

PRODOS SYSTEM
MANAGER'S GUIDE

Apple II

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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 ProDOS (R) operating system on the Apple (R) IIe computer.

HARDWARE AND SOFTWARE REQUIRED

To use Constellation II with Apple ProDOS, the version of the boot prom on the Corvus Apple IIe Transporter (TM) interface card must be 3.1 or greater. If the version of the boot prom is not 3.1, obtain a 3.1 boot prom your local Corvus dealer.

Corvus Apple IIe Transporter Card
with 3.1 Boot Prom

Another requirement to use Constellation II with Apple ProDOS is that the version of the ProDOS filer must be 1.0.2 or greater.

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In order for the system manager to use Constellation II with Apple ProDOS he must have an Apple IIe with 128 kilobytes of memory, including an extended 80-column card, and two Apple Disk II disk drives or equivalent.

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 user accounts, volumes and access to volumes. It also explains the drive management error message.

Chapter 4 explains the first of the system manager's three main tasks, creating user accounts for the people who will use the mass storage system.

Chapter 5 describes the second of the system manager's main tasks, creating volumes. Volumes are storage spaces on the system.

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:

Do not type the spaces between **type** and the first character to its right.

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 your user name and password and
press [RETURN].

This page intentionally left blank.

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 an overview of Constellation II.

PLANNING THE SYSTEM

The system manager is responsible for planning the system. The term system refers to the combination of hardware and software that comprises an Omninet network. The OmniDrive Setup Instructions describe 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 on the system 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 volumes--volumes accessible by two or more users can contain programs or other information needed by several users 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 an 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 want to work with the Corvus mass storage system need user accounts, which identify the user 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 system. Access is defined 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. Any number of users can be logged on with the same account name at any given time. Private account users are responsible for the privacy and security of their volumes and data. Keeping the account password secure is the key to security. The system manager's password

and the drive password are especially important, because they control access to the whole system.

VOLUMES

The space for storing information on a Corvus mass storage 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 vary in size.

Different operating systems require different types of volumes. Different computer types using the same operating system can share a 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 on the system 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. A pipe, similar to a file, resides in the PIPES volume. Individual pipes have no fixed size but grow to accommodate data as it is sent in. When a pipe's data is removed, the pipe is deleted.

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 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 slot and drive number. An inactive volume is unmounted, that is, no longer assigned to a slot and drive number. Users can use only mounted volumes and can mount their volumes using the mount manager program. The system manager can change the mount assignments using the access manager main menu.

ENTERING CONSTELLATION II

To use the Constellation II program, log on with the system manager's name, A2MGR, and password, HAI (Japanese for "yes").

Do not let anyone learn the password. Use the password above to create the system, but consider changing this password later in order to maintain security.

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 Corvus Systems, Inc.
```

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

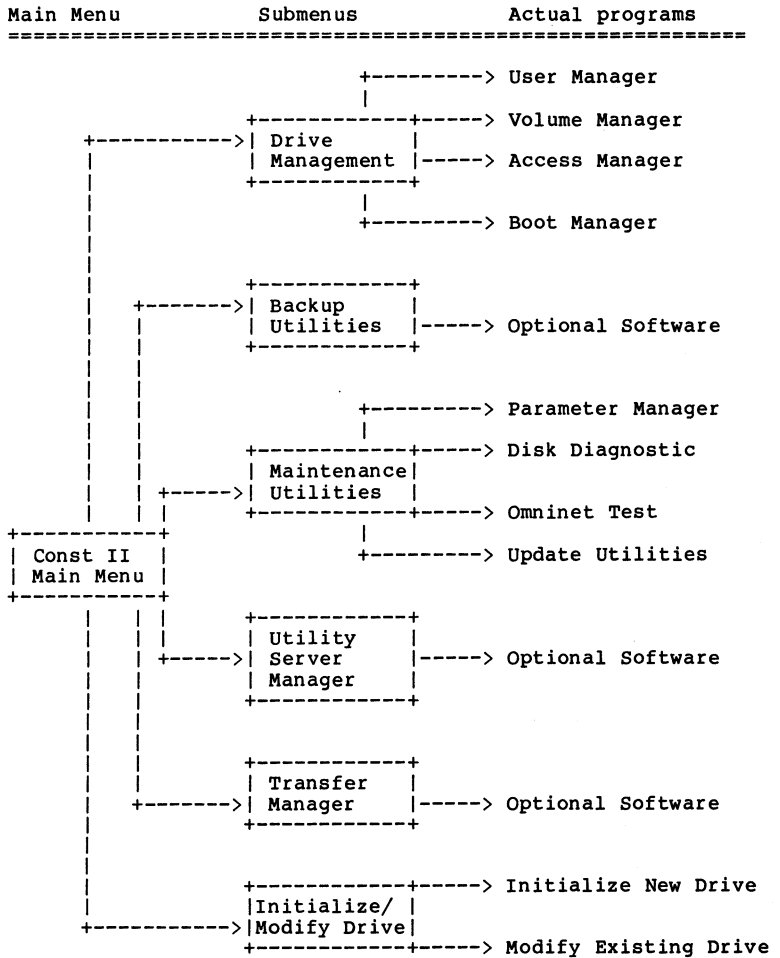
```
U - Utility Server Manager
T - Transfer Manager
```

