# System
Manager
Guide

IBM PC MSDOS 2.0
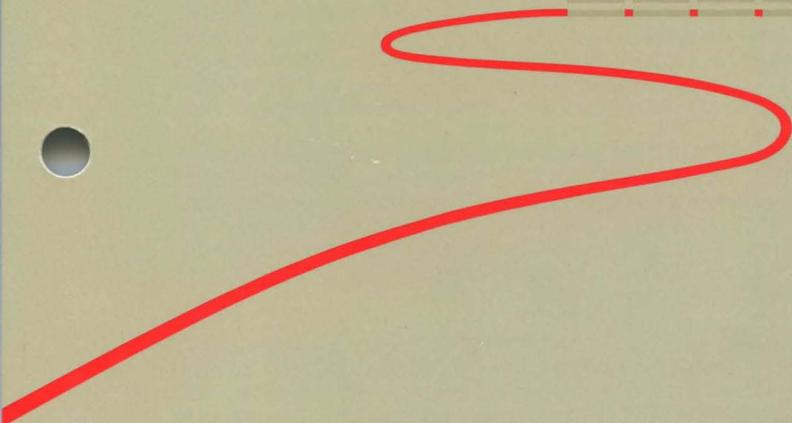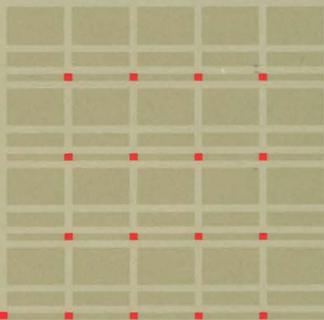
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System Manager Guide

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GETTING STARTED

Constellation II software is designed to manage mass storage for a single computer or network system. This guide shows the system manager how to maintain and supervise the network system using Constellation II software with the MS-DOS 2.0 operating system on the IBM Personal Computer.

HOW THIS GUIDE IS ORGANIZED

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

Chapter 2 shows in a practice session how to create a user, how to create a volume, and how to grant a user access to a volume. Those using Constellation II software for the first time should go through the sample session to learn the basic functions.

Chapter 3 describes drive management, the utility that creates user accounts, volumes and access to volumes. It also explains the drive management error message.

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

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

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

Chapter 7 describes how to create and initialize the PIPES volume, the message center for the network. It also describes printing files and sending files to the pipes area. Maintaining the pipes area is also discussed.

USAGE

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

Examples:

Type COPY B:*.DOC

Type DIR C:

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

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

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Examples:

Press Y

Press [RETURN]

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

Example:

Type your user name and password and **press** [RETURN] .

The variables **x.xx** in the screen displays stand for software revision numbers.

The variable **NN** in the log-on displays stands for the number of the server that is providing the boot information.

The terms **boot** and **reboot** refer to loading and reloading the operating system into a computer.

Throughout this guide, Constellation II main menu and Corvus management utility main menu appear. Both terms refer to the menu that appears once the system manager logs on.

OVERVIEW OF SYSTEM MANAGEMENT 1

The system manager's job is to plan the system, keep the system running smoothly and make sure the system resources are not wasted or misused. Part of keeping a system running smoothly includes backing up information on the drive regularly.

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. This chapter discusses planning a system and an overview of Constellation II.

PLANNING THE SYSTEM

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

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

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

Next decide which users will have access to which volumes. Individual users can have their own volumes or share public volumes with others.

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

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

CONSTELLATION II

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

USER ACCOUNTS

Users are the people who use the computer network. Each user needs a user account, which identifies them to the system. Once he has an account name, a password, and a list of accessible volumes, he can use the system without interfering with the work of others.

The scope of the account is determined by the system manager when he creates it. For each account, the list of volumes accessible could contain one volume, several volumes or all the volumes on the system. Access can be read-only or read-write (i.e. full access).

Accounts can be public or private. A public account is simply an account name known by many people. Any number of users can be logged on with the same account name at any given time. Private account users are responsible for the privacy and security of their volumes and data. Keeping the account password confidential is the key to security. It is critical to keep the system manager's password and drive password confidential. These passwords control access to the whole system.

VOLUMES

The space for storing information on a Corvus mass storage system is divided into volumes. Volumes are similar to floppy diskettes in that both store data or text. The differences are that the storage area of a diskette is fixed in size, while volumes vary in size.

Different operating systems require different types of volumes. That is why different computer types using the same operating system may share a volume and computers that use more than one operating system may need different volumes for each operating system.

PIPES

If a network consists of more than one computer, consider creating a volume called PIPES. PIPES, or the pipes area, is a special volume on the system that allows users to send information to other users or to shared printers. A pipe, similar to a file, resides in the PIPES volume until received by another user or printed. Individual pipes have no fixed size but grow to accommodate data as it is sent in. When a pipe's data is removed, the pipe is deleted.

ACCESS

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

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

Accessible volumes are either active or inactive. A volume is active once it's mounted, that is, assigned to a unit number. Users can use only mounted volumes. An inactive volume is unmounted, that is, no longer assigned to a unit number.

When the user boots the IBM PC, only the active volumes that are on the mass storage system served by the user's home disk server will be automatically mounted. If the user has other accessible volumes that are not mounted when the computer boots, the user can mount these volumes using the mount manager program. The system manager can change the mount assignments and determine what volumes will be mounted when the user boots the computer by using the access manager.

ENTERING CONSTELLATION II

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

Do not let anyone learn the password. Use the password above to create the system, but consider changing this password later. (To change the password refer to the section, "Changing User Attributes" in Chapter 4.)

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

```
CORVUS MANAGEMENT UTILITY        DS
Version [x.xx]                  Drive
(C) Copyright 1982, 1983 Corvus Systems, Inc.
---------------------------------------------------
  D — Drive Management
  B — Backup Utilities
  M — Maintenance Utilities

  U — Utility Server Manager
  T — Transfer Manager

  I — Initialize Drive
  L — List Drives
  H — Help
---------------------------------------------------
Please select an option:  _
```
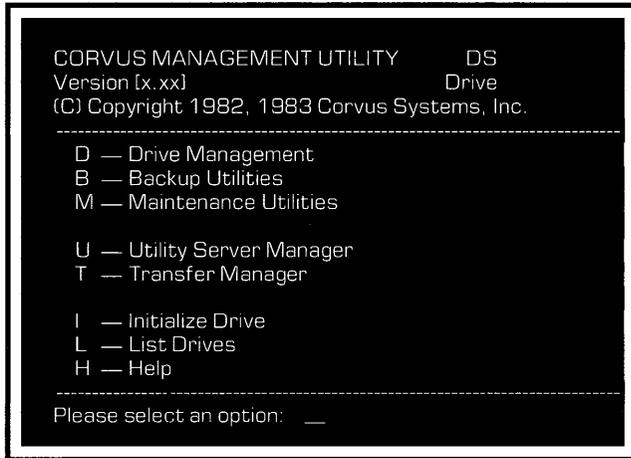
MENU OVERVIEWS

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

Main Menu	Submenus	Actual programs

```
                    ┌──────────────┐    ►User Manager
                    │ Drive        │    ►Volume Manager
              ┌────►│ Management   │    ►Access Manager
              │     └──────────────┘
┌──────────┐  │     ┌──────────────┐
│ Const II │  │     │ Backup       │    ►Optional Software
│ Main Menu│──┼────►│ Utilities    │
└──────────┘  │     └──────────────┘
              │                          ►Parameter Manager
              │     ┌──────────────┐    ►Disk Diagnostic
              └────►│ Maintenance  │────►OmniDrive Diagnostic
                    │ Utilities    │    ►Omninet Test
                    └──────────────┘
                                         ►Initialize Drive
```
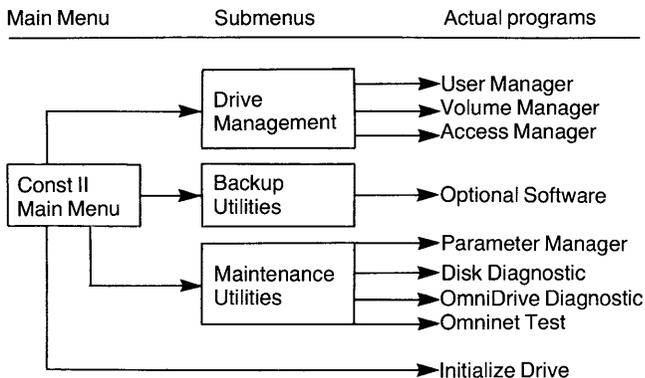
The utilities surrounded by boxes lead to programs that perform system functions.

