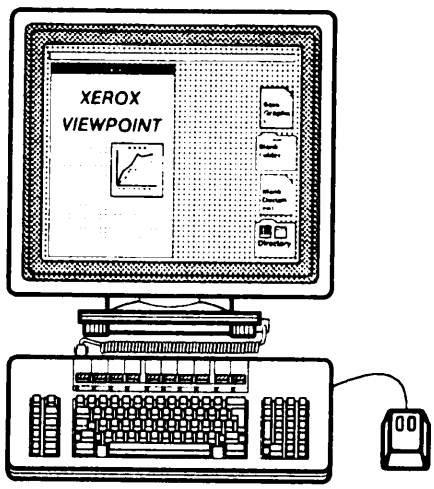
XEROX

PASSWORD

Customer Technical Bulletin



Volume 2, Issue 3

Topics:

Publication of the National Product Support Centre for XNS USERS

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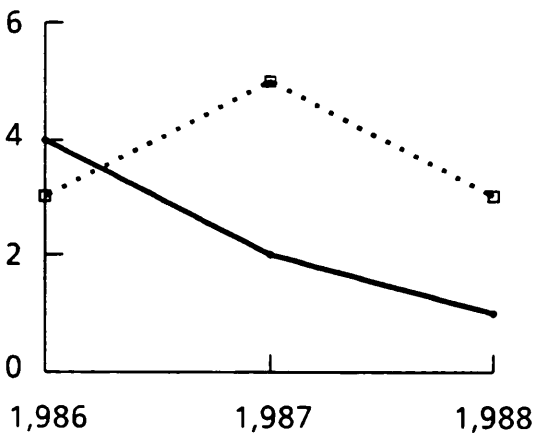
Labeling a Line Chart Using Years

If a line chart is labeled using 1986, 1987, etc., when the chart is drawn, the labels will appear as 1,986, 1,987, etc. (see below). To correct this problem, a "non-breaking space" must be entered before the first date. The non-breaking space is found in the <SPECIAL> keyboard (it corresponds to the letter 'w').



Enter a non-breaking space before 1986

Labels	XYZ	YQF
1986	4	3
1987	2	5
1988	1	3

Thick Lines Without Graphics

To get this solid line without using graphics, set the text properties as follows:

Modern font in sizes ranging from 14 to 36 point

Bold

Adjust line height accordingly (the larger fonts will require double or triple line height)

Press shift & underscore (beside the 0 key)

(When it prints out, it will be a thick, dark line.)

Some other possibilities for creating horizontal lines without using graphics are as follows:

1. Use the lower-case dash on the Office keyboard. This line is centered vertically within the line space.

2. Underline the tab character. Just enter a tab, select it, then press <UNDERLINE> or use the property sheet to set the underline. This will produce a thin horizontal line. To adjust the length of the line, simply change the tab position.

What is File Service Backup?

Backing up the File Service Volume to Rigid or Floppy Disks

Backup?

- (dictionary definition) Standing by as an alternate or auxiliary
- (our definition) Insuring stored information by use of redundancy
- Backup is NOT archival

Why is there risk to data?

- Hardware failures
- Software failures
- Human error
- Acts of God and war

Backup/Restore Requirements

- Physical separation of primary and backup data
- Electrical separation of primary and backup data
- Easy recovery from accidental deletion
- Restored file system should be undistinguishable from the original
- Restore must be convenient to use; Backup must be painless to use
- Procedures as automatic as possible
- Concepts simple and easy to understand
- Must recover gracefully from failure
- Hard for user to do anything wrong
- Minimize effects of losing backup media
- Maximize service up-time with unimpaired performance
- Performance must be high
- Recover individual files or entire file systems
- Economical for all file server configurations
- Reliable under all circumstances (heavily tested)
- Backup to local or remote media
- Configurable
- Maintain security

Backup Strategy Characteristics

When do we record changes?

- When they occur
- At (regular) intervals

What do we record?

- The changes themselves
- The effects of the changes

How much do we record?

- All data (complete snapshot)
- A single change
- An intermediate number of changes

Backup Strategies

Periodic Full Dump (Copy Volume)

Periodically, the filing volume is removed from service and copied to another medium.

