

HP-UX TN3270 Users Guide

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Preface

The TN3270 emulation program is a 3270 emulation program that runs over TCP/IP. This *HP-UX TN3270 Users Guide* describes the features and functions of the TN3270 emulation program. The guide explains the following:

- Using the program's menu interface
- Starting and controlling display emulation
- Transferring files between the HP-UX computer and the 3270 host
- Customizing TN3270 emulation

Audience

This guide is intended for anyone who uses the TN3270 emulation program.

Fast Path to TN3270 Emulation and File Transfer

The following sections of this guide will help you to get started quickly:

- To learn how to use the menu interface, see Chapter 2, “The TN3270 Emulation Program User Interface.”
- To start TN3270 terminal emulation, see “Fast Path to 3270 Terminal Emulation”.
- To start transferring files between your HP-UX computer and the 3270 host, see “Fast Path to File Transfer”.
- To customize display colors, sessions, keyboard definitions, or other appearance and performance characteristics of TN3270 emulation, see Chapter 6, “Customizing 3270 Emulation.”
- To find out more about TN3270 emulation and file transfer, finish reading this Preface, and then continue with Chapter 1, “Introducing the TN3270 Emulation Program.”

Organization of This Guide

This guide contains the following sections:

Chapter 1, “Introducing the TN3270 Emulation Program.”

Introduces the features and functions of the TN3270 emulation program.

Chapter 2, “The TN3270 Emulation Program User Interface.”

Explains how to use the TN3270 emulation program's menus, dialog boxes, and help screens.

Chapter 3, “Getting Started with 3270 Emulation.”

Describes how to start the TN3270 emulation program, provides an overview of 3270 display emulation, explains the menu interface and the status line, and explains how to record and replay sequences of 3270 keystrokes.

Chapter 4, “Controlling 3270 Emulation.”

Explains the control functions of the 3270 emulation program. It provides instructions for enabling and disabling sessions and viewing response times.

Chapter 5, “Transferring Files.”

Explains how to transfer files between your HP-UX computer and the MVS/TSO, VM/CMS, or CICS host computer.

Chapter 6, “Customizing 3270 Emulation.”

Describes the customization features of the TN3270 emulation program (for example, session parameters or keyboard mappings) and how to save your customization in a style file for future use.

Chapter 7, “Solving Problems.”

Suggests ways to deal with problems you may encounter while using the TN3270 emulation program.

Appendix A, “Default Keyboard Mappings.”

Describes the default keyboard definitions for your terminal during TN3270 emulation.

Appendix B, “Status Line Information.”

Explains the information that appears on the status line during TN3270 emulation.

Appendix C, “File Transfer Messages.”

Explains the messages that can be produced by the host during file transfer and (where appropriate) the action you should take.

Appendix D, “Print Style File Utility.”

Explains how to use the `tnprtsky` utility to produce a text listing of a style file.

Appendix F, “Printer Filter Application for Double-Byte Character Sets.”

Describes how the TN3270 emulation program supports double-byte printers by using an intermediate format, the SNA Printer Output File (SPOF).

Typographic Conventions

The following table shows the typographic styles used in this guide.

Table 1

Typographic Conventions

Special Element	Sample of Typography
Emphasized words	<i>replay</i>
Document title	<i>HP-UX SNAplus2 Administration Guide</i>
File or path name	/bin/sh
Directory name	/opt
Program or application	IND\$FILE
Command or HP-UX utility	<code>tn3270 ; lp</code>
Option or flag	<code>-s</code>
Parameter	convfile
Literal value or selection that the user can enter (including default values)	BW
Constant or signal	IBM-DYNAMIC
Return value	nn
Variable representing a supplied value	<i>stylefile</i>
Environment variable	SNABLANKSCREEN
User input	<code>-h 0x01,0x02,,0x04</code>

Special Element	Sample of Typography
Computer output	Fl=Help
Function, call, or entry point	termcap
Push button	<UI Info>
Pull-down menu	File
Pull-down menu option	File transfer
3270 key	ENTER
Keyboard keys	Ctrl+D; Enter
Keyboard sequences—commands that require you to press and release the first key and then press and release the second key. For example, Ctrl B means to press and release the Ctrl key and then press and release B .	Ctrl B
Keyboard combinations—commands that require you to press one key and hold it down while you press one or more other keys. For example, Ctrl + B means to press and hold down the Ctrl key while you press B .	Ctrl + B
Hexadecimal value	0x20

Motif Version and Character-Based Version

Motif

This heading is used to indicate sections of text that apply only to the Motif version of the TN3270 emulation program, and not to the character-based version.

In general, this guide describes the character-based TN3270 emulation program, and then highlights any differences for the Motif version. If you are using only the character-based program, you can ignore these sections.

End of section

This heading indicates the end of the Motif-specific text. The information following this heading applies to both programs.

Help Screens

For every menu, menu option, and dialog box in the user interface, a help screen (online documentation) describes its purpose, the functions available, entry fields, and, where applicable, step-by-step instructions.

The information in the help screens not only states the choices available from a menu or dialog box, but also guides you in making the correct choice.

To view the help screens, press **F1** from a menu or dialog box. While a help screen is displayed, you can press **F1** again to receive information about the type of help information, and how to use the help screens.

For more information about the help screens, see Chapter 2, “The TN3270 Emulation Program User Interface.”

HP-UX SNAplus2 TN3270 Documentation Set

The HP-UX SNAplus2 TN3270 product provides the following documentation:

HP-UX TN3270 Administration Guide

Explains how to install, configure, and manage TN3270. It describes the requirements for installing the TN3270 software, how to set up configuration information for using TN3270 emulation, and how to use the product's diagnostics tools to resolve problems.

HP-UX TN3270 Users Guide (this guide)

Explains how to use TN3270 emulation, including the following tasks:

- Start and stop TN3270 emulation.
- Transfer files.
- Use customization features such as remapping your keyboard and display colors.
- Interpret status-line information.
- View response times.

HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide

Contains the conceptual and detailed reference information needed to write application programs using high-level language application program interface (HLLAPI).

Related Publications

This guide does not attempt to describe 3270 Information Display System Products in detail. If you need further information, consult the following IBM documents:

- *IBM 3270 Information Display System:*
 - *Color and Programmed Symbols, GA33-3056*
 - *3174 Control Unit Functional Description, GA23-0218*
 - *3274 Control Unit Description and Programmer's Guide, GA23-0061*
 - *3274 Control Unit Display Station: Operator's Guide, GA23-0023*
 - *3279 Color Display Station Operator's Guide, GA23-3057*
- *IBM Systems Application Architecture Common User Access Basic Interface Design Guide, SC26-4583*
- **Internet Requests for Comments (RFCs):**
 - *RFC 854: Telnet Protocol Specification*
 - *RFC 855: Telnet Option Specifications*
 - *RFC 856: Telnet Binary Transmission*
 - *RFC 860: Telnet Timing Mark Option*
 - *RFC 885: Telnet End of Record Option*
 - *RFC 1041: Telnet 3270 Regime*
 - *RFC 1091: Telnet Terminal Type Option*
 - *RFC 1123: Requirements for Internet Hosts–Application and Support*
 - *RFC 1576: TN3270 Current Practices*
 - *RFC 1646: TN3270 Extensions for Luname and Printer Selection*
 - *RFC 1647: TN3270 Enhancements*

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1 **Introducing the TN3270 Emulation Program**

This chapter introduces the features of the TN3270 emulation program.

Overview

The TN3270 emulation program gives you access to most of the standard features of an IBM 3270 Information Display System (IDS) terminal, such as extended attribute byte (EAB) support for color and extended highlighting. Some of these features are available only if your HP-UX computer and your terminal support them. For more information about required hardware and software, refer to the *HP-UX TN3270 Administrators Guide*.

In addition, the TN3270 emulation program provides file transfer, local copy, and keystroke record/replay capabilities and enables you to develop and run High-Level Language Application Programming Interface (HLLAPI) programs.

Support of TN3270 Features

The TN3270 product supports both the standard TN3270 features and the extended TN3270E features that are described in the Internet Request for Comments (RFCs) listed in “Related Publications”. TN3270E supports all the standard TN3270 features and the following additional features:

- LU type 1 and LU type 3 printing
- Access to specific display and printer LUs
- Access to printer LUs associated with display LUs
- Access to the SSCP-LU session
- Support for the ATTN and SYSREQ keys
- Negotiation of which enhancements to use on each connection.

The TN3270 product does not support the features described in *Internet RFC 1205: Telnet 5250*.

The TN3270 product can connect directly to either a host computer that supports TN3270 access over TCP/IP or to a communications product that provides the TN server function. The standard SNAplus2 product includes TN server, enabling TN3270 programs to access a host over the SNA communications links provided by SNAplus2.

TN3270E features are supported only if both the host and any intermediate communications product also support TN3270E. When a session starts, the TN3270 product and the host, or the intermediate communications product, negotiate which protocols to support. The Status field in the Control Display Sessions dialog box indicates which protocol is supported on the active session. For more information, see “Controlling Display Sessions”.

Unless specifically noted, TN3270 is used in this book to mean both the standard TN3270 features and the extended TN3270E features.

The following functions included in *Internet RFC 1647: TN3270 Enhancements* are not supported:

- The device type `IBM-DYNAMIC` is not supported. When you configure the 3270 emulation program, you specify a display model; the emulator uses the device type that corresponds to the display model you configured.
- The TN3270 product responds to keep-alive messages, but it does not generate them. Keep-alive messages are generated to prevent a lost TCP connection from being left open indefinitely. However, if a TCP connection is lost, the TN3270 product detects a failure when a user presses a key that should cause data to be sent to the host.

Sessions

Depending on your configuration, you may have as many as ten concurrent 3270 sessions per TN3270 emulation program.

These sessions can consist of any combination of the following:

- IBM 3278/79 host display sessions (used for emulation, file transfer, and HLLAPI applications)
- IBM 3287 host printer sessions

Different sessions can be connected to the same host or to different hosts. (For more information, refer to the *HP-UX TN3270 Administrators Guide*.)

Model 2–5 Display Support

The TN3270 emulation program supports the 3270 display models shown in Table 1-1, “3270 Display Models.”

Table 1-1

3270 Display Models

3270 Display Model	Screen Size	Equivalent IBM Display Terminal
Model 2	24 x 80	3278 model 2or 2E, 3279 model S2A
Model 3	32 x 80	3278 model 3or 3E, 3279 model S2B
Model 4	43 x 80	3278 model 4or 4E, 3279 model S3A
Model 5	27 x 132	3278 model 5or 5E, 3279 model S3B

You can display screen models other than Model 2 only if your HP-UX computer and your terminal's screen hardware can support them. However, you can activate sessions that use any screen model and use HLLAPI application programs to access them, even if you cannot access these sessions directly. Refer to the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide* for more information.

File Transfer

The TN3270 emulation program supports file transfer using the IBM host file transfer program `IND$FILE` (or `APVUFILE` for double-byte host languages), enabling you to transfer files between your local computer and MVS/TSO, VM/CMS, and CICS host systems. You can transfer multiple files, with multiple hosts, at the same time. Each file transfer uses a separate active 3270 display session.

You can perform the following file transfer operations:

- Transfer both text and binary files, and sequential and partitioned data sets with fixed- or variable-length records. As a file is transferred, it can be translated from ASCII to EBCDIC or vice versa.
- Choose to insert or strip away carriage-return and line-feed characters.
- Send multiple HP-UX files to a host.
- Append a transferred file to an existing file on a host or on the HP-UX computer.
- Print the contents of any HP-UX file on a host-connected printer by transferring the HP-UX file to a host file or data set and then printing that file on the host printer.

- Issue the file transfer commands by using the TN3270 emulation program's menus and dialog boxes or transfer files from the HP-UX command prompt. For step-by-step instructions, see Chapter 5, “Transferring Files.”

Background Operation

You can use a command-line operation to run the character-based TN3270 emulation program in the background. In this case, you cannot directly view the 3270 display or use the keyboard, but you can run HLLAPI applications or command-line file transfers that access 3270 display sessions. For more information about running the TN3270 emulation program in the background, see Chapter 3, “Getting Started with 3270 Emulation.”

Temporary Exit from TN3270 Emulation

While using the TN3270 emulation program, you can perform a temporary exit to one of the HP-UX shells while leaving the TN3270 emulation program running. Use the temporary exit, for example, to list the contents of a directory or to run a HLLAPI application or a command-line file transfer. For more information about the temporary exit feature, see “Temporary Exit from 3270 Emulation”.

Motif

The TEMPEXIT keystroke is not supported in the Motif 3270 emulation program. Instead, you move to a new terminal window using the mouse as usual.

End of section

Type-Ahead during TN3270 Emulation

While waiting for the host to respond during TN3270 emulation, you can enter the keystrokes that will be required after the host has responded; these can be data characters, cursor control keys, or keys such as ENTER that send information to the host.

Local Copy

You can perform a local copy of your TN3270 emulation display in the following ways:

- Print a paper copy of your current TN3270 emulation display on any printer shared by the HP-UX server
- Store a copy of the current display to a local file

The host application can also request a local copy print, which it sends to a printer or file in the same way.

Keyboard Remapping

The keyboard remapping facility gives you flexibility in customizing your keyboard. You can view, swap, and disable key assignments. You can also change 3270 key assignments to a key or key combination (or more than one key or key combination) on your terminal. The following are examples of keyboard remapping:

- You can map PA1 to any key on your terminal's keyboard, such as **Ctrl + F1**.
- If you use two different keyboards and one of the two does not have a complete set of function keys, you can map PF12 to both **F12** and **Esc Esc F2**. You must have a separate style file for each keyboard, and you must start the emulation program with the style file appropriate for the keyboard you are using.

Keystroke Recording and Replay

You can record up to 24 sequences of keystrokes that you need to use regularly during TN3270 emulation (for example, the key sequence required to start up a host application, log on, and perform any standard initialization), and then replay these sequences later, instead of having to type all the keystrokes again. The keystroke sequences can include any of the following:

- Data characters
- Cursor control keys
- Program function or program access keys
- Keys, such as **ENTER**, that send information to the host
- Pauses to enable you to type in variable data

For more information about keystroke recording and replay, see Chapter 3, "Getting Started with 3270 Emulation."

International Language Support

The TN3270 emulation program provides the facility to communicate with hosts using international language variants of EBCDIC. This facility enables you to send and receive all the characters associated with a selected host language, including those specific to that language. The TN3270 emulation program supports both single-byte and double-byte host languages.

Whether your terminal displays international characters depends on the support for these characters provided by your HP-UX computer and its terminals. Only screen Model 2 supports double-byte characters.

3270 Status Line

During a 3270 session, the bottom line of your screen contains a status line that shows messages. These messages give the same information as those on an IBM 3278 or 3279 display terminal; they provide real-time information about the characteristics and activities of the session.

The way in which this status line information is displayed on the screen depends on your terminal's hardware and software and on your TN3270 customization. The status line information can be displayed in one of the following ways:

- Written to the terminal's status line (if the terminal supports this)
- Written to a spare line at the bottom of the screen (if the screen has more lines than your 3270 screen model requires)
- Shared with the last line of the 3270 display (in which case you press a key to switch between the status line and the last display line)

For more information, see Appendix B, “Status Line Information.”

You can also press a key to display a screen of help information about the status line. This screen explains the value that appears in each field on the status line of the current session.

Motif

If you are using the Motif TN3270 emulation program with the Japanese host language, an additional status line, the “Japanese extended status line,” is displayed below the standard one, showing additional messages that are specific to the Japanese language. The extended status line is not supported in the character-based program.

End of section

Printer Emulation

The 3270 emulation program lets your HP-UX computer's printer emulate an IBM 3287 host printer. It provides the following print options:

- LU type 1 printing using a printer session
- LU type 3 printing using a printer session
- User-initiated local copy (printing the current contents of the 3270 display at the request of the user)
- Host-initiated local copy (printing the current contents of the 3270 display at the request of the host application)
- Directing print output to some HP-UX file instead of to a printer

File, Customize, and Control Menus

The 3270 emulation program provides pull-down menus to customize and control 3270 emulation. To assist you, the 3270 emulation program also provides detailed help screens, accessible by pressing **F1** while in any menu or dialog box.

You can run the character-based 3270 emulation program without these menus to save HP-UX memory. For more information, see “Fast Path to 3270 Terminal Emulation”.

The File Menu

You can use the `File` pull-down menu to do the following:

- Open a style file, which contains the parameters (specified using the `Customize` menu) that control the appearance and behavior of your terminal in 3270 emulation
- Create a new style file
- Save changes to a style file
- Move from the menu interface to 3270 display sessions
- Exit the 3270 emulation program

For more information, see Chapter 6, “Customizing 3270 Emulation.”

The Customize Menu

You can customize the following features by selecting options under the `Customize` menu:

- Session characteristics
- Output devices or files
- Display colors
- Key definitions (the mapping between 3270 functions and keys on your terminal's keyboard)

Use the `File` menu to save customized parameters in a style file. You can set up more than one style file, each with its own set of definitions.

For more information, see Chapter 6, “Customizing 3270 Emulation.”

The Control Menu

You can control 3270 emulation by using the `Control` menu to do the following:

- Control display sessions
- Transfer files between the HP-UX computer and the host
- View host response times

HLLAPI Support

You can write application programs that use the HLLAPI programming interface to communicate with the host 3270 application. Application programs that use the functions provided by HLLAPI require an active 3270 emulation session.

For example, you can use HLLAPI programs to automate procedures for communicating with a host application, to provide a different user interface without modifying the host application, or to access host applications that require large screen models not supported by your terminal.

Refer to the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide* for more information.

Where Do You Go from Here?

- For instructions about starting TN3270 emulation or for information about the 3270 status line or keystroke recording and replay, see Chapter 3, “Getting Started with 3270 Emulation.” The chapter includes fast path instructions for getting started quickly.
- To begin transferring files, see Chapter 5, “Transferring Files.” This chapter includes fast path instructions for getting started quickly, as well as more detailed instructions for transferring files.
- To customize your terminal's appearance and operation during 3270 emulation and file transfer, see Chapter 6, “Customizing 3270 Emulation.”
- If you encounter any problems, see Chapter 7, “Solving Problems.”

Overview

This chapter describes the following topics about the user interface and its components:

- Screen clearing on different terminal types
- Menu bar
- Menus
- Dialog boxes
- Accelerator keys
- Nonselectable items
- Help screens
- Screen redrawing
- Fast exit from the menu interface

For definitions of CUA terms (menu bars, check boxes, and so on), refer to the IBM *Systems Application Architecture Common User Access Basic Interface Design Guide*.

Motif

This chapter describes and illustrates the character-based version of the user interface. Where the Motif interface is different, a section of text indicated with the Motif heading explains the differences. However, this chapter assumes that you are familiar with standard Motif features and does not attempt to describe the Motif interface in detail.

End of section

The screen images in this chapter do not show features such as highlighted characters and reverse video text.

You can view online help information about the user interface while using the menu interface programs. Press **F1** to access the help screens, and then choose the <UI Info> push button. For more information about the help screens, see “Help Screens”.

Motif

The <UI Info> push button is not supported in the Motif interface.

End of section

Screen Clearing on Different Terminal Types

On some terminal types, you may find that blank areas of the TN3270 emulation screen are not displayed correctly; this generally occurs when the background color of the terminal is not black (for example, if you are using a text window on an X terminal). You can correct this display problem by setting the `SNABLANKSCREEN` environment variable to one of the following before starting the program:

- If your terminal has a monochrome black-on-white display, set `SNABLANKSCREEN` to the character string `BW`.
- Otherwise, set `SNABLANKSCREEN` to the character string `STD`.

You do not need to set `SNABLANKSCREEN` if the screen is displayed correctly without setting it.

Menus

Menus are accessed from a menu bar (also called an action bar), which is the starting point for the TN3270 emulation program user interface.

Figure 2-1, “TN3270 Emulation Screen Showing Menu Bar,” shows the TN3270 emulation program's main screen with the menu bar at the top.

Figure 2-1 TN3270 Emulation Screen Showing Menu Bar



The menu bar contains several menus (also called pull-downs or pull-down menus), each of which has one letter (the accelerator key) highlighted. When you select an option from the menu bar, the corresponding menu is displayed. One of the menu names may appear in reverse video, indicating that it is currently selected.

At the top right of the screen, F1=Help is displayed as a reminder that help screens are always available by pressing F1.

Choosing a Menu from the Menu Bar

Motif

You can choose a menu using either a mouse or the keyboard. Use the mouse to click on the menu you want, or use the following instructions for using the keyboard.

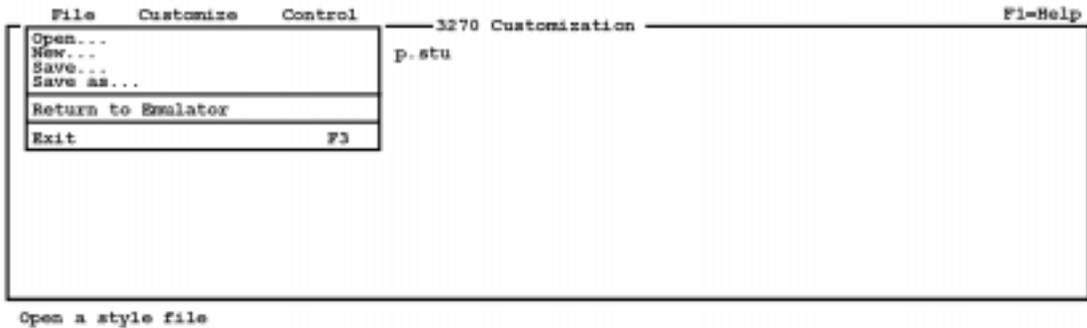
End of section

To choose a particular menu from the menu bar, press the highlighted letter (accelerator key) from the name of the menu you want.

Alternatively, press **Enter** to activate the reverse-video selector and highlight the first menu name. Use the **Right** and **Left** cursor keys to select the name of the menu you want. Then use either the **Up** or **Down** cursor key or **Enter** to pull down the menu.

The menu appears below its name on the menu bar, as shown in Figure 2-2, “TN3270 Emulation Screen Showing the File Menu.”

Figure 2-2 TN3270 Emulation Screen Showing the File Menu



For details on how to use the menus, see “Choosing a Menu Option”.

Choosing a Menu Option

Each menu contains several menu options (also called menu items) that indicate the functions you can access from the menu. One menu option appears in reverse video, showing that this is the currently selected option. The bottom line of the screen displays information about this option.

One or more options in the menu may appear in lighter type, indicating that they cannot currently be selected. For more information, see “Nonselectable Items”.

To choose a particular option from a menu, do one of the following:

- If you are using the reverse-video selector, use the **Up** and **Down** cursor keys to move the reverse-video selection to the menu option you want, and then press **Enter**.
- Press the accelerator key (shown by a highlighted letter) of the menu option you want.