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A SAMPLE SESSION | **2**

This chapter shows in a sample session how to create a user, a volume, and how to grant a user access to a volume. This process is the third step, following installation and system generation, in building a working network. In this example, there are three steps: first create a volume TRADE; second, create a user account name, ROBERT, and a password, BUY; third, grant ROBERT access to volume TRADE and one other volume. Once finished, reboot the system and log on as ROBERT.

LOGGING ON

1. Insert the Corvus boot diskette.

Insert the Corvus boot diskette in drive A.

If there is no boot diskette, make one. Go to chapter 3, "Copying Files," of the *IBM Personal Computer System Generation Guide*.

2. Turn on the computer.

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The screen displays the Constellation II log on message:

```
              ⚬
            ⚬
                   C O R V U S    S Y S T E M S
                      CONSTELLATION II
              ⚬
                   (LOGON Vx.xx)    (NN)
          ⚬  ⚬

      Please enter your name   __
```
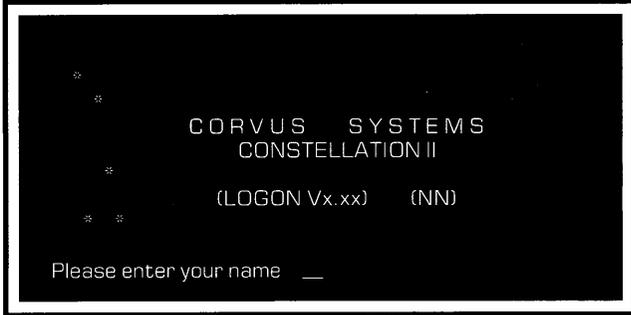
3. Log on as IBMGR with the password HAI.

Type IBMGR

Press [RETURN]

Type HAI

Press [RETURN]

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

```
      CORVUS MANAGEMENT UTILITY      DS
      Version [x.xx]                  Drive
      (C) Copyright 1982, 1983 Corvus Systems, Inc.
      ------------------------------------------------
         D — Drive Management
         B — Backup Utilities
         M — Maintenance Utilities

         U — Utility Server Manager
         T — Transfer Manager

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

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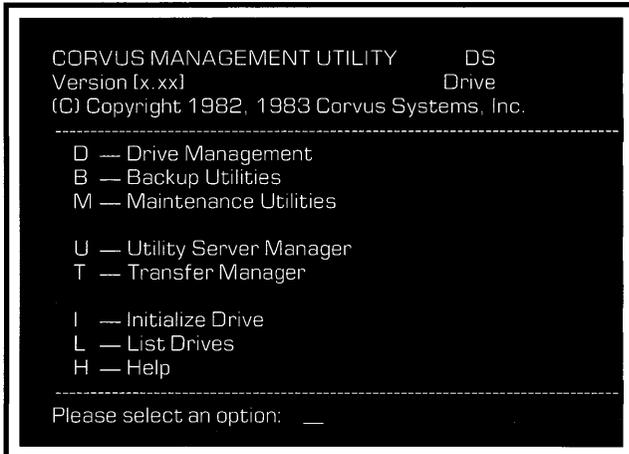
4. Select the drive management option.

Press D

The screen displays:

```
┌─────────────────────────────────────────────┐
│                                             │
│  CORVUS UTILITY [x.xx]              DS       │
│  Drive Management                  Drive     │
│  -----------------------------------------   │
│     U — User/Device Manager                  │
│     V — Volume Manager                       │
│     A — Access Manager                       │
│                                             │
│     B — Boot Manager                         │
│                                             │
│     S — Select Drive                         │
│     L — List Drives                          │
│     E — Exit                                 │
│  -----------------------------------------   │
│   Please select an option:                   │
│                                             │
└─────────────────────────────────────────────┘
```

The screen above is the drive management menu. The programs for creating users, volumes, and access tables are entered from this menu. The sections that follow in this chapter step through the procedures in these programs.

CREATING A VOLUME

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

1. Select the volume manager.

Press V

2. Enter the drive and server names and passwords.

Type the names and passwords entered during system generation.

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

```
VOLUME MANAGER [x.xx]      DS SERVER
Main Menu                  Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
----------------------------------------------
   A — Add a volume
   R — Remove a volume
   C — Change volume attributes
   L — List volumes
   X — Extended list
   F — Free space list

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

3. Select add a volume.

Press A

The screen displays:

```
Volume Manager [x.xx]      DS SERVER
Add a Volume               Drive DRIVE1
----------------------------------------------
Enter attributes of new volume:

        Name:
```

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4. Enter the volume name.

Type TRADE

Press RETURN

5. Choose the volume size.

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

Press RETURN

6. Choose the volume's starting location.

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

Press RETURN

7. Choose the volume type.

Type MSDOS

Press RETURN

The screen display is similar to:

```
Enter attributes of new volume:

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

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

8. Initialize the volume.

Press [RETURN]

The screen displays:

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

Press [RETURN]

The screen displays:

```
Reserved Sectors:   1
```

Press [RETURN]

The screen displays:

```
Directory entries:   256
```

Press [RETURN]

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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.
```
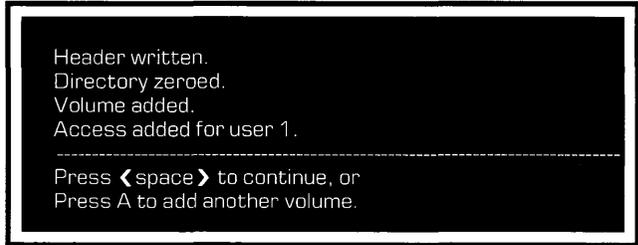
Press SPACE

The screen displays the volume
management menu.

Volume TRADE is part of the system now.
Follow the same steps to create all volumes.
See Chapter 5, "Volume Manager," for details.

9. Return to the drive management menu.

Press E

The screen displays the drive
management menu.

CREATING A USER

This section shows how to create a user. In
this example the user name is ROBERT, and
his password is BUY.

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

Press U

The screen displays the user manager menu:

```
User Manager [x.xx]          DS SERVER
Main Menu                    Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
-----------------------------------------------------
A — Add a user/device
R — Remove a user/device
C — Change user attributes
L — List users/devices

M — Merge user tables

H — Help
E — Exit
-----------------------------------------------------

Enter USERMGR function:
```
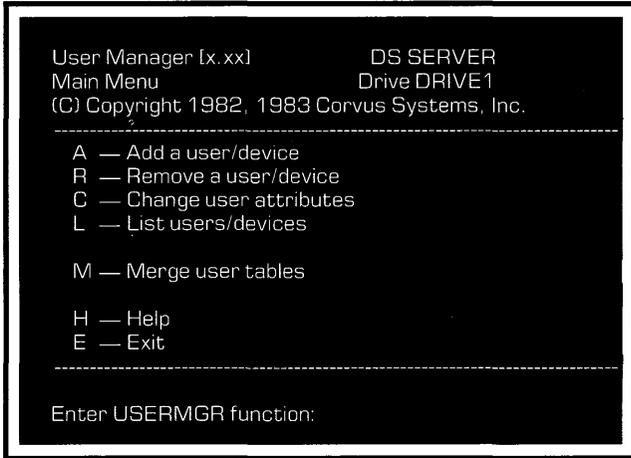
2. Select add a user or device.

