3+Open Backup Guide Addendum for Macintosh® Files

The following release notes contain information on how to archive Macintosh files. The instructions apply to Macintosh files stored on an AFP server, which is a network server running the 3+Open LAN Manager operating system and 3+Open for Macintosh File Service.

The release notes contain general instructions that apply to any archive program. There are also specific instructions for 3+Open Backup, which is a tape archive program that comes standard with 3+Open for 3Com servers.

References

You may want to refer to the following documents as you read and perform the procedures in the release notes:

- 3+Open Backup Guide

- 3+Open for Macintosh Administrator's Guide

- AppleShare File Server User's Guide

- 3+Open for Macintosh Supplement to the AppleShare File Server User's Guide

- 3+Open MS OS/2 LAN Manager Administrator Guide

- 3+Open MS OS/2 Documentation Set

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General Information
This section describes the rules that apply to both backing up and restoring Macintosh files.

General Information for Backing Up Macintosh Files
This section contains general guidelines for backing up Macintosh files. The guidelines apply to any archive program.

Backing Up Macintosh Files with 3+Open Backup
This section describes how to include the Macintosh volumes in an automatic backup schedule created with 3+Open Backup.

Restoring Macintosh Files
This section discusses how to restore Macintosh volumes and files to an AFP server.

General Information

AFP Server File System

When backing up and restoring Macintosh files, it is helpful to understand the directory structure 3+Open for Macintosh uses to store files. It is also useful to understand the importance of the resource fork and the data fork of Macintosh files. For information about these topics, review Appendix D in the *3+Open for Macintosh Administrator's Guide* before continuing.

Stopping 3+Open for Macintosh

You must stop the 3+Open for Macintosh file service
(AFPSERVER) on the server before backing up or restoring
files. This ensures that all user and support files are closed.
Most archive programs, including 3+Open Backup, will not
back up an open file. The recommended method for stopping
the service is the PAUSE or STOP command of the
MACADMIN utility. Both commands allow you to specify a
time delay to shutting down the service. They also send out a
warning to the Macintosh network users. If you use the
PAUSE command, be sure to also use its Disconnect option
to diconnect the Macintosh users.

When Macintsoh users receive a message that the service is
about to stop, they should close any open files and
applications programs that they are using on the server within
the timeframe indicated in the shutdown alert. Naturally,
they can continue to use the files and programs on any other
AFP server that is not being backed up.

If you are performing an automatic backup, the only way to
stop the service automatically is by using the AT utility and
the NET STOP AFPSERVER command. (This is explained
later in "Backing Up Macintosh Files with 3+Open Backup.")
Since this command immediately stops the service without
warning the users first, you should notify the users as to the
date and times of all scheduled backups of AFP servers.

For information on the MACADMIN utility, refer to the
3+Open for Macintosh Administrator's Guide.

Special Macintosh Service Files

In addition to the service information in the server's LANMAN.INI and PROTOCOL.INI files, 3+Open for Macintosh also has service information in two additional files on the server, separate from the support files found in the actual user directories. Both files are stored in the same partition and subdirectory on the server. The default partition is C and the subdirectory is \3OPEN\SERVER\LANMAN\SERVICES\AFPSRVR.

The first file is USERINFO.AFP. This file contains a list of the users and groups of 3+Open for Macintosh for that server. The file also contains the primary group of each user.

The second file is CONFIG.AFP. This file contains the AFP name of the file server on which the service is installed, the default owner and group name of the server, and the default file extension mappings. It also contains all volume configuration information.

To protect this service information, you should include these files in the backup of an AFP server. If you back up the entire server or all of partition C, these files are also backed up, providing, of course, that 3+Open for Macintosh File Service is stopped. (These files may be open at any point during 3+Open for Macintosh file service operation.) If you choose to limit the backup to Macintosh volumes only, you should also back up the subdirectory in which these files reside.

Using 3+Open Backup

If you use 3+Open Backup to archive your Macintosh files, be sure to observe the following rules.

- You cannot use the backup and restore commands of 3+Open Backup at a Macintosh computer. The commands require a DOS or OS/2 workstation.