Menus

- Press the direct accelerator key (shown to the right of the menu option). Direct accelerator keys are available only for some commonly used menu options, as for example, the `File transfer` option in the `Control` menu. You can also use them from the main screen of the program, without first having to select the appropriate menu.

Motif

Direct accelerator keys are not available in the Motif interface.

- Click on the menu option using the mouse.

End of section

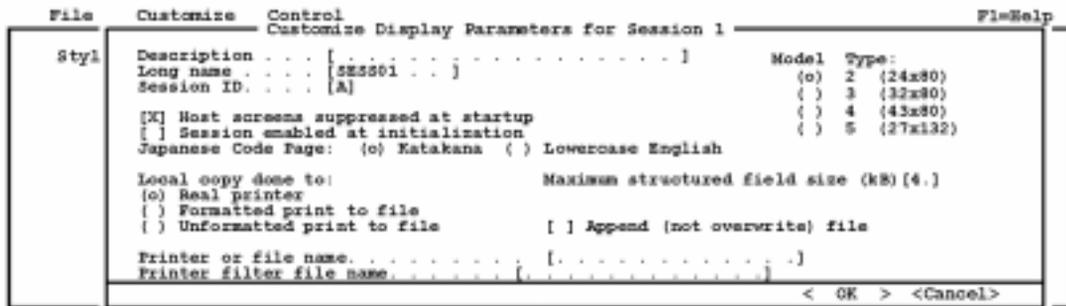
If a menu option is followed by an ellipsis (...), a dialog box is displayed when you choose the menu option. For example, when you choose `Open` from the `File` menu of the TN3270 emulation program, a dialog box appears to prompt you for the name of an existing style file to open. For details of how to use dialog boxes, see “Dialog Boxes”.

If a menu option is not followed by an ellipsis, an action is performed immediately when you choose the menu option. For example, when you choose `New` from the `File` menu, the TN3270 emulation program creates a new style file.

Dialog Boxes

Dialog boxes are used to enter responses and make choices, as shown in Figure 2-3, “Typical Dialog Box from TN3270 Emulation Program.”

Figure 2-3 Typical Dialog Box from TN3270 Emulation Program



A dialog box contains several separate fields (choices you can make or areas where you enter information). You can move to the next field by using the **Tab** key or **Ctrl + I**. You can move to the previous field by using the **Backtab** key or **Ctrl + B**.

In some cases, depending on the type of field, you can also move to another field by using accelerator keys. For more details, see “Accelerator Keys”.

Motif You can also move to another field by clicking on the new field with the mouse.

The **Ctrl + I** and **Ctrl + B** keystrokes are not supported in the Motif interface.

End of section

The following types of fields can appear in dialog boxes (they are described in the sections that follow):

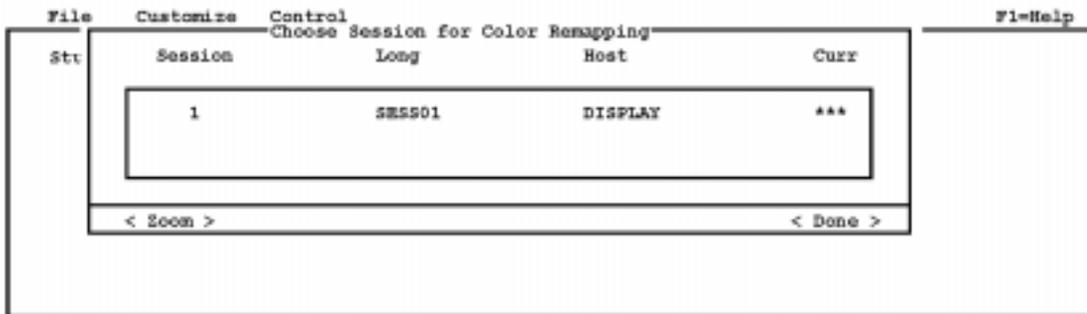
- Push buttons
- Check boxes
- Radio groups
- Edit boxes

- List boxes

Push Buttons

Push buttons are used to select an action. In Figure 2-4, “TN3270 Emulation Screen Showing Push Buttons,” <Zoom> and <Done> are push buttons.

Figure 2-4 TN3270 Emulation Screen Showing Push Buttons



Choose a push button to cause an action to occur. In the TN3270 emulation program, push buttons are shown as a name enclosed in angle brackets displayed at the bottom of dialog boxes.

To choose a push button, do one of the following:

- Use the **Tab** key to move the cursor to the push button (this highlights the angle brackets of this push button), and press **Enter**.
- Use the accelerator key of the push button. (For more information about accelerator keys, see “Accelerator Keys”.)
- Click with the mouse on the push button.

Motif

End of section

Each dialog box has one push button with highlighted angle brackets (the default push button). To choose the highlighted push button, press the **Enter** key from anywhere in the dialog box.

Motif

If the dialog also contains a list box, you can double-click on an item in the list box. This has the effect of performing the action of the default push button on this item. For example, if the dialog box contains a list of sessions and <Zoom> is the default push button, double-clicking on a session zooms on that session.

End of section

Push buttons that appear in the lower right-hand corner of a dialog box are used to end the dialog. These push buttons do not have an accelerator key shown, but you can select one or more of the following:

<OK>

Choosing the <OK> push button indicates that you have finished making any changes to the information in this dialog, and you want the program to accept the new information. The program checks the information you have entered. If any information is incorrect, a warning or error message is displayed. Otherwise, the dialog is ended.

<Cancel>

Choosing the <Cancel> push button abandons any changes you have made to the information in this dialog and ends the dialog. The Esc key can be used as an accelerator key for this push button.

<Done>

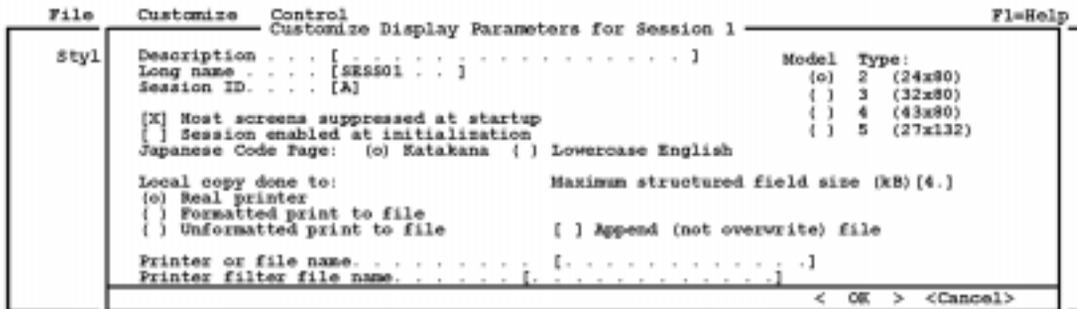
Choosing the <Done> push button ends dialogs on which there is no information to be entered. For example, this pushbutton would be used to end a dialog that displays a list of sessions and enables you to zoom in on a particular session.

Check Boxes

Check boxes are used to specify options that are either “on” or “off” (selected or not selected). They are shown as a pair of square brackets. When an x is displayed in the brackets, the item is selected. When the brackets are empty, the item is not selected.

In Figure 2-5, “TN3270 Emulation Screen Showing a Check Box,” “Session enabled at initialization” is a check box.

Figure 2-5 TN3270 Emulation Screen Showing a Check Box



In Figure 2-5, “TN3270 Emulation Screen Showing a Check Box,” the session is enabled at initialization if the check box contains an X, and is not enabled at initialization if the check box is empty.

To choose a check box from the keyboard, do the following:

- Step 1.** Press **Tab** to move the cursor to the check box.
- Step 2.** Press **Space** or the cursor keys to select or deselect the box.

The **Space** key toggles the box on or off (selected or not selected). The **Left** and **Up** cursor keys select the box. The **Right** and **Down** cursor keys deselect the box.

You can also use the accelerator key to move to a check box. This automatically toggles the state of the check box, so that it is selected if it was previously not selected, and not selected if it was previously selected. For more information, see “Accelerator Keys”.

Motif You can also click with the mouse on a check box. This toggles the state of the check box, so that it is selected if it was previously not selected, and not selected if it was previously selected.

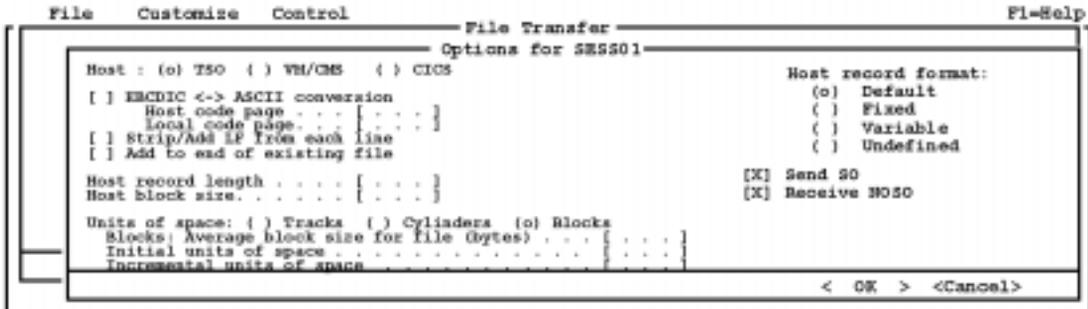
End of section

Radio Groups

Radio groups provide a set of two or more options, of which only one must be selected at any time. Each option is indicated by a radio button, which appears on the screen as a pair of parentheses.

Figure 2-6, “TN3270 Emulation Program Showing Radio Groups,” shows three radio groups: “Host,” “Host record format,” and “Units of space.”

Figure 2-6 TN3270 Emulation Program Showing Radio Groups



A circle within the parentheses indicates that the radio button is selected. When you select a button, all other buttons within the group are automatically deselected.

In the “Host radio” group in Figure 2-6, “TN3270 Emulation Program Showing Radio Groups,” the TSO radio button is selected, and the other options are not selected.

To choose a radio button from the keyboard, do the following:

- Step 1.** Press **Tab** to move to the radio group.
- Step 2.** Use the cursor keys to move to the button you want and select it. The **Down** or **Right** cursor keys move forwards within the group, and the **Up** or **Left** cursor keys move backwards.

Motif After moving to the button you want with the cursor keys, press **Space** to select it. In the Motif interface, moving the cursor to a radio button does not automatically select it.

You can also click with the mouse on a radio button. This automatically selects that radio button and deselects all the other buttons in the group.

End of section

You can also use the accelerator key to move to a radio button. This automatically selects that radio button and deselects all the other buttons in the group. For more information, see “Accelerator Keys”.

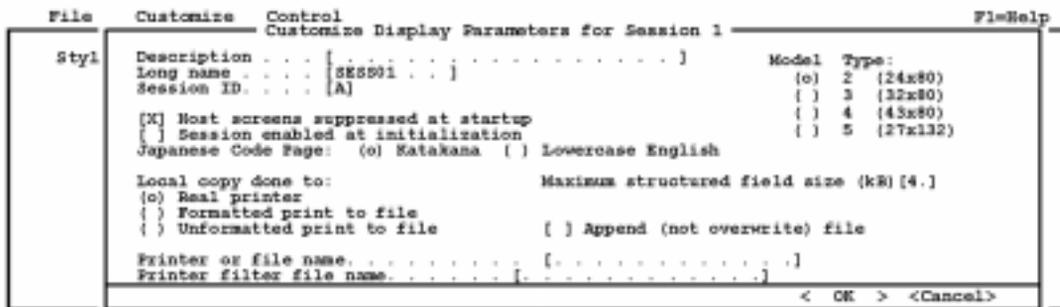
Edit Boxes

Edit boxes appear as a pair of square brackets containing space in which you can type information. They often contain default information which you can either accept or type over.

When you type information into some edit boxes, the typing area may scroll so you can enter more characters. Only a limited number of characters is shown in the edit box at a given time; you can use the **Left** or **Right** cursor keys or the **Home** or **End** keys to position the cursor within the edit box. The program still uses the full string you type in.

In Figure 2-7, “TN3270 Emulation Program Showing Edit Boxes,” “Description” is an edit box.

Figure 2-7 TN3270 Emulation Program Showing Edit Boxes



To add or change information in an edit box, do the following:

Step 1. Press **Tab** or use the accelerator key to move to the edit box. (For more information, see “Accelerator Keys”.)

Any existing information in the edit box is shown in reverse video.

Step 2. Use the **Left** or **Right** cursor keys or the **Home** or **End** keys to position the cursor within the edit box, and edit the existing text (using **Delete** or **Backspace**, cursor keys, and character keys).

Alternatively, if you start typing new text without first using the cursor keys, all the existing text disappears and is replaced by the new text you type in.

Motif

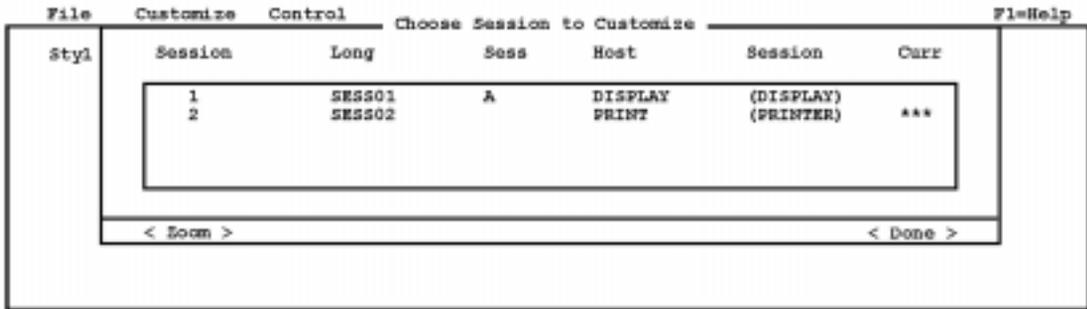
You can also cut and paste text in an edit box using the mouse in the normal way.

End of section

List Boxes

A list box contains a list of items, as shown in Figure 2-8, “TN3270 Emulation Program Showing a List Box.”

Figure 2-8 TN3270 Emulation Program Showing a List Box



In general, you choose one item from the list to view or to specify further information about that particular item. For example, if you select SESS02 from the list box shown above and then use the <Zoom> push button, the next dialog enables you to specify details of how that particular 3270 session is used.

To choose an item from the list box, do the following:

- Step 1.** Use the **Tab** key or the accelerator key shown in the list box title to move to the list box. (For more information, see “Accelerator Keys”.) One item in the list box (usually the first) is shown in reverse video, indicating that it is currently selected.
- Step 2.** Do one of the following:
 - Use the **Up** and **Down** cursor keys to position the cursor on the item you want.
 - Press the key corresponding to the first character of the line that represents the item you want to select. If more than one item begins with this character, keep pressing the key until the cursor reaches

the one you want. You can select an item from the list box by using the key corresponding to the first character of the item name even if the item is not currently visible in the list box.

The first character need not be a standard alphanumeric character. For example, to select a particular session (where the session number is in the first column of the list box), press the numeric key corresponding to the session number.

Motif

- Click with the mouse on the item you want. Double-clicking with the mouse on an item in the list box has the effect of performing the action of the default push button on this item. For example, if the dialog box contains a list of sessions and <Zoom> is the default push button, double-clicking on a session zooms on that session.

End of section

The elevator bar (shown on the right-hand edge of the list box) shows your current position in the list. This character is a marker that moves downwards to indicate your approximate position in the list as you scroll down the list box.

A list box may contain more items than the box can show at one time. To view items that are not currently shown, do one of the following:

- Use the **Up** or **Down** cursor keys to move the cursor past the top or bottom of the list box; the items in the box will scroll down or up.
- Use the **Home** or **End** keys to move the cursor to the first or last item in the list box.
- Use the **PageUp** or **PageDown** keys to move up or down through the list box items.

Motif

- Click with the mouse on the up or down arrow of the list box's elevator bar.

End of section

Accelerator Keys

Each field in a dialog box has an accelerator key, which is indicated by a highlighted character in the name of the field. You can move directly to another field in a dialog by pressing the key that corresponds to this character.

However, accelerator keys cannot be used in the following situations:

- When the cursor is in an edit box, any character key you press is entered into the edit box.
- When the cursor is in a list box, any character key you press is used to move the cursor to the next item in the list box that begins with that character.

To use accelerator keys in these situations, you must first use the **Tab** or **Backtab** keys to move the cursor to a field other than an edit box or list box.

The following accelerator keys are not indicated by highlighted characters:

- The **Enter** key chooses the current default push button (the one shown with highlighted angle brackets).
- The **Esc** key is an accelerator for either of the two push buttons **<Cancel>** or **<Done>**. (These two push buttons never appear on the same dialog box.)

Motif

Some versions of Motif do not support accelerator keys. However, you can move to another field using the mouse.

End of section

Nonselectable Items

Sometimes menu options or dialog items appear dim indicating that these options or dialog items are disabled and cannot be selected. On a monochrome screen, it is not possible to show nonselectable items as dim text; however, you can see which items are not selectable because no accelerator keys are shown for them.

Dialog items may not be available because of previous selections you made, such as selecting a particular check box or radio button. The TN3270 emulation program disables a dialog item when it is no longer applicable, or when it can no longer be changed because of a previous selection. For example, if you select “CICS” as the host type in the File Transfer Options dialog box, the “Units of space” parameters at the end of the dialog box are not selectable because they do not apply to this host type.

Help Screens

The TN3270 emulation program's menu interface includes help screens to guide you through using the program. A help screen is provided for each of the following items:

- Main screen (describing the overall function of the program and the menus available from the main screen)
- Each menu in the main screen's menu bar (describing the overall function of the menu and a summary of each of the menu options in it)
- Each menu option (giving more details about the functions provided by this menu option)
- Each dialog box (explaining the overall purpose of the dialog, each field in the dialog, and the valid responses to each field)

To invoke the help screen for a particular dialog box or menu item, press the F1 key. The help screens are context-specific, that is, the information displayed relates to the particular dialog or menu item on which the cursor was positioned when the F1 key was pressed.

Figure 2-9, "Help Screen for File Menu," shows the help screen for the TN3270 emulation program's File menu.

Figure 2-9 Help Screen for File Menu



When more help information is available than can be displayed on the screen at one time, the <Next> and <Previous> push buttons at the bottom of the help screen can be used to display the next or previous “page” of information. To finish with the help screen and return to the dialog from which it was called, use the <OK> push button or the Esc key.

The <UI Info> push button at the bottom of the help screen displays help information about the TN3270 emulation program user interface. You can move forward and backward through this information using <Next> and <Previous> push buttons, as for the other help screens. To finish with the user interface information and return to the menu or dialog box from which you selected help, use the <OK> push button or the Esc key.

While a help screen is displayed, you can press F1 again to display a screen that gives more information about the help facility. When you are finished with this screen, use the <OK> push button or the Esc key to return to the help screen you were previously viewing.

Motif

The <UI Info> push button is not supported in the Motif interface.

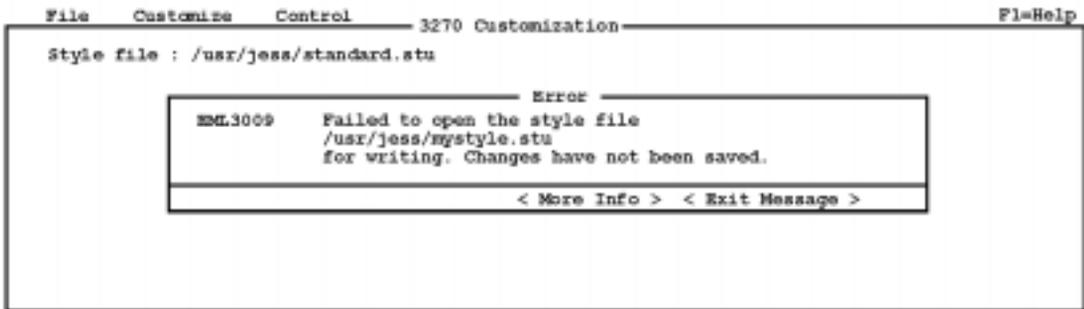
When you are finished with a help screen or with the help-in-help screen, use the <OK> push button; the Esc key does not exit from these screens in the Motif interface.

End of section

Message Boxes

The TN3270 emulation program uses message boxes to display messages as you use the menu interface. Figure 2-10, “Message Box,” shows a typical message box.

Figure 2-10 **Message Box**



The TN3270 emulation program provides the following types of message boxes:

Error

Error messages indicate a condition that requires action. The condition may be an error detected by the TN3270 emulation program, for example, the TN3270 emulation program may detect an error in a file you were attempting to open. It may also be an error that you made. For example, if you type data that is not valid in an edit box and choose <OK>, an error message indicates that you must return to the edit box and correct the entry or choose <Cancel> to abandon the dialog.

Warning

Warning messages indicate a condition that may require action. For example, if you load a style file that uses color and your terminal does not support color, a warning message informs you that the color mappings

will be reset to their default values; you can either continue with the default mappings, or load another style file.

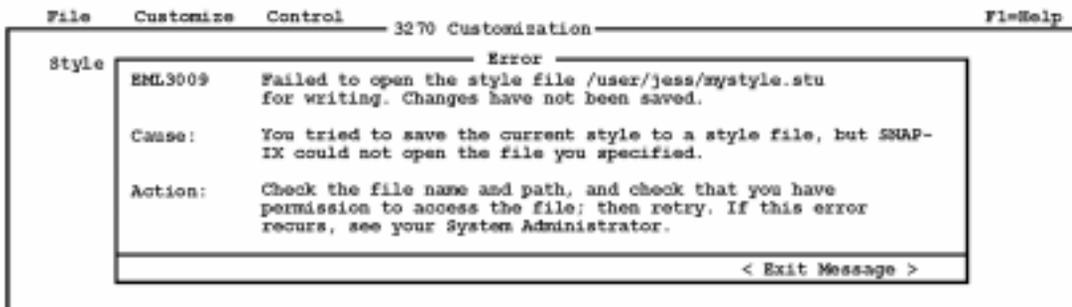
Information

Information messages provide confirmation that an action has been accepted (such as starting a file transfer process) or provide information related to the previous action that may be useful to you. No action is required.

The title of a message box indicates whether it is an Error, Warning, or Information message. For all types of message box, choose the `< Exit Message >` push button to acknowledge the message and continue with the program.

Error and Warning message boxes contain a `< More Info >` push button. If you choose this push button, the message box is replaced by a larger box, such as the example shown in Figure 2-11, “Example of an Expanded Error or Warning Message Box.”

Figure 2-11 Example of an Expanded Error or Warning Message Box



This box includes the message text that was shown in the original message box, more detailed information about the condition that caused the message, and the action you should take. Choose the `< Exit Message >` push button to acknowledge the message and continue with the program.

