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* CORVUS SYSTEMS

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SYSTEM MANAGER'S
GUIDE

Apple III

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SYSTEM MANAGER'S
GUIDE

Apple III

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**GETTING
STARTED**

Constellation II software is designed to manage mass storage for an Omninet (TM) local area network. This guide shows the system manager how to maintain and supervise the network using Constellation II software with the Apple (R) III computer. An Apple III with at least 256 kilobytes of memory is required to run the Constellation II software.

HOW THIS GUIDE IS ORGANIZED

Chapter 1 summarizes system management and the Constellation II software. The chapter describes the features of Constellation II and how to plan the network.

Chapter 2 includes a practice session to familiarize users with Constellation II. Those using the software for the first time should go through the sample session to learn the basic functions.

Chapter 3 describes drive management, the utility that creates users, volumes, and grant access to volumes. The chapter also explains the drive management error message.

Chapter 4 explains the first of the system manager's three main tasks: starting user accounts for the people who will use the network.

Chapter 5 describes the second of the system manager's main tasks: how to create volumes, which are storage spaces on the system, for users.

Chapter 6 describes the last of the system manager's main tasks: how to give users access to volumes. Access allows users to either read data from the volume or read information and write it to the volume.

Chapter 7 describes how to create and initialize the PIPES volume, the message center for the network. It also describes printing files and maintaining pipes.

USAGE

Throughout this guide, *type* means to enter two or more characters or keyboard symbols on the computer keyboard. Type all words, symbols, spaces and punctuation to the right of *type* exactly as shown. Do not add or leave out punctuation marks at the end of the statement.

Examples:

Type COPY B:*.DOC

Type DIR C:

Throughout this guide, *press* means to enter a single character or symbol on the computer keyboard. When a keytop symbol appears, press the key to which it refers. Do not type out each letter of the word in the keytop symbol.

Examples:

Press Y

Press [RETURN]

When the command *type* or *press* appears in a sentence or paragraph, enter the information indicated.

Example:

Type the user name and password and press [RETURN].

OVERVIEW OF SYSTEM MANAGEMENT	1
----------------------------------	---

The system manager's job is to plan the system, keep the system running smoothly and make sure the system resources are not wasted or misused. The system manager is also responsible for data backup and restoration.

Constellation II software is integral to the system manager's job. Constellation II manages a mass storage system for one or more computers on an Omninet local area network. This chapter discusses planning a system and presents an overview of Constellation II.

PLANNING THE SYSTEM

The system manager is responsible for planning the system--the combination of hardware and software that comprises an Omninet network. The *OmniDrive Setup Instructions* describes the hardware: the trunk cable, computer stations and mass storage system that make up the physical network. This manual explains the software.

The system manager first should determine the needs of the users that will share the network and establish user accounts. User accounts consist of a name, a password and a list of volumes accessible to that user.

Each user will need some amount of space, divided into volumes, on a mass storage system on the network. The allocation of space should be determined before the volumes are created; otherwise, all the space could be allocated before providing for all the users.

Next decide which users will have access to which volumes. Individual users can have their own volumes or share public volumes with others. Two users cannot write to the same volume at the same time without damaging data on the drive.

Generally, each user on the network has a private account consisting of volumes available only to him. Public accounts are accessible by all users and consist of volumes containing programs or other information needed by everyone on the network.

All of these points should be considered before plunging into the Constellation II software. A little time spent planning can make the system manager's job much easier.

CONSTELLATION II

Constellation II is the software package that allows multiple computers to share resources on a Corvus Omninet network. User accounts control access to volumes on the network. The pipes area, a special volume, allows users to print files or exchange them with other users. Some details of these features and how to use the Constellation II software are outlined below.

USER ACCOUNTS

Users are the people who use the computer or computer network. Users who will share the resources of the network disk system need user accounts, which identify them to the system. Once a user has an account name, password and a list of volumes accessible, he can use the system without interfering with the work of others.

The scope of the account is determined by the system manager when he creates it. For each account, the list of volumes could contain one volume, several volumes or all the volumes on the disk system. Access is specified as none, read-only or read-write (i.e. full access).

Accounts can be public or private. A public account is simply an account name known by many people. Private account users are responsible for the privacy and security of their volumes and data. Keeping the account password confidential secure is the key to security. The system manager's password and the drive password are especially important, because they control access to the entire network.

VOLUMES

The space for storing information on the network disk system is divided into volumes. Volumes are like floppy diskettes: both store data or text. But the storage area of a diskette is fixed in size, while volumes can be created in a variety of sizes.

Different operating systems require different types of volumes. Different computer types using the same operating system may be able to share the same volume. Computers that use more than one operating system may need different volumes for each operating system.

PIPES

If a network consists of more than one computer, consider creating a volume called PIPES. PIPES, or the pipes area, is a special volume that allows users to send information to other users or to shared printers. Only one PIPES volume is required, even if a network consists of several computer types and operating system.

The PIPES volume is used as a method of transmitting files across the network. It is used as a queuing area for files that are to be printed, and as a means of transferring files from one user to another.

When a PIPES volume exists, each user can send files to a specific printer on the network. A pipe is used to transmit that file, and by specifying a particular pipe name the file can be directed to the appropriate printer. Each computer no longer needs to have a printer attached, therefore a single letter quality, laser, or line printer can be shared by everyone.

If a pipe name is specified that does not correspond to one of the network printers, another user on the network can retrieve the file. This method of spooling and despooling to a pipe allows users to exchange files, even if they are using different computers or different operating systems.

ACCESS

The system manager creates user accounts as needed and gives users access to volumes. The manager decides what volumes are accessible to a user. Volumes that are accessible by many users are public volumes. Volumes accessible only by a single user are private volumes.

The system manager can let a user write to a volume (read-write access) or restrict the user to reading only the contents of a volume (read-only access). Usually, public volumes are read-only volumes, while private volumes are read-write. If two users have read-write access to the same volume, both must make sure not to write to it at the same time.

Accessible volumes are either active or inactive. A volume is active once it's mounted, that is, assigned to a unit. An inactive volume is unmounted, that is, no longer assigned to a unit. Users can only use mounted volumes but have the option of mounting inactive volumes with the Corvus mount manager program.

ENTERING CONSTELLATION II

To enter the Constellation II program, boot the Apple III with the system manager's diskette, A3SMGR, and log on with the system manager's name, A3MGR, and password, HAI (Japanese for "yes").

