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# System Manager's Guide

MSDOS 2.0



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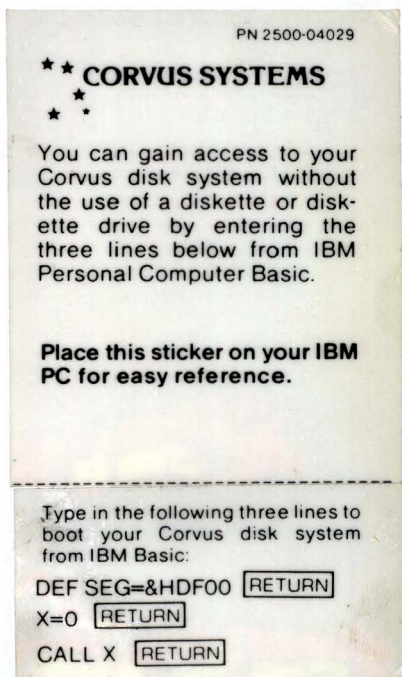
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# System Manager's Guide

## MSDOS 2.0



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# Table of Contents

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<b>Getting Started</b>	1
How This Guide is Organized	1
Usage	3
<b>Chapter 1: Overview of Constellation II</b>	5
User Accounts	5
Volumes	6
PIPES	6
Access	6
Active and Inactive Volumes	7
Logging On	7
Menu Overviews	9
<b>Chapter 2: A Sample Session</b>	11
Logging On	11
Creating Volume GALAXY	14
Creating User ARTHUR	18
Granting ARTHUR Access	21
Making a Boot Diskette	24
Make the Diskette	24
Sign On	26
<b>Chapter 3: Drive Manager</b>	27
<b>Chapter 4: User Manager</b>	29
Adding Users	30
Removing Users	31
Changing User Attributes	31
Listing Users	32
<b>Chapter 5: Volume Manager</b>	33
Adding Volumes	33
Volume Name	34
Volume Size	34
Volume Location	34

Volume Type	35
Volume Initialization	35
Removing Volumes	37
Changing Volume Attributes	38
Listing Volumes	38
<b>Chapter 6: Access Manager</b>	<b>41</b>
Granting Volume Access	42
Volume Name	42
Access	43
Mounted or Unmounted	43
Unit	44
Removing Volumes	45
Changing Volume Access	45
Listing Volume Access	46
Help	46
<b>Chapter 7: Configure System</b>	<b>47</b>
Creating a Boot Diskette	47
System Manager	47
MSDOS 2.0 User	48
Setting Up the Printer	48
<b>Chapter 8: PIPES—The Corvus Message Center</b>	<b>51</b>
Creating the Message Center	53
Create the PIPES Volume	53
Initialize the PIPES Volume	57
Printing an Electronic Message	60
Maintaining the Message Center	64
<b>Chapter 9: System Backup</b>	<b>71</b>
Using the Corvus Mirror	72
MIRROR Functions	73
Backup	77
Restoration	84
Errors	91

<b>Chapter 10: Troubleshooting</b>	<b>93</b>
Drive Indicator Lights	94
Corvus Diagnostic Utilities	95
Entering the Diagnostic Program	96
Updating the Firmware	99
Setting the Drive Parameters	101
Exercising the Heads	108
Parking the Heads	110
Correcting Media Defects	111
Checking the Cyclical Redundancy	112
Sparing Tracks	114
Formatting the Corvus Drive	119
Drive Manager Error	123
<b>Glossary</b>	<b>127</b>





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# Getting Started

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Our engineers have designed the Constellation II software to manage mass storage for a single computer or network system. This guide shows the system manager how to maintain and supervise the Constellation II system.

This guide applies to the IBM Personal Computer, DEC Rainbow 100 computer and other computers that run under the MSDOS 2.0 operating system.

## How This Guide is Organized

**Chapter 1** contains an overview of the Constellation II mass storage management programs. The chapter shows how to log onto Constellation II and how its programs work.

**Chapter 2** includes a practice session to familiarize you with Constellation II. If you're using the software for the first time, you should go through the sample session to learn the basic functions.

**Chapter 3** describes the drive manager, the utility that lets you create user accounts, volumes and access to volumes.

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**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. It tells 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 either to read data from the volume or read information and write it to the volume.

**Chapter 7** describes how to create a boot diskette and keep system manager records.

**Chapter 8** describes how to use the PIPES volume to let computers share a printer or send data to each other.

**Chapter 9** tells how to protect your system by regularly copying information on disks to floppy diskettes or to inexpensive video cassette tape using the Corvus MIRROR.

**Chapter 10** will help you diagnose and correct some common disk system problems.

## Usage

Throughout this guide, **type** means you should enter two or more characters or keyboard symbols on the computer keyboard. You should 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 C:

Type RUN BSYSGEN

Don't type the spaces between **type** and the first character to its right. When a keytop symbol appears, press the key it refers to. Don't type out each letter of the word in the keytop symbol.

Throughout this guide, **press** means you should enter a single character or symbol on the computer keyboard.

Examples:

Press Y

Press

Where you see **xx**. **x** on the screen display, these variables stand for software revision numbers.





---

# Chapter 1: Overview of Constellation II

---

Welcome to system management. It is your job to keep the system running smoothly and make sure the system resources are not wasted or misused.

Constellation II software is integral to the system manager's job. Constellation II manages a mass storage system, either for a single computer or a network. What follows is an overview of how the software works.

Your job as system manager includes planning and maintaining your system. You manage the system's resources by creating user accounts, volumes and access.

## 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 and password, he can have access to the system and use it without interfering with the work of others. Passwords help make the system secure.

## Volumes

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 Corvus volumes vary in size.

Different operating systems require different types of Corvus volumes. Different computer types using the same operating system can share a Corvus volume. Computers that use more than one operating system need different volumes for each operating system.

## PIPES

If you have a network with more than one computer, you should consider creating a volume called PIPES. PIPES is a special volume on your system that allows users to send information to other users, to shared printers or to other 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 to many users are public volumes. Volumes accessible to a single user are private volumes.

The system manager can give a user the right to write to a volume (read-write access) or give the user only the ability to read the contents of a volume (read-only access). Usually, public volumes are read-only volumes while private volumes are read-write.

## **Active and Inactive Volumes**

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.

Different computers allow different numbers of volumes to be active at one time. The Corvus interface to MSDOS 2.0 allows up to 10 Corvus volumes to be active at once.

## **Logging On**

When you wish to use the Constellation II program, you must sign on to your system with your system manager's name and the password HAI (Japanese for "yes").

The prefix of your user name will depend on your type computer, but will always end in MGR:

Computer	System Manager's Name
IBM	IBMGR
DEC Rainbow 100	DRBMGR
Zenith Z-100	ZSIMGR

You shouldn't let anyone learn your password. You should use the password above to create your system, but may change this password later.

When you have signed on, your 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 Manager
B - Backup Utilities
M - Maintenance Utilities
I - Initialize Drive
C - Configure System

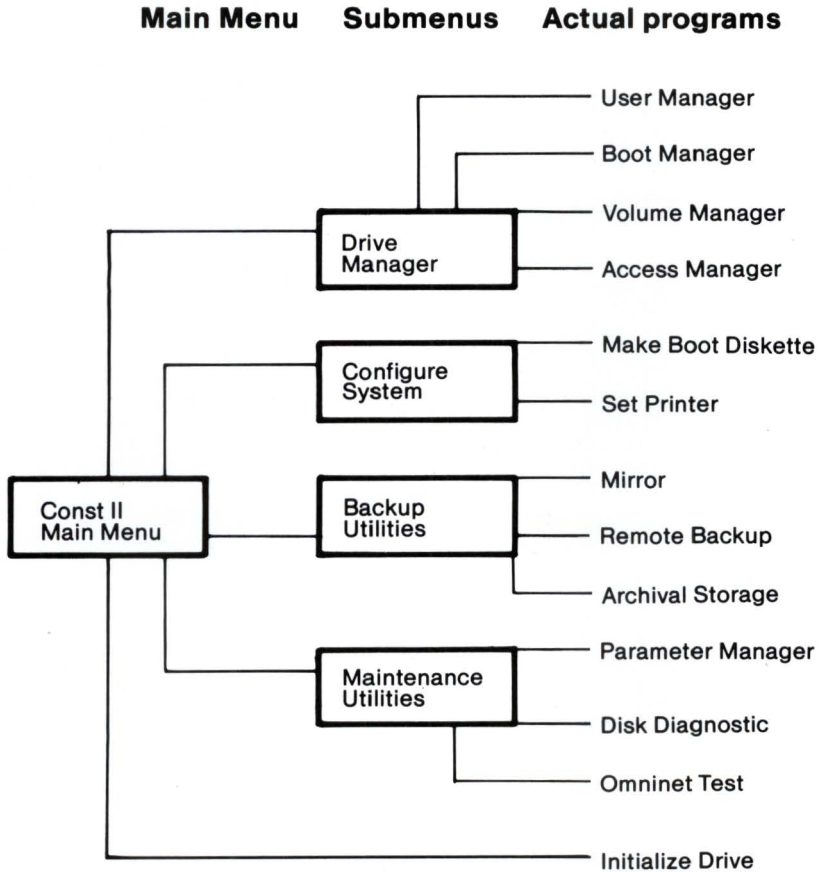
L - List Drives
H - Help
-----
Please select an option: ___
```

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## Menu Overviews

The main menu will take you to all of the Constellation II utility programs. Once you know which menu option you want, press the letter corresponding to that option. The diagram below shows the hierarchy of Constellation II menus and programs.



The programs surrounded by boxes are paths to programs that perform system functions.





## 4. Sign on as system manager and use the password HAI.

Your system manager name depends on the type of computer you are using:

Computer	System Manager Name
IBM PC	IBMGR
DEC Rainbow 100	DRBMGR
Zenith Z-100	ZS1MGR

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

```
CORVUS MANAGEMENT UTILITY DS
Version [x. x]                Drive
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----
D — Drive Manager
B — Backup Utilities
M — Maintenance Utilities
I — Initialize Drive
C — Configure System

L — List Drives
H — Help
-----
Please select an option: __
```

The drive manager contains the programs for creating accounts and volumes.

## 5. Select the drive management option.

Press D

The screen displays:

```
CORVUS UTILITY [x. x. x]   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
H - Help
E - Exit

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

## Creating Volume GALAXY

First you will create the volume GALAXY.

### 1. Select the volume manager.

Press V

### 2. Enter your drive and server names and passwords.

Type in the names that you wrote at the back of your Disk System Initialization Guide or System Generation Guide.

If you can't find your names, press the **ESC** key. This returns you to the drive management menu. Contact a Corvus Service representative for assistance.

