Customizing Terminal and Printer Type Files with Workstation Configurator

HP 3000 MPE/iX Computer Systems

Edition 5

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Preface

Workstation Configurator is a utility program used to define terminal and printer type files. Specifically, it can be used to:

- Modify terminal or printer type files.

- Examine terminal or printer type files.

- Convert MPE V termtypes to MPE/iX format.

MPE/iX, Multiprogramming Executive with Integrated POSIX, is the latest in a series of forward-compatible operating systems for the HP 3000 line of computers.

In HP documentation and in talking with HP 3000 users, you will encounter references to MPE XL, the direct predecessor of MPE/iX. MPE/iX is a superset of MPE XL. All programs written for MPE XL will run without change under MPE/iX. You can continue to use MPE XL system documentation, although it may not refer to features added to the operating system to support POSIX (for example, hierarchical directories).

Finally, you may encounter references to MPE V, which is the operating system for HP 3000s, not based on the PA-RISC architecture. MPE V software can be run on the PA-RISC HP 3000s (Series 900) in what is known as compatibility mode.

Skills and Tasks

Customizing Terminal and Printer Type Files with Workstation Configurator will be of greatest value to the person responsible for the overall operation and reliability of an MPE/iX system. This person is usually called the system administrator or system manager, and needs to be able to prepare devices for operation and to configure the computer to recognize asynchronous devices.

Guide To This Manual

Customizing Terminal and Printer Type Files with Workstation Configurator is divided into the following Chapters and Appendixes:

- Chapter 1, "Introducing Workstation Configurator," presents an overview of the Workstation Configurator software.

- Chapter 2, "Modifying a Terminal or Printer Type File," gives information and lists the steps to modify a terminal or printer type file.

- Chapter 3, "Using a New Terminal or Printer Type File," explains the different ways to use the new file.

- Chapter 4, "Workstation Configurator — Screen and Field Definition," defines the menus used to modify a terminal or printer type file and displays each screen.

- Appendix A, "Error Messages," lists error messages and causes and actions for each message.

- Appendix B, "Control Character Mnemonics," gives information and lists control characters.

- Appendix C, "Terminal Type Files," describes the characteristics of the terminal and printer type files supplied in the MPE/iX operating system.

Helpful Manuals

When using *Customizing Terminal and Printer Type Files with Workstation Configurator*, these manuals should be available for reference:

- *Configuring Systems for Terminals, Printers, and Other Serial Devices* (32022-61000). This manual describes how terminals and printers are connected to the HP 3000 (900 Series) computer. It includes an explanation of how terminal and printer input/output (I/O) is controlled by the MPE/iX operating system, and presents an overview of the hardware and software needed to accomplish communications in an asynchronous serial mode.

- *Asynchronous Serial Communications Programmer's Reference Manual* (32022-61001). This manual documents a subset of the system-supplied intrinsics available through the native mode of MPE/iX. The intrinsics are those that are particularly useful for the programmatic control of asynchronous devices.

- *Using the Node Management Services (NMS) Utilities* (32022-61005). This is a reference manual that has detailed information about the NMS Utilities, including NMMGR.

- *DTC Planning Guide*. This manual gives an overview of the DTC family, the management platforms, and the connections possible.

- *DTC Technical Reference Manual*. This manual covers the technical details of the DTC, including protocol implementations and limitations, explanations of how connections are established, and information on event logging.

1   Introducing Workstation Configurator

This chapter focuses on an explanation of Workstation Configurator, including the following:

- A list of the configurable characteristics in a terminal or printer type file.

- A definition of each configurable characteristic.

What is Workstation Configurator?

Workstation Configurator is a utility program used to define and save terminal and printer type files. It can also be used to modify or inspect existing terminal or printer type files.

The utility, `TTUTIL.PUB.SYS` will run on any HP 3000 (900 Series) computer. It is an interactive, menu-driven program; it uses a set of VPLUS/3000 screens.

System operator (OP) and privilege mode (PM) capabilities are required to run this program.

What is a Terminal or Printer Type file?

Terminal and printer type files are files that the system uses to define the relationship between the terminal or printer and the device driver on the Datacommunications and Terminal Controller (DTC). Some examples of the type of information defined by a terminal or printer type file includes flow control for inbound and outbound data, whether the terminal operates in block mode, and how the computer responds to the backspace character.

It is not necessary to understand terminal or printer type files in order to operate terminals or printers, but it is useful to know they exist. Refer to Appendix C, "Terminal Type Files," for a list of terminal and printer type files supplied in the MPE/iX operating system.

Why Use Workstation Configurator?

Users sometimes need to alter the terminal or printer type file when communication is initiated because the port was configured into the input/output system with a terminal or printer type file that is not suited to their use. Often, this is true for dial-up modem ports, where many different terminals share a single port, but at different times.

Workstation Configurator lets you modify the characteristics of a terminal or printer port. Multiple files can exist that define different characteristics for one port. The HP 3000 system enables terminal operators to temporarily alter the terminal or printer type for a port in order to change a terminal port's characteristics.

WARNING
Users of Workstation Configurator can create terminal or printer type files without restrictions. Proper and efficient operation of devices using a user-created terminal or printer type file is the responsibility of the user. For example, a terminal type file that specifies no flow control mechanism will create data overruns on the device.

What Characteristics are Modifiable?

Use Workstation Configurator to specify the following characteristics for a terminal or printer port:

- The XON/XOFF protocol.

- The read trigger.

- Block mode.

- Special characters.

- Echo.

- Form feed.

- DTC response to backspace.

- Typeahead.

- Printer control.

- Vertical Format Control.

Each of these is described in detail on the following pages.

XON/XOFF Protocol

The XON/XOFF protocol is controlled by the device, rather than by the device driver. The driver sends data to the device in a continuous stream. If the device can no longer accept data (because of being put offline, filling its buffer, running out of paper, etc.), it sends the XOFF character to the driver. The driver then stops sending data to the device. When the device is able to accept data again, it sends the XON character to the driver and the driver resumes data transmission.

Use Workstation Configurator to specify if a timer should be started when the XOFF character is received. If a timer is started and the timer expires before the XON character is received, a message is printed on the system console stating that the device is offline. The timer duration can be specified from 1 to 255 seconds.

Block Mode

Block mode is a method of transferring data from a terminal to the computer. Instead of sending each character as it is typed, the terminal buffers a line or more of data and sends an entire block of data when the terminal user finishes entering it.

Using Workstation Configurator, the type (or types) of block mode along with the block mode alert and block trigger characters can be specified.

Read Trigger

The read trigger character is used to tell the terminal when to send characters to the driver. This character is normally the `DC1` character.

Using Workstation Configurator, any character can be specified as the read trigger character. If the device requires a multiple character sequence for a read trigger, the first number minus one (`n-1`) characters can be sent to the device through a write and the last character can be made the read trigger character.

Special Characters

There are several characters that have special significance to the driver. These characters cause the driver to take special actions.

With Workstation Configurator, defining characters to cause a special action is possible. The characters that have special significance to the driver are as follows:

- Backspace.
- Cancel line.
- End-of-Record.
- Subsystem break.

Each of these are described in the pages that follow.

Backspace

This special function is entered by pressing **[Backspace]**. If enabled, backspace causes the cursor to back up one space, but it does not erase the character.

Cancel Line

This special function is entered by pressing **[CTRL]-[X]**. Cancel deletes the current line. The system verifies the cancellation by printing three exclamation marks (`!!!`), followed by a carriage return and a line feed.