Do not let anyone learn the password. Use the password above when starting to use Constellation II, but consider giving A3MGR a different password later.

Once the system manager logs on, the screen will display the Constellation II main menu:

Corvus Management Utility DS
Version [x.xx] Drive
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

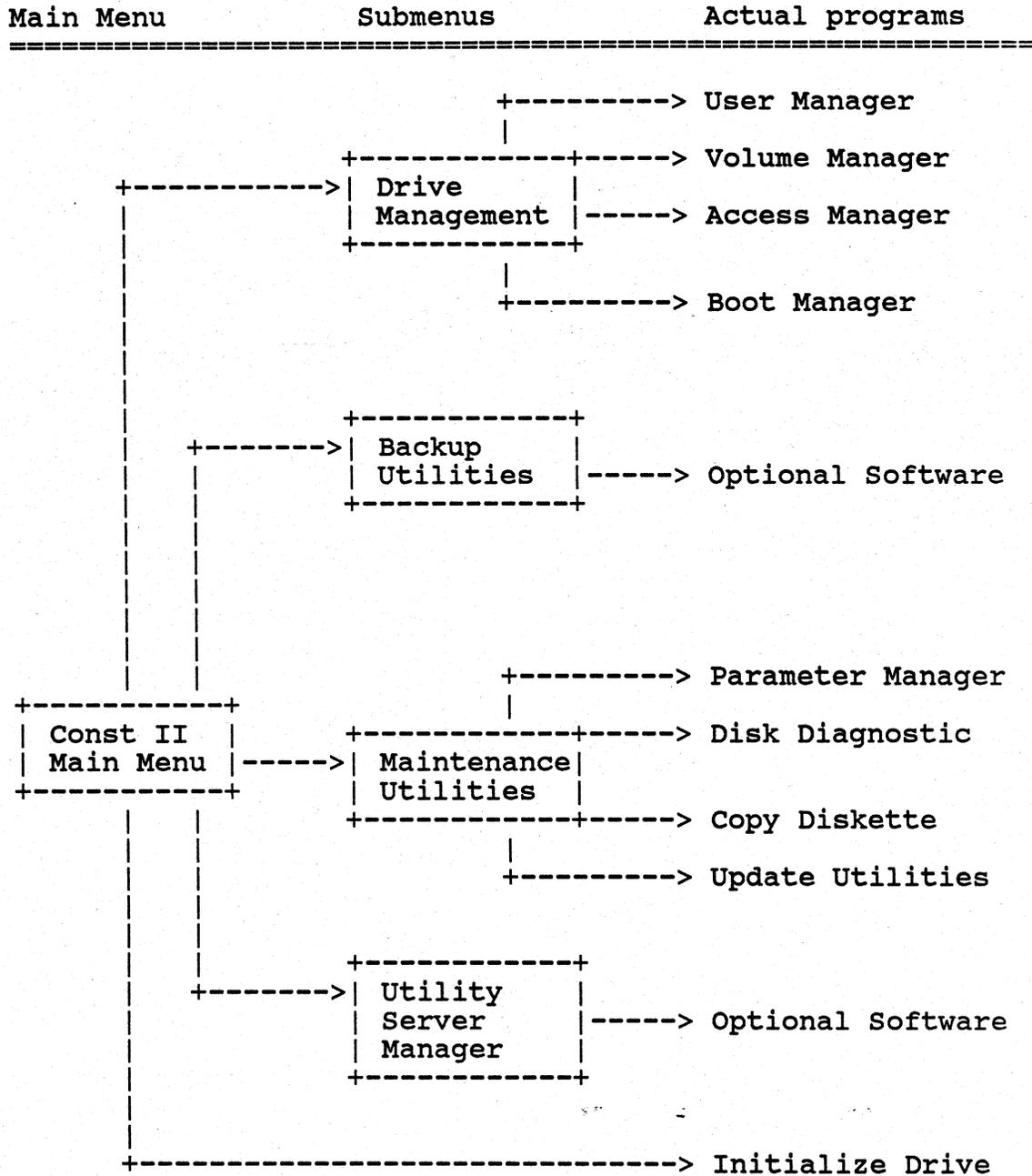
- D - Drive Management
- B - Backup Utilities
- M - Maintenance Utilities

- I - Initialize/Modify Drive
- L - List Drives
- H - Help

Please select an option:

MENU OVERVIEWS

The main menu leads to all of the Constellation II utility programs. After choosing a menu option, press the letter corresponding to that option. The diagram below shows the hierarchy of Constellation II menus and programs.



The utilities surrounded by boxes lead to programs that perform system functions.

This chapter shows in a sample session how to create a volume, create a user, grant a user access to volumes, and log on as a user.

Creating volumes and user accounts is the third step, following installation and system generation, in building a working network. First create a volume, MARKET. Then create a user account name, STEVEN, and a password, SELL. Finally, give STEVEN access to the volume MARKET and one other volume. Once finished, reboot the system and log on as STEVEN. Follow the same steps to create all the planned user accounts and volumes for the network.

Begin by inserting the system manager's diskette, A3SMGR, in the internal diskette drive, and turn on the Apple III. After a moment, the screen displays:

```
-----  
*  
*   C O R V U S   S Y S T E M S  
*  
*           C O N S T E L L A T I O N   I I  
*   *  
-----
```

PLEASE ENTER YOUR NAME:

Enter the system manager's name, A3MGR, and password, HAI, as requested. Press [RETURN] after typing each entry. After a few moments, the screen displays the Constellation II main menu:

Corvus Management Utility DS
Version [x.xx] Drive
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

D - Drive Management
B - Backup Utilities
M - Maintenance Utilities

I - Initialize/Modify Drive
L - List drives
H - Help

Please select an option:

Press D to select drive management, which includes all the other options needed to create volumes and user accounts. After drive management is selected, the screen displays:

Corvus Utility [x.xx] DS
Drive Management Drive
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

U - User/Device Manager
V - Volume Manager
A - Access Manager

B - Boot Manager

S - Select Drive
L - List Drives
E - Exit

Please select an option:

Go to the next section to create a volume.

CREATING A VOLUME

Follow the steps in this section to create a volume called MARKET. Creating this volume is just practice -- you do not need to keep it on the disk system permanently. After completing the sample session, see Chapter 5, "Volume Manager," to learn how to remove it.

