3COM COMPATIBILITY

This tape system is compatible with the 3Com 3Plus network. The following
paragraphs outline the important changes, special features, and special
actions required by the user under 3Com 3Plus network operation.

TAPE SYSTEM INSTALLATION ON 3COM NETWORK

There are two ways to install the tape system software on a 3Com network,
depending on the capabilities you require. With both installation
processes, the tape system HARDWARE must be installed in a workstation (i.e.,
NOT in the 3Com network file server). Tape operations will be executed from
that workstation, so it is best that it belong to the network supervisor, or
to the user responsible for backing up the network data.

Installation of SOFTWARE is slightly different. We recommend that you
install the software directly on the network file server, using DOS rather
than a network connection, following the steps outlined below:

1. Make sure that you have already installed all of the 3Com 3Plus network
   system software on the file server disk.

2. Boot up the file serve computer under DOS (i.e., NOT in its 3Com mode).
   It will be just like any other PC or AT computer in this mode.

3. Install the software. No special procedures are required to accommodate
   your 3Com network during installation.

4. At the end of the installation process, the tape installation program
   reports whether it was successful. In the same results box, it also
   reports if it completed the special 3Com installation procedures
   necessary to allow you to perform total backups of the 3Com file server
   disk from a workstation.

5. After software installation is complete, reboot the 3Com file server in
   dedicated 3Com server mode.

6. Login to the network as the SERVER USER from a workstation as detailed
   in the 3Com User's Guide. Then create a sharename for the directory in
   which the tape system software was installed on the 3Com file server. A
   drive letter must then be linked to the tape system directory to perform
   tape system operations.

The second method of loading the tape system on your network is to use a
network workstation. You may either install the software on a local hard disk
on the workstation where the tape hardware is installed, or you may install it
on a linked network disk drive. Linking of network drives is detailed in the
3Com network documentation. Follow the steps below for this type of
installation:

1. If you want the software to reside on the network file server, first link
   a drive letter to the directory of the disk where you plan to install the
   tape software. Of course, the network must be operational and you must be
   logging in to do this.

2. Perform the software installation. If the installation software detects the presence of a 3Com network, it automatically creates a root directory sharename for you boot disk drive. The software prompts you to enter the drive letter(s) of any other network disk drives that require a root directory share name.

After software installation is completed, you may use the tape system to back up and restore any files under linked network directory, just as if they were on any local disk drive.

CAPABILITY FOR FULL 3COM FILE SERVER TAPE OPERATIONS

The first method of software installation (direct file server installation through DOS) adds remote total network disk access capability to your 3Com network configuration and allows you to back up, restore, and compare the entire 3Com file server disk with a single tape operation.

To make use of this special capability, you must link a drive letter to the special 3Com sharename "ROOTDIRX", where "X" is the specified server drive letter. This sharename will only be valid if you installed the tape system using the first method outlined above and the system reported at the end of installation that the 3Com total backup capability was enabled. Use the "3F Link" command as detailed in your 3Com network manuals to link to this sharename. Once you have a drive letter linked to the special root directory sharename, you may address all of the files at the root level or below using that drive letter.

The special 3Com sharename "ROOTDIRX" has no password associated with it. If you wish to add a password or change access privileges to prevent unauthorized use, you may do so by using the network command "3F Mod" which is detailed in the 3Com network manuals.

Remember that the special "ROOTDIRX" sharename will be valid ONLY if the first software installation procedure above is followed (i.e., install through DOS directly onto the 3Com file server disk).

SHARING FILES ON THE NETWORK WITH THE TAPE SYSTEM

The 3Com software uses certain files constantly during network operation. Users on the network also use files from the 3Com file server while the network is running. When you try to perform tape operations on a system with open files, the tape system may be denied access to those files. As a result, you may not be able to back up or restore the data in some of these files until they are no longer in use. Therefore, it is best to perform backup or restore operations when no other users are logged on to the system.

If other users are logged on to the network, the tape system will display the following message it is unable to access the file, or unable to share the file with another user:

    D:\PATH\FILE ... SHARE VIOLATION

The tape system continues the backup, restore, or compare operation on the files that it can access. The tape system stores the file names it was unable to access in file named ERRORLOG.XX where "XX" is a number generated by the system to avoid conflicts with existing files. The error log file resides in the directory with the tape software.

If sharing violations were encountered, the tape system displays the following message when the tape operation is complete:

    WARNING nn FILES NOT ACCESSIBLE SEE ERRORLOG.XX

The number of files inaccessible and the extension of the error log are both included in the message. The system supervisor should look at the contents of the error log file as soon as possible to assess the impact the locked files had on a tape operation. Delete all error log files that are no longer needed.

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NOVELL NETWARE COMPATIBILITY

Full Novell Netware backup capability is implemented in version 1.32 and all later versions of the backup software. This compatibility applies to any network that is based on Novell Netware, even though that network may be listed under a different brand name. Any reference to a network in this section assumes that the network is Novell Netware based.

