#load spxddfif
#%load tsa400
#load dsapi
set upgrade low threads priority = on
##EnD## NetWare NLMs required by NetWorker ###
```

If this is a minimal installation and NetWorker software will not be loaded on this machine, the line “#%load tsa400” should be changed to “load tsa400.”

LEGATO TECHNICAL BULLETIN

172: NetWorker nsrjb Patch (UNIX Patch 4.1-001) OBSOLETE

PURPOSE

Patch 4.1-005 obsoletes this bulletin (see Technical Bulletin 188).

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and provides a patch to solve the problem. It applies to SunOS, Solaris, and AIX systems.

PROBLEM

If several **nsrjb** commands are issued at the same time, the jukebox may end up in a confused state.

If the jukebox is in a confused state, the administrator may receive many e-mail messages.

SOLUTION

Patch 4.1-001 provides a new version of **nsrjb** which solves both problems described above. This patch is available electronically from our request server or from CompuServe (see below).

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R.R.

LEGATO TECHNICAL BULLETIN

173: NetWorker nsrd Patch (UNIX Patch 4.1-002) OBSOLETE

PURPOSE

Patch 4.1-007 obsoletes this bulletin (see Technical Bulletin 199).

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and provides a patch to solve the problem. It applies to SunOS, Solaris, and AIX systems.

PROBLEM

If the fill capacity (amount used) of a backup volume is over 100%, but the volume still has space on it (because data is compressed), NetWorker will choose another empty or partially filled volume (< 100%). For example, suppose you have a backup volume that has a capacity of 5 Gigabytes, and you compressed 8 Gigabytes of data onto this volume. There is still space on the volume for more data, but NetWorker will first search for another writable backup volume before using the one in this example.

SOLUTION

Patch 4.1-002 provides a new version of **nsrd** which solves the problem described above. This patch is available electronically from our request server or from CompuServe (see below).

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LEGATO TECHNICAL BULLETIN

174: NetWorker nsrindexasm Patch (UNIX Patch 4.1-003) OBSOLETE

PURPOSE

Patch 4.1-006 obsoletes this bulletin (see Technical Bulletin 198).

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and provides a patch to solve the problem. It applies to SunOS, Solaris, and AIX systems.

PROBLEM

If you use the command line or the NetWorker Recover window to recover a client index, you may see an error message similar to this:

```
WARNING: The on-line index for `client_name' was NOT fully recovered.  
There may have been a media error. You can retry the recover, or attempt  
to recover another version of the `client_name' index.
```

This error occurs only if the last backup of the index was a full backup. The error message is false, and the client index is actually recovered.

Recovery of a client index (for example, */nsr/index/client_name*) may fail if the directory does not already exist. The work-around is to first create the directory for the client index and then recover the index.

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SOLUTION

Patch 4.1-003 provides a new version of **nsrindexasm** which solves the two problems described above. This patch is available electronically from:

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LEGATO TECHNICAL BULLETIN

175: NetWorker nsrmmd Patch (UNIX Patch 4.1-004)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and provides a patch to solve the problem. It applies to SunOS, Solaris, and AIX systems.

PROBLEM

In rare cases **nsrmmd** can dump core when recovering files that span across backup media.

Occasionally, when a cloning operation is cancelled, the operation does not stop until the volume requested in the pending display is mounted.

SOLUTION

Patch 4.1-004 provides a new version of **nsrmmd** which solves the two problems described above. This patch is available electronically from our request server or from CompuServe (see below).

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R.R.

LEGATO TECHNICAL BULLETIN

176: NetWorker and Tape Capacity Discrepancies (UNIX | NetWare)

PURPOSE

This Technical Bulletin addresses tape capacity issues. Specifically, you may feel that NetWorker does not write enough data to tape to fill it according to the tape's capacity. For example, a tape with an advertised capacity of 4000 Mbytes may be marked full by NetWorker after only 3000 Mbytes of data have been written to it.

EXPLANATION

There are several reasons for what appears to be NetWorker filling tapes prematurely:

- Write errors during backup
- NetWorker filemarks take up space on the tape
- Tape capacities vary from tape to tape
- Data compression affects the tape capacity
- Length of tape

Each of these reasons is explained in more detail in this bulletin.

The NetWorker algorithm for writing to tape is shown below:

```
res = write(fd, buf, cnt)
if (res != cnt) {
    report tape full;
}
```

NetWorker does not know the capacity of a tape. It keeps writing until it encounters a write error or end of tape (EOT). A tape marked FULL may show a capacity of 40% or 300%. For the purpose of providing a percentage, NetWorker *estimates* the capacity of

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a tape. However, the *actual* amount of data written is determined solely by the first write error or EOT.

Select the highest density device driver appropriate for your device. This should ensure that when a tape is labeled, NetWorker will write to it at the highest density supported by your device. High-density drivers should be used for compressing drives, medium-density for normal drives, and low-density for older, lower-density formats. For example, for an 8505 Exabyte drive with compression you would select the high-density device, for an 8500 Exabyte without compression the medium-density device, and for an 8200 select the low-density device.

In some cases, especially for compressing drives, you may also need to select jumper or switch settings on your device to achieve compression. See Technical Bulletin 146 for tips on correctly configuring device drivers for the proper density.

If you configure the device driver correctly, tapes written on a lower-density device should automatically be re-labeled with the selected device driver's density when written from the beginning of the tape. On some systems with poor implementations of the high-density device, the density could be determined by the format an old tape was written in. If this is the case, use new tapes in the drive instead of re-labeling old, lower-density tapes.

Performance can affect tape quality. Some drives will pad the tape if data is not supplied fast enough. The total effective tape capacity is reduced in an effort to keep the drive streaming. Noticeable reductions in tape capacity due to streaming are rarely encountered with NetWorker.

Write Errors

Most tape drives attempt to read after a write operation to verify that the tape was written correctly, and retry if it was not. A write error reflected to the *write* system call indicates either end of tape or a read error. Therefore, *any* tape error will result in NetWorker marking the tape as being full. NetWorker does not attempt to write data on a tape once a write error occurs.

To NetWorker, a failure to write data is very serious and NetWorker takes the prudent course: it marks the tape as full (the data before the error may still be valid) and does not attempt any more write operations to the suspect tape. In other words, NetWorker views the end of the tape the same as a write error: in either case, the tape should be marked full.

To prevent these kinds of tape write errors, you should clean your tape drive regularly and use only data-quality tapes.

Other hardware issues can cause write errors to occur. If cleaning the drive does not seem to help, make sure that the device driver is properly configured, any necessary switch settings on the tape drive itself are set to the manufacturer's specifications, all cabling is secure, and other potential SCSI problems have been addressed.

Filemarks

NetWorker periodically writes filemarks to facilitate rapid recovery of data. These filemarks consume varying amounts of tape depending upon the type of tape drive – on some drives, filemarks can consume several Mbytes. The number of filemarks NetWorker writes to tape is a function of how many save sets are on the tape: many small save sets will require more filemarks than a few larger ones.

The amount of tape consumed by filemarks is not currently tracked by the NetWorker statistics. Therefore, if you see x number of bytes written to tape, and k is the number of filemarks, $x + k * (\text{size of filemark})$ is the actual number of bytes written to tape.

Tape Capacities

Tape capacities are not constant from tape to tape – two apparently identical tapes from the same vendor may vary significantly in capacities. This can cause problems if you copy one very full tape to another, especially if the destination tape holds less data than the source tape.

Compression

It is not possible to predict the effect on tape capacities from compressing tape drives. A compressing drive may provide twice the capacity of a non-compressing drive – it could be far less or far more, depending on the kind of data being backed up.

Therefore, if a non-compressing drive writes 2 Gbytes of data to a specific tape, the compressing drive could write 10 Gbytes, 2 Gbytes, 5 Gbytes, or some other unpredictable amount of data.

Tape Length

Be sure to verify tape lengths. A 120-meter DAT tape will hold more data than a 90-meter DAT tape, and without examining the printed information on the tape cassette carefully, the two tapes may appear identical.

LEGATO TECHNICAL BULLETIN

177: Device Supplement 3.01b Patch (NetWare Patch 3.00-002)

PURPOSE

This Technical Bulletin describes a problem with the Device Support Supplement for NetWare, Version 3.01b, and offers a patch to overcome the limitation.

PROBLEM

During a scheduled backup, NetWorker may hang until you press a key on the keyboard. You must press a key for the scheduled backup to complete.

SOLUTION

This problem is fixed in version 3.01c of the device supplement. You can obtain Patch 3.00-002 by calling Legato Technical Support. Install the patch in SYS:NSR\BIN or the directory where you installed NetWorker.

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LEGATO TECHNICAL BULLETIN

178: NetWorker Recover Patch (UNIX Patch 4.02-006)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, SCO and AIX servers running NetWorker.

PROBLEM

When marking files or directories for recovery, NetWorker cannot cross mount points. This can be a problem when attempting to recover data backed up via NFS, especially if the remote filesystems are mounted by the automounter.

SOLUTION

The **add** command in the **recover** program now has the “-x” option. This option will cross mount points when marking files for recover.

Patch 4.02-006 provides a new version of **recover** which will cross mount points when marking files. This patch is available electronically from our request server, *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

179: NetWorker SCO Server Hang Patch (UNIX Patch 4.02-007)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to solve the problem. It applies only to SCO servers running NetWorker.

PROBLEM

Due to a bug in the SCO UNIX operating system versions 3.2v4.2 and below some files cannot be backed up via the open/read/close system calls. One example of this type of file is generated by Microsoft Word.

SOLUTION

Patch 4.02-007 works around the problem by doing an open/close/open/read/close operation.

The patch provides new versions of the following programs: **compressasm**, **logasm**, **mailasm**, **rawasm**, **swapasm**, **uasm**, **xlasm**, and **save**. These are compressed, so you must uncompress them and replace your old programs with the new ones.

Follow the instructions below to obtain the programs.

1. Use the **tar xvpf** command on *tarfile*, this will create 8 files in "file.Z" format.
2. Uncompress "file.Z;" this creates a file named "file."
3. Before replacing the programs supplied in the patch, make sure they are not currently running by issuing the **nsr_shutdown** command.
4. Replace the old programs with the new ones provided in the patch. Place these

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179: NetWorker SCO Server Hang Patch (UNIX Patch 4.02-007)

in the same directory as the other NetWorker executables.

5. Make sure that the owner and permissions for the programs are correct.

This patch is available electronically from our request server, *anonymous ftp*, and CompuServe.

LEGATO TECHNICAL BULLETIN

180: NetWorker savefs Patch (UNIX Patch 4.02-008)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and provides a patch to solve the problem. It applies to SunOS, Solaris, AIX, and SCO servers running NetWorker release 4.0.2.

PROBLEM

When **nsrexecd** forks off **savefs**, the **nsrexecd** program exits. This causes an aborted **savegroup** program to leave remote **save** programs running.

This is because **savefs** closes *stderr* (duplicating *stdout* to *stderr*), to keep the *stderr* and *stdout* output from getting mixed up as it passes over the wire back to **savegroup**.

Unfortunately, when **savefs** closes *stderr*, **nsrexecd** thinks that it is no longer needed, and exits. Normally, this has no effect, since all the output from **save** and **savefs** get passed back to **savegroup** without incident.

However, since **nsrexecd** has exited, there is no way for **savegroup**'s "kill the remote save" messages to get changed into UNIX signals, since that is one of **nsrexecd**'s jobs.

Also, when running **savefs** manually, some customers noticed that killing **savefs** caused various system processes (most notably, the *portmapper*) to exit.

SOLUTION

Patch 4.0-008 gives you new version of the **savefs** program which corrects this limitation. This patch is available electronically from our request server, *anonymous ftp*, and CompuServe.

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LEGATO TECHNICAL BULLETIN

181: NetWorker nsrmmd Patch (UNIX Patch 4.02-009)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, AIX, and SCO servers running NetWorker.

PROBLEM

Occasionally, the **nsrmmd** program dumps *core* at the time NetWorker spans backup volumes, or soon after. The *core* dump is triggered by a client **save** aborting while the **nsrmmd** is waiting for the new volume.

The same behavior occasionally takes place when NetWorker tries to mount valid backup volumes when the volumes are not in the media index. This can happen when NetWorker tries to use old backup volumes that were previously deleted.

SOLUTION

Patch 4.02-009 provides a new version of **nsrmmd** that fixes both situations described above. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

182: Backup Limitations (ClientPak for Windows NT)

PURPOSE

This technical bulletin describes the three limitations in backing up NT systems using ClientPak for Windows NT. These backup limitations only apply to Release 3.1; all subsequent releases will not experience these limitations.

PROBLEMS

- When NetWorker performs a scheduled backup for an NT system, it may lock out users who were not logged in while NetWorker was running. When this occurs, your NT system displays the following message:

`Can not load user profile`

- In some cases, the REGISTRY backup will also fail. In this instance you will receive the message below:

`Registry: security: cannot stat`

- When you back up files with names that have a combination of upper and lowercase characters, NetWorker tracks them all as uppercase names. The file names appear in uppercase in the NetWorker Recover window and are recovered as uppercase names.

SOLUTION

Registered customers will be sent new Windows NT Client software that solves these backup limitations.

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T.R.

LEGATO TECHNICAL BULLETIN

183: Backup Limitations (ClientPak for PC Desktops)

PURPOSE

This technical bulletin describes the three limitations in backing up NT systems using ClientPak for PC Desktops. These backup limitations only apply to Release 3.5; all subsequent releases will not experience these limitations.

PROBLEMS

- When NetWorker performs a scheduled backup for an NT system, it may lock out users who were not logged in while NetWorker was running. When this occurs, your NT system displays the following message:

`Can not load user profile`

- In some cases, the REGISTRY backup will also fail. In this instance you will receive the message below:

`Registry: security: cannot stat`

- When you back up files with names that have a combination of upper and lowercase characters, NetWorker tracks them all as uppercase names. The file names appear in uppercase in the NetWorker Recover window and are recovered as uppercase names.

SOLUTION

Registered customers will be sent new ClientPak for PC Desktops software that solves these backup limitations.

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T.R.

LEGATO TECHNICAL BULLETIN

184: NetWorker Command Line Functions (UNIX)

PURPOSE

This Technical Bulletin offers a way for non-X Window users to access NetWorker GUI functions via command line instructions. Use the **man** command if you wish to view more detailed information on these command line functions. For example, the command **man save** displays the man page for the **save** command.

PROBLEM

Non-X Window users do not have the GUI window interface to issue NetWorker commands.

SOLUTION

Substitute the following command line statements for functions normally accessed via the GUI for pre-NetWorker 4.1 versions:

GUI Functionality

NetWorker main screen

NetWorker->Administration

NetWorker->Operation->Backup

NetWorker->Operation->Recover

NetWorker->Operation->Volumes

NetWorker->Operation->Group Control

Command Line Functionality

<====> **nsrwatch**

<====> **nsradmin**

<====> **save** or **savefs**

<====> **recover**

<====> **nsrmm** or **mminfo**

<====> **nsr_shutdown -s** or

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K.W.

184: NetWorker Command Line Functions (UNIX)

		savegroup
NetWorker->Operation->Label (<i>without jukebox</i>)	<====>	nsrmm
NetWorker->Operation->Mount (<i>without jukebox</i>)	<====>	nsrmm
NetWorker->Operation->Unmount (<i>without jukebox</i>)	<====>	nsrmm
NetWorker->Operation->Label (<i>with jukebox</i>)	<====>	nsrjb
NetWorker->Operation->Mount (<i>with jukebox</i>)	<====>	nsrjb
NetWorker->Operation->Unmount (<i>with jukebox</i>)	<====>	nsrjb

LEGATO TECHNICAL BULLETIN

185: Data Stream Underflow Message (NetWare)

PURPOSE

This Technical Bulletin describes a misleading error message indicating a data stream underflow on a backed up file.

DESCRIPTION

A data stream underflow message may be generated while backing up a file (WGPOMGR.DLL). A review of the file may show that it was backed up correctly.

The message may have been caused by a slight internal inconsistency in the filesystem. It may indicate that the filesize of all the data associated with the file (including trustee assignments, extended attributes, and namespace information) differs from the actual bytes read. This may happen when part of a file has not been cleaned up.

This message does not necessarily indicate a problem and appears to be harmless.

SOLUTION

Running VREPAIR does not appear to solve the problem. Copying the file usually resolves the issue (for example, `NCOPY TMP A` followed by `NCOPY TMP A`).

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LEGATO TECHNICAL BULLETIN

186: Unsupported X LOCALE Modifiers (UNIX)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker Release 4.1 for UNIX running X11R5 on Sun machines. It applies only to SPARC (SunOS) systems running NetWorker.

PROBLEM

A user's installation of NetWorker 4.1 advanced upgrade under SunOS 4.1.3 appeared to go smoothly until an attempt was made to invoke **nwrecover** and **nwbackup**. The following message appeared:

```
altair:/ 24 # nwrecover
Warning: locale not supported by Xlib, locale set to C
Warning: X locale modifiers not supported, using default
Error: Unable to find Locale Database
Error: Try setting XNLSPATH environment variable

altair:/ 26 # nwbackup
Warning: locale not supported by Xlib, locale set to C
Warning: X locale modifiers not supported, using default
Error: Unable to find Locale Database
Error: Try setting XNLSPATH environment variable
```

The **nwadmin** command appeared to work correctly.

The problem appears to be that `/usr/lib/X11/nls` (Natural Language Support) does not exist on Sun machines. This is required for the X11R5 libraries that are used for Internationalization (I18N). Only client-side programs have I18N, so it makes sense that **nwadmin** works but **nwrecover** and **nwbackup** do not.

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186: Unsupported X LOCALE Modifiers (UNIX)

The `nsr_ize` will create a new `nls` directory if none exists, but will not overwrite an existing one. If you have an older X11 installed, the `nls` directory may not have the files needed to support NetWorker 4.1. Upgrading the `nls` directory to the one included in the extract directory should work for any older programs, as well as NetWorker.

SOLUTION

Move the `/usr/lib/X11/nls` into another location and use the `tar` command to copy ours from the 4.1 NetWorker software distribution tape into the correct location.

LEGATO TECHNICAL BULLETIN

187: Solaris and SunOS Patches Relevant to NetWorker (UNIX)

PURPOSE

This bulletin provides a list of patches provided by Sun Microsystems for their Solaris and SunOS platforms. These patches are recommended for use with NetWorker products for UNIX.

DESCRIPTION

This is a subset of Sun's patches that resolve particular problems with interaction of SunOS or Solaris and NetWorker. For a complete listing of patches for Solaris and SunOS, see the Sun Microsystems web site at <ftp://sunsolve1.sun.com/pub/patches.html>.

SOLUTION

This section lists the recommended patches by platform.

SunOS 4.1.4

Patch ID 102430-02

This patch fixes bug IDs 1184046, 1177296, 1163300, and 1170392. Under heavy traffic, the NIC interface would hang, cutting off communication between the client and the server. Running **ifconfig down** then **ifconfig up** reset the interface and allowed communication to continue. Running a trace showed that the NetWorker client's **save** process was hanging in a **writew** call, and **ansrd** (in versions of NetWorker before 4.2) or **nsrmmdd** (in versions of NetWorker 4.2 and later) was hanging in a **read** call.

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Solaris 2.3 and 2.4

Patch ID 101935-34

Patch ID 101935-35

Patch ID 101945-36

These patches fix bug IDs 1180414, 1207954, and 1174572, as well as other assorted bugs. These patches resolve problems in which both the **save** process and **ansrd** (in versions of NetWorker before 4.2) or **nsrmmmd** (in versions of NetWorker 4.2 and later) hang on a read call. Running the **truss** command helped to determine which processes were hanging. This problem is described in more detail in TB220.

Patch ID 101945-37

Patch ID 101945-38

Patch ID 101945-39

These patches were released after 101945-36. In some environments, they introduce **rpc** errors.

Patch ID 101945-40 and later

No problems reported with patches 101945-40 and later.

Solaris 2.5

Patch ID 103447-03

Patch ID 193093-03 (jumbo kernel patch)

Patch ID 103169.06 (IP driver patch)

These patches resolve some problems on Solaris 2.5, in which **save** processes were hanging in a manner similar to the Solaris 2.3 and 2.4 problem description above.

LEGATO TECHNICAL BULLETIN

188: Patches for nsrjb and jbxercise (UNIX Patch 4.1-005)

PURPOSE

This Technical Bulletin describes some limitations to NetWorker 4.1 for UNIX and provides a patch. It applies to SunOS, Solaris, and AIX systems running NetWorker.

DESCRIPTION

If you do any of the following, you may cause the jukebox to mark all of its inventory as empty:

- open or close the front door
- reset the power
- have a SCSI bus reset
- reboot the system it's attached to

When this happens, all of the slots may get marked by the jukebox as being in an "exception" state. When the jukebox is in this "exception" state, it will not inventory and in some cases, you may notice some I/O and SCSI errors.

The following information is returned by the Standard Jukebox Interface (SJI) driver when reading element status:

1. Whether media is present in the element.
2. Whether the information in item 1 is valid.

Currently, when reading element status information for a jukebox, **nsrjb** concludes that an element contains a volume when item 1 indicates that the element is occupied

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V.N., P.L.

188: Patches for *nsrjb* and *jbexercise* (UNIX Patch 4.1-005)

by a volume and item 2 indicates that the information in item 1 is valid. Otherwise, the element is considered empty.

After installing the patch, **nsrjb** marks the status of an element to be “uncertain” if item 2 reports that information in item 1 is invalid. If the status of an element is marked as “uncertain,” the jukebox's element status *may* be read again after initializing its element status. An *initialize element status* is performed and the element status is read again only when all of the following are true:

1. The *initialize element status* was not done prior to reading element status the first time.
2. The jukebox supports either element status or bar code labels, or both.
3. The “bar code reader” attribute for the jukebox resource is set to “yes.”

If the status of an element is still marked as “uncertain” during an inventory, an attempt is made to load a volume from that element and read its label. Therefore, if the element contains a volume, it will be included in the inventory. If it is empty, it is displayed as being empty.

When labeling a jukebox volume, one of the first operations performed is an inventory of the jukebox. During this process the element status information is checked. If needed, the jukebox's element status is read again after performing an *initialize element status* operation for the jukebox.

SOLUTION

Patch 4.1-005 provides new versions of **nsrjb** and **jbexercise** which solve this limitation. These patches are available electronically from our request server, or *anonymous ftp*, or CompuServe.

LEGATO TECHNICAL BULLETIN

189: Patch for nsrexecd (UNIX Patch 4.02-010)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.0.2 for UNIX and offers a patch to solve the problem. It applies to Solaris clients running NetWorker in a "SPARC cluster" configuration.

DESCRIPTION

A Solaris client may not be able to successfully run the **nsrexecd** command while running a SPARC cluster. This occurs when a server has numerous IP addresses with only one *hostname* in the NIS database. The cause may be attributed to problems introduced to NIS and the "**gethostby ...**" routines in Solaris to support SPARC clusters. The system will display the following error message:

```
nsrexecd: Host address mismatch for ...
```

SOLUTION

Patch 4.02-010 modifies the **nsrexecd** command to run in a less secure mode, thereby avoiding the error. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

190: X Error of Failed Request (UNIX)

PURPOSE

This Technical Bulletin describes an error you may see when running **nwrecover** or **nwbackup**. It applies to AIX systems running NetWorker release 4.1.

DESCRIPTION

You may see the following error messages after updating to NetWorker release 4.1:

```
X Error of failed request: Bad Name (named color or font does not exist)
Major opcode of failed request: 45 (X-open Font)
Serial number of failed request: 53
Current serial number in output stream: 54
```

These error messages indicate that a required font is not available to NetWorker.

SOLUTION

Check to make sure that you have the required fonts installed. You can do this by following the steps shown below.

1. Enter one of the following commands at the system prompt:

- **xlsfonts | grep helv**

or

- **xfd -fn required font**

Substitute one of the options listed below for **required font**:

```
--helvetica-bold-o-normal--14--*--*--*--iso8859-1
```

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190: X Error of Failed Request (UNIX)

```
--helvetica-bold-o-normal-*--14-*--75-75-*--iso8859-1  
--helvetica-bold-r-normal-*--14-*--*--*--*--iso8859-1  
--helvetica-bold-r-normal-*--14-*--75-75-*--iso8859-1  
--helvetica-medium-r-normal-*--14-*--*--*--*--iso8859-1  
--helvetica-medium-r-normal-*--14-*--75-75-*--iso8859-1  
--lucidatypewriter-medium-r-*--14-*--*--*--*--iso8859-1  
--lucidatypewriter-medium-r-*--14-*--75-75-*--iso8859-1
```

2. Enter the following command at the system prompt to add a path if you do not have the fonts shown:

```
xset +fp /usr/lib/X11/fonts/75dpi
```

3. You may elect to choose your own fonts and set them through X11 resources instead of following Step 2.

LEGATO TECHNICAL BULLETIN

191: Problem with Adding New Clients (UNIX)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker release 4.1 and suggests a way to work around it. It applies to SunOS, Solaris, and AIX systems running NetWorker release 4.1.

DESCRIPTION

You may encounter the following error message when you attempt to add new clients to a NetWorker pool:

```
Client is not configured
```

WORKAROUND

Follow these instructions to work around the limitation:

4. As **root**, shut down the NetWorker daemon by running the **nsr_shutdown -a** command.
5. As **root**, run the **nsradmin -c -f /nsr/res/nsr.res** command to add a client to an NSR *pool* resource.
6. Enter [s] for the Select menu.
7. Use the [Tab] key to select NSR *pool*, then press [Return].
8. Press [Return] until the desired NSR *pool* resource appears:

```
Command: Select Next Prev Edit Create Delete Options Quit
Editing NSR pool resource 8 of 9 (on <unknown>)
```

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191: Problem with Adding New Clients (UNIX)

```
        type: NSR pool;  
administrator: root@mars;  
        clients: ;  
        devices: ;  
        enabled: No;  
        groups: ;  
label template: Test;  
        levels: manual;  
        name: Test;  
        pool type: Backup;  
        save sets: ;  
store index entries: Yes;
```

9. Select the Edit menu, then use the [Tab] key to move to the clients attribute.
10. Add the desired client. To add multiple clients to the same NSR *pool*, separate the client names with a comma as shown in the example below:

```
clients: venus, mars;
```

11. Press [Esc] to save the modifications.
12. Select Quit to exit **nsradmin**.
13. As **root**, run the **nsrd** command to restart the NetWorker daemon.

LEGATO TECHNICAL BULLETIN

192: Configuring Transitional Technologies Q7 as EXB-120 (UNIX)

PURPOSE

This Technical Bulletin describes how to configure DLT Changers for a Transitional Technologies Q7 as an EXB-120.

DESCRIPTION

Page 5 of the December, 1994 issue of the *Hardware Compatibility Guide* shows the following entry for Transitional Technologies under the DLT Changers heading:

“... Q7 to the power 8.”

Users should change the mode to EXB-120 from the front panel and configure the autochanger as EXB-120 instead of the two DLT configuration choices available.

Use these command line instructions to configure the device:

1. Run the **jb_config** command from the system prompt.
2. Select **f** for Choice as shown in the example below, then press [Return].

Enter the letter corresponding to the type of jukebox you are installing:

- a) ADIC
- b) ATL
- c) EXB-10i
- d) EXB-10e
- e) EXB-60
- f) EXB-120
- g) HP
- h) Lago Datawheel
- i) other

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192: Configuring Transitional Technologies Q7 as EXB-120 (UNIX)

```
j) another jb  
Choice? f
```

3. Enter the jukebox device name to be assigned, then press [Return].
4. Enter the pathname for the jukebox device control port, then press [Return].
5. Enter the pathname for the media drive, then press [Return]

After the **jb_config** command executes successfully, you must run the **nsrkap** command to complete the process.

LEGATO TECHNICAL BULLETIN

193: AIC7770.DSK Driver Parameters (NetWare)

PURPOSE

This Technical Bulletin provides load line parameters for users applying the AIC7770.DSK driver. It applies to NetWare servers running NetWorker release 3.1 (or earlier).

DESCRIPTION

If you are using the AIC7770.DSK driver (under NetWare 3.12 or NetWare 4.X) and the AIC7770.DSK driver has a creation date prior to 10/94, add the IO_COMBINE and TAG_DISABLE parameters to the load line for that driver. For example, your STARTUP.NCF line might then be:

```
load AIC7770.DSK IO_COMBINE=1 TAG_DISABLE=FFFF slot=N
```

where N is the EISA slot the SCSI card is in.

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LEGATO TECHNICAL BULLETIN

194: Volume Selection Method Used in NetWorker Release 4.1 (UNIX)

PURPOSE

This Technical Bulletin describes the volume selection method employed on SunOS, Solaris, and AIX NetWorker servers running NetWorker release 4.1.

DESCRIPTION

Volume selection methods employed by NetWorker vary, since newer releases utilize the most optimal process possible for existing technologies. This Technical Bulletin provides a description of the current decision process that is employed for volume selection in NetWorker release 4.1. These methods are subject to change, without notice, for any NetWorker release.

DETAILS

When a request for a writable volume is received from a pool, the following volume-selection hierarchy is applied until there is a match for that pool:

6. A currently mounted appendable volume is chosen.
7. An autochanger that contains an appendable volume and whose drives are not all currently busy is chosen. The oldest of the appendable volumes stored in the eligible autochanger is selected.

NetWorker 4.1 uses the VOLUME LABEL-TIME to determine the oldest volume. Earlier NetWorker releases use the ALPHANUMERIC VOLUME NAME to establish the volume's age. In most cases, these two orders will parallel one another.

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194: Volume Selection Method Used in NetWorker Release 4.1 (UNIX)

8. A recyclable autochanger volume is chosen, using the same volume-age criteria as shown in Item 2.
9. A non-autochanger volume is chosen.
10. A prompt is sent to the administrator to mount and label a new volume if none of the conditions in Items 1 through 4 exist.

There are some exceptions to this selection hierarchy:

1. An external volume will be chosen over any others currently in the autochanger if it is not full to capacity or is an empty volume and it has a VOLUME LABEL-TIME earlier than other eligible volumes currently in the autochanger.
2. In some cases, the oldest volume in a group of available, recyclable volumes might not be chosen over newer volumes in the group.

LEGATO TECHNICAL BULLETIN

195: Module Connection Error (NetWare)

PURPOSE

This Technical Bulletin describes an error message that may be received during a backup and presents solutions to the problem. It applies to NetWare systems running NetWorker release 3.0.

DESCRIPTION

If the following error message occurs during a backup:

```
error - a connection to a module is invalid
```

you probably have one of the problems described below.

1. During a manual or scheduled backup, the BINDERY is being backed up at the same time as other savesets, *or*
2. If your NetWorker server is a UNIX system running NetWorker release 4.1, or a NetWare server running NetWorker release 3.1, then you probably have a stale TSA connection.

SOLUTIONS

- If you are doing a manual backup, unmark the BINDERY if it has been marked along with another file or filesystem.

If you are doing a scheduled backup, try explicitly naming the disk volumes and omit the BINDERY – put it into a separate group that will be backed up much later.

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195: Module Connection Error (NetWare)

- If this doesn't fix the problem or if your backup server is running an earlier version of NetWorker, follow these steps in the order presented below:
 1. Unload NetWorker.
 2. Unload any TSAs that may be loaded (for example, TSA.NLM or TSANDS.NLM).
 3. Unload SMDR.NLM.
 4. Reload NetWorker.

LEGATO TECHNICAL BULLETIN

196: Bus Error and Core Dump Received under nwadmin (UNIX)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker release 4.1 and provides a workaround. It applies to UNIX systems running Solaris versions 2.3 or 2.4.

DESCRIPTION

If the environment variable `LC_CTYPE` is set to any value other than `C`, you may receive a bus error and dump *core* when attempting to run the `nwadmin` program. The error does not occur when `LC_CTYPE` remains unset.

WORKAROUND

To work around the limitation, use the commands listed below to either set the environment variable `LC_CTYPE` to `C` or to unset it. You should be able to successfully run the `nwadmin` program afterwards.

1. To set the environment variable, enter the command appropriate for your **shell**:

```
% setenv LC_CTYPE C
```

or

```
$ LC_CTYPE=C; export LC_CTYPE
```

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196: Bus Error and Core Dump Received under nwadmin (UNIX)

2. To unset the environment variable, enter the command appropriate for your **shell**:

```
% unsetenv LC_CTYPE
```

or

```
$ unset LC_CTYPE
```

LEGATO TECHNICAL BULLETIN

197: Initialize Element Status on NetWorker 4.1 (UNIX)

PURPOSE

This Technical Bulletin describes some limitations to NetWorker release 4.1 and provides a workaround. It applies to SunOS, Solaris, and AIX systems running NetWorker release 4.1.

DESCRIPTION

You may receive some I/O, SENSE KEY, and SCSI errors after updating to NetWorker release 4.1.

There are many reasons for I/O errors (for example, a dirty tape drive). There are a few situations where these errors do not indicate a hardware problem:

- NetWorker will first try to verify the label of a new backup volume. Since the backup volume is new, NetWorker will receive an I/O error. This error *does not* indicate a bad drive or SCSI bus.
- NetWorker may trap an I/O error and refuse to label the new backup volume.
- The physical autochanger state may not agree with the state reflected in *nsrjb.res*.
- All slots may be marked by the autochanger as being in an "exception" state if you do anything to cause it to mark all of its inventory as questionable (for example, you open or close the front door, reset the power, have a SCSI bus reset, or reboot the system). When this occurs and you then attempt to label a backup volume or inventory without using the **-E** (*initialize element status*) option, **nsrjb** will completely clear the inventory for that autochanger. Any attempt you make to inventory without the **-E** option will complete without

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reading the backup volume's label.

WORKAROUND

Whenever the inventory has been marked by the autochanger as questionable, the first command to the device must include an operation that performs an *initialize element status*. This may be accomplished by entering the following commands at the system prompt:

1. **nsrjb -Hv -E -j autochanger-name or pscinfo -i device-name**
2. **nsrjb -Iv -E -S slot# name**

These commands *may* fail and cause the system to display the following message:

```
The door of the autochanger was opened and then closed
```

If you receive this message, repeat Steps 1 and 2.

Technical Bulletin 188 provides information on an available patch.

LEGATO TECHNICAL BULLETIN

198: Patch for SAVE ASM Mandatory Lock (UNIX Patch 4.1-006)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.

DESCRIPTION

You may receive a NetWorker savegroup error message when attempting to run a backup after updating to NetWorker release 4.1. The message will be similar to the following example:

```
NetWorker savegroup: (notice) Columba - System completed, 1 client (All
Succeeded)
Start time:   Tue Jan 17 01:00:00 1995
End time:     Tue Jan 17 01:18:34 1995

--- Successful Save Sets ---

  columba: /                               level=incr,    7.1 MB 00:00:28    208 files
* columba:/var save: cannot lock
/var/spool/cron/atjobs/pphilbin.79034040
0.a: Bad file number
* columba:/var save: cannot lock
/var/spool/cron/atjobs/pphilbin.79034040
1.a: Bad file number
  columba: /var                             level=incr,    949 KB 00:01:36    596 files
  columba: /home                            level=incr,     0 KB 00:01:36     0 files
  columba: /usr                             level=incr,    69 MB 00:05:03   3751 files
  columba: /tmp                             level=incr,     1 KB 00:00:03     1 file
  columba: /rackb5/nsr/index/moose.uvm.edu level=9,        3.3 MB
```

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198: Patch for SAVE ASM Mandatory Lock (UNIX Patch 4.1-006)

00:07:52 6 files
saveindex: bootstrap level=9, 674 KB 00:03:21 11 files

The problem appears to apply to files in the *cron* directory.

SOLUTION

Patch 4.1-006 provides new versions of **nsrindexasm**, **nsrmmdbasm**, **save**, and **uasm** which solve this limitation. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

LEGATO TECHNICAL BULLETIN

199: Patch for nsrd (UNIX Patch 4.1-007)

PURPOSE

This Technical Bulletin describes some limitations in NetWorker release 4.1 and provides a patch to resolve the problem. It applies to SunOS, Solaris, and AIX systems running NetWorker release 4.1.

DESCRIPTION

If you experience either of the problems listed below, obtain Patch 4.1-007 to correct the limitation.

- If the fill capacity (amount used) of a backup volume is over 100%, but the volume still has space on it (because data is compressed), NetWorker will choose another empty or partially filled volume (< 100%). For example, suppose you have a backup volume that has the capacity of 5 Gigabytes, and you compressed 8 Gigabytes of data onto this volume, and there is still space on the volume for more data. NetWorker will first search for another writable backup volume before using the one in this example.
- You may encounter segmentation faults when attempting to modify or edit menus while running the **nsrd** command. If this occurs, enter the following command at the system prompt:

```
ps - aux | grep nsr
```

If the response to this command shows that only the **nsrmmmd**, **nsrmmdbd**, and **nsrindexd** programs are present, you should obtain Patch 4.1-007.

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SOLUTION

Patch 4.1-007 provides a new version of **nsrd** which corrects these limitations. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

LEGATO TECHNICAL BULLETIN

200: Patch for nsrmmmd (UNIX Patch 4.1-008)

PURPOSE

This Technical Bulletin describes an I/O error encountered while labeling DLT tapes. It applies to AIX systems running NetWorker release 4.1.

DESCRIPTION

Problems may occur when labeling new, blank DLT tapes. The labeling process attempts to verify a label on the tape, but displays the following error message:

```
NetWorker media: (warning) /dev/rmt3.1 reading: I/O error
```

At this point, the labeling process fails and stops.

SOLUTION

Patch 4.1-008 provides a new version of **nsrmmmd** that fixes this limitation. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

201: Unable to Set OS/2 Client Name (NetWare)

PURPOSE

This Technical Bulletin describes limitations that occur on certain network adapter card and driver combinations on OS/2 clients running the SPX communication protocol.

DESCRIPTION

You may see the following error message when running NetWorker under SPX:

```
unable to set client name
```

This error may occur even if the client name is valid and not currently in use by another client. In this situation, the error is caused by an unsupported Network Interface Card (NIC) and driver.

The error has been encountered with the NICs and drivers listed on page 2 of this bulletin. Other problems may occur intermittently, for example, RPC errors and **xdr** data stream failures.

This problem does not appear to occur on OS/2 systems running TCP/IP communication protocol.

SUGGESTIONS

The following lists describe NICs that have been identified as supported successfully under SPX or have displayed problems and are not supported under SPX:

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201: Unable to Set OS/2 Client Name (NetWare)

Supported NICs

3C509
3C503
3C516
SMC8000
Western Digital Ethernet (MCA)
Allied Telesis AT 1500T
OLICOM ISA Token Ring Adapter
Cabletron E2119
IBM Token Ring Adapter 2 (Bus Mastering)
IBM Token Ring Adapter 16/4 (MCA, 1993 Manufacture)
Madge Smart AT 16/4 Token Ring Adapter (Bus Mastering)

Unsupported NICs

IBM Token Ring 16/4 (1988 Manufacture)
Proteon Token Ring Adapter (16bits and 8bits)
Thomas-Conrad Token Ring Adapter
Ansel Model 3200 (32bits EISA)
NE2000
NE2 (MCA)
NE3200

In order to verify whether the problem lies with an unsupported NIC or is just a case of a client name being used by another client, follow these steps:

1. Open a DOS window and log on to the backup server.
2. Run the utility NWCLTNAM from the server SYS:PUBLIC. This should report all known client names, indicated by the message:

```
clientname <-this machine
```

3. If the client name appears without the <-this machine designation, delete it from the system using the following command:

```
nwcltnam -d clientname
```

4. Open an OS/2 window. From the directory NetWorker is installed on, connect to the desired server using the command:

```
spxworkr -s servername -a
```

The following message will display, followed by the opening of a window for adding the client name:

```
you do not have a registered client name
```

5. Enter the previously unrecognized client name. If the system is still unable to set a client name, the NIC installed on your system is not supported under SPX.

LEGATO TECHNICAL BULLETIN

202: Recommended Procedure for a Backup of the NDS (NetWare)

PURPOSE

This Technical Bulletin describes the recommended procedure for making a backup of the Novell Directory Service (NDS) for use by NetWorker's Recover operation. This Bulletin applies to NetWare systems running NetWorker release 3.x and above.

DESCRIPTION

Considerable changes have been made to the NDS in the current version of Novell's NetWare release 4.x operating system. Unless *all* servers are upgraded to the same version of NDS within 72 hours of its installation on your system, the NDS database will gradually corrupt. Unless you use NetWorker to make a backup of the NDS prior to this occurrence, you will be unable to use NetWorker's Recover operation to restore the NDS.

For more information, contact Novell Technical Services.

NetWorker stores backup information by trustee name, as required by SMS standards. Non-SMS-compliant products store information by object ID. If you attempt to install a backup of the NDS made with a non-SMS-compliant product on a NetWorker server, you invalidate all filesystem trustee information (including owners and access rights). NetWare's filesystem will be unable to synchronize with the backed-up data.

RECOMMENDATION

Use NetWorker to do a manual or scheduled backup of the NDS installed on the main server. If a system disaster occurs, this backed-up version should be used for the Recover operation, since other backups of the NDS may be corrupt. Follow these steps:

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202: Recommended Procedure for a Backup of the NDS (NetWare)

1. Check to be sure that you have the TSANDS NLM (NetWare Loadable Module). NetWorker uses this NLM to back up and restore the directory services database.
2. Add the following line to the AUTOEXEC.NCF file in the SYS:SYSTEM directory for one server per NDS tree:

```
LOAD TSANDS.NLM
```

Make sure the program loads successfully before proceeding.

3. Start NetWorker on the NetWorker server.
4. Select Clients from the Administration pull-down menu.
5. Press [F8] to open the Creating Client window.
6. Press [F9] to Clear value, then enter the name of the NDS directory tree you want to back up, as shown below:

```
Name: [ nds = tree_name ]
```

Note: The NetWare server must be an object residing in the tree.

7. Tab to the Remote user field and enter the user name:
User: [.CN=ADMIN.O=top organization name]
8. Tab to the Password field and enter the password for this user.
9. Make any other changes required for your scheduled backups.
10. Press [Enter] twice after you have finished configuring the new client.
11. Select Backup from the Operation pull-down menu, then select Manual Backup.
12. Press [F8] to open the Specify Client dialog box.
13. Press [F9] to Clear value, then enter the name of the newly created NDS client.
14. Press [Enter] to open the Login dialog box.
15. Enter the User information shown below:
User: [.CN=ADMIN.O=top organization name]
16. Clear the Login Password field, then enter the current password assigned to ADMIN.
17. Press [Enter] and wait for the Login process to finish.
18. Mark the *root* directory.
19. Select Mark for Backup from the File pull-down menu, then select Start Manual Backup.

Note: To perform scheduled backups of your NDS client, simply add the `nds = tree_name` client to the group of your choice.

LEGATO TECHNICAL BULLETIN

203: Timeout on nsrjb During EXB-120 Inventory (UNIX Patch 4.1-009)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.1 for UNIX and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.

DESCRIPTION

When an EXB-120 autochanger attempts to read the bar code of all its tapes for an *initialize element status* operation during inventory, it may exceed the time allotted for the task. This will cause the **nsrjb** operation to timeout.

SOLUTION

Patch 4.1-009 provides new versions of **pscdd** for AIX, **psc** for Solaris, as well as **load_psc** and **psc_drv.o** for SunOS systems. These new versions increase the timeout setting for the INITIALIZE_ELEMT_STATUS variable. These patches are available electronically from our request server, or *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

204: Using the **nsrkap** Command with NetWorker 4.1 (UNIX)

PURPOSE

This Technical Bulletin describes the use of the **nsrkap** command during a new installation or update of a NetWorker product. It applies to SunOS, Solaris, and AIX systems running NetWorker.

DESCRIPTION

The usage of the **nsrkap** command will depend upon your situation. The following descriptions provide a guide to the commands needed for two scenarios:

1. If an earlier version of NetWorker is currently installed on your system and you are updating to NetWorker release 4.1, enter the update enabler code using the following command, replacing `xxxxxxx-xxxxxxx-xxxxxxx` with the update enabler code provided with NetWorker release 4.1:

```
nsrkap -v -c xxxxxxx-xxxxxxx-xxxxxxx
```

2. If you purchased an earlier version of NetWorker and have not installed it prior to receiving NetWorker release 4.1, use the command shown in Item 1, replacing `xxxxxxx-xxxxxxx-xxxxxxx` with the enabler code provided with the *earlier* version of NetWorker. You do not need a NetWorker 4.1 update enabler code in this circumstance.

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LEGATO TECHNICAL BULLETIN

205: Patch for nsrd (UNIX Patch 4.1-010)

PURPOSE

This Technical Bulletin describes a limitation to NetWorker release 4.1 and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX systems running NetWorker release 4.1 and backing up DOS, Windows, Windows NT, and OS/2 clients.

PROBLEM

If you are backing up a PC Desktop client to a UNIX server, you will not be able to restore or verify the files that are archived.

SOLUTION

Patch 4.1-010 provides a new version of **nsrd** which creates a "PC Archive" pool which will allow you to restore or verify files. All archives from PC clients will be directed to the "PC Archive" pool and will not be assigned to any other pool. This patch is available electronically from our request server, or *anonymous ftp*, or CompuServe.

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LEGATO TECHNICAL BULLETIN

206: Counter Increase During Volume Change (UNIX Patch 4.02-011)

PURPOSE

This Technical Bulletin describes a client-side problem that may occur when running NetWorker release 4.0.2 and offers a patch to solve the problem. It applies to SunOS, Solaris, SCO, and AIX servers running NetWorker release 4.0.2 with NetWare clients.

PROBLEM

When your server is waiting for a tape to be mounted or is in the process of changing an autochanger volume, you may see the PACKET RECEIVE BUFFER and NO ECB counters increase on the NetWare client.

SOLUTION

Patch 4.02-011 provides a new version of **nsrd** which avoids this problem. This patch is available electronically from our request server, or *anonymous ftp*, CompuServe, or World Wide Web. See the box below for further details.

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LEGATO TECHNICAL BULLETIN

207: Counter Increase During Volume Change (UNIX Patch 4.1-011)

PURPOSE

This Technical Bulletin describes a client-side problem that may occur when running NetWorker release 4.1 and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1 with NetWare clients.

PROBLEM

When your server is waiting for a tape to be mounted or is in the process of changing an autochanger volume, you may see the PACKET RECEIVE BUFFER and NO ECB counters increase on the NetWare client.

SOLUTION

Patch 4.1-011 provides a new version of **ansrd** which avoids this problem. This patch is available electronically from our request server, or *anonymous ftp*, CompuServe, or World Wide Web. See the box below for further details.

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LEGATO TECHNICAL BULLETIN

208: Recovery of the NDS (NetWare)

PURPOSE

This Technical Bulletin describes the procedure to follow to recover the Novell Directory Service (NDS) from a NetWorker backed-up version of the NDS (see Technical Bulletin 202 for recommended Backup procedures). This Bulletin applies to systems running NetWorker release 3.0.

DESCRIPTION

Considerable changes have been made to the NDS for NetWare release 4.02. For example, unless *all* servers are upgraded to NetWare release 4.02 within 72 hours of its installation on your system, the NDS database will gradually corrupt. If you have not made a backup of the NDS using NetWorker prior to this occurrence, you will be unable to use NetWorker's Recover operation to restore the NDS. Contact Novell Technical Services for more information.

NetWorker stores backup information by trustee name, as required by SMS standards. Non-SMS-compliant products store information by object ID. If you attempt to install a backup of the NDS made with a non-SMS-compliant product onto a NetWorker server, you invalidate all filesystem trustee information (including owners and access rights). NetWorker's filesystem will be unable to synchronize with the backed-up data.

The SMS Target Service Agent (TSA) for the NetWare filesystem in release 4.0 or later appends trustee access rights to existing files and directories. This may cause an invalid trustee to appear to be legitimate once the NDS has been fully restored.

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RECOMMENDATION

If other Novell utilities cannot be used to recover the NDS database, you need to remove and then reinstall the NDS. Use Recover to restore an uncorrupted backup version of the NDS (see Technical Bulletin 202).

This action should be considered *only* when other Novell utilities cannot be used to recover the NDS database, since this procedure invalidates trustee access rights and mail directories.

To do a recovery of the NDS:

1. Use the INSTALL NLM to remove directory services and install a new directory.
2. Start NetWorker on the backup server.
3. Select Recover from the Operation pull-down menu.
4. Press [F8] to open the Specify Client dialog box.
5. Press [F9] to Clear value, then enter the name of the NDS client assigned for the NetWorker backed-up NDS.
6. Press [Enter] to open the Login dialog box.
7. Enter the top organization (.O) name assigned to the NDS during the installation of your *first* server of the NDS directory tree, as shown below:

```
User: [ .CN=ADMIN.O=top organization name ]
```
8. Clear the Login Password field, then enter the current password assigned to ADMIN.
9. Press [Enter] and wait for the Login process to finish.
10. Mark the root directory.
11. Select Versions from the View pull-down menu. Make sure to select a version dated prior to the disaster, since newer versions may be corrupt.
12. Highlight the NDS version to be restored.
13. Press [C] to select Change Browse Time, then press [Enter] to update.
14. Select Mark for Recover from the File pull-down menu, then select Start Recover.
15. Use the DSREPAIR NLM to manually delete invalid trustees appended by the SMS Target Service Agent.
16. Run the NETADMIN and PARTMGR utilities provided with NetWare to validate the NDS restoration.

LEGATO TECHNICAL BULLETIN

209: Recovery from Manual Interference with an Autoloader (UNIX)

PURPOSE

This Technical Bulletin describes the procedure for recovery from manual interference with an autoloader. This Bulletin applies to systems running NetWorker release 4.x.x.

PROBLEM

If an autoloader is interfered with manually, NetWorker may be unable to use it. Manually ejecting the media from the drive, removing the media from the autoloader, or opening the autoloader door can cause this situation, depending on the type of autoloader used.

SOLUTION

To recover from this situation, reset the autoloader and perform an inventory.

1. Verify that the media cartridge is correctly installed in the autoloader and that the autoloader door is closed.
2. Reset the autoloader by entering the following as *root*:
nsrjb -Hv
3. Perform an inventory by entering the following as *root*:
nsrjb -Iv

After the inventory operation is finished, NetWorker will be able to use the autoloader.

For complete information on the use of the **nsrjb** command, see the online man page or the *Legato NetWorker Administrator's Guide*.

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LEGATO TECHNICAL BULLETIN

210: SPXWORKR.EXE Patch (NetWare Patch 3.1-002)

PURPOSE

This Technical Bulletin describes an error message you may see on a DOS client when it is backed up to a NetWare server via SPX and offers a patch to solve the problem. The patch applies to systems running NetWorker for NetWare versions 3.00 and 3.10.

DESCRIPTION

After a scheduled backup, a DOS client may display the following error message under the Group Status or Group Control window:

```
Unsuccessful Save Sets
* antlia: C:\! no output
```

SOLUTION

Patch 3.1-002 provides a new version of SPXWORKR.EXE to correct this problem. This new executable applies to NetWorker for NetWare versions 3.00 and 3.10. The patch is available electronically from CompuServe (GO LEGATO). You can either copy the patch directly to DOS clients or place it in the backup server's SYS:PUBLIC directory.

Legato Technical Bulletins are available electronically from:

- World Wide Web (<http://www.legato.com>)
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LEGATO TECHNICAL BULLETIN

211: Suggested SPX Settings (NetWare)

PURPOSE

This Technical Bulletin describes the tuning of SPX values on NetWare, OS/2, and DOS/Windows systems running NetWorker 3.x.

DESCRIPTION

Problems with SPX communications occur due to heavy network traffic, extensive delays due to distance between client and server, or unreliable network media.

When the client sends data to the backup server without receiving a response within the time specified in the VERIFY TIMEOUT setting, SPX sends a KEEP-CONNECTION-ALIVE packet to the backup server. The client waits to receive a response from the backup server for the duration specified in the LISTEN TIMEOUT or WAIT TIMEOUT setting. If the backup server still fails to respond, the client sends another packet requesting acknowledgment. If the ABORT TIMEOUT value is exceeded, the client sends yet another SPX packet requesting acknowledgment, then waits for the ABORT TIMEOUT limit to be reached again. This process repeats until a response is received or the specified RETRY COUNT is reached, causing the SPX session to terminate.

Increasing the following values as suggested avoids dropped communications due to a lack of response from the client or server. The values for SPX tuning vary, depending upon the platform in question. Suggested settings for specific platforms follow.

SPX Settings for NetWare

SPX values can be tuned through the SPXCONFIG.NLM in all versions of NetWare. Only the settings for the SPXCONFIG.NLM are provided below. NetWare 4.x allows SPX values to be set through SERVMAN as well as through SPXCONFIG.NLM.

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211: Suggested SPX Settings (NetWare)

The SPXCONFIG.NLM can be loaded anytime you need to dynamically change the SPX values without having to reboot the affected NetWare machine.

Add the following command line to the AUTOEXEC.NCF of the NetWare backup server *and* all NetWare clients, to ensure that the SPXCONFIG.NLM loads after a reboot.

```
load spxconfig a=1080 v=108 w=1080 r=255 q=1
```

SPX Parameter	Suggested	Default	Minimum	Maximum
ABORT TIMEOUT	a=1080 ¹	a=540	a=10	a=5400
VERIFY TIMEOUT	v=108	v=54	v=10	v=255
WAIT TIMEOUT	w=1080	w=108	w=10	w=3240
RETRY COUNT	r=255	r=10	r=1	r=255
MODE	q=1 ²	q=0	n/a	n/a

1. Timeout settings are stated in ticks. One second = 18.2 ticks.
2. This option loads SPXCONFIG.NLM in *quiet* mode to avoid a pause for user response after the values are reset.

SPX Settings for DOS/Windows

SPX values can be tuned on a DOS/Windows machine by editing the NET.CFG file used by the NetWare drivers at startup. The example below is based on the current syntax for NET.CFG setup. Earlier versions of the DOS NetWare drivers may require different syntax.

The NET.CFG file is only examined when the drivers are loaded. The best way to reset these values is to reboot the client after adding the following lines to the NET.CFG file:

```
PROTOCOL STACK IPX
SPX ABORT TIMEOUT = 1080
SPX VERIFY TIMEOUT = 108
SPX LISTEN TIMEOUT = 1080
SPX RETRY COUNT = 255
```

SPX Parameter	Suggested	Default	Minimum	Maximum
ABORT TIMEOUT	1080 ¹	540	10	5400
VERIFY TIMEOUT	108	54	10	255
LISTEN TIMEOUT	1080	108	10	3240
RETRY COUNT	255	20	10	255

1. Timeout settings are stated in ticks.

SPX Settings for OS/2

SPX values can be tuned on an OS/2 machine by editing the NET.CFG file used by the NetWare drivers at startup. The example below is based on the current syntax for NET.CFG setup. Earlier versions of the OS/2 NetWare drivers may require a different syntax. Novell's documentation of these values stresses that the timeout values should always have the same ratio to each other.

After inserting following the lines in the NET.CFG file, reboot the OS/2 client. The new values will then take effect.

```

PROTOCOL STACK SPX
  ABORT TIMEOUT 60000
  VERIFY TIMEOUT 6000
  LISTEN TIMEOUT 12000
  RETRY COUNT 255

```

SPX Parameter	Suggested	Default	Minimum	Maximum
ABORT TIMEOUT	60000 ¹	30000	10	65535
VERIFY TIMEOUT	6000	3000	10	65535
LISTEN TIMEOUT	12000	6000	10	65535
RETRY COUNT	255	20	10	255

1. Timeout settings are stated in milliseconds.

CONCLUSION

The values described in this document are suggested starting values. In some cases, boosting the values beyond our suggested values will allow a client to communicate correctly. In other cases, communication may be too slow or unreliable for SPX communications to be restored.

LEGATO TECHNICAL BULLETIN

212: NetWare Message Handling Services (NetWare)

PURPOSE

This Technical Bulletin describes the procedure for utilizing NetWare's Message Handling Services (MHS) to receive NetWorker event notices and daily status reports. It applies to systems running NetWare release 3.1.2 or 4.1.0 with NetWorker for NetWare release 3.1.

DESCRIPTION

NetWorker normally sends broadcast messages about important events to the status line of any workstation logged in as *supervisor* or *administrator* on a NetWare server. NetWorker can route these notices to your e-mail in-box instead, provided your system meets the following prerequisites:

- NetWare Basic MHS is installed (as delivered on Novell's installation media)
- Server has at least 32MB memory
- User ID for NetWorker has supervisor rights to the MHS directory

If you do not use MHS for e-mail but want NetWorker's messages routed to your e-mail address, you must ensure that:

- the system in use is MHS-compatible
- the backup server is included as a *Post Office*
- the interface or gateway is installed correctly

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METHODOLOGY

To set MHS notifications under NetWorker:

1. Select Server from the NetWorker Administrator window.
2. Press the down [Arrow] key to highlight disable MHS.
3. Press the spacebar to remove the X, enabling the MHS feature.
4. Press [Tab] to highlight the Mail addresses field.
5. Enter the desired MHS notification address in the form of

uuuuuuuu@sssssss

where *uuuuuuuu* is the username assigned by the mail administrator and *sssssss* is the MHS server name assigned by the network administrator upon MHS installation.

6. To specify multiple MHS-user notifications, enter each user's address on a separate line, following the same notification address convention shown above.
7. Press [Enter] to activate MHS notifications.

To test the process, use the FirstMail facility provided by Novell, following the instructions provided in the NetWare documentation for your system.

After you enable the MHS facility, NetWorker will create an MHS-compatible file in the MHS/MAIL/SND directory containing:

- status notifications as they occur, delivered as short e-mail messages
- a daily status report in the same format that is generated by choosing the F2 option from the Main NetWorker screen

When an event occurs, NetWorker inserts 'supervisor' in the *From* header and 'Legato Networker Status Report' in the *Subject* header. NetWorker verifies the MHS volume and user ID, composes a one-line message about the event, then generates a pending mail file in the MHS/MAIL/SND directory.

LEGATO TECHNICAL BULLETIN

213: NetWorker savefs Patch (UNIX Patch 4.02-012)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker for UNIX release 4.0.2 and offers a patch to solve the problem. It applies to AIX servers running NetWorker.

DESCRIPTION

You might experience an incomplete backup due to a system time clock error, possibly due to a change from standard to daylight savings time. A "time is in the future" error message similar to the following is generated in the `/nsr/logs/` messages file or `savegroup` completion mail.

```
* appomattox.austin.ibm.com:index nsrmmdbasm: time is in the future:
Mon Apr 18 10:06:19 1994
* appomattox.austin.ibm.com:index usage: nsrmmdbasm -s[bednv] [-ix]
[-t time] [-f proto] [-p ppath] file...
* appomattox.austin.ibm.com:index usage: nsrmmdbasm -r[dnv] [-i
{nNyYrR}] [-m <src>=<dst>] [-z suffix] [file]...
* appomattox.austin.ibm.com:index save: external ASM `nsrmmdbasm'
exited with code 1
* appomattox.austin.ibm.com:index save: /usr/nsr/mm/mmvolume was not
successfully saved
saveindex: bootstrap                level=9,          17 KB 00:00:14    9 files
```

SOLUTION

Patch 4.02-012 provides a new version of the `savefs` command that fixes this limitation. This patch is available electronically from:

- our request server (`request@Legato.com`)
- *anonymous ftp* (`ftp.Legato.com`)

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213: NetWorker savefs Patch (UNIX Patch 4.02-012)

- CompuServe (GO LEGATO)

LEGATO TECHNICAL BULLETIN

214: NetWorker WSPXWRKR, WSPXSCHD, and WSPXADMN Patch (NetWare Patch 3.00-003)

PURPOSE

This Technical Bulletin describes limitations in NetWorker for NetWare release 3.0.0 and offers a patch to overcome the limitations. It applies to SPX Windows systems running NetWorker. This patch will update the Windows client to the equivalent of NetWorker release 3.0.1.

DESCRIPTION

You might experience one or more of the following situations:

- A general protection (GP) fault occurs from within the Browser.
- A GP fault occurs when a CD-ROM is attached to the local machine and the MSCDEX.EXE command is invoked by the AUTOEXEC.BAT file.
- When backing up a locked file, NetWorker creates an index entry for the file indicating the correct filesize, but the actual backed-up file created has a filesize of zero.
- When NetWorker is used to compress a file during a backup operation, the file is not backed up correctly.
- When NetWorker is used to recover a previously compressed file, the file is not recovered correctly.
- When the server indicates that the client is to apply an ASM (for example, a DOS compression directive) during a scheduled backup and *root* is marked, nothing gets backed up.
- When you mark the *superroot* for a Recover or Verify operation, the following error

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message appears:

File not fully expanded or not found in index.

- On portable PC's, some ports indicate the presence of a removable drive, even if there are no drives attached that are capable of being backed up.

SOLUTION

Patch 3.00-003 provides new versions of WSPXWRKR.EXE, WSPXSCHD.EXE, and WSPXADMN.EXE that fix these limitations. This patch is available electronically through CompuServe (GO LEGATO).

This patch is distributed as a compressed, self-extracting file. After downloading the file from CompuServe, execute the extraction in a temporary directory. Copy the decompressed files to the directory where the old versions of these files exist (typically, C:\NETWORKR or SYS:NSR\BIN). Replace the old program files with the new versions.

LEGATO TECHNICAL BULLETIN

215: NetWorker Release 3.x Patches (NetWare)

PURPOSE

This bulletin provides a list of the current NetWorker for NetWare release 3.x patches, as well as the Technical Bulletins describing each problem in detail.

Legato provides these patches as a quick interim response to reported problems with NetWorker. These problems have not been widely reported.

Since the patches have not been through quality assurance testing, we recommend they be installed only in sites experiencing symptoms identical or similar to those described in the bulletins. The patches and their related Technical Bulletins are available electronically from:

- our request server (request@Legato.com)
- *anonymous ftp* (<ftp.Legato.com>)
- CompuServe (GO LEGATO)
- World Wide Web (<http://www.legato.com>)

The patches are distributed as compressed, self-extracting files. After downloading a patch file:

1. execute the extraction in a temporary directory
2. copy the decompressed files to the directory where the current versions of these files exist (typically, C:\NETWORKR or SYS:NSR\BIN)
3. replace the current program files with the new versions

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B.W., V.B.

215: NetWorker Release 3.x Patches (NetWare)

Patch ID#	CompuServe Library^a	File Size (in Bytes)	Technical Bulletin #: Description
3.0-001	PN30-01.EXE	229,165	156: OS/2 SPXWORKR NetWare Patch
3.0-002	PN30-02.EXE ^b	varies	177: Device Supplement 3.01b Patch
3.0-003	PN30-03.EXE	525,224	214: WSPXWORKR.EXE, WSPXSCHD.EXE, and WSPXADMN.EXE NetWare Patch
3.1-001	PN31-01.EXE	239,755	163: STACCATO.EXE and STACC310.DLL Staccato Patch
3.1-002	PN31-02.EXE	648,170	210: SPXWORKR.EXE NetWare Patch
3.1-003	PN31-03.EXE		219: NetWorker Release 3.1 Mega Patch (Patch 3.1-003 for NetWare)

- a. Files have been ZIPPed.
- b. Call Legato Technical Support to request this patch.

LEGATO TECHNICAL BULLETIN

216: RAP Error During `jb_config` Execution (UNIX)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker for UNIX release 4.1 and provides a solution. It applies to all UNIX servers running NetWorker with jukebox modules.

DESCRIPTION

After updating to NetWorker 4.1, you might receive the following error message when you invoke the `jb_config` command.

```
jb_config: RAP error
You must use the jukebox enabler program to add a jukebox resource.
```

```
-----
---
```

```
jb_config
Enter the letter corresponding to the type of jukebox you are
installing:
a) ADIC-1200c
b) ADIC-VLS
c) ARC-DiamondBack
d) DLI Libra Series
e) Digital DLT
f) EXB-10e
g) EXB-10i
h) EXB-60
i) EXB-120
j) EXB-210
k) EXB-400 Series
l) HP-Optical 630MB/1.3GB
m) HP-C1553A
```

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V.N., P.L.

216: RAP Error During `jb_config` Execution (UNIX)

```
n) Lago 340
o) Lago (Serial) Datawheel
p) Metrum (SCSI)
q) STK-9709/Odetics
r) STK-9708/Lago 380 (SCSI) Datawheel
s) ATL (Serial)
t) other
Choice? c
Installing an ARC-DiamondBack jukebox.
Name you would like to assign to the jukebox device? jukeboxname
Pathname of the control port for the jukebox device? [/dev/sjid1u1]
Enter pathname of media drive 1:? /dev/rmt/0mbn
jb_config: RAP error, You must use the jukebox enabler program to add a
jukebox resource.
```

EXPLANATION

The error message is generated due to a missing attribute for the autochanger resource. The `jb_config` command included with earlier releases of NetWorker does not supply all the required attributes for creating an autochanger resource. These autochanger resource attributes are provided in NetWorker release 4.1.

SOLUTION

Run the NetWorker release 4.1 version of the `jb_config` command. Invoke the command as shown below from the directory where NetWorker 4.1 is installed:

```
# ./jb_config
```

LEGATO TECHNICAL BULLETIN

217: Exabyte Barcode Label Requirements (UNIX)

PURPOSE

This Technical Bulletin describes *barcode label* requirements for Exabyte autochangers. It applies to SPARC (SunOS 4.1.x and Solaris 2.x) and AIX systems running NetWorker for UNIX release 4.1.

DESCRIPTION

When you run an inventory for an Exabyte autochanger after updating to NetWorker release 4.1, you might receive the following error message:

```
Illegal request: Sense Key <5>, ASC <3b>, ASCQ <88>
```

The same error message appears whether the inventory is invoked through NetWorker's GUI or through the following command line:

```
nsrjb -v -I -E -S slot-range -f /devname
```

The following translation of the error codes was interpreted from the user's manual for the Exabyte 120.

- Sense Key <5>
Indicates the location of the cartridge causing the problem.
- ASC <3b>
Indicates a move error. NetWorker sent a request that the autochanger cannot comply with.
- ASCQ <88>
Indicates that the cartridge's label is unreadable. This might be due to an

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217: Exabyte Barcode Label Requirements (UNIX)

“upside down” cartridge or a missing, damaged, or hand-generated barcode label.

NetWorker for UNIX release 4.1 supports barcode labels and searches for their presence during the inventory process. If you attempt to inventory media generated by an earlier release of NetWorker without placing valid barcode labels on them, you will receive the ASCQ error message shown above.

SUGGESTION

Check the label on the specified cartridge to determine its condition. Replace the barcode label on the cartridge, if needed. Once all media in the autochanger have valid barcode labels, **nsrjb** will be able to successfully execute the inventory process.

When you update to NetWorker for UNIX 4.1, have a large supply of barcode labels ready for placement on your old tapes. Make sure that all media in the autochanger have valid barcode labels before starting the inventory process.

LEGATO TECHNICAL BULLETIN

218: Label Verification Errors on Exabyte-8500 with 160m Tapes (UNIX)

PURPOSE

This Technical Bulletin describes a limitation on the use of 160 meter (m) tapes in an Exabyte-8500 tape drive. It applies to SunOS, Solaris, and AIX systems running NetWorker for UNIX release 4.1.

DESCRIPTION

When attempting to verify the internal label on a 160m tape in an EXB-8500 tape drive, you may receive an error message similar to the following:

```
Tue 17:15:02 /dev/rmt/0hbn verify label operation in progress
Tue 17:15:38 media warning: /dev/rmt/0hbn reading: I/O error
Tue 17:15:39 /dev/rmt/0hbn tape label read, I/O error
Tue 17:15:40 /dev/rmt/0hbn eject operation in progress
Tue 17:15:54 /dev/rmt/0hbn ejected
```

SUGGESTION

Replace the 160m tape in the EXB-8500 with a 112m tape. The EXB-8500 should be able to verify the internal label on the 112m tape.

The EXBxx-XL tape drive is more successful at handling 160m tapes.

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LEGATO TECHNICAL BULLETIN

219: NetWorker Release 3.1 Mega Patch (NetWare Patch 3.1-003)

PURPOSE

This Technical Bulletin describes limitations in NetWorker release 3.10 and offers a patch to resolve them. It applies to systems running NetWorker 3.10 for NetWare.

DESCRIPTION

You may encounter one or more of the following problems affecting the NLMs indicated.

Indexing problems and crashes

- *indexd.nlm**
- *nsrim.nlm*
- *nsrd.nlm**

Intolerance to \r in hostnames and case sensitivity problems

- *netdirlg.nlm*
- *local_lg.nlm*
- *spx_lg.nlm*
- *tcp_lg.nlm*

Time-outs and "can't send" complaints when accessing NetWorker functions

- *networkr.nlm*
- *rcmdsrv.nlm*
- *rpcxdr.nlm*
- *savegrp.nlm**

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*These NLMs only exist on a NetWorker for NetWare backup server. They do not need to be replaced on a client-only installation.

Crashes during save or recover after NetWorker server has shut down

- *ui.nlm*

SOLUTION

Patch 3.1-003 provides new versions of all the NLMs listed above. This patch is available on a 3.5" floppy disk or electronically (see details in the box on page 1) as a compressed, self-extracting file. This patch is referred to as either *3.1 Mega Patch* or *Jumbo Patch for NetWorker for NetWare release 3.1*.

The following steps explain how to install the patch. This example assumes the NetWorker executable files are located in SYS:NSR\BIN. If this is not the case for your installation, alter the directory name accordingly.

1. Change directories to SYS:NSR\BIN on the server.
2. Flag all NLMs in SYS:NSR\BIN as *read write* (**flag *.NLM rw**).
3. To install the patch from the 3.5" floppy disk
 - copy the NLMs from the disk to the SYS:NSR\BIN directory.

To download the patch file electronically

- execute the extraction in a temporary directory,
 - copy the decompressed files from the temporary directory to SYS:NSR\BIN.
4. Flag the NLMs back to *read only* (**flag *.NLM ro**)

This patch includes a group of NLMs that can be used to provide information to enhance technical support. These NLMs are contained in a sub-directory called *snooper*. These do not need to be installed, but should be retained in the event they are needed.

To install the *snooper* NLMs, perform the following steps appropriate to your version of NetWare.

NetWare 3.1x

1. Change directories to SYS:NSR\BIN on the server.
2. To install the patch from the 3.5" floppy disk
 - copy all files (except *snooper4.nlm*) from the *snooper* sub-directory to SYS:NSR\BIN.

To download the patch file electronically

- execute the extraction in a temporary directory,
 - copy the decompressed files (except *snooper4.nlm*) from the temporary directory to SYS:NSR\BIN.
3. Flag the new files as *read only* (**flag *.* ro**).

NetWare 4.1

1. Change directories to SYS:NSR\BIN on the server.
2. To install the patch from the 3.5" floppy disk
 - copy all files (except *snooper.nlm*) from the *snooper* sub-directory to SYS:NSR\BIN.

To download the patch file electronically

 - execute the extraction in a temporary directory,
 - copy the decompressed files (except *snooper.nlm*) from the temporary directory to SYS:NSR\BIN.
3. Rename *snooper4.nlm* to *snooper.nlm*.
4. Flag the new files as *read only* (flag *.* ro).

LEGATO TECHNICAL BULLETIN

220: NetWorker Hangs During save Execution (UNIX Patch 4.1-012)

PURPOSE

This Technical Bulletin describes errors that might occur during a **save** command and provides information on various solutions and patches to resolve the problem. The Bulletin applies to SunOS and Solaris systems running NetWorker release 4.1 for UNIX.

DESCRIPTION

When attempting to execute a **save** command, NetWorker might “hang.” Any of the following conditions could cause this problem.

SEND/RECV malfunction (UNIX Patch 4.1-012)

NetWorker release 4.1 for UNIX uses the SEND and RECV primitives for some of the network data transfers. On some operating systems, SEND and RECV do not function properly, causing NetWorker to hang in some cases.

Hangs due to use of the **asavegroup** binary show up when filesystems are probed for savepoints, typically at the beginning of a **save**. In this case, clients may have certain save points that are not backed up.

Applying the new version of the **asavegroup** binary to the server and the appropriate **save** binary included in UNIX Patch 4.1-012 (*save.sunos* or *save.solaris*) to clients eliminates this problem. The **save** binaries and the **asavegroup** binary are all included in this patch. The patch is available electronically from our request server, *anonymous ftp*, CompuServe, and World Wide Web.

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J.K.

NFS mount points unavailable

Unavailable NFS mount points are the most frequent cause of inactivity time-outs during execution of a **save** command.

NetWorker must **stat** or check every file or mount point in the directory being backed up even though NFS-mounted partitions, by default, are not backed up. If the NFS mount point or automounted NFS mount point accessed is not available (because it is down or because of network problems), the **save** command hangs trying to access that mount point until the problem is resolved. This is analogous to using the **ls** command in a directory containing mount points when the NFS server being mounted is hung.

Using read-only soft NFS mount points can, in some cases, avoid this problem, but this is only a viable solution if the filesystem is read-only.

Incremental save of a large filesystem

If you do an incremental save on a large filesystem where only a few files have changed, there may be a long delay before the client saves data to the server. In this case, the server might mistakenly believe that the client is inactive, generating abandoned save sets.

If this is the case, increasing the inactivity time-out setting should cure the problem.

Available patches not installed correctly

What appears as a hang may actually be caused by a problem already corrected by a patch. Obtain Technical Bulletin 113 for an up-to-date list of current patches available for NetWorker release 4.1 for UNIX.

Be sure that you have correctly installed all available Legato Patches. It is possible to mistakenly copy the patches to a different directory and, due to path settings, inadvertently use the old code. To prevent this from happening, verify the version of the binaries utilized by logging in as *root* and issuing the following command:

```
# ls -l `which binaryname`
```

Note that the ASMs often reside in a different location than the other NetWorker executables (for example, */usr/etc/*asm* and */usr/sbin/nsr**).

Verify that the server *and* all its clients use the correct version of the patched binaries. Failure to do so often results in wasted debugging time.

After the server patches (*nsr**) have been installed, restart NetWorker by issuing the following commands as *root* to ensure the patches take effect.

```
# nsr_shutdown  
# nsrd
```

Be sure any clients already running are restarted when applying client patches.

Waiting for writable tape message

If the message “waiting for writable tape from pool *poolname*” appears even though writable tapes exist for the Pool indicated, the cause might be one of the following:

- Pools are level-sensitive. For example, if the Pool indicated in the message does not include Level 9 saves, the save set indexes are directed to a different Pool (usually, the Default pool). If no tapes are available in the required pool, NetWorker will wait to complete the **save** and a “waiting for writable tape...” pending message appears.
- In some cases, NetWorker fails to automatically recycle a valid, recyclable tape. If enough recyclable tapes from the pools being used are readily available, try one of the following solutions.

For smaller client databases, use the following method.

1. Inventory the jukebox.
2. Issue the **nsr_shutdown** command to stop NetWorker.
3. Restart NetWorker with the **nsrd** command.

For larger client databases, the following method may be faster.

1. Inventory the jukebox.
2. Use the NetWorker Admin window to delete the jukebox resource.
3. Run **jb_config** to re-create the jukebox resource.

Operating system is losing internal events

To determine if this condition is present, issue the following command from the server or from the client experiencing the problem.

```
# nsr_support -t 20
```

If the backup process successfully restarts, the operating system is probably losing internal events. In most cases, applying the latest kernel patches should correct the problem. If the problem persists, contact your system supplier.

Packets are being discarded

If your network environment is a mix of Ethernet and FDDI or Token Ring, you may have a router problem that causes packets to be discarded. Try using one of the following to solve this problem.

- Use NetWorker on an all-Ethernet or all-FDDI setup, without routers involved, to rule out a router problem as the cause. Ensure that the “server network interface” attribute for each NetWorker client is correct before trying this experiment.
- Set a consistent MTU size across all the interfaces (typically, a setting of 1500).
- Check the value of the “don’t fragment” bit. By setting the “don’t fragment” bit’s value to “0” (allow fragmenting), mixed MTU values have a better chance of succeeding.

220: NetWorker Hangs During save Execution (UNIX Patch 4.1-012)

Check the setting of the “don’t fragment” bit with the following command.

```
# ndd /dev/ip ip_path_mtu_discovery
```

If the value “1” (the default) displays, use the following command to set the fragmentation bit’s value to “0”, then verify the new value.

```
# ndd -set /dev/ip ip_path_mtu_discovery 0
```

Out of kernel resources

Your system must be configured with sufficient *swap space* and *mbufs*. Running out of kernel resources can cause NetWorker to hang during system calls that block processing until adequate resources are available.

System utilities **pstat -T**, **netstat -m**, **sar**, **iostat**, and **vmstat** enable you to see when the system’s resources are being pushed to its limits.

Sun bug ID #1180414

Using nonblocking IO can cause corrupted data streams in SunOS 4.1 variants and systems running Solaris 2.3 or 2.4. Sun has patches available for several systems to solve this problem. Contact Sun and mention bug ID #1180414 to obtain the appropriate patch for your system.

This bug typically manifests itself as an abandoned save set (while the tape drive is in a “writing” mode). The bug can also cause a hang or corrupted data during a **recover** (usually resulting in an error message **about unknown type or bad magic number**).

Note that an abandoned save set does not mean that the **save** has been terminated. An abandoned save set causes **savegroup** to stop tracking the **save**, even if the server is still connected to the client in question. This allows **savegroup** to try to initiate other saves within the bounds of the server parallelism. An abandoned save will still consume a unit of server parallelism until it terminates.

If you encounter this problem, killing the client’s **save** process often causes the server to resume processing new save sets.

Sun’s patch for this bug *must* be applied to your NetWorker server. You can either apply it to NetWorker clients or use the *save.sunos* or *save.solaris* binaries provided in UNIX Patch 4.1-012. These client-side binaries do not use nonblocking IO (which *must* be used on the server).

Sun bug ID #1207954

A bug in Solaris 2.4 may produce symptoms similar to those in bug ID #1180414, described previously. This bug causes packets to be delivered out of order during periods of high-interrupt activity. Multi-processor SPARC machines typically tickle the bug more than single-processor machines. The bug can also cause a hang or corrupted data during a **recover**. Contact Sun and mention bug ID #1207954 to obtain the patch for this problem.

The Sun patch for this problem includes a Solaris 2.4 patch for the problem listed under Sun bug ID #1180414. This patch should be applied to both client *and* server machines, but is especially critical on the NetWorker server.

Sun bug IDs #1166610 and #1174572

This is the so-called “bit-flip” bug. Some SPARC machines have a caching problem that was corrected in subsequent hardware releases. A software fix for older hardware releases involves disabling the cache. This fix may result in significantly slower performance. The bug is automatically corrected in Solaris 2.4.

This bug typically presents itself by crashing the system. It could cause randomly corrupt data, which manifests itself in a similar way as Sun bug ID #1180414 described previously. Contact Sun and mention bug IDs #1166610 and #1174572 to obtain more information on this problem.

Why corrupt streams can cause hangs

NetWorker clients send counted data to the server. If this count is corrupted into a huge number, the server will attempt to read that number of bytes. The client will not send the expected amount of data, causing the server to hang waiting for data that will never arrive. Since the server continues to attempt to read data, it can not send a reply back to the client, often causing the client **save** process to hang up as well.

To resolve the problem, halt the client **save** process with the **kill** command. This usually gets a hung **savegroup** to run again. Applying the fixes mentioned above will generally solve the problem.

LEGATO TECHNICAL BULLETIN

221: Unable to Log On After Installation (Staccato)

PURPOSE

This Technical Bulletin describes a problem that may occur when attempting to log on after installing Staccato and also provides a solution. The Bulletin applies to NetWare systems running Staccato release 3.10 rev a for Windows.

PROBLEM

After installing Staccato, the following message appears when you attempt to log on:

The user name or password is invalid, or could not be authenticated.

SOLUTION

If an incorrect user name and password have been ruled out as the cause, the problem is most likely due to mismatched versions of the following DLLs:

Filename	Dated	Version
BC40RTL.DLL	06/10/94	1.01
COMMDLG.DLL	12/27/93	3.10
CTL3DV2.DLL	11/24/93	2.05

Run Novell's VERSION command, located in SYS:PUBLIC, to determine the version installed on your system. For example, enter the following at the DOS prompt:

```
VERSION BC40RTL.DLL
```

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B.S.

221: Unable to Log On After Installation (Staccato)

If the versions displayed do not agree with the versions in the previous chart, delete the mismatched DLLs from your system and re-install Staccato to ensure the correct versions are utilized.

Before re-installing Staccato, erase the NSR\NSR.RES file. After re-installation is complete, delete any redundant STACCATO line from your AUTOEXEC.NCF file.

If the VERSION command is unavailable on your system, obtain the DOS/Windows client software by following these steps:

1. log on to CompuServe
2. go to the NOVFILES forum
3. download the following:
 - DOSUP9.EXE
 - WINUP9.EXE

LEGATO TECHNICAL BULLETIN

222: ClientPak for Windows NT Patch (ClientPak Patch 3.51-001)

PURPOSE

This Technical Bulletin describes a client-side limitation that occurs in clients running ClientPak for Windows NT release 3.51.

DESCRIPTION

If a level of "SKIP" is assigned to a scheduled backup on a UNIX backup server, subsequent scheduled backups of a different level to the same server may result in an error message similar to the following:

```
savegroup: antlia:C:\ failed.  
* antlia:C:\ save: error, Connection already initiated (2)  
* antlia:C:\ save: Cannot open save session with `puck'
```

SOLUTION

Do not assign the level of "SKIP" to backups of these clients until you have obtained Patch 3.51-001.

Patch 3.51-001 provides new versions of the files WINWORKR.EXE, WTCPSCHD.EXE and WINSCHED.EXE. Install these files in the same location that the old versions were located, typically C:\WIN32APP\LEGATO.

Patch 3.51-001 can be obtained electronically from any of the following:

- our request server (request@Legato.com)
- *anonymous ftp* (<ftp.legato.com>)
- CompuServe (GO LEGATO)
- World Wide Web (<http://www.legato.com>)

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LEGATO TECHNICAL BULLETIN

223: ClientPak for PC Desktops Patch (ClientPak Patch 3.11-001)

PURPOSE

This Technical Bulletin describes a client-side limitation that occurs in systems running ClientPak for PC Desktops release 3.11 which contains version 3.02 for DOS, Windows, and OS/2 clients as well as the 3.51 version for Windows NT Workstation clients.

This client-side limitation also occurs with systems running ClientPak for PC Desktops release 3.10 and 3.02.

DESCRIPTION

If a level of "SKIP" is assigned to a scheduled backup on a UNIX backup server, subsequent scheduled backups of a different level to the same server may result in an error message similar to the following:

```
savegroup: antlia:C:\ failed.  
* antlia:C:\ save: error, Connection already initiated (2)  
* antlia:C:\ save: Cannot open save session with `puck'
```

SOLUTION

Do not assign the level of "SKIP" to backups of these clients until you have obtained Patch 3.11-001. Contact Legato Technical Support for information on obtaining this patch.

Patch 3.11-001 provides new versions of the files listed below. Install these files in the same location as the original versions, typically either C:\NETWORKR or C:\WIN32APP\LEGATO.

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223: ClientPak for PC Desktops Patch (ClientPak Patch 3.11-001)

OS/2

TCPWORKR.EXE

DOS

FTPWORKR.EXE

LWPWORKR.EXE

NFSWORKR.EXE

Windows

WINWORKR.EXE

WTCPSCHD.EXE

Windows NT Workstation

WINWORKR.EXE

WTCPSCHD.EXE

WINSCHED.EXE

LEGATO TECHNICAL BULLETIN

224: SCO MPX Tape Performance (UNIX)

PURPOSE

This Technical Bulletin describes a limitation that may exist on SCO UNIX 3.2v4.x MPX (Multiple Processor) systems running NetWorker release 4.0.2 and offers recommendations to resolve the limitation.

DESCRIPTION

SCO systems running NetWorker may experience low I/O performance rates when a tape drive/autochanger is connected through a bus mastering SCSI controller. The problem occurs because the UNIX **dd** command and NetWorker's **uasm** write to the tape drive at a higher speed than the data is transferred.

RECOMMENDATIONS

1. Use your favorite text editor to change the TCPWINDOW setting in the */etc/conf/pack.d/tcp/space.c* file to **8*1024**. Relink and reboot the system. Setting TCPWINDOW to this value allows NetWorker to operate without being required to renegotiate window sizes during transfers. This generally reduces overhead by as much as 60%.
2. Contact SCO to determine if a patch is available to help improve I/O performance.

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V.N.W.,

G.W.

LEGATO TECHNICAL BULLETIN

225: Access Violation Errors (UNIX Patch 4.13-001)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker release 4.1.3 for UNIX and provides information on an available patch to resolve the problem. It applies to SunOS, Solaris, and AIX systems running NetWorker release 4.1.3 for UNIX.

DESCRIPTION

NetWorker release 4.1.3 for UNIX verifies loopback addresses on local connections. If the DNS, NIS, */etc/hosts*, or NIS-PLUS database does not have the IP address to name mappings expected by the server, NetWorker will not be able to connect to the loopback IP address. You may receive an access violation error message similar to the following:

```
* xyz:index save: error, Access violation - unknown host: 127.0.0.1
* xyz:index save: Cannot open save session with yonada
```

SOLUTION

Patch 4.13-001 provides new versions of **nsrd**, **nsrexecd**, **nsrindexd** which recognize all of the server's IP addresses, independent of what the host databases indicate.

The patch is available electronically from the following sources:

- our World Wide Web site (www.legato.com)
- our CompuServe forum (GO LEGATO)
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LEGATO TECHNICAL BULLETIN

226: SCSI Errors on an ADIC VLS Autochanger (UNIX Patch 4.13-002)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker release 4.1.3 for UNIX and provides information on an available patch to resolve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3 for UNIX with an ADIC VLS autochanger.

DESCRIPTION

When resetting an ADIC VLS autochanger using the **nsrjb** command, attempts to move media from an empty source element (slot or drive) may cause the following error message:

```
# nsrjb -H -E
nsrjb: Jukebox error, ADIC VLS AutoChanger not ready, operator
intervention may be required: Sense Key <2>, ASC <3a>, ASCQ <0>
```

An ADIC VLS autochanger firmware problem returns the error condition “Medium not present” (ASC <3a>, ASCQ <0>) instead of “Medium source element empty” (ASC <3B>, ASCQ <E>), which is the expected and more accurate message.

SOLUTION

Patch 4.13-002 provides a new **psc** driver to correct this limitation. The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

227: import/export port 0 Error on an ADIC VLS Autochanger (UNIX)

PURPOSE

This Technical Bulletin describes a limitation in NetWorker release 4.1.3 for UNIX and offers a solution. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3 for UNIX with an ADIC VLS autochanger.

DESCRIPTION

When running **jbexercise** on an ADIC VLS autochanger, you may receive the following error message:

```
# jbexercise -m ADIC-VLS -c /dev/sjid1u1
Enter the non-rewinding pathname for drive 0(physical id 1):
/dev/rmt/01bn
Enter the non-rewinding pathname for drive 1(physical id 2):
/dev/rmt/11bn
About to exercise the jukebox. There should be media loaded in the
jukebox in the first and last slots and the drive doors should be open.
Ready to continue(y/n)?y
slot 1: "FULL"
slot 2: "EMPTY"
:
:
slot 14: "EMPTY"
slot 15: "FULL"
please remove media from import/export port 0
jbexercise: Jukebox error, ADIC VLS AutoChanger Illegal request: Sense
Key <5>, ASC <21>, ASCQ <1>
```

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SOLUTION

Use the following **jbexercise** command lines to exercise the drives and slots separately:

```
# jbexercise -m ADIC-VLS -d -c </dev/sjidlul>  
# jbexercise -m ADIC-VLS -s -c </dev/sjidlul>
```

Using the command line options **-d** (or **-D** for specific drives) and **-s** (or **-S** for specific slots) will avoid exercising the entry and exit ports. See the **jbexercise** man page for details on these command line options.

LEGATO TECHNICAL BULLETIN

228: Counter Increase During Volume Change (UNIX Patch 4.13-003)

PURPOSE

This Technical Bulletin describes a client-side problem that may occur when running NetWorker release 4.1.3 and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3 with NetWare clients.

PROBLEM

When your server is waiting for a tape to be mounted or is in the process of changing an autochanger volume, you may see the PACKET RECEIVE BUFFER and NO ECB counters increase on the NetWare client.

SOLUTION

Patch 4.13-003 provides a new version of **ansrd** which avoids this problem.

The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

229: ClientPak Installation with `nsr_ize` Fails (ClientPak Patch 3.0-001)

PURPOSE

This Technical Bulletin describes a problem you may encounter while installing NetWorker ClientPak for UNIX. The Bulletin applies to AIX systems running NetWorker ClientPak for UNIX release 3.0.

DESCRIPTION

You may encounter a problem while using the `nsr_ize` script included with your NetWorker ClientPak for UNIX release 3.0 on an AIX system. The script may display the following error message, then exit abnormally:

```
NetWorker is not supported on aix machines.
```

SOLUTION

Patch 3.0-001 provides a new version of the `nsr_ize` script to correct this problem.

The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

230: Tips on Avoiding SCSI Errors (NetWare)

PURPOSE

This Technical Bulletin explains how the NetWorker software communicates with tape drives, describes some of the causes of SCSI errors, and provides guidelines for items to check when SCSI errors occur.

DESCRIPTION

NetWorker uses Advanced SCSI Programming Interface (ASPI) to handle communication between the software and tape drives. Legato tests and certifies the ASPITRAN modules used by several manufacturers. See the *Legato Compatibility Guide* (FaxWorker Document #1905) for a current list of certified devices.

The NetWorker software communicates with the tape drive as follows:

1. NetWorker sends a standard SCSI command (for example, rewind, FORWARD SKIP FILE, write, or read) to the ASPITRAN module.
2. The ASPITRAN modules relay NetWorker's message to the SCSI host adapter (the SCSI card).
3. The SCSI controller sends the message to the drive through the SCSI cable.
4. The drive either carries out the command or fails.
5. A code relaying the success or failure of the operation is returned by following the chain backwards and, if an error occurs, it is logged in *nwscsi.log*.

A failure anywhere along the communication path will cause the command to fail. The failure code returned does not indicate where the error occurred, just that the attempt to perform an action on the tape drive did not succeed.

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230: Tips on Avoiding SCSI Errors (NetWare)

Typically, error messages listed in the *nwscsi.log* file indicate a hardware failure or configuration error somewhere along the SCSI bus.

The following recommendations can eliminate some frequently-encountered causes of SCSI errors:

- Set a transfer rate no higher than 5 MB/second for the Adaptec 1540 or 1740 cards. There are various methods for setting the transfer rate: changing a driver parameter, changing a switch or jumper on the SCSI adapter, or using a configuration utility.
- Be sure you have current firmware and driver software for your SCSI adapter. Older firmware and drivers might cause problems, such as false SCSI resets.
- Carefully check termination. The SCSI adapter itself is ordinarily terminated unless internal devices are connected, in which case the last internal SCSI device must be terminated. It is critical that the SCSI bus be terminated exactly *twice* at the ends of the bus (not in the middle). Active termination, while more expensive, is preferable to passive termination. Failure to properly terminate the SCSI bus is the single greatest cause of mysterious SCSI errors.
- Always use the shortest possible SCSI cables or internal ribbon connectors. The longer the total cable length, the greater the possibility of random errors. Fasten all cables securely.

LEGATO TECHNICAL BULLETIN

231: De-Installing NetWorker for NT Client Software (NT)

PURPOSE

This Technical Bulletin describes the procedures needed to manually de-install NetWorker for NT client software from an NT machine. This bulletin applies to versions 3.50 and 3.51 of Legato's ClientPak for Windows NT and ClientPak for PC Desktops.

Only experienced NT users should perform this procedure, as it requires editing the NT registry to fully de-install all items.

SUMMARY

During the initial install process, you could install NetWorker in one of the following four configurations:

- NetWorker Scheduled Backup Service
- 3rd Party Rsh Daemon
- NetWorker Remote Exec Service with Legato Portmapper
- NetWorker Remote Exec Service with 3rd Party Portmapper

You would usually choose the installation configuration as follows:

- For a NetWare backup server, NetWorker Scheduled Backup Service
- For a UNIX backup server, NetWorker Remote Exec Service with Legato Portmapper

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The following procedures provide instructions to de-install whichever configuration was initially installed. If you do not know which configuration is currently installed, look in the HKEY_LOCAL_MACHINE -> SYSTEM -> CurrentControlSet -> Services section of the NT Registry. Check for entries for *wtcpschd.exe*, *nsrexec* and *portmap*.

- If you have an entry for *wtcpschd.exe*, use the instructions for NetWorker Scheduled Backup Service.
- If you have entries for *nsrexec* and *portmap*, look at the Registry Key to determine which *portmap* file is present.
 - If the string value for the Display Name is Legato Portmapper, follow the instructions for NetWorker Remote Exec Service with Legato Portmapper.
 - If the string value for the Display Name contains any other entry, follow the instructions for NetWorker Remote Exec Service with 3rd Party Portmapper.
- If you do not find an entry for either *wtcpschd.exe*, *nsrexec*, or *portmap*, follow the instructions for 3rd Party Rsh Daemon.

Important: In each configuration, where the Registry keys are listed, you only need to delete the key specified. Deleting the specified key deletes both that key and all the subkeys under it.

NetWorker Scheduled Backup Service

Use these instructions to remove the NetWorker software from a client configured with NetWorker Scheduled Backup Service.

1. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SOFTWARE.
2. Delete the *Legato* key.
3. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services.
4. Delete the *wtcpschd.exe* key.
5. Use NT's Registry Editor to locate \HKEY_USERS*administrator_user* (for example - S-1-5-19021586-1881112493-1578072122-500).
6. Delete the *Legato* key.

Note: Repeat for any other user that has installed NetWorker - entry same as listed in steps 5 and 6 above.
7. Use the Program Manager to remove the WinWorkr Program Group and all of its contents.

Note: Repeat for any other user that has installed NetWorker - entry same as listed in step 7.
8. Remove the NetWorker directory and all of its contents. In a default installation, this directory path is C:\WIN32APP\LEGATO.
9. Reboot this NT machine to allow the changes in the Registry to take effect.

3rd Party Rsh Daemon

Use these instructions to remove the NetWorker software from a client configured with a 3rd party **rsh** daemon.

1. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SOFTWARE.
2. Delete the *Legato* key.
3. Use NT's Registry Editor to locate \HKEY_USERS*administrator_user* (for example - S-1-5-21-2063730127-191515597-1086071974-500).
4. Delete the *Legato* key.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in steps 3 and 4 above.
5. Use the Program Manager to remove the WinWorkr Program Group and all of its contents.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in step 5.
6. Remove the NetWorker directory and all of its contents. In a default installation, this directory path is C:\WIN32APP\LEGATO.

NetWorker Remote Exec Service with Legato Portmapper

Use these instructions to remove the NetWorker software from a client configured with NetWorker Remote Exec Service with Legato Portmapper.

1. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SOFTWARE.
2. Delete the *Legato* key.
3. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services.
4. Delete the *nsrexec* key.
5. Delete the *portmap* key.
6. Use NT's Registry Editor to locate \HKEY_USERS*administrator_user* (for example - S-1-5-21-2063730127-191515597-1086071974-500).
7. Delete the *Legato* key.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in steps 6 and 7 above.
8. Use the Program Manager to remove the WinWorkr Program Group and all of its contents.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in step 8.

231: De-Installing NetWorker for NT Client Software (NT)

9. Remove the NetWorker directory and all of its contents. In a default installation, this directory path is C:\WIN32APP\LEGATO.
10. Reboot this NT machine to allow the changes in the Registry to take effect.

NetWorker Remote Exec Service with 3rd Party Portmapper

Use these instructions to remove the NetWorker software from a client configured with NetWorker Remote Exec Service with 3rd party portmapper.

1. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SOFTWARE.
2. Delete the *Legato* key.
3. Use NT's Registry Editor to locate \HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services.
4. Delete the *nsrexec* key.
5. Use NT's Registry Editor to locate \HKEY_USERS*administrator_user* (for example - S-1-5-21-2063730127-191515597-1086071974-500).
6. Delete the *Legato* key.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in steps 5 and 6 above.
7. Use the Program Manager to remove the WinWorkr Program Group and all of its contents.
Note: Repeat for any other user that has installed NetWorker - entry same as listed in step 7.
8. Remove the NetWorker directory and all of its contents. In a default installation, this directory path is C:\WIN32APP\LEGATO.
9. Reboot this NT machine to allow the changes in the Registry to take effect.

LEGATO TECHNICAL BULLETIN

232: NetWorker Log File Administration (UNIX)

PURPOSE

This Bulletin presents a solution for automatic management of NetWorker's log files. It applies to SunOS and Solaris servers running NetWorker release 4.x.x.

DESCRIPTION

NetWorker stores the messages displayed in the NetWorker Administrator window in a message log file in the `/nsr/logs` directory. When NetWorker's log file becomes too large and automated administration is required, use the following solution.

SOLUTION

SunOS and Solaris systems provide a two-part mechanism for managing the `syslog` message file (`/var/log/syslog`): a shell script (`/usr/lib/newsyslog`) and a `crontab` entry for `root` to periodically invoke the script.

You can modify the `newsyslog` script to manage and maintain a short history of NetWorker's log file. The modified script maintains a three-file history of NetWorker's `daemon.log` file.

Follow these steps to manage your NetWorker log file.

1. Use your favorite text editor to add the following lines to `/usr/lib/newsyslog`. If you are using a NetWorker release prior to 4.2, use `LOG=daemonlog` in place of the second line of this script.

```
LOGDIR=/nsr/logs
LOG=daemon.log
if test -d $LOGDIR
then
```

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```
cd $LOGDIR
test -f $LOG.1 && mv $LOG.1 $LOG.2
test -f $LOG.0 && mv $LOG.0 $LOG.1
test -f $LOG && mv $LOG $LOG.0
cp /dev/null $LOG
chmod 644 $LOG
fi
```

Note that NetWorker will not use the new log file until the NetWorker daemons are shut down and restarted. Due to a feature of UNIX, the old log file will continue to be used even though it has been renamed. Shut down the daemons with the **nsr_shutdown(8)** command. You can shut down manually or from the **newsyslog** script. Make sure that the script does not run during a scheduled save. Use the **nsrd(8)** command to restart the daemons.

2. Add an entry to the **crontab** for *root* to control the frequency of running the **newsyslog** script. The entry shown in the following example invokes the **newsyslog** script every Saturday morning at 4:05 a.m.

```
5 4 * * 6 /usr/lib/newsyslog
```

If your system does not have the **newsyslog** script and **crontab** entry to invoke it, create the **newsyslog** script manually, and add the **crontab** entry for it. See the **crontab** man page for details on creating **crontab** entries.

LEGATO TECHNICAL BULLETIN

233: Resolving Naming Problems (ClientPak 3.50/3.51 for Windows NT)

PURPOSE

This Technical Bulletin provides solutions to naming problems encountered when setting up a NetWorker NT client.

PROBLEM

This problem applies to Windows NT clients using ClientPak for PC Desktops and ClientPak for Windows NT, release 3.50 or 3.51.

When trying to run WinWorker, you receive the following error:

```
Server 'venus': 'mars-test' is not a client of this server
```

However, the client name should be "mars" not "mars-test." NetWorker determines the client name from the hostname of the NT machine. If you issue the **hostname** command at this point, it would reply mars-test. There are many dependencies on name service configuration on the server and there may be more than one TCP name.

Most NetWorker servers, except for old NetWare servers, can use the Aliases field in the Client Setup menu to add other names for the client, for example "mars-test."

Sometimes it is appropriate to change the client setup; other times it may be more appropriate to handle the change on the server.

SOLUTION

To enable the system to return the correct hostname, perform the following steps:

1. Open the Control Panel.
2. Double-click Network.

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3. In the Network Settings window, select TCP/IP Protocol.
4. In TCP/IP Configuration, select DNS.

NOTE: This machine does not have to be set up to use DNS. This is the location where NT obtains the TCP/IP hostname.

5. Edit the Host Name field to contain the correct name for this machine.
6. Click OK in all of the open windows to save this new configuration.

The machine should now respond to the **hostname** command with the correct name, in this case "mars."

PROBLEM

This problem applies to Windows NT clients using ClientPak for PC Desktops and ClientPak for Windows NT, release 3.50 or 3.51.

On NT clients 3.50 and 3.51, if the registry attribute is set up, you can only do manual and scheduled backups to that one machine and no other. If the name of the server is incorrect (for example, the wrong form of the name or an old server) then it can be fixed with the following solution. If you need to allow backups by more than one NetWorker server with a Windows NT 3.50 or 3.51 client, a solution is also provided.

When trying to run either a scheduled backup on the server or a manual backup on the client, you receive the following error:

```
save request from venus.company.com is rejected
```

SOLUTIONS

Resolving Name Conflicts

This error occurs because the NT client is designed to only allow backup requests by a single backup server with a single name. During the software installation, the name "venus" was given, not "venus.legato.com." The backup server is responding as "venus.legato.com" because of the UNIX DNS configuration. It is outside the scope of this bulletin to explain how to reconfigure this.

There are two ways to fix this problem:

- The easiest is to re-install NetWorker on this client and enter the correct server name,
- The other is to edit the machine registry as follows.

CAUTION: Only System Administrators who are familiar with the NT Registry should edit the Registry.

Edit the string entry \HKEY_LOCAL_MACHINE\SOFTWARE\Legato\NetWorker
from

Authenticate server: REG_SZ: venus

to

Authenticate server: REG_SZ: venus.company.com

Backing Up to Multiple NetWorker Servers

This solution allows backups from Windows NT 3.50 or 3.51 clients to more than one NetWorker server. It also fixes any alternate name conflicts for the server.

In the machine registry, edit the string entry
\HKEY_LOCAL_MACHINE\SOFTWARE\Legato\NetWorker to delete the
following entry:

Authenticate server: REG_SZ: venus

Important: This solution allows any NetWorker server with a client resource for that machine and can route packets to that machine to be able to back up the machine.

LEGATO TECHNICAL BULLETIN

234: Gradual Degradation of Server Running NetWorker (NetWare)

PURPOSE

This Technical Bulletin provides a procedure to identify one possible cause of performance degradation on a NetWare server or client running any version of NetWorker.

DESCRIPTION

A NetWare server or client running NetWorker is exhibiting gradually degrading performance and needs to be rebooted. The procedure provided in this bulletin determines whether a high number of Event Control Block (ECB) buffers in use are the cause of the performance degradation.

Earlier versions of Network Interface Cards (NIC) were designed to provide the user a reasonable response time. NetWorker communicates at a much faster speed than the average user and consequently uses and attempts to release resources much faster. Newer NICs or LAN drivers have been improved to support server to server communications.

Contact the NIC manufacturer to obtain the latest version of your driver and install it.

SOLUTION

To determine if a high number of ECB buffers are in use, follow this procedure:

1. At the System Console, type the following command:

```
load monitor -p
```

A menu appears.

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- [ftp.legato.com](ftp://www.legato.com), Internet address 137.69.200.1 (log in as *anonymous*)
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H.P.