```
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.

A SAMPLE
SESSION | 2

This chapter shows in a sample session how to create a user and volume and grant access to volumes. This process 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 and give STEVEN access to MARKET and two system volumes. Once finished, reboot the system and log on as STEVEN.

LOGGING ON

- 1. Turn on the computer.

After a moment the Constellation II log-on display 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   ( N N )

          PLEASE ENTER YOUR NAME:
-----
```


The variables (NN) represent the number of the server that is providing the boot information.

2. **Log on as A2MGR with the password HAI.**

After a few moments, the screen displays the Constellation II main menu:

```
-----
CORVUS MANAGEMENT UTILITY DS
Version [x.xx]      DRIVE
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----
```

```

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

U - Utility Server Manager
T - Transfer Manager

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

Please select an option:

3. **Select the drive management option.**

Press D

The screen displays:

```
-----  
CORVUS UTILITY [x.xx]      DS  
Drive Management          DRIVE  
(c) Copyright 1982, 1983 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:  
-----
```

CREATING A VOLUME

This section shows how to create a volume. In this example the volume is named MARKET and is 1024 blocks.

1. **Select the volume manager.**

Press V

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

Type the names and passwords entered during system generation for the server and drive.

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 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 size.

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

Press [RETURN]

6. Choose the volume's starting location.

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

Press [RETURN]

7. Choose the volume type.

The program automatically suggests UCSD and the screen displays:

Select from:
CPM
DOS3.3
ProDOS
UCSD

Type ProDOS

Press [RETURN]

The screen display is similar to:

 Enter attributes of new volume:

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

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. Follow
 the same steps to create all volumes. See
 Chapter 5, "Volume Manager," for details.

9. Return to the drive management menu.

Press E

The screen displays the drive management main menu.

CREATING A USER

This section shows how to create a user. In this example the user name is STEVEN and his password is SELL.

1. Select the user and device manager.

From the drive management menu,

Press U

The screen displays the user manager menu:

```
-----
User Manager [x.xx]                DS SERVER
Main Menu                          Drive DRIVE1
(c) Copyright 1982, 1983 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 the user's password.

Type SELL

Press [RETURN]

6. Enter the user's home disk server.

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

7. Enter STEVEN's boot operating system.

The program automatically suggests Apple Pascal and the screen displays:

Please enter attributes of new user:

Name: STEVEN

Password: SELL

Name of home disk server: SERVER

Boot operating system: A2PASCAL

Select from:

A2DOS3.3

A2PASCAL

A2ProDOS

CP/M-80

UCSD IV.0

Type A2PRODOS

Press [RETURN]

The screen displays:

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

**8. Add the
new user.**

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 system user. Follow the same steps
to create all planned system 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 ACCESS TO VOLUMES

All the users on the system will share the public volumes A2PRO and A2BOOT. A2PRO contains utilities all users can share. The utilities include programs for sharing a network printer and mounting and unmounting volumes. A2BOOT contains system information needed for booting and using the network. In this section the user STEVEN is granted access to the volumes A2BOOT, A2PRO, and MARKET.

1. **Select the access manager.**

From the drive management menu,

Press A

The screen displays:

```
-----
Access Manager [x.xx]      User
Next user                 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 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 A2BOOT

Press [RETURN]

5. Select the type of access.

The computer asks whether STEVEN should have read-write (RW) or read-only (RO) access to A2BOOT and suggests read-only. Accept the suggested access.