End-of-Record

This function takes place during a read. When a read is issued, it has an expected length associated with it. By entering an end-of-record (EOR) character, the read can be terminated before the full number of characters has been entered. With Workstation Configurator, two types of EOR characters can be specified.

With the first type, the EOR character terminates the read, but it is not included in the data returned to the program doing the read or the actual count of characters. The read is returned with good (CCE) status.

The second type is the same as the Additional EOR specified through the `FCONTROL(25)` intrinsic. The character is included in both the data and the actual count of the number of bytes returned. The read is returned with a special status (a returned condition code of CCL on the read and a file system error number of `FSERR 31`), indicating that the read was terminated by the additional EOR character. The terminal cursor is not affected.

Subsystem Break

The subsystem break function enables you to interrupt the execution of a local program or subsystem command. The subsystem break character is invoked by pressing **[CTRL]-[Y]**. Using Workstation Configurator, one subsystem break character can be specified.

Echo

Echo allows terminal input to be echoed back to the terminal screen by the computer as it is received. With Workstation Configurator, the initial setting for echo (either `on` or `off`) can be specified. Whenever the terminal type is set, the initial setting for echo will take effect.

NOTE

Applications exist that set echo before the terminal type is selected. For applications to function correctly, the program needs to select the terminal type first, and then set echo as desired (if it is different than the default

Form Feed

The form feed character is usually contained in the carriage control sent to the hard copy printer. Some hard copy printer will not accept the form feed character. Workstation Configurator can be used to replace the form feed character with a character that the hard copy printer will accept. In most instances, the form feed character is replaced with the line feed character.

Subsystem Response to Backspace

When echo is enabled, a backspace is echoed to the terminal screen which might cause some action to the data on the screen. An additional response might be required from the system for better cursor positioning. The default for backspace causes the cursor to backup one space, but it does not erase the character. Workstation Configurator can be used to specify that the character should be erased.

Typeahead

Typeahead allows the terminal user to continuously enter data without having to wait for the system to process the data and return the MPE/iX prompt (`:`). Typeahead echo mode determines whether input

characters will be echoed to the terminal screen once or twice (the first echo occurs as the data is typed ahead; the second echo occurs when the data is used in subsequent reads). Using Workstation Configurator, typeahead can be enabled and the choice of one or two echoes of input characters can be specified.

Printer Control

When a printer acts as a spooled system printer, different people can use the printer in different ways. In order to insure that one user who changes the printer's characteristics (such as margins, tabs, or print density) does not affect the next user who does not want to use those characteristics, an initialization string can be specified.

An initialization string sets the printer to a known and repeatable state. When a device (configured as a printer) is first opened, the initialization string (up to 120 characters) is automatically sent to the printer by the driver. For spooled printers, this occurs at the beginning of every spool file sent to the printer.

Printer control functions provide control for printers. Using Workstation Configurator, an initialization string can be defined, and parameters can specify the status wait-time, the status retries, and the `FOPEN` wait-time. The status wait-time and status retries customize the status request protocol. `FOPEN` wait-time maintains a remote connection over multiple print (spool) files.

Vertical Format Control

Many line printers allow the use of Vertical Format Control (VFC). VFC instructs a printer to skip to a predetermined place on the page with certain carriage control directives instead of counting and displaying a number of blank lines and spaces.

Up to 16 VFC channels can be supported by a device with each channel representing one or more places within the vertical page. Each channel performs a standard skip function such as skip to top of next page, skip one line, skip to next quarter page, and so forth. Some serial printers allow the use of VFC through a set of character sequences. To skip to a particular VFC channel, the corresponding character sequence is sent to the device.

With Workstation Configurator, each VFC character sequence (up to 16) can be defined. When one of the VFC carriage controls is used, the driver generates the character sequence necessary to move the printer carriage to the proper channel.

2 Modifying a Terminal or Printer Type File

This chapter provides step-by-step instructions for modifying terminal or printer type files. Terminal and printer type files define the software operating characteristics of the terminals and printers directly or remotely attached to Datacommunications and Terminal Controllers (DTCs). The MPE/iX operating system has multiple terminal and printer type files that have various settings, such as different record width sizes and bits per second (bps). By following the steps in this chapter, the MPE/iX terminal and printer type files can be customized to match the operation requirements of the attached device.

When modifying a terminal or printer type file, start with one of the files supplied in the MPE/iX operating system. Refer to Appendix C, "Terminal Type Files," to choose a file that has the same basic functionality as the file that needs to be created. Rename this file and then make modifications to it, as required.

If, for example, a file needs to be created to work with buffered network printers, use printer type 26 as the base file for the modifications. If the device is a terminal attached to a PAD, use the PAD terminal type file (terminal type 24) as the base file for the modifications. Using similar base files will limit the number of modifications required because their contents already define similar software operating characteristics.

For additional information on terminal and printer type files, refer to *Configuring Systems for Terminals, Printers, and Other Serial Devices.*

NOTE   For the remainder of this chapter, both terminal and printer type files will be generically referred to as terminal type files.

Step 1: Starting Workstation Configurator

Workstation Configurator is initiated by typing `:RUN`
`TTUTIL.PUB.SYS` at the MPE/iX prompt (`:`) and pressing the **[Return]**
key. System operator (OP) and privilege mode (PM) capabilities are
required to run this program.

On each subsequent screen, modify the fields that appear in inverse
video. Information can be entered only in these areas, since the rest of
the screen is protected against modifications. Refer to Appendix B,
"Control Character Mnemonics," for a list of the mnemonics that can be
entered into the fields that appear in inverse video.

Some fields will list default values. Use these values if they are
acceptable, or enter new values and data specific to the terminal or
printer type file being created.

Step 2: Naming the Terminal Type File

The Main Menu screen is shown in Figure 2-1.

Figure 2-1   **Main Screen**

```
                              Main Menu
[                            ] Terminal type file name

[M]     File option
         C - Create
         M - Modify
         V - View

--------------------------------------------------------------------------------

[F]     Go to form
         X - Convert MPE/V termtype
         F - Flow control
         S - Special characters
         C - Control
         P - Printer control
         V - VFC definition




 Save              Refresh              Prev    Next    Main    Exit
 Data                                   Form    Form    Menu
```

Type the name of the terminal type file you want to modify in the
`Terminal type file name` field. This is the renamed terminal or
printer type file from the MPE/iX operating system that has the same
basic functionality as the file that will be created. Verify that `M` (Modify)
is displayed in the `File option` field. Press the **[Enter]** key.

Step 3: Configuring Flow Control

The Flow Control screen is shown in Figure 2-2. Steps for both enabling and disabling the XON/XOFF protocol, defining the typeahead buffer behavior, and specifying a type of block mode and a read trigger character are given below.

Figure 2-2 **Flow Control Screen**

```
                     Flow Control
[Y]        Driver uses an XON/XOFF protocol (Y,N)
           [Y]  Timer enabled (Y,N); [  60]  Timer period (seconds)

[0]        Typeahead buffer behavior for sending second XOFF
           0 - delayed
           1 - immediate

[N]        Block mode support (N,L,P,B)
           Characters:  alert [      ], trigger [      ]

[DC1 ]     Read trigger character
```

Save Data			Refresh		Prev Form	Next Form	Main Menu	Exit

To enable the XON/XOFF protocol:

1. Verify that the cursor is in the `Driver uses an XON/XOFF protocol (Y,N)` field. Terminals and printers use the XON/XOFF protocol to tell the HP 3000 that they cannot accept any more data and when they are ready to accept data again. Type `Y`.