Press A

The screen displays:

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

E — Exit
-----------------------------------------------------
Please select an option:
```

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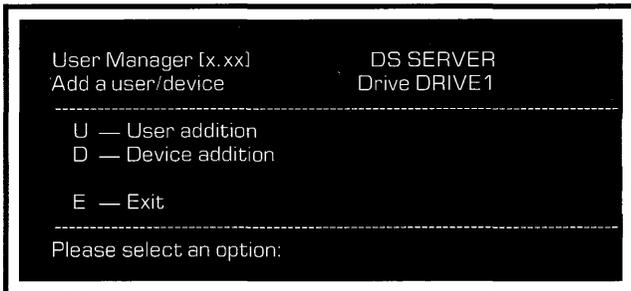
3. Select user addition.

Press U

The screen displays:

```
Please enter attributes of new user:

                    Name:
```

4. Enter the user name.

Type ROBERT

Press [RETURN]

5. Enter the user password.

Type BUY

Press [RETURN]

6. Enter the home disk server.

Type the name of the disk server and **press** [RETURN] .

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7. Enter the boot operating system.

Type MSDOS

Press [RETURN]

The screen displays:

```
Please enter attributes of new user:

                         Name:  ROBERT
                     Password:  BUY
      Name of home disk server:  SERVER
          Boot operating system:  MSDOS

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

8. Add the new user.

Press [RETURN]

If using more than one server, the screen prompts the user to update all servers. Update the servers by accepting the suggested responses.

After all servers are updated, or if only using one server, the screen displays:

```
User added
--------------------------------------------------------------------
Press ⟨ space ⟩ to continue, or
Press A to add another user or device.
```

Press [SPACE]

The screen displays the user manager menu.

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

9. Return to the drive management menu.

Press E

The screen displays the drive management menu.

GRANTING ACCESS TO VOLUMES

This section shows how to grant users access to volumes. All the users on the system will share the public volume IBMMS. The system manager had the option to put the Corvus utilities in IBMMS in the section "Making a Boot Diskette" of the *IBM Personal Computer System Generation Guide.* Programs for sharing the printer and mounting and unmounting volumes run more quickly from volume IBMMS than from a floppy diskette. In this example the user ROBERT is given access to the volumes IBMMS and TRADE.

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

Press A

The screen displays:

```
Access Manager [x.xx]      User
Next User                    DS SERVER
                            Drive DRIVE1
----------------------------------------------------------------
Enter user name:
```

2. Enter the user name.

Type ROBERT

Press [RETURN]

The screen displays the access manager menu:

```
Access Manager [x.xx]      User ROBERT
Main Menu                    DS SERVER
                            Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
----------------------------------------------------------------
  G — Grant volume access
  R — Remove volume access
  C — Change volume access

  L — List volumes accessible

  N — Next user
  H — Help
  E — Exit
----------------------------------------------------------------
Please select an option:
```

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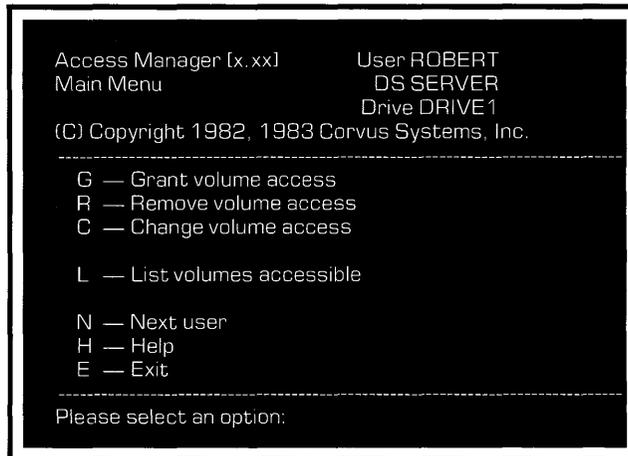
3. Select grant volume access.

Press G

The screen displays:

```
Access Manager [x.xx]        User Robert
Grant Volume Access    ·     DS SERVER
                             Drive DRIVE1
---------------------------------------------------
Please enter:

    Volume name:
```

4. Enter the volume name.

Type IBMMS

Press [RETURN]

5. Select the type of access.

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

Press [RETURN]

6. Mount IBMMS to make it active.

Press [RETURN]

The computer asks on which unit number to mount IBMMS.

Press 1

Press [RETURN]

The screen displays:

```
Please enter:

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

OK to grant volume access (Y/N)?Y
```
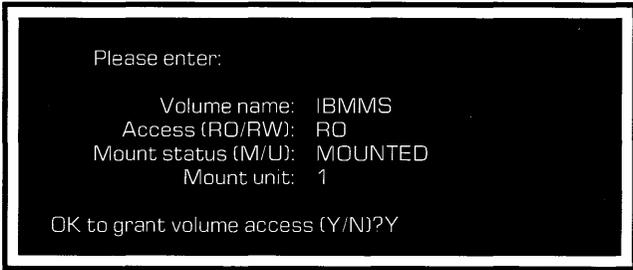
# 7. Grant access to IBMMS.

**Press** [RETURN]

The screen displays:

```
Access granted
-----------------------------------------------------------
Press ( space ) to continue, or
Press G to grant another volume.
```

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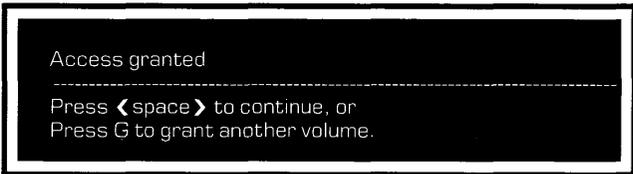
8. Continue granting access to the other volume.

Press G and follow "Granting Access" steps 3 through 7 above to give ROBERT RW access to TRADE. In step 4, select read-write access by **typing** RW and **pressing** [RETURN]. In step 6, mount TRADE on unit 2.

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

```
Access granted
-----------------------------------------------------------------
Press ( space ) to continue, or
Press G to grant another volume . . .
```
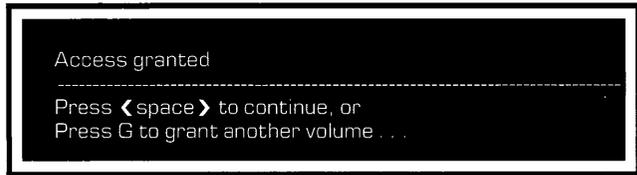
ROBERT now has access to volumes IBMMS and TRADE. Follow the steps above to grant other users volume access. See Chapter 6, "Access Manager," for details.

9. Return to the drive management menu.

Press E three times.

The screen displays the Constellation II main menu.

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LOG ON

This section shows how to log on as the user ROBERT, created in the preceding example.

1. Put the Corvus DOS boot diskette in the computer.

Insert the boot diskette in drive A.

If there is no Corvus boot diskette, make one. Go to Chapter 3, "Making a Boot Diskette," of the *IBM Personal Computer System Generation Guide.*

2. Reboot the computer.

Hold down CTRL and ALT and **press** DEL

After a moment, the screen displays:

```
               CORVUS    SYSTEMS
               CONSTELLATION II

               (LOGON V x.xx)  (NN)

      Please enter your name:
```
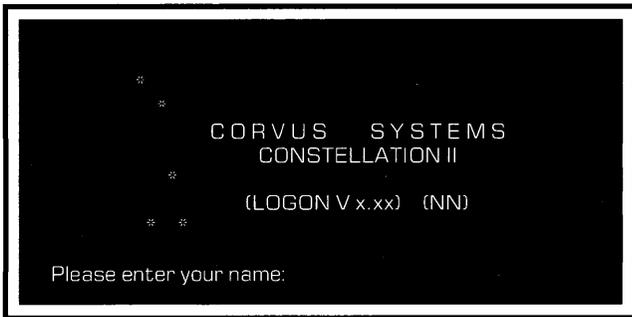
3. Log on as ROBERT with password BUY.

The user ROBERT now has RO access to IBMMS and RW access to TRADE.

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

DRIVE MANAGEMENT 3

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

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

ENTERING THE
DRIVE MANAGEMENT PROGRAM

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

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

Type the names entered during system generation. It is necessary to re-enter the names and password only after exiting the Constellation II program. The names and password do not need to be repeated each time the various managers are used.