Screen Redrawing

While using the menu interface, your screen may become corrupted because of other processes writing data to it, or because characters have been lost due to line transmission problems. To redraw the screen, you can use the keystroke **Ctrl + R** or **Ctrl + L** from any menu or dialog box. This does not affect data you have entered.

Motif

This function is not required in the Motif interface and is not supported.

End of section

Fast Exit from the Menu Interface

You can use the **F3** key as a “fast exit” from any point in the menu interface (without having to close any displayed dialogs) and return to the main screen.

The program prompts you to save the style file before exiting. You can choose to save and exit, to exit without saving, or to abandon the exit.

If you choose to save and exit, the exit process stops if it encounters a condition that requires a pop-up message (Error, Warning, or Information). You can then take any action required and press **F3** again to continue the exit.

If you were creating a new style file, the “Save as” dialog appears, enabling you to specify the name and path for the file. The program then saves the file and exits to the HP-UX command prompt.

NOTE

The “fast exit” keystroke **F3** applies only within the menu interface, and cannot be remapped. From TN3270 emulation, use the 3270 key **EXIT** (default keystroke **Ctrl + X**).

Overview

This chapter contains general instructions and reference information about using 3270 emulation. It includes the following topics:

- Fast path to 3270 emulation
- Instructions for starting the 3270 emulation program
- Information about using the program's menus and dialog boxes
- Instructions for running the 3270 emulation program in the background
- Overview of 3270 operations, including descriptions of the 3270 keyboard and status line messages
- Description of 3270 data fields
- Information about using 3270 emulation with host programs that support double-byte character sets
- Instructions for running HLLAPI programs
- Instructions for recording keystroke sequences
- Suggestions for automating start-up of 3270 emulation

You can work with default settings for terminal appearance and session details, or you can change them to suit your situation. To customize these parameters before beginning emulation or file transfer, see Chapter 6, “Customizing 3270 Emulation.”

To accept the system defaults and begin display or printer emulation, continue with “Fast Path to 3270 Terminal Emulation”, or with the expanded instructions later in this chapter. To begin file transfer without changing your appearance and performance parameters, see Chapter 5, “Transferring Files.”

Specifying the Path to TN3270 Product Programs

If you are using the TN3270 emulation program with the 10.0 file system, the executable programs are stored in a directory specific to the emulator. The Motif-based programs are stored in the directory `/opt`, and the character-based programs are stored in the directory `/opt`. Specify the path to the appropriate directory in one of the following ways:

- Add the directory to your `PATH` environment variable in your `.login` or `.profile` file before initially running the programs.
- Include the directory name each time you run the programs, as in the following examples:

```
/opt/tn3270-s/usr/jim/newstyle.stu
```

```
/opt/tnprtsty-s/usr/jim/newstyle.stu
```

```
/opt/xtn3270-s/usr/jim/newstyle.stu
```

NOTE

The sample command lines shown in this guide assume that you have added the directory to your `PATH` environment variable. Therefore, they do not include the directory name.

Fast Path to 3270 Terminal Emulation

The following fast path provides a brief outline of 3270 display emulations. It is designed to help experienced users quickly begin terminal emulation using default settings. For more detailed instructions, read the rest of this chapter.

Step 1. Prepare for 3270 emulation.

Make sure that you are configured as a TN3270 user. Contact your System Administrator, or refer to the *HP-UX TN3270 Administrators Guide*.

Check that your LANG environment variable is set to the correct language for the host program. Refer to your operating system documentation for the names of valid languages.

Step 2. Start the TN3270 emulation program.

Type the following at the HP-UX command prompt:

```
tn3270[-s[/path/]stylefile] [-e | -b] [-h IDlist] [-l host list]
```

Motif To start the Motif version of the program, type the following:

```
xtn3270[-s[/path/]stylefile] [-h IDlist] [-l host list]
```

End of section

For more information about the command-line options you can use, see “Starting the TN3270 Emulation Program”.

Step 3. Enable one or more 3270 display sessions.

Before using a session for 3270 emulation, you must initiate communications with the host (enable the session). When you start the program, if you see a host screen instead of the main screen of the user interface, you already have at least one enabled session. If the session you want to use is already enabled, skip this step and continue with the next step. If the enabled session is not the session you want, do the following:

- a. From the main screen of the program, pull down the `Control` menu, and choose `Display Sessions`. From an active 3270 session, press `ACTIONS` (default keystroke `Ctrl + U`) to access the main screen.
- b. In the `Control Display Sessions` dialog box, highlight the session you want to enable.
- c. Choose `<Change Status>`. The status changes from `Disabled` to `Enabled`.
- d. Repeat the enabling process for as many sessions as you need.
- e. Highlight the session you want to use first, and choose `<Make Current>`. Three asterisks (***) mark this session as the current session.

If your system is configured correctly and the connection to the host is active, the status changes briefly to `SSCP`, and then to `TN3270`.

- f. Choose `<Done>` to return to the main screen.

Motif

Each enabled session appears as a new window on the Motif screen.

When you return to the main screen, the TN3270 emulation program automatically displays the session window containing the current session.

End of section

Step 4. Enable one or more 3287 printer sessions (optional).

Before using a session for printer emulation, you must enable it. (You do not need to enable a printer session for local copy printing, which uses a display session.) If the session you want to use is already enabled, or if you are not using any printer sessions, skip this step and continue with the next step to begin emulation.

- a. From the main screen, pull down the `Control` menu, and choose `Printer Sessions`.
- b. In the `Control Printer Sessions` dialog box, highlight the session you want to enable from the list of sessions.
- c. Choose `<Change Status>`. The status changes from `Disabled` to `Enabled`.
- d. Enable as many additional printer sessions as you need.
- e. Choose `<Done>` to return to the main screen.

The TN3270 product does not display a separate 3270 emulation screen for a printer session.

Step 5. Begin emulation.

- a. To access the session you want to use, from the main screen, press **Esc**. If you see the No Active Display Session error message, choose the `<Exit Message>` push button and then enable a session by following the instructions in Step 3 of this fast path.

Motif

Use the mouse to move to the window containing the session you want to use.

End of section

- b. Follow logon or application instructions to use your 3270 session. For an explanation of information presented on the status line at the bottom of the display for your 3270 session, see “Understanding the 3270 Status Line”.

Step 6. Switch between active 3270 sessions by pressing the **SESS n** session selection key that corresponds to the number of the session you want to move to (default keystrokes are **Esc 1–Esc 0** for sessions 1–10), or pressing **NEXTSESS** (default keystroke **Ctrl + V**) to move to the next session, until you reach the session you want.

Motif

The **SESS n** and **NEXTSESS** keys are not supported in the Motif program. Use the mouse to move to the window containing the session you want to use.

End of section

Step 7. Exit emulation by performing the following steps:

- Step 1.** Log off all hosts. (Logging off is recommended but not always necessary. The TN3270 emulation program can terminate active sessions if you exit emulation without logging off. However, with some host applications this can cause problems when you next try to log on.)
- Step 2.** Press **EXIT** (default keystroke **Ctrl + X**) to exit emulation and return to the HP-UX command prompt.
- Step 3.** If any 3270 sessions are active, a message will be displayed asking you to confirm the exit.

Step 4. Choose <OK> to exit, or <Cancel> to return to 3270 emulation.

For more detailed instructions, read this chapter and Chapter 4, “Controlling 3270 Emulation,” Chapter 5, “Transferring Files,” and Chapter 6, “Customizing 3270 Emulation.”

Starting the TN3270 Emulation Program

Before starting the TN3270 emulation program, make sure that you are configured as a TN3270 user. Contact your System Administrator.

Also check that your `LANG` environment variable is set to the correct language for the host program. Refer to your operating system documentation for the names of valid languages.

To start the TN3270 emulation program, enter the following command at the HP-UX command prompt:

```
tn3270[-s[/path/]stylefile] [-e | -b] [-h IDlist] [-l host list]
```

Motif To start the Motif version of the program, type the following:

```
xtn3270[-s[/path/]stylefile] [-h IDlist] [-l host list]
```

End of section

Following are descriptions of the options available with the command to start the TN3270 emulation program:

`-s`

Loads the specified style file. If you include `-s`, it must be followed by a style file name (with or without a directory path).

If you specify a path, the program tries to open the file in the directory given; if no path is given, the file is assumed to be in the current directory. The style file name must have the extension `.stu`, but you need not specify this extension (the TN3270 emulation program adds it if you do not specify it). If you do not specify a style file, the TN3270 emulation program uses the default style file specified in the configuration file. For more information, see “Search Path for Style Files”.

Your System Administrator may have configured the TN3270 emulation program so that you do not have permission to use your own style file. In this case, the TN3270 emulation program displays a warning message and runs with the default style file specified in the configuration rather than the one you specify here.

- e** Used to suppress the menu interface so that you can save runtime memory. However, using this option limits you to using only the 3270 emulation sessions already configured. The menu interface is inaccessible. Therefore, if you use this option, you must use a style file that has at least one initially active display session of a suitable model size for your monitor. For more information about style files, see Chapter 6, “Customizing 3270 Emulation.”
- b** Starts the TN3270 emulation program as a background process. To save memory, the menu interface process is disabled (it would be inaccessible in any case). This option cannot be used with the **-e** option. For more information, see “Running 3270 Emulation in the Background”.

Motif The **-e** and **-b** options are not available with the Motif program. The main screen menus are available in the Motif program, and only `tn3270` can be run in the background.

End of section

- h** Specifies session IDs to be used with your 3270 sessions. The **-h** option must be followed by a list of one-byte hexadecimal values representing ASCII characters, separated by commas. Any value in the range `0x01–0xFF` can be used, as long as it does not match any other session ID or session long name used with this TN3270 emulation program. These session IDs are assigned to each session in turn.

Two consecutive commas indicate that no session ID is being assigned; in this case, or if the list contains fewer session IDs than your configured sessions, the session IDs specified in the style file are used instead.

For example, if you have five sessions, specifying the string `-h 0x01,0x02,,0x04` is interpreted as follows: the ID for session 1 is set to `0x01`, the ID for session 2 is set to `0x02`, the ID for session 4 is set to `0x04`, and the IDs for sessions 3 and 5 are taken from the style file (because you did not specify IDs for these sessions).

Session IDs specified on the command line apply only to the current run of the TN3270 emulation program; they cannot be saved in a style file. To use the same command-line session IDs again, you can create a shell script to start the program with the correct command-line parameters.

- 1 Specifies TCP/IP host addresses and ports to be used with your 3270 sessions. You can override the hosts defined for your sessions in the configuration file only if your System Administrator has given you permission to do so.

The `-1` is followed by a list of up to ten sets of host addresses and port numbers. Each set of host address and port number has the form:

hostname[: ***portname***] and is separated from other sets by a comma. The value for ***hostname*** can be either the name of the host or the host's dotted-decimal IP address. If the : ***portname*** option is not specified, the default port of 23 is used. Two consecutive commas in the list of host addresses and ports indicates that no host address is being assigned to that session. The configuration for that session defined by your System Administrator is used unchanged.

For example, the following string defines that session 1 will connect to `host1` on port 28, session 2 will use the configured host, and session 3 will connect to the host whose address is `192.19.2.1` on port 23.

```
-1 host1:28,,192.19.2.1
```

Using Menus and Dialog Boxes

After the TN3270 emulation program starts, one of the following is displayed:

- 3270 display of an enabled or active session
- Main screen of the TN3270 emulation program

If you see the main screen instead of a session, then you do not have any 3270 sessions set to be enabled at initialization. For instructions on updating your style file to enable a session at initialization, refer to “Customizing Display Sessions”.

Motif

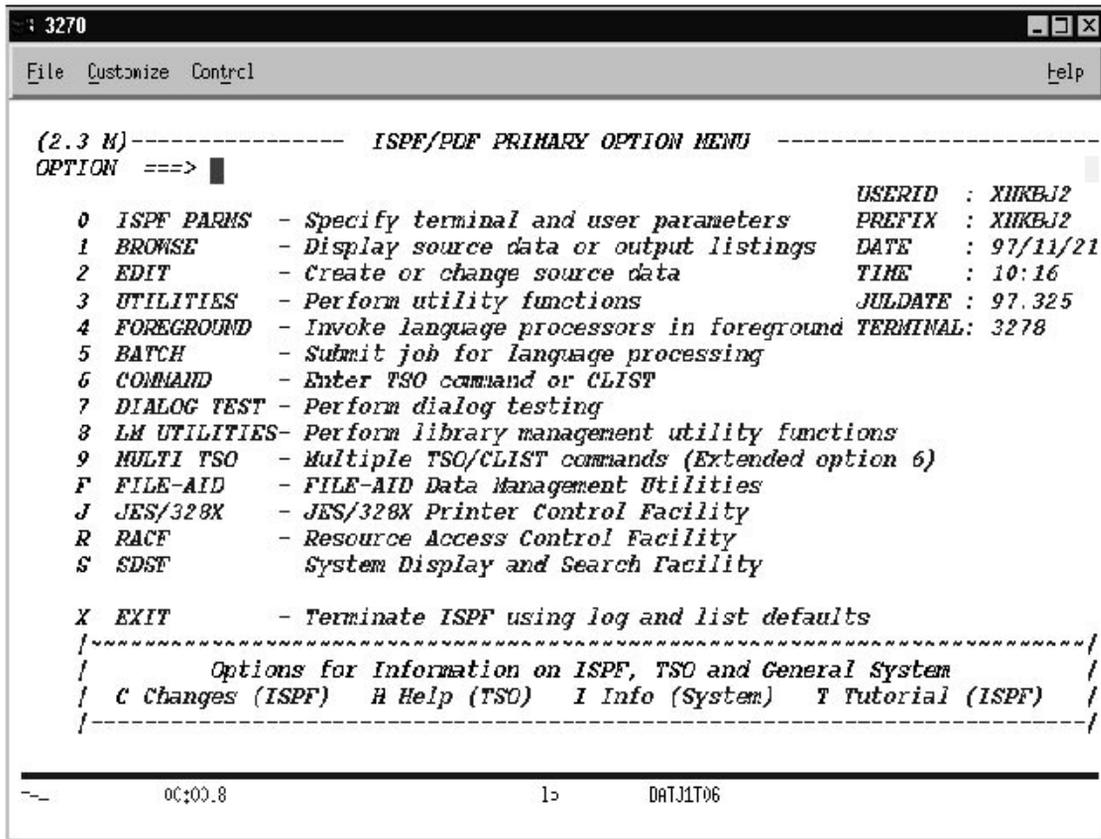
In the Motif emulation program, the 3270 display appears as part of the main screen (with the menu bar at the top). If you do not have an enabled or active session, the main screen is displayed, but the area where the 3270 display would appear is blank.

If you have more than one active session, each session appears in a separate window as a separate main screen with its own menu bar. You can customize the title for each window to help distinguish between them; for more information, see “Customizing Display Sessions”.

End of section

A typical 3270 display is shown in Figure 3-1, “Sample 3270 Display.”

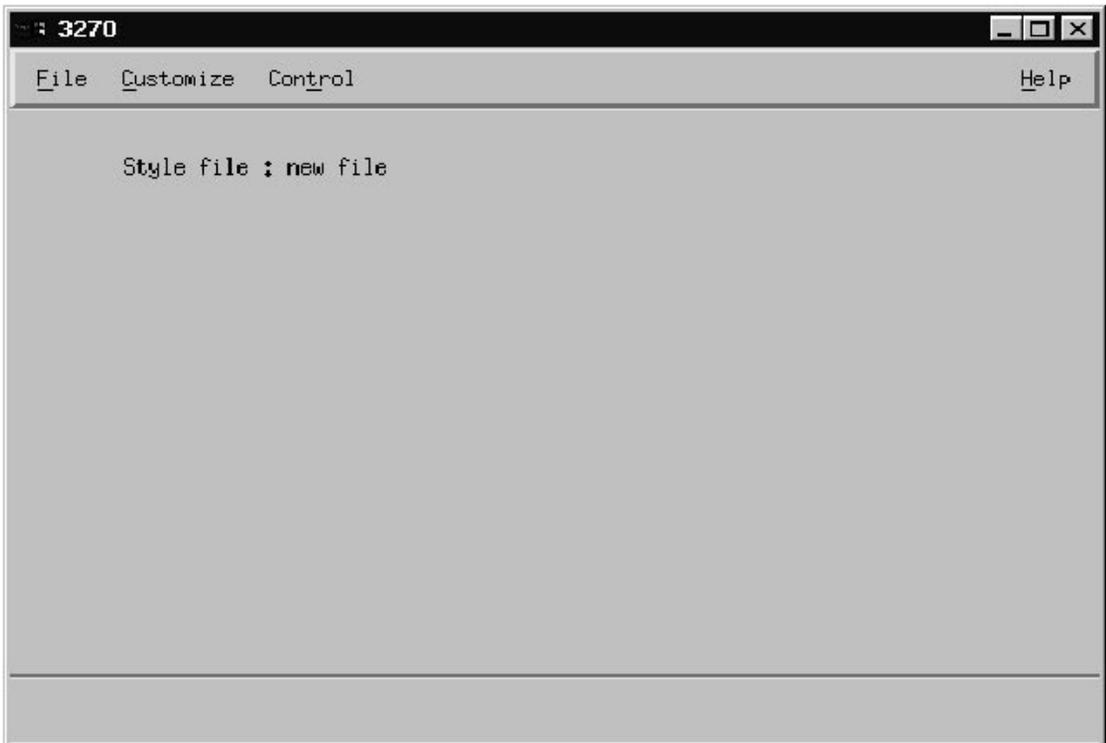
Figure 3-1 **Sample 3270 Display**



Displaying the Main Screen

From a 3270 display session, you can move to the main screen at any time to gain access to the File, Customize, or Control pull-down menus. You can use them to customize and control 3270 emulation. To move from a 3270 display to the main screen, press ACTIONS (default keystroke Ctrl + U). The main screen is shown in Figure 3-2, “Changing from a 3270 Display to the Main Screen.”

Figure 3-2 **Changing from a 3270 Display to the Main Screen**



The name of the style file also appears near the top of the main screen. To return from the main screen to 3270 emulation, press **Esc**, or choose `Return to Emulator` under the `File` menu.

Motif

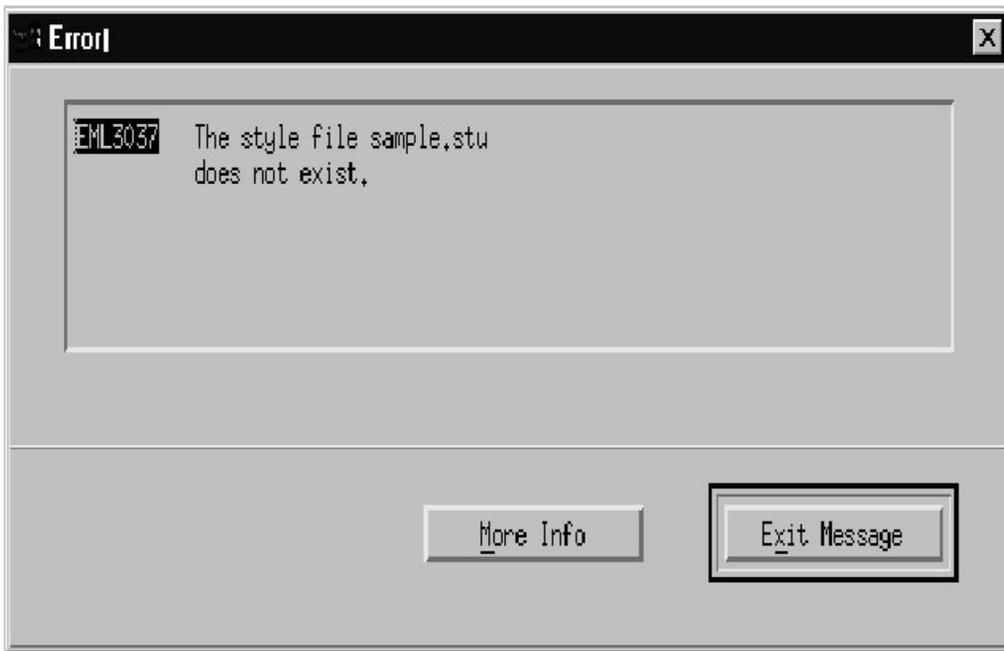
In the Motif emulation program, the 3270 display appears as part of the main screen (with the menu bar at the top); you can access the menus at any time. However, if you have more than one active session, you can access the menus in only one session window at any time. When you pull down a menu or move to a dialog box in one window, the menu bars in all other 3270 emulation session windows are disabled until you end all menus and dialog boxes in the first window.

End of section

Incorrect Style File Specified

If the style file name you specify is incorrect, or the file is not valid or cannot be opened, a message similar to that shown in Figure 3-3, “Incorrect Style File Message,” appears on the main screen when the program starts.

Figure 3-3 **Incorrect Style File Message**



Choose <Exit Message> to acknowledge the message. You can then attempt to open the correct file using the `File` menu. For more information, see Chapter 6, “Customizing 3270 Emulation.” Alternatively, you can continue with 3270 emulation without using a style file, in which case, you will use the program’s default style.

Using Style Files and Customizing Emulation

A style file contains the parameters that control the appearance and behavior of your terminal in 3270 emulation.

Using the `File` menu, you can take the following actions:

- Open a different style file to apply its customization parameters to 3270 emulation
- Save changes to a style file
- Create a new style file

You can use the `Customize` menu, to change customization parameters, which you then save to a style file. However, you will not be able to modify the default style or open new style files if your System Administrator has not given you permission to do this. For more information about complete instructions for using style files, see Chapter 6, “Customizing 3270 Emulation.”

Controlling Emulation

You use the `Control` menu to control emulation—enabling and disabling 3270 display sessions and 3287 printer sessions, starting and stopping file transfers, and viewing host response times. For instructions, see Chapter 4, “Controlling 3270 Emulation.”

Communicating with the Host

To conduct 3270 emulation, do the following:

- Step 1.** Log on to a host (if required to do so) and communicate with its control and application programs through an active session.
- Step 2.** Move to the currently selected session by choosing `Return to Emulator` under the `File` menu or by pressing the `Esc` key.
- Step 3.** Switch to another active session if desired, and follow the host computer's logon instructions, if any.

For instructions for moving from the 3270 emulation program to 3270 sessions and from one session to another, see Chapter 4, “Controlling 3270 Emulation.”

Moving between a 3270 Session and the Main Screen

To return temporarily from a 3270 display session to the main screen, press `ACTIONS` (default keystroke `Ctrl + U`).

To resume 3270 emulation from the main screen, press `Esc`.

Motif

In the Motif emulation program, the 3270 display appears as part of the main screen (with the menu bar at the top); you can access the menus at any time. However, if you have more than one active session, you can access the menus in only one session window at any time. When you pull down a menu or move to a dialog box in one window, the menu bars in all other 3270 emulation session windows are disabled until you end all menus and dialog boxes in the first window.

