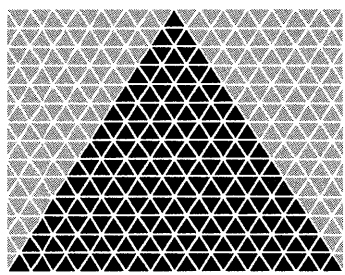
Altos Computer Systems

Altos System V™ Series 386 Installation



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GUIDE TO YOUR ALTOS SYSTEM V™ SERIES 386 DOCUMENTATION

RUN-TIME SYSTEM

Installation
Part numbers: 690-21170-*nnn*
690-21869-*nnn*

- Installation and upgrade
- Set up Multidrop and UPS

Using the AOM™ Menu System
Part number: 690-18055-*nnn*

- Easy-to-use menus to access programs
- Menu Manager to add, update, remove menus

Operations Guide
Part number: 690-21171-*nnn*

- System administration
- Accounting, file systems
- Backups, port setup
- Communications (UUCP)
- Error messages

Reference (C)
Part number: 690-22869-*nnn*

- Commands (C)

Reference (M)
Part number: 690-22870-*nnn*

- Miscellaneous files (M)

User's Guide
Part number: 690-21178-*nnn*
(Not shipped with the Run-time system)

- Basic concepts and tasks
- Vi, ed, mail, awk, sed
- Shells: sh and csh

TEXT PROCESSING SYSTEM

DOCUMENTER'S WORKBENCH™
Part numbers: 690-15843-*nnn*
690-15844-*nnn*

- Mm macros, reference
- Nroff, troff, tbl, eqn

DEVELOPMENT SYSTEM
Set part number: 690-21585-000

Reference (CP, S, F)

- Programming commands (CP)
- System calls, library routines (S)
- File formats (F)

Programmer's Guide

- Make, SCCS
- Lex, yacc
- Signals, system resources, device drivers
- Adb, sdb
- Shared libraries

C Compiler Library and User's Guide

- I/O functions, pipes
- Curses, terminfo
- Assembly routines
- As, cc, COFF, lint, ld
- Error processing
- Character and string processing

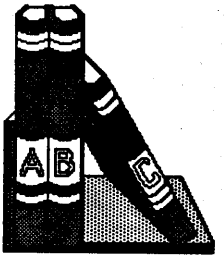
C Compiler Language Reference

- Elements of C
- Program structure
- Declarations, expressions
- Statements, functions
- Preprocessor directives

Macro Assembler User's Guide and Reference

- How to use masm
- Error messages
- Type declarations
- Operands, expressions
- Directives, file control
- Instruction summary

order the *User's Guide* or any of the above manuals, call 408/434-6688, ext. 3004
d give the manual title and part number.



About This Manual

USING THIS MANUAL

This manual, written for the system administrator, describes how to install and upgrade the Altos System V™ operating system, and how to set up the optional Multidrop Communications System and Uninterruptible Power Supply (UPS).

This manual does not describe how to physically connect your system or run the application software that you have purchased with your system.

NOTE

The last section of this manual, "Change Information," summarizes the changes that have been made to the manual since the previous version.

ORGANIZATION

This manual contains the following chapters:

Chapter 1, "Installing and Setting Up the Operating System," describes how to initially install and set up the operating system, reconfigure ports for your terminals and printers, and set up user login accounts.

Chapter 2, "Upgrading Your Operating System," explains how to upgrade your operating system and install additional hard disks.

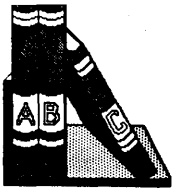
Chapter 3, "Setting Up Your Multidrop System," describes how to connect peripherals (terminals, printers, and so on) to the communications boards (Multidrop, SIO, or ACPA).

Chapter 4, "Uninterruptible Power Supply," describes the software that supports an Uninterruptible Power Supply, and explains how to select the desired power-down process for your installation.

MANUAL CONVENTIONS

This section describes documentation conventions used in this manual.

Symbol	Description
boldface type	What you type. For example: Type **tar cv** *files*
boldface type	Used for commands, programs, utilities, functions, and options. For example: Use the **tar** command to back up your files to floppy disk.
italic type	Variables (a value that can change), such as *files*, as shown in the example above. Also for manual titles, such as *Altos System V Series 386 Operations Guide.*
reverse type	Key you press. For example: Press Esc. Press Retn.



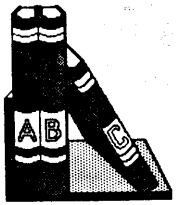
Symbol	Description
Ctrl-d	Keys you press simultaneously (separated by a hyphen and shown in reverse type). For example: Ctrl-d means you press and hold the Ctrl key and then press the **d** key.
Esc **c**	Keys you press sequentially.
a, x, n	Variables that can change. They mean: *a* (any letter), *n* (any number), *x* (any letter or number). For example: Version *n.na* File name *xxxxxx*

ADDITIONAL REFERENCE MATERIALS

For more information on your operating system, see the following list of manuals. To order a manual, call (408) 434-6688, ext. 3004 and give the manual title and part number.

Owner's Guide (part number 690-21264-*nnn* or 690-20351-*nnn*) describes how to connect computer components and peripherals, turn on power, and use the diagnostic programs.

Using the AOM Menu System (part number 690-18055-*nnn*) describes how to use the Altos Office Manager (AOM) to install software and manage the operating system.



Altos System V Series 386 User's Guide (part number 690-21178-*nnn*) (not shipped with the Run-time system) explains basic operating system concepts and programs (e.g., **vi, ed, sh, csh, mail, sed,** and **awk**).

Altos System V Series 386 Operations Guide (part number 690-21171-*nnn*) tells how to set up the system for users and peripherals, maintain and back up the system, optimize system performance, and use uucp communications programs. This manual also contains system and LP spooler error messages.

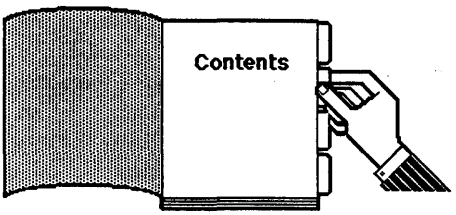
Altos System V Series 386 Reference (C) (part number 690-22869-*nnn*) and *Altos System V Series 386 Reference (M)* (part number 690-22870-*nnn*) describes the Altos Run-time system commands and extended utilities sections (C) and (M).

Altos System V Series 386 Development System Set (part number 690-21585-000) contains reference and tutorial material.

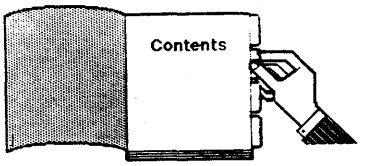
Manuals in this set include:

Altos System V Series 386 C Compiler Library and User's Guide
Altos System V Series 386 C Compiler Language Reference
Altos System V Series 386 Programmer's Guide
Altos System V Series 386 Macro Assembler User's Guide and Reference
Altos System V Series 386 Reference Sections (CP), (S), and (F)

DOCUMENTER'S WORKBENCH (part numbers 690-15843-*nnn* and 690-15844-*nnn*) describes **mm, nroff, troff,** and typesetting functions and commands.



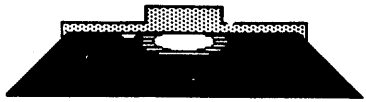
Contents



FIGURES

TABLES

Chapter 1
Installing and Setting Up the Operating System



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After you connect the components of your Altos computer system and turn on the power, as described in the Owner's Guide, you need to install the operating system programs and utilities.

This chapter describes how to install the Altos System V operating system for the first time. This chapter also describes how to set up the system for terminals and printers, create and change user accounts, and set up the system for other users.

CAUTION

The installation procedures described in this chapter erase all information on the hard disk. If you are upgrading your existing operating system, use the procedures described in Chapter 2.

HOW TO START

Before you begin:

1. Read the product Release Notes for recent software changes (found in the Software Product folder).

2. Assemble the media you will need for installation:

   - Root File System floppy disk
   - Utilities cartridge tape

3. Connect the terminal you use for the installation procedures (called the "console") to the console port (also called port 00 or port 0) of your Altos computer system (the Owner's Guide for your particular system has detailed instructions).

4. Optionally, run the system diagnostic tests. Because the Altos system is tested before shipping, this step is optional.

   However, you can use the diagnostic tests to detect problems that could occur as a result of shipment (such as loosening of components and connections). The tests take about one hour. See your Owner's Guide for Diagnostics instructions.

5. Use the copy utility on the Diagnostics floppy disk to copy the floppy disk. Be sure to leave the write-protect tab on the floppy while you make the copy. Always turn the power off for 30 seconds after using the system Diagnostics.

   Use a soft-tip pen to hand copy the label information. Store the original in a safe place.

6. Make sure your cartridge tape is write-protected (point the arrow on the tape to SAFE).

   If you are not familiar with handling floppy disks or cartridge tape, see the Owner's Guide for instructions.