Note that the same software is used on both network disks and on normal single-user systems. The software automatically checks to see which kind of disk is being addressed by the tape operations, and backs up and restores the information pertinent to that disk. You can even back up a local disk and restore it to a network disk or vice versa. This gives you a maximum versatility and convenience when performing tape operations on a number of different disks, both local and network.

Status messages which could appear during use of the tape system with a network are listed and explained in Chapter 6 of this manual.

SPECIAL LAN INFORMATION

To perform a backup from a LAN (Local Area Network) disk, a tape backup system must save some data that is not present on a single-user disk. For the Novell compatible LAN, this data consists of the following:

1. Extra file header information for each file on the disk, beyond the normal information stored by DOS on a local disk.

2. Extra directory information for each directory on a given disk.

3. A list of trustees for each directory, indicating who has rights to access its files.

4. A record of the legal users on the system, and their rights on the LAN disk.

5. Some extra low level information that relates only to LAN's, such as is the extra bit for each file indicating that the file is shareble on the LAN disk.

This extra information from the LAN is often referred to as "special network information" in the following documentation.

RIGHTS TO BACK UP SPECIAL LAN INFORMATION

Most of the "extra" information on the LAN relates to LAN security. It allows users to access certain areas of the LAN disk and allows the LAN to determine when files and/or directories are locked to a specific user.

The only person with a right to know this information, and the right to back up everything onto tape, is the LAN supervisor, or a user with supervisory rights. If every user were allowed to back up the security information, unauthorized persons might be able to access security information. This data includes the system passwords, the rights of each user, and a record of all information on the LAN disk. During normal day-to-day operation, the only person with unrestricted access to all of this information is the supervisor, or someone with supervisory rights. The tape backup system preserves this rule within the context of data that may be backed up.

Note that users with rights restricted to certain areas of the LAN disk can still back up the data from that part of the disk. The restriction only prevents them from backing up data or security information to which they do not have access.

RECORD OF RIGHT SAVED/RESTORED

A record of the most recent rights backed up or rights restored from tape is recorded by the tape system in the file DLOGRITE.QIC, found in the SYS:\SYSTEM directory on the network disk. This record lists the rights saved, and also records any problems encountered during the backup or restore of network rights.

CONDITIONS FOR BACKING UP THE SPECIAL LAN INFORMATION

When any user, including the supervisor makes a partial LAN disk backup, the special LAN information is not saved. This is because the security information and extra data associated with a LAN disk relate to the disk as a whole. It makes no sense to back up the special network information for the complete LAN system when only making a partial back up. If all special network information were backed up, the COMPLETE set of system rights might be restored when the partial file set is restored. In that case, the other files on the disk, the disk's directory structure, and other LAN disk information might have no relation to the special network information that was just restored.

Only when a complete LAN disk backup is made by someone with supervisory rights is the special network information backed up onto the tape along with the files and directory structure that are normally saved in a tape backup operation. The tape system saves the extra information automatically, and notifies you that it is doing so at the beginning of the backup operation. For that tape volume to be restored in its entirety, the person performing the restore must have supervisory rights. The tape system offers the option of restoring the special network information so that the LAN disk is restored to the data and security configuration at the time the backup was made.

SYSTEM STATUS DURING BACKUP

Ideally, when the supervisor makes a complete LAN disk backup, no other users should be logged onto the LAN. The best time to make backups is generally at the end of a day's work, because at that time LAN operation can usually be restricted to the system supervisor for at least a short time. Because of the

tape system's high data transfer rate, the LAN shut-down time will usually be brief, causing minimal inconvenience to other users.

If it is impossible to lock other users out of the LAN when a full system backup is made, it is important to understand the possible effects. First, any files in use by other workstations will not be included in the backup. The backup system cannot access those files because another user has them open with locks out the tape system. This should not be a major problem, as long as the backup system is not prevented from backing up crucial data files. It could become a problem, for example, if the LAN contains large database files that are heavily used and are constantly changing. Another problem could arise if a database management system accesses several files when it operates.

Database files backed up at different times may not bear the proper relation to each other when restored.

A second type of problem occurs if users open and close files while the backup is running. The backup volume directory is written before the actual backup of data. At that time, the tape system writes out a volume directory of accessible to non-accessible, or vice versa, after the volume directory is written but BEFORE the actual backup of the file's data, the volume directory will not match exactly the file data backed up onto the tape. This leaves file entries in the volume directory with no corresponding data, or file data with no directory entry. For these reasons, we highly recommend that backups be performed on a controlled system with no users logged in except for the supervisor.

CONDITIONS FOR RESTORING THE SPECIAL LAN INFORMATION

The conditions for completely restoring a LAN are much the same as those for backing up the LAN. Special network information may only be restored by someone with supervisory rights.