- You cannot use 3+Open Backup to back up or restore the files on the local hard disk of a Macintosh computer.

- 3+Open Backup is not aware of the longname form of Macintosh files, folders, and volumes. Instead, Macintosh names are displayed in their shortname form in the BACKUP2 menu program and in the log files. For further information on Macintosh shortnames and how Macintosh files are maintained on the server, refer to Appendices D and E in the *3+Open for Macintosh Administrator's Guide*.

General Instructions for Backing Up Macintosh Files

This section contains general instructions for backing up the Macintosh files on an AFP server. The steps are:

- Notify the network users that 3+Open for Macintosh will be stopped on the server.

  The easiest way to notify the network users is to use the PAUSE command in the MACADMIN utility. By selecting the Disconnect option of the command, you both warn the users of the impending shutdown and idle the file service. For instructions on the utility, refer to the *3+Open for Macintosh Administrator's Guide*.

- Stop or pause the AFPSERVER service.

  Refer to the section "Stopping 3+Open for Macintosh" earlier in the release notes for details.

- Back up the server files using your archive program.

  If you choose to back up a particular Macintosh volume or directory rather than the entire server or partition, follow these rules:

  - If you are using 3+Open Backup, identify the volume by its 3+Open LAN Manager sharename and not its Macintosh volume name. The sharename of a volume can be determined using the MACADMIN utility.

  - Back up all folders (subdirectories) of the volume, preferably starting at the volume's root. This ensures that all the appropriate hidden files and directories associated with Macintosh files are backed up as well.

  - To back up a directory within a volume, be sure to back up all subdirectories beneath the directory to ensure that you backed up the appropriate hidden subdirectories.

    If you back up a portion of a volume, the information in the two files DIRID.AFP and VOLINFO.AFP, which are located in the subdirectory ~AFP beneath the root of the volume, are not saved. Subsequently, you will lose any Finder GetInfo comments associated with all of the files along with the longname of the topmost folder being backed up. For this reason, backing up only a portion of a volume is not recommended.

For further information on the structure of Macintosh files and folders on the server, refer to Appendix D in the *3+Open for Macintosh Administrator's Guide*.

You can perform an incremental backup of a Macintosh server, such as only those files that have been modified. If any part of a Macintosh file is changed, the date and time of all parts of the file are updated, including its data fork and resource fork.

• Restart the AFPSERVER service of 3+Open for Macintosh using either MACADMIN, NET START or NET CONTINUE, depending on the command used to stop the service.

Backing Up Macintosh Files with 3+Open Backup

The information in this section is specific to 3+Open Backup. It explains how to include the backup of Macintosh volumes in your automatic backup schedules.

The *3+Open Backup Guide* contains instructions on how to automatically back up your network servers by creating automatic backup schedules. It explains how to create a backup schedule through the menus and prompts of the BACKUP2 program. It also mentions that you can store the BACKMAN BACKUP command in a command file and run the command automatically through the AT utility of 3+Open LAN Manager. Either method is a valid way of automatically backing up your 3+Open network servers.

If a server has 3+Open for Macintosh, you may want to create new automatic backup schedules for the Macintosh volumes, or you may want the Macintosh volumes to be backed up along with the rest of the server files. For this to work, you need a way to stop and start the 3+Open for Macintosh File Service (AFPSERVER) automatically. Unfortunately, 3+Open Backup cannot do it for you.

The first step is to stop the AFPSERVER service before the start of your scheduled backup. You can do this with the AT utility of 3+Open LAN Manager. (For information about the AT utility, refer to the *3+Open MS OS/2 LAN Manager Administrator Guide*.)

For example, assume that there exists a scheduled backup that performs a full backup of the Production server every Monday, Wednesday, and Friday morning at 2:00 a.m. To stop the AFPSERVER service on the Production server prior to the scheduled backup, enter the following AT command:

```
net admin \\production /c at 1:55 /e:m,w,f net stop
afpserver [Return]
```

This command automatically stops the service five minutes before the start of every scheduled backup. (Since the NET STOP command does not notify users prior to stopping a service, you should provide the users with a detailed schedule of all scheduled backups.)