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

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

DRIVE MANAGEMENT ERROR

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

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

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

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

```
Constellation error -107
Corvus utility already in use on selected drive.
Type < space > to continue . . .
```

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

1. Return to the Constellation II main menu.

Press [SPACE] after the above error message.

2. Enter the maintenance option.

Press M

3. Select the parameter option.

Press P

4. Select the set and display semaphore parameters option.

Press S

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5. **Select**
unlock semaphore.

Press U

6. **Type the**
semaphore name.

Type CRVSEMA4

CRVSEMA4 must be typed in capital letters.

Press [RETURN]

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

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

The drive management program is ready
for use.

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

Press E twice.

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USER
MANAGER | **4**

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

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

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

```
User Manager [x.xx]          DS SERVER
Main Menu                    Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
------------------------------------------------
     A — Add a user/device
     R — Remove a user/device
     C — Change user attributes
     L — List users/devices

     M — Merge user tables

     H — Help
     E — Exit
------------------------------------------------
Enter USERMGR function:
```

ADDING USERS

Press A for add a user and device option.

The screen displays:

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

  E — Exit
---------------------------------------------------
Please select an option:
```
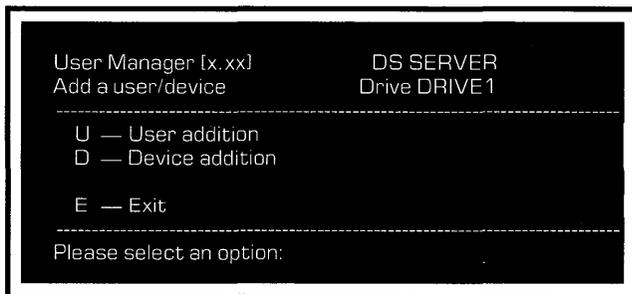
The device option is used to add system devices dedicated to a single task, such as a utility server.

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

When the user boots the computer the only accessible volumes that will be mounted for the user are the volumes that reside on the mass storage system that is served by the user's home disk server. The home disk server is the server connected to the drive containing the volume IBMMS. When the network user boots the IBM PC the system volume IBMMS will be mounted. If the user has access to other volumes that are not on the drive served by the user's home disk server, the user will have to use the mount manager program to mount the volumes.

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

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

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

Constellation II allows creating users for other operating systems besides DOS 2.0. Use this guide only to create DOS 2.0 users.

LISTING USERS

The list users and 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 [x.xx]          DS SERVER
List users/devices           Drive DRIVE1
-----------------------------------------------------
         User Name   Password   Home DS   Boot type

   1. IBMUSER                  SERVER   MSDOS
   2. IBMGR       HAI          SERVER   UCSD IV.0
   3. ROBERT      BUY          SERVER   MSDOS

   3 Users listed.
-----------------------------------------------------
Press < space > to continue
```

The device list is similar to:

```
User Manager [x.xx]          DS SERVER
List users/devices           Drive DRIVE1
-----------------------------------------------------
   DEV name       Type      Addr Home DS Boot Type

 1. SERVER  DISK SERVER   0    Server   Invalid

   1 device listed.
-----------------------------------------------------
Press < space > to continue, or
press F to list to a file.
```

After adding all users, consider listing them to
a file to have a record of all user names and
passwords for future reference. After
pressing F, specify a diskette or volume to
which the system manager has access. The
program will create a text file in the specified
volume. As an extra precaution, print the file
to have a paper copy of the information.

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CHANGING USER ATTRIBUTES

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

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

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

REMOVING USERS

When users no longer need network access, remove the user and the user's private volumes. To remove a user, from the user manager main menu, **press** R for the remove a user or device option. Type the name of the user to be removed and confirm the removal.

VOLUME MANAGER | 5

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

Note that in order for a volume to be mounted at the time the network user boots, the volume must be added to the mass storage system that is served by the user's home disk server.

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

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

```
Volume Manager [x.xx]          DS SERVER
Main Menu                      Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
-------------------------------------------------
A — Add a volume
R — Remove a volume
C — Change volume attributes
L — List volumes
X — Extended list
F — Free space list

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

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ADDING VOLUMES

To add a volume, **press** A for the add volume
option. Some options suggest a value; accept
the suggested values or change them by
typing a new value.

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

VOLUME NAME

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

VOLUME SIZE

Specify the size of the volume in blocks. One
block holds 512 bytes of information.
Constellation II suggests 1024 blocks, about
half a megabyte. The maximum size of a
DOS volume is 32763 blocks, or 16
megabytes. It's important to plan the number
of volumes and the size of each volume so
storage space is not wasted.

VOLUME LOCATION

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

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

VOLUME TYPE

The volume type is a format designation to make the volume compatible with an operating system. Different operating systems need different volume types. The screen suggests several operating system formats for a volume. Use this manual to create DOS volumes for use with the IBM Personal Computer.

VOLUME INITIALIZATION

New volumes must be initialized, that is, formatted or prepared for use. However, do not format a volume when upgrading Corvus mass storage systems from Constellation I to Constellation II software. In most cases, format the new volume.

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

When initializing DOS volumes, determine their cluster size, number of directory entries, and reserved sectors.

TYPICAL VOLUME CONFIGURATIONS

	Size (blocks)	Cluster Size	Dir Entries	FAT Sectors	Reserved Sectors	Capacity (kilobytes)
single sided diskette	360	1	64	1	1	180
suggested Corvus volume	1024	4	256	1	1	512
	4000	8	256	2	1	2000
	8000	8	256	6	1	4000
	16,000	8	256	64	1	8000

Cluster size is the number of sectors in a file allocation unit: 1, 2, 4, 8, 16, 32, 64, or 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 allocation size.

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Reserved sectors are used by diskettes to store boot information and they are also required to run certain applications software. Corvus recommends that all volumes on the mass storage system have 1 reserved sector.

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.

LISTING VOLUMES AND FREE SPACE

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

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

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

From the volume manager main menu, **press** L to list the volumes on the mass storage system.
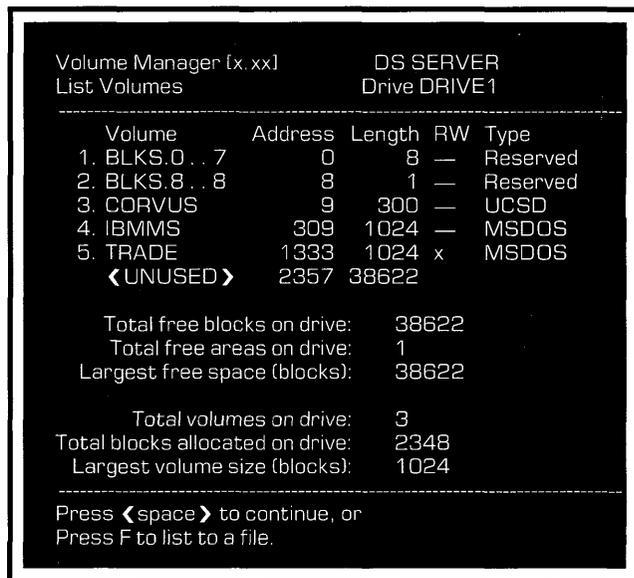
The screen display is similar to:

```
Volume Manager [x.xx]          DS SERVER
List Volumes                   Drive DRIVE1
------------------------------------------------------
     Volume      Address  Length  RW  Type
  1. BLKS.0 .. 7      0       8    —   Reserved
  2. BLKS.8 .. 8      8       1    —   Reserved
  3. CORVUS           9     300    —   UCSD
  4. IBMMS          309    1024    —   MSDOS
  5. TRADE         1333    1024  x     MSDOS
     < UNUSED >    2357   38622

     Total free blocks on drive:       38622
     Total free areas on drive:        1
     Largest free space (blocks):      38622

         Total volumes on drive:       3
  Total blocks allocated on drive:     2348
     Largest volume size (blocks):     1024
------------------------------------------------------
  Press < space > to continue, or
  Press F to list to a file.
```

The extended list option shows other volume attributes for a particular volume type.

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Press X for the extended volume list.

The screen display is similar to:

```
Volume Manager [x.xx]          DS SERVER
Extended Volume List           Drive DRIVE1
----------------------------------------------
List volumes of which type?