Press [RETURN]

6. Mount A2BOOT to make it active.

Press [RETURN]

The screen displays:

Mount unit: [S7D1]
Select from:
Slot 1...7, Drive 1, 2, or *

Press *

Press [RETURN]

The screen displays:

Please enter:

Volume name: A2BOOT
Access (RO/RW): RO
Mount status (M/U): MOUNTED
Mount unit: *

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

**7. Grant access
to A2BOOT.**

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 steps 4 through 7 above to give STEVEN RO access to A2PRO and RW access to MARKET. Mount A2PRO on S7D1 and MARKET on S6D1. Mount A2BOOT and A2PRO on units * and S7D1, respectively, for all users on the network when granting them access. For more information on types of access and mount units see Chapter 6, "Access Manager."

After finishing step 7 for the last volume, the screen will display:

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

Press [SPACE]

STEVEN now has access to volumes A2BOOT, A2PRO and MARKET. Follow the steps above to grant other users volume access.

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

Press E twice and the screen displays the Constellation II main menu.

LOG ON

1. **Reboot the computer**

Hold down [CTRL] and
Press [RESET]

After a minute, the Constellation II log-on display 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   ( N N )
```

PLEASE ENTER YOUR NAME:

- ```

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

The user STEVEN now has RO access to A2PRO and A2BOOT. STEVEN also has RW access to MARKET,

but before the volume can be used, it must be formatted for the Apple ProDOS operating system. To format the volume, see the Apple II ProDOS User's Manual that Apple supplied.

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

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, 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 type the names and password each time when entering the Constellation II program.

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. So 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.**

After the error message displays,

**Press [SPACE]**

The screen displays the drive management main menu.

**Press E**

The screen will display the Constellation II main menu.

2. **Enter the maintenance utilities.**

**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.**

Display the semaphore table to confirm it is no longer listed and thus is unlocked.

**Press S**

If the semaphore CRVSEMA4 does not appear the drive management program is ready for use.

8. Return to the drive management main menu.

Press E twice.

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

To use the user manager, enter the Constellation II main menu and select the drive management option. Then select the user manager:

**Press U**

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."

The screen displays:

```

User Manager [x.xx] DS SERVER
Main Menu Drive DRIVE1
(c) Copyright 1982, 1983 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**

To select the add a user and device option,

**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:
```

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, password, home disk server and operating system.

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.

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 serving the mass storage system that contains the Apple ProDOS system volumes A2BOOT and A2PRO.

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

**LISTING USERS**

The list users and devices option is a handy reference of user names and passwords. The user names are displayed alphabetically. From the user manager menu,

**Press L**

The screen display is similar to:

```

User Manager [x.xx] DS SERVER
List users/devices Drive DRIVE1

 User Name Password Home DS Boot type
1. A2PRODOS SERVER A2ProDOS
2. A2MGR HAI SERVER A2PASCAL
3. STEVEN SELL SERVER A2ProDOS

3 users 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 can be invaluable if the system ever needs to be restored. At the end of each listing, the screen displays:

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

After pressing F, use the format "/volname/filename" to name a diskette or 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. Update the listing whenever changes are made.

To continue,

Press [SPACE]

The device list is similar to:

-----  
 User Manager [x.xx]            DS SERVER  
 List users/devices            Drive DRIVE1  
 -----

| Dev name         | Type        |
|------------------|-------------|
| 1. SERVER        | DISK SERVER |
| 1 device listed. |             |

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

**CHANGING USER ATTRIBUTES**

The change user attributes option is used most frequently to change passwords if a user suspects others know it. To change a user's attributes press C and type in the name of the user whose attributes you wish to change. The screen will then prompt for the new attributes.

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 private 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.



This page intentionally left blank.

The volume manager adds or removes a volume, changes its attributes and lists the directory of volumes.

To use the volume manager, enter the Constellation II main menu and select the drive management option. To select the volume manager:

**Press V**

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."

The screen displays:

```

Volume Manager [x.xx] DS SERVER
Main Menu Drive DRIVE1
(C) Copyright 1982, 1983 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**

Some options suggest a value; accept the suggested value or change it by typing a new value. The computer asks for the volume name, size, location and type. Then it asks if it should initialize, or format, the new volume. Each parameter is discussed below.