End of section

Temporary Exit to the HP-UX Command Prompt

To move temporarily from a 3270 display session to a command prompt for HP-UX, leaving the TN3270 emulation program running, press TEMPEXIT (default keystroke **Ctrl + Z**). This starts a new HP-UX shell of the type specified by the `SHELL` environment variable (the default is `/bin/sh`). You could use this feature, for example, to do any of the following tasks:

- Find the name or directory of a style file
- Use the command-line file transfer feature
- Run a HLLAPI application

To resume 3270 emulation from a temporary exit, use the HP-UX end-of-file (EOF) key sequence for your terminal (typically **Ctrl + D**).

Motif

The TEMPEXIT keystroke is not supported in the Motif TN3270 emulation program. Instead, you can move to a new terminal window using the mouse as usual.

End of section

Ending Emulation

When you have finished using 3270 emulation and want to exit to the HP-UX command prompt, take these steps:

- Step 1.** Log off the host system (for each active 3270 display session).
- Step 2.** Press **ACTIONS** (default keystroke **Ctrl + U**) to display the main screen.

Motif This step is not required in the Motif program.

End of section

Step 3. From the `File` menu, choose `Exit`.

As an alternative to steps 2 and 3, or if you started 3270 emulation using the `-e` option, you can press `EXIT` (default keystroke `Ctrl + X`) to exit the program.

If you try to exit while a session is enabled or active, a message box is displayed, as shown in Figure 3-4, “Message Displayed When Exiting 3270 Emulation with Session Active.”

Step 4. Choose `<OK>` to disable any enabled sessions and end the `TN3270` emulation program, or `<Cancel>` to continue running the program.

Figure 3-4 Message Displayed When Exiting 3270 Emulation with Session Active



Running 3270 Emulation in the Background

You can run the TN3270 emulation program as a background process. When you run the program as a background process, you cannot view the 3270 emulation display or use the keyboard, but you can still access 3270 display sessions using a HLLAPI application or perform host printing with printer sessions. (When the TN3270 emulation program is in the background, you cannot run a command-line transfer directly. However, you can run a command-line file transfer indirectly by using a HLLAPI application to log on to the host.) Because the menu interface is inaccessible, it is disabled to save memory. For more information, see “Transferring Files from the HP-UX Command Prompt”.

When you start the TN3270 emulation program in the background, the following sessions are automatically activated:

- All initially active display sessions that have a session ID assigned
- All initially active printer sessions

If there are no initially active printer sessions or initially active display sessions that have a session ID assigned to them, the TN3270 emulation program displays an error message and the program terminates. See “Customizing Display Sessions” or “Customizing Printer Sessions” for information about session IDs and initially active sessions, or “Starting the TN3270 Emulation Program” for information about specifying session IDs from the command line.

Before starting the TN3270 emulation program in the background, make sure the following conditions are true:

- You are configured as a TN3270 user.
- Your default style file, or the style file you specify on the command line, contains at least one initially active session (display or printer).
- If the initially active session is a display session and does not have a session ID, use the `-h` option to specify the session ID on the command line when starting the TN3270 emulation program. For more information, see “Starting the TN3270 Emulation Program”.

- Your `LANG` environment variable is set to the correct language for the host program (refer to your operating system documentation for the names of valid languages).

Contact your System Administrator if necessary.

Starting the TN3270 Emulation Program

To start the TN3270 emulation program in the background, enter the following command at the HP-UX command prompt:

```
xtn3270 -b [-s[/path/]stylefile] [-h IDlist][-l host list]
```

Motif

The Motif program, `xtn3270`, cannot be run in the background; `tn3270` must be used.

End of section

The `-b` option indicates that the program is to be run in the background. For more information about the other command-line options, see “Starting the TN3270 Emulation Program”. If you use more than one option, you can specify them in any order.

When you start the TN3270 emulation program in the background, all sessions suitable for running in the background (initially active printer sessions or initially active display sessions that have a session ID assigned to them) are automatically activated. If there is no initially active printer session or initially active display session that has a session ID assigned to it, the program terminates with an error message.

Stopping the TN3270 Emulation Program

To stop the background 3270 process, use the `tnstop3270` utility by typing `tnstop3270`. This will stop all copies of the TN3270 emulation program that are running with your HP-UX user ID.

The TN3270 product responds with a message indicating the number of copies of the program it found and stopped.

Overview of 3270 Operations

Your HP-UX computer uses the TN3270 emulation program to emulate a 3270 terminal, which enables you to access host computers. To operate your terminal during 3270 emulation, you need to understand the information provided by the status line and how to use the keyboard in a 3270 emulation session.

Using the Keyboard

Terminal emulation requires your terminal's keyboard to perform the 3270 functions normally provided by a 3278 or 3279 keyboard. The TN3270 emulation program lets your terminal perform these functions by assigning them to specific keystrokes on your terminal's keyboard. Appendix A, "Default Keyboard Mappings," describes the default key definitions for emulating the 3270 keyboard.

"Customizing Key Definitions" contains instructions for viewing and changing these defaults. Ensure that you are using the correct entry for your terminal in the `terminfo` database on your HP-UX computer (this is specified using the `TERM` environment variable), and that this entry contains definitions for all the keys you need to use. Contact your System Administrator if necessary.

The keystrokes shown on the **File**, **Customize**, and **Control** menus, which enable you to jump straight to specific dialogs from the main screen, cannot be remapped to different keys. Key remapping applies only to TN3270 emulation.

If you are using a host language that does not match your keyboard type, you may need to use some character keys that do not appear on your keyboard. You can remap these 3270 keys to suitable keystrokes, or you can use the escape sequences provided by the HP-UX operating system to generate them (refer to your operating system documentation).

The methods for entering double-byte characters from your HP-UX keyboard vary among different operating systems. If you need to use these characters, ask your TN3270 product supplier to provide information about how to enter them on your system.

Appendix A, "Default Keyboard Mappings," describes the use of the following special keys:

Cursor control keys

The following keys control the cursor:

- **Up**
- **Down**
- **Left**
- **Right**
- **Tab**
- **Home**

During TN3270 emulation, the default operations of these keys are similar to their functions during normal HP-UX terminal operation, with some exceptions. For example, in a formatted 3270 display (one with fields on the screen), pressing the **Home** key causes the cursor to move to the start of the first field on the screen and pressing the **Tab** key causes the cursor to go to the next field, rather than to move a set number of spaces.

Edit keys

The following keys are used to enter special characters or to delete whole fields or displays:

- Program access keys
- Program function keys
- 3270 system keys
- Printer control keys

Understanding the 3270 Status Line

When you are in 3270 emulation, the last line of your screen shows status information about the current session. The way in which this status line is displayed on the screen depends on your 3270 customization and on your terminal's hardware and software. The status line can be written to the terminal's status line (if the terminal supports this) or to a spare line at the bottom of the screen (if the screen has more lines than your 3270 screen model requires), or it can be shared with the last line of the 3270 display. For more information, see Appendix B, "Status Line Information."

You have a choice between the following display modes for the status line:

Always on

The status line appears all the time.

On when required

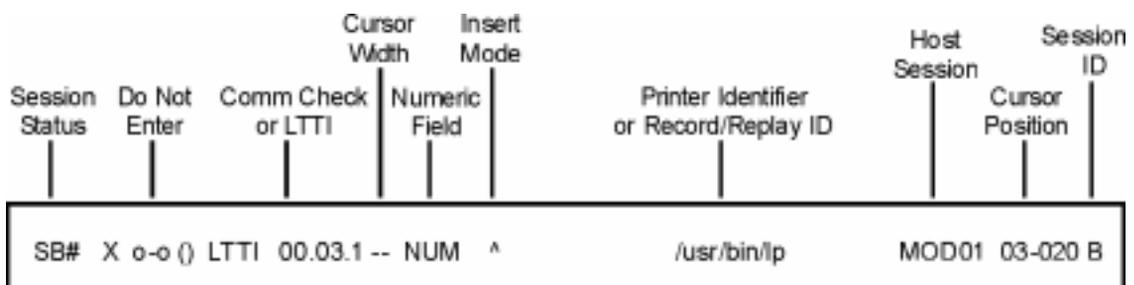
The status line is blank unless there is a Do Not Enter or Communications Check message to be displayed. It appears when a condition occurs that causes one of these messages, and returns to blank when the condition is cleared.

The “Status line displayed at startup” option in the Customize Miscellaneous Options dialog box (for more information, see Chapter 6, “Customizing 3270 Emulation,”) specifies which mode the program uses when it first starts up.

While the program is running, you can switch between the two modes using the STAT TOG (Status Line Toggle) key (default keystroke **Ctrl + W**). If you press STAT TOG while the status line is shown, the status line disappears, and the status line display mode switches to “on when required;” that is, it will reappear when there is a new Do Not Enter or Communications Check message to be displayed. If you press STAT TOG while the status line is not shown, the status line reappears, and the status line display mode switches to “always on.”

If the status line is shared with the last line of the 3270 emulation display, the STAT TOG key also switches between showing the status line and showing the last line of the 3270 emulation display. If you press STAT TOG while the status line is shown, to switch to “on when required” mode, the last line of the 3270 emulation display appears instead. If you press STAT TOG while the last line of the 3270 emulation display is shown, the status line appears instead, as shown in Figure 3-5, “Status Line Format for 3270 Emulation.”

Figure 3-5 Status Line Format for 3270 Emulation



Motif

The Motif TN3270 emulation program uses graphical symbols for some of the messages on the status line (similar to the symbols used on an IBM terminal), instead of the character symbols shown in Figure 3-5, “Status Line Format for 3270 Emulation.” The overall format of the status line and the meaning of individual messages is the same for both character-based and Motif versions.

The Motif program's status line is always on a separate line (not shared with the last line of the 3270 display). It is always displayed; the STAT TOG key has no effect.

If your LANG environment variable is set to Japanese, to enable communication with a Japanese host, the TN3270 emulation program displays an additional status line below the standard one. This line, called the Japanese extended status line, displays additional messages that are specific to the Japanese host system.

End of section

Types of Status Line Information

The following list summarizes the different types of information that appear on the status line. Appendix B, “Status Line Information,” describes all the individual status line messages and symbols.

Session Status messages

The Session Status messages indicate whether the HP-UX computer and the host system are already communicating on this session, are ready to communicate, or are not ready to communicate.

Do Not Enter messages

The Do Not Enter messages indicate the current state of the 3270 session. Some of these messages indicate normal conditions; others indicate that your 3270 keyboard is disabled temporarily and specify the reason for this.

Communications Check codes

The Communications Check codes indicate the current state of the connection to the host. Some of these messages indicate normal conditions that occur during initialization; others indicate problems with either hardware or configuration.

LTTI

The Last Transaction Time Indicator (LTTI) indicates the time taken for the most recent transaction with the host. This is displayed only if no communications check code is displayed and if your System Administrator has given you permission to view response-time information.

Cursor Width

The Cursor Width indicator appears only if your host language (specified using the `LANG` environment variable) is a double-byte language. It appears as a single dash if the cursor is at a screen position where you can enter only a single-byte character, and as two dashes if the cursor is at a screen position where you can enter a double-byte character.

Motif

The Cursor Width indicator does not appear on the status line in the Motif program. Instead, the cursor itself appears as a single-width or double-width character to indicate the type of character that can be entered.

End of section

Numeric

The Numeric indicator appears if the cursor is in a numeric-only field.

Insert

The Insert indicator shows that your keyboard is in Insert mode. When this indicator is on, you can insert a character at the cursor location. Press the `INSERT` key (default keystroke `Insert`) to enter Insert mode; press `RESET` (default keystroke `Esc R`) to leave Insert mode.

Printer identifier

The Printer identifier message gives the name of the printer or file to which local copy print requests on the current 3270 session are directed. This is specified in the Customize Display Session dialog box; see Chapter 6, “Customizing 3270 Emulation.”

Record/Replay ID

The Record/Replay ID message is shown instead of the printer identifier while you are recording a keystroke sequence or replaying a previously recorded sequence;

see “Keystroke Recording and Replay”. This message is displayed as `RECORD nn` or `REPLAY nn`, where `nn` is a number (1–24) that identifies the PF key associated with the keystroke sequence.

The message `BUFFER LOW (mm)` can also appear in this position if you are recording a keystroke sequence and are approaching the limit of 1500 characters; `mm` is the number of further keystrokes you can enter before reaching the limit.

Host Session

This message identifies the TCP/IP host being used by this session. This name is specified in the configuration file.

Cursor Position

The Cursor Position message gives the current position of the cursor on the screen.

Session ID

The Session ID message gives the ID of this session, if a session is assigned. For more information about assigning session IDs, see “Customizing Display Sessions” and “Starting the TN3270 Emulation Program”.

A session ID taken from the style file is always in the range A–Z, but a session ID specified on the command line may not be in this range. Any session ID not in the range A–Z is displayed as an asterisk (*).

Status Line Help

To obtain more information about the contents of the current session's status line, you can use the key `STAT HELP` (default keystroke `Ctrl + O`) to display a screen of help information. This screen displays text strings that interpret the status line information for the current session. The help screen displays information about the following:

- Session state
- TN3270 emulation program state (for example, a communications check code or a Do Not Enter message)
- Input state (Insert/Replace, numeric, and cursor width)
- Host session

- Session ID (if one is assigned)
- Last host response time
- Name of the printer or file to which local copy printing is directed

After you have finished viewing this information, use the STAT HELP keystroke again to remove the help screen.

Status Line Display for Keystroke Recording and Replay

When you use the RECORD or REPLAY keys (see “Keystroke Recording and Replay”), the status line display is temporarily replaced by a list of the identifiers assigned to recorded keystroke sequences. (However, you can use the STAT HELP key, described in “Status Line Help”, to find out status information.) The normal status line display is restored when you select an identifier for the keystroke sequence to record or replay.

Switching between 3270 Sessions

To switch from one 3270 session to another, use 3270 system keys. Press NEXTSESS (default keystroke `Ctrl + v`) to move to the next display session, or enter the correct SESS *n* key combination (default keystrokes `Esc 1–Esc 0` for sessions 1–10) for the session you want to move to.

Motif

If you are using the Motif TN3270 emulation program, the NEXTSESS and SESS *n* keystrokes are not supported. Instead, you can move to a new terminal window using the mouse as usual.

End of section

Temporary Exit from 3270 Emulation

While using the TN3270 emulation program, you can perform a temporary exit to the HP-UX shell while leaving the TN3270 emulation program running. This starts a new HP-UX shell of the type specified by the SHELL environment variable (the default is `/bin/sh`). Use the shell, for example, to list the contents of a directory or to run a HLLAPI application or a command-line file transfer process. To end this temporary shell and return to the TN3270 emulation program, use the end-of-file (EOF) sequence for your terminal, typically `Ctrl + D`.

Motif The TEMPEXIT keystroke is not supported in the Motif TN3270 emulation program. Instead, you move to a new terminal window using the mouse as usual.

End of section

Type-Ahead during 3270 Emulation

While waiting for the host to respond during 3270 emulation, you can enter the keystrokes that will be required after the host has responded. These can be data characters, cursor control keys, or keys such as ENTER that send information to the host. You can use type-ahead for a maximum of 16 keystrokes. If you exceed the maximum, the Keystroke Lost message “X ?+” appears on the status line, and the keyboard is locked until you press RESET.

Do not attempt to use this feature during the logon sequence, particularly while waiting for a password prompt from the host, as it can cause problems with some hosts. After you have supplied a password and received an indication from the host that you are successfully logged on, you can then use the type-ahead.

Using the Mouse with 3270 Emulation

Motif When a cursor that can be used for text input appears on the screen, you can use the mouse to move the cursor with the following limitations:

Protected fields

You can use the mouse to move the cursor into a protected field, but you cannot enter typed data while the cursor is in a protected field.

Cut-and-paste

By default, cutting and pasting does not affect the cursor position. If you press the left button and drag the mouse, the area over which you drag the mouse is highlighted. When you release the left button, the highlighted area is copied, but the cursor is not moved.

Customizing

The left mouse button is used to move the cursor. No customization for this feature is available.

End of section

3270 Data Fields

Attribute characters and EAB characters determine the characteristics of 3270 data fields.

Attribute Characters

On formatted 3270 displays, an invisible attribute character at the beginning of each field determines whether you can enter data in the field and, if so, the type of data you can enter (for example, numeric or alphanumeric). The attribute character also determines whether information is displayed and, if it is, determines the intensity or color of the display.

EAB Characters

Some host applications use the EAB (Extended Attribute Byte) feature to permit display of graphic characters at the terminal. With the EAB feature your terminal can display reverse video, blinking characters, and underlining, and it can show characters in different colors. However, these features are available to you only if the HP-UX computer and terminal you are using can support them. “Customizing Display Colors” explains how to customize 3270 emulation to interpret these special attributes.

If the host application does not use the EAB feature, the characters are displayed as one of four base colors, depending on the attribute byte of the field. These colors indicate whether the field is protected (meaning you cannot enter data into it), and whether it is highlighted or normal intensity.

Table 3-1, “How Field Attributes Determine a Base Color,” shows how the color option and the field attributes determine the base color. The base color corresponds to one of the four base colors listed in the Color Mappings dialog box; the actual color displayed on the screen depends on whether you are using color or mono display and on the color mappings you are using for that session.

Table 3-1 **How Field Attributes Determine a Base Color**

Field Attributes	Color
Unprotected, normal intensity	Green
Unprotected, intensified	Red
Protected, normal intensity	Blue
Protected, intensified	White

Double-Byte Characters

The TN3270 emulation program supports the use of double-byte characters, used in languages such as Japanese and Korean, to enable the program to communicate with 3270 host programs that support these characters.

Single-Byte, Double-Byte, and Mixed Fields

In a formatted presentation space, the host application can designate certain fields as accepting single-byte characters only, double-byte characters only, or mixed characters, in the same way that it designates fields as accepting any characters or only numeric characters. In a mixed field, you must use the SO and SI (shift out and shift in) characters to indicate the start and end, respectively, of a group of double-byte characters.

SO/SI Characters

In presentation space fields that accept both single-byte and double-byte characters, the two special characters SO and SI (shift out and shift in) are used to indicate the start and end of a group of double-byte characters. Single-byte characters are standard, so it may help you to think of shifting out of the regular mode to use double-byte characters and then shifting back in to regular mode when you finish. These characters are represented by the ASCII values 0x0E (SO) and 0x0F (SI).

When a single-byte character is followed by a double-byte character, an SO character is placed after the single-byte and before the double-byte character. When a double-byte character is followed by a single-byte character, or when the last character in the field is a double-byte character, an SI character is placed after the double-byte character.

The default characters displayed are [`] (open single quote) for SO and ['] (close single quote) for SI; you can change these to different ASCII characters if required. You may want to choose characters that are not normally used for any other purpose in the host application, to make it easier to recognize SO and SI characters. To do this, set the environment variables `SNAP3270_SO` and `SNAP3270_SI` to the hexadecimal values

representing the ASCII characters you want to use. For example, setting `SNAP3270_SO` to `3E` and `SNAP3270_SI` to `3C` displays right and left angle brackets, `>` (`0x3E`) for `SO` and `<` (`0x3C`) for `SI`.

The miscellaneous system key `SOSI TOG` (`SO/SI Toggle`) enables you to control whether `SO` and `SI` characters are displayed on the screen. `SO` and `SI` are displayed either as blanks or as the characters defined by the `SNAP3270_SO` and `SNAP3270_SI` environment variables.

Field Outlining

For fields that contain double-byte characters, the host can specify an additional character attribute called field outlining. This means that the field is displayed with lines drawn around it. Any combination of lines above, below, left, and right can be specified; combining all four causes the field to display with a complete rectangle around it. The lines are always displayed as the host color blue (normal display—not intense, reversed, or blinking).

Cursor Display in Double-Byte and Mixed Fields

When the cursor is in a single-byte or double-byte field, you can enter only the specified type of characters at the cursor position. When it is in a mixed field, you can enter double-byte characters if the cursor is in a double-byte subfield (between the `SO` and `SI` characters), and single-byte characters otherwise. The Cursor Width indicator on the status line indicates whether the current cursor position enables you to enter single-byte or double-byte characters. For more information about this indicator, see Appendix B, “Status Line Information.”

Motif

The Cursor Width indicator is not used in the Motif program; instead, the width of the cursor itself indicates the width of the characters you can enter. When the cursor is in a double-byte field on the screen, it is displayed as a long cursor (covering two character positions) instead of the standard one-character cursor. In a mixed field, the long cursor is displayed in positions where you can enter a double-byte character, and the short cursor is displayed elsewhere.

End of section

Double-Byte Character in Column 80

When a field in the 3270 screen occupies more than one line, a double-byte character can sometimes be split at the end of a line, that is, the first byte of the character occupies position 80 of one line, and the second byte occupies position 1 of the next line.

The TN3270 emulation program and the host will recognize the double-byte character and process it correctly. However, the character-based TN3270 emulation program cannot display it correctly on the screen. Instead, it displays a “split character” marker in these two positions.

The default character displayed is - (hyphen). You can change this to a different ASCII character if required. You may want to choose a character that is not normally used for any other purpose in the host application to make it easier to recognize these split characters. To do this, set the environment variable `SNAP3270_SPLIT_CHAR` to the hexadecimal value representing the ASCII character you want to use. For example, setting `SNAP3270_SPLIT_CHAR` to `40` displays the character @ (0x40) in both positions of the split character.

On some terminal types, writing a character to position 80 on the last line of the display causes a line feed. To avoid this problem, the TN3270 emulation program does not normally display a double-byte character that occupies positions 79 and 80 on the last line of the display. If your terminal can handle this correctly, you can set the environment variable `SNAP3270_LOWER_RIGHT` to override this. The program attempts to display a double-byte character in these positions if `SNAP3270_LOWER_RIGHT` is set to any non-null value, and the program does not attempt to display it if `SNAP3270_LOWER_RIGHT` is not set or is set to a null string.

Motif

The Motif TN3270 emulation program includes an additional column in the screen display (column 81) when you are using a double-byte host language. This column is normally left blank, with the data displayed only in the first 80 columns.

If a double-byte character occurs at the end of a line, it is displayed in positions 80 and 81, and position 1 of the following line (where the second byte of the character would normally be displayed) is left blank. The TN3270 emulation program and the host recognize the double-byte

character as occupying position 80 of one line and position 1 of the following line and will process it correctly. The `SNAP3270_SPLIT_CHAR` environment variable is not required and has no effect.

Double-byte characters can always be written to positions 79 and 80 of the last line. The `SNAP3270_LOWER_RIGHT` environment variable is not required and has no effect.

End of section

Input Method for Double-Byte Characters

The way you enter double-byte characters from your keyboard varies between different HP-UX systems. In addition, different methods are used for the Motif and character-based TN3270 emulation programs. Your TN3270 product supplier can provide you with information about how to enter these characters from your keyboard.