For the supervisor to restore special network information, it must exist on the tape backup volume. This means that the volume on the tape must be a complete backup of the LAN disk. The backup system automatically checks to see if the special network information exists on this backup volume. If that is the case, before beginning to restore the file data information stored on that tape volume, the tape system prompts you to restore special network information.

USE OF VOLUME NAMES

Under Novell Netware, it is possible to have several volumes mounted for use with the network. There is always a volume named "SYS:". The supervisor assigns other volume names. However, the tape backup system only recognizes single letters (e.g. C:, etc.) as a reference to a volume. In a network environment, you must therefore use a letter that is assigned to a volume, like F:=SYS:, to tell the tape system to back up an entire network volume.

You are in no way limited by this detail. At least one drive letter is always assigned to each network volume. Even when that drive letter is assigned to a subdirectory, you may follow it with a backslash (denoting root directory) to instruct the tape system to back up files from the root directory down (i.e. the entire network volume). See the examples below.

Assume the network has the following drive letter mapping:

```
     F: = SYS:\
     G: = SYS:\PUBLIC
     H: = SYS:\ACCOUNT\PAYROLL\DEPT3
     I: = SYSTWO:\LETTERS
```

Here are some possible backup commands and their results:

```
   1. TAPE BACKUP F:\*.*/S  -or-
            TAPE BACKUP G:\*.*/S  -or-
            TAPE BACKUP H:\*.*/S
            backs up the entire SYS: network volume.

   2. TAPE BACKUP I:\*.*/S
            backs up the entire SYSTWO: network volume.

   3. TAPE BACKUP H:*.*/S
            (notice the absence of the backslash after the colon)
            backs up the files in the directory
            SYS:\ACCOUNT\PAYROLL\DEPT3
```

SPECIAL NOTES ON RESTORING A TAPE VOLUME TO DISK

Several points should be mentioned in connection with restoring network disks.

In order to restore a tape volume to a network disk, the network system and the workstation from which the restore will take place must be able to recognize that disk. This means that the disk must be partitioned and formatted for use as a network disk, it must be recognized as part of a file server, and the workstation must be able to log onto that file server. These conditions may be met through use of the network install utility. Note that it is unnecessary to load all of the network system files or network utilities files onto the network disk that is going to be restored. These will all be restored from the tape volume. However, the log-in utilities must exist on the network disk in order for the workstation to log onto the file server and perform the restore.

To restore ALL special network information to a disk from a tape volume which contains this information, you MUST enable to overwrite option in the backup software during the restore. This is extremely important. If the overwrite option is not enabled, system users, passwords, and other network information will not be restored if it exists on the network disk. Because this information is the heart of network security, you must make a conscious decision to replace it.

The tape system informs you of the items left unchanged if the overwrite option is not enabled for this restore. You can enable the overwrite option from the second screen of the Utilities Menu by pressing F4 to access the configuration file screen, and there setting the Overwrite Existing Files During Restore option to "Y". This enables the overwrite option for all subsequent tape operations, until you change it. From a command line, you can set the overwrite flag on by specifying the "/o" option with the TAPE RESTORE command. This enables the overwrite option for that operation only, using the value already set in the configuration file for any subsequent operations unless you specify "/o" or "/-o" for those operations.

After a TOTAL restore of a network disk with special network information and

security rights, it is a good idea to shut down that file server using the command 'DOWN', explained in the network system documentation. The file server may then be brought back up and users may log on again. The network can then recognize all of the new security and access information.

The backup system is designed not to restore empty subdirectories from a tape volume because there is no file data to restore. This means that if you attempt to restore the special network information for an empty directory, an error message will notify you that the directory is not valid on the network system. This is normal and should not be cause for concern. If you want that directory to exist even though it has no resident files, you may create it using the DOS "make directory" command.

The tape restore operation restores files that exist on the tape that are marked as "Read-Only", but only if those files do not already exist on the network disk. "Read-Only" files are protected and cannot be overwritten. The tape system conforms to this network rule, and will not write over a "Read-Only" file on the network disk, even if the overwrite option for the tape system is enabled. If you want to overwrite "Read-Only" files, i.e. you want to restore them from the tape volume, you must first delete them from the disk using normal network commands.

NETWORK FILE AND DIRECTORY NAMES

Some networks, including Novell, allow you to allow file and directory names that are not DOS compatible. This usually means that the names are longer or contain special characters that are not allowed under DOS. This tape system is designed to be DOS compatible and to use DOS standards. One of its strengths is that it allows interchange of files between a network and a single-user DOS system, using the tape as a transfer medium.

In order to provide this compatibility, it is necessary that the network users also follow DOS conventions for file and directory names. This is the usual practice followed on network systems because application programs used on the network are also designed to use standard DOS names. Problems with tape operations may result if the tape system is used on files or directories with names that are not DOS compatible. A detailed description of DOS naming conventions may be found in your DOS manual.

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