Do not stop the service any later than five minutes before the start of the scheduled backup. This gives the service adequate time to close all files before the session starts.

When the scheduled backup is completed, the AFPSERVER service must be restarted. You can do this by creating the following batch file and storing it on the tape server.

```
:wait
waitn -s60 -q
if exist c:\3open\3backup\info\tape.stt goto wait
waitn -s60 -q
if exist c:\3open\3backup\info\tape.stt goto wait
net admin \\production /c net start afpserver
```

The batch file determines whether the backup session is still
in progress by testing for the existence of the TAPE.STT file.
This is a special file that 3+Open Backup creates at the
beginning of a backup session and deletes at the end. The
default location of the file is determined by the path of the
BACKINFO sharename, whose default path is partition C, in
the \3OPEN\3BACKUP\INFO subdirectory.

The presence of the file is tested using the IF ... GOTO
command. If the file exists, the command file loops back to
the start, waits 60 seconds using the WAITN.EXE program,
and tests again. If the file is gone, meaning that the session is
finished, the server performs the final line in the command
file to restart the AFPSERVER service.

The batch file tests for the TAPE.STT file twice. The file
may momentarily disappear during a full server backup when
the backup session finishes one server partition and prepares
to start on the next partition. By checking twice for the file,
you ensure that the session is actually finished.

Observe these cautions when using the batch file:

•   Do not attempt to use the batch file without the
    WAITN.EXE program. Without the wait, the server will
    stop responding to requests for network resources from
    network users.

•   Be sure that the command file pauses a minimum of 60
    seconds before testing again for the presence of
    TAPE.STT. More frequent loops may result in poor
    server performance.

- Do not start the batch file any sooner than two minutes after the start of a scheduled backup. A backup session, whether manual or automatic, can take several minutes to start. If you start the batch file too soon, the file may restart the AFPSERVER service prematurely if 3+Open Backup has not had time to create the TAPE.STT file.

You can create the batch file with a text editor, such as E. Store the file in partition C of the tape server in the \3OPEN\SERVER\LANMAN\NETPROG subdirectory. This is where you should store any program or batch file that you intend to run through the AT utility. (For further information on batch files, refer to the *3+Open MS OS/2 Documentation Set.*)

The WAITN.EXE program is not a standard program of 3+Open LAN Manager; but it is included on the 3+Open for Macintosh installation diskettes. The program is stored on the *Server Installation #2* diskette. Copy the program to the same location as the batch file.

The -S parameter of the WAITN program specifies the number of seconds the program waits. The value can range from 1 to 1000. The recommended value is 60 seconds. Checking for the TAPE.STT file more frequently than once a minute may impact the performance of the server. The -Q parameter specifies that the command is not to return output to the operating system.

After creating the batch file and copying WAITN.EXE onto the tape server, enter an AT command to start the file automatically after the start of the scheduled backup session. For instance, referring back to the earlier example in this section where an automatic backup session starts at 2:00 a.m., you might enter this AT command to start the batch file 10 minutes after the start of the scheduled backup. The command assumes that the name of the tape server is Sales and that the name of the batch file is AFPCHECK.CMD.

```
net admin \\sales /c at 2:10 /e:m,w,f afpcheck
[Return]
```

If you create a backup schedule that backs up a Macintosh volume rather than an entire partition or server, follow the rules found in "General Instructions for Backing Up Macintosh Files" earlier in these release notes.

The following steps summarize the procedure for creating automatic backup schedules for AFP servers:

*   Create the scheduled backups on the tape server using either BACKUP2 or BACKMAN BACKUP.

*   Enter an AT command at the server to be backed up that stops 3+Open for Macintosh no later than five minutes before the start of the scheduled backup.

*   Create a batch file that checks for the existence of the TAPE.STT file and restarts 3+Open for Macintosh once the backup is complete. Store the batch file on the tape server.

*   Enter an AT command that starts the batch file sometime after the start of the scheduled backup. The batch file should start no sooner than two minutes after the start of the scheduled backup.