234: Gradual Degradation of Server Running NetWorker (NetWare)

2. In this menu select LAN/WAN Information and press Enter.

A menu similar to the following appears:

```
                Available LAN Drivers
-----
| 3C509 [port=300 int=5 frame=ETHERNET_802.2]
| 3C509 [port=300 int=5 frame=ETHERNET_802.3]
| 3C509 [port=300 int=5 frame=ETHERNET_II]
| 3C509 [port=300 int=5 frame=ETHERNET_SNAP]
-----
```

3. In this menu, identify the name of your LAN driver.
4. Return to the previous menu.
5. Select System module information and press Enter.
6. Select the name of the LAN driver you identified in step 3 and press Enter.
7. Select ECB Buffers and press Enter.

The Resource Tags menu displays.

8. Look at the number in the In use: field.

This number should be small; if no activity is detected, the number is zero. A very large number, in the hundreds or thousands, indicates a problem.

9. If you have a very large number, reboot the system. Enter the following commands at the System Console to bring down the server:

```
DOWN [Enter]
EXIT [Enter]
```

Restart the server.

LEGATO TECHNICAL BULLETIN

235: Changing the Default Message Log Notification (UNIX)

PURPOSE

This Technical Bulletin describes a workaround enabling NetWorker to update the *messages* file. This bulletin applies to NetWorker servers running release 4.2 or earlier and AIX 4.1.2, 4.1.3, 4.1.4 or Solaris 2.5.

DESCRIPTION

AIX 4.1.2, 4.1.3, 4.1.4 and Solaris 2.5 changed the **logger** command so it no longer accepts the default logger event actions used by NetWorker 4.2 and earlier. Therefore, NetWorker running on AIX 4.1.2, 4.1.3, 4.1.4 or Solaris 2.5 cannot update the */nsr/logs/messages* file.

SOLUTION

AIX 4.1.2, 4.1.3, 4.1.4 and Solaris 2.5 logger commands do not accept the -f and -p switches used together. Change the default Log Notification from

```
/usr/bin/logger -p daemon.notice -f -
```

to

```
/usr/bin/logger -p daemon.notice
```

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V.N.W.

LEGATO TECHNICAL BULLETIN

236: Moving a NetWorker Server (NetWare)

PURPOSE

This Technical Bulletin describes how to move all versions of the NetWorker for NetWare software from one server to another one.

DESCRIPTION

If, for any reason, you need to move the NetWorker for NetWare software from one server to another, this bulletin provides a detailed procedure.

Follow these steps to move the NetWorker software:

1. Using NetWorker, perform a manual full backup of all the volumes on the old NetWorker server.
2. Use the F2 key from the menu to exit NetWorker and unload all NLMs.
3. Copy the entire `/nsr` directory tree from the old server to the new server.
4. Edit the AUTOEXEC.NCF file and remove all references to NetWorker.
5. Shut down your old server, and disconnect all the backup devices.
6. Shut down the new server, add the hardware devices to the new server, and restart both servers. Start the old server first, then the new one.
7. Using the NetWorker distribution media, load the NetWorker software on the new server.

IMPORTANT: If you have an autochanger, do not start NetWorker. Refer to the *Installation and Maintenance Guide* for instructions for installing and testing the autochanger device driver.

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H. P.

236: Moving a NetWorker Server (NetWare)

8. Start NetWorker on the new server. The NetWorker NLMs should start on the new server (make *sure* you have shut down NetWorker on the old server).

You should see the following messages on the new server:

```
NetWorker Server: (notice) started
NetWorker Registration: (notice) invalid auth codes detected.
The auth codes for the following licenses enablers are now invalid.
You must re-register these enablers within 15 days to obtain new codes.
```

9. Re-register your new NetWorker server. After moving NetWorker from one server to another, you have 15 days to register the new server with Legato to get new authorization codes. The server will disable itself after this time period.

Follow these steps to authorize NetWorker:

1. Open the Registration window by selecting the Registration command in the Administration pull-down menu of the Main window.
2. Select Tabular from the View pull-down menu to display the tabular view of the window.
3. Select Print from the File pull-down menu and enter a print command to send a copy of the Registration window to a printer.
4. FAX this printout along with your name, company, and telephone number to Legato Customer Support at (415) 812-6220.

Legato will then send you a Legato NetWorker Host Transfer Affidavit which you must complete and return to Legato. After the signed affidavit is returned to Legato, you will receive new authorization code(s).

5. Enter the new authorization code(s) into the Auth code field of the Registration window.

Follow these steps to prepare your new server for use:

1. Verify that all the clients are included in the scheduled backups.
2. Use the Recover window to make sure all the client indexes are visible and therefore “recoverable.”
3. Perform a full manual backup of the new server as soon as possible and prior to any scheduled backups.

If you want to set up the old server as a client, install the client software from the release media on the old server, then restart the server. You will need to either install the client software into a different directory than where the server software was installed or first delete everything from */nsr/bin*. We do not recommend that you delete any of the rest of the old */nsr* directory structure until you have verified that backups are now working on the new backup server.

LEGATO TECHNICAL BULLETIN

237: Cloning Patch for NetWorker for Windows NT (NT Patch 4.2-001)

PURPOSE

This Technical Bulletin describes a problem that may occur on servers running NetWorker for Windows NT release 4.2 and offers a patch to solve the problem. The information applies to Windows NT servers running NetWorker for Windows NT release 4.2. The problem is fixed in NetWorker for Windows NT release 4.2.1.

Important: Patch 4.2-004 includes this solution. If you plan to install patch 4.2-004, you do not need to install patch 4.2-001.

DESCRIPTION

When trying to clone a save set, you receive an error message similar to the following:

```
NSR server venus: Unable to receive
nsrclone: waiting 30 seconds then retrying
nsrclone: RPC error, Unable to receive (severity 4, number 4)
nsrclone: Cannot open nsrclone session with venus
nsrclone: Failed to clone any save sets
```

SOLUTION

Patch 4.2-001 provides new versions of **nsrmmd**, **nsrd**, **ansrd**, **librpc.dll**, and **libnsr.dll** to solve this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

- our World Wide Web site (www.legato.com)
- our CompuServe forum (GO LEGATO)
- our Internet address, 137.69.200.1 ([ftp.legato.com](ftp://137.69.200.1))
- our request server (request@legato.com)

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V.W., G.W.

LEGATO TECHNICAL BULLETIN

238: Simultaneous Backup and Recover Patch (NT Patch 4.2-002)

PURPOSE

This Technical Bulletin describes a problem that may occur on servers and clients running NetWorker for Windows NT release 4.2 and offers a patch to solve the problem. The problem is fixed in NetWorker for Windows NT release 4.2.1.

DESCRIPTION

If a Windows NT client attempts to recover files while the NetWorker Windows NT server is backing up data, an access violation error occurs and the NetWorker User program shuts down.

SOLUTION

Patch 4.2-002 provides a new version of **winworker.exe** to solve this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

- our World Wide Web site (www.legato.com)
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- our Internet address, 137.69.200.1 ([ftp.legato.com](ftp://legato.com))
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V.W., G.W.

LEGATO TECHNICAL BULLETIN

239: Scanner Patch for NetWorker for NT (NT Patch 4.2-003)

PURPOSE

This Technical Bulletin describes a problem that may occur on servers running NetWorker for Windows NT release 4.2 and offers a patch to solve the problem. The information applies to Windows NT servers running NetWorker for Windows NT release 4.2. The problem is fixed in NetWorker for Windows NT release 4.2.1.

DESCRIPTION

You may encounter various problems when using the **scanner** command. For example, while attempting to scan save sets in using the **scanner -i** command on a tape with multiple save sets, the **scanner** process hangs after only reading a few save sets from the tape.

SOLUTION

Patch 4.2-003 provides a new version of **scanner** to solve various problems. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

- our World Wide Web site (*www.legato.com*)
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- our Internet address, 137.69.200.1 (*ftp.legato.com*)
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LEGATO TECHNICAL BULLETIN

240: NetWorker on Non-English Language Systems (NT Patch 4.2-004)

PURPOSE

This Technical Bulletin describes a problem that may occur on non-English language servers running NetWorker for Windows NT release 4.2 and offers a patch to solve the problem. The information applies to Windows NT servers running NetWorker for Windows NT release 4.2. NetWorker for Windows NT release 4.2.1 fixes this problem.

Important: NT Patch 4.2-004 includes NT Patch 4.2-001. You no longer have to download NT Patch 4.2-001 separately. NT Patch 4.2-001 provides a solution for cloning problems.

DESCRIPTION

NetWorker for Windows NT was tested and designed in an English-language environment. Some NetWorker programs check for a program group called "Administrators." Unfortunately, the default English-language group "Administrators" may be called something else in a non-English language setup (for example, "Administrateurs" in French). To allow NetWorker services to start, an "Administrators" group must be created, and the services must be started by a member of this group.

SOLUTION

Patch 4.2-004 provides a new version of **liblocal.dll** to solve this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

241: NetWorker for Windows NT Patches (NT)

PURPOSE

This bulletin provides a list of the current patches available for NetWorker for Windows NT and ClientPak for Windows NT, and the Technical Bulletins describing each problem in detail.

Legato provides these patches as a quick interim response to reported problems with NetWorker. These problems have not been widely reported.

Since the patches have not been through quality assurance testing, we recommend they be installed only in sites experiencing symptoms identical or similar to those described in the bulletins.

The patches and their related Technical Bulletins are available electronically from:

- World Wide Web (<http://www.legato.com>)
- CompuServe (GO LEGATO)
- *anonymous ftp* (<ftp.legato.com>)
- our request server (request@legato.com)

Use the names listed for the machine architectures in the following table when requesting a patch through the request server or *anonymous ftp*.

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- World Wide Web (<http://www.legato.com>)
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V.N.W.

241: NetWorker for Windows NT Patches (NT)

Patch ID#	Architecture	Technical Bulletin #	Description
3.51-001	Windows NT	222	ClientPak for Windows NT
3.51-002	Windows NT	244	Windows NT Client Performance Problems
3.51-003	Windows NT	245	Windows NT Registry and MAC Name Space

Patch ID#	Architecture	Technical Bulletin #	Description
4.2-001	Windows NT	237	Cloning patch for NetWorker for Windows NT
4.2-002	Windows NT	238	Simultaneous backup and recover patch
4.2-003	Windows NT	239	Scanner patch for NetWorker for NT
4.2-004	Windows NT	240	NetWorker on non-English systems

LEGATO TECHNICAL BULLETIN

242: Disabling the Element Status Option (NT)

PURPOSE

This Technical Bulletin provides the procedure to disable the element status option in NetWorker for Windows NT release 4.2.

DESCRIPTION

Some jukeboxes or autochangers support the element status feature. NetWorker uses the element status feature to determine whether a slot contains a volume. If volumes have bar codes, the element status feature speeds up the inventory process by eliminating the need to load and read volume labels. If the volume has a bar code label, NetWorker reads it without loading the volume.

SOLUTION

If your volumes do not have bar codes and you want to disable the element status option for your autochanger, follow these steps:

1. Click the NetWorker Administrator icon.
2. Double-click the Program Manager icon.
3. Select Properties from the File menu in the Program Manager dialog box.

The Program Item Properties dialog box appears.

4. Add the `-x` flag to the end of the command in the Command Line text box of the Program Item Properties dialog box to run NetWorker for Windows NT in expert mode. For example:

```
C:\Win32app\nsr\bin\winadmin.EXE -s server_name -x
```

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B.W.

242: Disabling the Element Status Option (NT)

5. Click the OK button.
6. Double-click the NetWorker Administrator icon to start NetWorker.
The NetWorker Administrator window appears.
7. Select Autochanger from the Media pull-down menu in the NetWorker Administrator window.
The Autochangers dialog box appears.
8. Select the required autochanger from the list and click the Edit button in the Autochangers dialog box.
The Edit Autochanger list box appears.
9. Enter the following command in the Jukebox options list box:
`!element_status`
10. Click the OK button.
The element status option is now disabled.

LEGATO TECHNICAL BULLETIN

243: Required Daemons for NetWorker 4.2 (UNIX)

PURPOSE

This Technical Bulletin details the daemons required for NetWorker 4.2 to run successfully. This Bulletin applies to servers running NetWorker for UNIX release 4.2.

DESCRIPTION

With release 4.2, the **nsrexecd** daemon must be running on the UNIX server in addition to the **nsrd** daemon.

A UNIX server running NetWorker 4.2 fails to complete an attempted backup and produces messages similar to the following:

```
Feb 5 10:07:20 venus syslog: NetWorker Savegroup: (info) starting
venus_grp (with 1 client)
Feb 5 10:07:25 venus syslog: NetWorker Savegroup: (notice) venus_grp
completed, 1 client (venus Failed)
Feb 5 10:07:25 venus syslog: Start time:    Mon Feb 5 10:07:20 1996
Feb 5 10:07:25 venus syslog: End time:      Mon Feb 5 10:07:25 1996
Feb 5 10:07:25 venus syslog:
Feb 5 10:07:25 venus syslog: --- Unsuccessful Save Sets ---
Feb 5 10:07:25 venus syslog:
Feb 5 10:07:25 venus syslog: * venus:All permission denied
Feb 5 10:07:25 venus syslog: * venus:index permission denied
```

These messages indicate the **nsrexecd** daemon is not running.

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J.B.

SOLUTION

Use the following procedure to start the **nsrexecd** daemon.

1. Log in as *root*.
2. Change to the directory where the NetWorker executables reside.
3. Type the following command(s) to start the daemon.

- For SunOS:

```
# nsrd
# nsrexecd [-s server_name]
```

- For Solaris:

```
# /etc/init.d/networker start
```

- For AIX:

```
# /etc/rc.nsr
```

4. Type the following command to make sure all daemons are running.

```
# ps -ef | grep nsr
```

You should see messages similar to the following:

```
root 2169 2150 27 17:20:19? 0:00 /usr/sbin/nsrmmd -n
root 2167 2150 80 17:20:15? 0:03 /usr/sbin/nsrmmdbd
root 2150 1 80 17:20:01? 0:12 /usr/sbin/nsrd
root 2148 1 18 17:19:59? 0:00 /usr/sbin/nsrexecd
root 2168 2150 80 17:20:17? 0:02 /usr/sbin/nsrindexd
```

With release 4.2, whenever the daemons are shut down, both the **nsrd** and the **nsrexecd** commands must be entered to restart NetWorker.

LEGATO TECHNICAL BULLETIN

244: Index Conversion Patch (UNIX Patch 4.2-001)

PURPOSE

This Bulletin describes an index conversion limitation encountered when updating to NetWorker for UNIX release 4.2, and provides a solution. The information applies to SunOS, Solaris, and AIX servers and clients updating from earlier releases of NetWorker to NetWorker for UNIX release 4.2.

DESCRIPTION

After updating to NetWorker for UNIX release 4.2, you may encounter a problem with the conversion of your pre-4.2 indexes. This occurs because the update process for release 4.2 finds previously undetected corruptions in the older indexes.

SOLUTION

Patch 4.2-001 provides new versions of **nsrck** and **nsrindexasm**.

The following shows the recommended procedure for updating to release 4.2:

1. Perform a full backup of the client and server indexes.

While this step is not required in order to update the software, backing up the indexes can speed recovery in case problems occur. This precautionary backup should only include the *indexes*, not the data.

2. Perform the update to release 4.2, *without* starting the NetWorker daemons.
3. Install the new versions of **nsrck** and **nsrindexasm** included in Patch 4.2-001.
4. Issue the **nsrck -F** command.
5. Start the NetWorker daemons **nsrd** and **nsrexecd**.

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- World Wide Web (<http://www.legato.com>)
- [ftp.legato.com](ftp://ftp.legato.com), Internet address 137.69.200.1 (log in as *anonymous*)
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- e-mail request server (request@legato.com)
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V.N.W., A.B.

244: Index Conversion Patch (UNIX Patch 4.2-001)

If you encounter an index conversion problem, follow these steps:

1. Use the **mmrecov** command to recover the server *index*, *mmvolume*, and *res* files.
2. Use the **recover** command to recover the client indexes for all clients encountering the conversion problem.

The process of recovering the server and client indexes will convert the indexes to the new format.

Patch 4.2-001 is available electronically from the following sources:

- World Wide Web site (*www.legato.com*)
- CompuServe forum (GO LEGATO)
- Internet address, 137.69.200.1 (*ftp.legato.com*)
- request server (*request@legato.com*)

LEGATO TECHNICAL BULLETIN

245: Windows NT Client Performance Problems (ClientPak Patch 3.51-002)

PURPOSE

This Technical Bulletin offers a patch for performance problems that may occur with Windows NT clients using ClientPak for Windows NT release 3.51.

DESCRIPTION

NetWorker uses *setsockopt()* in various places to set the *send* and *receive* buffers to different sizes; in other places, NetWorker uses the system defaults. This can sometimes cause performance problems on Windows NT clients using FDDI interfaces.

This patch is supplied to fix save performance problems on Windows NT clients using ClientPak for Windows NT release 3.51 over FDDI.

SOLUTION

Patch 3.51-002 replaces the old *rpcxd351.dll* with a new one. Be sure to review the README file before downloading the patch.

The patch is available electronically from the following sources:

- World Wide Web site (www.legato.com)
- CompuServe forum (GO LEGATO)
- Internet address, 137.69.200.1 ([ftp.legato.com](ftp://legato.com))
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V.N.W., G.W.

LEGATO TECHNICAL BULLETIN

246: Windows NT Registry and MAC Name Space Problems (ClientPak Patch 3.51-003)

PURPOSE

This Technical Bulletin offers a patch for problems that may occur when installing NetWorker on NT clients. The information applies to ClientPak for Windows NT release 3.51. These problems are fixed in NetWorker for Windows NT, release 4.2.

DESCRIPTION

This patch is supplied to fix major issues with the Registry and MAC name space on NT clients running NetWorker for Windows NT release 3.51.

SOLUTION

Patch 3.51-003 provides a solution to these problems. Contact Legato Technical Support at support@legato.com or 415/812-6100 and request patch 3.51-003.

Legato Technical Bulletins are available electronically from:

- World Wide Web (<http://www.legato.com>)
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V.N.W.

LEGATO TECHNICAL BULLETIN

247: Core Dump During Recover (UNIX Patch 4.13-004)

PURPOSE

This Technical Bulletin describes a problem that may occur when running NetWorker release 4.1.3 and offers a patch to solve the problem. It applies to Solaris servers running NetWorker release 4.1.3.

PROBLEM

When you try to recover files that have had their name changed since they were originally backed up, you may create a "dmux recover" situation. This situation causes a segmentation fault and core dump.

SOLUTION

Patch 4.13-004 provides new versions of **recover** and **nwrecover** which solve this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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V.N.W.

LEGATO TECHNICAL BULLETIN

248: Problems During Upgrade to Solaris 2.4 (UNIX Patch 4.13-005)

69.200.1PURPOSE

This Technical Bulletin describes problems that may occur when upgrading from Solaris 2.3 to Solaris 2.4 and offers a patch to solve these problems. It applies to Solaris servers running NetWorker release 4.1.3.

PROBLEM

When you upgrade to Solaris 2.4, two problems can typically occur:

- Variable records are not written unless a "0" is in the size field.
- Some drivers will not satisfy a read request past a tape record in variable record mode.

SOLUTION

Patch 4.13-005 provides new versions of **nsrmmd** and **scanner** which solve these problems. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

249: Cloning Problems (UNIX Patch 4.13-006)

PURPOSE

This Technical Bulletin describes problems that may occur when attempting to create a cloning session and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3.

PROBLEM

When you attempt to create a cloning session, you may encounter an **nsrmmd** segmentation fault with a *signal 11* error code. The error occurs when freed memory is accessed during a reply to a request. A cloning session is assigned to an **mmd** process by **nsrd** and the **mmd** process attempts to establish a connection with a second **mmd** process that will save the cloned data. If the second **mmd** process is already engaged in a cloning operation, it cannot respond to another request. When attempting to reply to the request, freed memory is accessed.

SOLUTION

Patch 4.13-006 provides new versions of **nsrd** and **nsrmmd** which solve this problem. Review the README file before downloading this patch to your system.

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LEGATO TECHNICAL BULLETIN

250: nsrjb Hangs in Kernel (UNIX Patch 4.13-007)

PURPOSE

This Technical Bulletin describes problems that may occur with **nsrjb** when a tape is filled and offers a patch to solve the problem. It applies to AIX servers running NetWorker release 4.1.3.

PROBLEM

When you perform a backup with a NetWorker server running AIX 3.x or 4.x, when a tape fills, the **nsrjb** process may hang, and a new tape is not loaded.

SOLUTION

Patch 4.13-007 provides a new version of **psclpp** which solves this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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V.N.W.

LEGATO TECHNICAL BULLETIN

251: Specifying Savesets With Spaces (UNIX Patch 4.13-008)

PURPOSE

This Technical Bulletin describes problems that may occur when specifying savesets with spaces and offers a patch to solve the problem. It applies to SunOS, Solaris, and AIX servers running NetWorker release 4.1.3 with Macintosh clients.

PROBLEM

With the release of the ClientPak for Macintosh, saveset specification now needs to handle saveset names containing spaces.

Note: This patch does not allow entering multiple saveset names separated by spaces.

SOLUTION

Patch 4.13-008 solves this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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LEGATO TECHNICAL BULLETIN

252: Search Capabilities in Retrieve Programs (UNIX Patch 4.13-009)

PURPOSE

This Technical Bulletin offers a patch that provides two new search fields for use in **retrieve** and **nwretrieve**. The information applies to SunOS, Solaris, and DEC servers running NetWorker release 4.1.3.

DESCRIPTION

Patch 4.13-009 enhances the search capabilities of the **retrieve** and **nwretrieve** programs, allowing a narrower search based on client and filesystem name. A new *app-defaults* file and **nsrrtrieve** man page are provided in separate directories from the patch binaries.

Please review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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V.N.W., A.H.

LEGATO TECHNICAL BULLETIN

253: mminfo Problems (UNIX Patch 4.13-010)

PURPOSE

This Technical Bulletin describes problems that may occur when using **mminfo -a -q suspect** and offers a patch to solve the problem. It applies to SunOS, Solaris, and HP-UX servers running NetWorker release 4.1.3.

PROBLEM

When you use the command **mminfo -a -q suspect**, all savesets may be listed instead of just the suspect ones.

SOLUTION

Patch 4.13-010 provides a new version of **mminfo** which solves this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

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V.N.W.

LEGATO TECHNICAL BULLETIN

254: Changing Settings on a Mountain Gate Autochanger (UNIX | NT)

PURPOSE

This Technical Bulletin describes a problem that may occur when attempting to change front panel settings on a Mountain Gate autochanger and provides a solution. The information applies to SunOS, Solaris, AIX, HP-UX, and Windows NT servers running NetWorker, release 4.2 or later.

DESCRIPTION

When you change the settings on the front panel of a Mountain Gate autochanger without doing an explicit initialize element status afterward, the change can affect the state of the inventory. This occurs because the SCSI controller may not pick up the change.

SOLUTION

When you change settings using the front panel of the autochanger, perform an initialize element status afterwards, using the following command:

```
# nsrjb -EHv -j autochanger_name
```

Then, determine whether the autochanger recognizes that it has the element status capability, using the following command:

```
# nsrjb -V -j autochanger_name
```

You may need to re-inventory the contents of the autochanger with the **-E** option so that the autochanger re-initializes its element status, using the command

```
# nsrjb -Elv -j autochanger_name
```

Repeat all three commands, if the autochanger is still confused about its inventory.

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T.M.

LEGATO TECHNICAL BULLETIN

255: How NetWorker Uses File Change Time for Backups (UNIX)

PURPOSE

This Technical Bulletin explains what file change time is and how NetWorker uses the file change time for backups. This information applies to all UNIX platforms.

DESCRIPTION

NetWorker backs up files by their change time. This document explains how files get backed up for incremental and level 1-9 saves based on the change time.

SOLUTION

UNIX systems use the number of seconds elapsed since midnight Jan 1, 1970 GMT as their base time value.

A **stat** on the file/inode will give information about the three time attributes for a file: access time (atime), modification time (mtime), and change time (ctime).

The difference between ctime and mtime is the difference between altering the address on an envelope and altering its contents. Doing a **chmod a+x foo** is a change and **cat >>file** is a modification. What this means is that a change alters the files inode and a modification alters the contents of the file. On the other hand, atime is the last time a file was accessed (read, for example). This reading updates the atime, but the ctime and mtime remain unchanged since the file itself has not been changed. Writing to a file updates both the ctime and the mtime. These updates occur because when the mtime, an attribute of the file, changes the attributes placeholder, the inode, also changes.

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T.M.

255: How NetWorker Uses File Change Time for Backups (UNIX)

NetWorker goes through standard UNIX interfaces and calls to open and read files for backup. It is subject to normal UNIX rules about file access times. On Solaris 2.x, SunOS 4.1.2 and higher releases, NetWorker use special APIs to reset the file access time back to its original value after reading the file for backup. This API works for UNIX File System (UFS) and when save is run with an effective uid **root**. When someone other than **root** who is not in the operator group does a manual backup, the atime will be changed on the SunOS and Solaris systems.

For non-Solaris systems, there are no APIs to control atime without modifying the ctime. The atime for all these non-Sun UNIX systems will indeed be changed for each backup file.

The workaround for preserving the access time in these non-Sun systems is to use “atimeasm.” A side affect of using **atimeasm** to reset the access time is that the file’s ctime will be changed on each backup. So when using **atimeasm**, NetWorker checks the file’s mtime is used instead of ctime to figure out whether to backup a file for all incremental and level 1-9 saves. Using mtime instead of ctime for backup selection has the effect that if someone changes the attributes of a file without modifying the file contents, then using ctime will pick this file for an incremental backup while using mtime will not. For example, if you do a **chmod a-w myfile**, the file’s change time is updated because the attributes have changed, but the file’s modification time is not since the file’s data has not been modified. In this case, the file would not get backed up on the next incremental backup using **atimeasm**, but would be backed up if not using **atimeasm**. When an operation like the **cat** example is performed, which modifies the file’s data, it causes updates to both the file’s modification time and the file’s change time. In such a case, the file would be backed up on the next incremental save, with or without **atimeasm**.

LEGATO TECHNICAL BULLETIN

256: NetWorker Installation Notes for Sun4 and AIX Servers (UNIX)

PURPOSE

This Technical Bulletin describes an error message you may see while installing NetWorker on a Sun4 or AIX system and provides a solution to this problem.

DESCRIPTION

During installation, you may see an error message similar to the one below after running the **nsr_ize -i -s** or **nsr_ize -i -c** command on 4.1.3 or 4.2 versions of NetWorker for UNIX.

```
NetWorker is not supported for server configurations on Sun4 (or AIX)
machines.
```

SOLUTION

Verify that you have the correct version of **nsr_ize**. When you run the **nsr_ize** command, watch the version number scroll by. It should match the version number of your NetWorker software. If it does not match, download the correct version of **nsr_ize** from one of the following sources:

- World Wide Web (<http://www.legato.com>)
- CompuServe (GO LEGATO)

NOTE: For HP-UX users, make sure you are using HP-UX 9.x binaries to install on HP-UX 9.x machines. HP-UX 10.x uses SWINSTALL instead of the **nsr_ize** command.

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V.W., J.H.

LEGATO TECHNICAL BULLETIN

257: REXEC-Based Backups for Macintosh, Windows 95, and Windows NT Clients (NetWare Patch 3.12-001)

PURPOSE

This Bulletin describes a limitation of NetWorker 3.12 for NetWare when you use a NetWare backup server to back up a Macintosh, Windows 95, or Windows NT client. A patch is offered to solve this problem.

DESCRIPTION

The Macintosh, Windows 95, and Windows NT clients only respond to backup demands from an RPC-based `nsrexecd`. NetWorker 3.12 for NetWare supports only the RSH protocol for backup requests, and therefore, cannot back up these clients.

Error messages on a NetWare backup server attempting to back up the NT client "mercury" and the Mac client "venus" may look like this example:

```
--- Unsuccessful Save Sets ---
* mercury: All savefs: rcmd to active client mercury did not succeed
* venus.melcorp.com: All savefs: rcmd to active client
  venus.melcorp.com did not succeed
```

SOLUTION

Patch 3.12-001 provides new versions of NSRD.NLM, RAP.NLM, and SAVEGRP.NLM. Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web site (www.legato.com)
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Note: The SYS:\ETC\HOSTS file on the NetWare server must contain an IP mapping for the Macintosh, Windows 95, or Windows NT client specifying both the fully qualified name and the short name. For example, an NT machine called mercury and a Macintosh called venus may have HOSTS file entries like these:

```
198.69.1.134mercury.melcorp.com mercury
121.69.1.121venus.melcorp.com venus
```

The name of the client resource that is created to backup the Mac should specify the fully qualified name “venus.melcorp.com.”

LEGATO TECHNICAL BULLETIN

258: Modifying Client Resources With NetWorker Administrator in Windows (NetWare Patch 3.12-002)

PURPOSE

There is a limitation of NetWorker 3.12 for NetWare, you use the Administrator program on a NetWare backup server to modify the Client resource of a NetWare server client. A patch is provided to resolve this limitation.

DESCRIPTION

The problem occurs when you use a Windows system to run the NetWorker Administrator program to modify the NetWare server's client resource. If the resource is viewed or edited and the password field is not changed, when the other changes are saved, the password field changes to a blank field. Unless the user specified in the remote user field can login to this client without a password, the client's backup would fail.

Error messages for a NetWare client whose password field has reverted to a blank field may look like this example.

```
--- Unsuccessful Save Sets ---
* mars: All (2003) mars Invalid name or password, connection limit
exceeded, or TSA unavailable.
```

SOLUTION

The workaround to this problem is to re-enter the correct password in the Password field for the specified remote user and save the changes.

Patch 3.12-002 provides a permanent solution by replacing WSPXADMN.EXE on the Windows machine. Review the README file before applying this patch to your system.

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258: Modifying Client Resources With NetWorker Administrator in Windows (NetWare Patch

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LEGATO TECHNICAL BULLETIN

259: Directed Recover, Maximum Client Limit, and Long Remote User/Password Fields (NetWare Patch 3.12-003)

PURPOSE

This Bulletin describes a limitation of NetWorker 3.12 for NetWare, when you use a NetWare backup server and attempt to: perform a directed recover, create more than 256 clients, or input long strings in either the Remote user or Password fields of a client resource. A patch is provided to resolve this limitation.

DESCRIPTION

Directed Recovers

If you attempt a directed recover from the console of a NetWare server using NetWorker 3.12 for NetWare and the displayed choices for the client's directed recover are blank, then additional clients cannot be specified.

Truncated Clients Listing

The NetWare user interface of NetWorker 3.12 for NetWare displays a maximum of 256 clients. Clients created past this limit behave and function normally in every way, but you will be unable to access them from the NetWorker Administrator program on a NetWare server after creating the client. Clients past the 256th can still be edited from any NetWorker server or client whose NetWorker Administrator program does not have this limitation.

Truncated Remote User/Password

Under NetWare 3.x, user names and passwords are limited to 48 characters. Under NetWare 4.x, user names and passwords can be as large as Novell's SMS limit of 256

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B.W.

characters. NetWorker 3.12 for NetWare enforces the 48-character limit on user names and passwords.

SOLUTION

Patch 3.12-003 provides new versions of NETWORKR.NLM and NSRLIB.NLM to solve these problems. Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web site (*www.legato.com*)
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Note: Although it is possible to have a user whose fully qualified NDS name is much larger than 256 characters, Novell's SMS does not allow this. Therefore, NetWorker enforces this maximum length for Remote User values. NetWorker does not impose restrictions on the password length.

LEGATO TECHNICAL BULLETIN

260: Large Client Index Files (NetWare Patch 3.12-004)

PURPOSE

This Bulletin describes a limitation of NetWorker 3.12 for NetWare, when you use a NetWare backup server and have clients with large index files. A patch is provided to resolve this limitation.

DESCRIPTION

One gigabyte is the maximum size that NetWorker 3.12 for NetWare allows for a single client index grow.

SOLUTION

Patch 3.12-004 provides a new version of INDEXD.NLM that will allow indexes to grow up to two gigabytes. Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web site (www.legato.com)
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Note: Once the new INDEXD.NLM is installed, you must perform a "Reclaim Space" on any of the client indexes that need to grow past one gigabyte in size.

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LEGATO TECHNICAL BULLETIN

261: Editing Large Directives (NetWare Patch 3.12-005)

PURPOSE

This Bulletin describes a limitation of NetWorker 3.12 for NetWare when you use a NetWare backup server and attempt to create large directives. A patch is provided to resolve this limitation.

DESCRIPTION

If you edit a directive and the new directive exceeds 1024 bytes, the NetWare server may crash when the directive is saved.

SOLUTION

Patch 3.12-005 provides a new version of UI.NLM to solve the problem. Review the README file before applying this patch to your system.

This patch is available electronically from:

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LEGATO TECHNICAL BULLETIN

262: Performing Backups on Active TCP Clients (NetWare Patch 3.12-006)

PURPOSE

This Bulletin describes a limitation of NetWorker 3.12 for NetWare when you use a NetWare backup server and attempt to perform active TCP client backups. A patch is provided to solve this problem, which applies ONLY to NetWare 4.10.

DESCRIPTION

When the server attempts to perform an active TCP client backup, the NetWare client may randomly lock up. When the NetWare client locks up, the Novell TCP/IP "Receive ECB" is high, or the LAN drivers ECB Buffers "In Use" count is high. These counts can be determined from MONITOR under "System module information."

SOLUTION

As a workaround, decrease the parallelism so that NetWorker runs lighter backup loads for these clients.

Patch 3.12-006 provides a new version of LGSHIM.NLM. This patch attempts to avoid the problem by slowing down the backup whenever the total in-use ECB count gets too high.

Set Maximum Packet Receive Buffers to at least 2000, using the Novell SET command:

```
SET MAXIMUM PACKET RECEIVE BUFFERS = 2000
```

For NetWare 4.10 machines, set this value as high as possible up to the maximum of 4000.

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B.W.

262: Performing Backups on Active TCP Clients (NetWare Patch 3.12-006)

Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web site (*www.legato.com*)
- CompuServe forum (GO LEGATO)
- *ftp.legato.com* (Internet address 137.69.200.1, log in as *anonymous*)
- e-mail request server (*request@legato.com*)

LEGATO TECHNICAL BULLETIN

263: Enabling CAP on Metrum 360 (UNIX Patch 4.2-002)

PURPOSE

The **nsrjb** command does not support the Cartridge Access Port (CAP) on the Metrum 360. A patch is provided to solve the problem.