Select from:
  UCSD
  CP/M
  MSDOS
  CCOS
----------------------------------------------
```
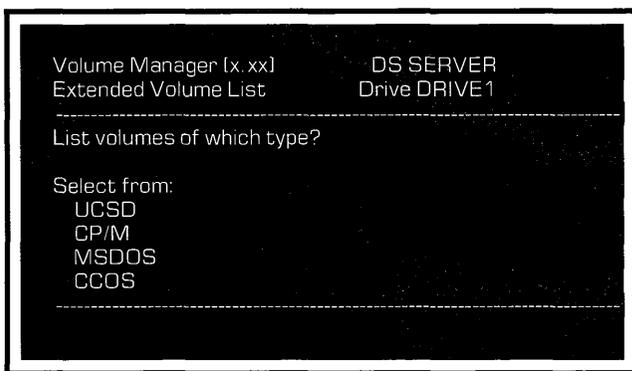
Type the desired operating system. For example,

Type MSDOS

Press [RETURN]

The screen display is similar to:

```
Volume Manager [x.xx]                    DS SERVER
Extended Volume List                     Drive DRIVE1
-----------------------------------------------------------
Volume Vol size  Clstr size Resrv sctrs Dir entries FAT sctrs

IBMMS    1024      4        0          256         1
TRADE    1024      4        1          256         1

            Total free blocks on drive:   38622
            Total free areas on drive:    1
        Largest free space (blocks):      38622

            Total volumes on drive:       3
       Total blocks allocated on drive:   2348
       Largest volume size (blocks):      1024
-----------------------------------------------------------
Press < space > to continue, or
Press F to list to a file.
```
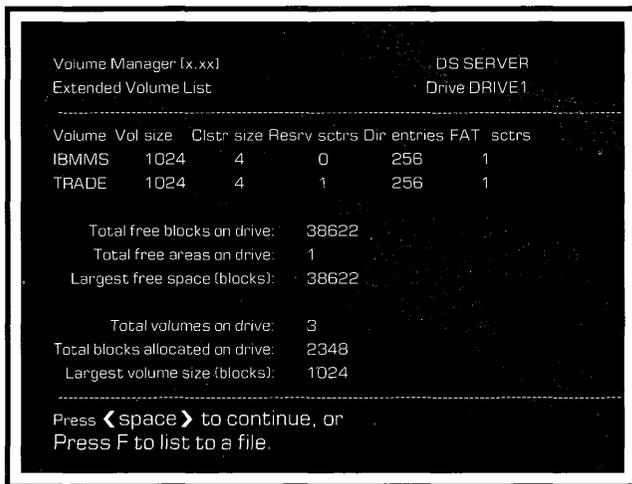
Use the free space list option to display only
the free space on the system and its location.

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

The screen display is similar to:

```
Volume Manager [x.xx]          DS SERVER
Free Space                     Drive DRIVE1
---------------------------------------------------
    Volume        Address  Length  RW   Type
  ‹UNUSED›          2357    38622

      Total Free Blocks on drive:    38622
      Total Free areas on drive:         1
      Largest free space (blocks):   38622
---------------------------------------------------
  Press ‹space› to continue, or
  Press F to list to a file.
```

After adding all volumes, consider listing
them to a file to have a record of volume
names, locations and sizes for future
reference. After **pressing** F, specify a diskette
or volume to which the system manager has
access. The program will create a text file in
the specified volume. As an extra precaution,
print the file to have a paper copy of the list.

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CHANGING VOLUME ATTRIBUTES

Only a volume's name and access can be changed. Changing a volume's size, location or type requires removing the volume, then re-creating it with the desired attributes. To keep the current contents of the volume, it is necessary to copy the files onto diskettes. When re-creating the volume, transfer the old files back into it. Go to the chapter, "Backup to Floppy," of the *IBM Personal Computer MSDOS Network Station User Guide* for a complete discussion of this diskette transfer process.

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

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

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

Volumes designated not accessible cannot be mounted by any user.

REMOVING VOLUMES

Remove a volume when a user is deleted from the system or when certain volume attributes are to be changed.

Removing a volume erases access to all files within it. Do not remove the volume CORVUS. This volume must remain on the 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 the volume's removal. The volume manager removes the volume and all users' access to that volume.

ACCESS MANAGER | 6

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

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

To use the program, **press** A from the drive management menu.

The screen displays:

```
Access Manager [x.xx]      User
Next User                  DS SERVER
                           Drive DRIVE1
--------------------------------------------------
Enter user name:
```

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

```
Access Manager [x.xx]      User STEVEN
Main Menu                  DS SERVER
                           Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
----------------------------------------------------------
  G — Grant volume access
  R — Remove volume access
  C — Change volume access

  L — List volumes accessible

  N — Next user
  H — Help
  E — Exit
----------------------------------------------------------
Please select an option:
```
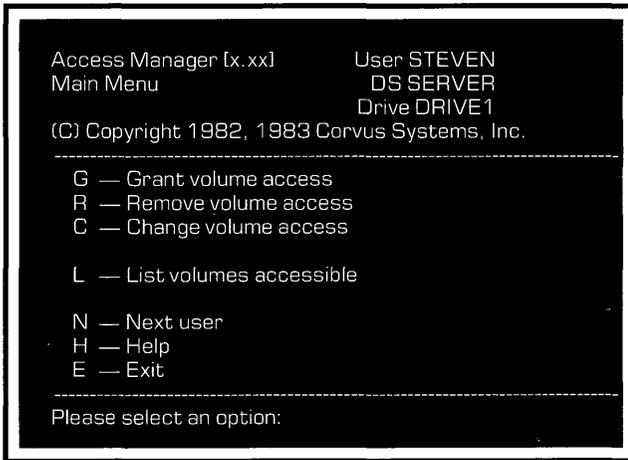
GRANTING VOLUME ACCESS

Press G to select the grant volume access option.

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

VOLUME NAME

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

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

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ACCESS

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

It's possible to restrict volume access to a single user by giving only that user read-write access to the volume. Giving only one user read-write access protects the information from changes by other system users. If the network has more than one computer, consider letting only one network user write to any one volume. Otherwise, two users could write to a file at the same time and information might be lost.

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

MOUNTED OR UNMOUNTED

Volumes are activated by having a logical unit number assigned to them. A logical unit is a number that identifies different volumes or equipment attached to the IBM Personal Computer. When a volume is assigned a unit number, it is called a mounted volume, and is ready to be used.

Press M to mount the volume or **press** U to leave it unmounted. Selecting unmounted finishes the process of granting volume access. Choosing to mount a volume, will cause the screen to prompt for a unit number.

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The system manager determines when setting up the user account which of the user's volumes will be mounted. All MSDOS users should have the volume IBMMS mounted. The Corvus interface to MSDOS 2.0 permits the system manager to mount up to 10 volumes per user. The system manager will use unit numbers to mount the volumes, yet when the system user logs on, his volumes will be mounted on unit letters.

Note that in order for a volume to be automatically mounted for the user when he boots, the volume must be added to the mass storage system that is served by the user's home disk server.

A volume that is accessible, but is unmounted is referred to as an inactive volume. The user can mount an inactive volume temporarily with the Corvus mount manager program.

If all 10 of the user's unit letters are occupied, the user can mount an inactive volume on an active volume's unit letter. To do this, the file allocation table (FAT) sectors of the inactive volume, must be equal to or less than the FAT sectors of the active volume that is being unmounted.

If 8 or less of the user's unit letters are occupied, the user will have two extra units on which to mount volumes. If the user has nine unit letters occupied, the user will have only one extra unit. In order to mount an inactive volume on a free unit, the FAT sector size of the inactive volume must be equal to or less than the greatest FAT sector size of the mounted volumes.

UNIT

Mounting a volume for a user requires assigning it a unit number. Unit numbers identify volumes to the operating system. After mounting each volume, the program asks what unit to assign it. Mount the volume on the lowest unit number available between 1 and 10. To select a unit, type the unit number and **press** [RETURN] .

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

When the network user boots the computer, the accessible volumes will be mounted on sequential unit letters, starting with the first available unit letter.

The hardware set-up determines the first available unit letter. The IBM PC reserves unit letters A-B for floppy drives. Each floppy or disk drive thereafter reserves one unit letter. The volume mounted on unit number 1 by the system manager will be mounted on the first unit letter available after units are assigned for floppy and/or disk drives. For example, for an IBM PC with two floppy drives and a disk drive, the first available unit letter is unit D.

LISTING VOLUME ACCESS

From the access manager main menu, **press** L to see a list of the volumes a user has access to, their mount units, access type, and operating system.

The screen display is similar to:

```
Access Manager [x.xx]          User STEVEN
List Volumes                   Server SERVER
                                Drive DRIVE1
----------------------------------------------------
    Volume       Unit     RW      Type

    1. IBMMS      C                MSDOS
    2. TRADE      D        x       MSDOS

    Number of volumes accesible  :  2.
----------------------------------------------------
Press < space > to continue, or
press F to list to a file.
```

CHANGING VOLUME ACCESS

From the access manager main menu, **press** C for the change volume access option that changes the type of access a user has to a volume. It is possible to change the access, mount status, and mount unit.

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

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

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

If the volume is unmounted, the process is finished.

If the volume is mounted, the screen automatically suggests the current mount unit. To keep the current unit, **press** RETURN . Otherwise, type the new number, then **press** RETURN .

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

REMOVING VOLUME ACCESS

From the access manager main menu, **press** R to select the remove volume access option that denies a user access to a volume. Type in the name of the volume with the denied access and confirm the choice. To remove the access, **press** Y and RETURN . To cancel, **press** N and RETURN .

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PIPES MANAGEMENT | 7

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

Think of the pipes area as an electronic message center. Network users can send, or spool, their files via a pipe that stores the information in a common space, the pipes area. Other users then can receive, or despool, these files or the printer can print them. A pipe is similar to a file in that it holds information. However, a pipe is temporary, vanishing when its information is despooled, and elastic, growing to accommodate the quantity of information spooled.

Files sent to the pipes area must have names that the receiving user or device, such as the printer, can recognize. The *IBM Personal Computer MS-DOS Network Station User Guide* explains spooling files to the printer or another user and despooling pipes to a file.

This chapter explains how to create the pipes area, then initialize it to set up its structure. It also explains how to automatically despool files to a printer on a network and and how to prepare users for spooling files to the pipes area. Maintaining the pipes area is also discussed.

CREATING THE PIPES VOLUME

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

1. Select the
drive management menu.

Press D

2. Select the
volume manager option.

Press V

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

The pipes volume must be on the server with address 0.

Type in the server and drive names that designate the server with address 0.

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

```
Volume Manager [x.xx]          DS SERVER
Main Menu                      Drive DRIVE1
(C) Copyright 1982, 1983 Corvus Systems, Inc.
--------------------------------------------------
A — Add a volume
R — Remove a volume
C — Change volume attributes
L — List volumes
X — Extended list
F — Free space list

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

4. Select the add a volume option.

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 the pipes area will hold at one time. A PIPES volume of 1024 blocks will hold many files, while one of 512 blocks might be enough for a small network.

Type the volume's location.

The screen will suggest a location. The pipes area must reside within the first 32000 blocks. Find a free space there for the PIPES volume. Add the length of the pipes area to the location on the screen. If the sum of the two values is less than 32000 blocks, **press** [RETURN] .

If the suggested location plus the pipes area is more than 32000, **press** [ESC] to return to the volume manager main menu. **Press** L for a listing of volumes and free space.

The volume should be a UCSD type volume.

Type UCSD

Press [RETURN]

6. Confirm the volume should be initialized.

Press Y

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 manager main menu.

The PIPES volume has been created.

7. Return to the Constellation II main menu.

Press E twice.

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INITIALIZING THE PIPES VOLUME

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

1. Select the maintenance utilities menu.

Press M

The screen displays the maintenance utilities menu:

```
CORVUS UTILITY [x.xx]        DS SERVER
Maintenance Utilities        Drive DRIVE 1
------------------------------------------------------------
 P  —  Parameter Manager

 D  —  Disk Diagnostic
 O  —  OmniDrive Diagnostic
 B  —  Bank Diagnostic

 T  —  Omninet Test

 U  —  Update Utilities

 S  —  Select Drive
 L  —  List Drives
 E  —  Exit
------------------------------------------------------------
Please select an option:
```
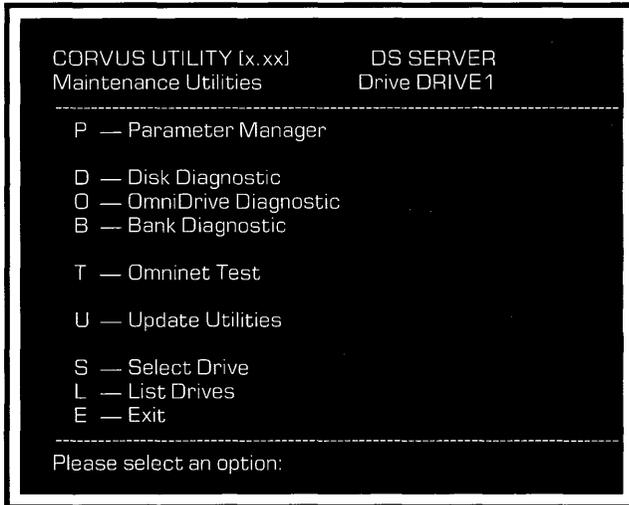
2. Select the parameter manager menu.

Press P

The screen displays the parameter manager menu:

```
PARMGR[x.xx]: Corvus Parameter Manager Program
(C) Copyright 1982, 1983 Corvus Systems, Inc.
--------------------------------------------------------------------
    M — Master Multiplexer
    P — Pipes
    S — Set/Display semaphore parameters

    H — Help
    E — Exit
--------------------------------------------------------------------
Slot is 6; server is SERVER
Please select an option:
```
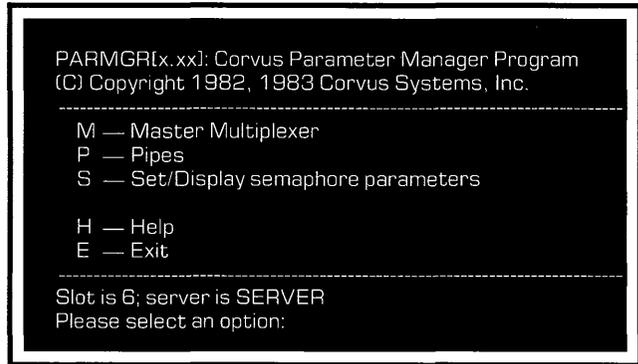
3. Select the pipes option.