2. Press the **[Tab]** key to move the cursor to the `Timer enabled? (Y,N)` field.

3. Verify that the cursor is in the `Timer enabled (Y,N)` field. If the timer is enabled and it expires before an XON is received from the terminal or printer, a message saying the device is offline is printed on the system console.

4. Type `Y`.

5. Verify that the cursor is in the `Timer period (seconds)` field.

6. Type the number of seconds, from 1 to 255, that the timer will be enabled for. This is the amount of time the HP 3000 will wait for the XON from the terminal or printer.

To disable the XON/XOFF protocol:

1. Verify that the cursor is in the `Does driver use an XON/XOFF protocol (Y,N)` field. Type `N`.

To specify the typeahead buffer behavior:

1. Verify that the cursor is in the `Typeahead buffer behavior for sending second XOFF` field. The HP 3000 sends an XOFF to the terminal when its typeahead buffer is full. The value entered in this field specifies how often the HP 3000 will send an XOFF, after its typeahead buffer is full.

2. Type `0` to delay sending an XOFF to the terminal after the typeahead buffer is full. If `0` is entered, the HP 3000 will wait to send an XOFF until 16 characters are received. HP recommends delaying the sending of an XOFF if data switches are used in the computer network.

3. Type `1` to specify that an XOFF should be sent to the terminal after each character is received when the terminal buffer is full.

To configure block mode:

1. Press the **[Tab]** key to move the cursor to the `Block mode support (N, L, P, B)` field. Type the first letter of the block mode that this terminal type file will use. The types of block mode are none, line, page, or both.

2. Verify that the cursor is in the `Characters: alert` field. This is the character that the terminal uses to alert the system that a block of data is coming.

3. Type the alert character for this terminal type file. In most instances, this character is the `DC2`.

4. Verify that the cursor is in the `Characters: trigger` field. This is the character that the system uses to tell the terminal that it is ready to receive the data.

5. Type the trigger character for this terminal type file. In most instances, this character is the `DC1`.

To configure a read trigger character:

1. Press the **[Tab]** key to move the cursor to the `Read trigger character` field. This character tells the terminal that the HP 3000 is ready to receive data.

2. Type the read trigger character for this terminal type file. The read trigger character entered here must be the same read trigger character entered for block mode. In most instances, this character is the `DC1`.

After all the data has been modified on this screen, press the **[Enter]** key and then the `Next Form` **[F6]** function key.

Step 4: Configuring Special Characters

The Special Characters screen is shown in Figure 2-3. Steps for configuring a backspace character, a cancel line character, a type 1 end-of-record character, type 2 end-of-record characters (up to 16 type 2 end-of-record characters allowed), and a subsystem break character are given below.

Figure 2-3   **Special Characters Screen**

```
                        Special Characters
[BS   ]    Backspace

[CAN  ]    Cancel line

[CR   ]    Type 1 end-of-record character

           Type 2 end-of-record characters
[                                                            ]

[EM   ]    Subsystem break character




┌────────┬──────┬──────┬─────────┬───────┬────────┬────────┬────────┬────────┐
│ Save   │      │      │ Refresh │       │ Prev   │ Next   │ Main   │ Exit   │
│ Data   │      │      │         │       │ Form   │ Form   │ Menu   │        │
└────────┴──────┴──────┴─────────┴───────┴────────┴────────┴────────┴────────┘
```

To configure a backspace character:

1. Verify that the cursor is in the Backspace field. If enabled, backspace deletes the previous character by outputting a space and a backspace character, which erases the character from the screen.

2. Enter the backspace character for this terminal type file. This required character can be input in any character format. The value entered most often is BS.

To configure a cancel line character:

1. Press the **[Tab]** key to move the cursor to the Cancel line field. Cancel deletes the current line.

2. Type the cancel line character for this terminal type file. This required character can be input in any character format. The value entered most often is CAN.

To configure a type 1 end-of-record character:

1. Press the **[Tab]** key to move the cursor to the `Type 1 end-of-record character` field. This character works like a line feed, but no carriage return occurs.

2. Modify the default to list the end-of-record character for this terminal type file. This character is optional. The value most often entered is `CR`.

To configure type 2 end-of-record characters:

1. Press the **[Tab]** key to move the cursor to the `Type 2 end-of-record characters` field. When a type 2 end-of-record character is configured, the read is returned with a special status that indicates that the read was terminated by the additional end-of-record character.

2. Enter the additional end-of-record characters. This is optional. Up to 16 type 2 end-of-record characters may be configured. Leave a blank between each mnemonic when you enter the field.

To configure a subsystem break character:

1. Press the **[Tab]** key to move the cursor to the `Subsystem break character` field. Subsystem break interrupts the execution of a local program or subsystem command.

2. Enter the subsystem break character for this terminal type file. This character is optional. The value most often entered is `EM`.

After the data has been modified on this screen, press the **[Enter]** key and the `Next Form` **[F6]** function key.

Step 5: Assigning Control

The Control screen is shown in Figure 2-4. What follows are steps for turning initial echo on or off and for defining form feed, backspace, and typeahead behavior.

Figure 2-4   Control Screen

```
                            Control

[OFF]    Initial echo (ON,OFF)

[Y]      Form feed allowed in output carriage control (Y,N)
         Replacement character for form feed [      ]

[1]      System response to backspace:
           1 - nothing
           5 - erase character

[N]      Typeahead enabled (Y,N)

[ ]      Typeahead Echo Mode
           0 - Double echo
           1 - Single echo




```

Save Data			Refresh		Prev Form	Next Form	Main Menu	Exit

To turn initial echo on or off:

1. Verify that the cursor is in the `Initial echo (ON,OFF)` field. Echo allows terminal input to be echoed back to the terminal screen by the computer as the input is received.

2. Type to enable initial echo. Type `OFF` to disable initial echo.

To specify whether form feed is allowed to be output to a terminal:

1. Press the **[Tab]** key to move the cursor to the `Form feed allowed in output carriage control (Y/N)` field. This character is usually contained in the carriage control sent to the hard copy device. Some hard copy devices will not accept the form feed character.

2. Type `Y` if the form feed character should be sent to the hard copy device.

3. If the hard copy device will not accept the form feed character, type N. Verify that the cursor is in the `Replacement character for form feed` field. Enter the replacement character for form feed, usually `LF`.

To specify a response to the backspace character:

1. Press the **[Tab]** key to move the cursor to the `System response to backspace` field. When echo is enabled, a backspace is sent to the terminal which might cause some action on the terminal's screen. An additional response might be required from the system for better cursor positioning.

2. Type 1 to back the cursor up one space, but entering 1 will not erase the character.

3. Enter 5 to back the cursor up one space and erase the character.

To turn typeahead on or off:

1. Press the **[Tab]** key to move the cursor to the `Is typeahead enabled (Y,N)` field. Typeahead allows the terminal user to continuously enter data without having to wait for the system to process the data and return the MPE prompt (:).

2. Type Y to turn typeahead on. Type N to turn typeahead off.

To specify typeahead echo mode:

1. Press the **[Tab]** key to move the cursor to the `Typeahead Echo Mode` field. The value entered here determines whether the input characters will be echoed to the terminal's screen once or twice.

2. Type 0 if the input characters should be echoed to the terminal's screen twice. Type 1 if the input characters should be echoed to the terminal's screen once.

After the data has been modified on this screen, press the **[Enter]** key and the `Next Form` **[F6]** function key.