Another way to automatically back up your network Macintosh volumes is with the 3BACKUP command of 3+Open Backup. This command is typically used by the network users to back up local hard disks and personal directories on network servers. The advantage of this command is that you do not need to check the status of the backup session; the next command in the batch file is not performed until the previous backup session is finished.

The disadvantage is that the command can only back up one partition, sharename, or volume at a time. Consequently, to back up an entire server, you would need a separate command for each partition. Also, if you need to restore the entire server, you would have to restore it one partition at a time. Here is an example of a batch file that backs up the five partitions on the tape server.

```
net stop afpserver
waitn -s60 -q
3backup c:\ h:\tape /s /w
3backup d:\ h:\tape /s /w /a
3backup e:\ h:\tape /s /w /a
3backup f:\ h:\tape /s /w /a
3backup g:\ h:\tape /s /w /a
net start afpserver
```

If you use 3BACKUP to back up a server other than the tape server, you need to establish a connection to the partition on the server and then end the connection to the partition once the backup is complete. This must be repeated for each partition on the server.

Here is an example of a batch file that does exactly that.

```
net admin \\production /c net stop afpserver
waitn -s60 -q
net use w: \\production\c$
3backup w:\ h:\tape /s /w
net use w: /d
net use w: \\production\d$
3backup w:\ h:\tape /s /w /a
net use w: /d
net use w: \\production\e$
3backup w:\ h:\tape /s /w /a
net use w: /d
net use w: \\production\f$
3backup w:\ h:\tape /s /w /a
net use w: /d
net use w: \\production\g$
3backup w:\ h:\tape /s /w /a
net admin \\production /c net start afpserver
```

For more information on 3BACKUP, refer to the *3+Open Backup Guide.* For more on batch files, refer to the *3+Open MS OS/2 Documentation Set.*

This completes the procedure for creating scheduled backups for AFP servers using 3+Open Backup.

Restoring Macintosh Files

This section describes how to restore Macintosh files onto an AFP server. The section is divided into the following parts:

- Restoring an Entire Server or Partition

- Restoring a Macintosh Volume

- Restoring a Macintosh Folder

- Restoring Selected Macintosh Files

Be sure to observe the following rules when restoring a Macintosh volume or folder:

- Stop or pause the AFPSERVER service before restoring the files. This is not necessary if you are only restoring a Macintosh volume, rather than the entire server or partition, and if the sharename to which you are restoring the files is not yet configured for use as a Macintosh volume.

- Do not restore Macintosh files from a backup session on tape where the AFPSERVER service was not stopped or paused, unless you have no other backups that contain the desired data. Once the data is restored, make sure that it is useable before merging it into your work environment. It is always possible that part of a Macintosh file was not backed up if the file was open at the time of the backup.

- If you restore a Macintosh volume or folder, be sure to restore it to an *empty volume* on the server. Once you have restored the files to the empty volume, you can copy the files to their permanent volume location using a Macintosh workstation. Restoring files to a volume that already contains files may overwrite existing files in unexpected ways that will result in lost data.

- The empty volume should be located directly off the root of a server partition to avoid the problem of not being able to access files and folders from a Macintosh workstation that are more than eight folders deep.

- If you restore a Macintosh volume to a different server or to its original server after Macintosh users have been added or deleted since the backup, delete the two files DIRID.AFP and DIRID.BAK on the target volume. You should do this if you plan on keeping the volume rather than merging the folders and files into other volumes. This will cause the File Service to regenerate the files with the correct user and group associations. The two files are located in the ~AFP subdirectory beneath the root of the volume.

The remaining subsections are specific to 3+Open Backup. For further information on restoring Macintosh files using another archive program, refer to the documentation that accompanies the program.

Restoring an Entire Server or Partition

The only precautions to observe when using 3+Open Backup to restore a full AFP server or an entire partition are those listed at the beginning of this section. Once you have stopped or paused the service and restored the server or partition, restart the service.

Remember, if the partition to be restored contains Macintosh files that you want to keep, restore the partition to an empty partition and then copy the files using a Macintosh workstation to their permanent partition.

Restoring a Macintosh Volume

The method for restoring an entire Macintosh volume varies depending on whether you backed up the volume separately or whether the volume is a part of a larger backup session, such as an entire server or partition.