1. **Select the volume manager.**

From the drive manager main menu,

Press V

2. **Enter the server and drive names and passwords.**

The program prompts for the server and drive names and passwords. These names and passwords should be kept confidential.

Type the names that were entered when the system was generated.

After the correct names and passwords are typed in, the screen displays the volume management menu:

```
Volume Manager [x.xx]      DS SERVER
Main Menu                  Drive DRIVE1
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.
```

```
A - Add a volume
R - Remove a volume
C - Change volume attributes
L - List volumes
X - Extended list
F - Free space list
```

```
H - Help
E - Exit
```

Enter VOLMGR function:

3. Select add a volume.

Press A

The screen displays:

Enter attributes of new volume:

Name:

4. Enter the volume name.

Type MARKET

Press [RETURN]

5. Choose the volume type.

The program automatically suggests SOS. Accept the suggested type.

Press [RETURN]

6. Choose the volume size.

The program asks for the size of the volume and automatically suggests 1024. Accept the suggested size.

Press [RETURN]

7. Choose the volume's starting location.

The program automatically suggests a location. Accept the suggested location.

Press [RETURN]

The screen display is similar to:

Enter attributes of new volume:

 Name: MARKET
 Volume type: SOS
 Size (blocks): 1024
 Location: 7376

Do you want to initialize the volume (Y/N)? [Y]

8. Initialize
the volume.

Press [RETURN]

The screen displays:

Header written.
Directory zeroed.
Volume added.
Access added for user 1.

Press <SPACE> to continue, or
Press A to add another volume.

Press [SPACE]

The screen displays the volume management menu.

Volume MARKET is now part of the system, but before the volume can be used, it must be formatted for the Apple SOS operating system. Follow the same steps to create all volumes planned. See Chapter 5, "Volume Manager," for details.

9. Return to the drive management menu.

Press E

The screen displays the drive management menu.

CREATING A USER

Follow the steps in this section to create a user named STEVEN with password SELL. Creating this user is just practice -- you do not need to keep him as a network user permanently. After completing the sample session, see Chapter 4, "User Manager," to learn how to remove him.

1. From the drive management menu, select user and device manager.

Press U

The screen displays the user manager menu:

```
-----  
User Manager [x.xx]      DS SERVER  
Main Menu                Drive DRIVE1  
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.  
-----
```

```
A - Add a user/device  
R - Remove a user/device  
C - Change user attributes  
L - List users/devices
```

```
M - Merge User Tables
```

```
H - Help  
E - Exit
```

```
-----  
Enter USERMGR function:  
-----
```

2. **Select add a user or device.**

Press A

The screen displays:

```
-----  
User Manager [x.xx]      DS SERVER  
Add a User/Device      Drive DRIVE1  
-----
```

```
U - User addition  
D - Device addition
```

```
E - Exit  
-----
```

Please select an option:

3. **Select user addition.**

Press U

The screen displays:

```
-----  
Please enter attributes of new user:
```

```
      Name:  
-----
```

4. **Enter the user name.**

Type STEVEN

Press [RETURN]

5. Enter STEVEN's password.

Type SELL

Press [RETURN]

6. Enter STEVEN's home disk server.

Type the server name entered during system generation and press [RETURN].

7. Enter STEVEN's boot operating system.

The program automatically suggests A3SOS. Accept the suggested type.

Press [RETURN]

The screen displays:

Please enter attributes of new user:

Name: STEVEN
Password: SELL
Name of home disk server: SERVER
Boot operating system: A3SOS

OK to add user (Y/N)? [Y]

8. Add user STEVEN.

Press [RETURN]

If the network has more than one server, the screen may display:

Update other servers, too? [Y/N] [Y]

Update all servers by accepting the suggested responses.

If not using more than one server, the screen displays:

User added.

Press <SPACE> to continue, or
Press A to add another user or device.

Press [SPACE]

The screen displays the user manager menu.

STEVEN is now a network user. Follow the same steps to create all planned users. See Chapter 4, "User Manager," for details.

9. Return to the drive management menu.

Press E

The screen displays the drive management menu.

GRANTING A USER ACCESS

Follow the steps in this section to grant user STEVEN access to a private volume and the public volume to which all Apple SOS users must have access. If you remove the user STEVEN after this sample session, his access will be erased automatically.

All Apple III network users will share the public volume A3UTIL. During system generation two utility programs -- spool and despool -- were copied to the volume A3UTIL. These programs allow the user to send files to a printer and another user on the network. (For more information on these programs see Chapter 7, PIPES, and the *Apple III Network Station User Guide*.) MARKET is STEVEN'S private volume. Grant access to both volumes so STEVEN can use them.

1. From the drive management menu, select access manager.

Press A

The screen displays:

```
-----  
Access Manager [x.xx]      User  
Main Menu                 DS SERVER  
                           Drive DRIVE1  
-----
```

Enter user name:

2. Enter the user name.

Type STEVEN

Press [RETURN]

The screen displays the access manager menu:

Access Manager [x.xx] User STEVEN
Main Menu DS SERVER
 Drive DRIVE1
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

- G - Grant volume access
- R - Remove volume access
- C - Change volume access

- L - List volumes accessible

- N - Next user
- H - Help
- E - Exit

Please select an option:

3. Select grant
volume access.

Press G

The screen displays:

Please enter:

Volume name:

4. Enter the
volume name.

Type A3UTIL

Press [RETURN]

5. **Select the type of access.**

The computer asks whether STEVEN should have read-write (RW) or read-only (RO) access to A3UTIL and suggests read-only. A3UTIL should always be read-only. Accept the suggested access.

Press [RETURN]

6. **Mount A3UTIL to make it active.**

Press [RETURN]

The screen displays:

```
Mount unit: [10]
Select from:
  1 thru 06, *
```

Press 1

Press [RETURN]

The screen displays:

Please enter:

```
Volume name: A3UTIL
Access (RO/RW): RO
Mount status (M/U): MOUNTED
Mount unit: 1
```

OK to grant volume access (Y/N)?Y

7. Grant STEVEN access to A3UTIL.

Press [RETURN]

STEVEN now has access to the volume. The screen displays:

Press <SPACE> to continue, or
Press G to grant another volume...