After you enter the correct names and passwords, the screen displays the volume management menu:

```
Volume Manager [x. x]    DS SERVER
Main Menu              Drive DRIVE1
-----
A — Add a volume
R — Remove a volume
C — Change volume attributes
L — List volumes
F — Free space list

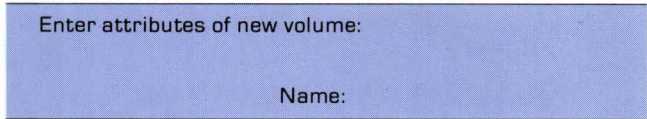
H — Help
E — Exit
-----
Enter VOLMGR function: _
```



**3. Select add a volume.**

Press **A**

The screen displays:



Enter attributes of new volume:

Name:

**4. Type GALAXY**

**5. Choose the volume size.**

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

Press

**6. Choose the volume's starting location.**

The program automatically suggests a location.

Press

## 7. Enter the volume type.

Type MSDOS

The screen display is similar to:

```
Enter attributes of new volume:

      Name: GALAXY
      Size (blocks): 1024
      Location: 7376
      Volume type: MSDOS

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

## 8. Initialize the volume.

Press Y

The screen displays:

```
Enter MSDOS attributes:
Cluster size (blocks): [4]
```

Press

The screen displays:

```
Reserved sectors: [0]
```

Press

The screen displays:

```
Directory entries: [256]
```

Press

The screen displays:

```
OK to add volume (Y/N) ? Y
```

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.

You now have created the volume **GALAXY**. You will follow the same steps to create all of your volumes. See Chapter 5, “Volume Manager,” for details.

You’re ready to create a user, **ARTHUR**.

## 9. **Return to the drive manager menu.**

Press **E**

The screen displays the drive management menu.

## Creating User ARTHUR

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

Press U

The screen displays the user management menu:

```
User Manager [x. x]   DS SERVER
Main menu           Drive DRIVE1
-----
A — Add a user/device
R — Remove a user/device
C — Change user attributes
L — List users/devices

H — Help
E — Exit
-----
Enter USEMGR function: _
```

2. Select add a user/device.

Press A

The screen displays:

```
User Manager [x. x]   DS SERVER
Add a user/device    Drive DRIVE1
-----
U — User addition
D — Device addition

E — Exit
-----
Enter USEMGR function: _
```

### 3. Select user addition.

Press U

The screen displays:

```
Please enter attributes of new user:

Name:
```

### 4. Type ARTHUR

### 5. Enter ARTHUR's password.

Type DENT

### 6. Enter ARTHUR's home disk server.

Press

### 7. Enter ARTHUR's boot operating system.

Type MSDOS

The screen displays:

```
Please enter attributes of new user:

Name: ARTHUR
Password: DENT
Name of home disk server: SERVER
Boot operating system: MSDOS
OK to add user [Y/N] ? Y
```

## 8. Add user ARTHUR.

Press **RETURN**

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.

You've finished making ARTHUR a user.  
Now you must give him access to volumes  
XXXMS and GALAXY, where XXX depends  
on your computer type:

```
IBM—IBM PC
DRB—DEC Rainbow 100
ZS1 —Zenith Z-100
```

## 9. Return to the drive management menu.

Press **E**



## Granting ARTHUR Access

XXXMS contains Corvus utilities that most MSDOS 2.0 users, including ARTHUR, want. These include programs to share the printer and to mount and unmount volumes. GALAXY is Arthur's private volume.

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

Press A

2. Type ARTHUR

The screen displays the access management menu:

```
Access Manager [x. x]           User ARTHUR
Main Menu                       DS SERVER
                                Drive DRIVE1
-----
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. Type XXXMS**

where XXX depends on your computer type:

IBM—IBM PC  
DRB—DEC Rainbow 100  
ZS1 —Zentih Z-100

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

The computer asks whether ARTHUR should have read-write (RW) or read-only (RO) access to XXXMS.

Type RO

## 6. Mount XXXMS to make it active.

Type M

The computer asks on which unit letter to mount XXXMS.

Type 1

The screen displays:

```
Please enter:

          Volume name: XXXMS
        Access (RO/RW): RO
    Mount status (M/U): MOUNTED
           Mount unit: 1
    OK to grant volume access (Y/N) ? Y
```

## 7. Grant ARTHUR access to XXXMS.

Press

ARTHUR now has access. The screen displays:

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

## 8. Continue granting access.

Press G

The screen displays:

```
Please enter:

          Volume name:
```

## 9. Type **GALAXY**

Follow "Granting Access" steps 2 through 7 above to give ARTHUR RW access to GALAXY. Mount GALAXY on mount unit 2.

When you finish step 7, the screen displays:

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

## 10. Return to the drive management menu.

Press

Press **E**

You have finished creating user **ARTHUR** with password **DENT** and given him access to volumes **XXXMS** and **GALAXY**.

Now you can create a Corvus MSDOS 2.0 boot diskette so you can log onto your system as **ARTHUR**.

### Making a Boot Diskette

#### Make the Diskette

You will find instructions for the steps below on format, disk copy, file copy and driver addition in your MSDOS 2.0 manual.

## 1. Insert the MSDOS 2.0 boot diskette and reboot your computer.

2. Format a diskette.
3. Copy the MSDOS 2.0 system diskette to the formatted diskette.
4. Copy files `CORDRV.BIN` and `CONFIG.SYS` to the copy of the MSDOS 2.0 diskette.

If the system diskette already contains the `CONFIG.SYS` file, add the driver `CORDRV.BIN` to the existing `CONFIG.SYS` file.

## Sign On

1. Place the Corvus MSDOS 2.0 boot diskette in diskette drive A.
2. Reboot your computer.

The screen displays the Constellation II sign-on message.

3. Sign on as ARTHUR with password DENT.

As ARTHUR, you now have RO access to XXXMS and RW access to GALAXY.

You can repeat the steps in this chapter to create all of your volumes and users. Chapters 3 through 6 explain how to manage your system and detail the tasks of the user manager, volume manager and access manager.



---

## Chapter 3: Drive Manager

---

The user manager, volume manager and access manager programs detailed in Chapters 4 through 6 all are part of the drive manager program. You first select the drive manager whenever you want to create or change a user account, volume or access.

Each time you enter the drive manager program, and select user/device manager, volume manager or access manager, for the first time, you must follow the steps below.

- 1. Enter your server name, drive name and drive password.**

Any time you enter the drive manager program, you must **type** in your server name, drive name and drive password.

Type the names you wrote down in your Disk System Initialization Guide or System Generation Guide. You won't have to re-enter the names and password unless you exit the drive manager menu.

**2.** If you can't find your drive name or password, press **ESC**

You will return to the drive manager menu. Contact a Corvus Service representative for assistance.

Once you type in your drive and server names and passwords, the screen will display the drive manager menu. Then you will be able to select either the user manager, volume manager or access manager menu.

Now go to Chapters 4 through 6 to learn how to use these programs.

---

## Chapter 4: User Manager

---

The user manager program lets you add or remove users, change a user's attributes and get a list of users.

To use the user manager, enter the Constellation II main menu and select the drive management option. Each time you enter the drive management program for the first time and select the user/device manager, you must type in your drive name, server name and passwords. See Chapter 3, "Drive Manager."

From the drive manager, press **U** for user/device manager. The screen displays:

```
User Manager [x. x]                               DS SERVER
Main menu                                         Drive DRIVE1
-----
A — Add a user/device
R — Remove a user/device
C — Change user attributes
L — List users/devices

H — Help
E — Exit
-----
Enter USEMGR function ____
```

## Adding Users

To add users you must be in the user manager main menu. Press **A** for add a user/device option.

The screen will display:

```
User Manager [2. 2b]                DS SERVER
Add a user/device                    Drive DRIVE1
-----
U  - User addition
D  - Device addition

E  - Exit
-----
Enter USEMGR function: __
```

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

Select **U** for user addition.

**Type** in the user name and password, home disk server and operating system.

The user name can be up to 10 characters. The first character must be a letter. The rest of the name may be letters, numbers or any of the characters: `_ - . # $ ' ( ) ^`. The system will capitalize letters in the name.

The user password can be up to eight characters. Follow the rules above when you make a password.

The name of the home disk server is the disk server you are now using.

Your system may show other operating systems besides MSDOS 2.0. Use this guide to create MSDOS 2.0 users.

## Removing Users

To remove a user, from the user manager main menu, press **R** for the remove a user/device option. Type the name of the user to be removed. Confirm that you want to remove that user.

## Changing User Attributes

The change user attributes option is mostly for changing passwords if a user suspects others know it.

Although you may change the boot operating system, normally you won't have reason to do so. Do not change the operating system assigned to any user whose name ends in MGR. If you do, you will lose all management capabilities and will have to regenerate your system from scratch.

The user name cannot be changed. Instead, create a new user with all attributes of the new user identical to the present user.



## Listing Users

The list users/devices option is a handy 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 [2. 2b] List users/devices		DS SERVER Drive DRIVE1	
User Name	Password	Home Server	Boot Op System
1. ARTHUR	DENT	SERVER	MSDOS
2. IBMGR	HAI	SERVER	UCSD IV.0
3. JOE	MANN	SERVER	MSDOS
3 users listed.			
Press <space> to continue, or press F to list a file.			

The device list is similar to:

User Manager [2. 2b] Add a User/Device		DS SERVER Drive DRIVE1	
device name		host type	
0 devices listed.			
Press <space> to continue, or press F to list a file.			

When you've added all users, you should list them on a local printer to help you if you forget a user name or password.

To print such a list, see "Setting Up the Printer" in Chapter 7. Don't publish this list because it contains user passwords.



---

## Chapter 5: Volume Manager

---

The volume manager lets you add or remove a volume, change its attributes and list the directory of volumes.

To use the volume manager, enter the Constellation II main menu and select the drive management option. Each time you enter the drive management program for the first time and select volume manager, you must type in your drive name, server name and passwords. See Chapter 3, "Drive Manager."

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

```
Volume Manager [2. 2b]           DS SERVER
Main Menu                       Drive DRIVE1
-----
A  — Add a volume
R  — Remove a volume
C  — Change volume attributes
L  — List volumes
F  — Free space list

H  — Help
E  — Exit
-----
Enter VOLMGR function: ___
```

### Adding Volumes

To add a volume, press **A** for the add volume option. Each option comes with default values; you may accept the suggested value or change it.

The computer asks you for the volume name, size, location and type. Then you must format, or initialize, the new volume.

## Volume Name

The volume name may be up to ten characters and must begin with a letter. The rest of the name may be letters, digits or the characters `_-.#$'()^`. The system will capitalize letters in the volume name.