Japanese Language Character Sets

A host using the Japanese language can use one of two different host character sets (EBCDIC code pages): Code Page 930 includes double-byte Japanese characters and Katakana characters, and Code Page 931 includes double-byte Japanese characters and lowercase English characters. A particular host application can use only one of these character sets at a time.

You can specify which code page a 3270 session uses in the Customize Session dialog box (for more information, see “Customizing Display Sessions” and “Customizing Printer Sessions”). However, the choice of code page takes effect when you start the session. If you change the setting in the dialog box while the session is running, you must stop and restart the session in order to use the new code page.

- If you are using Code Page 930 (double-byte characters and Katakana characters), any lowercase English characters you enter are converted to uppercase English, because this host code page does not include lowercase English characters. The 3270 function `KANA KEY` controls the keyboard input and determines whether the characters you type are interpreted as Katakana or as English.

Double-Byte Characters

- If you are using Code Page 931 (double-byte characters and lowercase English characters), you can enter either lowercase or uppercase English characters. You cannot use the 3270 function KANA KEY and cannot enter Katakana characters.

For both code pages, the 3270 function KANA TOG controls the screen display and determines whether characters are displayed on the screen as Katakana or as lowercase English.

The KANA KEY and KANA TOG keys act independently. Toggling the screen display has no effect on the keyboard input, and toggling the keyboard input has no effect on the screen display. You will probably want to use both keys when entering characters using Code Page 930, to ensure that the screen display matches the type of characters you are entering.

To enter Katakana characters using Code Page 930, follow these steps:

- Step 1.** If the screen display is currently in lowercase English mode, press KANA TOG to toggle to Katakana display.
- Step 2.** Press KANA KEY to toggle the keyboard input to Katakana mode.
- Step 3.** Enter the required characters.
- Step 4.** Press KANA KEY again to toggle the keyboard input back to lowercase English mode.

Motif

The right-hand end of the extended status line displays one of the following messages to indicate whether the display, or the keyboard, or both, is in Katakana mode:

KANA DSP

The display is in Katakana mode.

KANA KBD

The keyboard is in Katakana mode.

KANA DSP KBD

Both display and keyboard are in Katakana mode.

No message

Both display and keyboard are in lowercase English mode.

End of section

Keystroke Recording and Replay

The TN3270 emulation program provides facilities for recording sequences of keystrokes used during 3270 emulation and for replaying these sequences. These facilities enable you to save sequences of keystrokes that you use regularly (for example, to start up a host application and log on or to enter a complex host command) and to use the recorded sequences instead of having to type all the keystrokes again.

Recorded sequences are identified by one of the PF keys PF1 to PF24. To identify a sequence to be recorded or replayed, press the RECORD or REPLAY key followed by the appropriate PF key. You can have up to 24 recorded sequences at a time. The PF keys retain their standard functions for all other uses; they are interpreted as identifiers for keystroke sequences only when they follow the RECORD or REPLAY keys.

Valid Keystrokes for Recorded Sequences

Any of the keys in the Program Function, Program Access, 3270 System, Edit, and Characters key groups can be included in a recorded key sequence. For more information about the key groups, see Appendix A, “Default Keyboard Mappings,” or the Customize Key Definitions dialog in the TN3270 emulation program's menu interface. It is the host 3270 keys that are recorded, not the local mappings of them on your terminal. Your recorded key sequences are not affected if you remap your keyboard.

Other keys, which perform local functions such as TEMPEXIT or REDRAW rather than host functions, are not recorded. In particular, if you switch to another 3270 session, to a TEMPEXIT shell, or to the 3270 control interface, recording is suspended and any subsequent keys are not recorded. Recording resumes when you switch back to the session on which you started it.

You can include a key that requests action from the host, such as ENTER or PA1, but it must be the last key in the sequence, because these keys transfer control to the host application. The TN3270 emulation program cannot accept further input until the host has responded; any keys following an action-request key in the sequence will be rejected.

Recording a Keystroke Sequence

Use the following steps to record a key sequence:

Step 1. Press the RECORD key (default keystroke **Esc S**).

The status line changes to display the message `RECORD PF KEY`, as shown in the following example. It may also display a list of numbers enclosed in parentheses; these are the numbers of the PF keys that already have key sequences associated with them.

```
RECORD PF KEY (1 4 11 12 15 21)
```

Step 2. To continue keystroke recording, press any PF key (PF1–PF24) to identify the sequence to record. The default keystrokes are **F1–F12** for PF1–PF12, and **Esc F1–Esc F12** for PF13–PF24. Alternatively, to abandon keystroke recording without specifying a PF key, press either **RECORD** (default keystroke **Esc S**) or **QUIT** (default keystroke **Ctrl + T**) to return to normal 3270 emulation.

If you selected a PF key, the status line returns to normal and displays `RECORD nn`, where `nn` is the PF key number you selected. If this PF key was already assigned to a keystroke sequence, a beep sounds to warn you (unless you turned off the “Enable emulator beep” option in the Customize Miscellaneous Options dialog box). To avoid overwriting the existing sequence, press **QUIT** (default keystroke **Ctrl + T**), which abandons keystroke recording and leaves the existing sequence unchanged.

Step 3. Type the keystrokes to record. You can use any of the keys in the Program Function, Program Access, 3270 System, Edit, and Characters key groups. Other keys, which perform local functions such as **TEMPEXIT** or **REDRAW** rather than host functions, can be entered but are not recorded. For more information, see “Valid Keystrokes for Recorded Sequences”.

The first keystroke in the sequence must not be a **DELETE** keystroke, because it is used to clear the recorded sequence. For more information, see “Clearing a Recorded Keystroke Sequence”. Also, if the first keystroke is the **RECORD** key, recording stops; the PF key is still marked as having a sequence assigned to it, but the sequence does not contain any keystrokes.

You can record up to 1500 keystrokes in one sequence. If you enter more than 1475 keystrokes, a warning beep sounds, and the `RECORD nn` message on the status line is replaced by `BUFFER LOW (mm)`. The number of keystrokes remaining is displayed as `mm` and is decremented as you continue to enter keystrokes.

- Step 4.** To complete recording when you have finished entering keystrokes, press the `RECORD` key again. The keystroke sequence is saved; you can replay it using the same PF key you used to record it (see “Replaying a Keystroke Sequence”).

To abandon recording and return to normal 3270 emulation, press `QUIT` (default keystroke `Ctrl + T`). The keystrokes you have entered are not recorded; any previous sequence assigned to this PF key is left unchanged.

Replaying a Keystroke Sequence

Use the following steps to replay a key sequence you have already recorded:

- Step 1.** Press the `REPLAY` key (default keystroke `Esc P`).

The status line changes to display the message `REPLAY PF KEY`, as shown in the following example. It also displays a list of numbers enclosed in brackets; these are the numbers of the PF keys that have key sequences associated with them.

```
REPLAY PF KEY (1 4 11 12 15 21)
```

- Step 2.** To continue keystroke replay, press any PF key (PF1–PF24) whose number is shown in the list, to identify the sequence to replay. The default keystrokes are `F1–F12` for PF1–PF12, and `Esc F1–Esc F12` for PF13–PF24.

To abandon keystroke replay and return to normal 3270 emulation, press `QUIT` (default keystroke `Ctrl + T`).

If you selected a valid PF key, the status line returns to normal; `REPLAY nn` is displayed, where `nn` is the PF key number you selected. The recorded keystroke sequence is replayed.

If you selected a PF key for which no sequence was recorded or a non-PF key, a warning beep sounds to indicate that the keystroke was rejected (unless you turned off the “Enable emulator beep” option in the Customize Miscellaneous Options dialog box), and the `REPLAY PF KEY` message remains displayed. Either select a valid PF key, or press `QUIT` (default keystroke `Ctrl + T`) to abandon replay.

Step 3. To stop the replay at any time before it has finished, press `QUIT` (default keystroke `Ctrl + T`); the remaining keystrokes are not replayed, and you return to normal 3270 emulation.

If you enter a keystroke that takes you out of the current 3270 session, such as `ACTIONS` or `FILE XFR` (which move to the 3270 control interface), `NEXTSESS` or `SESS n` (which move to another 3270 session), or `TEMPEXIT` (which moves to a new HP-UX shell), the replay is suspended while you are not in the 3270 session in which you started replay. When you return to the session, the replay resumes.

Other keystrokes typed during a replay sequence, such as edit keys or character keys, are queued up in the TN3270 emulation program’s type-ahead buffer and will take effect after the replay has finished.

Pausing within a Keystroke Sequence

Sometimes you may need to record a keystroke sequence that enables you to enter a combination of fixed and variable keystrokes. For example, you may want to record a host command in such a way that you can supply different parameters to the same command each time you use it, or you may want to force a recorded logon sequence to stop to enable you to type the password (instead of recording the password).

You can use the `PAUSE` key (default keystroke `Esc W`) while recording a keystroke sequence, to indicate where the sequence should stop for additional input data. When you replay the same keystroke sequence, replay stops at this point to enable you to type the new data before continuing.

Use the following steps to include a pause in a recorded key sequence:

Step 1. While recording the sequence, press the `PAUSE` key (default keystroke `Esc W`).

The message `RECORD PAUSED` replaces `RECORD nn` on the status line. Any keystrokes that you type at this point are not recorded; however, the keystrokes you have already recorded are retained.

You can use the RECORD key while recording is paused, to stop recording and store the keystrokes you have entered, or the QUIT key to abandon recording. Each of these keys works as if the PAUSE key had not been pressed.

- Step 2.** After typing any variable data, press the PAUSE key again. The status line display is restored; recording continues as usual.
- Step 3.** You can repeat Steps 1 and 2 later during recording if you need more than one pause in the sequence.
- Step 4.** Take the usual steps to save the recorded key sequence.
- Step 5.** When you replay the key sequence, the replay stops at the point where you entered the PAUSE key. The message `REPLAY PAUSED` replaces `REPLAY nn` on the status line.
- Step 6.** Type in the appropriate keystrokes.
- Step 7.** Press the REPLAY key (default keystroke `Esc P`) to continue. The sequence continues with the keystrokes you entered after the end of the pause during recording.

Alternatively, if you want to stop the replay at this point, press the QUIT key (default keystroke `Ctrl + T`).

Clearing a Recorded Keystroke Sequence

If you have recorded a key sequence that you no longer want to use, you can clear it so that the PF key no longer has a key sequence associated with it by using the following procedure:

- Step 1.** Press the RECORD key (default keystroke `Esc s`), and then the PF key that identifies the sequence you want to clear, as though you were recording a new sequence for this PF key.

A warning beep sounds (unless you turned off the “Enable emulator beep” option in the Customize Miscellaneous Options dialog box), to remind you that this PF key already has a key sequence assigned.
- Step 2.** To clear the keystroke sequence, press the DELETE key (default keystroke `Del`). The sequence is cleared; this PF key no longer appears in the list of PF keys associated with keystroke sequences.

Alternatively, to abandon clearing the sequence, press QUIT (default keystroke `Ctrl + T`). The recorded sequence is left unchanged, and you return to normal 3270 emulation.

Saving Keystroke Sequences

Chapter 6, “Customizing 3270 Emulation,” describes how to use style files to define the appearance and behavior of your 3270 emulation. You can customize the TN3270 emulation program as you use it, and the changes you make are immediately reflected in the program. However, if you want to keep the changes so that you can use the same customization next time you use the TN3270 emulation program, you must save them to a style file.

The TN3270 emulation program stores recorded keystroke sequences in the same way as it stores customization changes. Any keystroke sequences you record during 3270 emulation are available until you exit the TN3270 emulation program or until you open a different style file. In order to keep the sequences you have recorded so that you can use them later, you must save your 3270 customization to a style file. For more information, see Chapter 6, “Customizing 3270 Emulation.”

NOTE

If you save the style file while you are recording or replaying a key sequence (even if you have used the PAUSE key to pause recording), you cannot save the key sequence. The new key sequence (and any previous key sequence assigned to the same PF key) will be lost; the PF key will be left without a key sequence assigned. The same applies if you exit the TN3270 emulation program during recording or replay. To avoid losing keystroke sequences, always ensure that you have finished recording or replaying key sequences before saving the style file or exiting the program.

Multiple Sessions

If you are using more than one 3270 display session at a time, the key sequences you define are shared among all your sessions. Therefore, you cannot record a sequence for a particular PF key on one session, and at the same time record or replay a sequence identified by the same PF key on another session. For example, your PF key definitions are restricted as follows:

- If you are recording a sequence for PF10 on one session, you cannot change to another session and replay the sequence for PF10 before you have finished recording it.
- If you are replaying a sequence for PF10 on one session, you cannot record a new sequence for PF10 on another session until you have finished replaying it on the first session. However, you can *replay* a sequence identified by the same PF key on more than one session at a time.
- If you record a sequence for PF10 on one session, pressing PF10 replays the same key sequence, no matter what session you are using. If you move to another session and again record a sequence of keystrokes for PF10, you are overwriting the original sequence, and now PF10 contains only the new sequence on all sessions.

In any situation where you try to use a keystroke sequence that is currently in use, the message `ERROR - IN USE` is displayed on the status line. Press the RESET key (default keystroke `Esc R`) to continue.

Running HLLAPI Programs

During 3270 emulation, you can run programs that use the HLLAPI application program interface. These programs enable you to simulate the actions of a 3270 user by entering data and handling data received from the host. For example, you can use a HLLAPI program to log on to a 3270 host automatically.

To run a HLLAPI program, follow these steps:

- Step 1.** Start the TN3270 emulation program as explained in “Starting the TN3270 Emulation Program”. Either use a style file that includes a session with the session ID used by the HLLAPI program, or specify the session ID when starting the TN3270 emulation program.
- Step 2.** Check that the session with this session ID is active. For more information, see Chapter 4, “Controlling 3270 Emulation.”
- Step 3.** Switch to the 3270 session and log on to the host, unless the HLLAPI program performs these actions automatically.
- Step 4.** Move to another terminal, or use the TEMPEXIT keystroke to exit to another HP-UX shell, and start the HLLAPI program. Use the same HP-UX login ID to run the HLLAPI program as you used to start the TN3270 emulation program; the two programs must run with the same effective user ID.

Alternatively, if you are using a HLLAPI application that performs all necessary interaction with the host and does not require any operator input, you can start the TN3270 emulation program in the background (see “Running 3270 Emulation in the Background”) and then run the HLLAPI application. You still must use a 3270 session with a session ID that matches the session ID used by the HLLAPI application.

If the TN3270 configuration enables you to have multiple 3270 sessions active, you can access more than one session using the same HLLAPI program or different HLLAPI programs.

For details on writing HLLAPI programs, refer to the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide*.

Moving from the Menu Interface to TN3270 Emulation

To move to the current 3270 emulation session from a customization menu or dialog box, follow these steps:

- Step 1.** Return to the main screen by pressing **Esc** or choosing `<Done>` one or more times.
- Step 2.** Return to the current session by pressing **Esc** again or choosing the `Return to Emulator` option from the `File` menu.

Motif

After returning to the main screen (with no menus or dialog boxes displayed), return to the session you want to use by clicking on the appropriate session window with the mouse.

End of section

Exiting the TN3270 Emulation Program

You can exit the TN3270 emulation program in the following ways:

- From within an emulation session, by using the 3270 EXIT key (default keystroke `Ctrl + X`)
- From the main screen of the menu interface, by choosing `Exit` from the `File` menu

To exit the TN3270 emulation program and return to the HP-UX command prompt, follow these steps:

Step 1. Log off any active sessions. (Logging off is recommended but not always necessary. The TN3270 emulation program can terminate active sessions if you exit emulation without logging off. However, with some host applications, this can cause problems when you next try to log on.)

Step 2. Optionally, disable any active or enabled sessions.

Step 3. From the main screen, choose `Exit` from the `File` menu. From a TN3270 emulation session, press `EXIT` (default keystroke `Ctrl + X`).

If any sessions are active when you choose this option, the message box shown below is displayed.

Step 4. Choose `<OK>` to exit and deactivate any active sessions, or choose `<Cancel>` to resume emulation.

If you have not made any changes to your 3270 emulation style, or if you have already saved any changes to a style file, you exit the TN3270 emulation program. If you have made changes and have not saved them, the dialog box shown in Figure 3-6, “Message Box Notifying You of Active Sessions,” is displayed.

Step 5. In the dialog box shown in Figure 3-7, “Dialog Box Warning You to Save Changes,” choose `<Yes>` to save the style file and exit, `<No>` to exit without saving, or `<Cancel>` to continue using the program. For complete instructions for saving style file, see “Opening, Creating, and Saving Style Files”.

Figure 3-6 Message Box Notifying You of Active Sessions

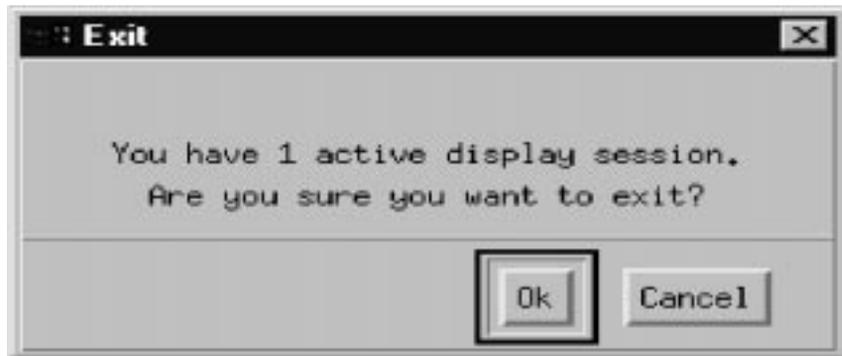
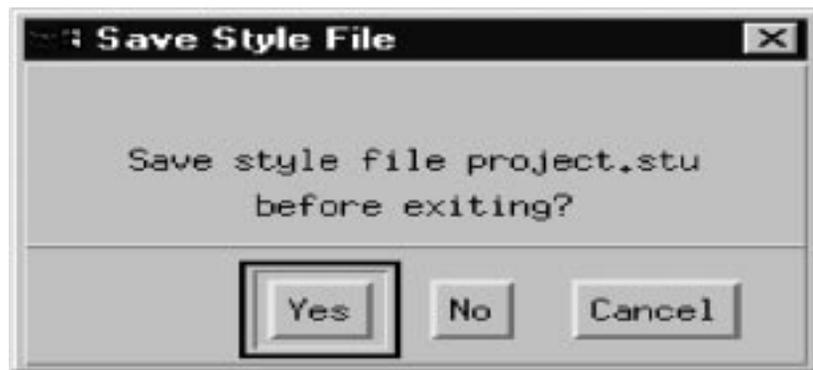


Figure 3-7 Dialog Box Warning You to Save Changes



You can also use the **F3** key from any dialog box in the TN3270 emulation program as a fast exit, which enables you to exit without having to return to the main screen first. The only dialog boxes in which you cannot use this key are the Redefining Key and Adding Key Definition dialog boxes.

You may encounter one or both of the confirmation messages shown in the previous two figures. The exit process continues when you respond to the message, unless you choose `<Cancel>` to abandon the exit.

If a condition is detected that would normally cause a pop-up message (Error, Warning, or Information), the exit process stops, and the appropriate pop-up message is displayed. Correct the error condition, or take any other action that may be necessary, and then press **F3** again to continue the exit.

Automating the TN3270 Emulation Start-Up

You can automate startup procedures to minimize your keystrokes by using the following procedure:

- Step 1.** Create a style file that is customized to make at least one session active when the TN3270 emulation program is started.
- Step 2.** Use HP-UX shell scripts to start the TN3270 emulation program and use these to specify the style file as a command-line parameter.

You can also automate startup to a particular host application by writing a HLLAPI application program to log on to the host and perform whatever initial steps are required, or by using the 3270 keystroke recording and replay facility to record your logon sequence. For information about writing HLLAPI programs, refer to the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide*; for information about keystroke recording and replay, see “Keystroke Recording and Replay”.

Where Do You Go from Here?

For detailed instructions for using TN3270 emulation, see Chapter 4, “Controlling 3270 Emulation.”

To begin transferring files, see Chapter 5, “Transferring Files.” It includes fast path instructions for getting started quickly, as well as more detailed instructions for transferring files.

To customize your terminal's appearance and function during TN3270 emulation and file transfer, see Chapter 6, “Customizing 3270 Emulation.”

If you encounter any problems, see Chapter 7, “Solving Problems.”

4 **Controlling 3270 Emulation**

Overview

This chapter explains how to control 3270 emulation using the `File` and `Control` menus. It contains the following information:

- Descriptions of the menus used to control TN3270 emulation
- Step-by-step instructions for controlling display sessions
- Step-by-step instructions for controlling printer sessions
- A brief description of how to transfer files between your HP-UX computer and a host
- Step-by-step instructions for viewing host response times
- Instructions for moving to TN3270 emulation from the menu interface and for moving between TN3270 sessions

You can work with the defaults provided by the program for the appearance and operation of your terminal, or you can change them. To customize these parameters before beginning emulation or file transfer, see Chapter 6, “Customizing 3270 Emulation.”

To accept the defaults and begin display or printer emulation, see “Fast Path to 3270 Terminal Emulation” or follow the more detailed instructions in this chapter. To begin file transfer without changing your appearance and performance parameters, see Chapter 5, “Transferring Files.”

Overview of the Main Screen Menus

After starting the TN3270 emulation program as described in Chapter 3, “Getting Started with 3270 Emulation,” you can access the main screen at any time. If you are logged on to a TN3270 session, press **ACTIONS** (default keystroke **Ctrl + U**) to display the main screen.

Motif

The **ACTIONS** keystroke is not required in the Motif interface. You can access the menus from the top of the session window at any time, provided that no menus or dialog boxes are displayed on any other 3270 session windows.

End of section

The main screen provides the following pull-down menus for controlling 3270 emulation:

- File
- Customize
- Control

This chapter covers the **Control** options. Chapter 6, “Customizing 3270 Emulation,” explains how to use the **Customize** menu options to change your terminal's appearance and performance during 3270 emulation and how to use the **File** menu to save the changes in style files for future use.