Press P

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

Press [SPACE]

The screen displays the pipes menu:

```
PARMGR[x.xx]: Corvus Parameter Manager Program
(C) Copyright 1982, 1983 Corvus Systems, Inc.
-----------------------------------------------------------------
  L — List active pipes
  R — Reinitialize (delete all pipes)
  I — Initialize pipes area
  C — Close a pipe
  P — Purge a pipe

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

4. Select the option to initialize the pipes area.

Press I

The screen display is similar to:

```
Initializing pipes with block = 2391, length = 1018

OK to continue?  N
```

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5. Initialize the PIPES volume.

Press Y

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

6. Return to the Constellation II main menu.

Press E twice.

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

PRINTING ON THE NETWORK

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

To print files and to send messages via the pipes area follow the same two-step process. First users send, or spool, the file to the pipes area. Then the file is despooled to a printer for printing or to another user for his use. This section explains printing on the network. Spooling files to the printer and exchanging information between users is discussed later in this chapter and in the *IBM Personal Computer MS-DOS Network Station User Guide.*

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

Choose easily-remembered pipe names for the printers. Consider calling the most frequently used printer PRINTER, because the programs that are used to send and retrieve information from the pipes area automatically suggest that name. In general, the name can be up to eight characters and must begin with a letter. The pipes area can hold many pipes with the same name.

Files in the pipes area with the same pipe name are despooled one at a time. The disk controller manages the pipes, so that many users can spool files to the same printer at the same time. Files are not necessarily printed in the same order as they are sent.

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

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

Files will stay in the pipes area until despooled. To check for files sent to the printer, use the list pipes option in the despool program main menu. If pipes are waiting, use the despool a file option in the despool program to retrieve them.

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

1. Select the despool utility.

From the DOS system prompt,

Type n:DESPOOL

Press [RETURN]

The letter **n,** is the unit letter for the volume containing the system volume, IBMMS.

The screen displays the despool main menu:

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

Corvus Despool Utility [x.xx]
Main Menu
------------------------------------------------------------------
   D — Despool a file

   C — Change despool parameters

   H — Help

   E — Exit
------------------------------------------------------------------
Please select an option:  __
```

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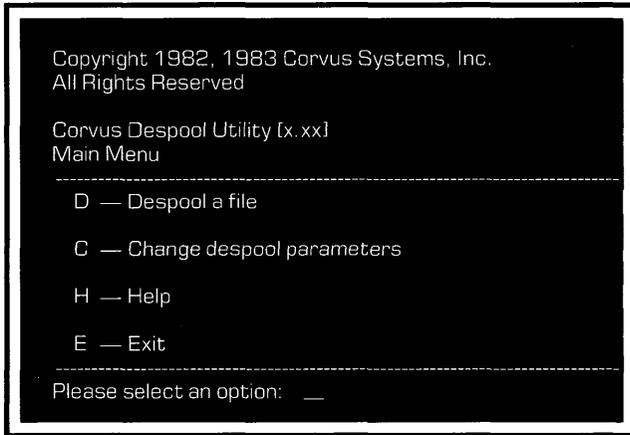
2. Select the change parameters option.

Press C

The screen displays the change parameters menu:

```
Corvus Despool Utility [x.xx]
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:  __
```

3. Select the pipe name option.

Press P

The despool program automatically will look for pipes addressed PRINTER. If this is the name of the printer, **press** RETURN . Otherwise, type the correct name and **press** RETURN .

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4. Adjust the print options.

Select the appropriate settings for the insert linefeeds and single page printing options.

When a carriage return ⟨cr⟩ is embedded in the file to be printed, some printers will automatically linefeed ⟨lf⟩. Other printers will keep returning to the beginning of the same line. Consult the printer manual to see whether the printer automatically advances the page one line after each carriage return.

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

If feeding paper one sheet at a time, change the single page printing option to yes by **pressing** S.

Press E to return to the despool program main menu.

5. Print the file.

Press D

The screen display is similar to:

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

The despool program searches the pipes area for pipes with the current pipe name. When it finds a pipe, the program removes it from the pipes area and despools it to the printer attached to the computer or utility server. After each pipe is despooled, the program returns to search for more pipes that have been spooled.

6. When finished despooling, exit the despool program.

Press [SPACE]

Press E

The screen displays the DOS system prompt.

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SENDING FILES TO THE PIPES AREA

Two programs may be used to send files to the pipes area: the spool program and the spool driver.

The spool program may be used to send both text and data files to the pipes area, and is discussed in detail in the *IBM Personal Computer MS-DOS Network Station User Guide.*

The spool driver allows existing print commands in application programs to send text files directly to the network pipes area. The spool driver cannot be used to send data files. Many users may prefer this method, since they will not have to exit their current program to print files to the network printer.

Depending upon how boot diskettes are created, the spool driver is contained on each user's boot diskette, and is automatically installed at boot time. In most cases, its operation is transparent to the user.

The spool driver may need to be altered depending on the network configuration. The next section discusses the spool driver program and how it can be changed to suit the requirements of the network. For information on how to use the spool driver to send files to the pipes area, consult the *IBM Personal Computer MS-DOS Network Station User Guide.*

THE SPOOL DRIVER

Many application programs have built-in print commands that allow users to send files to printers attached directly to their computers. The spool driver enables these print commands to send files directly to the network pipes area. From the pipes area, other users can retrieve the files, or the files can be sent to a network printer.

A command in the CONFIG.SYS file installs the spool driver into the computer's memory each time the computer is booted. To use the spool driver, a user's boot diskette must contain the version of the CONFIG.SYS file which has the spool driver command. See the *IBM Personal Computer MS-DOS System Generation Guide* for more details.

One function of CONFIG.SYS is to install device drivers. Device drivers are programs that computers use to control peripheral devices such as keyboards, monitors, or local printers. The spool driver is a device driver that allows DOS to send information directly to network pipes areas.

The spool driver replaces the standard device drivers PRN and LPT1. The IBM PC uses the PRN and LPT1 device drivers to control local printers. When users boot their IBM PCs using Corvus boot diskettes, they will temporarily be unable to use printers attached directly to their computers. The change spool driver utility enables users to switch between local or network printers, and is discussed in the *IBM Personal Computer MS-DOS Network Station User Guide*.

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CHANGING SPOOL DRIVER PARAMETERS

The spool driver program has several parameters that determine the way the driver functions. In particular, these parameters are used to identify where the spool driver sends a file, and what method is used to close the pipe after the entire file is sent to the pipes area. A pipe must be closed before its contents can be retrieved from the pipes area. Parameters can also be used to change the file name that appears on the printout.

The CONFIG.SYS file installs the spool driver with its parameters set to default values. The network or specific application program may require different parameter values. Since the spool driver is on each user's boot diskette, the system manager must ensure that the parameters are set properly before boot diskettes are created and distributed to users on the network.

Parameters are changed by editing the command line for the spool driver in the CONFIG.SYS file. The following is the command line for the spool driver as it appears in the CONFIG.SYS file:

DEVICE = SPLDRV.BIN

Use the DOS EDLIN program to modify the
CONFIG.SYS file. Each parameter is
identified by a single letter. To change the
default value for a parameter, add the
parameter letter and the new parameter value to
the command line using the following format:

DEVICE = SPLDRV.BIN/parameter:parameter
                        letter   value

The slash (/) indicates the start of each new
parameter. The parameter letter must follow
directly after the slash. The colon (:) must
follow the parameter letter and precede the
parameter value. Do not enter spaces
between any of the symbols or letters.

Examples:

DEVICE = SPLDRV.BIN/P:PRINTER1/C:^XE

DEVICE#SPLDRV.BIN/S:SERVER0/T:30

Parameters may be entered in any order or
combination.

Users may also use the change spool driver
utility to change the value of the parameters.
The change spool driver utility temporarily
changes the parameters for the current
session. As soon as the computer is rebooted,
the parameters return to the values specified
by the CONFIG.SYS file on the user's boot
diskette. The utility is discussed in the *IBM
Personal Computer MS-DOS Network Station
User Guide*.

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The remainder of this section discusses each parameter and their default values.

THE S PARAMETER. The S parameter identifies the name of the server controlling the drive which contains the pipes area. The default value is the name of the server set to network address 0.

Use the S parameter if the pipes area is not associated with the server set to address 0. Enter the server name as the parameter value. For example, if the server name is SERVER2, enter

DEVICE = SPLDRV.BIN/S:SERVER2

THE D PARAMETER. The D parameter determines if the file is sent to the network pipes area, or to a printer attached directly to the user's computer. The default value is N for the network printer.

The parameter may have two values: N for network printer, or L for local printer. For example, to print exclusively to a local printer, enter

DEVICE = SPLDRV.BIN/D:L

THE P PARAMETER. The P parameter sets the pipe name to which the file is sent. The pipe name can direct the file to a network printer, or it can indicate a pipe which will be despooled by another user on the network. The default value is pipe name PRINTER.

Use the P parameter if the network printer has not been assigned the pipe name PRINTER. For example, if the pipe name for the network printer is DIABLO, enter

DEVICE = SPLDRV.BIN/P:DIABLO

THE F PARAMETER. The F parameter sets the file name that printed on each file sent to the network printer by the spool driver. The user name and network station number are also printed on the file. The default file name is OUTPUT.TEXT.