DESCRIPTION

You may have trouble enabling the cartridge access input/output port (IOD/CAP) for this jukebox. Using **-w** with **nsrjb** for withdrawing cartridges gives a SCSI error:

```
# nsrjb -w -s 1
nsrjb: Jukebox error, Illegal Request, Invalid Element Address
```

Using **-d** or **-D** options for loading cartridges does not give an error message, but they are nonfunctioning options.

```
# nsrjb -d -s 1
```

SOLUTION

Patch 4.2-002 provides a new version of **nsrjb** to solve this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from:

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V.N.W.

LEGATO TECHNICAL BULLETIN

264: Savegrp Error Results in E-mail Truncation (UNIX Patch 4.2-003)

PURPOSE

This Bulletin describes a problem with **savegrp** completion e-mails (the e-mails get truncated under NetWorker for UNIX, release 4.2) and provides a patch to solve this problem. The information applies to SunOS, Solaris, and AIX servers.

DESCRIPTION

Under NetWorker for UNIX, release 4.2, you may encounter a problem with the **savegrp** completion e-mails being cut off at the bottom when the client has a large amount of output.

A sample **savegrp** completion e-mail may look like this example. Note the ellipses at the end of the e-mail.

```
NetWorker Savegroup: (notice) servers completed, 67 clients (altima
Failed)
  Start time:   Tue Mar 5 17:55:04 1996
  End time:     Wed Mar 6 09:14:05 1996
  --- Unsuccessful Save Sets ---
* altima:All 1 retry attempted
* altima:All remote exec problem for command `saveefs -s dragon inc -p
  -l full -R -v' to `altima': Connection timed out
--- Successful Save Sets ---
meteor: /                level=incr,34 KB 00:01:0113 files
meteor: /usr              level=incr,0 KB 00:01:390 files
meteor: /var              level=incr,10 MB 00:02:3715 files
meteor: /tmp              level=incr,1 KB 00:01:471 file
meteor: /u                level=incr,0 KB 00:02:150 files
meteor: /u2               level=incr,8.8 MB 00:02:188 files
meteor: /u3               level=incr,31 MB 00:04:2519 files
meteor: /u4               level=incr,9 KB 00:03:266 files
```

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S.A.

264: Savegrp Error Results in E-mail Truncation (UNIX Patch 4.2-003)

```
dragon: /nsr/index/meteor level=9,          70 KB 00:07:32      2 files
.
.
.
* taurus:/home3 Warning - file `/home3/test/data/TERMFCST.RAP' changed
during save
* t...
```

SOLUTION

Patch 4.2-003 provides new version of **savegrp**. Review the README file before applying this patch to your system.

The patch is available electronically from:

- World Wide Web site (www.legato.com)
- CompuServe forum (GO LEGATO)
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LEGATO TECHNICAL BULLETIN

265: Quantum DLT Tape Drive Support Patch (NT Patch 4.2-005)

PURPOSE

Networker 4.2 for NT and Windows NT Server 3.51 do not support Quantum DLT4000 and DLT4700 tape drives. This bulletin provides a patch to solve the problem.

DESCRIPTION

To install this patch, you must first install the DLT2000 tape driver from the Windows NT CD-ROM. Do this from the Program Manager. Go into the group called Main and select Windows NT Setup-->Options-->Add/Remove Tape Devices-->Add. Select "Digital TZ86, TZ87, DLT2000" and install the driver.

Note: Your system will ask you to reboot after exiting the setup program. Do not reboot yet. Copy the **dlttape.sys** provided to \WINNT35\SYSTEM32\DRIVERS, and then reboot your system.

If you have already installed Networker without a DLT tape driver installed, you must redefine the tape device in the Networker Administrator.

If you have an Autochanger,

1. Select Media-->Autochanger.
2. Select Delete then Close.
3. Select Media-->Devices.
4. Delete the current DLT tape device.
5. Select Create.

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V.W.

265: Quantum DLT Tape Drive Support Patch (NT Patch 4.2-005)

6. Give Networker the device name. This should be in the form of \\.\TapeX where X is the number of the device. To find out the number of the device, run `\nsr\bin\tapes.exe`. This command will show you the name of the device along with its SCSI ID. Do not include the SCSI ID in the device name.
7. Change the Media Type to DLT.
8. Save the device configuration.
9. Create any additional devices that are needed.

SOLUTION

Patch 4.2-005 provides support for the Quantum DLT tape drives. Review the README file before applying this patch to your system.

The patch is available electronically from:

- World Wide Web site (*www.legato.com*)
- CompuServe forum (GO LEGATO)
- *ftp.legato.com* (Internet address 137.69.200.1, log in as *anonymous*)
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LEGATO TECHNICAL BULLETIN

266: Enabling CAP on Metrum 360 (NT Patch 4.2-006)

PURPOSE

The **nsrjb** command does not support the Cartridge Access Port (CAP) on the Metrum 360. A patch is provided to solve the problem.

DESCRIPTION

You may have trouble enabling the cartridge access input/output port (IOD/CAP) for this autochanger. Using **-w** with **nsrjb** for withdrawing cartridges gives a SCSI error:

```
nsrjb -w -s 1
nsrjb: Jukebox error, Illegal Request, Invalid Element Address
```

Using **-d** or **-D** options for loading cartridges does not give an error message, but they are nonfunctioning options.

```
nsrjb -d -s 1
```

SOLUTION

Patch 4.2-006 solves this problem. Review the README file before downloading this patch to your system.

The patch is available electronically from:

- World Wide Web site (www.legato.com)
- CompuServe forum (GO LEGATO)
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V.N.W.

LEGATO TECHNICAL BULLETIN

267: Corruption of a NetWorker Group (NetWare Patch 4.0-001)

PURPOSE

This Bulletin describes a limitation of NetWorker 4.00 for NetWare, when you use a NetWare backup server and attempt to edit the properties of a NetWorker group on the server. A patch is provided to resolve this limitation.

DESCRIPTION

Under rare circumstances, a NetWorker group may become corrupted. If this happens, and you attempt to manually interact with this group, it is possible for the NetWare server to generate a Page Fault Processor Exception Abend.

SOLUTION

Since the corruption is localized to the Group resource, delete and recreate the group to avoid this problem. Choose F4 -> Groups, highlight the affected group, then press F9 to delete the group.

In addition to the above workaround, there is a new NETWORKR.NLM which does not exhibit this behavior with groups that have become corrupted. Use this new NLM to replace the NETWORKR.NLM currently in use, typically located in SYS:NSR\BIN.

Patch 4.0-001 provides a new version of NETWORKR.NLM. Review the README file before applying this patch to your system. The patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- [ftp.legato.com](ftp://ftp.legato.com), Internet Address 137.69.200.1 (log in as *anonymous*)
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B. W.

LEGATO TECHNICAL BULLETIN

268: NetWorker and Novell's NFS Release 2.1 (NetWare Patch 4.0-002)

PURPOSE

This Bulletin describes a limitation of NetWorker 4.0 for NetWare if you use NetWorker in conjunction with Novell's NFS, Release 2.1.

DESCRIPTION

Novell's NFS code services rpcbnd (a.k.a. portmapper) requests on the IPX and SPX transports. Prior to release 2.1, NFS only serviced TCP and UDP transports, and Legato's rpcbnd serviced the other protocols. This new release of NFS grabs IPX and ignores SPX, preventing the Legato rpcbnd from adding any value.

SOLUTION

To allow NetWorker 4.0 for NetWare and Novell's NFS, Release 2.1 to run smoothly on the same machine, replace the RPCXDR.NLM currently on your system, typically located in SYS: NSR\BIN, with the new version provided.

Patch 4.0-002 provides a new version of RPCXDR.NLM. Review the README file before applying this patch to your system. The patch is available electronically from:

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B.W.

LEGATO TECHNICAL BULLETIN

269: NetWorker Media Pools Patch (NetWare Patch 4.0-003)

PURPOSE

This Bulletin describes a limitation to NetWorker 4.0 for NetWare when you use a NetWare backup server and attempt to redirect backups to specific pools.

DESCRIPTION

When you use a NetWare backup server, there are a few circumstances under which data may end up in the wrong media pool :

- When NetWorker performs a passive save (which includes both Passive SPX scheduled backups and Manual backups).
- When a media pool is configured to capture all the data from a specific group. The data is backed up into the correct pool, but the indexes of the clients in the group end up in the server pool.

Setting a client name as the criteria for a media pool works if the backup server is included in the list of client names. NetWorker treats all passive backups as if the name of the requesting client is the same as the backup server.

SOLUTION

Patch 4.0-003 provides new versions of NSRD.NLM and SAVEGRP.NLM. Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- [ftp.legato.com](ftp://ftp.legato.com), Internet Address 137.69.200.1 (log in as *anonymous*)
- e-mail request server (request@legato.com)

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B. W.

LEGATO TECHNICAL BULLETIN

270: NetWorker Release 4.2 Jumbo Patch (UNIX Patch 4.2-004)

69.200.1PURPOSE

This Bulletin describes limitations in NetWorker 4.2 and offers a patch to resolve them. It applies to SunOS, Solaris, and AIX servers running NetWorker 4.2 for UNIX.

Important: UNIX Patch 4.2-004 includes the binaries from UNIX Patches 4.2-001 and 4.2-003. You no longer have to download these patches separately.

DESCRIPTION

You may encounter one or more of the following performance or savegroup problems: slow index backups, slow **nsrck**, slow volume relabel, indexes crosschecked too frequently, savegroup hangs if the client is unreachable, or the savegroup bootstrap for a full backup saves too much data.

SOLUTION

Patch 4.2-004 provides new binaries for the following commands: **nsrd**, **nsrindexd**, **nsrck**, **nsrindexasm**, **savegrp**, **asavegrp**, and **nsrmmdbd**. Review the README file before downloading this patch to your system.

Important: With release 4.2, whenever the daemons are shut down, both the **nsrd** and the **nsrexecd** commands must be entered to restart NetWorker.

The patch is available electronically from the following sources:

- our World Wide Web site (www.legato.com)
- our CompuServe forum (GO LEGATO)
- our Internet address, 137.69.200.1 ([ftp.legato.com](ftp://legato.com))
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A.B., V.W.

LEGATO TECHNICAL BULLETIN

271: NetWorker Release 4.2 Patch (UNIX Patch 4.2-005)

PURPOSE

This Bulletin describes limitations in NetWorker Release 4.2 and offers a patch to resolve them. It applies to SunOS, Solaris, and AIX servers running NetWorker 4.2 for UNIX.

SOLUTION

Patch 4.2-005 provides new binaries for **nwrecover**, **recover**, and **uasm** commands. Review the README file before downloading this patch to your system.

The patch is available electronically from the following sources:

- our World Wide Web site (www.legato.com)
- our CompuServe forum (GO LEGATO)
- our Internet address, 137.69.200.1 ([ftp.legato.com](ftp://legato.com))
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A.B. and V.W.

LEGATO TECHNICAL BULLETIN

272: NetWorker Shutdown Error Messages (NetWare Patch 4.0-004)

PURPOSE

This Bulletin describes error messages you may see when you exit NetWorker 4.0 for NetWare from either the server or client. A patch is provided to resolve the problem.

DESCRIPTION

The following messages may be seen when exiting NetWorker in the normal manner:

```
NetWorker shutting down...

3-20-96 9:40:00am: SERVER-4.10-2713
Module did not release 1 resource
Module: nsrd nlm
Resource: NetWare Streams
Description: STREAMS Active Handles

3-20-96 9:40:00am: SERVER-4.10-2713
Module did not release 176 resources
Module: nsrd nlm
Resource: Small memory allocations
Description: Alloc Memory (Bytes)

NetWorker shutdown completed.
```

Error messages like these can be caused by NetWare not releasing the resources after NetWorker has returned the resources to the Operating System. These error messages are generally of no consequence, however, if they appear after you apply this patch you most likely have a resource problem with your NetWare machine.

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B.W.

SOLUTION

Patch 4.0-004 provides new versions of NSRD.NLM and NSRLIB.NLM to resolve this problem. Review the README file before applying this patch to your system.

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- <ftp.legato.com>, Internet Address 137.69.200.1 (log in as *anonymous*)
- e-mail request server (request@legato.com)

LEGATO TECHNICAL BULLETIN

273: RCMDSRV Active Backup of NDS (NetWare Patch 4.0-005)

PURPOSE

This bulletin describes NetWorker for NetWare patch 4.0-005, which lets you back up the NDS actively.

NOTE: This patch can only be applied to NetWare 4.1 machines.

DESCRIPTION

The patch allows you to back up the NDS actively via RCMDSRV, for example, via TCP to a Windows NT or UNIX machine. To apply the patch, install the two revised Legato modules, NRSLIB.NLM and RCMDSRV.NLM, onto the NetWare 4.1 backup client.

SOLUTION

Patch 4.0-005 provides new versions of NSRLIB.NLM and RCMDSRV.NLM to resolve this problem. These two NLMs should replace the ones that currently exist, typically found in SYS:NSR\BIN on the client machine. In addition, the client machine must run the Novell-supplied TSANDS.NLM. Load TSANDS.NLM with the rest of NetWorker by adding the line "load tsands" anywhere in the SYS:SYSTEM\NETWORKR.NCF file.

Once all three NLMs are loaded on the backup client, the client will back up the NDS if either of the following statements is true:

- The client resource for the NetWare machine specifies keyword "All" in the "Save set" field.
- The client resource for the NetWare machine specifies "{NDS}" in the "Save set"

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B.W.

273: RCMDSRV Active Backup of NDS (NetWare Patch 4.0-005)

field.

Only one client should be configured to back up the NDS for a specified NDS tree.

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
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LEGATO TECHNICAL BULLETIN

275: Installing NetWorker on SFTIII (NetWare Patch 4.0-006)

PURPOSE

This bulletin describes NetWare patch 4.0-006, which provides a new version of CPINST.NLM for installing NetWorker on an SFTIII machine running NetWare 4.10.

NOTE: This patch applies only to NetWare 4.10 SFTIII platforms.

DESCRIPTION

Without this new version of CPINST.NLM, you will not be able to install NetWorker on an SFTIII machine. When you attempt to install NetWorker on an SFTIII machine using CPINST.NLM, the following error message is generated:

Does not support NetWare SFTIII
All known NetWorker problems with respect to SFTIII are addressed by this patch.

SOLUTION

Patch 4.0-006 provides a new version of CPINST.NLM. To install the new NLM:

1. Copy the six disk directories (DISK1, DISK2, etc.) from the NetWorker 4.0 CD-ROM to the SFTIII server.
2. Copy the new CPINST.NLM to the DISK1 subdirectory.
3. Load CPINST.NLM from the console, for example:

```
load sys:test\disk1\cpinst.nlm
```

CPINST will modify the MSAUTO.NCF file without modifying the AUTOEXEC.NCF file.

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This patch is available electronically from:

- World Wide Web (*http://www.legato.com*)
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LEGATO TECHNICAL BULLETIN

276: NetWorker 4.2.1 for Windows NT (NT Patch 4.21-003)

PURPOSE

This bulletin describes some limitations you may encounter using NetWorker 4.2 and 4.2.1 for Windows NT. A patch is provided to resolve these problems.

DESCRIPTION

This patch addresses several problems:

- NetWorker 4.2 and 4.2.1 for Windows NT clients do not back up to NetWorker 4.2 servers at the same speed as they do to NetWorker 4.1.x servers.
- When Auto Media Management is turned on, NetWorker occasionally hangs while trying to label new or blank tapes.
- NetWorker 4.2 for Windows NT can have problems recovering savesets that span multiple tapes from tapes that were written to using the Automedia Verify option. NetWorker 4.2.1 fixes the problem and can properly recover from tapes where Automedia Verify was used.
- NetWorker 4.2 and 4.2.1 for Windows NT does not recover open files correctly to the filesystem. The file names are recovered as “_*.*” in the filesystem.

NOTE: The file `\winnt35_default.pif` is a normal Windows NT file and is not a symptom of this problem.

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SOLUTION

Upgrade all NetWorker 4.2 for Windows NT clients to NetWorker 4.2.1 for Windows NT, then apply patch 4.21-003 to your backup server. Review the README file before applying this patch to your system.

Follow these steps to install the patch on the backup server:

1. Decompress the *.zip* file.
2. Shut down the NetWorker services on the Windows NT machine by stopping the following services in the order listed:
 - a. NetWorker Backup and Recover service (if it exists)
 - b. NetWorker Remote Exec service
 - c. Portmapper service
4. Change to the `\nsr\bin` directory.
5. Rename any files that are to be replaced by files in this patch to **.old*.
6. Copy the files from the patch into the `\nsr\bin` directory.
7. Restart the NetWorker services in the reverse order that they were stopped (see Step 2).

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- <ftp.legato.com>, Internet Address 137.69.200.1 (log in as *anonymous*)
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LEGATO TECHNICAL BULLETIN

277: Index Problems When a Client Belongs to More Than One Group (NT Patch 4.21-004)

PURPOSE

This Bulletin describes a limitation of NetWorker 4.2.1 for Windows NT when you try to access the indexes of a client multiple times. A patch is provided to resolve this limitation.

DESCRIPTION

When a client belongs to more than one group and the groups are running processes at the same time, the server may hang if both groups try to write to the client index at the same time.

SOLUTION

Upgrade all NetWorker 4.2 for Windows NT clients to NetWorker 4.2.1 for Windows NT, then apply Patch 4.21-004 to your backup server. Review the README file before applying this patch to your system.

Follow these steps to install the patch on the backup server:

1. Decompress the .zip file.
2. Shutdown the NetWorker services on the Windows NT machine by stopping the following services in the order listed:
 - a. NetWorker Backup and Recover service (if it exists)
 - b. NetWorker Remote Exec service
 - c. Portmapper service

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277: Index Problems When a Client Belongs to More Than One Group (NT Patch 4.21-004)

3. Change to the \nsr\bin directory.
4. Rename any files that are to be replaced by files in this patch to *.old.
5. Copy the files from the patch into the \nsr\bin directory.
6. Restart the NetWorker services in the reverse order that they were stopped (see Step 2).

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- <ftp.legato.com>, Internet Address 137.69.200.1 (log in as *anonymous*)
- e-mail request server (request@legato.com)

LEGATO TECHNICAL BULLETIN

278: Configuring MacTCP on the Mac DNS Client for NetWorker Compliance (ClientPak for Macintosh)

PURPOSE

This bulletin gives instructions for configuring MacTCP on the Macintosh DNS client.

DESCRIPTION

Before you install or run NetWorker on a Macintosh DNS client, you must configure its TCP/IP, the protocols used for network communications. If the DNS client has an outdated version of MacTCP, you must remove that version of MacTCP before installing and configuring the version required for NetWorker.

SOLUTION

If the Macintosh client currently has MacTCP v.2.0.6 installed, follow the instructions in "To configure MacTCP 2.0.6." If the Macintosh client has a version of MacTCP earlier than v.2.0.6, follow the upgrading instructions below before you configure MacTCP.

To upgrade from an earlier version of MacTCP:

1. Move the following files out of the System Folder:
 - MacTCP DNR
 - Control Panels: MacTCP
 - Preferences: MacTCP Prep
2. Find MacTCP on your System 7.5 CD-ROM. If the MacTCP file is version 2.0.6,

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skip to step 4. If the MacTCP file is version 2.0.4, continue with step 3.

3. If the file from the CD-ROM is MacTCP 2.0.4, copy MacTCP 2.0.4 to your hard drive and upgrade it to MacTCP 2.0.6 with the MacTCP 2.0.4 to 2.0.6 patch:
 - a. Download the patch from one of the following ftp sites:
 - *ftp://ftp.support.apple.com*
 - *ftp://ftptoo.support.apple.com*
 - *ftp://ftp.info.apple.com*with the following path:
/Apple_Support_Area/Apple_SW_Updates/US/Macintosh/Networking_and_Communications/Other_N-C/
or from the following mirror site:
ftp://mirror.apple.com/mirrors/Apple_SW_Updates/US/Macintosh/Networking_and_Communications/Other_N-C/
 - b. Use the instructions from the README file to apply the patch to the copy of MacTCP 2.0.4 that you just copied from your CD-ROM. This process converts the 2.0.4 file to a MacTCP 2.0.6 file.
4. Drag the MacTCP 2.0.6 file into your Control Panels folder in the System Folder.

To configure MacTCP 2.0.6:

1. Select MacTCP from the Control Panels folder under the Apple Menu.
2. Select Ethernet and click the More button.
3. Under Obtain Address, click the Manually radio button.
4. Click the OK button.
5. You'll now be back at the first screen, so enter your IP Address and click the More button.
6. Under IP Address, enter your Subnet Mask and then check the Lock checkbox.
7. Under Domain Name Server Information enter your name server under Domain and its IP Address under IP Address and click the Default radio button.
8. Click the OK button.
9. Close the MacTCP Control Panel window to save the changes. Restart your Macintosh to make the changes take effect.

LEGATO TECHNICAL BULLETIN

279: Using Manually Recycled Tapes With Your Windows NT Server (NT Patch 4.21-005)

PURPOSE

This Bulletin describes a limitation of NetWorker 4.2.1 for Windows NT when you use a manually recycled tape for backing up your data. A patch is provided to resolve this limitation.

DESCRIPTION

If a tape is manually marked recyclable before it is full, NetWorker does not recognize the tape as recycled and will not overwrite the tape. Instead, NetWorker will append the new data to the end of the tape.

SOLUTION

Patch 4.21-005 allows NetWorker to overwrite recycled tapes that are not full. Review the README file before applying this patch to your system.

Follow these steps to install the patch on the backup server:

1. Decompress the .zip file.
2. Shutdown the NetWorker services on the Windows NT machine by stopping the following services in the order listed:
 - a. NetWorker Backup and Recover service (if it exists)
 - b. NetWorker Remote Exec service
 - c. Portmapper service
3. Change to the \nsr\bin directory.

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279: Using Manually Recycled Tapes With Your Windows NT Server (NT Patch 4.21-005)

4. Rename any files that are to be replaced by files in this patch to *.old.
5. Copy the files from the patch into the \nsr\bin directory.
6. Restart the NetWorker services in the reverse order that they were stopped (see Step 2).

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- <ftp.legato.com>, Internet Address 137.69.200.1 (log in as *anonymous*)
- e-mail request server (request@legato.com)

LEGATO TECHNICAL BULLETIN

280: Running a Windows NT 4.0 Client (NT Patch 4.21-006)

PURPOSE

This Bulletin describes how to run a Windows NT 4.0 client with any NetWorker backup server.

DESCRIPTION

The enclosed patch enables you to define a Windows NT 4.0 system as a NetWorker client.

NOTE: Use this patch on a NetWorker client only. The patch is not meant to be used on a NetWorker backup server.

SOLUTION

Install the NetWorker client software as you normally would on your Windows NT 4.0 machine, ignoring any TCP/IP validation error messages during the installation. Then apply Patch 4.21-006.

Patch 4.21-006 provides a new version of LIBLOCAL.DLL, typically found in C:\win32app\nsr\bin directory. Review the README file before applying this patch to your system.

This patch is available electronically from:

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- e-mail request server (request@legato.com)

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G.W., B.W.

LEGATO TECHNICAL BULLETIN

281: Labeling Blank or New Tapes When Using Auto Media Management (NT Patch 4.2-010)

PURPOSE

This bulletin accompanies NetWorker for Windows NT patch 4.2-010, and provides explanation and installation instructions for the patch.

DESCRIPTION

Some sites reported that NetWorker 4.2 for Windows NT hangs while trying to label blank or new tapes when Auto Media Management is turned on.

SOLUTION

Install patch 4.2-010 to replace the **nsrmmd.exe** file.

To install patch 4.2-010:

1. Use the Control Panel to shut down the NetWorker server.
2. Make a directory called "original" in `\win32app\nsr\bin`.
3. Move `\win32app\nsr\bin\nsrmmd.exe` to `\win32app\nsr\bin\original`.
4. Copy the new **nsrmmd.exe** into your `\win32app\nsr\bin` directory.
5. Use the Control Panel to restart NetWorker.

This patch is available electronically from:

- World Wide Web (<http://www.legato.com>)
- [ftp.legato.com](ftp://legato.com), Internet Address 137.69.200.1 (log in as *anonymous*)
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LEGATO TECHNICAL BULLETIN

282: Jumbo Patch (UNIX 4.2 Patches)

PURPOSE

This bulletin accompanies UNIX patch 4.2-010, which updates the NetWorker 4.2 server on the Solaris, SunOS, AIX, and HP UNIX platforms.

Patch 4.2-010 contains patches 4.2-001, 4.2-002, 4.2-003, 4.2-004,a,b, 4.2-005, 4.2-006, 4.2-007, 4.2-009, and new fixes. You can download and apply all the fixes at once using patch 4.2-010.

See the *readme* file in *ftp://legato.com/NetWorker/Unix/4.2/* for the latest patch information for NetWorker 4.2 for UNIX.

DESCRIPTION

Patch 4.1-010 contains fixes for all of the following problems:

- Index backups slow
- **nsrck** slow
- Volume relabel slow
- Indexes crosschecked too frequently
- Savegroup can hang if client crashes or is unreachable
- Savegroup bootstrap for full saving too much data
- Multiple savegroups with the same client may not backup the second group
- JUKEBOX **nsrjb** does not support CAP port on Metrum 360
- **setuid root nwrecover** and core dump

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282: Jumbo Patch (UNIX 4.2 Patches)

- Save mishandles requests for more than 4GB files
- DRIVER incompatibility with device names
- **nsrchive** when used with empty **-T** option causes **nsrmmd** to dump core
- Automedia management won't overwrite a recycled tape

SOLUTION

Download patch 4.2-010 using anonymous ftp and install it according to the directions in the included *README* file. The NetWorker for UNIX 4.2 patches are in the following directory:

ftp://legato.com/NetWorker/Unix/4.2/

This patch is also available on the Legato web site.

LEGATO TECHNICAL BULLETIN

283: NetWorker Installation Notes for Windows NT Servers and Clients (NT)

PURPOSE

This Technical Bulletin describes error messages you may see while installing or operating NetWorker on a Windows NT system and provides solutions.

DESCRIPTION

During installation or operation you may see one or more of these error messages:

`"Unknown host"`

`Bad IP Address.`

`"Hostname" is not a valid hostname.`

`"Clientname" is not a client of this server.`

`Connection refused.`

SOLUTION

The error messages indicate that there is an improper server or client TCP/IP configuration, or there are problems with the TCP/IP interface. Use the following procedures to verify that you have correctly set up the Windows NT machine.

IP Configuration

1. Verify that the IP address for the NT machine is correct.

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V.W., J.H.

2. Verify that the Hosts Table is set up correctly.
The Hosts Table is located in the %SYSTEMROOT%\system32\drivers\ directory. Check the server and the client tables for the order, syntax, and case of the names you have entered for the server and client(s). The following example shows the correct hosts table setup.

```
Server A hosts table
127.0.0.1 localhost loopback
xxx.xxx.xxx.x server_a server_a.domain.com
xxx.xxx.xxx.x client_a client_a.domain.com
xxx.xxx.xxx.x client_b client_b.domain.com
```

```
Client A hosts table
127.0.0.1 localhost loopback
xxx.xxx.xxx.x client_a client_a.domain.com
xxx.xxx.xxx.x server_a server_a.domain.com
```

```
Client B hosts table
127.0.0.1 localhost loopback
xxx.xxx.xxx.x client_b client_b.domain.com
xxx.xxx.xxx.x server_a server_a.domain.com
```

3. Make sure the system has the correct hostname.
 - a. Select Network from the Control Panel.
 - b. Select TCP/IP Protocol from NetWorker Settings. The machine does not have to be set up for Domain Name Services (DNS) (refer to Technical Bulletin #233).
 - c. Enter the correct short name of the host in the Hostname field.
 - d. Enter the fully qualified name of the host in the Domain field (i.e., company.com). Use the **gethostbyname** command to confirm that the name is correct.
 - e. Click OK in all of the open windows to save the configuration.
4. Check these requirements for the TCP/IP name resolution services you are using:
 - Verify that the DNS server address is correct and that the server is running.
 - Verify that the Windows Internet Name Service (WINS) server address is correct and that the server is running.
 - Verify that the Dynamic Host Configuration Protocol (DHCP) settings are correct and that the WINS server is updated with the correct DHCP address. Confirm that the Default Gateway is set up correctly.

NOTE: The backup server must have a static IP address.

If you have trouble with these services, use Hosts Table instead of DNS or WINS. You can also eliminate DHCP and use a static address.

Connectivity

1. Use the **ping** command to verify that the NT machine can locate its destination machine. Check that you can **ping** the Fully Qualified Name as well as the short name under DNS.
2. Use the **rpcinfo -p** command to display the address list. If you get an rpc error, there is a problem with an rpc connection.

Using NetWorker

1. Use the -s option to start a NetWorker utilities (e.g., winadmin -s SERVER_NAME or winwork -s SERVER_NAME).
2. In the NetWorker Administrator window, verify that a server is running before changing to that server.

LEGATO TECHNICAL BULLETIN

284: Problems Having a Client Name as the Substring of Another Client (UNIX)

PURPOSE

This technical bulletin describes the problems caused by having a client name that is a substring of another client name. This information is applicable for NetWorker 4.2 on all UNIX platforms.

DESCRIPTION

Some sites report that having the name of a client as the substring of another client causes problems. For example, the name "meteor_1" is a substring of "meteor_14."

You may experience two problems in this scenario:

1. While doing the backups, you see the following errors:

```
meteor_14:index nsrindexasm: save failed on
/voll/nsr/index/meteor_14/db
meteor_14:index save: external ASM `nsrindexasm' exited with code 1
meteor_14:index save: /voll/nsr/index/meteor_14/db was not
successfully saved
meteor_14:index save: SYSTEM error, I/O error
meteor_14:index save: save of /voll/nsr/index/meteor_14 to
hnssys2.hns.com failed
```

2. While recovering the database of "meteor_14," NetWorker actually recovers the database of "meteor_1."

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R.P. L.R.

SOLUTION

There are the two workarounds recommended for this problem:

WORKAROUND #1

In */nsr/index*, create a directory whose name is unique to all the directories and/or files in */nsr/index*.

Specify the full path name of the new directory for the “index path” attribute in the client resource for the client whose name is the substring of the other clients.

WORKAROUND #2

Change the client name so it is not a substring of other clients’ names.

LEGATO TECHNICAL BULLETIN

285: NetWorker for Windows NT Client Disaster Recovery Procedure (NT)

PURPOSE

This bulletin describes the steps you must follow to completely recover a Windows NT client using NetWorker for Windows NT.

DESCRIPTION

In cases where a NetWorker client for Windows NT fails, becomes corrupted, or needs to be recovered to another machine, NetWorker can recover the software and user files that existed on the machine before the failure. The Solution section of this bulletin provides the procedure.

NOTE: This procedure is for recovering a NetWorker client.

- To recover a NetWorker server for Windows NT, release 4.3 and later, follow the instructions in Reinstall Windows NT. Then refer to the *Disaster Recovery Guide* for information on how to recover NetWorker indexes and configuration files and follow the instructions in Reinstall NetWorker and Recover Data with NetWorker User.
- For earlier versions of the NetWorker server for Windows NT, refer to the *Installation and Maintenance Guide* for information on how to restore the media database and on-line indexes then follow the instructions in Reinstall NetWorker and Recover Data with NetWorker User.

SOLUTION

First you reinstall Windows NT and NetWorker, then you use the NetWorker User program to recover the lost client files.

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D.N., B.W.

Reinstall Windows NT

Reinstall the same version of Windows NT as was previously installed. You must:

1. Install Windows NT into the same directory as it was before.
2. Install the machine as a Workstation or Server, not as a Domain Controller.
3. Install the machine into a Workgroup, not a Domain.
4. Recreate all of the filesystems that were previously on the machine. The filesystems must be:
 - The same filesystem type as before (NTFS, FAT, or HPFS).
 - At least the same size as before, to hold all of the backed up data.
5. Reconfigure the networking as it was configured before, with the same hostname and IP address.
6. Reboot the machine after reinstalling the Windows NT operating system.
7. If the machine had a Windows NT Service Pack installed, reinstall the same Service Pack, as well as any necessary patches for that Service Pack.

NOTE: If you use Service Pack 4 for Windows NT 3.51, a patch is required to recover correctly. Before you recover the data from the machine, apply Microsoft's patch for Service Pack 4. The patch is documented in Microsoft's "Q149857 MoveFile_Delay_Until_Reboot" and is available from:

ftp.microsoft.com/bussys/winnt/winnt-public/fixes/usa/nt351/hotfixes-postSP4/SMSS-fix

Reboot the machine after reinstalling the Service Pack.

Reinstall NetWorker

1. Log in locally as Administrator.
2. Reinstall the same version of NetWorker as was used for backup and in the same location as before.
3. Obtain and install all applicable NetWorker patches for the version you have installed, even if they were not installed prior to the disaster.

NetWorker patches are available from the World Wide Web (*http://www.legato.com*) or the Legato FTP server (*ftp.legato.com/NetWorker/NT/version_number*).

Recover Data with NetWorker User

Use the NetWorker User program to mark the Registry and all data for recovery.

- Do not recover any Service Pack patches that you applied in Reinstall Windows NT.
- Do not recover the NetWorker directory (default C:\win32app\nsr).
- For NetWorker for Windows NT version 4.3 and earlier, do not recover the user

profiles.

- On Windows NT 3.51, the user profiles are part of the REGISTRY: saveset. A user profile entry contains the first five letters of a username and some numbers.
- On Windows NT 4.0, the user profiles are the *ntuser.dat* or *NTUSER.DAT* files located in *%SystemRoot%\Profiles* for each user's directory. The default path is *C:\winnt\profiles*. Unmark the *ntuser.dat* or *NTUSER.DAT* file in every subdirectory located in the *Profiles* directory.

NOTE: Select "Overwrite" for files and Registry keys that already exist.

If you are running NetWorker for Windows NT version 4.4 or later, reboot the machine. The machine should now be restored to its previous state.

Users with NetWorker for Windows NT version 4.3 and earlier:

1. Reboot the machine.
2. Log in as Administrator.
3. Create a new user and assign the user to the Administrators group.
4. Log out, then log back in as this new user.
5. Recover the user profiles.

NOTE: On Windows NT 3.51 with NetWorker for Windows NT version 4.3 and earlier, there may be duplicate entries for some user profiles. One entry will have the first five letters of the user name and a three digit number while the other will begin identically, with the same five letters and three numbers, but will be followed by a Windows NT Security Identifier (SID). Only recover the profiles followed by a SID.

6. Log in as Administrator and delete the user created in Step 3.
7. Reboot the machine.

The machine should now be restored to its previous state.