CAUTION

Do not use the original floppy disk to install the operating system. Always make a copy of this and any other software you value.

INSTALLATION SUMMARY

The following is a summary of installation procedures. Detailed procedures are in the next section.

1. Start up (boot) the system from your *copy* of the Root File System floppy disk.

2. Install the utilities from the cartridge tape.

3. Optionally, set up the system for terminals and printer(s).

4. Create or change user login accounts.

5. Install AOM and optionally install any communication software or any application software packages. (Refer to the appropriate Altos manual for installation instructions.)

6. Set up the system to display "login" on the other terminals so other users can use the system.

INSTALLING THE OPERATING SYSTEM

Allow one-half to one hour to install the operating system for the first time. If installation is interrupted, the next time you work with the system a message will indicate the system was not shut down properly. In this event, refer to "Recovering from Interrupted Installation" at the end of this chapter.

If you encounter problems or error messages not described in this manual (either during or after software installation), run the system diagnostic tests.

During installation, you can correct a typing error by pressing the Backspace key to back up to the error. Then retype the character.

If your Altos terminal has a screen saver (automatically blanks if there is no input from the keyboard or the computer for 15 minutes), you can restore the display by pressing any key.

To install the operating system,

1. Turn on the power, or with the power on, turn it off, wait 30 seconds, then turn it back on. You will see the system pass a series of power-up tests.

   Prepare to press any character when you are prompted as follows:

```
Type any character to interrupt autoboot
```

   If your system doesn't pass the power-up tests, make sure that your terminal is properly set up and connected to the computer (it should be connected to the console port).

   If you press any character in time, you will see a menu (Step 2 shows the first two items of the menu).

   If you don't press a key in time, the system will attempt to boot from the hard disk, which doesn't have the Boot program on it. To correct this, turn the RESET/RUN key (on the front of your system) to RESET, then to RUN, and press a key when prompted.

2. If you have not already done so, remove the cardboard from the floppy disk and tape drive. And, if you previously put a write-protect tab on your copy of the Root floppy disk, also remove it. When you see the following display (or one similar to it), insert the floppy disk into the disk drive.

   NOTE

   Make sure your *copy* of the Root floppy disk doesn't have a write-protect tab, so the system can place information on it.

Type **2** to boot from the floppy disk. The sequence looks similar to the screen that follows.

```
1)Boot from hard disk
2)Boot from floppy disk
.
.
.
> 2
Booting from Floppy ...
.
.
.
Loading kernel...
Downloading I/O Channel Code...[Done]
```

The screen displays messages that the system is loading code, the size of memory, and the number of users licensed for the system. (This takes several minutes.) Then you are asked if you want to check the file system. Type **y**.

3. Next, the Welcome to Altos System V menu appears as shown in Figure 1-1.


```
                WELCOME TO ALTOS SYSTEM V
                        Version n

Options:

  a. Install Altos System V for the first time

  b. Upgrade your computer system to Altos System V
     Version n Release nn

  c. Restore data to the hard disk from cartridge tape

  d. Shut down the system

  e. Exit to the shell

Enter option (a, b, c, d, or e) and press RETURN:
```

Figure 1-1. Welcome to Altos System V Menu

Type **a** and press Retn.

4. The screen displays:

```
Installing will overwrite ALL data on the hard disk.
Do you want to continue? (y/n)
```

Because this is the first time you're installing the operating system, the hard disk does not have any data on it.

Type **y** and press Retn.

5. Next, the screen displays the following:

```
Do you want a standard swap area size? (y/n)
(Swap area size is nnnn 512-byte blocks)
(Normally, you will want to answer "yes" to this question.)
```

This question refers to systems that use large application programs such as AOM II Plus™ and 20/20™. Most of the time you want the standard swap size.

Type **y** and press **Retn**.

(If you want to change the swap size, you must supply the number of blocks for swap area. The system will prompt you through this procedure. Refer to **layout**(M) in the *Altos System V Series 386 Reference (M)* for information about this command.)

The system automatically calculates the default number of blocks.

If you have an *optional* Uninterruptible Power Supply (UPS) installed on your system, respond to the following questions. If you do not have a UPS, skip this part.

Before answering the questions, see Chapter 4 for information about UPS. The screen prompts:

```
Do you want a UPS restart partition? (y/n)
```

If you have UPS, answer **y** to this question. Then you see the following screen:


```
Enter the maximum amount of memory,
in megabytes, that your system will contain?
(Default = n)
```

Press **Retn** for the default (which may vary from system to system), or enter the maximum amount of memory.

6. Then the following screen is displayed:

```
Do you want an extra partition?  (y/n)
```

You might want an extra disk partition if you are planning on loading applications that need a separate raw disk partition. Such applications include INFORMIX-Turbo or other programs that bypass the file system and perform raw disk I/O.

Type **y** and press **Retn** to create an extra partition. If you do not want an extra partition, type **n** and skip the rest of this step and go directly to step 7.

If you type **y**, the following prompt appears on your screen:

```
How many 512-byte blocks do you want in your extra partition?
(Default = nnnnn; Maximum = nnnnnn)
```

Enter your value or press **Retn** for the default.

Note that space devoted to an extra partition is taken from space normally used by the main file

system. Therefore, the larger the extra partition, the less space available to the main file system. The extra partition is on **/dev/hd0c.**

7. Regardless of whether you add an extra partition, the screen next displays the following:

```
Writing layout information on the hard disk.
Installing a drive with nnnMB formatted capacity.
Making the file system on the hard disk...


Do you want a standard number of files?
(the default number of files is nnnnn)
(Normally, you will want to answer yes to this question)
```

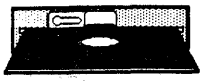
Most of the time you want the standard number of files.

Type **y** and press Retn.

During this phase of installation, you will see information about the blocks on your system. Then the computer checks the hard disk and makes the file system. Next, you will see messages that indicate this phase is going well. This process takes several minutes.

If the file system on the hard disk is *not* correct, the system will tell you, and then shut down. You should turn your system off, then back on, and try the installation procedure again. If this does not correct the problem, refer to your Owner's Guide for information on using Diagnostics to isolate the problem.

If the file system is correct, the system creates the special files.



8. After the following message is displayed:

```
** Normal System Shutdown **
```

the system automatically reboots, passes a series of power-up tests, and displays messages about system configuration.

Then the following message appears:

```
Type any character to interrupt autoboot
```

Don't press a key, because you want the system to boot from the hard disk. If you do press a key, type **1** to boot from the hard disk.

(Some systems may ask you to insert the Utilities tape as described in step 9 below before rebooting as described in this step. Otherwise, the procedure remains the same.)

9. Next, you are prompted to remove the Root floppy disk, store it in a safe place, and insert the Utilities tape. Check that the arrow on the tape points to SAFE.

Insert the cartridge tape that contains the Utilities and press Retn.

As utilities are copied from the tape to the hard disk, you will see messages listing the file name and number of bytes and tape blocks. These messages have the form:

x *filename, number-of-bytes, number-of-blocks*

You will also see messages saying that a file has been linked to another file. These messages are for

background information only; they require no action from you.

CAUTION

Do not remove the cartridge tape until a message on the screen tells you to remove it, and the indicator light on the tape drive is off.

After the last file has been copied to hard disk from the tape, the display of file names stops.

When this process has completed, the operating system is installed on the hard disk.

10. Remove the Utilities tape and store it in a safe place. Installation continues as system files are configured. The next prompt refers to installation of an additional hard disk.

INSTALLING ADDITIONAL HARD DISKS

The system begins this phase of installation by asking:

```
Do you want to install a second hard disk on your system?
(y/n)
```

If you do not have a second hard disk, type **n** and press Retn, and then skip this step.

CAUTION

This procedure erases all data on the additional hard disk.

If you have a second hard disk, type **y** and press Retn. The system then asks you about swap area and number of files. Step 5 (in the previous section) describes how to respond to these questions.

As the file system on the second hard disk is set up, you will see messages about what is happening. When this part of the installation is finished, a message tells you that the additional hard disk is correctly installed.

If you have a third hard disk, the system will repeat the installation procedures for it. Install the third hard disk as you did the second.

If the file system installation does not occur as described, see "Recovering from Interrupted Installation" later in this chapter.

SETTING UP THE PORTS FOR TERMINALS AND PRINTERS

This stage of installation deals with configuring ports for peripheral devices (terminals, printers, and so forth). The screen displays the following message:

```
Do you want to change the descriptions of the terminal(s)
and/or printer(s)?  (y/n)
```

The system is already set up so you can connect Altos terminals and standard printers to the ports on your system.

NOTE

Ports used for optional communications products, such as port 04 for WorkNet II™, are not available for use with terminals, printers, or modems.

Table 1-1 shows an example of the factory (default) settings for a 10-user system.