Characteristics

- Changes recorded at intervals
- The effects of the changes are recorded
- All data is recorded whether it changed or not

Pros

- Backup is fast
- Restoration is fast
- An exact copy is made
- Restoring a single file is relatively easy

Cons

- Human involvement required
- Volume is inaccessible during Backup
- Frequent backups may require more media (disk packs)
- A spare drive must be dedicated to Backup
- Every file is backed up (security problem, more data transferred)

Backup Strategies continued

Incremental Backup with periodic partial dump (Backup/Restore)

Periodically scan a filing volume for files that were stored or changed since the last backup, and copy these to the backup medium. Also copy those files that have not been backed up within a specifiable period of time (the backup cycle).

Characteristics

- Changes recorded at intervals.
- The effects of the changes are recorded.
- All changes are recorded. Unchanged data is not recorded

Pros

- Backup may be performed with high frequency.
- Backup may be performed while files are being modified.

Cons

- Restoring individual files is not particularly fast.

Periodic full dump and intracycle incremental dumps (Copy Volume and Backup/Restore used together)

Within a cycle (the backup cycle), a full dump is made on the first day, and incremental dumps on other days record only the files that have been stored or modified since the last full or incremental dump.

Backup Strategies continued

Characteristics

- Changes recorded at intervals
- The effects of the changes are recorded
- All changes are recorded on full dump. Only changes are recorded on incremental dumps

Pros

- Faster than periodic full dumps
- Don't need to take volume offline for incremental dumps
- An exact copy is made
- Backup may be performed with high frequency

Cons

- All of the cons of a full dump (but less often)

The Incremental Backup Process

For each backup increment:

1. Examine all files on the source volume, determine which files need to be backed up, and back them up
2. Create a backup index of all files on the volume for use in restoration

Terms:

Backup Increment: A partial snapshot of the volume taken by one run of Backup

Source Volume or Primary Volume: The volume being backed up

Backup Epoch: The point in time after which new and changed files must be backed up incrementally

Backup Index: a list of all files on the volume, including their place in the file hierarchy

Placeholder Entry: An entry in the backup index that serves only to record that a file exists. The file itself is not backed up

Full Entry: An entry in the backup index for a file that was actually backed up. It includes the location of the attributes and content of the file

The Incremental Restore Process

1. Process backup increments in reverse of the order in which they were made
2. Use the index in the most recent increment to determine which files should be restored
3. Use previous increments to get data for placeholder entries in the most recent increment.

Does this file need to be restored?

- Is (created date of file in backup data) > (restore date)? If so, then skip it. If not...
- Does the file already exist on the destination volume? If not, then restore it. If so...
- Is (modified date of file in backup data) > (restore date)? If so, then skip it. If not...
- Is (modified date of existing file) > (restore date)? If so, then restore it. If not...
- Is (modified date of file in backup data) > (modified date of existing file)? If so, then restore it; otherwise skip it.

Notes:

1. If the file ID is found somewhere else on the "same" volume (same volumeID or same name), it is assumed that the file has been moved and it will not be restored.
2. If a file with the same pathname already exists, Restore will try to create the file with a different version. If it fails (because the parent directory has specified uniquely named children), the file is skipped.

Restore Date: We would like to restore the volume as closely as possible to the state it had at this date and time.

Destination Volume: The volume which is being re-created by the restore process

The Delete Obsolete Backup Increments Process

Since all files are backed up at least once in each backup cycle, we can generally delete any increments that are more than one cycle old.

1. Find the date of the most recent increment that completed successfully.

2. Subtract the Backup cycle that was used for that increment; the result is the reference cutoff date.

3. For each earlier increment, going backward in time:
   a. If the increment completed successfully, determine its cutoff date and compare it to the reference cutoff date. If the new date is more recent than the reference cutoff date, change the reference cutoff date to this new date.
   b. Determine whether this increment was created before the reference cutoff date. If it was, then this increment and all earlier increments are obsolete and will be deleted.

Other General Backup/Restore Terms

Backup Medium: The type of storage used for backup data.

Media Instance: A single floppy disk or rigid disk pack

Split Increment: A backup increment consists of one or more split increments, each of which contains a portion of the backup index and data for the files that were backed up in that split increment.

Other General Backup/Restore Terms continued

Backup Parameters: A group of user-specified values that control the operation of Backup

Automatic Backup: A function of the Backup/Restore that allows the user to cause Backup to run at regular intervals without intervention

Backup Frequency: How often automatic backup runs

Backup Volume: The file service volume where the backup data for one backup increment is stored. This term applies only to rigid disk backup.