LEGATO TECHNICAL BULLETIN

286: Configuring and Troubleshooting Printer Notifications On A NetWorker for Windows NT Server (NT)

PURPOSE

This Bulletin describes how to set up and troubleshoot Printer Notifications on a NetWorker for Windows NT backup server.

SET UP

To print from a Windows NT server, you must first install Microsoft's TCP/IP Print Service. Verify that you can use the NT LPR command to print a file.

NetWorker cannot print to a printer that contains spaces in its name. There are two solutions to this problem:

- Share a printer on the network that does not contain spaces in the name. To share a printer on the network:
 1. Select Printers from the Control Panel.
 2. Select the printer you want to share.
 3. Select Properties from the Printer pull-down menu.
 4. Click the option to "Share this printer on the network." The name of the printer you choose must not contain spaces.
- Recreate the printer name without spaces. Once you have configured the printer correctly, use the following command to test NetWorker's ability to print:

```
nsrldr -P [printer_name] [text_file]
```

Replace [printer_name] with the name of the selected printer and [text_file] with the name of the file you want to print.

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D.N., B.W.

TROUBLESHOOTING

If you receive these error messages:

```
Error: print server unreachable or specified printer does not exist.
```

```
nsrlpr: The TCP/IP Print Server was stopped on exacto.
```

```
nsrlpr: Please start it.
```

your TCP/IP print service may not be started. Select Services from the Control Panel to start the service.

If you receive the error message:

```
Error: print server did not accept request. Job aborted.
```

your printer name is incorrect. Correct the printer name and try to print again.

Once you can print from the command line, change the Notification Action field to the print command:

```
nsrlpr -P [printer_name]
```

To choose a Notification from the NetWorker Administrator window, select Customize, then Notifications, and select the Notification you want to print.

LEGATO TECHNICAL BULLETIN

287: Setting Up Email Notifications on NetWorker Servers (NT)

PURPOSE

This technical bulletin tells you how to configure NetWorker servers for Windows NT, release 4.2 and later, to use various methods for sending email notifications.

DESCRIPTION

NetWorker for Windows NT can use email to send automatic notifications to the administrator at certain points in the backup and recover processes. You can configure your NetWorker server to work with the following mail programs:

- Microsoft Mail (built into Windows NT)
- Microsoft Exchange
- SMTP

NetWorker can be configured to use third party SMTP email programs that can be run from the command line and accept input from STDIN. An example of an SMTP program is a public domain program called Blat, which is currently available from the following web site:

<http://gepasi.dbs.aber.ac.uk/softw/Blat.html.r>

The Solution section gives instructions for configuring NetWorker to use these mail programs.

SOLUTION

To configure NetWorker for Windows NT to send email notifications:

1. For NetWorker for Windows NT release 4.3 and later, copy **nsrmail** from the

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support directory on the NetWorker for Windows NT CD to the `\win32app\nsr\bin` directory on the NetWorker server.

Note: Legato Technical Support does not support **nsrmail** in NetWorker for Windows NT release 4.3 and later.

For NetWorker for Windows NT release 4.2 and 4.21, **nsrmail** is installed automatically with the product.

2. Install and configure the mail software on the NetWorker server.

Microsoft Exchange: Install and configure the Exchange client software on the NetWorker server. It must connect to an existing Exchange Server.

SMTP: Install and configure the Blat software into the `\win32app\nsr\bin` directory on the NetWorker server. It must connect to an existing SMTP server.

Note: You can install the email server software (Microsoft Exchange Server or SMTP server) on the same machine as the NetWorker server. If you have the NetWorker server and the mail server software on the same machine, be aware that NetWorker uses most of the machine's resources and may cause performance issues with your mail server software.

3. Make sure the email software works properly. Test both sending and receiving for the user ID that will receive notifications from NetWorker.
4. Test NetWorker's ability to send email.
 - a. Create a text file for NetWorker to send. This example uses `\win32app\nsr\bin\test.txt`, which contains the line "This is a test file."
 - b. At the command prompt, change to the `\win32app\nsr\bin` directory.
 - c. At the command prompt, enter the command for your mail program, for example:

Microsoft Mail or Microsoft Exchange:

```
nsrmail -u originator_ID -p originator_password -s "Test message"
recipient_ID < test.txt
```

Where:

originator_ID is the user ID sending the email. This should be the same user ID that the email program asks you for when you start the program.

originator_password is the password of the Microsoft Mail user.

recipient_ID is the user ID of the recipient of the email.

SMTP:

```
blat test.txt -s "Test message" -t recipient_ID
```

Where:

recipient_ID is the name of the user that mail will be sent to.

4. Verify that the mail was sent. If it was not, check the following:

Microsoft Mail or Microsoft Exchange:

- In the NetWorker Administrator program, select Setup from the Clients menu, then select the NetWorker server machine from the list of clients. The Remote User and Password fields should be blank.
- Make sure that you use the same *originator_ID* and *originator_password* as you use to log in to the email program.
- If **nsrmail** appears to hang, make sure you are redirecting a text file to **nsrmail** with the "<" sign, for example:

```
nsrmail -s "Test Message" Administrator < test.txt
```

Press CNTL-C to get out of mail or CNTL-Z to have mail send any text you have typed in.

- Make sure that the *recipient_ID* is a valid address and that you are checking the right mailbox.

SMTP:

- Make sure that the *recipient_ID* is a valid address and that you are checking the right mailbox.
- Consult the documentation that comes with Blat for other solutions.

Note: If email cannot be sent at this point, Legato Technical Support cannot troubleshoot the problem. The problem lies with the Blat software and not with NetWorker. Legato Technical support will direct you to contact the makers of Blat if you are having problems at this point.

5. **Microsoft Mail or Microsoft Exchange only:** After you know **nsrmail** runs from the command prompt, edit the client resource for the NetWorker server to add the user ID and password for your mail program.
 - a. In the NetWorker Administrator program, select Client Setup from the Clients menu, then select the NetWorker server machine from the list of clients.
 - b. Change the Remote User field to the user ID for your mail program and change the Password field to the password for your mail program.
 - c. Test to make sure you specified the correct username and password by running the following command:

```
nsrmail -s "Test message" recipient_ID < test.txt
```

- d. Verify that the mail was sent. If it was not, repeat the checks listed in step 4.

6. Change the notifications so that they send email. In the NetWorker Administrator program, select the notification you want to automate from the Notifications menu. In the action field, enter the appropriate command for your mail program.

Note: For NetWorker for Windows NT release 4.3 and later, you must create a custom notification that uses **nsrmail**. You cannot modify any of the existing notifications to use **nsrmail**.

Microsoft Mail or Microsoft Exchange:

```
nsrmail -s "subject" recipient_ID
```

Where:

subject is the subject line you would like the email to have, for example, "puma.legato.com's savegroup completion email".

If you want multiple users to receive the email, you must specify each address separated by a space, for example:

```
nsrmail -s "puma.legato.com's savegroup completion" recipient_ID1  
recipient_ID2 recipient_ID3
```

SMTP:

```
blat - -s "subject" -t recipient_ID
```

Note: The extra "-" is not a typo and is very important for making Blat work with NetWorker. Consult the Blat documentation for more information on this option.

Where:

subject is the subject line you would like the email to have, for example, "puma.legato.com's savegroup completion email".

If you want multiple users to receive the email, you must specify each name separated by a space, for example:

```
blat - -s "puma.legato.com's savegroup completion." -t recipient_ID1  
recipient_ID2 recipient_ID3
```

Nsrmail Limitations

Microsoft Mail or Microsoft Exchange: Due to problems with Microsoft's mail engine, **nsrmail** cannot send mail while the machine is logged out or when the screen saver is running. Please contact Microsoft if you have any questions about this limitation.

Blat (SMTP) is able to send mail when the machine is logged out or when the screen saver is running.

NetWorker for Windows NT, version 4.3 and later: All default notifications (those predefined and shipped with NetWorker) use **nsrlog**. If you try to set a default notification to use **nsrmail**, NetWorker will change the notification back to **nsrlog** whenever the server is started. To use **nsrmail** in a notification, you must create a custom notification.

Users who upgrade pre-4.3 servers to 4.3 (or later) will have their **nsrmail** notifications modified to use **nsrlog**.

Legato Technical Support does not support **nsrmail** in NetWorker for Windows NT release 4.3 and later.

Owner Notification

NetWorker can send email to different users or groups regarding the status of an individual machine. For example, if you have 10 servers, and each server is managed by a different person, administrators should receive email regarding the status of the backup of their servers, but not the status of other administrators' servers.

To set up owner notification, start the NetWorker Administrator program with the **-x** option:

```
\win32app\nsr\bin\winadmin -s server_name -x
```

server_name is the name of the NetWorker server.

Select Client Setup from the Clients menu. In the Owner Notification field, enter your **nsrmail** or **blat** command to send a user the savegroup completion information about the selected client.

LEGATO TECHNICAL BULLETIN

288: Error Caused by Missing *jbcap* File (UNIX)

PURPOSE

This technical bulletin explains a common error that results from a missing *jbcap* file on a NetWorker server across all HP-UX platforms.

DESCRIPTION

If the *jbcap* file is missing, NetWorker generates the following parse error:

```
# jbinfo /dev/sjiuld1
Error: hpux_rjc() parse failed: No such file or directory
Jukebox configuration parse error
```

The NetWorker driver is failing to find the */nsr/jukebox/jbcap* file. This bulletin provides a solution for fixing the parse error.

SOLUTION

Install a new *jbcap* file, an ASCII text file that needs to be in the */nsr/jukebox* directory. You can get a new copy of the *jbcap* file by:

- Extracting the file directly off the NetWorker media (tape or CD)
- Downloading the file from the Innovus ftp site (*ftp.innovus.com*) located in the */NetWorker/Jukebox* directory

Before you install the new *jbcap* file, shut down the NetWorker daemons. To shut down the daemons, become root on the NetWorker server and issue the **nsr_shutdown** command at the root prompt. NetWorker prompts you for confirmation, as in the following example:

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288: Error Caused by Missing jbcap File (UNIX)

```
miata# nsr_shutdown
nsr_shutdown will kill the following processes
 209 ?      S  0:00 /usr/sbin/nsrexecd -s miata
 214 ?      S 54:48 /usr/sbin/nsrd
 263 ?      S  0:00 /usr/sbin/nsrmmdbd
 265 ?      S  0:05 /usr/sbin/nsrindexd
 267 ?      S  0:00 /usr/sbin/nsrmmmd -n 1
Do you want to continue? [Yes]?
  * * * Killing NetWorker daemons
```

After you have installed the new *jbcap* file, bring the daemons back up. To bring the daemons back up, still as root, enter the following commands:

```
nsrd
nsrexecd
```

nsrd is the server daemon. **nsrexecd** is the client daemon. Since the NetWorker server is considered a client of itself, both daemons should be actively running on the server.

LEGATO TECHNICAL BULLETIN

289: NetWorker 4.1 Server Installed Without New Enablers (NetWare)

PURPOSE

This bulletin describes the problem that occurs when NetWorker for NetWare 4.1 server is installed over an existing, enabled NetWorker server without also installing the NetWorker 4.1 enablers and gives two solutions to the problem.

DESCRIPTION

If NetWorker for NetWare 4.1 is installed over an existing, enabled server without also installing the NetWorker 4.1 enablers, the NetWorker server will stop backing up. This is because NetWorker 4.1 uses new licensing and stratification, which the NetWorker 4.0 enablers do not recognize.

SOLUTION

In this situation, you have two options:

1. Downgrade to NetWorker 4.0.
2. Install the NetWorker 4.1 enabler codes.

Downgrading to NetWorker 4.0

1. Delete `sys:nsr\bin*.*`.
2. Reinstall NetWorker 4.0 from CD.

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J.P., R.D., S.S.

Installing the NetWorker 4.1 Enabler Codes

If you do not have the updated enabler codes, contact Legato customer service or sales to get the enabler codes. After you receive the enabler codes, apply them to the server.

To apply the updated enabler codes:

1. Press F4 - Registration.
2. Press F8 - Create.
3. Type in the update enablers.

LEGATO TECHNICAL BULLETIN

290: NetWare Patches Incompatible with NetWorker (NetWare)

PURPOSE

This technical bulletin provides list of NetWare patches that are incompatible with NetWorker.

DESCRIPTION

Novell has released a few NetWare patches that conflict with NetWorker, often causing server abends. After Legato and some customers installed these patches, we found three patches that are incompatible with NetWorker.

If you are running NetWorker 3.12, 4.0, or 4.1, you may experience problems with the following NetWare patches:

- SMSUP5.EXE
- LIBUP9.EXE
- TCPN02.EXE

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290: NetWare Patches Incompatible with NetWorker (NetWare)

This matrix shows some of the NLMs within the patches which have been reported incompatible with NetWorker.

NetWare Patches	NetWorker Versions		
	3.12	4.0 + Patches	4.1
SMSUP5.EXE	t _{sa} 312 works	t _{sa} 410 works t _{sands} does not work	
LIBUP9.EXE		IP works Reported trouble with SPX: <code>spxs.nlm</code> will exhaust memory	
TCPN02.EXE	Reported trouble with 3COM's FDDI Model 3c770 and TCP/IP revision H		

SOLUTION

Do not apply these patches. If you already applied these patches and you are having problems with NetWorker, back out of the patches.

LEGATO TECHNICAL BULLETIN

291: Configuring an Autochanger on HP-UX 10.01/T500 (UNIX)

PURPOSE

This technical bulletin provides an example of configuring an autochanger on an HP-UX 10.01/T500 server running NetWorker 4.2.

DESCRIPTION

The instructions in this example are for configuring the autochanger in the kernel. The complete procedure is documented in the Installation guide and HP manuals.

SOLUTION

The example provided here is configuring an HP 48AL autochanger.

1. Attach the autochanger to the server, making sure that there are no SCSI conflicts, and reboot the machine. Enter `ioscan -f` and verify that the new entries are displayed. For the HP 48AL autochanger, the new entries should be:

```
tape      6 0/52.5.0 tape2      CLAIMED  DEVICE  HP      C1553A
spt       0 0/52.5.1 spt        CLAIMED  DEVICE  HP      C1553A
```

2. Rebuild the kernel `/stand/system` to include the `spt` entry. No `spt` patch is needed for HP-UX 10.01 because the driver is bundled in. The `spt` entry is:

```
driver 0/52.5.1 spt
```

3. Reboot the machine, then enter `what vmunix | grep scsi_` to verify that the kernel knows about the driver. You should get the following output:

```
scsi_pt.c      Revision: 10.01 $Date: 95/03/31 16:28:03 $
```

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P.R., R. S

The NetWorker part of the configuration runs the **mknod** command to build the device file for the robotics control port. To build the device file for the robotics control port:

1. Get the major number for the driver. Enter `lsdev -d spt`. You should get the following output:

Character	Block	Driver	Class
75	-1	spt	spt

2. Enter `ioscan -f`. You should get the following output:

Class	I	H/W Path	Driver	S/W State	H/W Type	Description
tty	1	0/48	mux2	CLAIMED	INTERFACE	HP J2092A - 16 RS-232 MUX
ext_bus	5	0/52	scsil	CLAIMED	INTERFACE	HP 28655A - SCSI Interface
target	12	0/52.0	target	CLAIMED	DEVICE	
tape	0	0/52.0.0	tape2	CLAIMED	DEVICE	HP C1533A
target	13	0/52.1	target	CLAIMED	DEVICE	
tape	1	0/52.1.0	tape2	CLAIMED	DEVICE	HP C1533A
target	14	0/52.2	target	CLAIMED	DEVICE	
tape	2	0/52.2.0	tape2	CLAIMED	DEVICE	HP C1533A
target	15	0/52.3	target	CLAIMED	DEVICE	
disk	12	0/52.3.0	disc3	CLAIMED	DEVICE	TOSHIBA CD-ROM XM-3401TA
target	30	0/52.5	target	CLAIMED	DEVICE	
tape	6	0/52.5.0	tape2	CLAIMED	DEVICE	HP C1553A
spt	0	0/52.5.1	spt	CLAIMED	DEVICE	HP C1553A

The proper syntax of the `mknod` command is:

```
mknod /dev/sjid1u1 c spt_major_number 0xIITL00
```

Where **II** is the instance number (I column in `ioscan` output) of the controlling SCSI bus (`ext_bus`), **T** is the SCSI address of the robotics, and **L** is the LUN number which is 0 for most devices except HP 48AL and DL's which use a LUN of 1.

3. For the HP 48AL, enter `mknod /dev/sjid1u1 c 75 0x055100` (Instance number of 5, SCSI address of robotics 5 and LUN 1)
4. With the device set up, enter `jbinfo` on `/dev/sjid1u1` to verify the configuration.

LEGATO TECHNICAL BULLETIN

292: Recovering from an Expired or Bad Enabler on the NetWorker Server (UNIX)

PURPOSE

This bulletin provides instructions for recovering from bad or wrong enabler code entries on a NetWorker server for UNIX, version 4.0 and later.

This bulletin also includes information specific to two NetWorker for HP-UX issues:

- Problems with temporary enablers
- Problems with codeword files

DESCRIPTION

If you get "server disabled" error messages after you enter the permanent enabler and authorization codes, you may have an expired or bad enabler code on your system. This problem happens most often during upgrades, but also happens if the *nsr.res* file is corrupted.

SOLUTION

Try these solutions:

1. Upgrade. Enter **nsrcap -v -u** and follow the prompts.
2. If upgrading does not work, downgrade. Enter **nsrcap -v -d** to remove the latest enabler.
3. If upgrading and downgrading do not work, use **nsradmin** to edit the resource files.

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If you edit the resource files, make only the changes listed below, following the instructions exactly. The resource file is very sensitive to corruption. Corrupted resource files can cause NetWorker to hang, dump core, or in severe cases, cause the entire system to hang or dump core.

To edit the resource files:

1. Shut down NetWorker. Enter **nsr_shutdown -a** and make sure that the shutdown completes successfully.
2. Make backup files of *nsr.res* and *nsrjb.res* (for example, *nsr.res.bak* and *nsrjb.res.bak*)
3. Start **nsradmin** from the command line, specifying the resource file with a **-f** option. For example:

```
nsradmin -f /nsr/res/nsr.res
```
4. Once **nsradmin** has started, select visual, by typing **visual** or **v**. Visual mode requires that your **TERM** variable be set correctly and a *termcap* file has been created for your terminal type.
5. Select the license resource types: Type **s**, tab to the NSR license entry, then press Return.
6. Delete all license entries: Type **d**, and then confirm by typing **y** when prompted.
7. Exit **nsradmin** by typing **q** twice, once to exit visual mode, then again to exit **nsradmin**.
8. Start NetWorker. Enter **nsrexecd**, then **nsrd**.
9. Enter **nsrcap -v -c**, as you would normally when entering enabler codes for the first time. After you enter the base enabler, enter the rest of the enablers and authorization codes through **nwadmin**.

SPECIAL NOTES TO HP-UX USERS:

A codeword file was used in NetWorker for HP-UX in versions prior to 4.1 (i.e. 4.0.2). This file was used instead of enablers. The codeword itself normally consists of 3 blocks of 6 characters each (sometimes 3 blocks of 8 characters each.) The default path for the codeword file is */usr/local/bin/codeword*. The codeword file is normally accessed through **nsr_ize**, but it also can be accessed through **install_cwd**. The default path is modified by the **CODES** environment variable.

For versions of NetWorker for HP-UX prior to 4.1, if you installed an evaluation codeword and later install the permanent codeword, you must manually remove the evaluation codeword. Shut down NetWorker, then, using a text editor, such as **vi**, remove the evaluation codeword entry in the codeword file.

Temporary enablers do not always work on HP-UX systems. Temporary enablers allow users to extend the evaluation period for NetWorker. The first temporary enabler is usually accepted and will re-authorize NetWorker for an additional 45 days.

When a second temporary enabler is used after the first expires, the enabler is accepted, but the NetWorker server disables itself within about 2 hours or when the NetWorker server daemons are stopped and restarted.

If you are enabling a jukebox, first enter the codeword for the jukebox module using **install_cwd**, then run **jbm_enabler**. (This is procedure is the reverse of the procedure for NetWorker versions 4.1 and later, where the jukebox resource is created first, then it is enabled.)

There is a known bug that will sometimes create duplicate license resources in the */nsr/res/nsr.res* file. If you remove license resources, make sure that *all* resources are deleted, including the duplicates.

If you have installed HP's Omniback product prior to installing NetWorker, it will be necessary to remove the Omniback codeword from the codeword file before NetWorker can be successfully installed.

There have been some problems with the codeword file when it becomes corrupt. Although newer versions of NetWorker use enablers, the codeword file remains on systems that have been upgraded. If you have problems with licenses, shut down NetWorker, delete the codeword file and restart NetWorker. In most cases, if *nsr.res* is valid, this procedure will fix broken licenses.

IMPORTANT:

The following example includes actual, working codewords. Your use of the codewords contained in this bulletin indicates and confirms your acknowledgment that you have obtained, read, and fully accepted all of the terms and conditions of the NetWorker for HP 9000 license agreements that accompanied your software.

```
# Start of current codeword file
/*
NetWorker Codeword File Created 1996.01.31
Manual modifications to this file may lead to serious problems.
*/
LAN9CD 1LUJ75S 1N8NJZZ /* M:`Advd0' N:10 Permanent */
LAN9CD 1LX1318 1DQX0XY /* M:`JBI__' N:1 Exp:1993.06.13 */
```

To install a codeword use, type **install_cwd -c** (create), enter the codeword and then type **quit** to exit.

LEGATO TECHNICAL BULLETIN

293: Upgrading to NetWorker 4.1: Frequently Asked Questions (NetWare)

PURPOSE

This Technical Bulletin contains Frequently Asked Questions (FAQ) and answers about upgrading to NetWorker for NetWare 4.1.

QUESTIONS AND ANSWERS

- What is the difference between Universal and PC/Mac clients?

The PC and Mac client enablers support DOS, Mac, OS/2, Windows 3.1, Windows 95, and WindowsNT Workstation clients.

The Universal client enablers support all other client types, including UNIX, NetWare, and WindowsNT Server.

- Why are they separated?

They are separated because of the significant difference in value of backing PC-class machines, which typically are 1GB of data or less, and servers, which can be tens or hundreds of gigabytes of data.

This separation allows us to provide the PC client connections at a lower price.

- Which clients are included and which require ClientPaks?

NetWorker 4.1 for NetWare NetWork Edition includes client software for NetWare 3.1x and 4.1x file servers, and Windows 3.1x and Windows 95 systems. You can download client software for DOS from our ftp server or Web site. Support for any other client requires the purchase of the appropriate ClientPak.

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- What's an Archive Module?

The Archive Module enables the archiving function on NetWorker 4.1 for NetWare, which provides permanent file archiving and disk file grooming capability. This feature was formerly part of the basic NetWorker product, but was separated to make it consistent with the NetWorker NT and NetWorker UNIX products. Current NetWorker for NetWare customers can request this module free of charge as part of their update.

- Will the support price for client connections go up in the future?

Not at this time. However, Legato reserves the right to change prices in the future.

- If I change my mind and don't want the NetWorker 4.1 upgrade, can I return it and go back to 3.12?

Yes. To return to NetWorker 4.1, you must completely delete the NetWorker 4.1 and reinstall NetWorker 3.12. After you reinstall NetWorker 3.12, perform a disaster recovery of the NetWorker server using the last backups that were made with the 3.12 software.



Important: You will not be able to recover data backed up by NetWorker 4.1 using NetWorker 3.12.

- What's the difference between Server Edition and Network Edition?

Server Edition backs up only the NetWare server that NetWorker is installed on; Network Edition can back up the NetWare server where NetWorker is installed and other network clients.

- Can I add connections to Server Edition?

No.

LEGATO TECHNICAL BULLETIN

294: NetWare Checklist (NetWare)

PURPOSE

This bulletin provides a partial list of the most commonly required patches and updates for Novell NetWare servers that will be used as either NetWorker clients or servers.

DESCRIPTION

This document is provided as a convenience for Legato customers, to provide a single reference for the most commonly required patches, updates, and configuration tips for Novell NetWare servers that may be used as either NetWorker clients or servers. This document should not be considered as an exhaustive reference for NetWare patches and updates. The customer assumes full responsibility and liability for determining the suitability and applicability of this information to their network environment.

Backup software, as well as other types of operations, can place a very heavy load on a server. It is important that your NetWare server have the OS updated with the necessary patches recommended by Novell prior to installing NetWorker software. These patches may not always be the latest versions, because sometimes there are compatibility problems between different versions of patches and OS updates.

The current release of NetWorker for NetWare is 4.1. You should use this release whenever possible for your NetWare clients and servers. See the Legato web site for compatibility guides, technical bulletins, and various support and information mailing lists to help you stay abreast of information on patches, updates, and upgrades.

SOLUTION

Check the items listed in this section on your file servers and workstations.

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- World Wide Web (<http://www.legato.com>)
- [ftp.legato.com](ftp://ftp.legato.com), Internet address 137.69.200.1 (log in as *anonymous*)
- FaxWorker at (415) 812-6156
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J. O., H.P.

NETWARE SERVER PRE-INSTALLATION UPDATES & PATCHES

Note: The files listed here change frequently as Novell issues updates. For the latest information, check with Novell directly or use their forums on CompuServe and their Internet site (netware.novell.com).

1. Check that the version of NetWare being run has all appropriate patches, updates, and fixes from Novell, installed:
 - a. IntraNetWare & NetWare 4.11 platforms should have the following patches and updates applied:
 - 411SP1B.EXE
 - LIBUPB.EXE
 - b. NetWare 4.1 should have, at a minimum, the following patches and updates applied:
 - 410PT6.EXE
 - 410NDS9.EXE
 - 410PT6.EXE
 - 41NDS9.EXE
 - SPXSTR.EXE
 - LIBUP8.EXE or LIBUPB.EXE
 - STRL5.EXE
 - SRVMN1.EXE
 - LANDR5.EXE
 - CDUP3.EXE
 - SMSUP6.EXE

NetWare 4.10 SFTII shares many of the same updates and patches used by the regular 4.10 version of NetWare. Check the readme files in each update to determine which update from that library pertain to SFTIII. Be sure to run the NetWorker client installation routine, CPINST.NLM, from the SFTIII server that is running MENGINE.

- c. NetWare 3.12 should have, at a minimum, the following patches and updates applied:
 - STRTL5.EXE
 - LIBUP8.EXE or LIBUPB.EXE
 - SMSUP6.EXE
 - MON176.EXE
 - 312PTA.EXE
 - d. NetWare 3.11 should have the following patches and updates applied:
 - 311PTG.EXE
 - MON176.EXE
 - PBURST.EXE
 - SMSUP6.EXE
 - STRTL5.EXE

- LIBUP8.EXE or LIBUPB.EXE

Notes for all NetWare releases:

- Avoid LIBUP6.EXE, LIBUP7.EXE, and LIBUP9.EXE. These updates had problems with CLIB and other components. LIBUPB.EXE has not been fully tested. If you experience problems with LIBUPB, drop back to LIBUP8.
- Avoid SMSUP5.EXE because it has TSA problems.

NETWARE SERVER PRE-INSTALLATION CONFIGURATION TIPS

1. Ensure that the STREAMS, CLIB, MATHLIB, AFTER311, A3112, and TLI versions are the most appropriate ones for the version of NetWare being supported and that all TSAs on Host and Target servers are the same level. (i.e. The TSAs all come from the same update file or collection.)

The TSANDS.NLM TSA only needs to be loaded on one server in a given tree in order to protect NDS for that tree.

Note: Be careful which AFTER311.NLM you use with NetWare 4.10! The version that ships with NetWare 4.10 is only about 426 bytes in size while the other versions are 14K-24K. Use only the small one with NetWare 4.10. It will identify itself as version 4.10a. If AFTER311 does not load, NetWorker software will not load or work properly!

2. Ensure that the STREAMS, CLIB, MATHLIB (MATHLIBC for SX servers without a co-processor), A3112 (NetWare 3.12 servers), and AFTER311 NLM Load statements are implicitly specified at the beginning of the AUTOEXEC.NCF file, before all other NLMs.

NetWare 3.11 servers should have the PATCHMAN, FATFIX, and SPXFIX2 NLMs loaded first in the AUTOEXEC.NCF, followed by STREAMS, CLIB, MATHLIB, and other NLMs.

Do not rely on the autoloading feature, because with some server hardware, it makes a difference in what order various NLMs load. The NLMs listed above should be the first NLMs loaded in the AUTOEXEC.NCF file. In all cases of specific patches, such as PATCHMAN and FATFIX, these NLMs should be loaded ahead of all other NLMs.

3. If you are connecting to Windows NT or UNIX servers, you must use TCP/IP. Ensure that you are running the most current release of TCP/IP applicable to your specific version of NetWare. It is important to be running at least rev. 2.02m or higher. Please note that starting with TCPN01.EXE, you must choose your TCP/IP updates based on the version of NetWare you are running as well as whether or not you are running specific versions of Multiprotocol Router and/or NetWare Connect. Please read the Novell update documentation carefully to be sure you are selecting the correct TCP/IP update for your NetWare server. Problems have been encountered with certain network cards and drivers when used with the TCP/IP updates in TCPN02.EXE. If you encounter this situation, you may need to drop back to TCPN01.EXE or TCP41B.EXE.

4. Ensure that the HOSTS tables entries for the server and clients are properly synchronized. If connecting with Windows NT servers that have underscores (`_`) in the machine name, Windows NT doesn't always transmit the underscore accurately. It sometimes converts it to a dash (`-`). To be safe, include both alias variations in your host tables for your Windows NT server entries as well as fully qualified domain names for the Windows NT servers.
5. If you are running NFS, it must be at least version 1.2c or higher. Current updates are NFS193.EXE for NFS 1.2c, and NFS199.EXE for NFS 2.1.
6. Ensure that all tape and optical hardware and controllers are properly configured and that you have a list of their various IDs and settings.
 - Verify SCSI type and termination. Don't mix FAST SCSI-2 with FAST & WIDE SCSI.
 - Verify that all tape and optical devices and their associated Firmware revisions are on the Legato Compatibility Guide. These lists (documents #1905 and #2301) are available through the Legato FaxWorker system at 415-812-6156.
7. Ensure that you have at least 8 MB of additional server RAM and two available server connections to handle the NetWorker software. The server's Cache Buffers percentage in MONITOR should be at least 50% or greater. Novell, HP, and Compaq usually recommend that this value be at least 70% or greater for optimum performance. If this value is below 50%, add more memory to the server.
8. Be sure that there is at least 15 MB + 5% of total backup data of disk space on the SYS volume for the NLMs and indexes. Allow an additional 10 MB of space if you wish to install the online manuals.
9. Ensure that you've loaded the most current SCSI and ASPI drivers for your backup hardware.
10. Set Minimum Packet Receive Buffers to a minimum of 100 in STARTUP.NCF, and Maximum Packet Receive Buffers to a minimum of 500 in the AUTOEXEC.NCF. Some SCSI controllers will also require you to set Reserved Buffers Below 16 MB; for these SCSI controllers, set the Minimum Packet Receive Buffers to a minimum of 200.
11. Be certain to unload and disable any other backup software NLMs that may be present from the customer's current backup solution, if any.

NETWARE SERVER POST-INSTALLATION CONFIGURATION TIPS

1. If you are using TCP/IP, check the RPCNET.CFG file located in the NSR directory. There should be five uncommented lines in this file. Make sure the the two lines starting with TCP and UDP are the first uncommented lines in this file.
2. If your NetWare client keeps experiencing a Name Translation Failure error and keeps trying to register with itself even though it is not the NetWorker server, check for the presence of a NETWORKR.INI which is a hidden file usually found at the root of the SYS volume. If this file doesn't exist, you may create it with any text editor. It normally contains four lines:

```
default server = networker_host_name  
polling interval = 5  
colorset = C  
screen saver = 1
```

Once you have created the file, flag it as hidden and restart NETWORKR.NCF.

3. In extreme cases where creating the NETWORKR.INI file still doesn't clear up the Name Translation Failure error, edit the NETWORKR.NCF file in the system directory and add the NetWorker Host Name with the -s parameter to the end of the LOAD NWSTART line in this file, for example, -s *networker_host_name*. DO NOT tamper with the other parameters on this line!

LEGATO TECHNICAL BULLETIN

295: NetWorker for NetWare Upgrade Problem (NetWare)

PURPOSE

This bulletin describes a problem with the log file when you upgrade to NetWorker 4.0 for NetWare from previous versions of NetWorker.

DESCRIPTION

When you upgrade to NetWorker 4.0 for NetWare from previous versions, the Action field for the Log Default Notification is not updated, which causes the messages file to no longer be updated.

SOLUTION

To correct this problem, change the Action field to **nsrlog**.

To change this field from the NetWare console:

1. Switch to the NetWorker screen.
2. Press F4, then select Notifications >Log default.
3. Change the Action field to **nsrlog**.

To change this field from a Windows interface:

1. Select Customize>Notifications>Log default.
2. Change the Action field to **nsrlog**.

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- e-mail request server (request@legato.com)
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LEGATO TECHNICAL BULLETIN

296: Client Archive Fails with Authorization Error (Windows 95)

PURPOSE

This bulletin addresses a problem with NetWorker 4.2 clients for Windows 95 where the archive of a client fails with errors saying that the user is not in the administrator or archive users list.

DESCRIPTION

Starting an archive from the NetWorker user program on a Windows 95 client to a UNIX or Windows NT server will give the following error message:

```
SYSTEM error, user needs to be on administrator or archive users list
Archive
Cannot start backup of C:\ with server civic.legato.com
```

SOLUTION

The following workaround is recommended for this situation:

1. On the backup server, edit the client resource for the Windows 95 client.
2. Make sure archive services are enabled.
3. In the Archive Users field, type in `guest`. Click Add, then click Apply.

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S.C.A.

LEGATO TECHNICAL BULLETIN

297: NetWorker Server on AIX Hangs During `jb_config` (UNIX)

PURPOSE

This bulletin addresses a problem in NetWorker for UNIX, release 4.2, where `jb_config` may hang an AIX server.

DESCRIPTION

Running `jb_config` will give the following options:

- 1) Install an Autodetected SCSI Jukebox.
- 2) Install a Serial Jukebox.
- 3) Install an SJI Jukebox.

What kind of Jukebox are you installing? 1

Selecting "Install an Autodetected SCSI Jukebox" may hang the server.

SOLUTION

The following work around is recommended for this situation:

1. Select option 3; Install an SJI jukebox. A list of jukeboxes is displayed.
2. Enter the number corresponding to the type of jukebox you are installing.
3. Proceed with `jb_config` until you receive the following message:

Jukebox has been added successfully.