Table 1-1. Port Configuration

Port Name	Device Type	Terminal Type	Printer Name	Printer No.*	Baud Rate	Action (On/Off)	Modem?
console	terminal	altos5			9600	On	No
parallel	printer					Off	No
tty01	printer		local	default	9600	Off	No
tty02	terminal	altos5		2	9600	On	No
tty03	terminal	altos5		2	9600	On	No
tty04	terminal	altos5		2	9600	On	No
tty05	terminal	altos5		2	9600	On	No
tty06	terminal	altos5		2	9600	On	No
tty07	terminal	altos5		2	9600	On	No
tty08	terminal	altos5		2	9600	On	No
tty09	terminal	altos5		2	9600	On	No

* or Runstate

When you first install the operating system, you may need to change the settings of a port to tell the system what kind of terminals and printer(s) are connected. To do this, you will use the Port Configuration (**pconfig**) program. The following pages explain these procedures.

If you do not need to change port settings, type **n** and press Retn, and continue with the following section titled "Creating and Changing User Accounts."

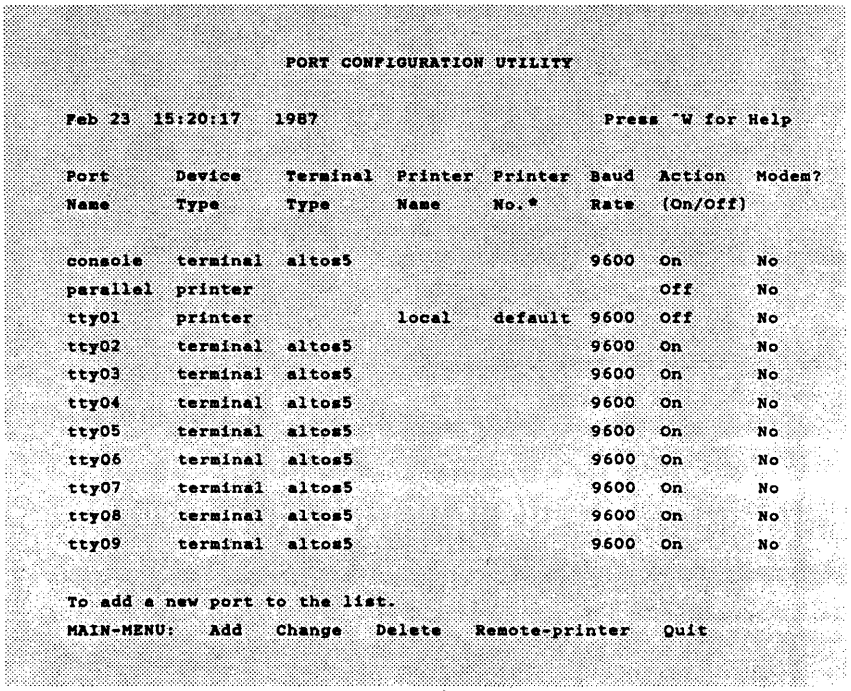
If you need to change a port's setting, type **y** and press Retn.

The next message refers to the type of terminal you are using:

```
Your terminal type is "xxxxx".  If correct press RETN.
If not, enter the correct terminal type and press RETN:
```

where *xxxxx* is the name (code) of the terminal you are using. Type Retn if your terminal type is displayed. If you aren't sure what code to use for your terminal, type **?** and press Retn to display the valid terminal types.

The Port Configuration screen appears. An example screen follows in Figure 1-2.



```
                    PORT CONFIGURATION UTILITY

Feb 23  15:20:17   1987                              Press ^W for Help

Port       Device     Terminal  Printer  Printer  Baud   Action   Modem?
Name       Type       Type      Name     No.*     Rate   (On/Off)

console    terminal   altos5                      9600   On       No
parallel   printer                                       Off      No
tty01      printer               local    default  9600   Off      No
tty02      terminal   altos5                      9600   On       No
tty03      terminal   altos5                      9600   On       No
tty04      terminal   altos5                      9600   On       No
tty05      terminal   altos5                      9600   On       No
tty06      terminal   altos5                      9600   On       No
tty07      terminal   altos5                      9600   On       No
tty08      terminal   altos5                      9600   On       No
tty09      terminal   altos5                      9600   On       No

To add a new port to the list.
MAIN-MENU:   Add   Change   Delete   Remote-printer   Quit

*
  or Runstate
```

Figure 1-2. Port Configuration Screen

Use this screen to add a new port to the list, change a port's settings, or remove a port from use. You can set up a port for use with a terminal, printer, or modem.

The top line of the screen displays the current date and tells you to press Ctrl-w to get Help. The center part of the screen lists the following for the ports on your system:

- Port name (e.g., console, parallel, tty01)
- Type of device (terminal or printer)

- Type of terminal
- Printer name (or run state)
- Printer number (or run state)
- Baud rate
- Action (on or off)
- Modem connection

The bottom of the screen contains a Message line and Command line. The Command line currently contains the Main menu. From this menu, you can add, change, or delete a port, set up a remote printer, or quit the program. (Other menus also appear on the Command line.)

Note that the cursor is on the Add option, and the Message line explains, "To add a new port to the list." The Message line displays a description of a command. When necessary, this line also displays an error or warning message.

As you use the Port Configuration program, you will be selecting commands or items from two types of menus:

- Command line menu
- Center screen menu

The following tables explain how to select a command or item from each of these menus.

Table 1-2. Command Line Menu

Action	Key to Press
Move to another command	First letter of a command
Right (move forward)	Spacebar
Left (move backward)	Back Space
Select highlighted command (current setting or default)	Retn

Table 1-3. Center Screen Menu

Action	Key(s) to Press
Select highlighted option (current setting or default)	Retn
Move down in a column	Down Arrow, Ctrl-d, or Spacebar
Move up in a column	Up Arrow or Ctrl-u
Move right in a row	Right Arrow or Ctrl-r
Move left in a row	Left Arrow or Ctrl-l
Go to next screen	Next Scrn or Ctrl-n
Go to previous screen	Prev Scrn or Ctrl-p

There are Help screens to guide you through this program. If you need an explanation of a particular option, press Ctrl-w, which will display help for the current screen.

Adding a Port

To add (enable) a new port:

1. Select **Add** from the Command line. The screen displays a list of valid port names.

2. Type the name of the new port (**tty16**, for example). The default settings for that port are displayed. You can press Retn to select the default settings or select a new setting. The Message line displays the following:

```
A video display unit with a screen and keyboard.
DEVICE-TYPE:  Terminal  Printer  Modem  Other
```

3. Valid device types are Terminal, Printer, Modem, or Other. Select the type of device you want to add, and press Retn.

4. For terminals, the screen displays a list of all valid terminals. Select the terminal type (or type its name), and press Retn.

   For printers, see the following section, "Setting Up a Printer."

5. Next, you are asked if you want to set up a modem on the port. Select Yes or No and press Retn.

   The difference between selecting "Terminal" with a modem and "Modem" is that serial lines for "Modem" are configured for both dialing in and dialing out.

6. The screen displays the available baud rates (speeds). Select a baud rate and press Retn.

7. Then you are asked to select an action: **Active** (on) or **Inactive** (off). Select the action for that port and press **Retn**.

8. A message then asks if you want an auxiliary printer on the port. Select **Yes** or **No**.

   If you select **No**, the final settings for the port appear on the screen. If you select **Yes**, a list of printers appears on the screen.

NOTE

If you print from an auxiliary printer, during printing, the system will redirect data to the printer using the terminal's transparent print mode. All echoed output to the terminal will be disabled; however, to stop printing and regain control of the terminal, press **Del**.

9. Select a printer from the list and press **Retn**. You are then prompted to type a printer name and printer number. (Valid numbers are 0 to 255, and valid names are up to 14 alphanumeric characters.)

10. Next, you are asked to supply the mode flags for the auxiliary printer. These flags set the protocol for the printer (for example, odd or even parity). Your printer manual explains these flags. Press **Retn** for the default, or enter the flags for your particular printer.

11. The Port Configuration screen reappears, displaying the ports (including the changes you've just made).

    The final settings are displayed for that port. If you are finished changing the settings and want to resume installation, select **Quit** and press **Retn**.

12. You are asked for confirmation that the port assignments are correct. If they are correct, select **Yes** and press Retn. The system updates the port configuration information.

    If the changes are not correct, select **No**. You are asked if you want to continue in **pconfig**. If you want to make other changes or corrections, select Yes.

Changing a Port

To change the settings for a port:

1. Select **Change** from the Main menu Command line.

2. Select the port you wish to change by moving the cursor to that port (or typing its name) and pressing Retn. You are then asked questions about the device attached to that port.

3. The screen displays the type of device connected to that port; valid types are Terminal, Printer, Modem, or Other.

   The default settings for the port are displayed. You can press Retn to select the default settings, or enter information about the port. Select a new type of device, or press Retn to leave this setting unchanged.

   If you select Printer, see the following section, "Setting Up a Printer."

4. For terminals, the screen displays a list of the valid terminals. The cursor is on the current terminal type (if the device on this port was previously a terminal).

   Select the terminal type (or type its name) and press Retn, or press Retn to leave this setting unchanged.