8. Continue granting access to the other volumes.

Press G and follow "Granting Access" steps 4 through 7 above to give STEVEN RW access to MARKET. In step 4, select read-write access by typing RW and pressing [RETURN]. Mount MARKET on any of the remaining units. In this sample session A3UTIL was mounted on unit 1, however A3UTIL can be mounted on any available unit.

After finishing step 7, the screen will display:

Press <SPACE> to continue, or
Press G to grant another volume...

Press [SPACE]

STEVEN now has access to volumes A3UTIL, and MARKET. Follow the steps above to grant other users volume access. See Chapter 6, "Access Manager," for details.

9. Return to the Constellation II main menu.

Press E twice.

LOGGING ON AS A USER

1. **Reboot
the computer.**

Put the Corvus boot diskette in the internal floppy drive. If you do not have a Corvus boot diskette go to Chapter 4 of the *Apple III System Generation Guide* and make one.

Hold down [CTRL] and press [RESET].

After a minute, the Constellation II log-on appears:

```
-----
*
*   C O R V U S   S Y S T E M S
*
*           C O N S T E L L A T I O N   I I
*
*   *
```

PLEASE ENTER YOUR NAME:

2. **Log on as STEVEN
with password SELL.**

The screen should display the Pascal command line. The user STEVEN now has RO access to A3UTIL. Steven also has RW access to MARKET, but before the volume can be used it must be formatted for the Apple SOS operating system. To format a volume see the format a volume command in the *Apple III Owner's Guide*.

Repeat the steps in this chapter to create all planned volumes and users. Chapters 3 through 6 explain how to manage the network and detail the functions of the user manager, volume manager and access manager.

Remember to remove the volume MARKET and user STEVEN if you are finished with the sample session.

DRIVE MANAGEMENT	3
-----------------------------	----------

The user manager, volume manager and access manager programs detailed in Chapters 4 through 6 are all part of the drive management program. First select drive management, then select the appropriate manager program to create or change a user, volume or access.

If an error message appears after selecting the drive management program, see this chapter's section, "Drive Management Error."

ENTERING THE DRIVE MANAGEMENT PROGRAM

Whenever entering the drive management program and selecting user and device manager, volume manager or access manager for the first time, the computer will ask for the server name, drive name and drive password.

After selecting one of the drive management programs, type the server name, drive name and drive password.

Type the names entered during system generation. It is not necessary to re-enter the names and password after exiting one of the manager programs and going to another.

Once the drive and server names and passwords are typed in, the screen will display the chosen management menu.

After using the manager programs, be sure to exit Constellation II completely before rebooting or turning off the computer.

DRIVE MANAGEMENT ERROR

If two computers write to the drive management tables at the same time, everything on the mass storage system could be lost. Corvus provides a locking method, called semaphores, to prevent two people from writing simultaneously to the drive management tables.

Semaphores are a signal to prevent more than one person from using the drive management program at one time. The set semaphore is listed in the semaphore table. The program clears the semaphore once the user exits the drive management program.

A power failure or rebooting while still in the drive management program causes the system manager to exit the program with the semaphore still set. The semaphore will lock out the system manager if he tries to re-enter the program after a power failure or rebooting.

When the system manager tries to re-enter the program with the semaphore still set, the screen will display the following error message:

```
-----  
Constellation Error -107  
Corvus Utility already in use on selected drive  
Type <SPACE> to continue...  
-----
```

Be sure no one else is using the drive management program. To enter the drive management program, clear the semaphore by following the steps below.

1. **Return to the Constellation II main menu.**

Either exit the current management program or reboot and log on as the system manager.

2. **Enter the maintenance option.**

Press M

3. Select the parameter manager.

Press P

4. Select the set and display semaphore parameters option.

Press S

5. Select unlock semaphore.

Press U

6. Type the semaphore name.

Type CRVSEMA4

Press [RETURN]

7. Confirm that the semaphore is unlocked.

Press S to display the semaphore table to confirm the semaphore is no longer listed and thus is unlocked.

The drive management program is ready for use.

8. Return to the drive management main menu.

Press E twice.

This page intentionally left blank.

The user manager program adds or removes users, changes a user's attributes and lists users.

Type in the drive name, server name and passwords whenever entering the drive management program for the first time and selecting the user and device manager. See Chapter 3, "Drive Management."

From the drive management main menu, press U for user and device manager. The screen displays:

```
-----
User Manager [x.xx]      DS Server
Main Menu                DRIVE Drivel
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.
-----
```

```

A - Add a User/Device
R - Remove a User/Device
C - Change User Attributes
L - List Users/Devices

```

```

M - Merge User Tables

```

```

H - Help
E - Exit
-----
```

Enter USERMGR function:

```
-----
```

ADDING USERS

Press A for add a user and device option.

The screen displays:

```
-----  
User Manager [x.xx]      DS Server  
Add a User/Device      DRIVE Drive1  
-----
```

```
U - User addition  
D - Device addition
```

```
E - Exit  
-----
```

Please select an option:

```
-----
```

The device option is used to add system devices dedicated to a single task, such as a utility server.

Press U for user addition and type the user name and password, home disk server and operating system.

The user name can be up to 10 characters and must begin with a letter. The rest of the name may be letters, numbers or any of the characters: `_ - . # $ ' () ^`. No spaces are allowed between any of the characters. The system will capitalize letters in the name.

The user password can be up to eight characters. The same characters listed above may be used in a password.

The name of the home disk server is the name of the server attached to the drive containing the Apple III system volume A3UTIL.

Constellation II allows creating users for other operating systems besides Apple SOS. Use this guide only to create Apple SOS users.

Whenever adding users or devices on a network with more than one mass storage system, update all servers. The program automatically checks for the server names; accept the suggested responses until all servers are updated. Make sure that all the mass storage systems are turned on before trying to update them.

LISTING USERS

The list users and devices option is a reference of user names and passwords. From the user manager menu, press L to list users alphabetically.

The screen display is similar to:

```
-----
User Manager [x.xx]      DS Server
List Users/Devices      DRIVE Drivel
-----
      User Name  Password Home DS  Boot Type
1.  A3MGR       HAI         SERVER  A3SOS
2.  A3USER      SERVER      A3SOS
3.  STEVEN     SELL        SERVER  A3SOS

3 Users Listed.
```

The device list is similar to:

```
-----
User Manager [x.xx]      DS Server
List Users/Devices      DRIVE Drivel
-----
      Dev Name   Type
1.  SERVER     DISK SERVER

1 Device Listed.
```

```
-----
Press <SPACE> to continue, or
Press F to list to a file.
-----
```

After adding all users, list them to a file to have a record of all user names and passwords for future reference. Make sure the listing has the date on it as well. The listing is valuable in case the system ever needs rebuilding.