## Volume Size

You must specify the size of the volume in blocks. A block holds 512 bytes of information. The system will prompt you with 1024 blocks, about half a megabyte. That size will let you do most tasks. You can accept it by pressing `RETURN`. The maximum size of an MSDOS volume is 32763 blocks, almost 16 megabytes.

## Volume Location

The volume's address, or location, on the mass storage system is specified by block number. If the free area is equal or greater in size than the volume size you specified, you will be prompted with the address of this free area. The volume location suggested by the computer is the same as the starting address of the system's largest free space.

To determine if you have a better area than the one suggested, check the directory of volumes and free space options. If you have removed volumes, you may want to use a different location for the new volume.

## Volume Type

The volume type is a formatting scheme that's compatible with an operating system. Different operating systems need different volume types. The screen gives you a choice of operating system formats for a volume. Choose the operating system that you want to use the volume with.

## Volume Initialization

New volumes must be formatted. You can choose not to format a volume only if you are upgrading Corvus systems not operating under Constellation II. Normally you will answer yes to this question.

Formatting sets up a directory that's compatible with the operating system. During the format, the directory within the volume is erased.

When initializing MSDOS volumes, you will be asked for their allocation or cluster size, reserved sectors and number of directory entries.

**Cluster Size.** This equals the number of sectors in a file allocation unit: 1, 2, 4, 8, 16, 32, 64 and 128. For most efficient storage, cluster size should be slightly larger than the average file size within the volume. If the volume will contain mostly small files, choose a small cluster size. A volume with many large files should have a larger cluster size.

## TYPICAL VOLUME CONFIGURATIONS

	Size (blocks)	Cluster Size	Reserved Sectors	Directory Entries	FAT Sectors	Disk Space (bytes)
single sided diskette	324	1	1	64	1	160,256
double sided diskette	644	2	1	112	1	322,560
suggested Corvus volume	1,024	4	0	256	1	512,000
	4,000	8	0	256	2	2,035,712
	8,000	8	0	256	3	4,079,616
	16,000	8	0	256	6	8,175,616
	32,000	16	0	256	6	16,367,616

**Reserved Sectors.** A diskette uses reserved sectors to store boot information. Unless you want to make a Corvus volume identical to a floppy diskette, make the reserved sector equal to 0. The Corvus system does not require reserved sectors.

**Directory Entries.** Every file in the volume requires a directory entry. The maximum number of entries is 4080. The more space set aside for directory entries, the less space remains for storage. For maximum efficiency, the number of directory entries should be a multiple of 16.

## Removing Volumes

You may want to remove a volume when a user is deleted from the system or if you want to change some volume attributes. For example, if you wish to change the size of a volume, you first remove the volume, then recreate it.

When you remove the volume, you'll lose all files within it. Do not remove the volume CORVUS. This volume must remain on your system because it contains 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 that you want to remove the volume. The volume manager removes the volume and each user's access to that volume.



## Changing Volume Attributes

You can change only a volume's name and access. If you wish to change a volume's size, location or type, you first must remove the volume, then recreate it with the desired attributes.

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, but you won't be allowed to change them. The current access—read-only, read-write or not accessible (NA)—will automatically appear on the screen. You may accept the current access by pressing **RETURN** or change it by typing in a new access.

You can use the volume manager to label a volume **NA** if you're not sure it's being used. Then, if no one claims the volume, you can remove it and use the space for something else.

## Listing Volumes

To place new volumes where volumes have been removed, press **L** to list the volumes and the disk's free space.

The volume manager designates most volumes as read-write. Then the access grants read-only or read-write access on a user-by-user basis.



Volumes designated read-only cannot be changed by any user, even if the access manager granted that user read-write access. But once the system manager has placed files in a public volume, the volume's read-write attribute can be changed to read-only.

The screen display is similar to:

Volume Manager [2. 2b]		DS SERVER		
List Volumes		Drive DRIVE1		
Volume	Address	Length	RW	Type
1. CORVUS	1023	200	x	UCSD
2. IBMSYS	1232	1024	x	UCSD
3. IBMMS	2256	1024	x	MSDOS
4. IBMBOOT	3280	128		MSDOS
5. IBMBACK	3308	1024	x	MSDOS
<unused>	4332	6788		
Total free blocks on drive:		7811		
Total free areas on drive:		2		
Largest free space (blocks):		6788		
Total volumes on drive:		5		
Total blocks allocated on drive:		3400		
Largest volume size (blocks):		1024		
-----				
Press <space> to continue, or press F to list to a file.				

List volumes will show each volume's name, starting address and length in blocks, access and type. X in the RW column denotes read-write access; a blank denotes read-only access. This example shows only MSDOS and UCSD volumes. But computers will display the volume type that pertains to the volume's operating system format.

The screen also 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 free space option will tell you how much free space you have and where it is.

The free space display is similar to:

Volume Manager [2. 2b] Free Space		DS SERVER Drive DRIVE1	
Volume	Address	Length	RW Type
1. <unused>	10348	1796	
Total free blocks on drive:		1796	
Total free areas on drive:		1	
Largest free space (blocks):		1796	

When you've added all the volumes, you should list them on a local printer in case you ever need the information to reconstruct the volumes on your mass storage system. To use a printer, see "Setting Up the Printer" in Chapter 7.

---

## Chapter 6: Access Manager

---

The access manager program grants a user access to volumes. The program also removes access from a volume, changes access or lists volume access. You can use this to prevent unauthorized users from tapping a particular volume and to mount volumes automatically for a user. A volume must be mounted, or made active, before a user can have access to it.

Access is read-only, meaning the user can only read data from the mass storage system, or read-write, meaning the user can both read data from and write it to the system.

To use the access manager, enter the Constellation II main menu and select the drive management option. Each time you enter the drive management program for the first time or exit the program, you must enter your drive name, server name and passwords. See Chapter 3, "Drive Manager."

To use the program, from the drive management menu, press **A** for the access menu. Type in your drive name, server name and passwords. Then type the name of the user to be managed and press **RETURN** .

The screen displays:

```
Access Manager [x. x]          User ARTHUR
Main Menu                    DS SERVER
                               Drive DRIVE1
-----
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 you the name of the volume to give the user, the type of access the user will have and the volume's mount status. If the volume is mounted, the screen also will ask for the volume's mount unit.

### Volume Name

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

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



## Access

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

You can restrict access to a volume to one user by giving only that user read-write access to the volume. That makes a volume private and protects the information from changes by other system users. If you're using a local area network, you should let only one network user per volume write to a volume.

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 write access to a volume but the volume manager makes the volume read-only, the user will have only read-only access.

## Mounted or Unmounted

The system manager decides which of the user's accessible volumes will be active, or mounted, when the user boots. The Corvus interface to MSDOS 2.0 permits the system manager to mount up to 10 volumes per user.

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 and a computer with 128K or more memory.

Users usually will mount volumes by substituting an inactive volume for an active volume on the active volume's unit. This is done by the mount manager. But if the system manager didn't activate all 10 of the user's Corvus volumes, the user will have up to two extra units on which to mount volumes.

To mount an inactive volume, the file allocation table (FAT) sectors of the inactive volume must be equal to or less than the FAT sectors of the active volume you want replaced. If two extra units remain, their FAT sector size must be equal to the user's mounted volume with the greatest FAT sector size.

Press **M** to mount the volume or press **U** to leave it unmounted. If you selected unmounted, you have finished granting the volume access.

## Unit

If you decide to mount a volume for the user, you also must assign it a unit number. After each volume you mount, the program will ask you what unit number you will assign to that volume. Mount the volume on the lowest unit number available between 1 and 10. Then press **RETURN** .

Mount only one volume to a unit. If you mount more than one volume per unit, only the volume with the lower address on the system will be mounted.



Your unit assignments set the order of the volumes when a user boots his computer. When the computer boots, Corvus volumes will be mounted on sequential unit letters, starting with the first available unit letter. For example, if the user's computer has two diskette drives A and B, the volume mounted on unit number 1 would be mounted on C.

Type the chosen unit number and press

**RETURN** .

### 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 that you will deny the user access. The screen will ask you to confirm you want the user to be denied access to that volume. To remove the access, press **Y** and **RETURN** . To cancel, press **N** and **RETURN** .

### Changing Volume Access

Press **C** to use the change volume option that changes the type of access a user has to a volume. You can change the access, mount status and mount unit.

Type in the volume name and press **RETURN** .

The screen will prompt you with the volume's current access. If you want to keep it, press **RETURN** . Otherwise, type in **RO** for read-only or **RW** for read-write and press **RETURN** .

Next you'll be prompted with the volume's mount status. If you want to keep the current status, press **RETURN** . Otherwise, press **M** for mounted or **U** for unmounted and press **RETURN** .

If the volume is unmounted, you're finished.

If the volume is mounted, you'll be prompted with the current mount unit. If you want to keep the current unit, press **RETURN** . Otherwise, type in a number 1 through 10, then press **RETURN** .

"Granting Volume Access" above explains the steps in more detail.

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

## 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.

## Help

Press **H** for help to get a list of all volumes on the drive or all users on the network.

---

## Chapter 7: Configure System

---

The configure system program lets you perform two functions normally done by the IBM operating system. This option is on the Constellation II main menu.

The configure system program lets you create a boot diskette and make diskettes that automatically start up the Corvus disk system.

Once you set the configurations for your printer and computer, you can use the change I/O configuration option to have a printer list information about your network.

### Creating a Boot Diskette

#### System Manager

To make a boot diskette for the system manager, enter the Constellation II main menu. Select the configure option.

From the configure menu, select the option to make a DOS diskette. The option will make a boot diskette for MSDOS 1.1 and any other operating system that can boot from the Corvus system, not including MSDOS 2.0.

The screen will prompt you to place a formatted diskette into drive A. The computer then makes the diskette into a boot diskette.

## MSDOS 2.0 User

You will find instructions on formatting disk copy, file copy and driver addition in your MSDOS 2.0 manual.

1. Insert the MSDOS 2.0 boot diskette and reboot your computer.
2. Format a diskette.
3. Copy the MSDOS 2.0 system diskette to the formatted diskette.
4. Copy files **CORDRV.BIN** and **CONFIG.SYS** to the new system diskette.

If the system diskette already contains the **CONFIG.SYS** file, add the driver **CORDRV.BIN** to the existing **CONFIG.SYS** file.

## Setting up the Printer

As system manager you may want to list the status of your network. Enter the Constellation II main menu. From the configure system menu, select the change I/O configuration option.

The screen asks what kind of printer you have. Press **P** for parallel, **S** for serial.

If your printer is serial, you'll also be asked to enter the baud rate, parity, number of stop bits and data bits and handshake of your printer.

The screen will list your choices. Confirm they are correct by pressing **Y** for yes and stop the configuration by pressing **N**. Exit the configure system option.

The computer is now ready to send lists to the printer. Do not reboot your system, or you will have to repeat the configuration. After each list option of the drive manager submenus, you have the option of pressing **F**. Press **F** to send the lists to the file. If you accept the prompt of **PRINTER**, the information will be sent to the printer.





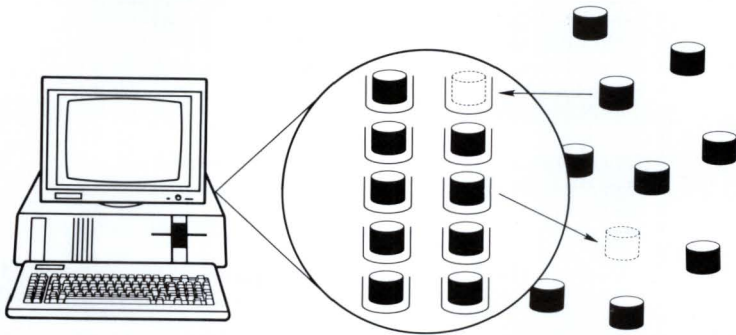
---

## Chapter 8: PIPES—The Corvus Message Center

---

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

Think of the pipe area as an electronic message center. Network users can send their files via a pipe that stores the information in a common space, the pipe area. Other users then can reach these files or send the files to the printer. Files sent to the pipe area must have names that the receiving user or device, such as a printer, can recognize. The system manager should assign these names.



*Storing and Retrieving Files  
From the Pipe Area*

This chapter explains how to create the pipe area and use it as a message center or a way to print files. You will learn how to retrieve information from the pipe area, despool to a printer and maintain the message center. (Despooling files to a user and spooling, which sends information to the pipe area, is explained in the Network Station User Guide for your computer.)

The easiest way to keep track of names is to use the log-on names of users as their addresses. A pipe address is a temporary name for a file in the pipe area. The address can be up to eight characters and must begin with a letter. The system manager can make a directory such as the one below. All network users should have the directory.