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S.C.A.

LEGATO TECHNICAL BULLETIN

298: Scheduled Backup of Client Does Not Complete (Windows 95)

PURPOSE

This bulletin addresses a problem with NetWorker 4.2 clients for Windows 95 that causes scheduled backups to hang.

DESCRIPTION

Directives are not supported by version 4.2 of the Windows 95 client, and scheduled backups will hang if the directive specified in the client resource contains any NetWorker directive statements. Using directives supplied by NetWorker, such as "DOS standard directives" and "DOS with compression," could cause this problem.

The following example shows the type of messages that are recorded in a server's log when the scheduled backup does not complete:

```
-- Clients --
cobra.legato.com
-- Unsuccessful Save Sets --
* cobra.legato.com: C:\!no output
* cobra.legato.com: D:\!no output
-- Successful Save Sets --
trans-am: cobra.legato.com Index
```

SOLUTION

The following workaround is recommended:

1. On the backup server, create a new directive.
2. Do not specify any directive commands for this new directive. Click Apply.
3. Select the client resource for the Windows 95 client. Select the newly created directive for this client. Click Apply.

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S.C.A.

LEGATO TECHNICAL BULLETIN

299: IP Naming in Heterogeneous Environments (UNIX | NT | NetWare | Windows 95)

PURPOSE

This bulletin describes NetWorker's IP naming requirements and provides testing methods to help you diagnose and solve problems related to IP naming.

DESCRIPTION

If you get one of the following errors, you probably have an IP naming problem:

- RPC
- Unknown host
- Contact portmapper failures
- Connection failures or timeouts
- Probe unexpectedly exited
- Refused connections
- RCMD to active client failures
- Name to address translation failures
- Program not registered messages
- NetWorker services or daemons fail to start
- NetWorker services or daemons fail to remain active
- Invalid path

SOLUTION

This section contains specific information for troubleshooting and solving IP naming problems.

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- World Wide Web (<http://www.legato.com>)
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B.G., V.N.W.

How to Troubleshoot IP Errors

1. Read the entire document first.

Document the steps you take and the results, especially error messages, in case you need to contact Legato Technical Support. This will allow you to email or fax exact steps and error message text directly to us.

2. Set up host tables for NetWorker clients and NetWorker servers.
3. Disable other name servers to simplify testing.
4. Use **ping** to establish basic connectivity.
5. Use **rpcinfo** to verify that sessions can be established and that portmapping is correct.

Setting Up Host Tables for Troubleshooting IP

Legato recommends that you troubleshoot IP problems using only host tables.

Troubleshooting using only host tables does not mean you cannot use your name service, for example, DNS, with NetWorker. Test using only host tables to determine whether you have NetWorker installed correctly. After you know NetWorker works with host tables, you can enable whatever name server you are using.

To configure hosts tables on a server or client:

1. On the NetWorker client, list the client and the NetWorker servers to which it connects, for example:

```
127.0.0.1 localhost loopback
xxx.xxx.xxx.xxx clienta clienta.domain.com
xxx.xxx.xxx.xxx servera servera.domain.com
```

2. On the NetWorker server, list the NetWorker server itself and all of its clients, for example:

```
127.0.0.1 localhost loopback
xxx.xxx.xxx.xxx servera servera.domain.com
xxx.xxx.xxx.xxx clienta clienta.domain.com
```

3. Use the guidelines in "Using ping to Verify Network Connections" to ensure the highest success rate for host table parsing within any operating system.

Notes for host table configuration:

- Do not use blank lines in the body of your host tables.
- The end of the host table should always contain a blank line.
- The first unremarked entry should always be the loopback line in the exact order and format as shown above.
- The last character of each unremarked line should be a space, not a carriage return.

Host table locations for some operating systems:

NetWare

SYS:etc\hosts

Windows NT

`%SYSTEMROOT%\system32\drivers\etc\hosts`
(`%SYSTEMROOT%` is usually equal to `\winnt35`)

Windows 95

`%windir%\hosts`
(`%windir%` is usually equal to `\windows`)

DOS/Windows

Varies with TCP stack

OS/2 Warp

`%etc%\hosts`
(`%etc%` is usually equal to `\mptn\etc`)

UNIX

`/etc/hosts`

Macintosh

Uses DNS only

These host tables can be used in addition to DNS where necessary, but it is simplest to temporarily disable DNS for troubleshooting purposes.

Disabling Name Servers for Troubleshooting

To simplify the troubleshooting of name resolution problems, we recommend disabling services like DNS, WINS, and DHCP. If you have name resolution problems, first configure only the host tables for your machines, then test your backups.

Some common problems with DNS, WINS, and DHCP are:

- DNS is not configured with a reverse lookup table.
- Clients are configured with the wrong IP addresses for DNS or WINS servers.
- DHCP services do not properly update the WINS server with new addresses.

DNS does not need to be disabled for your entire network, only for the initial setup of the NetWorker clients and the NetWorker server you want to test. Only disable the ability of a client to obtain IP naming information from a DNS server. Typically, you do not need to disable the DNS server itself.

Windows NT

Choose Control Panel, Network, TCP/IP Protocol, Configure, Advanced and remove check mark from Enable DNS. You must also remove the IP addresses of the DNS servers to accomplish this with NT.

Windows 95

Choose Control Panel, Network, TCP/IP Protocol - *adaptor_name*, DNS and click the Disable DNS radio button.

Most UNIX systems

Rename the file `/etc/resolv.conf` and reboot. In Solaris and HP-UX you can, instead of renaming `resolv.conf`, set up IP name search order so that the host table is searched before DNS. To do this you must edit the `/etc/nsswitch.conf` file and `/etc/resolv.conf` must

exist. To set the host file to be first in search order with DNS second and NIS last the entry would look like this:

```
hosts: files [NOTFOUND=continue] DNS [NOTFOUND=continue] nis
```

AIX

Edit the `/etc/netsvc.conf` file and reboot. You can also set the NSORDER environment variable. However, please refer to Info Explorer for directions specific to your version of AIX.

Windows 3.1/DOS

Varies with TCP stack

NetWare

Versions prior to NetWare 4.11 (IntraNetWare) only work with host tables.

DNS

In Windows NT and Windows 95, the machine name or computer name listed under Control Panel, Network will always appear in uppercase. The host name listed under DNS must exactly match the computer name, even if DNS is disabled except that the DNS host name is typically lower case.

If your Windows NT or Windows 95 computer name has a host name with an underscore or a hyphen in it, you may have to reapply the same name after TCP/IP is installed to make Windows report the name correctly on the network. This is due to the way Windows 95 and Windows NT handle underscores and hyphens at TCP/IP setup. Windows usually requires a reboot after changing the DNS host name if it registered the change. If it does not require a reboot, you probably need to reapply the change because this typically indicates that Windows did not register the change.

The name listed in the Windows 95 or Windows NT Domain name field under Control Panel, Network, TCP Protocol, DNS must match the TCP/IP domain of the computer.

If the computer is not in a TCP/IP domain, the field should be blank. This field is NOT for the Windows NT domain.

DHCP

On Windows NT, each client receives a unique IP address from the DHCP server when the client boots up. If the NetWorker server is a Windows NT server using DHCP the server must have a static IP address, meaning that every time it boots the IP address will be the same.

Windows NT clients, and all other operating system clients or servers, need a temporary static IP address only during setup and troubleshooting, so that host tables can be used.

Using ping to Verify Network Connections

After you have created the host tables, test with **ping**. Use just the steps marked with an asterisk (*) if the server is the only client.

On the NetWorker client:

- **ping** the client short name (host name) from the client
- **ping** the client long name (host name plus domain information) from the client
- **ping** the client IP address from the client
- **ping** the server short name from the client
- **ping** the server long name from the client
- **ping** the server IP address from the client

The following example shows pinging the client short name and client long name from a NetWorker client called *puma* in the *legato* domain:

```
ping puma
ping puma.legato.com
```

On the NetWorker server:

- **ping** the server short name from the server *
- **ping** the server long name from the server *
- **ping** the server IP address from the server *
- **ping** the client short name from the server
- **ping** the client long name from the server
- **ping** the client IP address from the server

Using rpcinfo to Verify that Sessions Can Be Established

If **ping** is successful and backup problems still exist, you can also test with **rpcinfo**. Because NetWorker relies heavily on mapping of ports, use **rpcinfo** to test the operation of the portmapper. Using **ping** tests the connection up to the network layer in the OSI model, **rpcinfo** checks for communication up to the session layer.

Use the same tests with **rpcinfo** as with **ping**. Run just the steps marked with an asterisk (*) if the server is the only client.

The **rpcinfo** utility is shipped with most flavors of UNIX and provided on the NetWorker CD for other operating systems.

Note: For **rpcinfo** to be used successfully, the machine whose hostname is entered on the command line must have a portmapper running. Legato portmappers are compatible with fully functional portmappers from other vendors (this is called a 3rd party portmapper) in most cases. If you are using a product that provides its own portmapper, we recommend not loading the 3rd party portmapper until you have verified that NetWorker works with the rest of your environment. This process lets you test portmapper compatibility without adding other unknowns.

Windows NT

To start NetWorker Portmap service (*portmap.exe*), select Services from the Control Panel. You must copy *rpcinfo.exe* from the *support* subdirectory of the NetWorker distribution media (usually a CD-ROM) into the *nsr\bin* subdirectory on each machine.

Windows 95

NetWorker Scheduled Backup program should be started. This is normally in the Startup Group. You must copy *rpcinfo.exe* from the *support* subdirectory of the NetWorker distribution media (usually a CD-ROM) into the *nsr\bin* subdirectory on each machine.

NetWare

RPCBIND.NLM, RPCBSTUB.NLM and RPCXDR.NLM must be loaded. You must copy *rpcinfo.nlm* from the *snooper* subdirectory of the NetWorker distribution media (usually a CD-ROM) into the *nsr\bin* subdirectory on each machine.

Solaris

The **rpcbind** daemon must be running. The **rpcinfo** utility is part of the operating system.

AIX and HP/UX

The portmap daemon must be running. The **rpcinfo** utility is part of the operating system.

Windows/DOS

There is no NetWorker portmapper for Windows 3.xx or DOS, so using **rpcinfo** on a Windows or DOS client will generally not be useful. If you have a Windows or DOS NFS package, it will have its own portmapper and probably even a Windows or DOS compatible **rpcinfo**. Even if there is a portmapper installed on a Windows or DOS client, the current NetWorker Windows or DOS client software will not use it, and it may even cause a conflict.

Macintosh

Use the public domain MacTCP Watcher or some equivalent utility. MacTCP Watcher is available from <http://www.taussig.com/macfiles.html> and other locations. This utility provides the ability to **ping** and also check UDP, TCP, and DNS with IP addresses and host names. Select Show Connection List from the File menu to display **nsrexecd** port information.

The syntax for using **rpcinfo** to display ports using TCP is:

```
rpcinfo -p hostname
```

Substitute the long name and short name for the variable *hostname*, just like for **ping**. For NetWare, precede the command with a **load** statement, for example:

```
load rpcinfo -p hostname
```

You can view other **rpcinfo** command line options by typing **rpcinfo** at the command line. Notes on the **rpcinfo** command and its error messages are available in the UNIX man page for **rpcinfo**. Repeat **rpcinfo** using all of the locations and all of the iterations listed in this document for **ping**.

Note: If **rpcinfo** runs successfully, the output is a listing of columns containing port numbers and names. For purposes of this procedure we are only interested in the exact text of any error messages. Typical successful responses have the following format:

```
rpcinfo for mandrill
program vers proto  port
```

100000	2	tcp	111	portmapper
100000	2	udp	111	portmapper
390103	2	tcp	760	
390109	2	tcp	760	
390110	1	tcp	760	
390103	2	udp	764	
390109	2	udp	764	
390110	1	udp	764	
390113	1	tcp	7937	
390105	5	tcp	821	
390107	4	tcp	819	
390107	5	tcp	819	
390104	105	tcp	822	

Verifying Firmware for Switches and Routers

If you are using switches or routers from any vendor, make sure that the switch or router firmware is dated after August 1995 (wherever they exist on your network) to ensure that RPC traffic is handled properly. Most of the switch and router vendors with whom we have worked have significantly improved their handling of RPC traffic since August 1995.

Server Authorization

NetWorker for Windows NT and UNIX clients release 4.2 and above use the servers file located in the `nsr\res` subdirectory to determine if a NetWorker server is authorized to back up the client's data.

Make sure the servers file on a client contains both the short name and long name of the server you want to back up that client's data.

For example, the servers file on a NetWorker client would contain the following names for a NetWorker server named puma located in the legato.com domain:

```
puma
puma.legato.com
```

Client Setup - Alias Field

List both the short name and the long name plus any other applicable aliases for each client in the Alias field of the Client Setup dialog box in the NetWorker Administrator program.

Determining the Protocol on NetWare Servers

The NetWare version of NetWorker uses a file called `RPCNET.CFG`. It is sometimes referred to by the UNIX equivalent file name, `NETCONFIG`. This file is used to determine which protocols should be used by the NetWorker backup program, `SAVE`, and in what order they should be tried on that client.

NetWorker scans `RPCNET.CFG` until it finds a working protocol. The protocol entered in the client backup method field on the NetWorker server is used only to probe the client when the server asks the client what it has to save.

NetWorker servers on Windows NT or UNIX use TCP/IP as the primary protocol. To back up IP enabled NetWare clients (including the NetWorker server for NetWare) to a NetWorker server on Windows NT or UNIX, change the RPCNET.CFG file on each NetWare machine to match the sample below:

```
tispx tpi_clts v loopback ipx /dev/nipx sys:\nsr/bin/local_lg.nlm
tcp tpi_cots v inet tcp /dev/tcp sys:\nsr/bin/tcp_lg.nlm
udp tpi_clts v inet udp /dev/udp sys:\nsr/bin/tcp_lg.nlm
spx tpi_cots v netware spx /dev/nspx sys:\nsr/bin/spx_lg.nlm
ipx tpi_clts v netware ipx /dev/nipx sys:\nsr/bin/spx_lg.nlm
```

The first three to five characters on each line are the names of protocols. The first entry in the example, *tispx*, directs the NetWare machine to check itself first. NetWorker reads the remaining lines in order to determine which protocol to use during backup and recovery. All NetWare servers use only SPX on their internal network.

NetWare Notes

- NetWorker clients for NetWare clients must run version 2.02m or later of the TCP/IP NLM
- For NetWorker to be able to use TCP/IP as a protocol for backup, the TCP/IP NLM must be loaded before NetWorker is installed. There are some modules and file entries that need to be copied over during installation, such as the TCP and UDP entries in *rpcnet.cfg*. If you installed TCP after installing NetWorker, the easiest way to correct the NetWorker setup is to take the following steps.
 - a. Rename *nsr\bin*
 - b. Rename *nsr\rpcnet.cfg* (see section on *rpcnet.cfg*)
 - c. Reinstall NetWorker

After you know the new setup works, delete the renamed files and directories.

- If you are using Novell NFS 2.1 with NetWorker 4.0, see the Legato FTP site for the appropriate patch. No patch is required for using NFS 2.1 with NetWorker versions after 4.0.
- If you are using a version of Novell NFS prior to 2.1, you must use Legato's RPCBSTUB.NLM, not Novell's.

Glossary

alias

A name other than the short name that is used for a client or server on a network.

computer name

The computer name is used by Windows for Workgroups, Windows 95 and Windows NT to identify a computer in a workgroup. This name must match the host name.

Domain Name Service (DNS)

DNS is used to make it possible to administer the IP naming environment from the DNS server(s) instead of using host tables at each client or server. It uses a distributed name space to maintain and supply name to IP address resolution.

Dynamic Host Control Protocol (DHCP)

DHCP is used to assign IP addresses at bootup to network clients rather than using dedicated, static IP addresses.

host name

The host name is the short or unqualified name of a client or server on an IP network.

host table

The host table is a local list stored as a text file that contains IP addresses, host names, fully qualified domain names and other aliases for all network nodes with which the local machine communicates.

IP address

A numeric address in the form *xxx.xxx.xxx.xxx* which uniquely identifies a node on an IP network.

long name (fully qualified domain name)

A host name in the form *host_name.domain.com*.

Network Information Service (NIS)

Formally known as yellow pages. Function is similar to DNS.

Remote Procedure Call (RPC)

This is the type of call made between NetWorker servers and clients.

reverse lookup

Programs in an IP environment will sometimes do a reverse IP name lookup. Instead of calling a network host by name it will call the host by its address.

short name

This is the host name stripped of any domain information. It is usually the same as the host name.

Windows Internet Name Service (WINS)

Computers on a Microsoft Windows Network can use this version of a DNS server.

LEGATO TECHNICAL BULLETIN

300: Getting a Memory Dump (NetWare)

PURPOSE

This bulletin gives instructions on how to get a memory dump on NetWorker servers running NetWorker for NetWare.

DESCRIPTION

Sometimes, Legato Technical Support will request a memory dump (also called core dump) while they are helping you with a problem. This bulletin lists the different methods of getting a memory dump and provides information to help you plan for memory dumps in advance.

SOLUTION

Depending on your version of NetWare and the amount of memory on your NetWorker server, you can either dump to floppy diskette or hard disk.

Dump to Floppy

On NetWare 3.11, the default is to dump the diagnostic core file to floppy disks. On NetWare 3.12 and 4.X, there is an option to dump the diagnostic core file to floppy disks. This procedure will require enough blank, formatted diskettes to hold the entire contents of the system memory and is, therefore, impractical unless you have 16MB of RAM or less.

Dump to Hard Disk

Sending the memory dump to a hard disk is usually be the preferred method since it is much faster than dumping to diskette. By default, NetWare 3.12 and 4.X systems send core dumps to the hard disk. In order to be given the option of sending the core dump to the hard drive on

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300: Getting a Memory Dump (NetWare)

NetWare 3.11, you will need to load HDUMP.NLM before the abend or forced core dump takes place.

The core dump will be placed on the C:\ partition of the server. You will need to plan ahead to make sure that the C: drive has free space equal to the amount of RAM on the server. If you do not meet this requirement, you may need to add an additional hard drive and configure it such that the C: drive has enough free space.

The core dump will be created as a single file called *coredump.img* on the C:\ partition. The next step is generally to use IMGCOPY.NLM on this server to move the *coredump.img* file from the C:\ partition to a NetWare Volume. At that point, send it off to be analyzed using either ftp or mailing a tape.

Additional Information

Novell has a number of additional resources that explain this procedure in greater detail. Among these are the self extracting zip files TABND2.EXE and IMGCPY.EXE, which also contain a number of the NLMs mentioned above. Another resource is Novell's Knowledge Base.

LEGATO TECHNICAL BULLETIN

301: Using a Non-Default Slot for Cleaning Cartridge (UNIX)

PURPOSE

This bulletin explains how to configure NetWorker to use a slot other than the default one for the cleaning cartridge.

DESCRIPTION

If you want to use a cleaning cartridge in an autochanger slot other than NetWorker's default slot, use the workaround provided in this bulletin.

SOLUTION

To specify a different autochanger slot for the cleaning cartridge:

1. Put the cleaning tape in the slot you wish to use for this purpose.
2. On the NetWorker server, from the Media menu, select Jukeboxes. From the View menu, select Details.
3. Look at the "Default Cleaning" field and write down the number of uses left on the cleaning cartridge.
4. In the "Cleaning slots" field, specify the slot you want to use. Make sure the "Auto clean" field is set to "yes."
5. Change the "Available slots" field to reflect the range of slots available for the data tapes. Click the Apply button.

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Note: If you use a slot other than the first or last for the cleaning tape, specify two ranges for “Available Slots,” because the inventory of the jukebox must be performed in two steps, once for each range of slots. For example, if the jukebox contains 11 slots and slot 6 is used for the cleaning slot, specify:

1-5
7-11

on separate lines in the “Available Slots” field, or use the following syntax with **nsradmin**:

```
available slots: 1-5, 7-11;
```

6. At the command line, run the following command:

```
nsrjb -U uses -j jukebox -S slot
```

where:

uses is the number of uses left on the “Default Cleaning” field (the number you wrote down in step 3)

slot specifies the slot you wish to use as the cleaning slot

-j can be left out if there is only one jukebox

Note: Every time you replace the cleaning cartridge in the jukebox, you must run the **nsrjb** command to specify the number of uses left.

LEGATO TECHNICAL BULLETIN

302: Using Alternate Network Adapter Interfaces (UNIX | NT)

PURPOSE

This bulletin explains how to configure NetWorker servers and clients for UNIX and Windows NT to use alternate network interfaces instead of the primary network interfaces.

DESCRIPTION

You may want to configure NetWorker to use alternate network interfaces instead of the primary interface for backup to increase speed or balance network traffic.

NetWorker can use a variety of network interface cards to back up data, for example, FDDI, ATM, or 100Mbs.

In this bulletin, the example is backing up data using a 100Mbs interface card on a NetWorker server and a single client. To use these instructions for backing up data with another type of interface card, substitute your alternate interface for 100Mbs in the example, and substitute the interface NetWorker currently uses on your network for 10Mbs in the example.

Note: These instructions only apply to TCP/IP networks; they do not apply to SPX networks.

SOLUTION

Before you configure NetWorker, add an IP address and names for both the server and client in the Hosts file for the 100Mbs interface card. See the following examples:

Server example:

```
xxx.xx.100.1    Server.10 (10Mbs name)
```

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```
xxx.xx.100.2   Server.100 (100Mbs name)
```

Client example:

```
xxx.xx.100.3   Client.10 (10Mbs name)
xxx.xx.100.4   Client.100 (100Mbs name)
```

To configure NetWorker:

1. On the NetWorker server, open the Client window. Create the duplicate client (Client.100), using all the same configuration choices as the original client (Client.10). For example, select the same group, retention policies, and directives.
2. Add Client.10 as an alias of Client.100 in the “Alias” field.
3. **UNIX:** Select Details from the View menu, then enter Server.100 in the “Server NetWorker Interface” field.

Windows NT: Start NetWorker Administrator in expert mode. Highlight the NetWorker Administrator icon, then click the right mouse button to open the pop-up menu. Select Properties, then change the command to `\win32app\nsr\bin\winadmin -x -s Server.100`.

4. Delete Client.10.
5. **UNIX:** On the NetWorker client, either:
 - Edit the startup file. Add `-s Server.100` to the command that starts `nsrexecd`. Do not remove `-s Server.10`, because removing it may cause authentication problems when the server first contacts the client for backup. The `nsrexecd` line should look like this:

```
nsrexecd -s Server.10 -s Server.100
```

- If you are using a “servers” file in the `/nsr/res` directory (NetWorker for UNIX version 4.2 or later) from which `nsrexecd` gets the name of trusted servers, edit the “servers” file to include both interface names, Server.10 and Server.100. Put each interface name on a separate line. Then stop `nsrexecd` and restart it.

Windows NT: On the NetWorker client, edit the “servers” file in the `\win32app\nsr\res` directory and make sure both interface names, Server.10 and Server.100, are listed, and make sure each interface name is on a separate line. Then select Services from the Control Panel menu, stop all NetWorker services, then restart them.

6. Use the `nsr_shutdown` command to shut down the NetWorker daemons.
7. On the server, copy the contents of `/nsr/index/Client.10/` to `/nsr/index/Client.100/`. (Use the `uasm` command; do not use the `mv` command.) Refer to the instructions in the *NetWorker Installation and Maintenance Guide*, UNIX Version for more information about moving client indexes.
8. Restart the NetWorker daemons.

LEGATO TECHNICAL BULLETIN

303: Replacing Temporary Enablers (UNIX | NT | NetWare)

PURPOSE

This bulletin describes the procedure for replacing a temporary enabler code with a new enabler code on NetWorker servers for UNIX, Windows NT, and NetWare.

DESCRIPTION

If you used a temporary enabler code on your NetWorker server, you must use a special procedure to replace it when it expires. The procedure for each server platform is described in this bulletin.

SOLUTION

This section provides instructions for replacing a temporary enabler code on each server platform.

UNIX

1. Log on as root to the NetWorker server.
2. Enter the following command:

```
nsrccap -v -u enabler_code
```

Where *enabler_code* is the new enabler code.

Repeat this procedure for each new enabler code you have.

Windows NT

1. Log on as Administrator to the NetWorker server.

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303: Replacing Temporary Enablers (UNIX | NT | NetWare)

2. At a command prompt, enter the following command:

```
\win32app\nsr\bin\nsrcap -v -u enabler_code
```

Where *enabler_code* is the new enabler code.

Repeat this procedure for each new enabler code you have.

NetWare

At the console prompt of the NetWorker server, enter the following command:

```
load nsrca -v -u enabler_code
```

Where *enabler_code* is the new enabler code. Repeat this procedure for each new enabler code you have.

Note: This procedure can only be used with NetWorker for Netware v4.0 and later. If you have an older version of NetWorker for NetWare, contact Technical Support for assistance.

LEGATO TECHNICAL BULLETIN

304: NetWorker Errors on AIX 4.1.4 and Later (UNIX)

PURPOSE

This bulletin addresses a problem in NetWorker 4.2 when running the programs `nwadmin`, `nwbackup`, or `nwrecover` on AIX 4.1.4 and later.

DESCRIPTION

Running the programs `nwadmin`, `nwbackup`, or `nwrecover` may give the following error messages on AIX 4.1.4 or newer:

```
0509-037 System error error data is nwadmin
0509-027 Member shr.o is not found or file is not an archive
0509-022 cannot load library libX11.a [ shr.o]
0509-026 System error : A file or directory in the path name does not
exist
```

The `libX11.a` library is on `/usr/lpp/X11/lib/R5` and link to `/usr/lib`.

SOLUTION

NetWorker 4.2 expects to find the `shr.o` code in the `libX11.a` library. On earlier AIX versions (for example, 3.2.5 or 4.1.2), both `shr.o` and `shr4.o` are included in `libX11`. On AIX 4.1.4, only `shr4.o` is included in this library and NetWorker 4.2 is looking for `shr.o`. What is included in `libX11.a` can be viewed by using the `ar -t` command.

Extract the `shr.o` function from an old `libX11.a`, for example, an AIX 3.2.5 machine, using the command `ar -x libX11.a shr.o`, then include the `shr.o` function in the new `libX11.a` library using the command `ar -a shr.o libX11.a`.

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LEGATO TECHNICAL BULLETIN

305: Canceling and Cleaning Scheduled Backups of Oracle Databases (UNIX)

PURPOSE

This bulletin provides instructions for how to gracefully stop and clean scheduled backups that are initiated for the Oracle Databases using NetWorker, Database Module for Oracle (DMO) or BusinessSuite Module for Oracle (BMO) and Oracle Enterprise Backup Utility (EBU).

This bulletin applies to all the supported versions of NetWorker, DMO or BMO and EBU. A product compatibility matrix for the supported versions is available on the Legato Web site (<http://www.legato.com>).

DESCRIPTION

The Database Module for Oracle (DMO) or BusinessSuite Module for Oracle (BMO) does not currently support use of the Stop button in the Group Control window for scheduled backups. Although the progress message may indicate that the backup has exited prematurely before finishing, the DMO or BMO processes may still be running on the client. This bulletin provides a workaround for this problem.

The method of cancelling a job described in this bulletin prevents problems that sometimes occur when the Enterprise Backup Utility exits. All backup save sets associated with the job are removed from the media, the Backup Catalog is properly cleaned up, and tablespaces currently being backed up are switched out of backup mode, if necessary.

SOLUTION

To stop the Database Module for Oracle (DMO) or BusinessSuite Module for Oracle (BMO) processes on the client machine:

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3. On the NetWorker client machine, find the Enterprise Backup Utility job ID of the backup job to be cancelled. The job identifier is listed in the log file being generated for the active job by **obackup**.

For example, a line similar to the following will appear in the log file:

```
Started job 523 with pid=1280 on 12/21/1996 14:21:08 for database:
```

4. Use a cancel command script to stop a specified job and clean up its resources. For example, to stop job 523, use this **obackup** command script named **cancel_job**:

```
cancel  
job_id=523
```

To cancel the job, run this script with the following command:

```
% obackup cancel_job
```

When the script completes successfully, it displays the following type of output:

```
Oracle7 Enterprise Backup Utility: Release 2.0.12.4.0  
Copyright (c) Oracle Corporation 1979, 1994. All rights reserved.  
CORE Version 3.5.2.0.0 - Production  
NLSRTL Version 3.2.2.0.0 - Production  
CANCEL job SUCCESSFUL
```

When an **obackup** job cancels successfully, a message similar to the following appears in the **obackup** log file of the cancelled job:

```
OBK-2016: Job 523 failed due to being cancelled by user  
request (1) on 12/21/1997 14:22:40 [ 1288 : brccmd ]  
BACKUP job FAILED
```

LEGATO TECHNICAL BULLETIN

306: Example Script Using Pre/Post-Processing (UNIX)

PURPOSE

This bulletin provides a sample script that you can use as a reference to write other scripts to be used with the pre/post-processing feature in NetWorker 4.2 or later releases of NetWorker.

SOLUTION

Use the following script to lock a Clear Case VOB, do the backup, then unlock the VOB.

```
#!/bin/sh

# export the SHELL that we are going to use
SHELL=/bin/sh
export SHELL

# export the correct PATH so that all the required binaries can be found
case $0 in
/* ) PATH=/usr/atria/bin:/bin:/usr/bin:`/bin/dirname $0`
c=`/bin/basename $0`
;;
* )PATH=/usr/atria/bin:/bin:/usr/bin:/usr/sbin
c=$0
;;
esac
export PATH

# These are the valid statuses which save reports on completion of the
backup
statuses="
failed.
```

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306: Example Script Using Pre/Post-Processing (UNIX)

```
abandoned.
succeeded.
completed savetime=
"

# Perform the PRECMD (Lock VOB)
/usr/atria/bin/cleartool setview -exec "/usr/atria/bin/cleartoollock -c \
  'VOB backups in progress' -vob /cm_data/mis_dev" magic_view >
/tmp/voblock.log 2>&1

# Perform backup on client
save "$@" > /tmp/saveout$$ 2>&1

# cat out the save output
cat /tmp/saveout$$

# search for the backup status in the output reported by save
for i in ${statuses}; do
    result=`grep "${i}" /tmp/saveout$$`
    if [ $? != 0 ]; then
        echo ${result}
    fi
done

# Perform the POSTCMD (Unlock VOB)
/usr/atria/bin/cleartool setview -exec "/usr/atria/bin/cleartoolunlock -
vob
/cm_data/mis_dev" \
    magic_view > /tmp/vobunlock.log 2>&

# make sure to gracefully exit out of this shell script
exit 0
```

LEGATO TECHNICAL BULLETIN

307: Setting Up nsrjb for Non-Root Users (UNIX)

PURPOSE

This bulletin describes how to allow non-root users to operate the jukebox on a UNIX backup server from command line using the **nsrjb** command.

DESCRIPTION

Running nsrjb from command line as a non-root user will give the following error:

```
nsrjb: You are not authorized to run this command
```

SOLUTION

The following workaround is recommended for this situation:

1. Change to the directory where NetWorker binaries are installed.
2. Set the NetWorker user ID to root by running the following command:

```
chmod 4755 nsrjb
```
3. Select Server Setup from the Server menu to see if the desired user ID is in the Administrator list for the server resource. If the user ID is already in the Administrator list, skip steps 5 and 6, because the list is propagated to all resources.
4. In the NetWorker administration program (**nwadmin**), select Jukeboxes from the Media menu.
5. Select Details from the View menu, and add the desired user ID to the Administrator field. Click Add, then click Apply.

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6. Select Devices from the Media menu. In the Devices window, select a tape drive that is in the jukebox, then select Details from the View menu. Add the user to the Administrator field, then click Apply. Repeat this step for every device in the jukebox.

LEGATO TECHNICAL BULLETIN

308: Moving Indexes on NetWorker Servers (NT)

PURPOSE

This bulletin describes how to move a client's index on a NetWorker server for Windows NT.

DESCRIPTION

In our examples we will be moving the index on a client called *altima* from the default location (*D:\win32app\nsr\index\altima*) to the new location (*e:\index\altima*).

It is best to add the *\win32app\nsr\bin* directory to your path before doing this. The command to move the indexes is quite long and may be too long to execute without this in your path. The examples that are used here assume that the *\win32app\nsr\bin* directory is in the current path statement.

SOLUTION

1. Make sure there are no backups or restores running on the NetWorker server.
2. Make a new directory to which you want to copy the new indexes, for example, *e:\index*.
3. Change to the new directory (for example: `cd e:\index`)
4. Enter `cd` and copy down the output EXACTLY as it appears. The commands and output are case sensitive. For example, if you enter:

```
e:\index> cd
```

Copy the output exactly, for example:

```
E:\index
```

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5. Change to the drive of the current index.
6. Change to the parent directory of the client's index that you want to move.

```
cd D:\win32app\nsr\index
```

7. Enter **dir** and copy the EXACT directory name of the client you want to move. For example, from the following output copy the directory from the line that includes **altima**:

```
D:\win32app\nsr\index>dir
Volume in drive D has no label.
Volume Serial Number is 902F-4AD4

Directory of D:\win32app\nsr\index

09/05/96  10:06          <DIR>          .
09/05/96  10:06          <DIR>          ..
09/04/96  04:30          <DIR>          altima
07/27/96  01:49          <DIR>          puma.legato.com
                2 File(s)                0 bytes
                        48,621,568 bytes free
```

8. Copy the index to the new location. Enter:

```
uasm -s -i client-directory | uasm -r -m client-directory=new-directory
```

- *client-directory* is the directory name you copied in step 7.
- *new-directory* is the directory name you copied in step 4 plus the client directory from step 7.

For example:

```
D:\win32app\nsr\index>uasm -s -i altima | uasm -r -m
altima=E:\index\altima
```

If you get the following error, you may have entered the command incorrectly. Check your syntax and try again.

```
D:\WIN32APP\nsr\index\altima\db file exists, overwrite (n, y, N, Y) or
rename (r, R) [n]?
```

If you entered the command correctly and received the error, the command may be too long to be executed by Windows NT. Call Legato Technical Support if that is case.

If you get the following error, add the `\win32app\nsr\bin` directory to the path of the machine:

```
xdr flush failed
```

9. Confirm that the files were copied to the new location.
10. Rename the old index directory to **.old*.