At the end of the device listing, the screen displays:

Press <space> to continue, or
press F to list to a file.

After pressing F, name a volume to which the system manager has access. The program will create a text file in the specified volume. Print the listing to have a paper copy of the information for your files. Update the listing whenever changes are made.

CHANGING USER ATTRIBUTES

The change user attributes option is used most frequently to change passwords if a user suspects others know it.

The boot operating system can be changed, but there is no reason to do so. Do not change the operating system assigned to any user whose name ends in MGR. Otherwise, the system could lose all management capabilities and would require regeneration.

The user name cannot be changed with the user manager. To change a user's name, create a new user with all attributes, except the name, the same as the present user, then remove the old user name.

REMOVING USERS

When users no longer need network access, remove the user and any volumes not needed by any other users still on the network. To remove a user, from the user manager main menu, press R for the remove a user or device

option. Type the name of the user to be removed and confirm the removal.

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The volume manager adds or removes a volume, changes its attributes and lists all the volumes on the mass storage system.

To use the volume manager, enter the Constellation II main menu and select the drive management option. Type in the drive name, server name and passwords whenever entering the drive management program for the first time and selecting the volume manager. See Chapter 3, "Drive Management."

From the drive management option, press V for volume manager. The screen displays:

```
-----  
Volume Manager [x.xx]                DS Server  
Main Menu                            DRIVE Drivel  
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.  
-----
```

```
A - Add a volume  
R - Remove a volume  
C - Change volume attributes  
L - List volumes  
X - Extended list  
F - Free space list
```

```
H - Help  
E - Exit
```

```
-----  
Enter VOLMGR function:  
-----
```

ADDING VOLUMES

To add a volume, press A for the add volume option. Some options suggest a value; accept the suggested value or change it by entering a new value.

The computer asks for the volume name, size, location and type. Then it asks if it should initialize the new volume.

VOLUME NAME

The volume name may be up to 10 characters and must begin with a letter. The rest of the name may be letters, digits or the characters `_ - . # $ ' () ^`. No spaces are allowed between any of the characters. The system will capitalize letters in the volume name.

VOLUME SIZE

Specify the size of the volume in blocks. One block holds 512 bytes of information. The program automatically suggests 1024 blocks, about half a megabyte. That size is large enough for most tasks. Accept it by pressing [RETURN]. Choose a different size by typing that size instead. The maximum size of an Apple SOS volume is 32767 blocks, just under 16 megabytes.

VOLUME LOCATION

The volume's address, or location, on the mass storage system is specified by block number. The program automatically suggests the address of a free area for the volume. The suggested volume location is the starting block address of the system's largest free space. Accept it by pressing [RETURN]. To locate the volume at a different address, type that address instead.

See the section "Listing Volumes" in this chapter to get a list of all the volumes and free areas on the mass storage system.

VOLUME TYPE

The volume type is a format designation to make the volume compatible with an operating system. Different operating systems need different volume types. The screen suggests several operating system formats for a volume. Use this manual to create SOS type volumes for the Apple III computer.

VOLUME INITIALIZATION

New volumes must be initialized and formatted for use with Constellation II. The first step is to write the volume header; writing the header enables Constellation II to recognize a SOS volume. The second step is to format the volume. Formatting makes a volume ready to accept information and sets up a directory that is compatible with the Apple SOS operating system.

The system manager can write the header from Constellation II, but cannot format the volume. In order to format a volume for Apple SOS, the network user must use the Apple SOS format option. The network user is instructed to do this in the *Apple III Network Station User Guide*. For more information on formatting volumes, see the *Apple III Owner's Guide* supplied by Apple.

LISTING VOLUMES AND FREE SPACE

The list volumes option shows each volume's name, starting address, length in blocks, access and type. An X in the RW column denotes read-write access; a blank denotes read-only access.

The example below shows only UCSD and Apple SOS volumes, but all volumes on the mass storage system will be displayed.

The screen will show the system's total number of free blocks, the total free areas with their sizes and locations, and the largest single area of free space. The screen also will show the total number of volumes, the total allocated blocks and the largest volume on the drive.

From the volume manager main menu, press L to list the volumes on the mass storage system.

The screen display is similar to:

```
-----
Volume Manager [x.xx]          DS Server
List Volumes                   DRIVE Drivel
-----
```

Volume	Address	Length	RW	Type
1. CORVUS	9	300	x	UCSD
2. A3SYS	309	1024	x	UCSD
3. A3UTIL	1333	1024	x	UCSD
4. APPLE3	2357	3000	x	SOS
5. MARKET	5357	1024	x	SOS
<UNUSED>	6381	5763		

```

Total free blocks on drive: 5763
Total free areas on drive: 1
Largest free space (blocks): 5763

```

```

Total volumes on drive: 5
Total blocks allocated on drive: 6372
Largest volume size (blocks): 3000

```

```
-----
Press <SPACE> to continue, or
Press F to list to a file.
-----
```

The extended list option shows other volume attributes for a particular volume type. For SOS volumes it shows volume name and size. To use the extended list option press X from the volume manager main menu. When the screen prompts for the volume type, enter SOS.

The free space list option shows only the free space on the system and its location.

From the volume manager main menu, press F to list the free space on the mass storage system.

The screen display is similar to:

```

-----
Volume Manager [x.xx]    DS Server
Free Space              DRIVE Drive1
-----

```

```

      Volume      Address Length  RW Type
      <UNUSED>    6381    5763
      Total free blocks on drive:    5763
      Total free areas on drive:      1
      Largest free space (blocks):    5763

```

After adding all volumes, list them to a file to have a record of all volumes and their addresses for future reference. Make sure the listing has the date on it as well. The listing is valuable in case the system ever needs rebuilding.

At the end of each listing, the screen displays:

```

-----
Press <space> to continue, or
press F to list to a file.
-----

```

After pressing F, name a volume to which the system manager has access. The program will create a text file in the specified volume. Print the listing to have a paper copy of the information for your files. Update the listing whenever changes are made.