The Control Menu

Use the menu shown in Figure 4-1, “Control Menu,” to do the following:

- Control display and printer sessions
- Transfer files between your HP-UX computer and a host
- View host response times

Figure 4-1

Control Menu

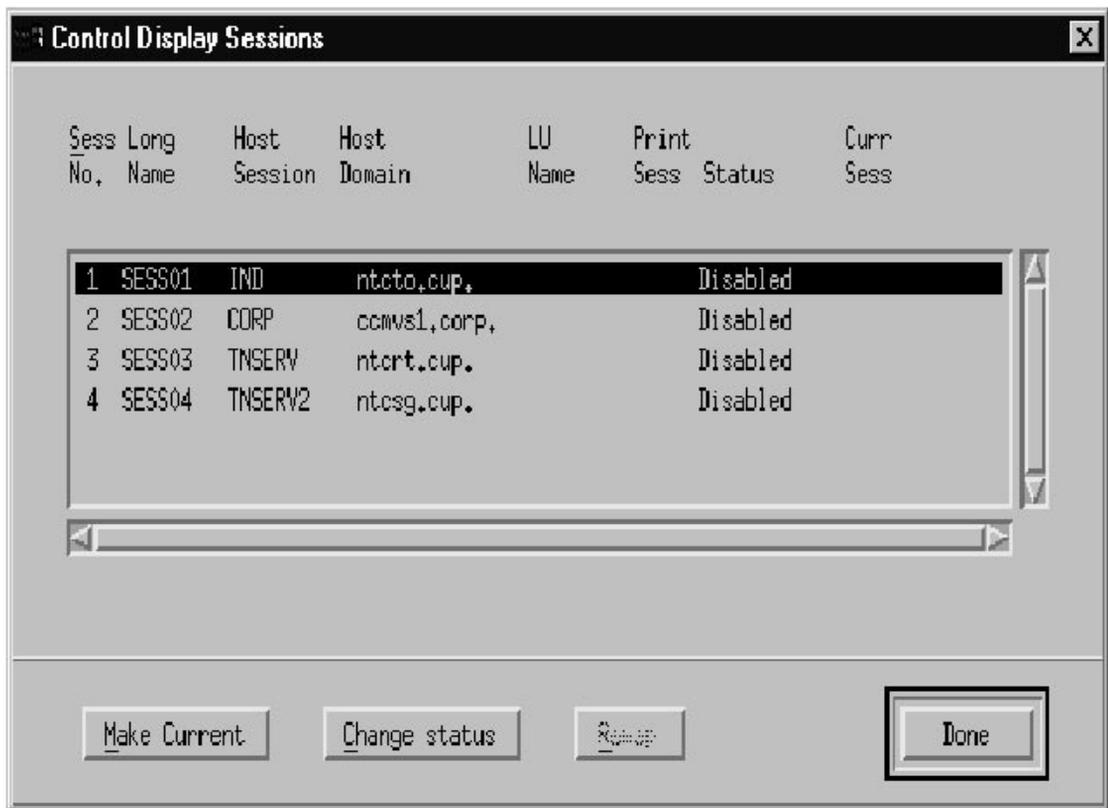


Controlling Display Sessions

To control display sessions, from the main screen, pull down the Control menu and select Display Sessions.

The dialog box shown in Figure 4-2, “Control Display Sessions Dialog Box,” is displayed.

Figure 4-2 Control Display Sessions Dialog Box



The list box lists all the display sessions configured for you; you may have up to ten sessions configured. The following list describes the information contained in the Control Display Sessions dialog box.

Session Number

The number assigned to the session.

Long Name	The unique identifier for each session. For instructions for changing this option, see “Customizing Display Sessions”.
Host Session	The name of the host session record in the configuration file.
Host Domain	<p>The symbolic domain name of the TCP/IP host used by the session. If the session is disabled, this field is blank. This field may be truncated on the right, if necessary.</p> <p>This name may correspond to a host computer that supports direct TN3270 access over TCP/IP, or to a communications product (such as the main SNAplus2 product) providing the TN server function on another computer. For a TN server, the name shown is the domain name or Internet address of the computer where the TN server software is running.</p> <p>If the System Administrator has given you permission to override the configured domain name, you can specify the -1 option on the command line to specify the name of the host to use for a given session. For more information about overriding the configured host domain name, see Appendix E, “Configuring TN3270 Hosts from the Command Line.”</p>
LU Name	Identifies the 3270 LU or LU pool that is used by the session. If the session is disabled, the name of the configured LU or LU pool is shown (or blank if no LU name is configured). If the session is active, the name shown is the name of the actual LU used by the session. If TN3270 protocols are being used, rather than TN3270E protocols, the name of the configured LU or LU pool is shown because the actual LU name is not available.
Print Session	The session number for the associated printer session. This field is blank if no printer session has been associated.

Status

Indicates whether the session is ready to communicate with the host or is already communicating. To conduct terminal emulation or to transfer files using the session, you must enable it. To enable a session, highlight it and choose `<Change Status>`. For more information, see “Enabling and Disabling a Printer Session”. The following list describes the possible Status messages.

Disabled

Session is not communicating with TCP/IP. To conduct terminal emulation or to transfer files using this session, you must enable it by highlighting it and choosing `<Change Status>`.

Enabled **nnn**

Session is initializing communications with TCP/IP. The variable **nnn** is the communications check code, displayed as `-+z_nnn` on the status line of the 3270 session. The code indicates why the TN3270 emulation program has not yet established communications with the host. Appendix B, “Status Line Information,” explains communications check codes.

The status can also appear as Enabled without a communications check code for a few seconds before it changes to SSCP.

SSCP

Session has established communications with the host, but is not yet communicating with a host application.

NVT

Session is communicating with the host TN3270 program using data messages in Network Virtual Terminal (NVT) format. This format uses no header and ends all ASCII lines with a carriage return and line feed (CR LF).

TN3270

Session is communicating with the host TN3270 program using data messages in TN3270 format. This format uses no header, LU type 2 data, and TELNET END-OF-RECORD (EOR).

TN3270E

Session is communicating with the host TN3270 program using data messages in TN3270E format. This format uses a 5-byte header, various data types, and TELNET END-OF-RECORD (EOR).

TN3287

Session is communicating with the host TN3270 program using data messages in TN3287 format. This format uses one zero-byte prefix for LU type 1 or LU type 3 data and TELNET END-OF-RECORD (EOR).

Host_application_name

Session is communicating with the named host application. This name is shown if it is available from the BIND image exchanged during session activation. If the BIND image is not available, either the value TN3270 or TN3270E is shown.

The Control Display Sessions dialog box provides the following push buttons:

<Make Current>

Choose this to make the highlighted session current, so that it is the session you go to first when you begin or resume 3270 emulation. You can make a session current only if it is enabled and if its screen model is one that your terminal can display. If you try to make a disabled session current, a message box warns you that you cannot. In that case, acknowledge the message by choosing <Exit Message> in the message box and then enable the session before making it current. For more information about message boxes, see “Message Boxes”. For more information about enabling sessions and current sessions, see “Enabling a Display Session” and “Making a Session Current”.

<Change Status>

Choose this to enable a disabled session or to disable an enabled or active session. An active session is one that is communicating with the host. In the Control Display Sessions dialog box, an active session's status appears as SSCP or TN3270. For more information, see “Enabling a Display Session”.

<Done>

Choose this when you have finished controlling display sessions.

Enabling a Display Session

You can conduct 3270 emulation only on an active session (an enabled session that is communicating with the host). To enable a session, use the following procedure:

Step 1. Select a disabled session in the list box.

Step 2. Choose <Change Status>.

Enabling a session causes the Status message to change from Disabled to Enabled. When the session is made the current session, the Status message will change to SSCP, NVT, TN3270, TN3270E, or TN3287, and when you have logged on to the host, to the name of the host application. The session is made the current session automatically if it is the first enabled session; otherwise, choose <Make Current>.

Motif

If this is the first session enabled, the 3270 emulation display appears in the current screen window. A new screen window is created for each additional session you enable.

End of section

Making a Session Current

The current session is the one you move to when you press **Esc** at the main screen (or choose **Return to Emulator** from the **File** menu). You must enable a session before making it current.

If a session uses a screen model that your terminal cannot display (for example, if your terminal has a 24 x 80 screen and the session uses Model 4 or 4E, which is 43 x 80), you can enable the session, but you cannot make it the current session because it cannot be displayed on the screen when you return to emulation. (You can still access the session using a HLLAPI application, even though you cannot display it on the screen.)

Motif

The Motif program does not restrict the screen models that can be displayed, so you can make any session the current session.

End of section

To make a session current, use the following procedure:

- Step 1.** Select an enabled session in the list box.
- Step 2.** Choose <Make Current>. Three asterisks (***) mark the session as current.

If you disable the current session, the next enabled display session (with a screen model that can be displayed) becomes the current session automatically. If no display sessions with suitable screen models are enabled, no session is current.

Disabling a Session

To disable an enabled session, highlight the session in the Control Display Sessions dialog box and choose <Change Status>. Status changes to Disabled.

If you try to disable an active display session, the dialog box shown in Figure 4-3, “Session Is in Use Dialog Box,” is displayed.

Figure 4-3 **Session Is in Use Dialog Box**



To respond to this dialog box, complete the following steps:

Step 1. Select `Deactivate Session` or `Leave Session Active`.

Step 2. Choose `<OK>`. The `Control Display Sessions` dialog box is displayed.

Step 3. Select `<Done>` to return to the main screen.

If you try to disable a display session with an active associated printer session, the `Session Is in Use` dialog box informs you that both sessions will be deactivated if you select `Deactivate Session`.

Controlling Printer Sessions

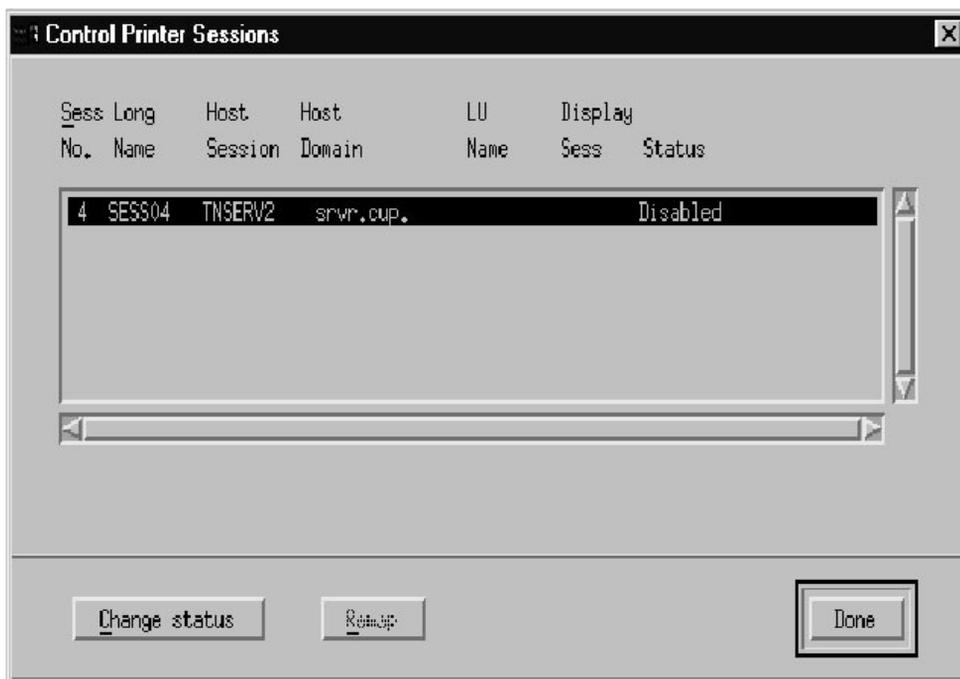
Printer sessions are used by host applications that can print to 3287 printers using LU types 1 or 3. You control printer sessions in much the same way as you control display sessions.

You do not need a printer session to print the contents of a 3270 display on a local printer. To do that, press PRINT (default keystroke **Ctrl + P**) during 3270 emulation.

If you are using a double-byte host language, the 3270 emulation program generates printer output to a file in a special format known as SNA Printer Output File (SPOF). The methods for printing this file on a standard HP-UX printer (such as **lp**) vary between different HP-UX systems. Your TN3270 product supplier can provide you with the appropriate instructions for your system.

To control printer sessions, choose `Printer Sessions` from the `Control` menu. The dialog box shown in Figure 4-4, “Control Printer Sessions Dialog Box,” is displayed.

Figure 4-4 Control Printer Sessions Dialog Box



The following list describes the information contained in the Control Printer Sessions dialog box.

Long Name

The unique identifier for each session. For instructions for changing this option, see “Customizing Printer Sessions”.

Host Session

The name of the host session record in the configuration file.

Host Domain

The host symbolic domain name of the TCP/IP host used by the session. If the session is disabled, this field is blank. This field may be truncated on the right, if necessary.

This name may correspond to a host computer that supports direct TN3270 access over TCP/IP, or to a communications product (such as the main SNAPplus2

product) providing the TN server function on another computer. For a TN server, the name shown is the domain name or Internet address of the computer where the TN server software is running.

If the System Administrator has given you permission to override the configured domain name, you can use the command line to specify the name of the host to use for a given session. For more information about overriding the configured host domain name, see Appendix E, “Configuring TN3270 Hosts from the Command Line.”

LU Name

Identifies the local LU assigned to the session. If the session is disabled, the name of the configured LU or LU pool is shown (or blank if no LU name is configured). If the session is active, the name shown is the name of the actual LU used by the session. If TN3270 protocols, rather than TN3270E protocols, are being used, the name of the configured LU or LU pool is shown because the actual LU name is not available.

Display Session

Session number for the associated display session. This field is blank if no display session has been associated.

Status

Indicates whether the session is communicating with the local node. To use the session for printer emulation, you must enable it. For more information, see “Enabling and Disabling a Printer Session”. The following list describes the printer session status messages.

Disabled

The session is not communicating with the local node. To enable this session, you must choose < Change Status>.

Enabled **nnn**

The session is communicating with the local node but not with a host control program. The variable **nnn** is the communications check code, displayed as `-+z_nnn` on the status line of the 3270 session. For explanations of these codes, see Appendix B, “Status Line

Information.” The code indicates why the TN3270 emulation program has not been able to contact the host control program.

The status may also appear as `Enabled` without a communications check code for a few seconds before it changes to `SSCP`.

`SSCP`

The session is activated and communicating with a host control program.

`NVT`

The session is communicating with the host TN3270 program using data messages in Network Virtual Terminal (NVT) format. This format uses no header and ends all ASCII lines with a carriage return and line feed (CR LF).

`TN3270`

The session is communicating with the host TN3270 program using data messages in TN3270 format. This format uses no header, LU type 2 data, and TELNET END-OF-RECORD (EOR).

`TN3270E`

The session is communicating with the host TN3270 program using data messages in TN3270E format. This format uses a 5-byte header, various data types, and TELNET END-OF-RECORD (EOR).

`TN3287`

Session is communicating with the host TN3270 program using data messages in TN3287 format. This format uses one zero-byte prefix for LU type 1 or LU type 3 data and TELNET END-OF-RECORD (EOR).

Host_application_name

The TN3270 emulation program is communicating with the named host application, but printing has not yet started. This name is shown if it is available from the BIND image exchanged during session activation. If the BIND image is not available, either the value `TN3270` or `TN3270E` is shown.

`Printing`

The TN3270 emulation program is communicating with a host application, and printing is in progress.

The Control Printer Sessions dialog box provides the following push buttons:

<Change Status>

Choose this to enable a disabled session or to disable an enabled session. (For more information, see “Enabling and Disabling a Printer Session”.)

<Done>

Choose this to exit the Control Printer Sessions dialog box.

Enabling and Disabling a Printer Session

To conduct printer emulation, you must enable a printer session. To toggle a session's status between enabled and disabled, use the following procedure:

Step 1. Select a printer session in the Control Printer Sessions dialog box.

Step 2. Choose <Change Status>.

Once enabled, a printer session is available to direct 3270 output either to a printer attached to your HP-UX computer or to a file on the HP-UX computer. No display function is associated with printer sessions.

For printer sessions associated with display sessions, the TN3270 emulation program automatically disables the printer session unless the display session is active. If you attempt to enable a printer session associated with a display session when the display session is not active, the TN3270 emulation program displays an error message that indicates that the printer session is not enabled.

Maximum Print Position for LU 1 and Unformatted LU 3 Printer Sessions

When the host sends data for a printer session, it can specify the maximum number of characters to be printed on a line (the 'maximum print position'). The default value is 132; the TN3270 emulation program accepts any value from the host up to 132, but will reject larger values.

If you need to accept larger values specified by the host, or to restrict the host to values below 132, you must set the environment variable `SNALU1MPP` before starting the TN3270 emulation program. This should be set to the maximum number of characters acceptable per line (the

limit is 250). The TN3270 emulation program will then accept any value from the host that is less than or equal to the value of this environment variable, but will reject larger values. Contact your System Administrator if you are not sure how to set the `SNALU1MPP` environment variable.

Transferring Files

The TN3270 emulation program provides the following ways to transfer files between a host and the HP-UX computer:

- Using the TN3270 emulation program's dialog boxes, under the `Control` menu.
- Entering file transfer commands at the command prompt while the TN3270 emulation program is running in one of the following ways:
 - On a separate terminal
 - In a separate terminal window on the Motif screen
 - In a shell accessed on the same terminal by using the `TEMPEXIT` function from the character-based program

Chapter 5, “Transferring Files,” explains how to use each method.

Viewing Host Response Times

The TN3270 emulation program tracks how long the host computer takes to respond to each request from you. These host response times are recorded for each display session. Response time is the time that elapses after you press ENTER to send a request to the host until the host responds.

To view a chart showing the distribution of response times for your display sessions, use the following procedure:

- Step 1.** From the `Control` menu, choose `Response Times`. (If this option is not selectable, your System Administrator has not configured the emulator to provide it. For information about configuring this option, see the *HP-UX TN3270 Administrators Guide*.)

The dialog box shown in Figure 4-5, “View Response Times Dialog Box,” is displayed.

- Step 2.** Highlight a session.
- Step 3.** Choose `<Zoom>`. The dialog box shown in Figure 4-6, “View Response Times for SESSnn Dialog Box,” is displayed. It shows a series of time intervals, measured in seconds, and the percentage of host responses that occurred within each interval.
- Step 4.** Choose `<Done>` to return to the View Response Times dialog box.
- Step 5.** View response times for another session, or choose `<Done>` to return to the main menu.

Figure 4-5 **View Response Times Dialog Box**

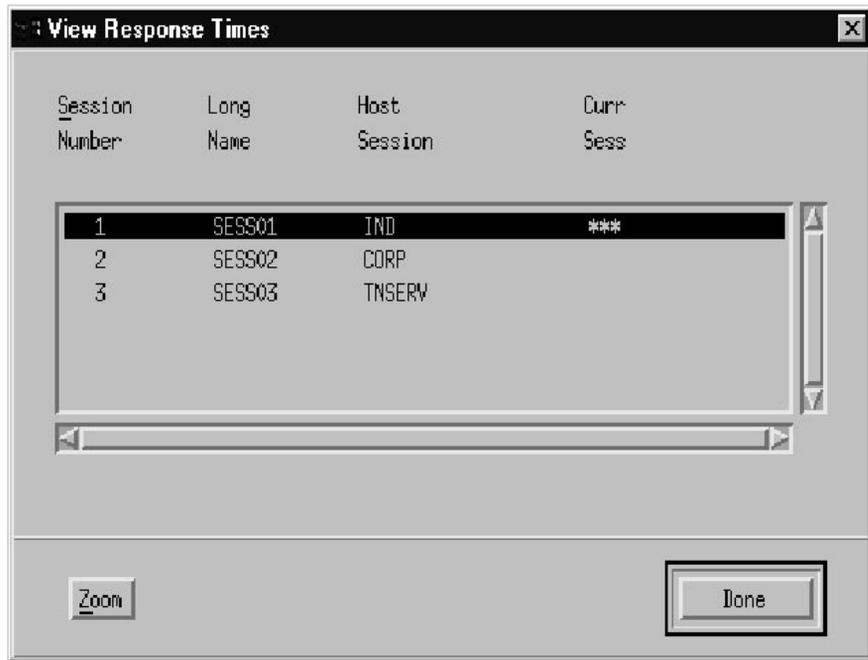
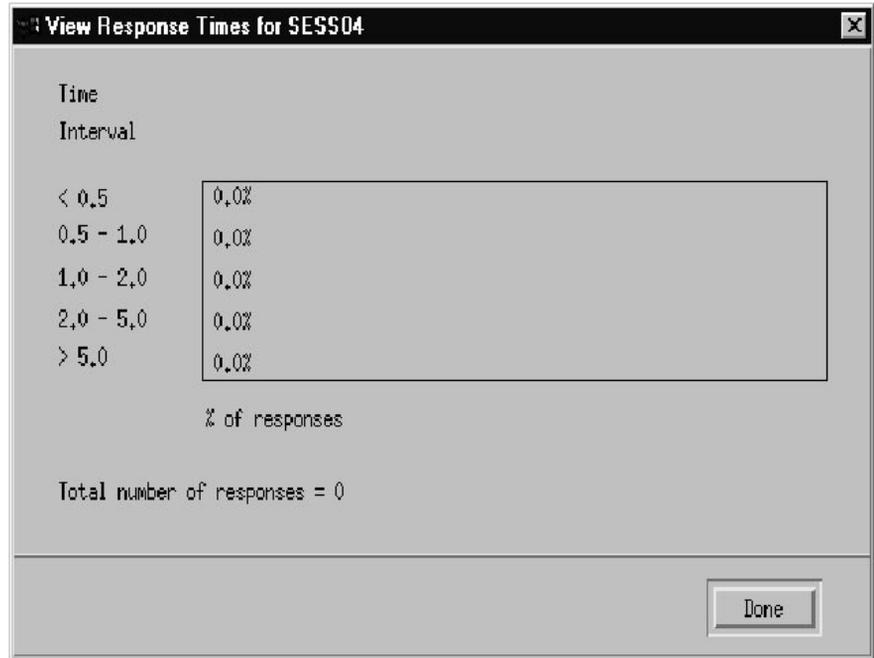


Figure 4-6 **View Response Times for SESSnn Dialog Box**



For more information about host response times, see the *HP-UX TN3270 Administrators Guide*.

Resuming or Beginning Terminal Emulation

To move from the main screen to 3270 emulation, press **Esc**, or select the **File** menu and choose **Return to Emulator**.

Moving between 3270 Sessions

To move to another 3270 display session, do one of the following:

- Press the **SESS n** session selection key that corresponds to the session you want (the default keystrokes are **Esc 1** to **Esc 0**). The session you choose must be a display session, not a printer session. If the session is not already enabled, it is enabled when you switch to it.
- Continue pressing **NEXTSESS** (default keystroke **Ctrl + V**), which moves to the next enabled display session, until you reach the session you want. This key moves only between enabled sessions; it does not enable a disabled session.

Motif

The **NEXTSESS** and **SESS n** keys are not supported in the Motif program. Instead, you can switch between sessions by switching between their display windows using the mouse.

End of section

Controlling 3270 Emulation
Moving between 3270 Sessions

5 **Transferring Files**

Overview

This chapter explains how to transfer files using the TN3270 emulation program in MVS/TSO, VM/CMS, and CICS host environments. It provides the following information:

- Fast path to file transfer
- General instructions for preparing to transfer files
- Instructions for using the menu options to transfer files
- Instructions for command-line file transfer

To begin file transfer without changing your emulation parameters, see “Fast Path to File Transfer”. To customize your emulation parameters before beginning file transfer, see Chapter 6, “Customizing 3270 Emulation.”