Step 6: Assigning Printer Control

The Printer Control screen is shown in Figure 2-5. Steps for defining the number of status requests that should be attempted, the length of time to wait for a reply, the number of requests to attempt, and the amount of time to wait before sending a disconnect request are given below.

Figure 2-5   **Printer Control Screen**

```
                        Printer Control

 [Y]      Status request efficiency mode enabled (Y,N)
          Frequency of status requests [      ] (1 request per 1...250 writes)

 [ 60]    Wait time for reply to status request (5...180 seconds)

 [ 10]    Read retries for XON and status request reply (0...100 retries)

 [10]     Wait time for FOPEN before disconnect (0...90 seconds or 99, 99=infinite)

 [N]      Does the printer support duplex printing (Y,N)




 Save              Refresh            Prev      Next      Main      Exit
 Data                                 Form      Form      Menu
```

To turn on or off status request efficiency mode:

1. Verify that the cursor is in the `Status request efficiency mode enabled (Y,N)` field. This protocol specifies the number of requests per write the HP 3000 should send to the printer.

2. Type `Y` to enable status request efficiency mode. Type `N` to disable status request efficiency mode.

3. If status request efficiency mode is disabled, verify that the cursor is in the `Frequency of status requests` field. Enter a number to specify the number of requests per write the HP 3000 should send to the printer.

To configure the amount of time the HP 3000 should wait for a reply:

1. Press the **[Tab]** key to move the cursor to the `Wait time for reply to status request (5..180 seconds)` field. Enter a time that is long enough for the status request reply to return during peak periods of network traffic.

2. Type the number of seconds, from 5 to 180.

To configure the number of retries that are made when the wait timer:

1. Press the **[Tab]** key to move the cursor to the `Read retries for XON and status request reply (0..100 retries)` field. When the wait time for a reply to status expires, the driver sends a message to the console and retries the read for as many attempts as are specified here.

2. Type the number of read retries, from 0 to 100.

To specify the number of seconds to wait before sending a disconnect request to a remote printer port:

1. Press the **[Tab]** key to move the cursor to the `Wait time for FOPEN before disconnect (0..90 seconds or 99, 99=infinite)` field.

2. Type the number of seconds from 0 to 90, or type 99 if the HP 3000 should wait indefinitely.

To specify if duplex printing is supported:

1. Press the **[Tab]** key to move the cursor to the `Does the printer support duplex printing` field.

2. Specify yes or no for duplex printing.

After the data has been entered on this screen, press the **[Enter]** key and the `Next Form` **[F6]** function key.

Step 7: Modifying a Vertical Format Control (VFC) File

The VFC File Selection screen is shown in Figure 2-6. Steps for modifying a VFC file are given below.

Figure 2-6 **VFC File Selection Screen**

```
                          VFC File Selection

[■■■■■■■■■■■■■■■■■■■■■■■■■] VFC file name

[M]      File option
          C - Create
          M - Modify
          V - View
          N - Name only



 ┌──────┬─────┬─────┬─────────┬─────┬──────┬──────┬──────┬──────┐
 │ Save │     │     │ Refresh │     │ Prev │ Next │ Main │ Exit │
 │ Data │     │     │         │     │ Form │ Form │ Menu │      │
 └──────┴─────┴─────┴─────────┴─────┴──────┴──────┴──────┴──────┘
```

Type the name of the vertical format control file you want to modify in the VFC file name field. Verify that M (Modify) is displayed in the File option field. Press the **[Enter]** key.

Step 8: Defining Vertical Format Control (VFC)

The VFC and Initialization screen is shown in Figure 2-7. Steps for defining an initialization string that will set the printer to a known and repeatable state are given below.

Figure 2-7   **VFC and Initialization Screen**

To specify whether an initialization string will be sent to a printer:

1. Verify that the cursor is in the `Device to be initialized (Y,N)` field. Initializing the printer sets it to a known and repeatable state. The settings that an initialization string might define include the margins, the fonts, and the column width.

2. Type `N` if the printer should not be initialized when files are sent to it.

3. Type `Y` if the printer should be initialized when files are sent to it. Verify that the cursor is in the `Initialization String` field.

4. Enter the initialization string. A maximum of 120 characters can be entered. Remember to surround the initialization string with quotes.

To configure VFC channels on the printer:

1. Press the **[Tab]** key to move the cursor to the `Is VFC defined for the device (Y,N)` field. Up to 16 VFC channels can be configured. Each channel performs a standard function such as "skip to top of next page" or "skip one line."

2. Type `N` if VFC channels are not required for this printer.

3. Type `Y` if VFC channels are required for this printer. Verify that the cursor is in the `String` field.

4. Enter the VFC strings. A maximum of 16 characters can be entered, per string. Remember to surround each string with quotes.

After the data has been entered on this screen, press the `Save Data` **[F1]** function key and the `Exit` **[F8]** function key to leave Workstation Configurator.

3 Using a New Terminal or Printer Type File

The terminal or printer type file created with Workstation Configurator is almost ready for use. This chapter explains the different ways of using the new terminal or printer type file. One option is to permanently associate a terminal or printer type file with a logical device number (ldev number). Another option is to use a terminal or printer type file for the duration of a session; this is accomplished by specifying the file name when the session is first established.

Linking Terminal and Printer Type Files to Ldev Numbers

One way to use a new terminal or printer type file is to associate the terminal type or printer type file with a profile name and then associate the profile name with an ldev number. This information is stored in the `NMCONFIG.PUB.SYS` file. The `NMCONFIG.PUB.SYS` file defines the HP 3000's configuration.

The Node Management Configuration Services (NMMGR) is the tool used to modify the `NMCONFIG.PUB.SYS` file. For information on using NMMGR, refer to Using the Node Management Services (NMS) Utilities. For detailed information on adding terminal and printer type files to the `NMCONFIG.PUB.SYS` file, refer to *Configuring Systems for Terminals, Printers, and Other Serial Devices*.

Follow the steps below to add a new terminal or printer type file to `NMCONFIG.PUB.SYS` file.

1. Start NMMGR by typing `NMMGR` at the MPE prompt (:). Node manager (NM) and network administrator (NA) capabilities are required to run this program.

2. Verify that `NMCONFIG.PUB.SYS` is the configuration file name used.

3. Press the `Open Config` **[F1]** function key to go to the Main screen.

4. Use the direct branching utility to reach the Profile Selection screen. If using host-based management, type `@DTS.PROFILE` in the NMMGR command line. If using PC-based management, type `@DTS.PROFPC` in the NMMGR command line. Press the **[Enter]** key. The DTS Profile Selection screen is displayed.

5. Type a new profile name in the `Profile name` field.

6. Verify that the cursor is in the `Type` field. Type `terminal` if the new file is a terminal type file or `printer` if the new file is a printer type file.

7. Press the `Add` **[F5]** function key. Either the DTS Printer Profile screen or the DTS Terminal Profile screen is displayed, depending on the type of profile specified in step 5.

8. Enter the new terminal or printer type file name in the `Terminal` or `Printer Type File Name` field.

9. Modify the configurable variables, as necessary. Press the `Save Data` **[F6]** function key. Press the `Prior Screen` **[F8]** twice to move to the Host Configuration screen.

10. Press the `Go To DTC` **[F2]** function key. The DTC Configuration Selection screen is displayed.

11. Select the DTC type for your DTC by pressing the appropriate key. The DTC Configuration screen is displayed.

12. Type the DTC name of the DTC that has attached to it the device that will use the new terminal or printer type file. Press the `Read DTC` **[F1]** key.