CHANGING VOLUME ATTRIBUTES

Only a volume's name and access can be changed. Changing a volume's size, location or type requires removing the volume, then re-creating it with the desired attributes. To keep the current contents of the

volume, it is necessary to copy the files onto diskettes. After re-creating the volume, transfer the old files back into it.

To change a volume's name or access, press C for the change volume option. The screen will display the volume's size and location, which cannot be changed. The current access -- read-only, read-write or not accessible -- will appear automatically on the screen. Accept the current access by pressing [RETURN] or change it by typing in a new access.

The volume manager designates volumes as read-write when creating them. Use the change volume option to reset the access to read-only or not accessible.

Volumes designated read-only cannot be written to by any user, even if read-write access has been granted to that user.

Volumes designated not accessible cannot be mounted by any user.

REMOVING VOLUMES

Remove a volume when a user is deleted from the system and no one else needs the volume, or to change certain volume attributes.

Removing a volume erases access to all the files within it. Do not remove the volumes CORVUS, A3SYS or A3UTIL. Those volumes must remain on the system because they contain the files used to manage all users and volumes, the system files and the boot information.

From the volume manager, select the remove a volume option. Type the name of the volume to be removed and confirm the volume's removal. The volume manager removes the volume and all users' access to that volume.

ACCESS MANAGER	6
-------------------	---

The access manager program grants a user access to volumes. The program also removes access from a volume, changes access or lists volume access. Use the program to prevent unauthorized users from entering a particular volume and to mount volumes automatically for a user.

Access is *read-only*, meaning the user can only read data from a volume, or *read-write*, meaning the user can both read data from and write data to a volume.

Two users cannot write to the same volume at the same time without destroying information on the drive. If two users have read-write access to the same volume, both must make sure to write at different times.

To use the access manager, enter the Constellation II main menu and select the drive management option. Whenever entering the drive management program for the first time and selecting access manager, type your drive name, server name and passwords. See Chapter 3, "Drive Management."

To use the program, press A from the drive management menu. The screen displays:

```
-----
Access Manager [x.xx]      USER
Main Menu                  DS Server
                             DRIVE Drivel
-----
```

Enter user name:

Then type the name of the user to be managed and press [RETURN]. The screen display is similar to:

Access Manager [x.xx] USER Steven
Main Menu DS Server
 DRIVE Drivel
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

G - Grant volume access
R - Remove volume access
C - Change volume access

L - List volumes accessible

N - Next user
H - Help
E - Exit

Please select an option:

GRANTING VOLUME ACCESS

Press G to select the grant volume access option.

The screen will ask for the volume name, the type of access the user will have and the volume's mount status. If the volume will be mounted, the screen also will ask for the volume's mount unit.

VOLUME NAME

Decide which volume to grant the user. Although uncommon, the system manager could grant a user access to all the volumes in the system.

Type the volume name that the user will have access to and press [RETURN].

ACCESS

Type whatever access the user will have, either RO for read-only or RW for read-write.

It's possible to restrict volume access to a single user by giving only that user read-write access to the volume. Giving only one user access to a volume makes it private and protects the information from changes by other system users.

If the access manager and volume manager do not agree on a volume's access, the most restrictive access takes precedence. For example, if the access manager grants read-write access to a volume but the volume manager makes the volume read-only, the user will have read-only access.

MOUNTED OR UNMOUNTED

The system manager determines when setting up the user account which of the user's accessible volumes will be mounted when he boots. Up to six volumes can be mounted at one time. Note that all Apple SOS users must have A3UTIL mounted. A3UTIL contains two utility programs -- spool and despool -- that were copied over during system generation. These programs allow a user to send files to a printer and to other users on the network. (For more information about these programs see the *Apple III Network Station User Guide*.)

If a user has access to a volume that is inactive when he boots, the user can mount the volume temporarily with the Corvus mount manager program.

Press M to mount the volume or press U to leave it unmounted. Selecting unmounted finishes the process of granting volume access.

UNIT

Mounting a volume for a user requires assigning it a unit number. Unit numbers identify volumes to the operating system. After mounting each volume, the program asks what unit to assign it. Mount the volume on an available

unit. Valid unit numbers are 1 through 6. To select a unit, press the number and press [RETURN].

Mount only one volume on a unit. Attempts to mount more than one volume per unit will mount only the first volume that the program finds with that unit assignment.

LISTING VOLUME ACCESS

Press L to see a list of the volumes a user has access to, their mount units, access type and operating system.

The screen display is similar to:

```
-----
Access Manager [x.xx]          USER Steven
List Volumes                  DS Server
                               DRIVE Drivel
```

```
-----
Volume      Unit   RW   Type
1. A3UTIL   1
2. MARKET  2     X   SOS
```

```
-----
Press <SPACE> to continue, or
Press F to list to a file.
```

CHANGING VOLUME ACCESS

Press C for the change volume access option that changes the type of access a user has to a volume. It's possible to change the access, mount status and mount unit.

Type the volume name and press [RETURN].

The screen automatically suggests the volume's current access. To keep it, press [RETURN]. Otherwise, type RO for read-only or RW for read-write and press [RETURN].

Next the screen automatically suggests the volume's current mount status. To keep the current status, press [RETURN]. Otherwise, press M for mounted or U for unmounted and press [RETURN].

If the volume is unmounted, the process is finished.

If the volume is mounted, the screen automatically suggests the current mount unit. To keep the current unit, press [RETURN]. Otherwise, press a number, 1 through 6, and then press [RETURN].

Changes made while the user is on the system take effect only after the user reboots or uses the mount manager program to access the changed volume.

REMOVING VOLUME ACCESS

Press R to select the remove volume access option that denies a user access to a volume. Type in the name of the volume with the denied access and confirm the choice. To remove the access, press Y and [RETURN]. To cancel, press N and [RETURN].

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PIPES
MANAGEMENT | 7

The Corvus Omninet local area network lets users share data and equipment for printing and other tasks. They do this with the help of a special area on the mass storage system called the pipes area or PIPES volume.

Think of the pipes area as an electronic message center. Network users can send, or spool, their files via a pipe that stores the information in a common space, the pipes area. Other users then can receive, or despool, these files or the printer can print them.

It is possible to have more than one PIPES volume when using the Apple III utilities because they are designed to recognize PIPES volumes on more than one server in a multiple server network. But do not put more than one pipes area on a single drive.