Backup User/Password: The user name and password used by Backup to log on to the backup volume

Backup Volumes Group: The set of backup volumes to be used for backup of a given source volume

Backup Commands

Backup File System: forces one immediate run of Backup on a given volume, creating one increment

Restore File System: restores a given volume by processing one or more backup increments

Delete Obsolete Backup Increments: deletes all obsolete backup data for a given source volume

Copy Container: copies a given file or entire directory, storing the copy in backup data format.

Restore Container: restores a given file or entire directory, using data from either Backup or Copy Container

Show Backup Index: reads and displays the backup index for one or more increments, or for any floppy disk

Set Backup Parameters: allows user to "set-and-forget" backup parameters, and to initiate automatic backup

Show Backup Parms: displays currently set backup parameters

Backup Commands continued

Stop Backup: allows the user to terminate Backup on a given source volume if it is currently running

Some Common Problems

- Backup volume fills
- Restored volume fills
- Backup never completes normally
- Delete obsolete doesn't delete anything
- What happens when Backup fails
- What happens when Restore fails

Review your File Service manual index and table of contents to find sections on how to correct these conditions. Call the National Product Support Centre if you still encounter difficulties.

AN EASY WAY TO CREATE A HANGING INDENT

The following paragraph has a hanging indent:

As you type, text is entered to the left until it reaches the left margin. It then is entered to the right until the right margin is reached, whereupon it wraps to the tab position on the line below.

The way to do this is as follows:

1. Set a **right flush** tab at the indent position.

2. Begin the paragraph with a paragraph tab and type the text.

Reference Icons

If you are working with certain files constantly and do not want to have to retrieve them from the file drawer every time you need them, read the information below on reference icons. It could save you a lot of time and eliminate the need to store many files directly on your desktop.

Reference icons are merely "pointers" that direct the system to the real data stored in a file drawer. The reference icon does not contain any actual data and therefore does not take up any local disk space.

The main purposes for creating reference icons are:

1. to save time in retrieving documents from a file drawer by eliminating the need to manually open file drawers and folders every time you wish to access a file.

2. to reduce possible data loss in the event of rigid drive hardware failure (since the reference icon only points to a document which is permanently stored on the file service).

3. to eliminate the need to know where and how your documents are filed (the reference icon property sheet displays the exact location of the document or folder if you need to know it).

4. to save disk space on your local desktop (as reference icons do not take up any local disk space).

5. to allow sending of large documents through the mail service (since reference icons are merely "pointing" someone to where the actual document is located, they do not take up any disk space, and are sent much faster. The actual files can then be retrieved via the file service provided the recipient has access to the file drawer).

NOTE: If the file service is offline, you cannot access the information in reference icon or any information in your file drawer.

PROCEDURE

A) To create a reference icon:

1. Store the document or folder in your file drawer (if not stored already).

2. Select the file drawer.

3. Press <OPEN>.

4. Select the document or folder to be referenced.

5. Select [REFERENCE LAST-FILED VERSION] or [REFERENCE SELECTED VERSION] in the file drawer window menu.

   "LAST-FILED VERSION" will access the data icon with the latest version date.

   "SELECTED VERSION" will access the original data icon selected. Once the real data icon has been deleted or moved and then later returned to its original location in the file drawer, the reference is no longer valid.

6. Select a position on your desktop to place the reference icon and click the left mouse button. The reference icon appears on your desktop. It is shaded gray and has the same name as the document.

7. Close the file drawer using [CLOSE ALL].

To trace the path of a reference icon, select it and press <PROPS>. The property sheet will show the file drawer and folder in which the original data icon is stored.

Procedure continued

B) To create a real data icon from a reference icon (on your desktop):

1. Select the reference icon.

NOTE: If you are working with a reference folder icon, each document in the folder is already a "real data icon". You can simply copy the document icon from within the folder to your desktop.

CAUTION: If you delete a data icon from a reference folder, you are also deleting it from the file drawer, provided that you have the appropriate access to do it. This happens because all icons inside a reference folder are the "real" data icons that are in the file drawer -- not copies.

2. Press <OPEN> "Document cannot be opened" message will appear.

3. Select [MAKE LOCAL COPY] in the window menu.

4. Select a position on your desktop to place the "local copy"and click the left mouse button. A "real" copy of the reference icon appears on your desktop.

   The resulting real data icon on your desktop is only a copy of the data icon in the file drawer. Anything done to the document (ie. move, copy, delete) does not affect the data icon in the file drawer.