5. Next, you are asked if you want to set up a modem on that port. Select Yes or No and press Retn, or press Retn to leave this setting unchanged.

The next questions ask for the following information:

- Baud rate (speed) of the modem.
- Action for the modem: Active or Inactive.
- Auxiliary printer for the port and mode flags for the printer.

To answer these questions, you can either select from a list (move the cursor to the item you want), press Retn to leave the setting unchanged, or type the required information. Steps 6 - 12 in the previous section, "Adding a Port," describe responses to these questions.

Setting Up a Printer

Your system is already set up for a serial and parallel printer (see Figure 1-2). Using the Port Configuration program, you can do the following:

- Change the existing serial printer
- Add another serial printer
- Change the printer device assigned to the parallel port
- Set up a remote printer

Serial Printer

To add or change a serial printer port:

1. Select **Add** or **Change** from the Main menu Command line.

2. Select the port you want to change.

3. Select **Printer** when you are prompted for a device type. A list of valid printer types appears on the screen.

4. Select a printer type from the list, or if you are adding a printer, enter the type (e.g., laser) and press Retn. You are then asked to supply a name for the printer.

5. Type a name for the printer and press Retn. Valid names can be up to 14 alphanumeric characters. The next prompt asks for a printer number.

6. Type a number for the printer and press Retn. Valid numbers are 0 through 255. The first (default) printer is printer 0, the second printer is 1, and so on.

7. Then the screen displays valid baud rates (speeds) for the printer; the cursor highlights the current baud rate. Select a rate and press Retn, or press Retn to leave this setting unchanged.

8. Next, a message asks you to enter the printer mode flags, and displays the default values for these flags. These flags set the protocol for the printer (e.g., odd or even parity). Your printer manual explains these flags. For example,

   ```
   cs8 -parity opost -nl -tabs
   ```

   Press Retn to select the displayed flags, or enter new flags as you are prompted.

Then the main Port Configuration screen reappears.

Parallel Printer

To change the printer device assigned to the parallel printer port:

1. Select **Change** from the Main menu Command line.

2. Select the parallel printer port. A list of valid printer types appears on the screen.

NOTE

Use a Centronics interface on the parallel port.

3. Select a printer type from the list, or if you are adding a printer, enter the type and press Retn. You are then asked to supply a name for the printer.

4. Type a name for the printer and press Retn. Valid names can be up to 14 alphanumeric characters. The next prompt asks for a printer number.

5. Type a number for the printer and press Retn. Valid numbers are 0 through 255. The first (default) printer is printer 0, the second printer is 1, and so on.

6. Next, a message asks you to enter the printer mode flags, and displays the default values for these flags. These flags set the protocol for the printer (e.g., odd or even parity). Your printer manual should explain these flags. For example,

```
cs8 -parity opost -nl -tabs
```

Press Retn to select the displayed flags, or enter new flags as you are prompted.

The Port Configuration screen reappears and displays the settings for the ports.

Remote Printer

A remote printer is one that is attached to a port on a remote machine networked to your system. To set up a remote printer:

1. Select Remote-printer from the Command line. You will see a list of valid remote-printer names. You are prompted for a printer name.

2. Select a name for the printer (or type a name and press Retn). Then you are asked to enter a number for the printer.

3. Type a number for the printer and press Retn. Valid numbers are 0 through 255. The first (default) printer is printer 0, the second printer is 1, and so on. Then you are asked for a printer type.

4. Select or enter the printer type (e.g., laser) and press Retn. The next prompt asks for the name of the remote machine to which the printer is connected.

5. Type the name of the remote machine and press Retn. Then the screen displays valid baud rates (speeds) for the printer; the cursor highlights the current baud rate.

6. Select a baud rate and press Retn, or press Retn to leave this setting unchanged.

   Next, a message asks you to enter the printer mode

flags, and displays the default values for these flags. These flags set the protocol for the printer (e.g., odd or even parity). Your printer manual should explain these flags. For example,

```
cs8 -parity opost -nl -tabs
```

7. Press Retn to select the displayed flags, or enter new flags as you are prompted.

   The Port Configuration screen reappears and displays the settings for the ports.

Testing a Printer

After you set up a port for a printer, it's a good idea to test it using the **lp** program. Do this after you finish the installation procedure. For example (with **lp** as the default), type:

lp *filename* Retn

where *filename* is the name of a file (e.g., /etc/passwd). If the printer does not print correctly, refer to your printer manual and check one or more of the following:

- The printer is connected to the correct port and is switched to "ON."
- You have the correct type of printer cable.
- The following settings for the printer are correct:
  - baud rate
  - parity setting
  - linefeed or carriage return settings

- XON/XOFF protocol
- word length setting

Removing a Port from Use

To remove a port from use:

1. Select **Delete** from the Main menu Command line. New commands appear on the Command line.

2. Select **Remove** from the Command line. A message asks if you're sure you want to delete the port from use.

3. To confirm the deletion, select **Yes**. If you don't want to remove the port, select **No**. At this point, you can remove another port from use.

4. To return to the Port Configuration Main menu, select **Quit**.

Exiting the Port Configuration Program

When you are finished making changes to the ports:

1. Select **Quit** from the Command line. A message asks:

```
Do you want to save the changes?
CONFIRM:  Yes  No
```

2. To save the changes you have made, select **Yes**. The ports are reconfigured, and installation resumes (see the next section).

   If you decide you do not want to save the changes, select **No**. You are asked if you want to continue in

pconfig. If you select **Yes**, the **pconfig** screen reappears. If you select **No**, installation continues.

After you set up the ports for terminals, printers, and so forth, installation continues. If you need to change the port settings in the future, either *Using the AOM Menu System* or the *Altos System V Series 386 Operations Guide* will explain how.

CREATING AND CHANGING USER ACCOUNTS

This part of the installation deals with setting up users. The screen displays the following message:

```
Do you want to add more users and/or change existing
user accounts?  (y/n)
```

You should create a login (account) name for each person using the system. Type **y** and press **Retn**.

The screen displays the following:

```
Your terminal type is xxxxx - Correct?  (y/n)
```

where *xxxxx* is the type of the terminal you are using.

Type **y** if your terminal type is displayed.

Type **n** if the terminal type displayed is not correct. The system then asks you to enter the terminal type.

Enter the correct terminal type (for example, **altos5** for the Altos V terminal). You are asked to confirm the terminal type.

Then the User Administration screen appears (see Figure 1-3).

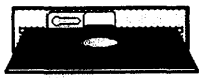
```
                    User Administration

Commands:  show, add, delete, change, user, Users, group,
Groups, help, !, quit


Command?
```

Figure 1-3. User Administration Screen

User Administration Commands

Command words appear at the top of the User Administration screen. To set up a user account, use a combination of two command words, typing the first letter of each word. A description of each command follows.

Command	Description
add **u**ser username	Adds a new user to the system
add **g**roup groupname	Adds a new group to the system
delete **u**ser username	Deletes a user from the system
delete **g**roup groupname	Deletes a group from the system
show **u**ser username	Displays a user's attributes
show **g**roup groupname	Displays a group's attributes
change **u**ser username	Changes a user's attributes
change **g**roup groupname	Changes a group's attributes



Command	Description (Cont.)
show **U**sers	Shows all current users
show **G**roups	Shows all current groups
! shell command	Returns to the shell; execute commands
help	Displays the help screen
quit	Returns to AOM or the shell

Creating a User Account

Guidelines for creating/changing a user account follow in the next section. To create a user account:

1. Type **a** ("add" appears at the bottom of the screen).
2. Type **u** ("user" appears next to "add").
3. Type a *user name*, and press Retn.

You can only enter one user or group at a time; add Users and add Groups are not legal commands.

NOTE

If you make a mistake while typing, press Ctrl-x to backspace over the entire line.

The program automatically assigns user ID, group ID, full name, directory, and shell. Initially there is no password. The new user can set up a password. If your system is on

a WorkNet® network, make sure the user ID and account name are the same on all machines in the network.

For example, to add a user named beth, enter the following:

a u beth Retn

The system responds with

```
Updating new user:  beth
```

The screen then displays the system settings for beth (see Figure 1-4); to change a setting, type the single letter that is to the left of each line.

```
                    User Administration

Commands: show, add, delete, change, user, Users, group,
Groups, help, !, quit


                a. User:       beth
                b. User ID:    28
                c. Group:      other
                d. Group Id:   1
                e. Password:   <NOT SET>
                f. Full Name:  beth
                g. Directory:  /usr/beth
                h. Shell:      /bin/acmlogin

                q. (quit -- return to top level)


Which field?
```

Figure 1-4. Example of Creating a New User Account

After you finish setting up the account, type **q** to cause the changes to take effect. The screen displays the following:

```
Installing files from /etc/newuser

Command:
```

You can now enter another User Administration command, or type **q** to resume installation.

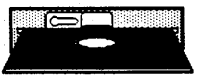
Guidelines

When you create or change a login user account, use the following guidelines:

1. Make the user name short (the user will enter it often). Use lower-case characters: up to 8 letters or numbers (no spaces). The user should enter the name exactly as created.