Use the F parameter to change the file name that appears on the printout. For example, to print the file name SUSAN.TEXT, enter

DEVICE = SPLDRV.BIN/F:SUSAN.TEXT

THE C PARAMETER. The C parameter is used to define a specific control string which the application program sends to indicate the end of a file. The character string also signals the spool driver to close the pipe. The default value is the character string ^Z^Z where the symbol ^ indicates a control character.

The control string can have up to three characters. Two types of characters may be used in a control string:

- A caret (^) followed by one letter (A-Z). For example, ^T is a valid character.
- The letter E which represents the ESC character.

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These characters can be entered in any order or combination. The following are examples of valid control strings:

ˆEˆAˆT
ˆRˆUE
ˆGˆO
E
ˆY

For example, to use the character string ˆGˆO, enter

DEVICE = SPLDRV.BIN/C:ˆGˆO

Certain application programs and printers may place limitations on the type of control string that may be used. Refer to the program and printer manuals for more information.

Assigning a character string is the best method for closing a pipe. The application program must have the capability to send a character string to indicate the end of a file.

While the C parameter is the recommended way, the T parameter and E option are alternative ways to close the pipe. Any combination of the three methods may be used to close a pipe.

THE T PARAMETER. The T parameter sets the length of time that the spool driver waits before closing the pipe. If no further activity occurs in the pipe at the end of the time interval, the pipe is closed. The default value is 20 seconds.

Specify the time-out in seconds. For example, to set the time interval to 30 seconds, enter

DEVICE = SPLDRV.BIN/T:30

Setting the time-out to 0 disables the mechanism. In this case, either the C or E parameters will be used to close the pipe.

When determining the length of the time-out, consider how much activity occurs on the network. If a network is busy, it may take longer for the entire file to be sent to the pipes area. In this instance, set a longer time-out.

If the time interval is not long enough, the pipe may be closed before the entire file is sent to the pipes area. The file would then be printed on two separate printouts and data may be lost.

If the time interval is set too long, a second file may be sent to the same pipe before the pipe is closed. In this case, two separate files would be printed as one printout.

THE E OPTION. The E option is used to close a pipe after exiting an application program. The pipe is not closed when the application program is exited. It must be closed manually.

To use this option set the T parameter to 0.
With a 0 time-out the pipe will not close. The
CONFIG.SYS device line should include:

DEVICE = SPLDRV.BIN/T:0

After exiting an application program enter the
change spool driver program and **press** E.
This will close the pipe.

The values for the parameters should be
changed only if the default values do not
accomodate the network or specific
application programs. Compare the default
values with the specifications for the network
and decide which parameters, if any, need to
be altered.

After all the parameters have been added to
the spool driver command line, save the
CONFIG.SYS file. Note that different users on
the network may require different versions of
the spool driver command line, and therefore,
different versions of CONFIG.SYS. Copy the
appropriate CONFIG.SYS to each user's
boot diskette.

MAINTAINING THE PIPES VOLUME

The pipes area is useful for sending messages between users and printing files on a network printer. But with time, mislabeled files will clutter the pipes area and reduce the amount of useful space. Periodically, clean the pipes area by deleting the unwanted files. Log on as IBMGR. The Constellation II main menu displays.

1. Select the maintenance utilities.

Press M

The screen displays the maintenance utilities main menu.

2. Select the parameter manager option.

Press P

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

Type in the names entered during system generation.

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

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4. Select the pipes option.

Press P

The screen displays the pipes menu.

5. Select the option to list active pipes.

Press L

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

```
Active pipes are:

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

Press < space > to continue
```

In the example above, the list gives the status of each pipe and its size. Pipes are either open or closed. Only closed pipes can be despooled. An open pipe is either being written to, or being read from the pipes area. If a pipe is open, and its size does not change, it is a bad pipe and must be purged. 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 despooled by the printer. If listing the
pipe area again and the pipe's size in blocks
has decreased, the pipe is being despooled.

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

Steve is probably despooling pipe 3. Again,
confirm this by listing the pipe area a second
time to see if the size in blocks has decreased.
If the size remains the same, the pipe is not
being despooled. If so, the pipe may have a
problem and should be purged.

A user accidentally transposed the letters in
SMITH when he spooled the file in pipe 4
with the name SMTIH. This pipe is taking up
space and should be purged.

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

It appears the letter-quality printer finished
despooling pipe 6, but the pipe is still open.
The despool program may not know to go on
to other files named LETTER. Purge the pipe
if it remains on the list.

6. Continue the program.

Press [SPACE]

The screen displays the pipes menu.

7. Purge a pipe.

Press P

The screen displays:

```
Purge which pipe? [pipe number]:
```

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

The screen display is similar to:

```
Pipe 4 purged

Press ‹ space › to continue
```

Press [SPACE]

The screen returns to the pipes menu.

8. Close an open pipe to avoid respooling.

Press C

The screen displays:

```
Close which pipe? [pipe number]:
```

Type the pipe's number and **press** [RETURN] .

The screen display is similar to:

```
Pipe 5 closed

Press < space > to continue
```

Press [SPACE]

The screen returns to the pipes menu.

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

Press E twice.

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

ENTERING THE DIAGNOSTIC PROGRAM | A

This appendix explains how to enter the diagnostic program. After completing these steps, turn to the *OmniDrive Diagnostic Guide*.

1. Put the CORMS22 diskette in the diskette drive.

Insert the COMRS22 diskette in drive A.

2. Turn on the computer.

After a minute, the screen displays:

```
CORVUS DIAGNOSTIC UTILITIES
Version [x.xx]
(c) Copyright 1982, 1983 Corvus Systems, Inc.
-----------------------------------------------------
  D — Disk Diagnostic
  O — OmniDrive Diagnostic

  T — Omninet Test
-----------------------------------------------------
Please select an option:
```
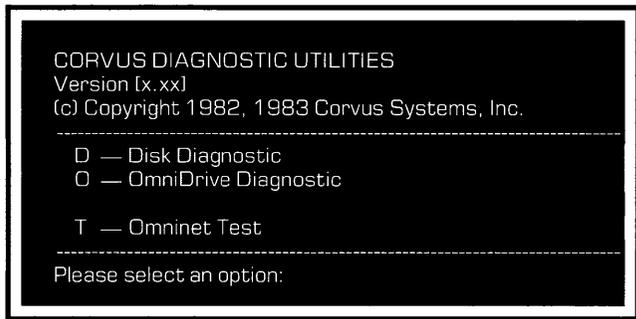
3. Enter the OmniDrive Diagnostic utility.

Press O

The screen display is similar to:

```
OMNIDRIVE DIAGNOSTIC [x.xx]    Slot:  1
Select Drive                   Server:  0
(c) Copyright 1982, 1983 Corvus Systems, Inc.
------------------------------------------------------------
Slot 1: an Omninet interface

Enter slot number:
------------------------------------------------------------
```
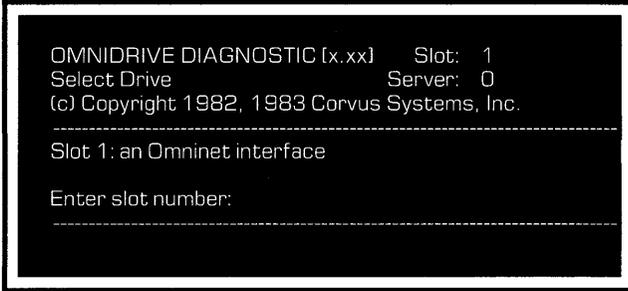
4. Enter the slot number.

Enter the slot number of the Omninet interface.

Press [RETURN]

```
Enter server number:
```

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5. Enter the server number.

Enter the server number of the OmniDrive.

Press [RETURN]

The screen display is similar to:

```
Selected drive is server SERVER0; drive DRIVE1
Continue (Y/N)   ?
```

Press Y

The screen displays the OmniDrive diagnostics main menu.

Now go to the OmniDrive Diagnostic Guide.

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