13. Type the number of the card to which the device is attached in the `To configure a card, enter a card number ...` field. Press the `Config Card` **[F4]** function key.

14. On this displayed screen, an ldev number and profile name is associated with each of the ports on the card. Type the new profile name to be associated with the attached device. Press the `Save Data` **[F6]** function key.

15. Press the **[Tab]** key to move the cursor to the NMMGR command line. Type `VA` and press the **[Enter]** key to go to the Validate Configuration File screen.

16. Press the `Validate DTS/LINK` **[F2]** key to validate the changed configuration. If there were no errors found and the file that is open is `NMCONFIG.PUB.SYS`, then NMMGR will automatically cross-validate the configuration file with the system I/O devices configured through the SYSGEN utility.

17. Verify that there were no error messages displayed (several warning messages may be displayed).

18. After viewing the screens' content, press the **[Return]** key. If no validation or SYSGEN error messages were displayed, press the **[Tab]** key to move the cursor to the NMMGR command line.

19. Type `exit` and press the **[Enter]** key. If other subsystems are not validated, NMMGR will not allow you to exit and an error message will be displayed on the status line. If you do not want to validate these other subsystems at this time, press the **[Enter]** key again to exit NMMGR.

Rebooting the Host and the DTC

The MPE/iX system and the DTC must be rebooted after the network management configuration file has been modified.

To reboot the MPE/iX system, do the following:

1. Enter these commands at the MPE/iX prompt (:):

   :   **[CTRL]-A**

   =   SHUTDOWN

2. The system will display various shutdown messages. Wait until the
   following message is displayed on the screen:

   ```
   Shutdown of operation system complete
   ```

3. Enter these commands:

   [CTRL]- B

   CM>   RS

4. Answer YES to the question: Restart the system?.

   The system will reset and display the ISL prompt. Type the
   following command to start the system:

   ISL> START NORECOVERY

[CTRL]-A means press the **[CTRL]** key and the A key simultaneously.

Shutdown normally takes several minutes.

5. To reset the DTC, turn off the power and then turn on the power
   again for the DTC. You should reboot the DTC after rebooting the
   MPE/iX system.

   You may also use TermDSM, an online diagnostic program for
   host-managed DTCs, to reset the DTC. Refer to *Troubleshooting
   Terminal, Printer, and Serial Device Connections* for more
   information.

Using Terminal Type Files in Logon Strings

A terminal type file can be specified in the logon string. When a terminal type file is specified in the logon string, the file is associated with the ldev number for the duration of the session. The **:HELLO** command accepts either a terminal type number or a terminal type file name with the `;`TERM=*parameter*. For example, the following logon allows the terminal user called TEMPUSER.TEST to use the terminal type file called MYTERM.

:HELLO *TEMPUSER.TEST*`;`TERM=*MYTERM*

If a terminal type file is specified in the logon string, that file remains active until the **:BYE** command is entered. Unless a terminal type file is specified in the logon string, the configured terminal type file associated with that ldev number is used until the **:BYE** command is entered.

Using the ENV = Parameter when Printing

If the default printer type file is not suited to your needs, specify a different printer type file with the parameter. For example, if your printer type file specifies the laserjet and you want to print to the plotter, use this parameter.

When using this parameter, a printer type file other than the configured one can be specified. For printers, this parameter specifies a printer type file other than the configured one. The syntax for this parameter is as follows:

FILE *filename*; DEV=*deviceclass*; ENV=*filename*

4 Workstation Configurator — Screen and Field Definition

This chapter defines and illustrates each screen of the Workstation Configurator and provides a discussion of each field on the screen.

Main Menu

The Main Menu screen as shown in Figure 4-1, allows you to complete
the following tasks:

- Name the terminal type file.

- Specify the type of function you want to perform on the file.

- Go to the screen or form you want to modify.

Figure 4-1   **Main Screen**

```
                              Main Menu
[                            ] Terminal type file name

[M]      File option
            C — Create
            M — Modify
            V — View

 ------------------------------------------------------------------------

[F]      Go to form
            X — Convert MPE/V termtype
            F — Flow control
            S — Special characters
            C — Control
            P — Printer control
            V — VFC definition




 Save                  Refresh              Prev    Next    Main    Exit
 Data                                       Form    Form    Menu
```

Fields

The Main Menu screen lists the following fields:

- `Terminal type file name`. This field will contain the name of the
  terminal or printer type file. Enter a valid file name for the file you
  want to create, modify, or view. Valid file names contain up to three
  parts, each of which contains from one to eight alphanumeric
  characters, the first of which must be alphabetic. The file name must
  be in the following format:

  `filename[.groupname[.acctname]]`

  The default `groupname` and `acctname` are the logon group and
  account. Before any other menu can be accessed, this field must
  contain a valid file name.

- `File option`. This field lets you to specify whether you want to create a new file, modify an existing file, or view the data in an existing file.

  If you enter either `M` (Modify) or `V` (View), information from the file entered in the `Terminal type file name` field is copied into the work area of the utility. To modify the file, you must have write access for this file. However, to view a file, you only need read access.

  If you specify `C` (Create), a new file is created and saved. The file is then automatically reopened when the modify option is specified.

- `Go to form`. This field lets you pick the next screen (or form) to go to for terminal type information. The following screens can be accessed to create (or modify) a terminal type file:

  - Convert MPE V Termtype

  - Flow Control

  - Special Characters

  - Control

  - Printer Control

  - VFC Definition

Convert MPE V Termtype

The Convert MPE V Termtype screen is the second Workstation
Configurator screen. To select this screen, enter X in the `Go to form`
field on the Main Menu screen and press the **[Enter]** key. The Flow
Control screen shown in Figure 4-2 is then displayed.

Figure 4-2   **Flow Control Screen**

```
                    Flow Control

[Y]        Driver uses an XON/XOFF protocol (Y,N)
           [Y]  Timer enabled (Y,N); [ 60]  Timer period (seconds)

[0]        Typeahead buffer behavior for sending second XOFF
           0 - delayed
           1 - immediate

[N]        Block mode support (N,L,P,B)
           Characters:  alert [      ], trigger [      ]

[DC1 ]     Read trigger character




_____
 Save  |       |       |Refresh|       | Prev | Next | Main | Exit
 Data  |       |       |       |       | Form | Form | Menu |
```

Fields

The Convert MPE V Termtype screen lists only one field.

`Convert MPE V termtype file to MPE/iX format (Y/N).` Use
this field to convert an MPE V termtype file to MPE/iX format.

NOTE   After the termtype file has been converted to MPE/iX format, the file
cannot be ported back to HP 3000 MPE V systems. Additionally, when
termtype files are converted from MPE V to MPE/iX format, the
termtype files might not function as they did on the MPE V system.
Refer to the *Asynchronous Serial Communications Programmer's
Reference Manual* for information on the differences between MPE V
and MPE/iX.

Flow Control

The Flow Control screen is the third Workstation Configurator screen. To select this screen, enter F in the `Go to form` field on the Main Menu screen and press the **[Enter]** key or press the `NEXT FORM` **[F6]** function key on the Convert MPE/V Termtype screen. The menu shown in Figure 4-3 is then displayed.