2. Do not use a name with any upper-case letters unless that person actually has a terminal that has only upper-case letters. If a name is created with only upper-case letters, use of the system is hampered.

3. Do not set a password for the user. If one is set, no one will be able to log in to that account. However, to remove a password that someone has forgotten, change the password to <NOT SET> by entering **e** and pressing Retn.



4. Choose the shell the user will log in to. The shells are:

   - **/bin/aomlogin**--Altos Office Manager (with menus)
   - **/bin/sh**--Bourne Shell
   - **/bin/csh**--C Shell

After you set up user accounts, installation continues. If you need to add or change users in the future, either *Using the AOM Menu System* or the *Altos System V Series 386 Operations Guide* will explain how.

CHECKING THE FILE SYSTEM, SETTING THE DATE, AND STARTING UP

The next installation step is to check the file system. Your sequence will look similar to the following screen.

```
Checking the file system on the hard disk...

/dev/hd0b
File System:  Volume:hd0b
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List
nnn files nnnn blocks nnnnnn free

The file system on the hard disk is correct
```

If the operating system is not correctly installed, the system will tell you. You should turn your system off, then back on, and try the installation procedure again. If this does not correct the problem, refer to your Owner's Guide for information on using system diagnostics to isolate the problem.

After the file system check, the screen displays the date and asks for confirmation, then it displays the time and asks for confirmation. If the date and time are correct, just press Retn. The sequence looks similar to the screen that follows.

```
Current System Time is FRI May 1 18:38:10 PST 1987
Enter date (yymmdd) or press RETURN if ok:
.
.
.
Enter time (hhmm) or press RETURN if ok:
```

To change the date and time, use the following format:

yy	= last two digits of the current year
mm	= current month
dd	= current day of month
hh	= hour (24-hour clock)
mm	= minutes

For example, enter May 1, 1987 as:

870501 and press Retn

Enter 4:30 pm as:

1630 and press Retn

The screen displays the date and time as you set them.

A message tells you that the system is correctly installed. Then the system proceeds with normal startup and the "login" prompt appears on terminals so other users can now log in.

RECOVERING FROM INTERRUPTED INSTALLATION

If installation is interrupted, you may receive the following message after you restart the system.

```
The system was not shut down properly.
The root file system will be cleaned.
(Type "no" only if you want to avoid cleaning.)
```

Always allow the root file system to be cleaned. This process begins automatically after a few seconds. It validates the consistency of the disk file system, which may have been damaged, and automatically repairs it. If there is no damage, you will see a screen similar to the following:

```
/dev/root
** Phase 1 - Check Blocks and Sizes
** Phase 2 - Check Pathnames
** Phase 3 - Check Connectivity
** Phase 4 - Check Reference Counts
** Phase 5 - Check Free List
nnn files nnnn sectors used nnnnnn sectors free
```

If the file system was damaged, it is automatically repaired and you will see the corrections that have been made.

After the "** Normal System Shutdown **" message appears, the system may ask you to insert the Utilities tape and press Return.

If nothing appears on the screen after the message "Booting from Hard Disk," the installation procedure has failed. Start installation again, select **2**, Booting from the floppy disk, and follow the instructions at the beginning of this chapter.

If you completed the installation of the main hard disk, but were unable to install the second hard disk, try installing it using the **add.hd** procedure described in Chapter 2.

If, after repeating the installation process, you still can't install the operating system, refer to your Owner's Guide for information on using Diagnostics to isolate the problem.

WHERE TO NEXT?

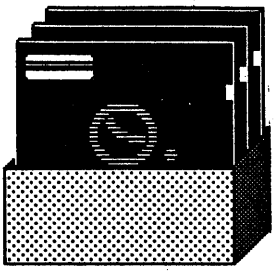
After successful system (and optional software) installation, the next step is for you and other users to begin using the system. In addition, you will probably want to read the documentation that comes with your system; look at the section titled "Related Manuals" in the front of this manual.

As you become familiar with the system, you will discover that there are many tasks it can do for you. The following paragraphs describe where to turn for information if you want to:

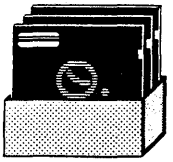
- Use the system--refer to the User's Guide for your system for basic concepts such as logging in and out, typing commands, and using files and directories.

- Manage the system--turn to either *Using the AOM Menu System* or the *Altos System V Series 386 Operations Guide* for tasks such as becoming the system administrator, adding new users, changing the ports, backing up the file system, shutting down the system, and so forth.

- Install other software--refer to *Using the AOM Menu System* and the product software Release Notes and manual.



Chapter 2
Upgrading Your Operating System



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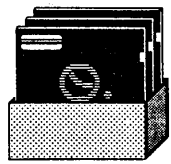


This chapter describes how to upgrade your operating system. If you are installing the operating system for the first time, use the procedure described in Chapter 1. This chapter also describes how to install an additional hard disk.

INTRODUCTION

Before you begin the upgrade procedure, assemble the media (floppy disk and cartridge tape) you are going to use for the upgrade. Always make a *copy* of the media you are going to use, and label each by hand. You must have 9000 free blocks on the root file system; type **df** to see the amount of free blocks you have.

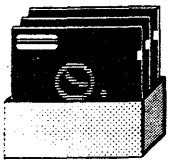
During the upgrade, the operating system:

- Preserves system files that you have probably changed (e.g., **/etc/passwd**, which changes when you run the User Administration program)
- Preserves user files
- Replaces other system files with new files of the same name

NOTE

Communication products and any applications will have to be re-installed after the upgrade.

You must be logged in as the system administrator (either **admin** or **root**) and be in single-user mode to upgrade the system.



INSTALLING THE UPDATED VERSION

Before you begin the actual upgrade procedure, read the product Release Notes (found in the Software Product folder) for specific upgrade steps.

CAUTION

Do not use the original floppy disk to upgrade the operating system. Always make a copy this and any other software you value.

Some upgrade procedures may ask you to back up your hard disks; messages on the screen will prompt you through this process.

Use the **tar** command to back up all of your data on the hard disk(s) (for example, the **/usr** files and special files). Then assemble the media you are going to use for the upgrade, and proceed as follows.

1. Log in as **root** and enter root's password.

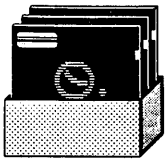
2. Optionally back up all your **/usr** and special files.

3. Shut down the system. To do so, type:

   /etc/shutdown -g*n* and press Retn

   where *n* is the number of seconds until shutdown occurs (0 to 999). It's a good idea to give other users on the system time to finish up and log off (5 minutes or so). The default is 60 seconds.

4. As shutdown procedes, you will see messages that the system is shutting down and services are stopping. Then you will see the following:




```
** Normal System Shutdown **
```

5. Turn the RESET/RUN key to RESET, then back to RUN. You will see the system pass a series of powerup tests. Prepare to press any character when prompted.

```
Type any character interrupt boot
```

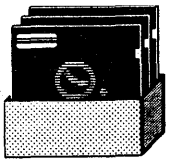
If you press a character in time, you will see a menu (Step 6 shows the first two items of the menu). If you didn't press a key in time, turn the RESET/RUN key to RESET, then back to RUN, and press a key when prompted.

NOTE

Make sure your *copy* of the floppy disk does not have a write-protect tab, so the system can place information on it.

6. When you see the menu below, or one similar to it, insert your copy of the Root floppy disk into the disk drive. Enter **2** to boot from the floppy disk.

```
Enter [1] to boot from Hard Disk
      [2] to boot from Floppy Disk
.
.
.
Enter option:  2
Booting from Floppy ...
```



The screen displays messages that the system is loading code, the version number of the operating system, and the size of available memory.

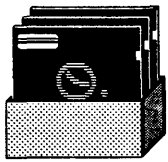
7. Then you will see the following menu.

```
                WELCOME TO ALTOS SYSTEM V
                      Version n


Options:
  a. Install Altos System V for the first time

  b. Upgrade your computer system to Altos System V
     Version n Release nn

  c. Restore data to the hard disk from cartridge tape

  d. Shut down the system

  e. Exit to the shell

Enter option (a, b, c, d, or e) and press RETURN:
```

Type **b** and press Retn. A message on the screen may prompt you to back up your files if you have not already done so.

8. You will see messages as the upgrade continues. First the file system is checked. Then the upgrade procedure saves the local system files. Finally, the system shuts down and reboots.

9. Next, you are prompted to remove the floppy disk, store it in a safe place, and insert the Utilities tape. Before doing so, make sure the arrow on the tape points to SAFE.



(If the system doesn't automatically reboot after shutdown, refer to "Recovering from Interrupted Installation" in the previous chapter.)