**VOLUME NAME**

When the system manager creates a volume, he assigns the volume a name. For example, in Chapter 2, the system manager created a volume for user STEVEN and called the volume MARKET. At this point the volume has a Constellation II volume name, but does not have a ProDOS volume name. The user has the task of giving the volume its ProDOS name. The ProDOS user STEVEN, created in chapter 2, could name the volume STORE, PURCHASE, MARKET or any other name that he desires. To avoid confusion, Corvus recommends that the system manager make sure the Constellation II volume name and ProDOS volume name are identical.

The Constellation II 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.

For the attributes of the ProDOS volume name, see the Apple II ProDOS User's Manual supplied by Apple

**VOLUME SIZE**

Specify the size of the volume in blocks. One block holds 512 bytes of information. Constellation II suggests 1024 blocks, about half a megabyte. The maximum size of a ProDOS volume is 32767 blocks, or 16 megabytes. It is important to plan the number of volumes and the size of each volume so storage space is not wasted.

### 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 ProDOS volumes for the Apple ProDOS operating system.

### VOLUME INITIALIZATION

New volumes must be initialized, that is, formatted or prepared for use. The first step is to write the volume header; writing the header enables Constellation II to recognize a ProDOS volume. The second step is to format the volume. Formatting makes a volume ready to accept information by setting up the ProDOS volume structure within it. The system manager can write the header from Constellation II, but cannot format the volume. In order to format a volume for Apple ProDOS, the network user must use the Apple ProDOS format option. The network user is instructed to do this in the Apple II ProDOS Network Station User Guide. For more information on formatting volumes, see the Apple II ProDOS User's Manual 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 ProDOS 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**

The screen display is similar to:

```

Volume Manager [x.xx] DS SERVER
List volumes Drive DRIVE1

```

| Volume    | Address | Length | RW | Type     |
|-----------|---------|--------|----|----------|
| 1. CORVUS | 9       | 300    |    | UCSD     |
| 2. A2BOOT | 309     | 1024   |    | UCSD     |
| 3. A2PRO  | 1333    | 1000   |    | A2ProDOS |
| 4. MARKET | 2333    | 1024   | x  | A2ProDOS |
| <UNUSED>  | 3357    | 5763   |    |          |

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

Total volumes on drive: 4  
 Total blocks allocated on drive: 3357  
 Largest volume size (blocks): 1024

```

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

```

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 can be invaluable if the system ever needs to be restored. At the end of each listing, the screen displays:

```

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

```

After pressing F, use the format "/volname/filename" to name a volume to which the system manager has access. The program will create a text file in the specified volume. Print the file to have a paper copy of the information. Update the listing whenever changes are made.

To continue,

Press [SPACE]

The screen displays the volume manager main menu.

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

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> 3357 5763
 Total free blocks on drive: 5763
 Total free areas on drive: 1
 Largest free space (blocks): 5763

```

**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. When re-creating the volume, transfer the old files back into it. Go to Chapter 5, "Backup-to-Floppy," of the Apple II ProDOS Network Station User Guide for a complete discussion of this diskette transfer process.

To change a volume's name or access,

**Press C**

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 they are created. 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 or when certain volume attributes are to be changed.

Removing a volume erases access to all the files within it. Do not remove the volumes CORVUS, A2SYS, A2PRO or A2BOOT. Those volumes must remain on the system because they contain system files, boot information, and the tables used to manage all users and volumes.

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.



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The access manager program grants a user access to volumes. Access can be 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. 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.

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 to the volume at different times.

To use the access manager, enter the Constellation II main menu and select the drive management option. Then select the access manager:

**Press A**

Whenever entering the drive management program and selecting access manager, type the drive name, server name and passwords. See Chapter 3, "Drive Management."

The screen displays:

```

Access Manager [x.xx] User
Next user DS SERVER
 Drive DRIVE1

Enter user name:

```

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 DRIVE1
(c) Copyright 1982, 1983 Corvus Systems, Inc.

```

```

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

L - List volume accessible

N - Next user
H - Help
E - Exit

```

```

Please select an option:

```

### GRANTING VOLUME ACCESS

To select the grant volume access option,

**Press G**

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. Each parameter is discussed below.