Figure 4-3   **Special Characters Screen**

```
                        Special Characters
[BS  ]    Backspace

[CAN ]    Cancel line

[CR  ]    Type 1 end-of-record character

          Type 2 end-of-record characters
[                                                        ]

[EM  ]    Subsystem break character




┌──────┬──────┬──────┬──────────┬──────┬──────┬──────┬──────┬──────┐
│ Save │      │      │ Refresh  │      │ Prev │ Next │ Main │ Exit │
│ Data │      │      │          │      │ Form │ Form │ Menu │      │
└──────┴──────┴──────┴──────────┴──────┴──────┴──────┴──────┴──────┘
```

Fields

The Flow Control screen lets you configure the following functionality:

- `Driver uses an XON/XOFF protocol (Y/N)`. This field lets you turn on or off the XON/XOFF protocol. If XON/XOFF is enabled, you can specify whether a timer is started when the XOFF is received. You can also specify the length of the timer period, in seconds. Valid timer periods range from 1 to 255 seconds.

- `Typeahead buffer behavior for sending second XOFF`. The HP 3000 sends an XOFF to the terminal when its typeahead buffer is full. The value entered in this field specifies how often the HP 3000 will send an XOFF, after its typeahead buffer is full.

- `0` — `delayed`. If `0` is entered, the HP 3000 will wait to send an XOFF until 16 characters are received after the typeahead buffer is full. HP recommends delaying the sending of an XOFF if data switches are used in the computer network.

- `1` — `immediate`. If `1` is entered, the HP 3000 will send an XOFF after each character is received when the typeahead buffer is full.

- `Block mode support`. This field lets you configure the type of block mode your terminal will use. The types of block mode are none, line, page, or both. If block mode is used, the values for the block mode trigger and alert characters are displayed.

- `Read trigger character`. This field lets you configure the read trigger character. This character lets the terminal know that the HP 3000 system is ready to receive data. If the field is left empty, then no trigger character is written by the driver at the beginning of a read.

NOTE   The block mode read trigger character and the read trigger character should be the same. For example, if the block mode read trigger character is `DC1`, then the read trigger character should be `DC1`.

Special Characters

The Special Characters screen is the fourth Workstation Configurator screen. To select this screen, enter an S in the `Go to form` field on the Main Menu screen and press the **[Enter]** key or press the NEXT FORM **[F6]** function key on the Flow Control screen. The screen shown in Figure 4-4 is then displayed.

Figure 4-4   **Control Screen**

```
                              Control

 [OFF]     Initial echo (ON,OFF)

 [Y]       Form feed allowed in output carriage control (Y,N)
           Replacement character for form feed [      ]

 [1]       System response to backspace:
             1 — nothing
             5 — erase character

 [N]       Typeahead enabled (Y,N)

 [ ]       Typeahead Echo Mode
             0 — Double echo
             1 — Single echo




 ┌──────┬──────┬──────┬─────────┬──────┬──────┬──────┬──────┬──────┐
 │ Save │      │      │ Refresh │      │ Prev │ Next │ Main │ Exit │
 │ Data │      │      │         │      │ Form │ Form │ Menu │      │
 └──────┴──────┴──────┴─────────┴──────┴──────┴──────┴──────┴──────┘
```

Fields

The Special Characters screen lets you configure the following information:

- `Backspace`. This field specifies the character that, when entered, will act like a backspace and delete the previous character from the input data. This required character can be input in any character format.

- `Cancel line`. This field specifies the cancel line character. Cancel deletes the current line. The system verifies the cancellation by printing three exclamation marks (`!!!`), followed by a carriage return and a line feed. This required character can be input in any character format.

- `Type 1 End-of-record character`. **This character terminates the read, but is not included in the data returned to the program doing the read or the actual count of characters. The end of record (EOR) character is optional.**

- `Type 2 End-of-record characters`. **When this character is configured, the read is returned with a special status that indicates that the read was terminated by the additional end-of-record character. The character is included in both the data and the actual count of number of bytes returned. The terminal cursor is not affected. The end of record (EOR) character is optional. Up to sixteen type 2 end-of-record characters may be configured.**

- `Subsystem break characters`. **Subsystem break allows you to interrupt the execution of a local program or subsystem command. The subsystem break character is optional.**

Control

The Control screen is the fifth Workstation Configurator screen. To select this screen, enter C in the Go to form field on the Main Menu screen and press the **[Enter]** key or press the NEXT FORM **[F6]** function key from the Special Characters Screen. The screen shown in Figure 4-5 is then displayed.

Figure 4-5   **Printer Control Screen**

```
                        Printer Control
  [Y]      Status request efficiency mode enabled (Y,N)
           Frequency of status requests [    ] (1 request per 1...250 writes)

  [ 60]    Wait time for reply to status request (5...180 seconds)

  [ 10]    Read retries for XON and status request reply (0...100 retries)

  [10]     Wait time for FOPEN before disconnect (0...90 seconds or 99, 99=infinite)

  [N]      Does the printer support duplex printing (Y,N)




 Save          Refresh           Prev    Next    Main    Exit
 Data                            Form    Form    Menu
```

Fields

The Control screen lets you configure the following information:

* Initial echo. Echo allows terminal input to be echoed back to the terminal by the computer as it is received. This field lets you turn initial echo on or off. The value entered takes effect whenever the terminal type is used. It occurs at speed sense or FOPEN time for the default terminal type or when the terminal type is changed through the FCONTROL intrinsic.

NOTE   There are applications that depend on echo being off. For these applications to function correctly, the program needs to first select the terminal type file desired and then set echo.

- Is form feed allowed in output data (Y,N).Replacement
  character for form feed. These fields let you specify whether
  form feed will be included in output data. If form feed is not included
  in output data, then you must supply a character that will replace
  the form feeds (FFs) in the data stream. Typically, you should enter
  LF.

- System response to backspace. This field lets you configure a
  response to the backspace character. The responses and their
  meanings are displayed below the backspace response field.

  In all cases, when echo is enabled, a backspace is echoed to the
  terminal screen which might cause some action to the data on the
  terminal screen. An additional response from the system might be
  required for better cursor positioning.

  - 1 — nothing. This is the default and it causes the cursor to
    backup one space if echo is enabled but it does not erase the
    character.

  - 5 — erase character. This response is to output a space and a
    backspace character, which erases the character from the display.

NOTE　　　If echo is disabled, then the selected response will not occur.

- Is typeahead enabled? (Y,N). Typeahead allows the terminal
  user to continuously enter data without having to wait for the
  system to process the data and return the MPE prompt (:). This
  field lets you turn on or off typeahead by entering either Y or N.

- Typeahead Echo Mode. The value entered here determines
  whether the input characters will be echoed to the terminal's screen
  once or twice.

  - 0 — Double echo. If 0 is entered, the HP 3000 will echo the
    characters twice to the terminal's screen.

  - 1 — Single echo. If 1 is entered, the HP 3000 will echo the
    characters once to the terminal's screen.

Printer Control

The Printer Control screen is the sixth Workstation Configurator screen. To select this screen, enter `P` in the `Go to form` field on the Main Menu screen and press the **[Enter]** key or press the `NEXT FORM` **[F6]** function key from the Control screen. The screen shown in Figure 4-6 is then displayed.

Figure 4-6   **VFC File Selection Screen**

```
                        VFC File Selection
[                           ] VFC file name

[M]     File option
        C - Create
        M - Modify
        V - View
        N - Name only




 Save                Refresh              Prev    Next    Main    Exit
 Data                                     Form    Form    Menu
```

Fields

The Printer Control screen lets you configure the following information:

- `Status Request Efficiency Mode Enabled (Y,N)`. This field lets you turn on or off Status Request Efficiency Mode. If it is turned off, the number of requests per write that the HP 3000 should send to an I/O device must be specified. A number between 1 and 250 must be entered in the `Frequency of Status Requests` field.