```

*****
*
*          ELECTRONIC MESSAGE          *
*          CENTER DIRECTORY           *
*
*          Log-on name and           *
* User name      message center address *
* -----
* John Anderson  JOHNNY              *
* Steve Harris   STEVE               *
* Steve Smith    SMITH               *
*
*          Message center address    *
* Device name    -----
* Daisy-wheel printer  LETTER        *
* Line printer        PRINTER        *
*
*****

```

In the example above, user John Anderson knows from looking at the directory that his pipe address and log-on name are the same, JOHNNY. He also knows he can send a message to Steve Smith if he sends or spools it to Steve at the SMITH address.

John also can see from the directory that his network has two printers, a letter-quality daisy-wheel printer with the address LETTER and a fast dot-matrix printer with the address PRINTER. Each printer is attached to a computer that will search the pipe area for pipes addressed to it. So John can choose which printer to use by addressing his file to LETTER or PRINTER.

## Creating the Message Center

To create the message center, first create the volume PIPES and then initialize it to set up its structure. You should be in the Constellation II main menu.

### Create the PIPES Volume

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

Press D

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

Press V

### 3. Identify the mass storage device where you will create the volume.

Type in the names that you wrote at the back of your Disk System Initialization or System Generation Guide.

If you can't find the names, press the **ESC** key. This returns you to the drive management menu. Contact a Corvus Service representative for assistance.

Once you enter the correct names and passwords, the screen displays the volume manager main menu:

```
Volume Manager [x. x]                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
F -- Free space list

H -- Help
E -- Exit
-----
Enter VOLMGR function: __
```

### 4. Select the option to add a volume.

Press **A**

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

Type volume name PIPES and press

`RETURN` .

Type the volume's desired size and press

`RETURN` .

The size will depend on how many files you expect to have in the pipe area at one time. A pipe area of 1024 blocks will hold many files. A pipe area of 512 blocks will serve a small network. You can expand or contract the pipe area later by removing the volume you're making now and creating and initializing a new volume.

Type the volume's location.

The screen will suggest a location. To that number, add the length of the pipe area. If the sum of the two values is less than 32000 blocks, press `RETURN` .

If the suggested location plus the pipe area is more than 32000, press `ESC` . You will return to the volume manager main menu. Press `L` for a listing of volumes and free space. The pipe area must reside within the first 32000 blocks. So find a free space there for a volume of the desired size.

The volume should be a UCSD type volume.

Type UCSD `RETURN` .



## 6. Decide to initialize the volume.

Press Y

The screen displays:

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

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

Press

The screen displays the volume manager main menu.

You have finished creating the PIPES volume.

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

Press E

twice.



## Initialize the PIPES Volume

To use the newly created PIPES volume as a pipe area, you must specially initialize it. You begin in the Corvus management utility main menu.

### 1. Select the maintenance utilities menu.

Press **M**

The screen displays the maintenance utilities menu:

```
CORVUS UTILITY [x. x]                DS SERVER
Maintenance Utilities                Drive DRIVE1
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----
P — Parameter Manager

D — Disk Diagnostic
O — Omninet Test

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. x]: 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 1; server is SERVER

Please select an option:
```

## 3. Select the pipes option.

Press P

The screen displays the pipes menu:

```
PARMGR [x. x]: 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 = 506  
  
OK to continue? [N]
```

**5. Initialize the PIPES volume.**

Press Y

You have finished initializing PIPES. The screen displays the pipes menu.

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

Press E

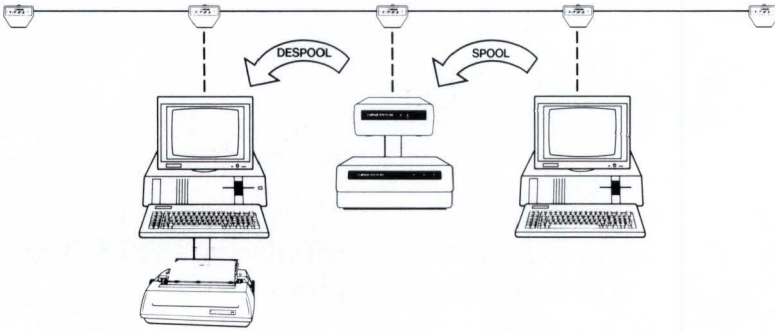
three times.

The PIPES volume is ready to use. The next section will explain how to have a printer take pipes out of the pipe area for printing.

To learn how to place pipes into the pipe area and how users retrieve pipes from the pipe area, see the Network Station User Guide for your computer.

## Printing an Electronic Message

To print files from the pipe area, the printer must be connected to a computer. The computer reads files from the pipe area and sends the information to the printer, a process called despooling. Files will stay in the pipe area until despoiled. Your computer can despool when not doing other tasks.



*Spooling to the Pipe Area,  
then Despooling to a Printer*

Attach a printer to the computer that will take files out of the pipe area for printing. Connect the printer as you normally would. You begin at the Constellation II log-on message.

1. Sign on as user **XXXUSER** and press **RETURN**

where XXX depends on your type computer:

IBM for IBM PC,  
DRB for DEC Rainbow 100,  
and ZS1 for Zenith Z-100.



The screen displays:

```
Current date is TUE 1-01-1980
Enter new date:
Current time is 0:00:14:33
Enter new time:
```

## 2. Enter the date and time.

Type in the correct date and time or press **RETURN** twice.

The screen displays:

```
The IBM Personal Computer DOS
Version 2.0 (C) Copyright IBM Corp. 1981, 1982

A> _
```

## 3. Select the despool utility.

Type `n:DESPOOL` **RETURN**

where n is the lowest Corvus volume unit letter.

The screen displays the despool main menu:

```
Copyright 1982, 1983 Corvus Systems, Inc.
All Rights Reserved
```

```
Corvus Despool Utility [x. x]
Main Menu
```

```
-----
D — Despool a file
C — Change despool parameters
```

```
H — Help
E — Exit
```

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



## 4. Select the change parameters option.

Press C

The screen displays the change parameters menu:

```
Corvus Despool Utility [x. x]
Change Parameters
-----
P  — Pipe name           : PRINTER
O  — Output device       : PRINTER
L  — Do you want <lf> after <cr> : YES
S  — Single page printing : NO
E  — Exit to main menu
-----
Please select an option:
```

The despool program automatically will look for pipes addressed PRINTER.

If this is the name of your printer, press

.

If network users gave their printer a different name, press P and type in the correct name

.

When the file to be printed is embedded with a carriage return <cr>, some printers will automatically linefeed but others will keep returning to the beginning of the same line. Consult your printer manual to see whether your printer automatically advances the page one line after each carriage return.

If your printer automatically linefeeds <lf> when it sees a carriage return <cr>, toggle the linefeed option to no by **pressing L**.

If you're feeding paper one sheet at a time, to toggle the single page printing option to yes by pressing S.

**5.** Once you have set all parameters, return to the despool main menu.

Press E

**6.** Start despooling.

Press D

The screen display is similar to:

```
Corvus Despool Utility [x. x]
Despool a file
-----
Currently searching for pipe named : PRINTER
Press any key to escape ...
```

The despool program uses the name you've given it to search the pipe area for a like-named pipe. When it finds the pipe, the program removes it from the pipe area and despools it to the printer hooked to the computer. After each pipe despools, the program returns to search for more pipes that have been spooled.

## 7. When you've finished despooling, exit the despool program.

Press `SPACE`

Press `E`

The screen displays:

```
A>
```

You now know how to despool a file from the pipe area to your printer.

### Maintaining the Message Center

The pipe area is useful for sending messages between users electronically and spooling and despooling files to a printer. But with time, mislabeled files from mistakes in spooling and despooling will clutter the pipe area and reduce the amount of useful space. Periodically, you'll want to clean the pipe area and reclaim space from unwanted files. You begin at the Corvus management utility main menu.

## 1. Select the maintenance utilities.

Press `M`

## 2. Identify the mass storage device containing the desired pipe area.

Type in the names that you wrote at the back of your Disk System Initialization or System Generation Guide.

If you can't find the names, press the **ESC** key. This returns you to the drive management menu. Contact a Corvus Service representative for assistance.

When you have identified the system, the screen displays the maintenance main menu.

## 3. Select the parameter manager option.

Press P

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 pipe 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. All pipes, whether of data or text, will “contain data” or be “empty.”

PIPE 1 is a pipe addressed to the pipe name PRINTER. The file is open and probably is being despoiled by the printer. If you list the pipe area again and the pipe’s number of blocks has decreased, you’ll confirm it’s being despoiled.

PIPE 2 is waiting to be despoiled once PIPE 1 finishes.



Steve is probably despooling PIPE 3. Again, you can confirm this by listing the pipe area a second time and seeing if its number of blocks has decreased. If the number remains the same, the pipe isn't being despoiled. If so, the pipe may have a problem and you should purge it.

A user accidentally transposed the letters in SMITH when he spooled the file in PIPE 4 with the address SMTIH. This name isn't on the electronic message center directory. This pipe is taking up space and you should purge it.

A user is writing, or spooling, the pipe in PIPE 5. He should soon finish spooling and the pipe will close. If a second listing doesn't show the pipe growing or closing, the pipe may have a problem. You can close the pipe to avoid respooling it or purge the pipe and respool it.

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. You should purge the pipe.

Note the pipes that have problems and what action you want to take. You may need to purge a pipe or close and open pipe.

## 6. Continue the program.

Press

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 6 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 **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 you've cleaned the pipes area, return to the Corvus management utility main menu.

Press **E**

twice.



---

## Chapter 9: System Backup

---

You must protect information on computer storage media from accidental loss. The best security is to back up, or make copies of, everything. These copies are kept on a different piece of storage media, often at a remote location. Thus, a fire in one building won't destroy your work.

You can back up your Corvus disk system three ways:

Method	Backs up	Refer to
● MSDOS 2.0 standard copy program	Files within a volume to diskette	MSDOS 2.0 Disk Operating System Manual
● Corvus backup-to-floppy program	Volumes to one or several diskettes	Network Station User's Guide
● Corvus MIRROR hardware and software	Volumes or disks to video cassette tape	This chapter

As system manager, you may want to back up an entire disk quickly. For such tasks, Corvus Systems specially developed the Corvus MIRROR hardware and software, an effective and low-cost way to back up hard disk drives.

The MIRROR creates an image, or copy, of a drive or drive volume and saves the image with a video cassette recorder (VCR). You can buy the MIRROR either built into the Corvus disk system or later as an add-on option. The Corvus management utility includes MIRROR software.



## Using the Corvus MIRROR

Any computer can execute the MIRROR program, but all other users should be told not to use the network during backup. The MIRROR uses the disk exclusively and does not allow other hard disk activities.

You use the MIRROR with a VCR. Before using the recorder, become familiar with how it works.

Always use the same VCR to back up and restore your Corvus drive. Set the VCR at standard play speed and use the highest quality tape to prevent errors. Use a VCR without the color enhancement feature or disable this feature when using the MIRROR.

The following section describes the MIRROR's functions. Then you will learn how to use those functions to back up and restore drives and volumes.

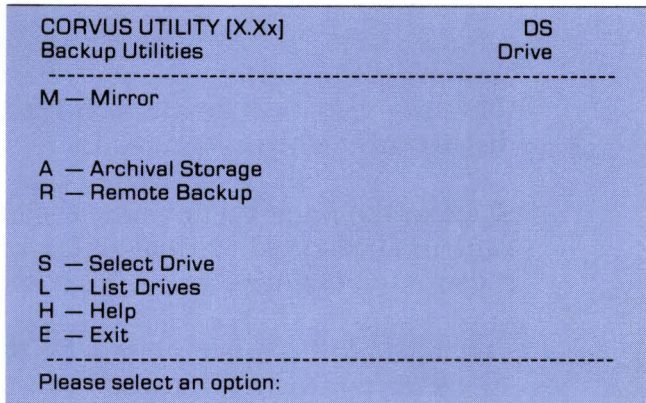
## MIRROR Functions

To display the MIRROR program, sign on as the system manager and enter the Corvus management utility menu.

### 1. Select backup utilities.

Press B

The screen displays:



The MIRROR program works with all drives containing MIRROR hardware and backs up your disk by making an image of it. MIRROR options include:

Archival storage—Places several images on tape with a directory.  
Requires remote option hardware.

Remote backup —Allows a timer to delay the start of backup. Requires remote option hardware.

- |              |   |
|--------------|---|
| Select drive | –Chooses which drive to back up.                |
| List drives  | –Displays the on-line drives.                   |
| Exit         | –Returns program to Constellation II main menu. |

## 2. Select the MIRROR program.

Press M

## 3. Identify the disk system containing information you want to back up.

Type in the names that you wrote at the back of your Disk System Initialization or System Generation Guide.

If you can't find the names, press the **ESC** key. This returns you to the drive management menu. Contact a Corvus Service representative for assistance.

Once you enter the correct names and passwords, the screen displays:

```
Mirror [X.Xx]                               Slot 1
Main menu                                     DS 0
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----
I  — Identify image
B  — Backup
R  — Restore
V  — Verify

H  — Help
E  — Exit
-----
Please select an option:  _
```

### Backup

—Copies all or part of a Corvus drive to tape while doing a cyclical redundancy check (CRC) to find errors. Backup only writes to the tape and can't detect whether tape is in the VCR. You always should verify immediately after backing up to make sure images were copied correctly.

The option produces a tape image with a header block that includes the image's date, time, size, system type and optional comments.

### Restore

—Copies images, block by block, from tape and places them on the disk while doing a CRC.

- Verify — Lets you check the accuracy of the tape recording. Verify uses the CRC to determine if the backup tape could be restored. Verify doesn't compare data on the tape to that on the drive and doesn't write the stored data back to the disk.
- Identify — Reads, then displays the image header and determines the image's tape position.
- Exit — Returns you to the backup program.

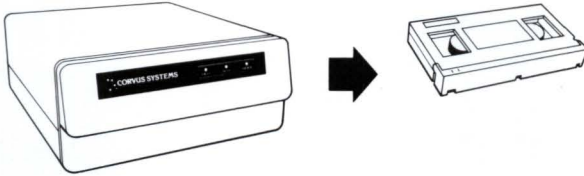
During backup, the program records each block on the disk four times. If the verify finds an error on the block's first copy, it counts a soft, or recoverable, error and reads the second copy of the block. The CRC repeats the error check after each faulty image and quits when it finds an error-free block. If the CRC finds all four images are faulty, it counts a tape read, or hard, error. Tape read errors are blocks that couldn't be restored properly.

If the CRC reports more than 250 recoverable errors, your tape probably is worn out and should be replaced.



## Backup

This section shows how to back up either a drive or volume. The steps are the same except when you must select either the drive (steps 2 and 3) or the volume (steps 4 and 5).



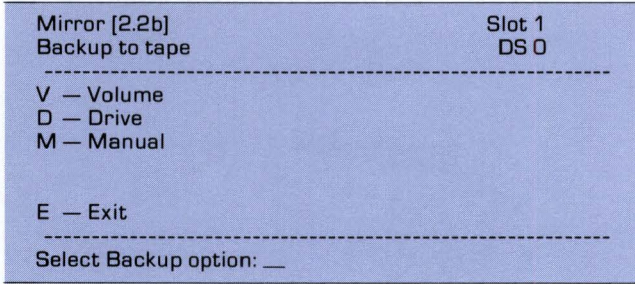
### *Backing Up the Disk to Video Tape*

Backup consists of two major tasks. First you back up the disk or volume to tape while the computer checks the disk for errors. Then you verify the tape, to make sure the disk or volume image was copied correctly.

**1. From the MIRROR main menu, select backup.**

Press B

The screen displays:



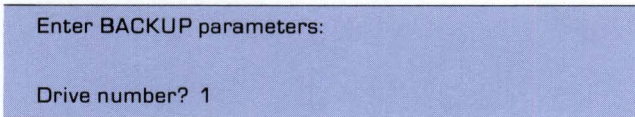
If you are backing up a drive, go to step 2.

If you are backing up a volume, skip to step 4.

**2. Select the drive option.**

Press D

The screen displays:



### 3. Select which drive to back up.

If drives are chained together, select which drive to back up. You can back up only one drive at a time.

Press

The screen display is similar to:

```
Backing up 11540 blocks from drive
starting at block 0.
Date: 9-Mar-83
```

Skip to step 6.

### 4. Select the volume option.

Press **V**

The screen displays:

```
Name of volume? _
```

### 5. Select which volume to back up.

Type the name of the volume and press  .

The screen display is similar to:

```
Backing up 3072 blocks from drive 1
starting at block 4304

Enter date : 31-JAN-83
```

## 6. Label your tape image.

The computer will prompt you for the image's date, time, name and any comments. Your responses will be written at the beginning of the tape to help you identify its contents.

Type in the date. For example, type `9-MAR-83` `RETURN` .

Type the time. For example, type `5:00 P.M.` `RETURN` .

Type a name of up to 16 characters for the tape image you'll create. For example, type `DRIVE BACKUP` `RETURN` .

Type a comment of up to 80 characters that labels the contents of the drive backup. For example, type `MARKETING DRIVE`.

When you finish the four responses, the screen display will be similar to:

```
Date: 9-MAR-83
Time: 5:00 P.M.
Name: DRIVE BACKUP
Comment: MARKETING DRIVE
```

```
Position Recorder and Start Record
Press <return> when ready _
```

## 7. Load your video cassette recorder.

Set the VCR's speed to standard play. Insert a tape and rewind it. You should back up only one image per tape.

Backup requires about 1½ minutes of tape per megabyte (2048 blocks). So you'll need a 30-minute tape to back up a Model 6 or Model 11 drive. You'll need a 60-minute tape for a Model 20 drive. You can back up most volumes on a 30-minute tape.




## 8. Back up.

When you have loaded the VCR, press the recorder's **PLAY** and **RECORD** . After a few moments, on the computer, press **RETURN** .

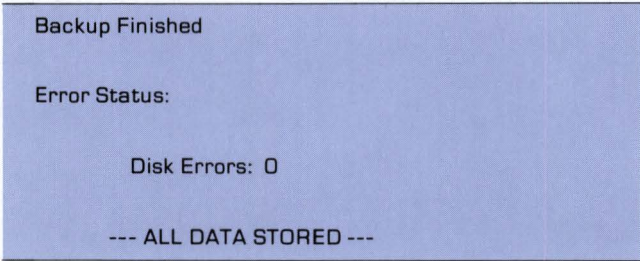
You can cancel the command by pressing the computer's **ESC** , and you'll return to the MIRROR main menu.

The screen displays:



Backup in Progress . . .

Backup requires about 1½ minutes per megabyte (2048 blocks) of information. Backup takes about 12 minutes for Model 6, about 24 minutes for Model 11 and about 36 minutes for Model 20. Once the backup is completed, the screen displays:



Backup Finished

Error Status:

Disk Errors: 0

--- ALL DATA STORED ---

If any disk errors are reported, see Chapter 10, "Troubleshooting," to correct possible media defects.

Note that the backup option only writes to the tape. If the tape is faulty, you may not be able to restore it.

## 9. Verify whether you can restore the tape.

Press **V**

The screen displays:

```
Verify selected.
```

```
Position Recorder and Start PLAYBACK  
Press <return> when ready__
```

Rewind the tape to its beginning and press the recorder's **PLAY**. On the computer, press **RETURN**.

The screen displays:

```
Verify in Progress...
```

Verification takes as long as backup. When done, the screen displays:

```
Error Status:
```

```
Recovered
```

```
Recovered Errors: 16
```

```
Tape Read Errors: 0
```

```
--- ALL DATA RECEIVED ---
```

If the computer reports more than 250 recovered errors, the tape probably is wearing out and should be replaced. If tape read errors occur, repeat the backup with a new tape.

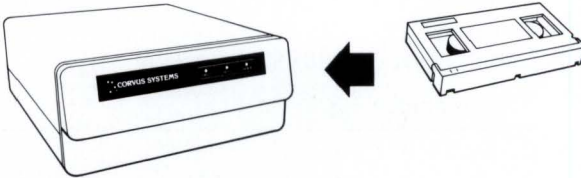
## 10. Return to the backup utilities menu.

Press **E**

## Restoration

The steps below show how to use the MIRROR to restore in three ways. You can restore volume images to volumes and disk drives to the equal-size or larger drives.

Restoring a volume or disk drive consists of two major steps. First you identify the tape, to make sure it's the one you want. Then you restore the tape to disk as the computer checks both tape and disk for errors.



### *Restoring the Video Tape to Disk*

The volume you restore must be the same size as the volume you backed up. Otherwise, you will write over volumes where other information is stored. You select which volume to restore in steps 4 and 5.

When you restore a drive from tape, you usually will restore the image to another drive equal in size. You select the equal-size drive to restore in steps 6 and 7.

Sometimes you will want to restore a drive that varies in size from the drive which created the original image. You can only restore the image to a larger drive than the original. You select an alternate drive in steps 8 and 9.

You begin at the MIRROR main menu.

## 1. Make sure the tape contains the correct backup information.

To select the identify image option,

Press I

The screen displays:

Identify selected.

Position recorder and start PLAYBACK  
Press <return> when ready \_\_\_

## 2. Position the recorder and start playback.

Rewind the video tape. When it is rewound, on the recorder press **PLAY**. On the computer, press **RETURN**.

The screen display is similar to:

```
Image ID   : 1
Size       : 11540
Generated on: IBM PC
Date       : 9-MAR-83
Time       : 5:00 P.M.
Name       : DRIVE BACKUP
Comment    : MARKETING DRIVE
```

3. If the tape contains the desired image, select the restore menu.

Press R

The screen displays the restore menu:

```
Mirror [2.2b]                               Slot 1
Restore to tape                             DS 0
-----
V - Volume
D - Drive
M - Manual

E - Exit
-----
Select Restore option: __
```

If you are restoring a volume, go on to step 4.

If you are restoring a drive, skip to step 6.

If you are restoring an alternate-size drive, skip to step 8.

4. To restore a volume, select the volume option.

Press V



## 5. Select the volume to restore.

Type the name of the volume you'll use to restore the information and press **RETURN** .

For example, type **DEMO** **RETURN**

The screen displays:

```
Restoring 3072 blocks to drive 1
starting at block 4304.
Position recorder and start PLAYBACK
Press <return> when ready __
```

Skip to step 10.

## 6. To restore a drive, select the restore menu's drive option.

Press **D**

The screen displays:

```
Enter RESTORE parameters:

Drive number: 1
```

If drives are chained together, you may select the drive where the image will be restored. Remember that the drive from which you took the image and the drive where you'll restore the image must be equal in size. Usually, you'll restore drive 1.

## 7. Type 1 RETURN

The screen displays:

```
Restoring 11540 blocks to drive 1
starting at block 0.
Position recorder and start PLAYBACK
Press <return> when ready__
```

Skip to step 10.

## 8. To restore an alternate-size drive, select the manual option.

Press M

The screen displays:

```
Enter RESTORE parameters:

How many blocks: 0
```

## 9. Check the size of your tape.

When the computer identifies the backup tape in step 3, the identify option reports the size of the image on the original drive. The image's size must be smaller than the drive to be restored. To check the size of your drive, use the disk diagnostic's version check under the maintenance utilities.

If the image is smaller than the drive to which it will be restored, type the image size  .

For example, type 11540.

The screen displays:

```
For drive: 0
```

If drives are chained together, type the number of the drive that will restore the image and press  .

If no drives are chained, type 1  .

The screen displays:

```
Restoring 11540 blocks to drive 1
starting at block 0.
Position recorder and start PLAYBACK
Press <return> when ready _
```

Go on to step 10.

## 10. Position the recorder and start playback.

Rewind the tape. When it is rewound, on the recorder, press **PLAY** . On the computer, press **RETURN** .

The screen displays:

```
Restore in progress . . .
```

Restoration takes as long as the original backup. When finished, the screen displays:

```
Error Status:
```

```
Recovered Errors: 30  
Tape Read Errors: 0  
Disk Write Errors: 0
```

```
--- ALL DATA RECEIVED ---
```

If more than 250 recovered errors are reported, the tape probably is wearing out and should be replaced. If the computer encounters any tape read errors, the tape media could be faulty and you should try to restore the image again. If the computer encounters disk write errors, see Chapter 10, “Troubleshooting,” to correct possible media defects.

## 11. Exit the MIRROR program.

Press **E**

You return to the backup menu.

## Errors

The three most common error messages you may encounter when using the MIRROR involve tape problems.

The error message “image not found” displays if you incorrectly position the cassette when you begin the tape. The program will search for the start of the image and the header block for about one minute before abandoning the search.

The error message “image size mismatch” indicates the size of the area you’re restoring doesn’t match the image’s size.

The error message “tape dropout during playback operation” indicates the tape you’re reading has been partially erased. This can occur if you placed a magnet near your tape or didn’t properly position your tape before recording.





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## Chapter 10: Troubleshooting

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You can fix yourself many of the problems you may encounter with the Corvus disk system. But before you begin any unfamiliar routines, take the time to back up your drive. You'll keep from losing important information and save yourself serious problems.

Disk problems are caused by mechanical failure or faulty hardware, software or firmware. Firmware is the factory-supplied software that controls the disk and enables the computer to communicate with the disk. This chapter will address disk problems caused by faulty firmware or hardware.

You may experience disk problems if the drive firmware is outdated or damaged. You may have problems if the disk platter, the media which stores information, has scratches, flakes and other defects.

Your tools to fix such problems are the drive indicator lights, installation guide, Corvus diagnostic utilities and steps to correct a drive manager error.

You should begin by using the drive indicator lights and your installation guide. Refer to the installation guide for your particular computer and particular setup. If you still can't solve the problem, turn to the Corvus diagnostic utilities. Steps to correct a drive manager error conclude this section.

## Drive Indicator Lights

The three lights on the drive show its status. When only the ready light is on, the drive is operational and can communicate with computers. The ready light goes off when the disk is actually in use. You'll often see the lights flicker when the disk is in use.

The table below shows common problems and their solutions. More details on how to remedy problems follow the table.

Symptom	Possible Problem	Remedy
No indicator lights on disk	Power cord not properly connected	Properly connect power cord
	Fuse blown	Replace fuse
	Voltage setting incorrect	Select proper voltage setting (See hardware setup.)
Indicator lights function yet ready light doesn't stay on	Improper hardware setup	Check hardware setup, especially cable attachments
	Drive error	Toggle reset switch
	Improper firmware	Replace firmware (See firmware section below)
Ready light on but computer cannot communicate with drive	Improper hardware setup	Check hardware setup especially drive controller switches
	Problems in interleaving specification or virtual drive offset (VDO) table	Properly set up interleaving specification and VDO table (See section below)
Ready light on and computer can communicate with the drive but intermittent problems	Media defects	Check for media defects (See section below)
	Problems in interleaving specification or VDO table	Properly set up interleaving specification and VDO table (See section below)

## Corvus Diagnostic Utilities

The disk diagnostic program will help you repair disk problems. The tools you'll use are updating the firmware, exercising and parking the heads, and setting the drive parameters, which include the interleaving specification and the virtual drive offset (VDO) table. You can correct media defects by checking the cyclical redundancy and substituting spare tracks. If all else fails, you can format the disk.

You update the firmware if the ready light is on but the drive can't communicate with the computer. You also need to update after reformatting a drive or when adding some new devices to an existing system. Before updating firmware, use the version option to see which version of firmware is on the drive.

Exercising the heads checks how the heads are operating. Heads read data from the various disk platters inside a Corvus drive. The screen displays any head failures.

Parking the heads locks the heads over the innermost portion of the disk, which does not record data. This feature keeps you from damaging the disk's data when you carry the drive from one place to another.

You have another remedy if the drive can't communicate with the computer. You can set the drive parameters, either the virtual drive offset (VDO) table or the interleaving specifications. The VDO table tells the size of each logical drive. The interleaving specification sets the timing for the heads to read data from the disk as the disk rotates.

You can use the cyclical redundancy check (CRC) to look for defects on the Corvus drive.

If the CRC finds defective areas on the disk, you can skip over them by sparing the tracks. The disk uses tracks to store information. Tracks are divided into sectors, then blocks, which are measured in bytes.

If all of the diagnostic procedures fail, as a last resort you can format the disk. Formatting the disk erases all data on a drive. After you have reformatted a drive, you must replace the firmware using the firmware update procedure. Also, if a previous CRC has found defective tracks, you again will have to substitute spare tracks.

## Entering the Diagnostic Program

To use the diagnostic program, from the Constellation II main menu, select the maintenance option. If your Corvus disk system is inoperative, you must use the diagnostic program from your diskette drive. You will find the program on CORMS22. Place the diskette in the drive and turn on your computer. You must always use the diskette for updating firmware.

- 1. Turn on all Corvus equipment.**
- 2. Put the CORMS22 diskette into your diskette drive.**

If your computer has two diskette drives, put the diskette into drive A.



### 3. Turn on your computer.

The screen displays the maintenance menu:

```
CORVUS DIAGNOSTIC UTILITY
VERSION [X.Xx]
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----
D — Disk Diagnostic
O — Omninet Test
-----
Please select an option: _
```

### 4. Select the disk diagnostic option.

Press **D**

If you are not using OMNINET, skip to the next section, "Updating the Firmware."

If you are using OMNINET, the screen displays:

```
Slot 1: an OMNINET interface

Select slot number [1]:0
```

### 5. Select the slot number.

Type 1

The screen displays:

```
Select server number [0..63]:0
```

## 6. Select the server number.

Type in the OMNINET node address of your disk system or disk server and press **RETURN** .

The screen displays:

```
DDIAG [x.x]: Disk Diagnostic
(c) Copyright 1982, 1983 Corvus Systems, Inc.
```

```
-----
V -- Version check
P -- Display/modify drive parameters
X -- Perform servo exercise
C -- Perform CRC scan for bad tracks
```

```
S -- Set diag data block file name
U -- Update firmware on disk
F -- Perform platter format
```

```
O -- Park heads of disk
M -- Manual mode
```

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

```
-----
Current slot is 2; server is 64
```

## Updating the Firmware

You may have to update your firmware when you add to your system Corvus devices, Corvus utilities or new versions of the computer's operating system. Updating or replacing the firmware does not affect any other files on your drive. But you should back up your disk before selecting this option.

The steps below show how to check the disk's firmware version, then update or replace the Corvus firmware.

### 1. Check the firmware version number.

From the disk diagnostic menu, press **V**.

The screen display is similar to:

Drv	P/V	Capacity	SPT	TPC	CPD
---	---	-----	---	---	---
1	P	35860	20	6	306

Drv	ROM	Firmware
---	---	-----
1	62	V18.4AP
		-- CONST II - 10/82

The firmware version is a number, V18.4AP in the example above, and a short message. Also displayed are the drive model and capacity, physical or virtual drive (P/V), number of sectors per track (SPT), tracks per cylinder (TPC) and cylinders per disk (CPD).

## 2. Press

The screen displays the main disk diagnostic menu.

## 3. Select the update option.

Be sure you have booted from diskette.

Press **U**

The screen displays:

The option you have selected may destroy data on the drive. Please make sure that you are talking to the proper drive.

Target controller is : slot 1, server 0

Continue? [Y/N]

Press **Y**

The screen displays:

Update firmware on which drive? 1

Press

The screen displays:

Change drive tables? N

Press

The screen displays:

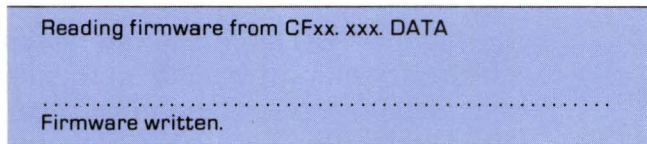
Enter firmware file name: CFxx. xxx

## 4. Enter the firmware file name.

To update or replace the firmware with the displayed version number,

Press **RETURN**

The screen displays:



Press **SPACE**

The screen displays the main disk diagnostic menu.

## 5. Confirm the new firmware is on your drive.

Press **V**

## 6. Exit the diagnostic program.

Press **E**

### Setting the Drive Parameters

Normally, you don't have to set the drive parameters of the virtual display offset (VDO) table or interleaving specification drive parameters. But if the drive can't communicate with the disk, the drive parameters could be the cause.



The VDO table gives the starting address of any virtual drives on the disk.

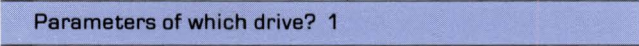
The interleaving specification numbers sectors of the disk according to the rotational speed and timing of the read-write operations. Numbers are not in sequential order. The wrong interleaving number will greatly delay the disk operations.

Setting the VDO table and interleaving specification destroys data on the disk. Before selecting this option, you must back up your disk. Restore the data to the disk when you have finished. You begin at the disk diagnostic menu.

## 1. Select the option to display/ modify drive parameters.

Press P

The screen displays:



Parameters of which drive? 1

## 2. Select which drive to modify.

Press **RETURN**

The screen displays:

```
Disk Map for Drive 1
No tracks are spared
Interleave spec: 9
Virtual Drive / Track Offset
          1      0
```

Press **SPACE**

The screen displays:

```
-----
L  - Display parameters
S  - Save changes

T  - Set spare tracks
I  - Set interleaving
V  - Set Virtual drive offset table

E  - Exit
-----
Select PARAMETER option:
```

## 3. Set the interleaving specification.

Press **I**

The screen displays:

```
Enter Interleaving: 9
```

## 4. Enter the interleaving number.

Type the value corresponding to your Corvus drive.

The proper value of the interleaving specification is 9 for Models 6, 11 and 20.

If the screen displays the correct value for your drive, press **RETURN** .

If the Corvus service department instructs you to change the interleaving specification, or if the displayed specification is incorrect, type the correct number.

The screen displays:

```
Disk Map for Drive 1
No tracks are spared
Interleave spec: 9
Virtual Drive / Track Offset
                1   0
```

Press **SPACE**

The screen displays:

```
-----
L  — Display parameters
S  — Save changes

T  — Set spare tracks
I  — Set interleaving
V  — Set Virtual drive offset table

E  — Exit
-----
Select PARAMETER option:
```

## 5. Set the VDO table.

Press **V**

The screen displays:

```
Enter -1 to terminate entry
Track offset for virtual drive 1: 0
```

Press **RETURN**

The screen displays:

```
Track offset for virtual drive 2: -1
```

Press **RETURN**

The screen displays:

```
Disk Map for Drive 1
No tracks are spared
Interleave spec: 9
Virtual Drive / Track Offset
          1      0
```

Press **SPACE**

The screen displays:

```
-----
L  - Display parameters
S  - Save changes

T  - Set spare tracks
I  - Set interleaving
V  - Set Virtual drive offset table

E  - Exit
-----
Select PARAMETER option
```

## 6. Save your changes.

To save your changes for the interleaving specification and VDO table,

**Press S**

The screen displays:

```
Disk Map for Drive 1
No tracks are spared
Interleave spec: 9
Virtual Drive / Track Offset
                1      0
```

```
You are about to destroy data
on the disk. Continue? [Y/N]
```



## 7. Back up your disk.

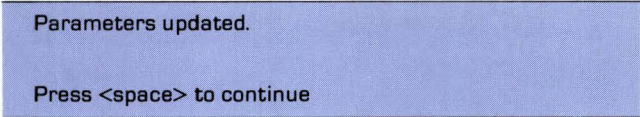
You must back up your disk on a diskette or on video tape using the Corvus MIRROR.

If you haven't backed up your disk, press **N**. See Chapter 9, "System Backup," for instructions on backing up your drive.

If you already backed up your disk,

Press **Y**

The screen displays:



```
Parameters updated.  
  
Press <space> to continue
```

Press **SPACE**

The screen displays the disk diagnostic main menu.

## 8. Exit the diagnostic program.

Press **E** twice.

You have finished updating the interleaving specification and the VDO table.

## Exercising the Heads

The heads read data from and write data to the recording surfaces of the disk platter, inside a Corvus drive. The steps below show how to test whether the heads are functioning properly. First, enter the diagnostic program.

1. **Select the option to perform servo exercise.**

Press **X**

The screen displays:

```
How many passes do you wish to run? [80]
```

2. **Select the passes to run.**

Press **RETURN**

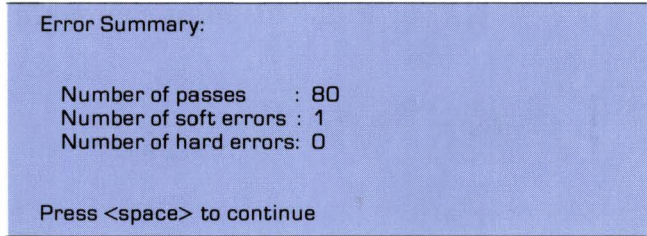
The screen displays:

```
Disk exerciser option.  
  
Disk exerciser option.  
Press <space> to stop test.  
.....  
.....  
.....  
.....
```

### 3. Stop the test.

Press

The screen display is similar to:



If the screen lists any hard errors, you may have a serious problem with the disk drive. Contact a Corvus Service representative for assistance.

Press

The screen displays the disk diagnostic menu.

### 4. Exit the diagnostic program.

Press **E**

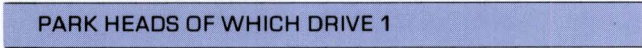
## Parking the Heads

Parking the heads places the heads over an unused area of the disk drive. The procedure prevents you from damaging the disk when moving it from one place to another. You should be in the diagnostic program.

### 1. Select the option to park heads of the disk.

Press **O**

The screen displays:



```
PARK HEADS OF WHICH DRIVE 1
```

### 2. Select the drive.

Press **RETURN**

All three of the drive's red indicator lights will turn off.

The disk drive heads now are over the innermost parts of the disk platters. After you turn off and unplug the drive, you may transport the disk drive safely without damaging the disk surface. Even if the heads touched the disk, they would touch an area that is not used for recording.

When you again turn on the drive, the heads will no longer be parked. You may freely use the drive.

If you parked the heads and did not turn off the drive, you can move the heads back to a useable part of the disk by flipping the reset switch. The switch is the farthest right switch on the front of the drive.

## **Correcting Media Defects**

Media defects can cause intermittent problems with the Corvus disk drive. Defects are either in the hardware or in the software.

Hardware defects result from blemished media. The defects cause intermittent, persistent problems on the disk.

If you suspect media defects, first you can check the cyclical redundancy. If the check lists a track three or more times, you should spare that track.

Sparing tracks substitutes good tracks for defective ones and destroys data on the disk. You must back up your disk before sparing any tracks. Restore the data to the disk when you have finished.



## Checking the Cyclical Redundancy.

When the disk drive is inoperative, you must run the diagnostic program from diskette. Enter the diagnostic program.

1. **Select the option to perform CRC scan for bad tracks.**

Press **C**

The screen displays:

```
PERFORM CRC CHECK OF WHICH DRIVE? 1
```

## 2. Select the drive.

Press `RETURN`

This begins execution of a cyclical redundancy check to determine the quality of the disk drive media.

The screen displays:

```
CRC scan in progress
(takes from 1 to 3 minutes)
```

The BUSY light on the Corvus drive blinks rapidly.

After one to three minutes, the CRC test finishes and the screen displays the results. If no errors were found, the screen displays:

```
No blocks with CRC errors found

Press <space> to continue
```

If the test found errors, the screen displays:

```
HEAD  CYL  SECTOR  TRACK
----  ---  -
1     200   18      801

Press <space> to continue
```

### 3. Copy the error information.

If the test found media defects, note the head, cylinder, sector and track of any errors.

Press SPACE

The screen displays the disk diagnostic menu.

### 4. If the test found errors, repeat steps 1 to 4 five times.

If a track appears bad three or more times, you should spare the track, that is, substitute a spare track for the defective one.

#### Sparing Tracks

When you spare a track, you destroy all the drive information on it. So you first must back up the entire drive before sparing any tracks. After you spare all bad tracks, restore the drive from the tape. You begin in the disk diagnostic menu.

### 1. Select the option to display/modify parameters.

Press P

The screen displays:

Parameters of which drive? 1

## 2. Select the drive.

Press **RETURN**

The screen displays:

```
Disk Map for Drive 1
No tracks are spared
Interleave spec: 12
Virtual Drive / Track Offset
                1   0
```

Press <space> to continue

Press **SPACE**

The screen displays:

```
-----
L  — Display parameters
S  — Save changes

T  — Set spare tracks
I  — Set interleaving
V  — Set Virtual drive offset table

E  — Exit
-----
```

Select PARAMETER option

### 3. Spare damaged tracks on the Corvus disk drive.

Press T

The screen displays:

```
No tracks are spared
-----
A — Add a track to the list
R — Remove a track from the list
C — Remove all tracks from the list

H — Help
E — Exit
-----
Select TRACK SPARING option:
```

### 4. Select the option to add a track.

Press A

The screen displays:

```
ENTER TRACK NUMBER TO BE ADDED: 0
```

### 5. Select the bad track.

Type the number of a track that the CRC check listed as bad. For example, type 306

.

The screen displays:

```
Spared tracks:
306
      1 tracks are currently spared.
      31 total tracks may be spared.
```



## 6. Continue sparing tracks.

Repeat steps 3 through 5 until you have spared all of the tracks that the CRC check listed as defective.

## 7. Exit the spared tracks menu.

Press **E**

The screen displays:

```
Disk Map for Drive 1
Spared tracks:
  306
      1 tracks are currently spared.
      31 total tracks may be spared.
Interleave spec: 12
Virtual Drive / Track Offset
      1      0
      2    896

Press <space> to continue
```

Press **SPACE**

The screen displays:

```
-----
L - Display parameters
S - Save changes

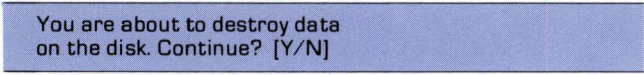
T - Set spare tracks
I - Set interleaving
V - Set Virtual drive offset table

E - Exit
-----
Select PARAMETER option
```

## 8. Save the changes.

Press **S**

The screen displays:



You are about to destroy data  
on the disk. Continue? [Y/N]

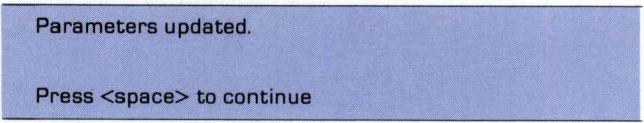
## 9. Back up your data.

You must back up your data, either on diskettes or on video tape using the Corvus MIRROR. Also, make a handwritten list of spared tracks and keep it with the disk drive so you have it when needed.

If you have not backed up your data, press **N**. See Chapter 9, "System Backup," for instructions on drive backup.

If you already backed up your disk, press **Y**.

The screen displays:



Parameters updated.  
  
Press <space> to continue

Press SPACE

The screen displays the disk diagnostic menu.

## 10. Exit the diagnostic program.

Press E

### Formatting the Corvus Drive

The steps below will destroy all data on the disk. So before you do these steps, back up all data on the drive. Use the Corvus MIRROR or floppy diskettes to protect your work.

Format the drive only when no other diagnostic procedure makes your Corvus drive work. After you have formatted a drive, you must replace the firmware and spare again any spared tracks. You begin at the diagnostic menu.

## 1. Select the option to perform platter format.

Press F

The screen displays:

The option you have selected may destroy data on the drive. Please make sure that you are talking to the proper drive.

Target controller is : slot 1, server 0

Continue? [Y/N]

## 2. Confirm which drive to format.

Press **Y**

The screen displays:

Format which drive? 1

Press **RETURN**

The screen displays:

Reminder: You will have to rewrite  
the firmware after the drive format.

Do you want to continue [Y/N] ? N

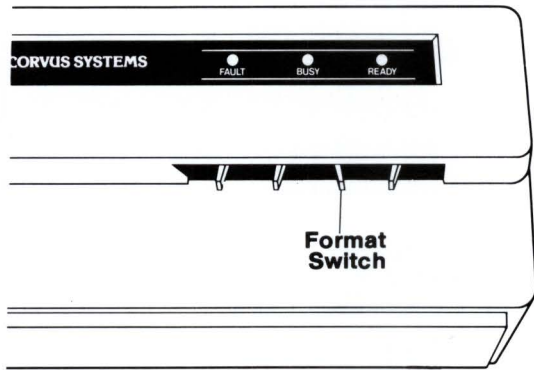
Press **Y**

The screen displays:

Turn on the format switch  
and press <RETURN>

### 3. Turn on the format switch.

Under the three red lights on the front of the Corvus disk drive are four drive controller switches. When facing the front of the Corvus drive, the third switch from the left is the format switch. Flip this switch to the right. Leave the other three switches as they are.



Press

The screen displays:

```
Format in progress
(takes from 1 to 2 minutes)
```

The BUSY light on the drive will blink rapidly during the formatting. When the drive is formatted, the screen display is similar to:

```
Format complete ...
```

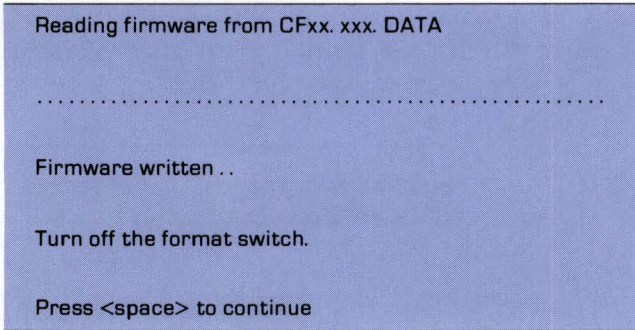
```
Enter firmware file name: CFxx. xxx
```



## 4. Enter the firmware file name.

Press **RETURN**

The screen displays:



## 5. Turn off the format switch.

Flip the format switch, the third switch from the left on the front of the drive, back to the left.

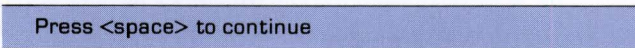
Press **SPACE**

Toggle the reset switch, the rightmost switch on the front of the drive.

When only the ready light on the drive stays lit,

Press **RETURN**

The screen displays:



Press **SPACE**

The screen displays the disk diagnostic menu.

## 6. Spare again any bad tracks on the disk.

See the section above, "Correcting Media Defects."

## 7. Exit the diagnostic program.

Press E

See Chapter 9, "System Backup," for instructions on restoring all data to the disk using the Corvus Mirror.

### Drive Manager Error

If two computers write to the drive management tables at the same time, they could destroy everything on the disk system. So Corvus provides a lock, called semaphores or flags, to prevent two people from writing simultaneously to the drive management tables.

Semaphores set a flag to prevent others from using the drive manager program once you enter it. The set flag is listed in the semaphore table. When you finish using the drive manager program, the program clears the flag.

But a power failure will cause you to exit the drive manager program with the flag still set. So when you try to re-enter the program, the flag will lock you out. You will see the following 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 manager. To resume using the drive manager, clear the flag following the steps below.

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

You may exit the drive manager or reboot and sign on as the system manager.

**2. Enter the maintenance option.**

**3. Select the parameter option.**

**4. Select the set/display semaphore parameters option.**

**5. Select unlock semaphore.**

**6. Type CRVSEMA4**

**7. Confirm the semaphore is unlocked.**

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

The error no longer will occur.

**8. Return to the drive manager.**





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## Glossary

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In this glossary you will find brief definitions of specific Corvus Systems terms and some general data processing terms. For further study, please see:

Chandor, Anthony, **The Penguin Dictionary of Microprocessors**, New York: Penguin Books, 1981

Chandor, Anthony, **The Penguin Dictionary of Computers**, New York: Penguin Books, 1978

Sipl, C.J. and Sippl, R.J., **Computer Dictionary**. Indianapolis: Howard W. Sams & Co., Inc., 1982

Terms in boldface also are defined elsewhere in the glossary.

Account	Network resources available to the user which the system manager assigns to him. The account identifies the user to the system. A user may use his account from all computers of the same type on the network.
Block	A unit of storage space on the Corvus mass storage system equal to 512 bytes or 4K bits. Two thousand and forty-eight blocks equal one megabyte.
Boot	Short for bootstrap, the procedure which loads the operating system from a storage device into a computer.

Boot volume	A <b>volume</b> on the Corvus system containing information for a computer on how to <b>boot</b> . Only operating systems which can boot from the Corvus system need a boot volume.
Constellation II	Also written as Constellation or Const II, network software managing a number of users and computers and their access to one or more Corvus mass storage systems.
CRC	Cyclical redundancy check, a technique for finding errors on a storage device.
Default	A value the computer automatically assumes if no other value is specified.
Despool	Method of transferring a file from the <b>PIPES volume</b> to a user's console, a file of his own or a printer.
Directory	A list of the <b>files</b> on a specific <b>volume</b> .
Disk	A Corvus hard disk unless otherwise noted.
File	A collection of data.
Initialization	A procedure which sets values and defines hardware characteristics to enable the software to run properly.
K	Short for kilo or 1000. In terms of computer storage, 1024.

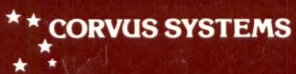
Logical	In the context of operating systems, a term describing objects as they appear to the computer, as opposed to the term physical, describing objects as they concretely exist.
Logical device	A general microcomputer function as opposed to physical device, the equipment that performs a microcomputer function.
MB	Short for megabyte, one million bytes.
MIRROR	A Corvus product which backs up disks onto video cassettes.
Mount	To activate a <b>volume</b> for use.
PIPES	An area on the mass storage system enabling users to share data and equipment. A pipe carries information to a common area called the <b>PIPES volume</b> . Any station may create and fill a pipe with data, and another station may then retrieve this data, transferring it to a file, console or printer.
Read	To retrieve data.
Semaphores	Flags or signals generally used to prevent two or more users from changing data at the same time.
Server	A network device linking the network and other devices, such as printers, which perform specific tasks.

Spare tracks	Good tracks which replace defective ones. Also used as a verb, to skip over defective tracks.
Spared tracks	Tracks no longer used because defects were found on them.
Spooling	A way of sharing information among users by temporarily sending a file to a storage area. Corvus software lets network stations spool files to a PIPES volume. A user may then retrieve the information by despooling.
Sysgen	Short for system generation, a program which must be run before using the system. This program structures the system to accept volumes according to the requirements of a particular operating system.
Track	Concentric rings on the surface of the storage media.
Unit	A logical device number or letter used to address a volume.
Utility server	A network device which can use printer server software to take files from the pipe area to printers.
VDO	Virtual drive offset, a number representing the starting address of a logical drive.

Version	A number used to identify the individual releases of equipment and software. Version numbers may vary, though the function of each product remains basically the same.
Volume	An area of the Corvus system formatted for a particular operating system.
Write	To store data.







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