#### VOLUME NAME

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 read-write access to a volume protects the information from changes by other system users.

**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. Note that all Apple ProDOS users should have A2BOOT and A2PRO mounted on units \* and S7D1, respectively.

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

If a user has access to a volume that is not mounted at boot time, the user can mount the volume with the mount manager program.

**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. Slots 1 through 7, drives 1 and 2, and \* are the valid unit numbers, although \* is reserved for the boot volume, A2BOOT and S7D1 is reserved for the system volume, A2PRO.

Slot 3 is a valid unit number, however only volumes that have already been formatted for Apple ProDOS can be mounted on this slot. The system manager should never use this slot. Network users can use slot 3 providing that they only mount formatted volumes on it.

To select a unit, type the unit number according to the format SsDd, where s is the slot number and d is the drive number. For example, type S4D1 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. Note also that Constellation II unit assignments will pre-empt the Apple II device slots. The slot and drive designations in Constellation II and the device slots in the Apple II are directly correlated. For example, mounting a volume on unit S4D1 will disable a disk drive connected to the drive 1 plug on the card in slot 4.

Be aware that user accounts are dependent on a particular network station. If a user has a disk drive card plugged into slot 4 of his network station and volumes mounted on units S5D1 and S5D2, the disk drives will work. However, if he logs on at another station that has a card in slot 5, he will not be able to use the disk drives connected to that card.

**LISTING VOLUME ACCESS**

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

**Press L**

The screen display is similar to:

```

Access Manager [x.xx] User STEVEN
List volumes DS SERVER
 Drive DRIVE1

 Volume Unit RW Type

 1. A2BOOT -*
 2. A2PRO S7D1 x A2ProDOS
 3. MARKET S6D2 x A2ProDOS

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

```

Save this list to a file to have a record of a user's accessible volumes. Make sure the listing has a date on it as well. The listing can be invaluable if the system ever needs to be restored. At the end of each listing, the screen displays:

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

After pressing F use the format "/volname/filename/" to name a volume to which the system manager has access. The program will create a text file in the specified volume. Print the file to have a paper copy of the information. Repeat this process for all the users on the network. Update the appropriate listing whenever changes are made.

To continue,

**Press [SPACE]**

The screen displays the access manager main menu.

#### **CHANGING VOLUME ACCESS**

To use the change volume access option,

**Press C**

It is possible to change the type of access, mount status, and mount unit for any volume.

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, type the new slot and drive number, then press [RETURN].

Changes made while the user is on the system take effect only after the user reboots.

#### **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].

The Omninet local area network lets users share data and equipment for printing and other tasks. This is done using 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. All computer types on a network can use the same pipes area.

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 changed to 0. This is because the Corvus Utility Server and several other computers on a multiple server network may only recognize the PIPES volume on server 0. It is possible to have more than one PIPES volume when using the Apple II utilities, because they can recognize pipes areas on more than one server.

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 II ProDOS Network Station User Guide explains spooling files to the printer or another user and despooling pipes to a file.

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. **Select a mass storage sytem.**

If this is the first PIPES volume on the network, the volume must be on the disk system with Omninet address 0. Otherwise the PIPES volume may be on any disk system.

**Type** in the server and drive names that correspond to the appropriate disk system.

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

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. Find a free space there for the PIPES volume.

The volume should be a UCSD type volume.

**Type** UCSD

**Press** [RETURN]

The screen displays:

-----  
Do you want to initialize the volume [Y/N]: Y?  
-----

6. **Confirm the volume should be initialized.**

**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.

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

**Press E twice.**

The PIPES volume has been created, but still needs to go through a separate initialization process. Follow the steps in next section, "Initializing the PIPES volume."

**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.**

**Press M**

The screen displays the maintenance utilities menu:

```

CORVUS UTILITY [x.xx] DS SERVER
Maintenance Utilities Drive DRIVE1
(c) Copyright 1982, 1983 Corvus Systems, Inc.