- `Wait time for reply to status request`. This field lets you configure the wait time for a status request reply. Immediately after the timer expires, the connection is dropped, unless retries are also specified. Enter a value between 5 and 180 seconds to specify the amount time the driver will wait for a status request reply. You should specify a time that is long enough for the status request reply to return during peak periods of network traffic.

- `Read retries for XON and status request reply.` This field lets you specify the number of status request retries made when the wait timer expires. When the wait time for reply to status request expires, the driver sends a message to the console and retries the read for as many attempts as are specified in this field. When the number of attempts is equal to this value, the printer input/output (I/O) is aborted. Enter a value between 0 and 100 to specify the number of read retries. If a value of 0 is entered, the printer I/O is aborted as soon as the timer expires. No retries are attempted.

- `Wait time for FOPEN before disconnect.` This field lets you specify the number of seconds the HP 3000 system should wait before sending a disconnect request to the printer port. Enter a value between 0 and 90 to specify the number of seconds to wait. If a value of 0 is entered, the connection is dropped immediately after the file is sent.

- `Does the printer support duplex printing?` This field specifies if the printer will support duplex printing, which is the ability to print on both the front and back sides of the printer paper. The LaserJet 2D, LaserJet 3D, and LaserJet 3SI are examples of three PCL (Printer Control Language) laser printers that support duplex printing. Specify yes or no to duplex printing. Refer to *Configuring Systems for Terminals, Printers, and Other Serial Devices* for more information on duplex printing.

VFC File Selection

The VFC File Selection screen is the seventh Workstation Configurator screen. To select this screen, enter `V` in the `Go to form` field on the Main Menu screen and press the **[Enter]** key or press the `NEXT FORM` **[F6]** function key from the Printer Control screen. The screen shown in Figure 4-7 is then displayed.

Figure 4-7   **VFC and Initialization Screen**

```
                         VFC And Initialization
[VFCPCL                      ] VFC file name

[Y] Device to be initialized (Y,N)

                      Initialization String
[                                                                      ]
[                                                                      ]
[                                                                      ]

[Y] VFC defined for the device (Y,N)

        String              Code                     String          Code
[                    ] %300              [                    ] %301
[                    ] %302              [                    ] %303
[                    ] %304              [                    ] %305
[                    ] %306              [                    ] %307
[                    ] %310              [                    ] %311
[                    ] %312              [                    ] %313
[                    ] %314              [                    ] %315
[                    ] %316              [                    ] %317


 Save          │        │Refresh │        │ Prev │ Next │ Main │ Exit
 Data          │        │        │        │ Form │ Form │ Menu │
```

Fields

The VFC File Selection screen lists the following fields:

• `VFC file name`. This field will contain the name of the VFC file. Enter a valid file name for the file you want to create, modify, view, or name. Valid file names contain up to three parts, each of which contains from one to eight alphanumeric characters, the first of which must be alphabetic. The file name must be in the following format:

`filename[.groupname[.acctname]]`

The default `groupname` and `acctname` are the logon group and account.

- `File option`. This field lets you to specify whether you want to create a new file, modify an existing file, view the data in an existing file, or assign a new name to the VFC file.

  If you enter either `M` (Modify) or `V` (View), information from the file entered in the `VFC file name` field is copied into the work area of the utility. To modify the file, you must have write access for this file. However, to view a file, you only need read access.

  If you specify `C` (Create), a new file is created and saved. The file is then automatically reopened when the modify option is specified.

  If you specify `N` (Name only), the name of the VFC file is placed in the terminal type file, without accessing the VFC file. (The `N` option is invalid if the VFC file has not yet been defined.)

VFC and Initialization

The VFC and Initialization screen is the eighth Workstation Configurator screen. To select this screen, press the `Save Data` **[F1]** function key from the VFC File Selection screen. The screen shown in Figure 4-8 is then displayed.

Fields

The VFC and Initialization screen lets you configure the following information:

- `Is device to be initialized (Y/N)`. Initializing the printer sets it to a known and repeatable state. This field lets you specify whether the printer should be initialized when this term type is used.

- `Initialization String`. This field allows you to configure the character string used to initialize the printer. A maximum of 120 characters can be entered. Printable characters are surrounded with quotes. Control characters are entered by using the mnemonics defined in Appendix B, "Control Character Mnemonics," these are separated from character strings by a comma.

- `Is VFC defined for the device (Y/N)`. Up to 16 VFC channels can be configured. Each channel performs a standard skip function such as skip to top of next page or skip one line. When using this terminal type, this field lets you specify whether VFC is defined

- `String`. The character string entered here defines the VFC sequences for the device. A maximum of 16 sequences can be defined per device.

NOTE
The mnemonic `NUL` is not a valid entry for the `Initialization String` and `String` fields.

A   Error Messages

The error messages listed in this appendix can occur while entering data for a terminal type or printer type file. Messages are displayed in inverse video on the bottom line of the screen. If the error(s) are related to a field (or fields) on the screen, the fields are highlighted in full bright, inverse video. If more than one field contains an error, only the error message for the first highlighted field is displayed.

MESSAGE: Character already has other function.

CAUSE: The character entered has been defined elsewhere to have a different special meaning. Each character can have only one special function.

ACTION: Choose a different character for this special function, or release this character for use by selecting a different character for the other special function.

MESSAGE: Character value out of range.

CAUSE: The character input was out of the range of characters allowed for that function.

ACTION: Input a character within the range.

MESSAGE: File is damaged; checksum error.

CAUSE: The file has been damaged so that the checksum is no longer valid. The utility still reads the data from the file into the work area, and when saving the data back to the file, a correct checksum is generated.

ACTION: Press the **[Enter]** key again to go to the form selected. Verify the data on the screen.

MESSAGE: File is not a valid VFC file.

CAUSE: The file name specified is not a valid VFC file.

ACTION: Specify a file which is a VFC file.

MESSAGE: File is not a valid terminal type file.

CAUSE: The file specified is not a valid terminal type file.

ACTION: Specify a file which is a valid terminal type file.

MESSAGE: Invalid file name.

CAUSE: The file name specified does not meet the requirements for an HP 3000 file name. It might be because the name starts with a non-alphabetic character or contains non-alphanumeric characters.

ACTION: Enter a valid file name.

MESSAGE: File converted to MPE/iX format.

CAUSE: Informational message only.

ACTION: No action is required.

MESSAGE: File System Errors.

CAUSE: If a file system error occurred when attempting to open the file specified, the file system error message is displayed in the error window.

ACTION: No action is required.

MESSAGE: Invalid file option.

CAUSE: The file option given was not C, M, or V.

ACTION: Enter a valid file option.

MESSAGE: Invalid form identifier.

CAUSE: The letter entered in the form specifier field is not one of the known form identifiers.

ACTION: Enter one of the listed form identifiers in the field.

MESSAGE: Invalid number.

CAUSE: You attempted to input a character in numerical format, but the number was not an integer.

ACTION: Input a valid number.

MESSAGE: Maximum number of nn characters allowed is nn.

CAUSE: You have input more than the maximum allowed number of characters for the specified function.

ACTION: Reduce the number to less than or equal to the maximum specified in the error message.

MESSAGE: Missing character.

CAUSE: In the input of a string, the program is expecting another character, but none follows. This is most likely caused by two commas in a row, or a comma at the end of a line without the ampersand.

ACTION: Remove the extra comma or insert the appropriate character.