5. Close the reference icon. You can now select the "real" copy and edit it if you wish.

SUGGESTIONS FOR MAKING WORKSTATION DIAGNOSTIC PROCEDURES 'READER FRIENDLY'

A little bit of customizing in a user's "Workstation Equipment and Installation Reference Manual" may make this important information more accessible and understandable to the user. This article lists some specific places in the documentation where this can be done quickly and easily.

- Encourage the use of post-a-note pads so users can make tabs for the documentation for their ease in accessing information.

- Suggest that standalone and remote users put a post-a-note tab on page 15 of the Floppy Disk Installation. This Appendix 2, 'Setting date and time.' Other tips for setting date and time are:

    - If the user does not work in the Pacific Time Zone, write in the time zone offset for their location.

    - Next to step 3, make note that the Federal Government changed the first day of Daylight Savings Time to 98.

- Encourage remote or standalone users to put their reference and training standalone/remote documentation somewhere in the "Workstation Equipment and Installation Reference Manual" as this is where they will find the information and user desktops and passwords.

All users should pay special attention to these pages behind the tab labeled "Workstation Diagnostics":

- On page 11, 'Performing Rigid Disk Diagnostics', have users put a post-a-note tab so labeled.

- If step 2 reads "Insert the floppy disk labeled '6085 Rigid Diagnostics' in the floppy disk drive", change step 1 to step 2 and vice-versa. Cross out the words.

- Insert a step 3a, "When requested, insert Offline Diagnostics Disk #2."6085 Rigid Disk Diagnostics" and write in "Offline Diagnostics Disk #1."

Suggestions For Making Workstation Diagnostic Procedures 'Reader Friendly' continued

- In step 4, cross out "Respond to the Enter any key command to continue prompt." Insert a step 4a, "When the menu appears, type the number corresponding to 'Rigid Disk Tests'." If the system is a remote or standalone, add a step 4b, "When requested, set time".

- On page 8, 'Performing Boot Diagnostics', make a note that it's not a good idea to use "Rigid disk - F5" to run boot diagnostics. This is because if there is cause to suspect a problem with the rigid, it should not be tested with something that might be broken (i.e., the rigid itself). If users have boot service, they can use F7 to run boot diagnostics, but if not they will have to use "Floppy Disk - F6" (which means the Offline Diagnostics Disk #2 must be inserted in the floppy disk drive).

- Make a note that the users should run the long version of extended boot diagnostics rather than the short version, because the long version is a more complete and reliable test.

- Make a note that users can use the <M> key to move the codes to the bottom of the screen if they are too hard to see at the top.

- Users with Documenters should ensure that the Documenter printer is turned on before starting extended boot diagnostics. Otherwise, a failure code would result simply because the Documenter printer was turned off.

All users should check these pages behind the tab labeled "Recovery Procedures."

- On page 4, next to Table 1-1 ("File check maintenance codes"), put a post-a-note tab with the codes listed on it.

- Next to codes '950' and '7500' where "No action required" is noted, make a special very large note stating: "NEVER INTERRUPT WITHOUT CHECKING WITH THE NATIONAL PRODUCT SUPPORT CENTRE AT THE PHONE NUMBER YOU USUALLY CALL FOR SERVICE."

- Next to codes '7504' and '7511', put a special note with the message "NEVER RUN FILE CHECK WITHOUT RUNNING THE LONG OPTION OF EXTENDED BOOT DIAGNOSTICS AND RIGID DISK DIAGNOSTICS FIRST!"

- Put a post-a-note tab on page 9 for "Installing and using File Check software." Also on page 9, place another prominent note stating: "NEVER RUN FILE CHECK WITHOUT RUNNING THE LONG OPTION OF EXTENDED BOOT DIAGNOSTICS AND RIGID DISK DIAGNOSTICS FIRST!"

Suggestions For Making Workstation Diagnostic Procedures 'Reader Friendly' continued

- Generally, there are three places people have problems when trying to do a file check. These potential problem areas may require additional explanation:
  - Users try to boot the file check software. Next to step one, make a note stating "See page 8,"
  - Users try to run file check without loading it first.
  - Users load file check but do not run it.
- Users of remote or standalone workstations should put a post-a-note tab on page 11 for "Completing a File Check on a Standalone or Remote Workstation." Other suggestions for these users are:
  - In the first paragraph, "On remote or standalone workstations, it is necessary to reinstall the set time utility after the bouncing keyboard displays", the user should cross out the words "the bounding keyboard" and replace them with "7700."
  - A note may be made telling users to "see page 8" next to step one.
  - Users should be aware that they will need their "Standalone [or RemoteCom] Common Software" disk after making the appropriate selection in step 2. Once the disk has been read, the menu will reappear. At that point, users may choose the option to "Start 6085 system" or reboot the workstation from F1. **END**