Insert the cartridge tape that contains the Utilities and press Retn. The system copies the utilities from the cartridge tape to the hard disk. You will see messages of the form:

```
x filename, number-of-bytes, number-of-blocks
```

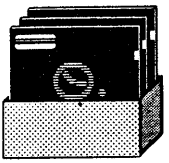
You will also see messages saying that a file has been linked to another file. These messages are for information only. After the last file is copied to the hard disk, a message asks you to remove the Utilites tape.

10. Remove the Utilities tape and store it in a safe place. Next, the other system files are configured and then the local file system is restored.

After this part of the procedure is complete, messages on the screen ask if you want to do some tasks:

- Install additional hard disks (see the next section).
- Change the descriptions of the terminal(s) and/or the printer (see the previous chapter).
- Add or change user accounts (see the previous chapter).

Lastly, the file system on the hard disk is checked. You are asked if the time and date are correct (the previous chapter explains how to set these). Then the system restarts and goes to multi-user mode, so other users can log in.



INSTALLING ADDITIONAL HARD DISKS

This section explains how to set up the software for an additional hard disk. You must be the system administrator (logged in as **root** or **admin**) for this procedure.

CAUTION

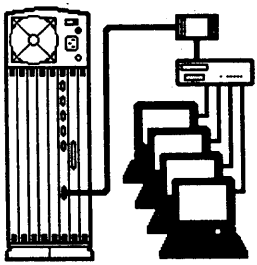
The add.hd command erases any files on the additional hard disk.

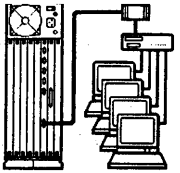
For example, to add a second hard disk, type:

add.hd 2 and press Retn

The **add.hd** command initializes the second hard disk, creates the bad sector table, and creates the file system. At times you will be prompted for information to enter (e.g., if you want to change the size of the swap area). If you need to change the swap area size or number of files on the second hard disk, see "Installing the Operating System" in Chapter 1. Then the system runs the **fsck** program, makes the **/usr2** directory, and mounts the hard disk. The **add.hd** command adds a line to the startup file, so that every time the system is brought up for multiple users (displays "login:" on other terminals), the second hard disk will be mounted.

Chapter 3
Setting Up Your Multidrop System





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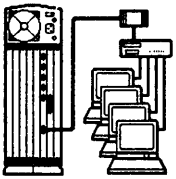


INTRODUCTION

This chapter briefly describes some of the communications capabilities of the optional Multidrop system, which allows you to connect additional devices (terminals, printers, and the like) to your system. With Multidrop, you can connect both RS-232 and RS-422 devices.

For a more complete explanation of the Multidrop system, see the *Multidrop Installation* manual (or the Owner's Guide for your system).

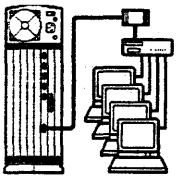
CALCULATING PORT ADDRESSES

The numbers (addresses) that are assigned to the ports on your system depend on how the communication (COMM) boards are installed. (Note that in the pages that follow, the port number, tty number, and TCU address are synonymous.)

Currently, Altos offers three types of communications boards: a Serial Input/Output (SIO) board, a Multidrop Communications (MDC) board, and the Advanced Communications Processor Attachment (ACPA) board. In general, these boards can be mixed in a system, but no more than two MDCs are supported per system.

There are additional limitations that are specific to certain machines. For example, the Altos 386 Series 1000 does not support any MDC boards, and makes its Multidrop connections through the Multidrop connector found on the ACPA/1000 board. Your Release Notes describe the specific limitations that apply to your system.

The MDC reserves 64 ports for devices: The first 5 ports (00 - 04) are RS-232 ports and the remaining 59 ports (05 - 63) are RS-422 ports. The first three of these remaining 59 ports are reserved for RS-422 use, but if you



want to connect RS-232 devices to the last 56 ports (08 - 63), you can do so by using a Terminal Cluster Unit (TCU). You connect RS-422 devices to ports 05, 06, and 07 on the MDC via a junction box and drop cable.

The addresses on the Terminal Cluster Unit-8 (TCU-8) should be in multiples of eight. For example as shown in Figure 3-1, the first TCU-8 occupies ports 08 - 15, the second TCU-8, ports 16 - 23. Recall that a TCU-8 can never occupy ports 00 through 07.

Ports on an SIO board are addressed in groups of eight or ten, depending on which type of SIO your system uses. (For example, a 386 Series 1000 uses an eight-port SIO, while the Series 2000 uses a ten-port SIO.) Regardless of how many are available, all SIO ports are RS-232 ports.

ACPA boards, however, address ports just like an MDC: 64 maxiumum ports, with the first 5 as RS-422 ports and the remainder as RS-232. An ACPA for a 386 Series 2000 (otherwise known as an ACPA/2000) offers complete groups of 64 ports.

However, the ACPA board on a 386 Series 1000 (i.e., an ACPA/1000) addresses a variable number of ports, depending on the number and type of boards preceding it on the machine backplane. (Refer to your Release Notes for details on these limitations.)

In general, the ACPA/1000 addresses the remaining ports up to port 63 after the preceding boards. For example, in a system with an SIO (8 ports), the ACPA/1000 addresses ports 08 - 63. If the system has two SIOs (addressing the first 16 ports), the ACPA/1000 addresses ports 16 - 63.

Tables 3-1 and 3-2 on the following page shows some examples of board configurations and addresses.

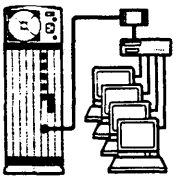


Table 3-1. Sample COMM Board Configurations and Addresses - 386 Series 2000

Board	Addresses Available	Address/Type of Port
EXAMPLE 1:		
MDC (primary board)	00 - 63	00 - 04 (RS-232) 05 - 63 (RS-422)
MDC (second board)	64 - 127	64 - 68 (RS-232) 69 - 127 (RS-422)
SIO (third board)	128 - 137	128 - 137 (RS-232)
EXAMPLE 2:		
SIO (primary board)	00 - 09	00 - 09 (RS-232)
MDC (second board)	10 - 73	10 - 14 (RS-232) 15 - 73 (RS-422)
EXAMPLE 3:		
ACPA (primary board)	00 - 63	00 - 04 (RS-232) 05 - 63 (RS-422)
SIO (second board)	64 - 73	64 - 73 (RS-232)

Table 3-2. Sample COMM Board Configurations and Addresses - 386 Series 1000

Board	Addresses Available	Address/Type of Port
EXAMPLE 1:		
SIO (primary board)	00 - 07	00 - 07 (RS-232)
SIO (second board)	08 - 15	08 - 15 (RS-232)

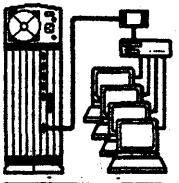


Table 3-2. Sample COMM Board Configurations and Addresses - 386 Series 1000 (Cont.)

Board	Addresses Available	Address/Type of Port
EXAMPLE 2:		
SIO (primary board)	00 - 07	00 - 07 (RS-232)
SIO (second board)	08 - 15	08 - 15 (RS-232)
ACPA (third board)	16 - 63	16 - 20 (RS-232) 21 - 63 (RS-422)

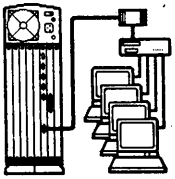
To see the first and last port number you can use on the communications boards loaded on your system, log in as root and use the **devinfo** command as shown below:

devinfo and press Return

For example, the screen might display the following information:

```
Board  Name        Major  Prefix  First   Last
0      Multidrop   10     tty     tty00    tty63
1      SIO         5      tty     tty64    tty73
```

Refer to the description of **devinfo**(C) in the *Altos System V Series 386 Reference (C)* for further information, especially regarding the use of **devinfo** on Altos 386 Series 1000 systems.



SET-UP PROCEDURE SUMMARY

There are three basic steps to setting up a Multidrop system on your Altos computer:

1. Connect the cables.

2. Set the TCU-8 switches.

3. Configure the ports with **pconfig.**

Refer to the *Multidrop Installation* manual (or the "Installing Multidrop" chapter of your Owner's Guide) and the *TCU-8 Hardware Setup Guide* for details on steps 1 and 2 above.

Step 3 (configuring ports) is described in Chapter 1 of this manual under "Setting Up the Ports for Terminals and Printers." You can find similar information in Chapter 8 of the *Altos System V Series 386 Operations Guide*, "Using Peripheral Devices." The **pconfig** port configuration program is described in *Altos System V Series 386 Reference (C).*

This procedure is summarized in Figure 3-1 on the following pages. This figure uses as its example the setup for an MDC with two TCU-8s on an Altos 386 Series 2000. (Note that on a 386 Series 1000, the Multidrop cable would be connected to an ACPA, not an MDC. Otherwise, the remainder of the setup procedure remains the same.)