The first PIPES volume should be created on the disk system at Omninet address 0. If one of the disk systems on the network is not set to address 0, one must be reset to 0. Create the first PIPES volume on server 0 because the Corvus Utility Server and several other computers on the Omninet network only recognize the PIPES volume on server 0.

A pipe is similar to a file in that it holds information. However, a pipe is temporary, vanishing when its information is despoiled, and elastic, growing to accommodate the quantity of information spooled. The PIPES volume, however, is fixed in size.

Files sent to the pipes area must have names that the receiving user or device, such as the printer, can recognize. The *Apple III Network Station User Guide* fully explains spooling files to the printer or another user and despooling pipes to a file.

All computer types on a network can use the same pipes area; a separate PIPES volume for each type is not needed.

This chapter explains how to create the pipes area, then initialize it to set up its structure. It also explains how to automatically despool files to a printer on the network and maintain the pipes area.

CREATING THE PIPES VOLUME

To create the PIPES volume, begin at the Constellation II main menu.

1. **Select the drive management menu.**

Press D

2. **Select the volume manager option.**

Press V

3. **Identify the mass storage system that will hold the volume.**

Enter the server and drive name for the disk system at Omninet address 0 if this is the first PIPES volume. Otherwise, select another server and enter the required names.

Once the correct names and passwords are typed in, the screen displays the volume manager main menu:

Volume Manager [x.xx] DS SERVER0
Main Menu DRIVE Drivel
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

A - Add a volume
R - Remove a volume
C - Change volume attributes
L - List volumes
X - Extended list
F - Free space list

H - Help
E - Exit

Enter VOLMGR function:

4. **Select the
add a volume option.**

Press A

5. **Enter the volume's name,
size, location and type.**

Type PIPES

Press [RETURN]

Type the volume's desired size and press [RETURN].

The size will depend on how many files the pipes area will hold at one time. A PIPES volume of 1024 blocks will hold many files, while one of 512 blocks might be enough for a small network. A PIPES volume of 1024 blocks should be large enough for most applications.

Type the volume's location.

The screen will suggest a location. The pipes area must reside entirely within the first 32000 blocks. Add the length of the pipes area to the suggested number. If the sum of the two values is less than 32000 blocks, press [RETURN].

If the suggested location plus the pipes area is more than 32000, press [ESC] to return to the volume manager main menu. Press L for a listing of volumes and free space. The pipes area must reside within the first 32000 blocks. Find, or create, within the first 32000 blocks a free space for the PIPES volume. Then start this section again.

The volume should be a UCSD type volume.

Type UCSD

Press [RETURN]

6. Confirm the volume should be initialized.

Press Y

Press [RETURN]

The screen displays:

Directory zeroed.
Volume added.
Access added for user 1.

Press <space> to continue, or
press A to add another volume.

Press [SPACE]

The screen displays the volume manager main menu.

The PIPES volume has been created.

7. Return to the Constellation II main menu.

Press E twice.

INITIALIZING THE PIPES VOLUME

To use the new PIPES volume as the pipes area, the volume must be initialized as a pipes area. Begin at the Constellation II main menu.

1. **Select the maintenance utilities menu.**

Press M

The screen displays the maintenance utilities menu:

```
-----  
Corvus Utility [x.xx]      DS Server0  
Maintenance Utilities    DRIVE Drivel  
-----
```

P - Parameter Manager

D - Mass Storage Diagnostic

U - Update Utilities

S - Select Drive

L - List Drive

E - Exit

```
-----  
Please select an option:  
-----
```

2. **Select the parameter manager menu.**

Press P

The screen displays the parameter manager menu:

Parmgr[x.xx]: Corvus Parameter Manager Program
(C) Copyright 1982, 1983, 1984 Corvus Systems, Inc.

P - Pipes
S - Set/display semaphore parameters

H - Help
E - Exit

Slot is 4; Server is SERVER

Please select an option:

**3. Select the
pipes option.**

Press P

The screen may display an error message stating the pipes area has not been initialized.

Press [SPACE]

The screen displays the pipes menu:

Parmgr[x.xx]: Corvus Parameter Manager Program
(C) Copyright 1982, 1983 Corvus Systems, Inc.

L - List active pipes
R - Reinitialize (delete all pipes)
I - Initialize pipes area
C - Close a pipe
P - Purge a pipe

E - Exit

Select pipes option:

4. Select the option to initialize the pipes area.

Press I

The screen display is similar to:

```
-----  
Initializing pipes with block = 2391, LENGTH = 1018  
OK to continue? [N]  
-----
```

The number displayed as the length is six blocks less than the volume size. The six blocks are used for the volume's directory.

5. Initialize the PIPES volume.

Press Y

The pipes area is initialized. The screen displays the pipes menu.

6. Return to the Constellation II main menu.

Press E twice.

The PIPES volume is ready for use. Go to the next section to learn how to use the pipes area for printing.

PRINTING ON THE NETWORK

Once the PIPES volume has been created and initialized, it is ready to hold files. Then the PIPES volume can be used for printing files or sending messages and files to other users.

Printing files and sending messages via the pipes area follow the same two-step process. First users send, or spool, the file to the pipes area. Then the file is

despooled to a printer for printing or to another user for his use. This section explains printing on the network; spooling files to the printer and exchanging information between users is discussed in the *Apple III Network Station User Guide*.

Files sent to the pipes area must have names that the receiving user or printer can recognize. An easy way to keep track of pipe names is to use names indicating their destinations.

Choose easily-remembered pipe names for the printers. Consider calling the most frequently used printer `PRINTER`, because both the spool and despool program automatically suggest that name. The name can be up to eight characters and must begin with a letter. The system manager should inform all network users of the printer pipe names so that their files can be automatically despooled.

The pipes area can hold many pipes with the same name. Files in the pipes area with the same pipe name are despooled one at a time. The disk controller manages the pipes, so that many users can spool files to the same printer at the same time. Files are not necessarily printed in the same order that they are sent because the despool program searches the pipes area from the top each time. New pipes are assigned the first available number and could be printed before older pipes.

To print files on the network, use a printer server to search the pipes area for spooled files and despool them to a printer. Normally, networks have one or more stations acting as printer servers. A printer server is a computer, with a printer connected, that is running the despool program. A printer server can be a dedicated device, such as the Corvus Utility Server, or a computer that can run the despool program when not doing other tasks.