```

P - Parameter Manager

D - Disk Diagnostic

O - Omninet Test

U - Update Utilities

S - Select Drive

L - List Drive

E - Exit  
-----

Please select an option:  
-----

**2. Select the parameter manager.**

**Press P**

The screen displays the parameter manager menu:

```

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

```

```
 M - Master Multiplexer
 P - Pipes
 S - Set/display semaphore parameters

 H - Help
 E - Exit

```

Slot is 6; 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]  
-----

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 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 Apple II or utility server that will despool the files. The interface card for the printer must be connected to slot 1 on the Apple II. Connect the printer following the manufacturer's instructions. Consult the printer manual. If using a computer to despool that is frequently used for other tasks, run the program when the computer is not performing other functions.

Files will stay in the pipes area until they are despoiled or purged. To use an Apple II to despool, log on with a user name and password and begin the despool program.

**1. Enter the despool program.**

From the Applesoft Basic prompt,

**Type** BRUN /A2PRO/DESPOOL

**Press** [RETURN]

ProDOS volume A2PRO contains the despool program.

The screen display is similar to:

The PIPES volume is ready for use. The next section explains 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 II ProDOS Network Station User Guide.

Files sent to the pipes area must be given pipe 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 despoiled.

The pipes area can hold many pipes with the same name. Files in the pipes area with the same pipe name are despoiled 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 for the lowest numbered pipe. 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

-----

PRODOS DESPOOL [x.xx]  
 (C) 1984 CORVUS SYSTEMS, INC.  
 - M A I N M E N U -

PLEASE SELECT:

S - START DESPOOLING  
 O - OUTPUT DEVICE           CONSOLE  
 E - EXPAND TABS               08  
 P - PIPE NAME                 PRINTER  
 F - LINE FEED                 [OFF]

C - CURRENT PIPE STATUS  
 A - ALT SLOT                 SERVER1  
 Q - QUIT

-----

**2. Select the pipe name.**

The despool program automatically will look for pipes addressed PRINTER. If this is the name of the printer, then skip to step 4. Otherwise,

**Press P**

The screen displays:

-----

PLEASE ENTER PIPE NAME:

-----

**3. Enter the pipe name.**

**Type** the correct name and **press** [RETURN].



**4. Adjust the print options.**

When a carriage return is embedded in a file, some printers will automatically linefeed, 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 F.

The default value for the tab setting is eight. This means that if you are printing out a document that has columns, each column will start at intervals of eight spaces. To change the default value, press E and enter a new value. Valid tabs are anywhere from 1 to 255.

**5. Select the server.**

This step only applies to multiple server networks. If using a single server network, go to step 6.

To despool a file from a server other than the suggested server, select the alternate slot option by pressing A. Only the names of the servers with pipes volumes and their corresponding letters display on the screen.

```

A - SERVER0
B - SERVER1
C - SERVER2

SELECT WHICH SERVER ?

```

Press the letter that correspondes to the appropriate server. After pressing the letter the despool program menu will appear on the screen with the new server name.

**6. Select the  
despool destination.**

**Press O**

The screen displays:

---

A - Console

B - File

C - Printer

---

The option to despool a file to a local printer will not appear unless the interface card for the printer is connected to slot 1.

To despool a file to a printer, press C to select the printer option. After selecting a letter the screen displays the despool program menu.

**7. Despool  
the pipe.**

**Press S**

The screen displays:

---

PIPE NAME IS: PRINTER  
DESPOOLING FROM PIPE #[1]

---

The despool program will automatically print a header page with the file name and message sent by the spool program, and a trailer page after the file has been printed.

After the file is despooled the screen display is similar to:

```

PRODOS DESPOOL, PIPE NAME IS: PRINTER
.....

```

If more than one pipe was sent to the PIPES area, the despool program automatically sends the next file to the printer.

After all files are despooled the program will continue to write the ProDOS despool message across the screen. If using a computer as a dedicated device for despooling, skip steps 8 and 9 and leave the machine with the despool message printing across the screen; this way the despool program will continually send all pipes to the printer.

**8. Return to the despool program menu.**

Press [ESC]

The screen displays the despool program menu.

**9. Exit the despool program.**

Press Q

The Applesoft Basic prompt appears.

#### **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 files 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. **Select a mass storage system.**

**Type** in the names entered during system generation for the server containing the desired pipe area.

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  | Conatans Data | 10 Blocks |
| 4. SMTIH   | Closed | ---   | Conatans 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 being written to or read from the pipes area. Write means a file is being spooled and read means it is being despoiled. Closed pipes are already written and waiting to be read.

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.

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]:  
-----

**Type** 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. 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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