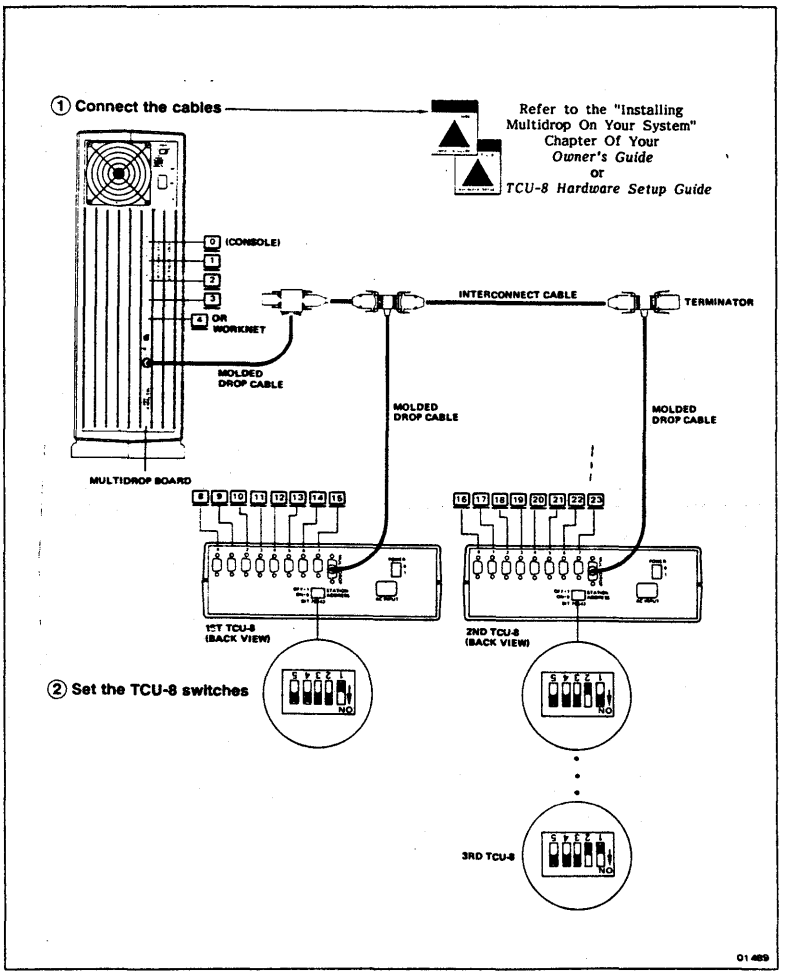


Figure 3-1. Setting Up Multidrop

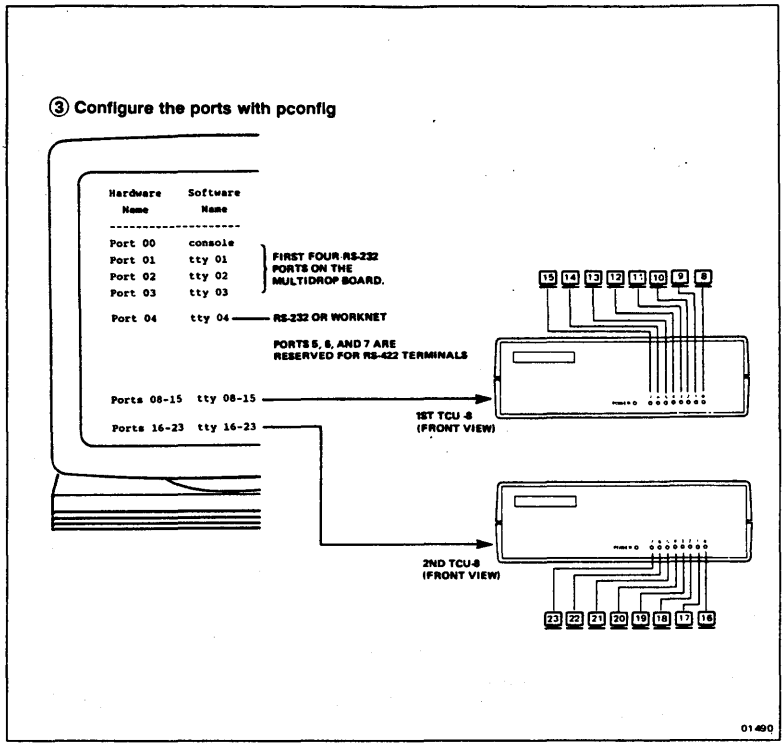
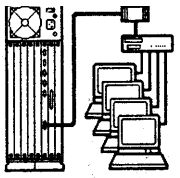


Figure 3-1. Setting Up Multidrop (Cont.)



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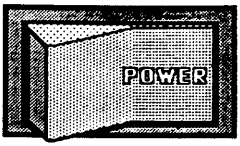
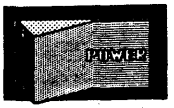
Chapter 4
Uninterruptible Power Supply (UPS)





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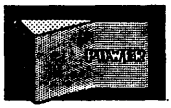


INTRODUCTION

This chapter describes the software that supports an Uninterruptible Power Supply (UPS), a device that safeguards your computer against data loss when there is a power failure.

Some computers do not support the use of a UPS. If yours does, the information on installing and setting up the UPS will be in your computer's *Owner's Guide.*

If no UPS is installed and a power failure occurs, residual power in the system allows active data transfers to complete before the system halts.

If a UPS is present on your system and a power failure occurs, the system can either:

- Execute a SHUTKILL, which causes a standard operating system shutdown, killing all processes in a controlled fashion, sending a **sync**(C) command to ensure file system integrity, and halting the system. SHUTKILL is the default.

- Execute a SHUTSAVE, which saves all active processes, which then resume as if there had been no interruption when power is restored.

See "Installation Considerations" later in this chapter to determine the type of power-down procedure you want.

SHUTKILL

If you have a UPS, your system is initially set to execute a SHUTKILL when there is a power interruption. The sequence of events when SHUTKILL is set and a power failure occurs is shown in Figure 4-1.

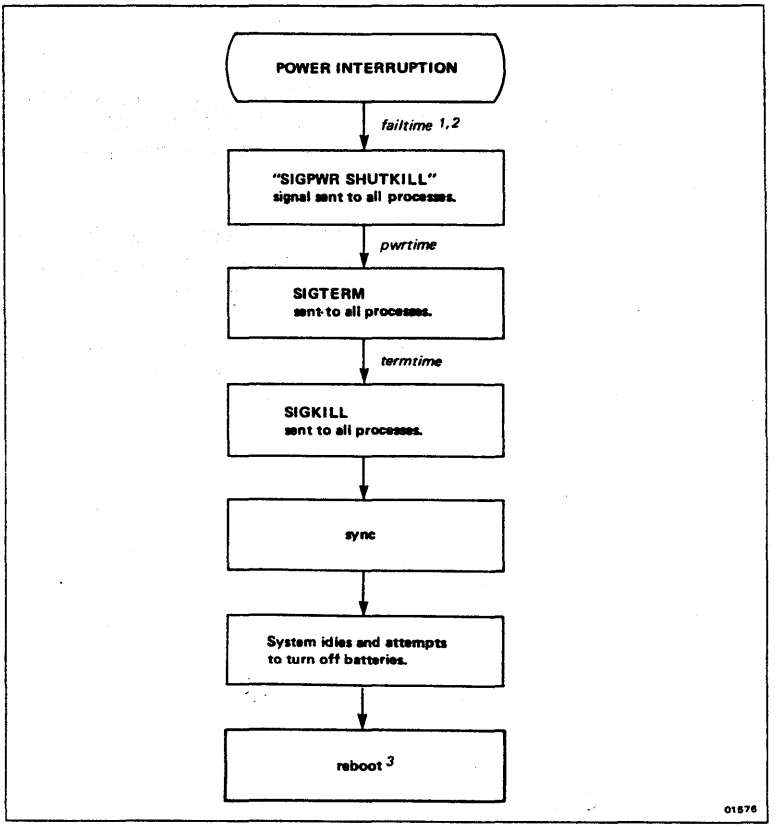


Figure 4-1. SHUTKILL Powerdown

1 If power is restored before "failtime" expires, the power failure is ignored.

2 If the power fails more than "pwrcnt" times (see shutype(M)), SHUTKILL occurs even if the power comes back on.

3 If power is restored after "failtime" expires, a reboot is guaranteed.

SHUTKILL sends a series of signals: SIGPWR, with SHUTKILL parameters, SIGTERM, and SIGKILL at intervals to all processes running at the time of the power interruption. (The SIGPWR signal is ignored if not caught by a process.) The time intervals between signals (failtime, pwrtime, and termtime) are set with the **shutype**(M) command. The SHUTKILL procedure halts all processes in an orderly fashion, flushes I/O buffers to disk (with a **sync**(C) command), idles the system, and attempts to turn off the battery.

NOTE

Only an Altos UPS can have its batteries turned off at shutdown.

When power is restored, the state of processes running before the power interruption occurred is not preserved.

SHUTSAVE

By setting your system to SHUTSAVE instead of SHUTKILL, you can save the execution state of all active processes at the time of a power failure. The sequence of events when SHUTSAVE is set and a power failure occurs is shown in Figure 4-2.