MESSAGE: Modification of data is not allowed.

CAUSE: The **[Enter]** key was pressed after choosing the View file option. You are not allowed to modify data while in View mode.

ACTION: Use only the soft keys.

MESSAGE: MPE/V termtype file; use Form X to convert to MPE/iX format.

CAUSE: The terminal type file name entered in the Terminal Type File Name field is in MPE V format.

ACTION: Convert the MPE V termtype file to MPE/iX format.

MESSAGE: MESSAGE = Response must be in the range from nn to nn.

CAUSE: The field contains a value that is not within the range specified.

ACTION: Enter a value within the correct range.

MESSAGE: MESSAGE = Response must be None, Line, Page, or Both.

CAUSE: The field requires N, L, P, or B as a valid response, but a different value was input.

ACTION: Change the value to N, L, P, or B.

MESSAGE: MESSAGE = Response must be ON or OFF.

CAUSE: The only valid entries for this field are ON and OFF, but some other value was entered.

ACTION: Change the value to either ON or OFF.

MESSAGE: MESSAGE = Response must be YES or NO.

CAUSE: The field requires either a Y or an N as a valid response, but a different value was input.

ACTION: Change the value to either ON or OFF.

MESSAGE: Termtype file is already in MPE/iX format.

CAUSE: Because the terminal type file is already in MPE/iX format, there is no reason to convert it to MPE/iX format.

ACTION: No action is required.

MESSAGE: The field can only contain digits.

CAUSE: The field is designed to accept only positive integers. The value entered contains characters other than digits.

ACTION: Enter a positive integer in the field.

MESSAGE: The required field is empty.

CAUSE: The specified field requires a value and nothing was entered.

ACTION: Enter a value in the field.

MESSAGE: There is no next form.

CAUSE: The Next Form function key was pressed when at the last form menu, and there is no next form.

ACTION: Do not press the Next Form function key at the last form.

MESSAGE: There is no previous form.

CAUSE: The Prev Form function key was pressed when at the Main Menu or when the VFC option was selected. There is no previous form.

ACTION: Do not press the `Prev Form` function at the Main Menu, or when the VFC option is selected.

MESSAGE: There is no VFC defined.

CAUSE: You specified `V` for the View file option and to go to the VFC Menu, but this terminal type file does not have a VFC file associated with it.

ACTION: Specify a different menu.

MESSAGE: This key is invalid when no file is selected.

CAUSE: The function key pressed is invalid when no file has been specified.

ACTION: Specify a file name first, or press a valid function key.

MESSAGE: This option is invalid when no terminal type is defined.

CAUSE: You used `N`, the Name Only option, when using the VFC entry point. Therefore, there is no terminal type file to store the name.

ACTION: Enter another option (`C`, `M`, `V`) in the VFC Head Menu.

MESSAGE: This option cannot be selected. The termtype currently displayed is not a printer termtype file.

CAUSE: The indicated field(s) contain invalid data.

ACTION: Either erase the indicated fields or go to another screen. Enter another option (`C`, `M`, `V`) in the VFC Head Menu.

MESSAGE: This option cannot be changed. The termtype currently displayed is a Network Printer termtype file, and this option is non-configurable for this type of file.

CAUSE: You attempted to modify a terminal type file whose attributes cannot be reconfigured.

ACTION: Enter the previous value for the indicated fields again, or go to another screen. Enter another option (`C`, `M`, `V`) in the VFC Head Menu.

MESSAGE: Unknown character.

CAUSE: The character input does not match one of the accepted character input formats, or the character mnemonic cannot be found in the recognized list.

ACTION: Input a valid character.

MESSAGE: Unknown character input format.

CAUSE: You attempted to input a character, but the character could not be determined.

ACTION: Input a valid character.

MESSAGE: Unknown string input format.

CAUSE: You attempted to input a string, but the input could not be decoded.

ACTION: Enter in the correct string.

MESSAGE: User does not have write access to file.

CAUSE: You specified M, for the Modify file option, but you do not have write access to the file. Therefore, you cannot modify it.

ACTION: Specify a different file, or use the View option.

MESSAGE: WARNING: data not saved.

CAUSE: You tried to exit or specify another file name after modifying the current file but without saving the modifications made.

ACTION: Press the Save Data function key if you want to save the modifications. If not, type EXIT at the command line or press the **[Enter]** key a second time to perform the desired operation.

B Control Character Mnemonics

The following Table B-1 lists the mnemonic, its octal value, the character; and the meaning.

Table B-1   **Control Character Mnemonics**

MNEMONIC	OCTAL	CHARACTER	MEANING
NUL	0	[CTRL]-@	Null
SOH	1	[CTRL]-A	Start of Heading
STX	2	[CTRL]-B	Start of Text
ETX	3	[CTRL]-C	End of Text
EOT	4	[CTRL]-D	End of Transmission
ENQ	5	[CTRL]-E	Enquiry
ACK	6	[CTRL]-F	Acknowledge
BEL	7	[CTRL]-G	Bell
BS	10	[CTRL]-H	Backspace
HT	11	[CTRL]-I	Horizontal Tabulation
LF	12	[CTRL]-J	Line Feed
VT	13	[CTRL]-K	Vertical Tabulation
FF	14	[CTRL]-L	Form Feed
CR	15	[CTRL]-M	Carriage Return
SO	16	[CTRL]-N	Shift Out
SI	17	[CTRL]-O	Shift In
DLE	20	[CTRL]-P	Data Link Escape
DC1	21	[CTRL]-Q	Device Control 1
DC2	22	[CTRL]-R	Device Control 2
DC3	23	[CTRL]-S	Device Control 3
DC4	24	[CTRL]-T	Device Control 4
NAK	25	[CTRL]-U	Negative Acknowledge
SYN	26	[CTRL]-V	Synchronous Idle
ETB	27	[CTRL]-W	End of Transmission Block
CAN	30	[CTRL]-X	Cancel
EM	31	[CTRL]-Y	End of Medium
SUB	32	[CTRL]-Z	Substitute

MNEMONIC	OCTAL	CHARACTER	MEANING
ESC	33	[CTRL]-[	Escape
FS	34	[CTRL]-\	File Separator
GS	35	[CTRL]-]	Group Separator
RS	36	[CTRL]-	Record Separator
US	37	[CTRL]	Unit Separator
DEL	177	[DEL]	Delete

C   Terminal Type Files

Table C-1 describes available terminal type and printer type files and the attributes associated with each.

Table C-1   **Terminal Type Files**

Terminal Type	XON/ XOFF	Typical Workstation	Block Mode	BackSpace Reply	Comments
10	Opt	HP Terminal	Yes*	None	
18	Opt	Non-HP terminal	No	None	No DC1 sent to start read. No status checking.
18	Yes	Non-HP printer	N/A	N/A	No status checking.
24	Opt	PAD terminal	No	None	
21	Yes	Serial spooled printer	N/A	N/A	Uses 7 bits. Sends status request on FOPEN, FCLOSE, and DCLOSE.
22	Yes	Serial spooled printer	N/A	N/A	Uses 8 bit pass-through. Sends status request on FOPEN, FCLOSE, and DCLOSE.
26	Yes	Networked serial spooled printer	N/A	N/A	Sends status request on FOPEN, FCLOSE, and DCLOSE. Performs status retry.
44	Yes	Non-HP printer	N/A	N/A	No status checking. Wait time of 20 seconds for FOPEN before disconnect

*Block mode may be enabled by escape sequences sent by an application program.

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