Fast Path to File Transfer

This fast path is designed for experienced users and provides a brief outline of how to transfer files. For more detailed instructions, read the rest of this chapter.

To begin file transfer between your HP-UX computer and host computers, follow these steps:

Step 1. Prepare for 3270 emulation by ensuring the following:

- You are configured as a TN3270 user. Contact your System Administrator, if necessary.
- The `LANG` environment variable is set to the correct host language for the host computer you will be using. For instructions, see “Preparing to Transfer Files”.
- The host and your HP-UX computer agree on the name of the file transfer program, normally `IND$FILE`, to be executed by the host. For instructions, see “Preparing to Transfer Files”.

Step 2. Start the TN3270 emulation program.

Type the following at the HP-UX command prompt:

```
tn3270[-s[/path/]stylefile] [-e | -b] [-h IDlist]
```

Motif

To start the Motif version of the program, type the following:

```
xtn3270[-s[/path/]stylefile] [-h IDlist]
```

End of section

For more information about the command-line options you can use, see “Starting the TN3270 Emulation Program”.

Step 3. Enable one or more 3270 display sessions by using the following procedure:

- a. From the main screen, pull down the `Control` menu and choose `Display Sessions`.

Transferring Files

Fast Path to File Transfer

- b.** Enable a session. To do so, highlight it in the Control Display Sessions dialog box and choose `<Change Status>`. Repeat this step until you have enabled all the sessions you need.
- c.** Make the first session you want to use current by highlighting it and choosing `<Make Current>`.
- d.** Choose `<Done>` to return to the main screen.
- e.** Press `Esc` to move to the 3270 session.
- f.** Log on to the host.
- g.** Press `ACTIONS` (default keystroke `Ctrl + U`) to return to the control interface.

Motif

Each enabled session appears as a new window on the Motif screen.

When you return to the main screen, the session window containing the current session is automatically displayed.

The `ACTIONS` keystroke is not required in the Motif program.

End of section

Step 4. Use the following steps to set parameters for file transfer:

- a.** To begin the File Transfer process, choose `File Transfer` from the `Control` menu.
- b.** In the File Transfer dialog box, highlight the session you want to use. (The session must be available, that is, you must be logged on to the host.)
- c.** Choose `<Host Parameters>`.
- d.** In the Options dialog box, specify the type of host environment you are communicating with (TSO, VM/CMS, or CICS), and set the appropriate parameters. (For definitions of the parameters, see “Setting Host File Transfer Parameters”.)
- e.** Choose `<OK>` to return to the File Transfer dialog box.

Step 5. Begin transferring files using the following steps:

- a.** Choose `<Start transfer>`. The Transfer File on `SESSnn` dialog box for your host environment is displayed.

- b.** Choose `Send` to send a file to the host or `Receive` to receive a file from the host.
- c.** Enter file names and any other parameters specific to the host type (see “Transferring Files Using the Menu Interface”).
- d.** Choose `<OK>` to start the transfer. You can transfer only one file at a time per session.
- e.** Choose `<OK>` to acknowledge the start of file transfer.

If you need to stop the file transfer, choose `Abort Transfer`, select the `<Abort File Transfer>` radio button to confirm terminating the file transfer process, and then choose `<OK>` .

To return to the main screen when you finish transferring files, choose `<Done>` from the File Transfer dialog box or press `Esc`. From a 3270 session, press `ACTIONS` (default keystroke `Ctrl + U`) to return to the main screen.

Motif

The `ACTIONS` keystroke is not required in the Motif program.

End of section

For complete instructions about conducting file transfer from the HP-UX command prompt, read the rest of this chapter. For a complete list of `TRANSnnn` file transfer messages, see Appendix C, “File Transfer Messages.”

Preparing to Transfer Files

To transfer files between your HP-UX computer and a host computer, you can use the menus and dialog boxes of the TN3270 emulation program, or you can enter commands at the HP-UX command prompt.

You can transfer files in one 3270 session while conducting 3270 emulation in another session.

Setting Environment Variables

Before transferring files, ensure that the `IND_FILE` and `LANG` environment variables are properly set.

When you transfer files between a host and your HP-UX computer, the host runs a file transfer program. This is normally one of two programs: `IND$FILE` for single-byte host languages, and `APVUFILE` for double-byte host languages. The TN3270 emulation program makes the choice between `IND$FILE` and `APVUFILE` automatically, based on the setting of the `LANG` environment variable.

If you need to use a different host file transfer program (your System Administrator or your TN3270 product supplier can tell you if this is the case), you must set the `IND_FILE` environment variable to the correct program name before running the emulation program.

Check that the `LANG` environment variable is set to the correct language for the host system you are using. Refer to your operating system documentation for the names of valid languages.

Setting Other Parameters

You may need to set the maximum structured field size (the size of the file transfer data buffer) for the session you are using for the file transfer. For more information, see “Customizing Display Sessions”.

For command-line file transfer, the session you are using must have a session ID. For more information about session IDs, see “Customizing Display Sessions”. You can specify the session ID as a command-line parameter when starting the program; for more information, see “Starting the TN3270 Emulation Program”.

Establishing Communications

Before starting to transfer files, you need to start the TN3270 emulation program, enable at least one session, and log on to the host. (For more information, see Chapter 3, “Getting Started with 3270 Emulation.”)

You can then determine whether you are ready to begin transferring files by accessing the File Transfer dialog box. Information in this box keeps you informed about the status of your file transfer activity.

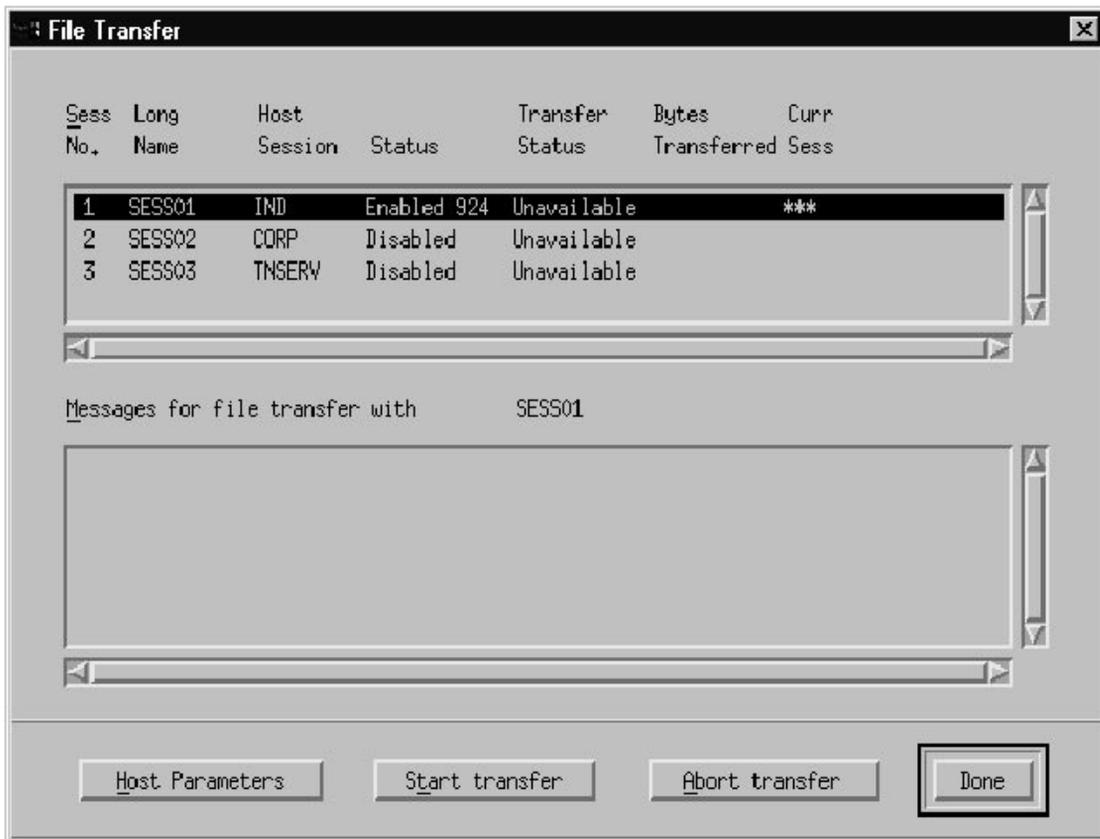
Accessing the File Transfer Dialog Box

You can access the File Transfer dialog box in one of the following ways:

- From the Control menu, choose File Transfer.
- From an active 3270 session press FILE XFR (default keystroke **Ctrl + F**).

The dialog box shown in Figure 5-1, “File Transfer Dialog Box,” is displayed.

Figure 5-1 File Transfer Dialog Box



For details of the information shown in this dialog box, see “Monitoring File Transfer Status”.

Available Sessions

If the Transfer Status for the session you want to use is Available, you are ready to set host parameters and begin transferring files. You can proceed with “Transferring Files Using the Menu Interface”.

Unavailable Sessions

If the Transfer Status for the session you want to use is Unavailable, check its session status in the File Transfer dialog box. Then do one of the following:

- If the session is disabled, use the `Control` menu to enable the session, and then log on to the host.
- If session Status is `Enabled nnn`, look up the three-digit communications check code `nnn` in Appendix B, “Status Line Information,” take any action that may be necessary, and then log on to the host.
- If session Status is `SSCP`, log on to the host.

To log on to the host, use the following procedure (Steps 1–4 are not required if the session you want to use is already the current session):

- Step 1.** From the File Transfer dialog box, press `Esc` to move to the main screen.
- Step 2.** From the `Control` menu, choose `Display Sessions`.
- Step 3.** Designate the session you want to use for file transfer as the current session by highlighting the session and choosing `<Make Current>`.
- Step 4.** Choose `<Done>` to return to the main screen.
- Step 5.** Press `Esc` to move to the current session.

As an alternative to Steps 1–5 above, return to the main screen, move to the session you want to use for file transfer, and use the following procedure:

- Step 1.** Follow the logon instructions from the host.
- Step 2.** Press `FILE XFR` (default keystroke `Ctrl + F`) to return to the File Transfer dialog box and confirm that the required session is now available.

When communications are established, you can begin transferring files. Follow the instructions in “Transferring Files Using the Menu Interface”.

Monitoring File Transfer Status

You can monitor file transfers by viewing the File Transfer dialog box, shown in Figure 5-1, “File Transfer Dialog Box.” Its contents are described in the following list:

Sess Number

The Session Number, from 1 to 10. All your display sessions are listed in this box.

Long Name

The unique identifier for each session. For instructions for changing this option, see “Customizing Display Sessions”.

Host Session

The name of the host session record in the configuration file.

Status

Indicates whether the session is ready to communicate with the host or is already communicating. To transfer files on a session, you must be logged on to the host. The following list explains the possible session status messages.

Disabled

The session is not communicating with TCP/IP. You must enable a session before using it to perform file transfer.

Enabled **nnn**

The session is initializing communications with TCP/IP. The variable **nnn** is the communications check code, displayed as `-+z_nnn` on the status line of the 3270 session. The code indicates why the TN3270 emulation program has not yet established communications with the host. Appendix B, “Status Line Information,” explains communications check codes.

The status may also appear as Enabled without a communications check code for a few seconds before it changes to SSCP.

SSCP

The session has established communications with the host, but is not yet communicating with a host application.

NVT

The session is communicating with the host TN3270 program using data messages in Network Virtual Terminal (NVT) format. This format uses no header and ends all ASCII lines with a carriage return and line feed (CR LF).

TN3270

The session is communicating with the host TN3270 program using data messages in TN3270 format. This format uses no header, LU type 2 data, and TELNET END-OF-RECORD (EOR).

TN3270E

The session is communicating with the host TN3270 program using data messages in TN3270E format. This format uses a 5-byte header, various data types, and TELNET END-OF-RECORD (EOR).

TN3287

The session is communicating with the host TN3270 program using data messages in TN3287 format. This format uses one zero-byte prefix for LU type 1 or LU type 3 data, and TELNET END-OF-RECORD (EOR).

Host_application_name

The TN3270 emulation program is communicating with the named host application. This name is shown if it is available from the BIND image exchanged during session activation. If the BIND image is not available, either the value TN3270 or TN3270E is shown.

Transfer status

Indicates availability of the session for file transfer and the progress of any transfer already started. The possible Transfer Status messages are as follows:

Available

No file transfer is in progress. The session is active and the host is ready to receive file transfer requests.

Unavailable

The session is not enabled; or communication with the host is established, but the user is not yet logged on to the host.

Receiving

Receive operation is in progress on this session. The number of bytes already transferred is shown.

Sending

Send operation is in progress on this session. The number of bytes already transferred is shown.

Busy

This indicates one of the following:

- A file transfer operation is ending; a list box displays any file transfer messages generated by the transfer. For more information, see Appendix C, “File Transfer Messages.”
- The session cannot be used for file transfer at the moment (for example, it is currently receiving data from the host).

Complete

A file transfer has been completed. The total number of bytes transferred is shown.

Bytes Transferred

The number in this field keeps you informed about file transfer progress by showing the number of characters transferred so far.

Messages for file transfer with SESS_{nn}

Messages related to the current (or most recent) file transfer on the highlighted session are shown in the Messages list box. If there are more messages than can be displayed at one time, you can scroll to display them. See Appendix C, “File Transfer Messages,” for explanations of the TN3270 emulation program messages and TRANS_{nnn} host messages that may appear in this list box. For host systems that use other messages (such as INW_{nnnn}), refer to your host documentation for explanations of the messages.

The File Transfer dialog box provides the following push buttons:

<Host Parameters>

Displays the Options for SESS_{nn} dialog box. In it you define host parameters such as the host environment, file size, and whether EBCDIC to ASCII translation is required. For information and instructions for completing this dialog box, see “Setting Host File Transfer Parameters”.

<Start transfer>

Displays the Transfer (MVS/TSO, VM/CMS, or CICS) File on SESS_{nn} dialog box. You must enter information about files and enter `Send` or `Receive` commands in this dialog box. For information and instructions for completing this dialog box, see “Transferring Files with an MVS/TSO Host”, “Transferring Files with a VM/CMS Host”, or “Transferring Files with a CICS Host”.

<Abort transfer>

Displays the Abort File Transfer on SESS_{nn} dialog box, in which you can terminate a file transfer in progress. For information and instructions for completing this dialog box, see “Stopping a File Transfer in Progress”.

<Done>

Leaves the File Transfer dialog box and returns to the main screen.

Transferring Files Using the Menu Interface

Setting host file transfer parameters provides step-by-step instructions for setting the host parameters so that you can transfer files using the menu interface, with notes on the differences for different host types. Following this is a section about starting the file transfer for each host type. For instructions for transferring files using the command line option, see “Transferring Files from the HP-UX Command Prompt”.

Setting Host File Transfer Parameters

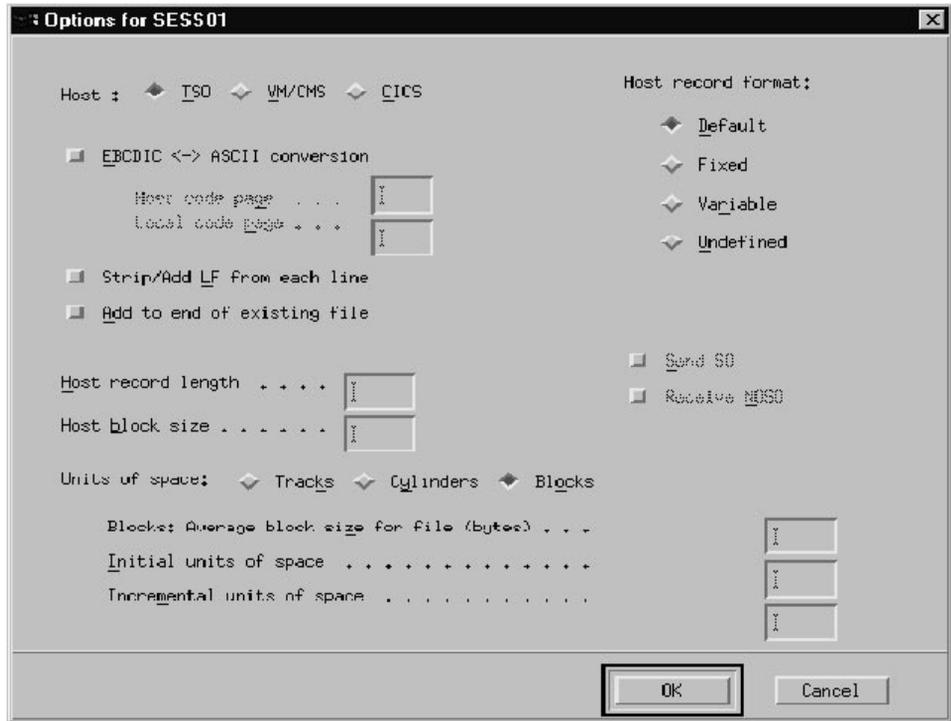
Before starting a file transfer, you must set host file transfer parameters, which identify your host's operating system and specify the size and format of files to be transferred. You can set these parameters independently for each 3270 session.

File transfer parameters are stored in your style file. If you wish to keep the changed parameters for future use, use the `File` menu to save the current style (for more information, see Chapter 6, “Customizing 3270 Emulation,”).

To set host file transfer parameters, use the following procedure:

- Step 1.** From the File Transfer dialog box, highlight the session you want to use.
- Step 2.** Choose `<Host Parameters>`. The dialog box in Figure 5-2, “The Options for SESSnn Dialog Box,” is displayed.
- Step 3.** Modify the file transfer parameters as appropriate.
- Step 4.** Choose `<OK>` to set parameters or `<Cancel>` to abandon any changes. Either action returns to the File Transfer dialog box.

Figure 5-2 **The Options for SESSnn Dialog Box**



Depending on the host type you choose as the first parameter in the Options for SESSnn dialog box, some of the remaining parameters in the dialog box may not be required. When you choose the host type, any parameters not applicable to this host type become not selectable.

In addition, some parameters are used only when sending files or only when receiving files, and some are used only for double-byte languages. These parameters can still be set in all cases, but are ignored when they do not apply.

Table 5-1, “File Transfer Parameters,” lists the parameters in the dialog box, and shows for which tasks and for which host types they are used. Check the table to find which parameters you need to set for a particular file transfer.

Table 5-1 **File Transfer Parameters**

Parameter	Host TSO	VM/CMS	CICS
Host	X	X	X
EBCDIC to ASCII conversion	X	X	X
Strip/Add LF from each line	X	X	X
Add to end of existing file	X	X	R
Host record format	S	S	-
Host record length	S	S	-
Host block size	S	-	-
Send SO	S	S	S
Receive NOSO	R	R	R
Units of space	S	-	-
BLOCKS: Average block size for file (bytes)	S	-	-
Initial units of space	S	-	-
Incremental units of space	S	-	-

Key:

X

This parameter is used for both *Send* and *Receive*.

-

This parameter is not used for this host type; the field is not selectable.

R

This parameter is used only for *Receive*. It is ignored for *Send*.

S

This parameter is used only for *Send*, when creating a new host file. It is ignored for *Receive*, or when replacing or appending to an existing host file.

The following list describes the fields in the Options for SESS_{nn} dialog box. To set host parameters, complete the fields that apply to your host type and transfer type, as indicated in Table 5-1, “File Transfer Parameters.”

Host

Specify your host type as TSO, VM/CMS, or CICS.

EBCDIC to ASCII conversion

Use this parameter only for text files. Mark the check box to convert files between EBCDIC format at the host and ASCII format at the HP-UX computer.

When you choose this parameter, default values appear for the code pages used for the translation (“Host code page” is the EBCDIC code page used by the host, and “Local code page” is the ASCII code page used by your HP-UX computer). The default values are the appropriate host and local code pages for the host language you are using (specified by the LANG environment variable). If you need to use a different host code page or local code page, specify the correct ones here (for more information, see “Supported Code Pages”).

Strip/Add LF from each line

Check this box to remove line-feed (LF) characters from any HP-UX text file sent to the host, or to add them to any HP-UX text file received from the host. Use this option for standard text files.

Add to end of existing file

Check this box if the transferred data (using Send or Receive) is to be added to the end of an existing target file. For a CICS host, this parameter is valid only for Receive, and is ignored for Send.

CAUTION

If you do not select this parameter, the target file is overwritten.

Host record format

Choose Default, Fixed, Variable, or Undefined to specify how individual records are structured. The value Undefined is valid only for TSO.

The `Default` option is equivalent to `Variable` if the **Strip/Add LF from each line** parameter is selected, and to `Fixed` if it is not selected. Choose `Default` unless you are sending data to an application that requires a specific record format.

Host record length

If you specified **Host record format** as `Fixed`, specify the length (in bytes) of the records to be created. If you specified **Host record format** as `Variable`, specify the maximum length (in bytes) of the records to be created. In both cases, the default is 80 bytes.

Host block size

A TSO host groups records into blocks; the default block size is the same as the record length (one record per block). If you need to block records into larger groups, specify the block size you want to use.

Send SO

Check this box to add shift out / shift in (SO/SI) characters to any HP-UX text file sent to the host, or leave it unchecked to transfer the file without adding these characters. If the file was previously received without using the **Receive NOSO** parameter, so that SO/SI characters were converted to right- and left-arrow symbols, this parameter converts the right- and left-arrow symbols back to SO/SI characters. This parameter is used only for files containing double-byte characters, and only when sending to the host with the **EBCDIC to ASCII conversion** parameter selected. It is ignored if the selected host language is a single-byte language, if **EBCDIC to ASCII conversion** is not selected, or when receiving a file from the host.

Receive NOSO

Check this box to remove shift out / shift in (SO/SI) characters from any HP-UX text file received from the host. If you leave it unchecked, any SO and SI characters in the file will be converted to right-arrow and left-arrow symbols (0x2D3E and 0x3C2D) respectively. If you then need to send the file back to

the host, you can use the **Send SO** parameter to convert the right- and left-arrow symbols back to SO/SI characters.

This parameter is used only for files containing double-byte characters, and only when receiving from the host with the **EBCDIC to ASCII conversion** parameter selected. It is ignored if the selected host language is a single-byte language, if **EBCDIC to ASCII conversion** is not selected, or when sending a file to the host.

Units of space

Specify one of the following units of measure used for record size in the file to be created:

Tracks

Tracks are used as the unit of measure used for record size.

Cylinders

Cylinders are used as the unit of measure for record size.

Blocks

Blocks are used as the unit of measure for record size. The size of the blocks is specified in the **Average block size for file** parameter.

Average block size for file (bytes)

If you specified `Blocks` as the **Units of space** parameter, specify the size of the blocks in bytes.