NOTE

If your system is running a heavy load, all processes may not finish before shutdown.

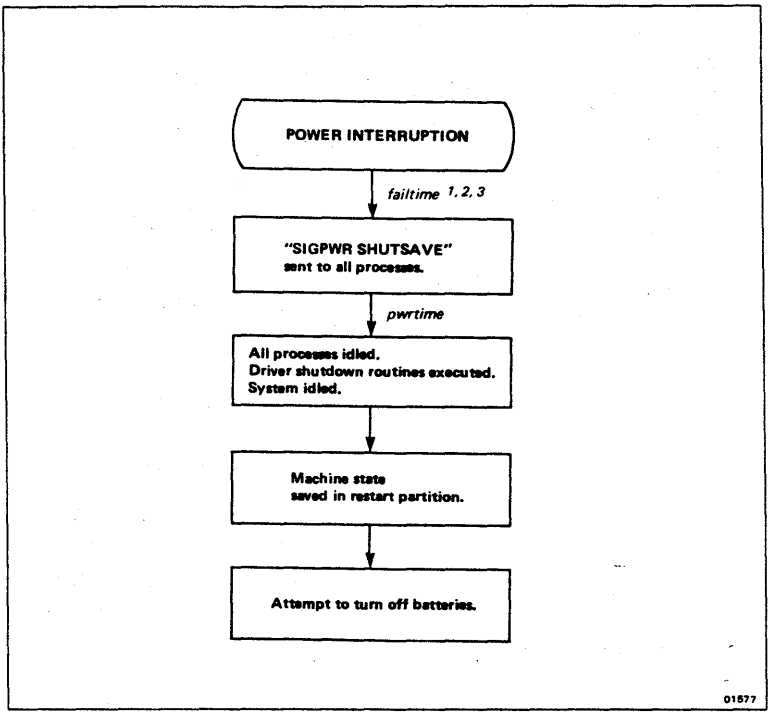


Figure 4-2. SHUTSAVE Powerdown

1 If power is restored before "failtime" expires, the power failure is ignored.

2 If the power fails more than "pwrcnt" times (see shutype(M)), SHUTKILL occurs even if the power comes back on.

3 If power is restored after "failtime" expires, the SHUTSAVE powerdown is executed and the system continues after the batteries recharge to the state in which they can support another powerdown.

NOTE

Only an Altos UPS can have its batteries turned off at shutdown.

When a power interruption occurs, the operating system sends a SIGPWR signal (with SHUTSAVE parameters) to all processes, waits a specified time interval until all processes have received the signal and had time to do any desired cleanup, then saves all processes in the restart partition on the hard disk. (The SIGPWR signal is ignored if not caught by a process.)

When power is restored, the operating system sends a SIGPWR signal (with RESTART parameters) to all processes, which resume just as they were at the time of the power interruption. The power restoration process is shown in Figure 4-3.

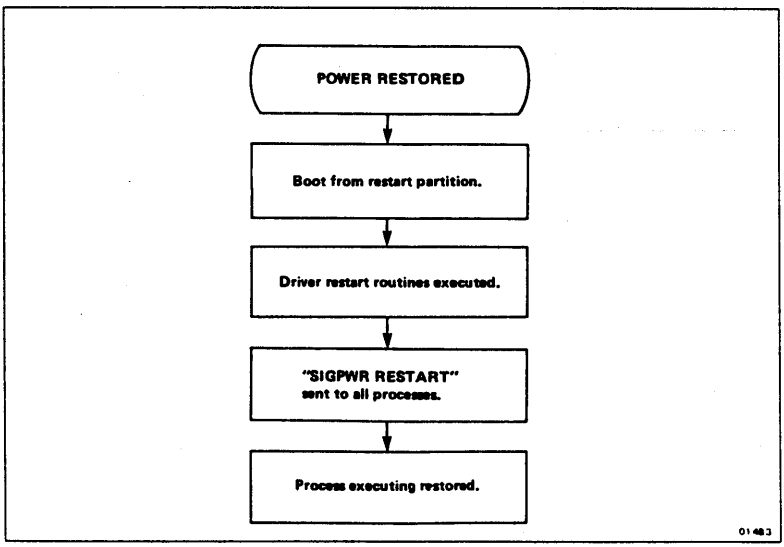
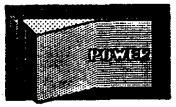


Figure 4-3. SHUTSAVE Power Restoration



INSTALLATION CONSIDERATIONS

If you have a UPS, make sure you follow these steps so your system functions the way you want it to during a power failure:

1. During installation (see the installation procedure in Chapter 1), make sure you answer y for "yes" when asked if you want a restart partition.

   This will set up your system for a shutdown, and bring the system to single-user mode when a power failure happens.

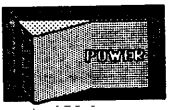
   NOTE

   If you expect to add more main memory to the system in the future, you should create a larger restart partition at the time of installation. You can do this by answering "yes" to the questions about the restart partition and nonstandard layout. The appropriate amount of disk space will then be added to the restart partition. The restart partition must always be greater than or equal to the amount of main memory for a SHUTSAVE/RESTART sequence to be successful.

2. Decide which type of powerdown you want to occur: SHUTKILL or SHUTSAVE. Your system is already set to SHUTKILL. To select SHUTSAVE, you can use the **shutype**(M) command or you can edit the **/etc/brc** file directly.

   To select SHUTSAVE with the **shutype**(M) command, enter:

   shutype -tshutsave

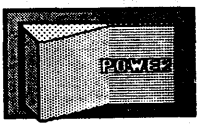


If you use the **shutype**(M) command to select SHUTSAVE, the selection will be in effect until the next time the system is brought to Multiuser mode. At that time, the system will revert to the default SHUTKILL.

To select SHUTSAVE permanently, edit the **/etc/brc** file by adding the following line:

```
shutype -tshutsave
```

For information on changing these options, see **shutype**(M) in the *Altos System V Series 386 Reference (M).*



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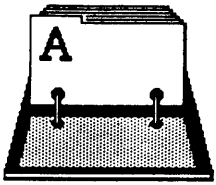

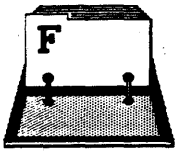

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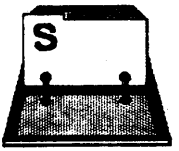

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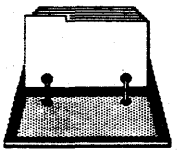

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hange Information

This is a summary of the changes that have been made to the previous version of this manual. The chapters, page numbers, and/or paragraphs mentioned in this summary reference the previous manual.

Title: Altos System V Series 386 Installation

Revised Part Number: 690-21170-007

Previous Part Number: 690-21170-006

Date: July 1989

Changes:

On page 1-10, added description of how to include an extra disk partition while installing the operating system.

On page 2-3, made it clear that any communication products or applications must be re-installed after upgrading the operating system.

On page 2-4, added the -g option to the /etc/shutdown command, which must now precede its argument.

In Chapter 3, "Setting Up Your Multidrop System," broadened the discussion to include ACPA communications boards. Also, added information specific to 386 Series 1000 systems.

On page 3-5, noted that SIO boards can have eight or ten ports, depending on system type.

On page 3-6, corrected some minor inaccuracies in the table containing COMM board configurations and addresses. Also addded some additional examples and split it into two spearate tables.

On pages 4-8 and 4-9, corrected the shutype -t format; there should be no space between the -t option and the following argument (in this cases, shutsave).

READER'S COMMENTS

Manual Title: Altos System V Series 386 Installation

Part Number: 690-21170-007

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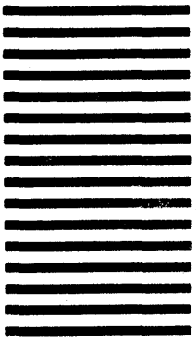

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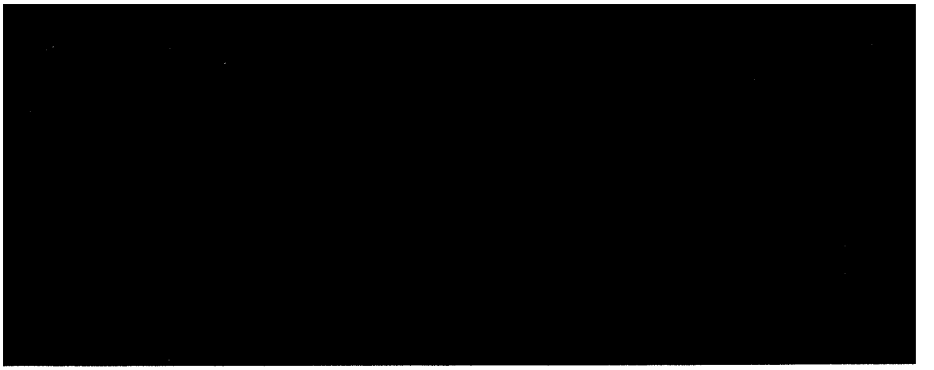

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