In the first case, where the volume is in a separate backup session on tape, you can restore the volume directly. That is, you can restore the volume by specifying its corresponding 3+Open sharename in the BACKMAN RESTORE command or the BACKUP2 program.

For example, the following command restores the Macintosh volume JOHN SMITH, which has the 3+Open sharename of JSMITH, onto a temporary sharename (TEMPVOL) on the Production server using the tape server Sales:

```
backman restore \\sales\tape \\production\tempvol /s
/v:jsmith
```

You create the temporary volume with the MACADMIN utility just as you would any Macintosh volume. After moving the files to their permanent volume, you can delete the contents of the temporary volume and then the volume itself.

If the tape is an appended tape containing multiple versions of the JSMITH sharename, specify the appropriate backup session using its session name.

For example, if the JSMITH session to be restored has the session name 1212890808, you enter:

```
backman restore \\sales\tape \\production\tempvol /s
/v:jsmith /n:1212890808
```

In those cases where the volume is a part of a larger backup session, you restore the volume by creating and editing a tape directory of the tape. The edited tape directory should contain only those filenames that apply to the Macintosh volume.

You can identify the filenames that belong to the volume by knowing the root directory of the Macintosh volume. You can do this by using the MACADMIN utility for an existing volume on the server, or if the volume no longer exists, by inferring the path from the shortname form of the files and directories as listed in the tape directory. The two files VOLINFO.AFP and DIRID.AFP in the ~AFP subdirectory off the root directory of a volume are an easy way to determine the root of a Macintosh volume.

For example, assume that you want to restore the Macintosh volume JOHN SMITH from a tape that contains a full backup of the server. The volume is stored in partition D and has the path \USERS\SMITH. After creating the tape directory of the appropriate tape, you would edit it, leaving those filenames that start with the path \USERS\SMITH. Be sure to leave all the files in the hidden directories ~AFP and ~I that are characteristic of Macintosh volumes and that contain information about Macintosh files and folders.

Once you have edited the tape directory, restore the files by specifying the tape directory in the restore command. This example uses the BACKMAN RESTORE command and the /G: parameter. It assumes that the name of the tape directory is TAPEDIR.CAT.

```
backman restore \\sales\tape \\production\tempvol
/g:tapedir.cat [Return]
```

Once you have restored the volume to the sharename TEMPVOL, configure a new volume over the sharename TEMPVOL using MACADMIN. You can then access the volume from a Macintosh workstation and either transfer the files to another Macintosh volume or use the files as they are stored in the sharename TEMPVOL.

Restoring Macintosh Folders

To restore a folder of a volume rather than the entire volume, observe the following:

- Restore the folder to an empty volume on the server and then move the files to their permanent volume using a Macintosh workstation. Restoring the folder directly to its permanent volume may overwrite existing files.

- Locating the desired folder on tape may be difficult since the tape directory uses the shortname form of the Macintosh folder and filenames. However, you may still be able to infer their names if they are unique enough.

- Be sure to restore the contents of all the subdirectories that are located within the directory that you are restoring.

- If you restore a portion of a volume directly to a permanant volume instead of to a temporary volume, you may have to rebuild the volume's desktop if you find icons or application programs are not being found by the Finder. To rebuild a desktop, check to be sure that the workstation automatically links to the volume as a standard part of its startup. Then shut down the workstation. Restart the workstation and press the [Option] and [Command] keys simultaneously. Continue to press the two keys until the workstation displays a message asking if you want to rebuild a volume. The workstation asks this question for each volume to which it links as a part of its startup. Rebuild the desktop of the desired volume.

NOTE: Rebuilding the desktop of a volume will result in the loss of all Finder GetInfo comments for the volume.

Restoring Selected Macintosh Files

It is not advised that you restore selected Macintosh files from tape. Rather, you should restore the entire volume containing the desired files into a temporary volume and then copy the desired files to their permanant volume. This is the only way to ensure that all the file attributes are restored, including any comments in the Finder GetInfo. For instructions on restoring a Macintosh volume, refer to the previous section, "Restoring a Macintosh Volume."

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