```
D:\win32app\nsr\index>move altima altima.old
```

This step makes it possible for you to go back to the old indexes in case the index copy did not work.

11. For NetWorker release 4.4 and later, start NetWorker Administrator (**nwadmin.exe**).

NOTE: If you have installed Novell NetWare on the same machine are using to run the NetWorker Administration program, there may be two executables named **nwadmin.exe**. The NetWorker executable is installed by default in *D:\win32app\nsr\bin*. Make sure you are using the NetWorker program.

- a. In NetWorker Administrator program, select the Configure tab to display the Configure window.
- b. In the Configure window, click the Manage Clients button to display the list of clients.
- c. Right-click the icon of the client whose index you just moved (in this example, *altima*), and select Edit from the menu. The Edit Client dialog box displays.
- d. In the Edit Client dialog box, select the Index tab. The Index dialog box displays.
- e. In the Index dialog box, change the Index Path field to the new index directory. Enter the same directory as the *new-directory* from step 8.
- f. Click OK.

For NetWorker release 4.3 and earlier, start NetWorker Administrator (**winadmin.exe**) in expert mode. Enter:

```
D:\win32app\nsr\index>winadmin -x
```

- a. In NetWorker Administrator program, select Setup from the Clients menu.
- b. In the Clients window, select the client for which you just moved the index (for example, *altima*) and click the Edit button.
- c. In the Edit Client window, change the Index Path field to the new index directory. Enter the same directory as the *new-directory* from step 8.

If this is the first time you have moved this client's index, the Index Path field will be blank. A blank in this field indicates that the index is in the default location, the *nsr\index* directory.

- d. Click the OK button to close the Edit Client window and save the client resource.

12. At the command prompt, Enter **nsrck -F *client-name*** to confirm the index was moved properly. For example:

```
D:\win32app\nsr\index>nsrck -F altima
```

If no errors occur, perform a backup of the client.

13. After you have confirmed that the client is working properly, you can delete the old client index directory that you saved in step 10.

LEGATO TECHNICAL BULLETIN

309: Setting Jukebox Options (UNIX | NT)

PURPOSE

Some jukeboxes require custom options in order to work properly or better. This bulletin describes various options that can be set on NetWorker servers for UNIX and Windows NT to better control a jukebox.

DESCRIPTION

In the Jukeboxes resource for UNIX or the Autochanger window for Windows NT, use the following list of configurable options to control the behavior of your jukebox. The Solution section provides further instructions.

- **two_sided**

The jukebox expects 2-sided media. Slot numbers have a or b appended to the name.

- **autoeject**

The jukebox has the autoeject feature. The jukebox does not require an eject operation for data volumes. The default is that data volumes are always automatically ejected.

- **element_status**

The jukebox has the initialize element feature, which is the ability to determine what, if anything, is in the slots.

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- **volume_tags**

A volume tag is an identifier that can be associated with a volume. It can be thought of as a substitute for barcodes. The ID can be set by an application. The ID is associated with the volume as long as it is in the jukebox. If the volume leaves the jukebox, the association is lost. NetWorker does not assign volume tags to volumes, but NetWorker uses volume tags them if the jukebox recognizes them.

- **barcode**

The jukebox supports barcodes. Barcodes in jukeboxes are physical labels on the outside of a volume.

- **auto_cc_unload**

Cleaning cartridge automatically unloaded.

NOTE: When this option is enabled, it does not mean that the tape is automatically ejected, although NetWorker always assumes that cleaning tapes are automatically ejected after cleaning. See the `cc_eject` entry for more information. The default is that the cleaning cartridge is automatically moved back to its slot (always automatically unloaded).

- **eject_sleep**

Set sleep time for eject operation. For example:

```
eject_sleep = 120    set eject_sleep to 120 seconds
eject_sleep         set eject_sleep to the default value, 60 seconds
!eject_sleep        disable eject_sleep
```

- **cleaning_delay**

Set eject time after cleaning, which tells NetWorker how long the it will take between cleaning the drive and ejecting the cleaning cartridge from the drive. For example:

```
cleaning_delay = 120    set cleaning_delay to 120 seconds
cleaning_delay         set cleaning_delay to the default value, 60 seconds
!cleaning_delay        set cleaning_delay to the default value, 60 seconds
```

- **unload_sleep**

Set pause time when unloading volume. This delay was added for devices which return asynchronously from the unload operation before the operation is complete. The time delay is needed because `nsrjb` assumes that the operation has completed and may attempt another operation which may fail because the operation hasn't actually completed. For example:

```
unload_sleep = 120    set unload_sleep to 120 seconds
unload_sleep         set unload_sleep to the default value, 60 seconds
!unload_sleep        disable unload_sleep
```

- **load_sleep**

Set pause time when loading volume. This delay was added for devices which return asynchronously from the load operation before the device is ready. If the return is asynchronous, there may be errors in trying to access the device before it is ready. This delay was also added to give optical drives time to spin up. For example:

load_sleep = 120 set **load_sleep** to 120 seconds

load_sleep set **load_sleep** to the default value, 15 seconds

!load_sleep disable **load_sleep**

- **cc_eject**

Eject cleaning cartridge.

NOTE: You must set the **cc_eject** option in conjunction with **auto_cc_unload**. If both **cc_eject** and **!auto_cc_unload** are input, NetWorker will always issue an eject and an unload (move cleaning tape back to its slot) when dealing with cleaning cartridges. By default, cleaning cartridges are automatically ejected.

- **need_align**

These jukeboxes have a magazine separated from the devices in the jukebox by a partition. There is a window in the partition. To load or unload volumes into a device, both the slot and the device have to be aligned to the window prior to an eject or move media operation. Turn on this option if there are problems with the tapes being aligned with the drive.

SOLUTION

To customize the options in a jukebox for Windows NT:

1. Start NetWorker Administrator for Windows NT in expert mode. Enter **winadmin -x**.
2. In the NetWorker Administrator main window, select Autochanger from the Media menu. The Autochanger window displays.
3. In the Autochanger window, select the name of the autochanger from the list, then click the Edit button. The Edit Autochanger window displays.
4. In the Edit Autochanger window, scroll to the Jukebox Options field. In the Jukebox Options field, enable and disable options to control your jukebox. The options are listed in DESCRIPTION.
 - To enable an option, enter the name of the option, for example, **two_sided**.
 - To disable an option, enter the name of the option preceded by an exclamation point, for example, **!two_sided**.

When an option is disabled, NetWorker knows that the jukebox does not support this feature.

To customize the options in a jukebox for UNIX:

1. Start the NetWorker administration program. Enter **nwadmin**.
2. In the NetWorker administration program main window, select Jukeboxes from the Media menu. The Jukeboxes window displays.
3. In the Jukeboxes window, select Details from the View menu to display the Jukeboxes window in details mode.
4. Select the name of the jukebox from the Jukeboxes list.
5. Scroll to the Jukebox Options field. In the Jukebox Options field, enable and disable options to control your jukebox. The options are listed in DESCRIPTION.
 - To enable an option, enter the name of the option, for example, **two_sided**.
 - To disable an option, enter the name of the option preceded by an exclamation point, for example, **!two_sided**.

When an option is disabled, NetWorker knows that the jukebox does not support this feature.

LEGATO TECHNICAL BULLETIN

310: Recover from Original or Clone Volumes with mmrecov (UNIX)

PURPOSE

This bulletin describes how to use the **mmrecov** command to recover the NetWorker indexes and configuration files that reside in the */nsr/res* directory. The information in this bulletin applies to:

- The NetWorker server for UNIX, release 5.0
- The NetWorker server for SunOS, Solaris, or AIX, release 4.2.5, with the 4.25-010 patch applied
- The NetWorker server for HP-UX, release 4.2, with the 4.2-014 patch applied

IMPORTANT: If you do not apply the patch to a NetWorker server for SunOS, Solaris, or AIX, release 4.2.5, or HP-UX, release 4.2, the procedures described in this bulletin will not work. To get the patch for your pre-5.0 NetWorker server for UNIX, download the patch from the Legato FTP server.

DESCRIPTION

If the NetWorker indexes and configuration files that reside in the */nsr/res* directory have been destroyed, you will need to use the **mmrecov** command to recover them. This applies only to NetWorker servers; you do not need to perform this procedure for NetWorker clients because indexes and configuration files do not reside on the clients.

Use the **mmrecov** command to recover from the following problems:

- Corrupted indexes
- Incomplete index conversions
- Disk crash or other disaster

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If the operating system and the NetWorker software were also destroyed, they must be reinstalled prior to recovering the `/nsr/res` directory contents.

When you use the `mmrecov` command to recover the `/nsr` directory, you actually recover the contents of three important directories:

- `/nsr/mm` (media manager) directory – contains the NetWorker media index that tracks all of the NetWorker backup volumes.
- `/nsr/index/server-name` directory – contains the server indexes, which has a list of all the server files that were backed up prior to the disaster. You recover the client indexes later, using the `nwrecover` program.
- `/nsr/res` directory – contains special NetWorker configuration files. The `nsr.res` file includes the list of clients that belong to the server, customized client configurations or selections, and device and registration information. The `nsrjb.res` file includes the location of the backup volumes in the jukebox and label template information. Unlike the indexes, the contents of this directory can not be reliably overwritten while NetWorker is running. Therefore, `mmrecov` recovers the `/nsr/res` directory as `/nsr/res.R`.

SOLUTION

Use the `mmrecov` command to recover the NetWorker server indexes and configuration files residing in the `/nsr/res` directory.

The `mmrecov` command asks you for the bootstrap save set identification number (ssid). If you followed the recommended procedures to prepare for loss of critical data, you have a copy of the bootstrap file (either hardcopy or an electronic file) with the name of the backup media you need and the bootstrap ssid.

In the following example, ssid “17851237” is the most recent bootstrap backup:

```
Jun 17 22:21 1997 mars's NetWorker bootstrap information
date   time   level   ssid  file  record  volume
6/14/92 23:46:13   full  17826163   48    0   mars.1
6/15/92 22:45:15    9   17836325   87    0   mars.2
6/16/92 22:50:34    9   17846505  134    0   mars.2
                                     mars.3
6/17/92 22:20:25    9   17851237   52    0   mars.3
```

If you do not have this information, you can still recover the indexes by finding the ssid using the `scanner -B` command.

How to Use the scanner -B Command

1. Place the most recent media used for scheduled backups in the server device.
2. At the system prompt, change to the directory where you originally installed NetWorker. The default location of the server binaries for each supported platform follows:
 - SunOS and Solaris: `/usr/sbin`

- AIX: `/usr/bin`
 - HP-UX10x: `/opt/networker/bin`
 - HP-UX9x: `/usr/networker/bin`
3. Use the **scanner -B** command to locate the most recent bootstrap on the media, for example:

For SunOS systems:

```
/usr/etc/scanner -B /dev/nrst8
```

For Solaris systems:

```
/usr/sbin/scanner -B /dev/rmt/0hbn
```

For AIX systems:

```
/usr/bin/scanner -B /dev/rmt0.1
```

For HP-UX 9.x systems:

```
/usr/networker/bin/scanner -B /dev/rmt/0mnb
```

For HP-UX 10.x systems:

```
/opt/networker/bin/scanner -B /dev/rmt/0mnb
```

The **scanner -B** command displays the latest bootstrap save set information found on the backup volume, as illustrated below:

```
scanner: scanning 8mm tape jupiter.001 /dev/rmt/0hbn
scanner: Bootstrap 1148869870 of 8/21/96 7:45:15 located on volume
jupiter.001, file 88
```

With the operating system and NetWorker software in place, recover the indexes and configuration files from the backup media.

How to Recover NetWorker Indexes and Configuration Files from Media

1. Find the bootstrap information, which you need for the next two steps.
2. Mount the backup media that contains the most recent backup named bootstrap in a storage device.
3. Use the **mmrecov** command to extract the contents of the bootstrap backup. For example:

```
# mmrecov
Doing mmrecov operation as root on the server !!!
mmrecov: Using mars as server
NOTICE: mmrecov is used to recover the NetWorker server's on-line file and
media indexes from media (backup tapes or disks) when either of the
server's on-line file or media index has been lost or damaged.
Note that this command will OVERWRITE the server's existing on-line file
and media indexes. 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.

rd=mars:/space1/DISKDEV1 rd=mars:/space1/DISKDEV2 /space1/DISKDEV1
```

310: Recover from Original or Clone Volumes with mmrecov (UNIX)

```
/space1/DISKDEV2
What is the name of the device you plan on using
[rd=mars:/space1/DISKDEV1]? /space1/DISKDEV1
Enter the latest bootstrap save set id []: 17851237
Enter starting file number (if known) [0]: 52
Enter starting record number (if known) [0]: 0

Please insert the volume on which save set id 17851237 started into
/space1/DISKDEV1. When you have done this, press <RETURN>: [Return]

Scanning /space1/DISKDEV1 for save set 17851237; this may take a while...
scanner: scanning optical disk TestBackup.199 on /space1/DISKDEV1
/nsr/res/nsr.res
/nsr/res/nsrjb.res
scanner: ssid 17851237: scan complete
scanner: ssid 17851237: 44 KB, 11 file(s)
/nsr/res/nsrla.res
/nsr/res/
/nsr/mm/
/nsr/index/mars/
/nsr/index/
/nsr/
/
nsrmmdbasm -r /nsr/mm/mmvolume/
nsrindexasm -r /nsr/index/mars/db/
/space1/DISKDEV1: mount operation in progress
/space1/DISKDEV1: mounted optical disk TestBackup.199 (write protected)
```

The bootstrap entry in the on-line index for mars has been recovered. The complete index is now being reconstructed from the various partial indexes which were saved during the normal save for this server.

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

Otherwise, just restart the daemons after the index has been reconstructed.

```
7 records recovered, 0 discarded.
nsrindexasm: Pursuing index pieces of /nsr/index/mars/db from mars.
Recovering files into their original locations.
nsrindexasm -r ./mars/db/
merging with existing mars index
mars: 2035 records recovered, 0 discarded.
Received 1 matching file(s) from NSR server `mars'
Recover completion time: Tue Jun 24 16:46:38 1997
Cross checking index for client mars to remove duplicate records
```

The index for 'mars' is now fully recovered.

You can use NetWorker commands such as **nsrwatch** or **nwadmin** to watch the progress of the server during the recovery of the index and configuration files. Open a new window (shell tool) to monitor the recovery so that the **mmrecov** output does not display on top of the **nsrwatch** output.

```
mars# nsrwatch
```

```

Tue 16:36:11 server notice: started
Tue 16:36:30 index notice: The client index is missing, recover the index
or run nsrck -c
Tue 16:36:30 index notice: completed checking 2 client(s)
Tue 16:36:34 /space1/DISKDEV1 volume TestBackup.199 not found in media
index
Tue 16:45:21 /space1/DISKDEV1 mount operation in progress
Tue 16:45:30 /space1/DISKDEV1 mounted optical disk TestBackup.199 (write
protected)
Tue 16:45:33 index notice: nsrim has finished cross checking the media db
Tue 16:46:24 index notice: cross-checking index for mars
Tue 16:46:30 /space1/DISKDEV1 mounted optical disk TestBackup.199 (write
protected)
Tue 16:46:31 mars:/nsr/index/mars (6/24/97) starting read from
TestBackup.199 of 397
Tue 16:46:35 mars:/nsr/index/mars (6/24/97) done reading 397 KB
Tue 16:46:38 index notice: cross-checking index for mars

```

How to Recover Data from Clone Volumes

For recovery from clone volumes, use the **mmrecov** program, as described on page 2.

Select the bootstrap identifier that includes the information associated with the cloned save set. The most recent bootstrap is the last save set listed in the bootstrap output.

In the following example, the ssid of the most recent bootstrap save set is “17851237”. The clone of the bootstrap save set resides on mars_c.3. The value for the file location is 6, and the value for the record location is 0.

```

Jun 17  22:21 1996  mars's NetWorker bootstrap information Page 1
date    time          level  ssid           file  record  volume
6/14/96 23:46:13    full  17826163      48    0    mars.1
6/14/96 23:46:13    full  17826163      12    0    mars_c.1
6/15/96 22:45:15     9    17836325      87    0    mars.2
6/15/96 22:45:15     9    17836325      24    0    mars_c.2
6/17/96 22:20:25     9    17851237      52    0    mars.3
6/17/96 22:20:25     9    17851237       6    0    mars_c.3

```

After **mmrecov** recovers the bootstrap save set, **mmrecov** pursues the other pieces of the server's client index to complete the recovery. The cloned bootstrap contains information about the original and cloned volumes.

To most easily recover from clone volumes, make sure that all required clone volumes are mounted in devices at the time you run **mmrecov**. If some of the clone volumes are not online, **mmrecov** requests the original volume from which to recover the server's client index, unless the original volume is marked suspect. If the original volume is marked suspect, the NetWorker server requests the clone volume.

Based on the example bootstrap output above, the mars_c.1 and mars_c.3 volumes both need to be online. If the mars_c.3 volume is the only one online, then **mmrecov** also requests mars.1. To finish recovering the server's index from clones:

1. Determine which volumes are needed for recovery.

Use **nwadmin** or **nsrwatch** to list the volumes needed for recovery in the Pending

messages panel.

2. Delete the records of the original volumes from the media database.

Use **nwadmin** or **nsrwatch** to delete the volumes from the media database.

In the example, where only mars_c.3 was mounted, delete mars.1 from the media database. At the shell prompt, enter **nsrmm -d mars.1**.

3. Enter **nsr_shutdown** to shut down the server. When you shut down the server, you kill off the index recovery in progress.
4. Enter **nsrd** to restart server.
5. Use **mminfo** to determine the save set ID of the most recent index backup, for example:

```
mminfo -s server -c server -N /nsr/index/server -v -o t
```

In the -N option, enter the full path to the index if it is located in a different location, for example if `/nsr/index/server` is a symbolic link to `/disk1/nsr/index/server`, specify **-N /disk1/nsr/index/server**. The save set ID follows the size field in the **mminfo** output. In the following example output from **mminfo**, the save set id is "18196."

```
mars_c.002 mars 12/27/96 14:06:32 138 KB 18196 cb 9 /nsr/ index/mars
```

6. Run save set recover, and enter the save set ID, for example, given the information above, one would run the following command:

```
recover -s server -S 18196
```

When the recover completes, the message "The index is now fully recovered" is displayed.

Unlike the `/nsr/indexes` directory, the `/nsr/res` directory containing the configuration files cannot be reliably overwritten while NetWorker is running. Therefore, **mmrecov** recovers the `/nsr/res` directory as `/nsr/res.R`.

To complete the recovery of the NetWorker configuration files:

1. Shut down NetWorker.
2. Rename the existing `/nsr/res` directory to `nsr/Res.orig`.
3. Rename the recovered `/res.R` directory to `/nsr/res`.
4. Restart NetWorker.

Complete these steps after **mmrecov** has finished and this final message appears:

```
The on-line index for 'server' is now fully recovered.
```

1. Shut down the NetWorker server using the **nsr_shutdown** command:

```
# nsr_shutdown
```

2. Save the original `/res` directory as `/res.orig`, and rename the recovered file (`res.R`) to `res`.

```
# cd /nsr
```

```
# mv res res.orig
```

```
# mv res.R res
```

3. Restart NetWorker. When it restarts, the server uses the recovered configuration data residing in the recovered `/res` directory.

```
# cd /  
# nsrd  
# nsrexecd
```

4. Once you verify the NetWorker configurations are correct, you can remove the `res.orig` directory.

```
# rm -r /nsr/res.orig
```

After you have recovered the server's indexes, you can recover the remainder of the server data that includes the client indexes, using the `nwrecover` program.

If you are recovering the root directory (`/`), delete `/bootrec` for IBM AIX systems, `/*boot` for Solaris systems, and `/boot` for SunOS systems from the save set recover list, not the filesystem. If you recover these files, you will not be able to reboot your system. If you recover `/boot` on a SunOS system, for example, you will need to use the `installboot` command to boot your system. You should always reboot a system after recovering a primary disk. For Solaris, you must also unmark the `/dev` and `/devices` directories from the save set recover list.

Deselect the following directories and/or files before you recover the remainder of the server data:

- `/nsr/index/server-name` file – recovered when you ran the `mmrecov` command.
- `/nsr/res` and the `/nsr/mm` directories – also recovered when you ran the `mmrecov` command. If you recover the `/nsr/res` directory and you used the autochanger to perform the disaster recovery, you will lose any special configurations you created when you added and configured the autochanger.

You cannot boot from recovered versions of `/etc/init` or `/bin/sh`. Preserve the original `init` file and `sh` file by moving them to an alternate location before you recover the root filesystem (`/`). After you recover `/`, overwrite the recovered versions of the `init` file and the `sh` file with the originals. It is also a good practice to preserve the original kernel (`/hp-ux` for HP-UX 9.0x, `/stand/vmunix` for HP-UX 10.x, `/vmunix` for SunOS, or `/kernel/unix` for Solaris) by copying it to an alternate location when you recover the root filesystem.

After you recover the server data, inventory the autochanger so NetWorker knows which slots contain which volumes.

The system should be restored back to its status prior to the disk crash.

LEGATO TECHNICAL BULLETIN

311: Initial NetWorker NT Support for Microsoft Cluster Server (NT)

PURPOSE

This bulletin explains the current implementation of NetWorker Power Edition support for the Microsoft Cluster Server (MSCS) and describes how to back up and recover the data and cluster database of a Microsoft Cluster Server.

DESCRIPTION

The implementation of MSCS that was released in Windows NT 4.0 Enterprise Edition is a failover model for a two-server cluster. Each machine has private disks; the machines also share some disks. Failover for the NetWorker server is not available with this release. Availability of this functionality is planned for the next phase of NetWorker clustering support.

SOLUTION

The first phase of NetWorkerPower Edition support for MSCS provides backup and recovery of the data in the nodes in a cluster as though the nodes were two independent machines.

Backing Up the Cluster Data

To prepare for regular backups, install the NetWorker client on both nodes of the cluster. Use only the private disks of the nodes for the installation. Configure the NetWorker client running on each node to back up the private disk on that node, as well as the shared storage owned by that node.

To back up either a private or shared disk, configure them either by driver letter or by using **saveset ALL**. Each node in the cluster must be configured separately, and

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S.D.

saveset ALL can be specified for both nodes. For example, when **saveset ALL** is specified for node_A, all private disks of node_A as well as all shared disks owned by node_A are backed up.

To provide NetWorker server support to the cluster, install the NetWorker server only on a private disk of any of the nodes in the cluster (for example, node_A). Any NetWorker clients that want to connect to the NetWorker server in the cluster should use the hostname of the node where NetWorker server is installed (for example, node_A).

You can also back up all nodes in the cluster to a NetWorker server that is not part of the cluster.

Recovering the Cluster Data

Recovering data backed up from private disks in a cluster node is similar to recovering data on a machine that is not part of a cluster. Follow the regular recovery instructions.

To recover data from a shared disk, determine which node owned the shared disk when the most recent backup of the shared disk occurred. Ownership of shared disks can change as a result of some failure in the node or for some administrative purposes. Therefore, it is possible that a particular shared disk that is backed up one time as the storage of node_A might later be backed up as the storage of node_B.

Note: Looking at *CLUSDB.LOG* (cluster database activity log) would easily reveal what happened and when. Unfortunately, this file cannot be accessed for viewing when the cluster is up and running. Also, this database has a special format, so it cannot be viewed without a special viewing tool, and no such tool is available at this time. Therefore, you can only check dates in the backed-up files before recovering them.

If the most recent backup of the shared disk was made from the node that now owns the shared disk, follow the regular recovery instructions.

If the node that currently owns a shared disk is not the one used during the most recent backup, you can recover the data of this shared disk in one of two ways:

- Use the directed recovery process.
- Move the resource group that contains this shared disk to the appropriate node before you recover the data.

Recovering the Cluster Database

The cluster database is maintained synchronously in both nodes; thus, getting the consistent state of the cluster database during the backup/recover process is an issue. NetWorker backs up the cluster database like any other registry file.

To recover the cluster database, do the following:

1. Stop the cluster server on node_B.
2. Uninstall the cluster server from node_B. This is necessary to enable access to the shared disk, which is assigned as the quorum resource, so that the quorum log stored in this disk can be deleted for a successful recovery of the cluster database.

3. Shut down node_B.
4. Set the "startup" parameter of MSCS service to "manual" on node_A.
5. Shut down node_A.
6. Start nodeB.
7. Move the *quolog.log* and **.tmp* files from the MSCS directory on the shared disk, which has been assigned as the quorum resource, to a safe location (such as a private disk). These moved files can be deleted once a successful recovery of the cluster database is complete.

You must remove these files in the MSCS directory from the shared disk, because the cluster server maintains some recovery information in the *quolog.log* file. If you do not remove this file, the cluster database recovery might not have any effect, since the cluster database is updated with the latest information present in *quolog.log* (by the cluster server). Removing the other (**.tmp*) files is only for cleanup purposes.

8. Shut down node_B.
9. Start node_A.
10. Move the *CLUSDB* and *CLUSDB.LOG* files from the cluster directory in node_A (the default location of which is *c:\winnt\cluster*) to a safe location. These moved files can be deleted once a successful recovery of the cluster database is complete.

You must move *CLUSDB.LOG* out of the cluster directory to remove any recovery information maintained by the cluster server on activities in the cluster database. If you do not remove this file, the cluster database recovery might not have any effect, since the cluster database is updated with the latest information present in *CLUSDB.LOG* (by the cluster server).

11. Recover *CLUSDB* using NetWorker and move the file to the cluster directory.

IMPORTANT: NetWorker restores this file to the *config* location in the system directory. You must move the recovered *CLUSDB* file from this *config* directory (for example, *C:\WINNT\system32\config*) to the cluster directory (for example, *C:\WINNT\cluster*).

NetWorker does not restore this file to the cluster directory because, if the cluster service is not started during system boot, the **Cluster** entry is not added as one of the entries in the registry. Thus, the NetWorker method to locate each major registry file does not return a valid value for the *CLUSDB* registry file. For this reason, the *config* directory under the system directory is used as the default location (for example, *C:\WINNT\system32\config*) for recovering the cluster database.

12. Start node_A.
13. Start the MSCS service, either using the Services window or the Cluster Administrator program (node_A).

14. Set the "startup" parameter of the MSCS service to "automatic" so that the cluster server starts automatically when the machine (node_A) boots the next time.

IMPORTANT: If you try to set the startup parameter to "automatic" before starting the cluster server, you get an error similar to "the associated database is locked." If it still puts out this message, try changing the startup parameter a few times. This problem eventually goes away.

15. Evict (remove) node_B from the cluster if it is part of the cluster. You can use the Cluster Administrator GUI to evict node_B.

The cluster server software cannot be installed in node_B to make it to join the cluster, if the cluster server thinks that node_B is still its member.

16. Install the cluster in node_B, and make node_B join the cluster during installation.

LEGATO TECHNICAL BULLETIN

312: NetWorker 4.2.5 Support of UNIX LVMs (Patch 4.2-014)

PURPOSE

This bulletin describes the Logical Volume Manager (LVM) support in NetWorker 4.2.5.

DESCRIPTION

NetWorker allows for parallel saves of Logical Volumes (LVs) by adjusting the **diskno** and **max_sessions** values on the **savefs probe** operation. Based on the **savefs probe**, you can use **savegrp** to assign parallel sessions.

Limited by the parallelism values, **savegrp** first allocates backup sessions to separate clients, then to separate **diskno** values on the same client, and then to the same **diskno** value (up to its **max_sessions** value).

For this function, the following LVMs are supported in 4.2.5:

- Solaris Online:DiskSuite (ODS)
- Solaris Veritas Volume Manager
- AIX LVM

NetWorker examines the device pathname to distinguish among the LVs.

The exact handling of LVs depends on whether the LV manager includes a volume group (some of these products use a different term) as part of the device path. In cases where a volume group is part of the device path, all LVs within that volume group are assigned the same **diskno** value, and **max_sessions** equals the number of LVs (within that volume group).

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In cases where a volume group is not part of the device pathname, all LVs on the system have the same **diskno** value, and **max_sessions** for this **diskno** equals the total number of LVs.

Solaris Veritas Volume Manager includes the volume (or disk) group in its device paths. Solaris ODS and AIX do not include a volume group in their device paths.

More specifically, for both Solaris ODS and the Veritas Volume Manager, NetWorker considers */dev/dsk* to be the start of a standard device path. Any other device path is assumed to be the start of an LV. The following are examples of device paths and the type of LV they represent:

/dev/md/dsk (start of Solaris ODS LV)

/dev/vx/dsk/volume_group_name (start of Solaris Veritas LV)

For AIX, NetWorker considers */dev/hd* to be the start of a “standard” device path (actually the standard set of LVs on **hdisk0**), and assigns all such LVs the same **diskno** value with a **max_sessions** equal to 1. Any other device path is considered to be the start of an independent LV. A typical device path has the following form:

/dev/logical_volume_name

For all such independent LVs, NetWorker assigns the same **diskno** value and sets **max_sessions** equal to their total number.

Interim Comments on HP-UX LVM Support

NetWorker 4.2 with patch 4.2-014 supports LVMs on HP-UX. Each volume group is assigned a separate **diskno** value, and the **max_sessions** value equals the number of LVs within that volume group.

Patch 4.2-014 is available from ftp.legato.com.

LEGATO TECHNICAL BULLETIN

313: Using the 'dlt7000' Device With NetWorker 4.4.1 (NT)

PURPOSE

This technical bulletin explains restrictions on the use of the 'dlt7000' device type with NetWorker for Windows NT. The 'dlt7000' device type was added as part of Patch 4.4-007 and Device Supplements 4.4a (July 1997) and 4.4b (October 1997) for use with the 4.4 release of Workgroup and Network Editions of NetWorker for Windows NT.

Device Supplements 4.4a and 4.4b and Patch 4.4-007 have been withdrawn and should not be used. Do not use the 'dlt7000' device type with releases of NetWorker prior to Release 4.4.1 Power Edition.

NOTE: This problem occurs only on version 4.4.1 of NetWorker, after Device Supplements 4.4a or 4.4b or Patch 4.4-007 are applied to NetWorker for NT version 4.4. This problem does NOT occur in NetWorker for NT Version 4.4.1 Power Edition (displayed as **4.4.1 pe** in the Help/About menu choice of **nwadmin**). If you are using NetWorker 4.4.1 but are not using it with DLT-7000 tape drives configured as 'dlt7000' type devices, you are also NOT affected by this problem.

DESCRIPTION

Legato created a 'dlt7000' device type to maximize the performance of DLT-7000 devices in NetWorker Power Edition. However, this device type has a default 96K block size, which is not supported by some NT SCSI adapter cards in use today.

When you use the 'dlt7000' device type with hardware that cannot handle a 96K block size, NetWorker Power Edition correctly identifies the unsupported block size and selects an alternate block size, typically 64K, supported by the NT SCSI adapter card.

Versions of NetWorker prior to NetWorker 4.4.1 Power Edition do not have this failure detection logic. In these situations, NetWorker transfers data using a 96K block size, which is split by NT into 64K and 32K physical blocks on the tape.

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PROBLEM

If you attempt to perform a recover from a tape that was written using the 'dlt7000' device type on NetWorker for NT version 4.4.1, in most cases the recover fails with the error message: `Error reading record number nnn from file filename.`

The actual problem has to do with the high-speed positioning, where NetWorker uses the Forward Space File (**fsf**) and Forward Space Record (**fsr**) commands to quickly move to the required location on the tape in order to perform a partial recover.

If the particular recover uses the **fsr** command, NetWorker incorrectly calculates the number of records to skip, and therefore ends up in the wrong place and is unable to recover the files. NetWorker attempts to disable **fsr** and continue, but since the problem is not actually caused by the **fsr** command, this does not help, and the recover still fails.

SOLUTION

If you already created backup tapes using the 'dlt7000' device type on NetWorker 4.4.1, clone them immediately using the cloning procedure described below, then reconfigure your system to use the 'dlt' device type.

NOTE: The cloning procedure described below requires that the media and file indices for the original tape be intact. If you removed the volume from the media or file indices, do not attempt to use a scanner to read the tape — this does not work. Contact Legato Technical Support for assistance.

Depending on your performance requirements, you can choose to either upgrade to 4.4.1 Power Edition or switch to the 'dlt' device type and continue to use 4.4 Network Edition.

If you upgrade to 4.4.1 Power Edition, you can use the 'dlt7000' device type, and it automatically selects the correct block size. However, Power Edition is not able to read tapes created with the mixed 64K or 32K blocks. You still must clone those tapes if you want to recover data from them.

If you stay with NetWorker 4.4, after cloning any needed tapes, you must delete any 'dlt7000' devices and then recreate them using the 'dlt' device type. Do this as follows:

1. Left-click on the "Devices: setup, mount, unmount, label" icon in the Media Management section of the Configure tab.
2. Locate the appropriate tape device (for example, `\\.\Tape2`) that is defined as a DLT-7000 device type, right-click on it, and choose **Delete**.
3. Right-click on the Devices section of this window and choose **Create**.
4. Change the Name attribute to reflect the tape device that was just deleted (for example, `\\.\Tape2`).
5. Change the Media Type attribute to **dlt**.
6. Do a full backup of all clients.

NOTE: If the tape drive is part of a jukebox, you must delete the jukebox resource before following these steps and then re-add and reconfigure your jukebox.

The default block size for the 'dlt' device type is 32K, which is not too large for any hardware in use today and is also compatible with the internals of NetWorker 4.4 and 4.4.1.

In Release 5.1 and later versions of NetWorker, protection against writing unreadable block sizes is included in all editions of NetWorker, as is support for the 'dlt7000' device type.

CLONING PROCEDURE

To make useful clones of volumes that were generated using NetWorker 4.4.1 and the 'dlt7000' device type, you need at least two DLT tape drives. One remains configured as a 'dlt7000' device, and the other must be configured as a 'dlt' type. If you have multiple DLT-7000 drives, delete one drive and re-create it using 'dlt' as the device type.

If you do not have at least two DLT drives, you can clone the volumes from the DLT-7000 drive to any other NetWorker supported device (tape drive or optical drive).

Using the 'dlt' drive, label as many clone tapes as are needed, placing them in the appropriate clone pools. When you create the clone pools, configure NetWorker so that it uses only the 'dlt' device type. With a clone tape mounted in the 'dlt' drive and the original volume mounted in the 'dlt7000' drive, you should be able to select 'clone volumes' from the operations menu and clone the tape. You might see an error message indicating that a filemark was reached when reading, but it is safe to ignore this error message.

After cloning all of the tapes you need, delete any remaining 'dlt7000' tape devices and re-create them as 'dlt' type devices. Note that if they are in a jukebox, you must first delete the jukebox and delete the drives, then reconfigure the jukebox using **jbconfig.exe**.