RECOVERING FROM CRASHES WITH 'XX45' CODE

Users should be aware that when a workstation crashes and displays cycling codes in which '7645', '7745', '7845', or '8045' appear, a problem has been detected when accessing the rigid disk. A user who notices such a crash code should be aware that replacing software will not resolve the problem, and could prove to be harmful. In such a case, the user should take these steps:

1. Make A brief note of what occurred at the workstation just before the crash
2. Write down the entire sequence of cycling codes (from one '9999' to the next '9999')
3. 6085 users should:

    a. run the long version of Extended Boot diagnostics, and make note of the results.
    b. Run a Confidence Test and make note of the results (this test is available from the 'Rigid Disk Tests' selection of the offline Diagnostics main menu)

The rational for running both of the above tests was explained in the previous Password issue. Suggestion for making workstation diagnostic procedures 'Reader Friendly', are elsewhere in this issue .

    c. Run a Scan for New Bad Pages, with 5 passes (this test is available from the 'Formatter, Scavenger, and Bad Page Utility' Selection of the Offline Diagnostics main menu, and is a selection in the 'Bad Page Utilities' submenu)

4. 8010 users should:
    a. run ALAG diagnostics and make note of the results.
    b. At the conclusion of ALAG diagnostics, the user should type the command 'Logon'. At the prompts, the user should supply the name 'Xerox' and the password 'CIXCOS'. This grants the user access to System Analyst commands.

       The command 'Media Scan' should be entered. At the prompts, the user should specify a pass count of '5' and a retry count of '2'. This test checks the rigid disk for the presence of bad pages, and serves to confirm the results of "ALAG" diagnostics. At the conclusion of the Media Scan, do not reboot the workstation.

5. Call the Network Workstation team of the National Product Support Centre at the usual phone number to report the situation, and the results of the diagnostics.

At that point, additional diagnostic procedures may be run to provide additional information about the problem. Based on the consistency of the information obtained from the diagnostics, and the background information obtained from the user, steps will be taken to resolve the problem. **END**

BACKGROUND INFORMATION ON SCAVENGERS AND SCAVENGING

ViewPoint runs under a sophisticated file structure that allows dynamic allocation and demand paging. These are operations that are necessary for the creation and maintenance of large files. Files that are normally written to your workstation hard disk are not sequential. That is to say they are not written on the disk like songs on a cassette tape. Parts of one document may be stored in scattered locations on the hard disk. This allows users to do things with these documents that cannot be done with MS-DOS or PS/2.

Sometimes the system, while doing 30 or 40 things at one time (thought it may appear to the user that nothing is happening), will forget where it stored a part of a file of the disk. When this happens, the file system is labeled inconsistent. The only way to fix an inconsistent file system is for a program to inspect every file on the disk and trace it's relative parts. This is called a **scavenge**.

As a scavenger works, it, like most programs, keeps a log of what has been done with various files and portions of files. Of course a scavenger is a highly disk-intensive program and does this much more than regular programs. For this reason they must be highly reliable programs. A scavenger performs the most sophisticated operations on the disk, for this reason one should avoid interrupting a file check. Even though a scavenger can scavenge the mess an interrupted scavenger makes, it's not something one wants to see happen.

The Mesa environment upon which ViewPoint is built supports several different Scavenger programs. The two things that ViewPoint users should be familiar with are the Pilot Scavenger (950) and the File Check. The Pilot Scavenger will run automatically whenever it is needed. It is a small program and is part of the normal system. The File Check or BWS Scavenger is larger and more complicated and must be loaded onto the system and run manually.

Whenever you see an MP code of 0950, that means that the Pilot Scavenger is running. All MP Codes that begin 75XX have something to do with the File Check. The File Check runs on MP code 7500. Whenever you see MP Code 7511 this means you must run a File Check. Remember that if you start File Check and have not successfully completed diagnostics first to ensure stable hardware, you are risking data loss.

Rules of Scavenging

RULE #1 EVERY USER SHOULD UNDERSTAND THESES PROCEDURES.
RULE #2 AVOID STOPPING ANY FILE SCAVENGE.
END