Attach the printer to the computer or utility server that will despool the files. Connect the printer following the manufacturer's instructions. Consult the appropriate manual. If using a computer to despool that is frequently doing other tasks, run the program when the computer is not performing other functions.

Files will stay in the pipes area until despooled or purged. To check for files sent to the printer, use the list pipes option in the despool program main menu. If

pipes are waiting, use the despool a file option in the despool program to retrieve them.

To use an Apple III to despool, log on with a user name and password and begin the despool program.

1. **Select the despool utility.**

From the Pascal command line,

Press X

When the prompt "Execute what file?" appears,

Type /A3UTIL/DESPOOL

Press [RETURN]

The screen displays the despool program main menu:

DESPOOL [x.xx] Corvus Despool Program
(c) Copyright 1984 Corvus Systems, Inc.

Despooling from slot 4, server SERVER0
Valid options are:

- S - Start despooling
- D - Despool device PRINTER
- E - Expand tabs..... 8

- P - Despool pipe name ... PRINTER

- L - Insert line feeds ... YES
- Q - Quit

- C - Current pipe status

Select option:

The set alternate slot option will appear if more than one pipes area exists on a multiple server network. The maximum lines per page option, and the header and trailer options will appear if a local printer is attached to the Apple III.

2. **Select the pipe name option.**

Press P

The screen displays:

```
-----  
Enter new pipe name:  
-----
```

3. **Enter the pipe name.**

The despool program automatically looks for pipes named PRINTER. If this is the name users have spooled to, press [RETURN]. Otherwise, type the correct name and press [RETURN].

4. **Adjust the print options.**

Set the tab column positions by pressing E for expand tabs. Enter a new value and press [RETURN]. Expand tabs causes the despool program to insert spaces until it reaches the next tab column. Starting at the left margin, tabs are set according to the specified tab length. For example, a tab length of 8 positions text eight spaces to the right of the current position.

Set the maximum lines per page by pressing M. Type a new value and press [RETURN].

When a carriage return <cr> is embedded in a file, some printers will automatically linefeed <lf>, or advance one line. Other printers will keep returning to the beginning of the same line.

Consult the printer manual to see how the printer responds to a carriage return.

If the printer automatically linefeeds when it sees a carriage return, change the linefeed option to no by pressing L.

Print a header page with the file name and message sent by the spool program by pressing H.

Feed a trailer page after the file has been printed by pressing T.

5. Return to the despool program main menu.

Press E

The screen displays the despool program main menu.

6. Begin despooling.

Press S

The screen display is similar to:

```
-----  
Waiting to despool pipe PRINTER  
Press any key to continue ...  
-----
```

The despool program uses the pipe name given it to search the pipes area for an identically named pipe. When the program finds a pipe, it is removed from the pipes area as it is despoiled to the printer attached to the computer. After each pipe is despoiled, the program returns to search for more pipes.

7. When finished despooling, exit the despool program.

Press any key, then press Q.

MAINTAINING THE PIPES VOLUME

The pipes area is useful for sending messages between users electronically and printing files on a network printer. But with time, mislabeled pipes from mistakes in spooling and despooling will clutter the pipes area and reduce the amount of useful space. Periodically clean the pipes area to reclaim space from unwanted files. Begin at the Constellation II main menu.

1. Select the maintenance utilities.

Press M

The screen displays the maintenance utilities main menu.

2. Select the parameter manager option.

Press P

3. Identify the mass storage system containing the desired pipe area.

Type in the names entered during system generation.

Once the system is identified, the screen displays the parameter manager main menu.

4. Select the pipes option.

Press P

The screen displays the pipes menu.

5. Select the option to list active pipes.

Press L

The screen lists all pipes in the pipes area. The display is similar to:

Active pipes are:

1. PRINTER	Open	Read	Contains data	53 blocks
2. PRINTER	Closed	---	Contains data	25 blocks
3. STEVE	Open	Read	Contains data	10 blocks
4. SMTIH	Closed	---	Contains data	12 blocks
5. SMITH	Open	Write	Contains data	6 blocks
6. LETTER	Open	Read	Contains data	0 blocks

Press <SPACE> to continue

In the example above, the list gives the status of each pipe and its size. Pipes are either open or closed. Open pipes are either reading or writing data. Writing means a file is being spooled and reading means it is being despoiled. Closed pipes are already written and waiting to be read. All pipes, whether of data or text, will contain data or be empty.

Pipe 1 is addressed to the pipe name PRINTER. The pipe is open and is almost certainly being despoiled to the printer. Subsequent listings of the pipes area should show a decrease in the number of blocks as pipe 1 is despoiled.

Pipe 2 is waiting to be despoiled once pipe 1 finishes.

Steve is probably despooling pipe 3. Again, confirm this by listing the pipe area a second time to see if the number of blocks has decreased. If the number remains the same, the pipe isn't being despoiled and should be purged.

A user accidentally transposed the letters in SMITH when he spooled the file in pipe 4 with the name

SMTIH. This pipe is taking up space and should be purged, or Smith should be told to despool the pipe using the pipe name SMITH.

A user is spooling the file in pipe 5. He should soon finish spooling and the pipe will close. If a second listing does not show more blocks or the pipe closing, the pipe may have a problem. Either close the pipe to avoid respooling it or purge the pipe and have the user spool it again. Closing a pipe does not ensure that the file is complete.

It appears the letter-quality printer finished despooling pipe 6. But the pipe is still open. The despool program may not know to go on to other files named LETTER. Purge the pipe if it appears in a second listing.

6. Continue the program.

Press [SPACE]

The screen displays the pipes menu.

7. Purge a pipe.

Press P

The screen displays:

Purge which pipe? [PIPE NUMBER]:

Choose which pipe to purge. Type the number of the pipe to be purged and press [RETURN].

The screen display is similar to:

Pipe 4 purged

Press <SPACE> to continue

Press [SPACE]

The screen returns to the pipes menu.

8. Close an open pipe to avoid respooling.

Press C

The screen displays:

Close which pipe? [PIPE NUMBER]:

Press the pipe's number and press [RETURN].

The screen display is similar to:

Pipe 5 closed

Press <SPACE> to continue

Press [SPACE]

The screen returns to the pipes menu.

9. Once the pipes area is clean,
return to the Constellation II main menu.

Press E twice.

The pipes area is now clean. To resume printing,
return to the despool program.

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