Initial units of space

Specify the amount of space, in `Blocks`, `Cylinders`, or `Tracks`, as specified in the **Units of space** parameter, that you want to allocate for the host data set.

Incremental units of space

Specify the number of additional units of space you want to allocate if the amount specified in the **Initial units of space** parameter is insufficient to hold the file.

When you have finished setting the parameters, choose `<OK>` to save the parameters, or choose `<Cancel>` or press `Esc` to abandon the changes and return to the previous settings.

You can also save any changes you have made to these parameters in your style file for future use, using the `File` menu. For more information, see Chapter 6, “Customizing 3270 Emulation.”

Once you have set file transfer parameters, you are ready to send or receive files. For more information, see “Transferring Files with an MVS/TSO Host”, “Transferring Files with a VM/CMS Host”, or “Transferring Files with a CICS Host”.

Supported Code Pages

Many code pages for ASCII and EBCDIC are supported by the TN3270 emulation program. You need to consider national language variants of ASCII or EBCDIC to determine which code page to use. Table 5-2, “ASCII Code Pages,” and Table 5-3, “EBCDIC Code Pages,” show the ASCII and EBCDIC codes pages supported by the TN3270 emulation program.

The default code page used for file transfers depends on the language you are using, which is defined by the `LANG` environment variable. Refer to your operating system documentation for information about the names of languages you can set.

Table 5-2 **ASCII Code Pages**

8859	Generalized ASCII code page defined by ISO 8859, used to support all language variants
ROM8	Generalized Roman 8 code page, used to support all language variants
HP15	Double-byte code page: Japanese, Korean, and Traditional Chinese
BIG5	Double-byte code page: Traditional Chinese (using a different encoding from HP15)
EUC	Double-byte code page: Japanese (Extended UNIX Code)

Table 5-3 **EBCDIC Code Pages**

037	U.S. English, Canadian Bilingual, Netherlands, Portuguese
273	German
277	Danish, Norwegian
278	Finnish, Swedish

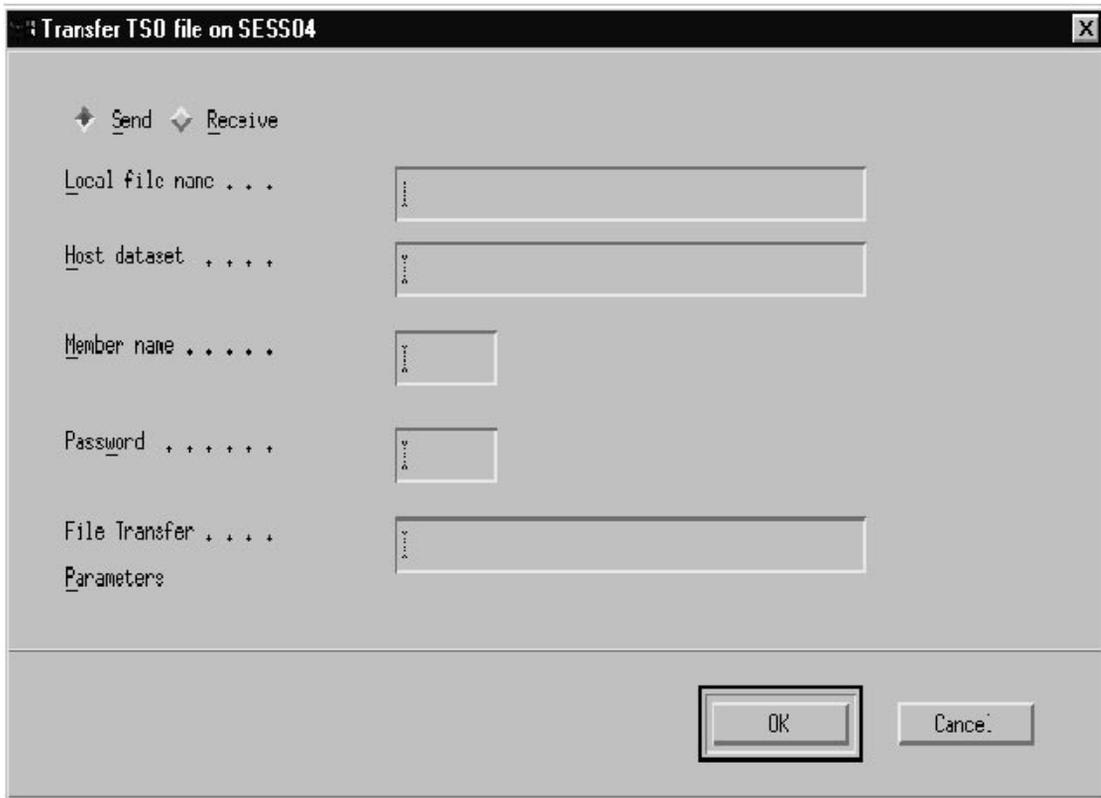
280	Italian
284	Spanish, Latin American
285	U.K. English
297	French
500	Belgian (New), Swiss French, Swiss German
871	Icelandic
930	Japanese, including Katakana characters
931	Japanese, including lowercase English characters
933	Korean (Hangul)
937	Traditional Chinese

Transferring Files with an MVS/TSO Host

To transfer files, highlight an active session in the File Transfer dialog box and choose `<Start transfer>`. (An error message is displayed if you try to start transfer on an inactive session.) The dialog box shown in Figure 5-3, “Transfer TSO File on SESSnn Dialog Box,” is displayed.

You cannot communicate with the host on this session, or transfer another file, while the file transfer is in progress; the Wait for File Transfer message `X () FT` is displayed on the status line until the transfer has finished. For more information about status line messages, see Appendix B, “Status Line Information.”

Figure 5-3 **Transfer TSO File on SESSnn Dialog Box**



Transfer TSO File on SESSnn Dialog Box Fields

The following list describes the fields of the Transfer TSO File on SESSnn dialog box. Before transferring files, enter the required information.

Send / Receive

Choose **Send** to transfer a named HP-UX file to the host, or **Receive** to transfer a host data set to the HP-UX computer.

Local file name

The name of the HP-UX file sent to the host or the HP-UX file receiving data from the host. This can be any valid HP-UX file name. If the file is not in the current directory, specify the full path (not a relative path).

Host dataset

The name of the data set to which a named HP-UX file is sent, or the data set from which data is received. If you supply a fully qualified name (that is, the first element of the name is a user ID), enclose the complete name in single quotation marks.

Member name

Optionally included name of the member within the host partitioned data set to which a named HP-UX file is sent, or from which data is received by the HP-UX file. If the host data set is not a partitioned data set, this parameter is not required.

If you are sending a file to a partitioned data set, the data set must already exist on the host. The file transfer program cannot create a new partitioned data set.

Password

Optionally included password used to access the host data set. If the host data set is not protected by a password, this parameter is not required.

File Transfer Parameters

If your host file transfer program requires any other parameters or options that are not included in the Options for SESS_{nn} dialog box, enter them here in the format expected by the host program. Your System Administrator or host support personnel can provide you with information about any additional parameters required here. If you do not need to use any additional parameters, leave this edit box blank.

The following push buttons are available on the Transfer TSO File on SESS_{nn} dialog box:

<OK>

Choose <OK> to begin sending or receiving.

<Cancel>

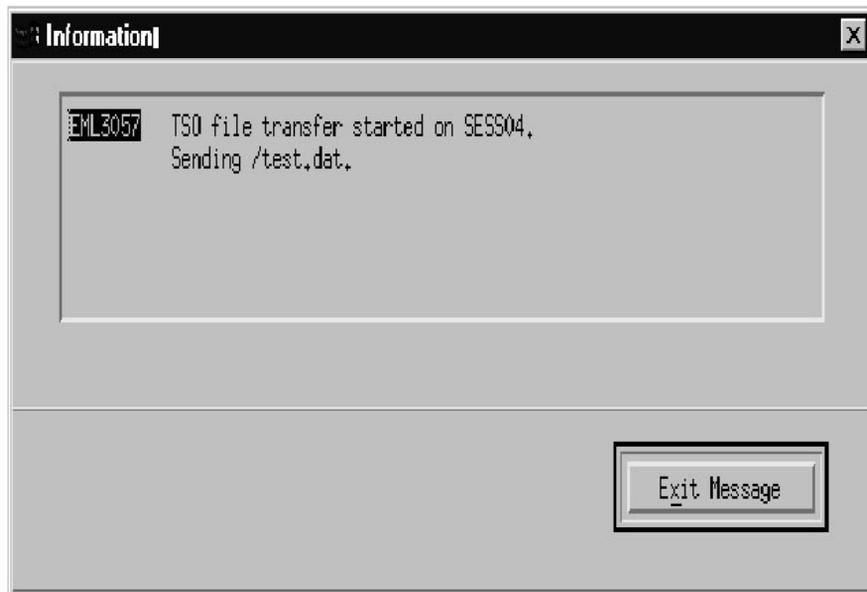
Choose <Cancel> to abandon the file transfer process.

Transferring the TSO File

To transfer the file, use the following procedure:

- Step 1.** Choose `Send` or `Receive`.
- Step 2.** Enter appropriate information in the fields of the `Transfer TSO File on SESSnn` dialog box.
- Step 3.** Choose `<OK>` to transfer the file. A dialog box, shown in Figure 5-4, “TSO File Transfer in Progress,” gives details on the file transfer in progress.
- Step 4.** Choose `<Exit Message>` to acknowledge this message.
- Step 5.** To monitor progress of the file transfer, view the `File Transfer` dialog box and read the information in the `Status`, `Transfer Status`, and `Messages for File Transfer with SESSnn` fields. To see an example of the `File Transfer` dialog box, see Figure 5-1, “File Transfer Dialog Box.”

Figure 5-4 TSO File Transfer in Progress

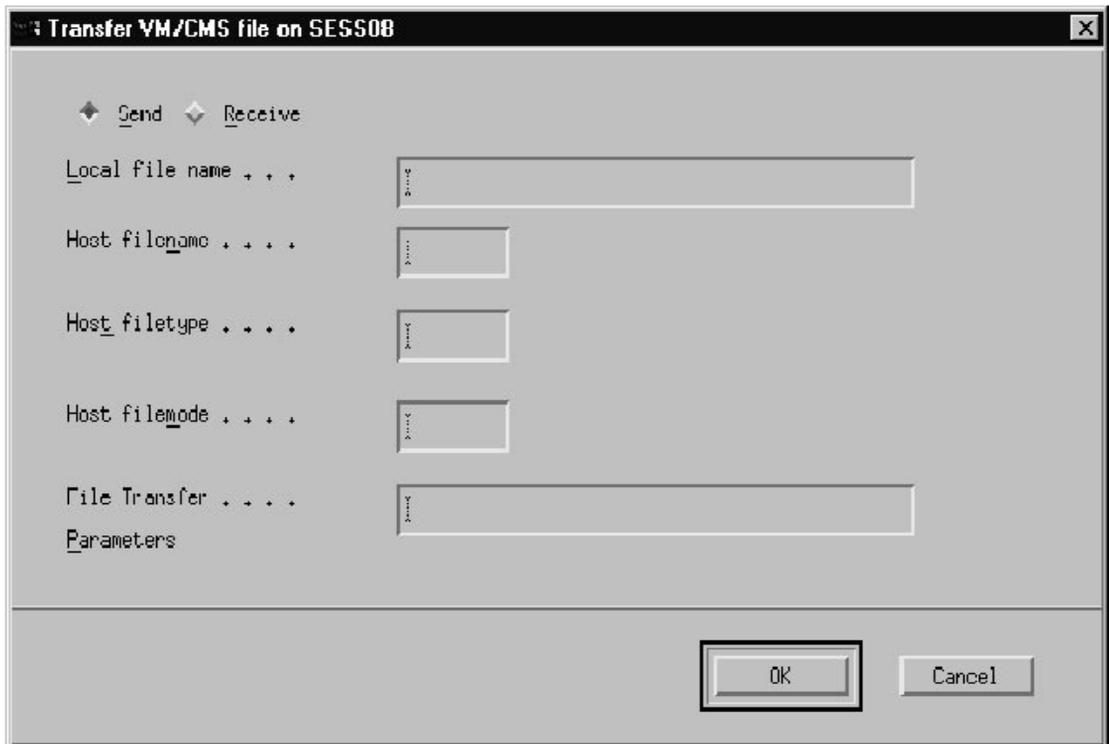


Transferring Files with a VM/CMS Host

To start a file transfer, highlight a session in the File Transfer dialog box and choose <Start transfer>. The dialog box shown in Figure 5-5, “Transfer VM/CMS on SESSnn Dialog Box,” is displayed.

You cannot communicate with the host on this session, or transfer another file, while the file transfer is in progress; the Wait for File Transfer message X () FT is displayed on the status line until the transfer has finished. For more information about status line messages, see Appendix B, “Status Line Information.”

Figure 5-5 **Transfer VM/CMS on SESSnn Dialog Box**



Transfer VM/CMS File on SESSnn Dialog Box Fields

The following list describes the fields of the Transfer VM/CMS File on SESSnn dialog box:

Send / Receive

Choose **Send** to transfer a named HP-UX file to the host, or **Receive** to transfer a host file to your HP-UX computer.

Local file name

The name of the HP-UX file sent to the host or the HP-UX file receiving data from the host. This may be any valid HP-UX file name. If the file is not in the current directory, specify the full path (not a relative path).

Host filename

The host file to which the data is sent, or the file received from the host.

Host filetype

The VM/CMS file type of the host file.

Host filemode

The VM/CMS file mode of the host file. This parameter is optional; if you do not specify it, the default A1 is used.

File Transfer Parameters

If your host file transfer program requires any other parameters or options that are not included in the Options for SESS_{nn} dialog box, enter them here in the format expected by the host program. Your System Administrator or host support personnel should provide you with information about any additional parameters required here. If you do not need to use any additional parameters, leave this edit box blank.

The following push buttons are available on the Transfer VM/CMS File on SESS_{nn} dialog box:

<OK>

Choose <OK> to begin sending or receiving.

<Cancel>

Choose <Cancel> to abandon the file transfer process.

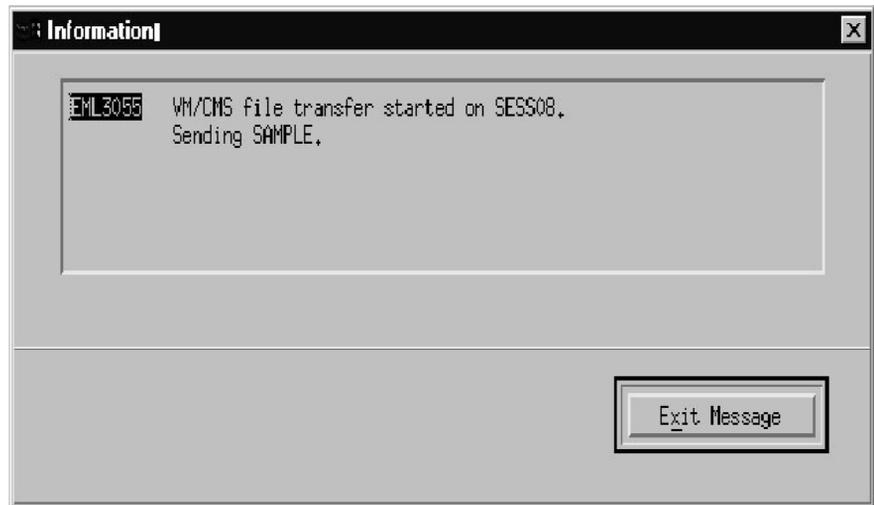
Transferring the VM/CMS File

To transfer the file, use the following procedure:

- Step 1.** Choose **Send** or **Receive**.

- Step 2.** Enter appropriate information in the fields of the Transfer VM/CMS File on SESSnn dialog box.
- Step 3.** Choose <OK> to transfer the file. A message appears as shown in the Figure 5-6, “VM/CMS File Transfer in Progress,” giving details on the file transfer.
- Step 4.** Choose <Exit Message> to acknowledge this message.
- Step 5.** To monitor progress of the file transfer, view the File Transfer dialog box and read the information in the Status, Transfer Status, and Messages for File Transfer with SESSnn fields. To see an example of the File Transfer dialog box, see Figure 5-1, “File Transfer Dialog Box.”

Figure 5-6 VM/CMS File Transfer in Progress

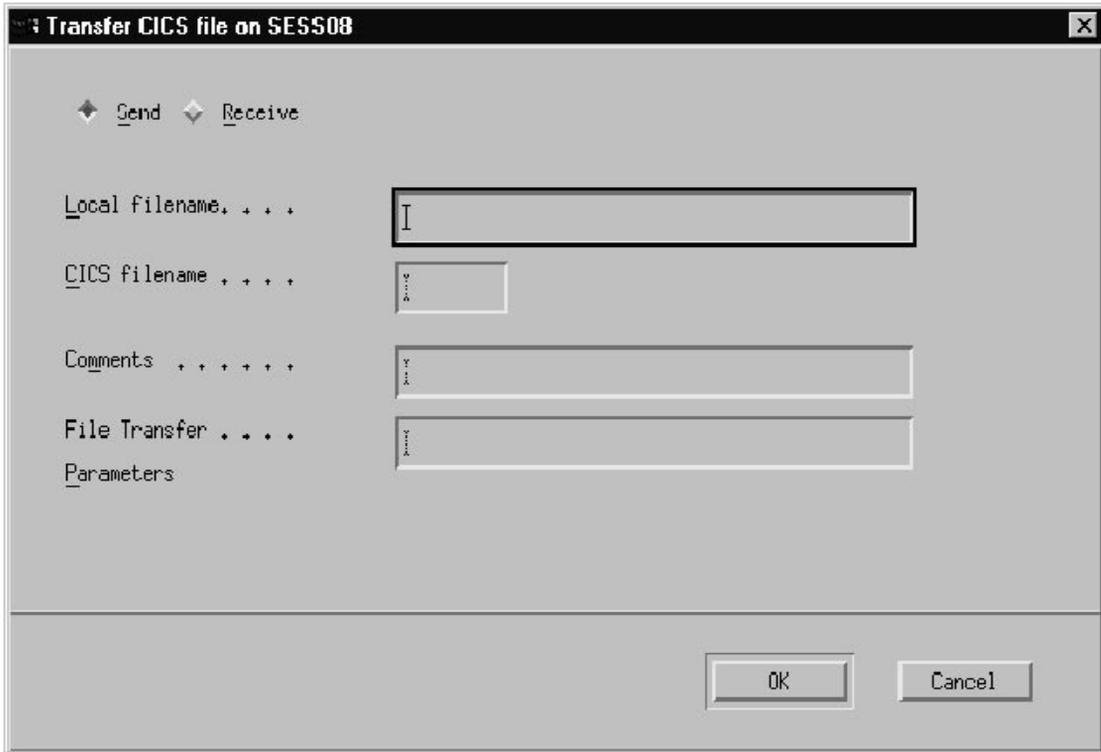


Transferring Files with a CICS Host

To start a file transfer, highlight a session in the File Transfer dialog box, and choose <Start transfer>. The dialog box shown in Figure 5-7, “Transfer CICS File on SESSnn Dialog Box,” is displayed.

You cannot communicate with the host on this session, or transfer another file, while the file transfer is in progress; the Wait for File Transfer message X () FT is displayed on the status line until the transfer has finished. For more information about status line messages, see Appendix B, “Status Line Information.”

Figure 5-7 **Transfer CICS File on SESSnn Dialog Box**



Transfer CICS File on SESSnn Dialog Box Fields

The following list describes the fields of the Transfer CICS File on SESSnn dialog box:

Send / Receive

Select **Send** to transfer a named HP-UX file to the host, or **Receive** to transfer a host file to the HP-UX computer.

Local filename

The name of the HP-UX file sent to the host or the HP-UX file receiving data from the host. This may be any valid HP-UX file name. If the file is not in the current directory, specify the full path (not a relative path).

CICS filename

This is the host file to which the data is sent, or the file received from the host.

Comments

You can add a comment when sending a file; it is written to the first record of the host file. Comments are not valid when receiving a file. The comment may be up to 80 characters, although some hosts may impose a lower limit.

File Transfer Parameters

If your host file transfer program requires any other parameters or options that are not included in the Options for SESS_{nn} dialog box, enter them here in the format expected by the host program. Your System Administrator or host support personnel should provide you with information about any additional parameters required here. If you do not need to use any additional parameters, leave this edit box blank.

The following push buttons are available on the Transfer CICS File on SESS_{nn} dialog box:

<OK>

Choose <OK> to begin sending or receiving.

<Cancel>

Choose <Cancel> to abandon the file transfer process.

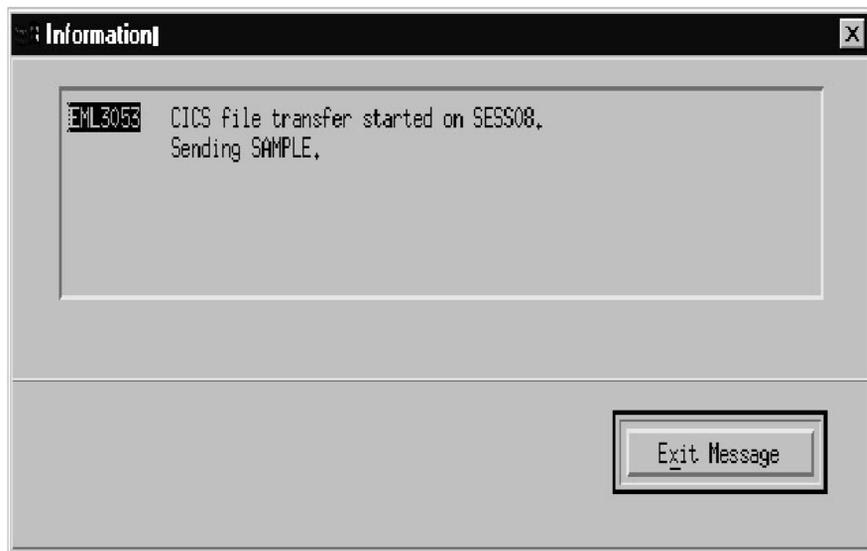
Transferring a CICS File

To transfer a file, use the following procedure:

- Step 1.** Choose Send or Receive.
- Step 2.** Enter appropriate information in the fields of the Transfer CICS File on SESS_{nn} dialog box.

- Step 3.** Choose <OK> to transfer the file. A message appears as shown in the Figure 5-8, “CICS File Transfer in Progress,” giving details on the file transfer.
- Step 4.** Choose <Exit Message> to acknowledge this message.
- Step 5.** To monitor progress of the file transfer, view the File Transfer dialog box and read the information in the Status, Transfer Status, and Messages for File Transfer with SESSnn fields. To see an example of the File Transfer dialog box, see Figure 5-1, “File Transfer Dialog Box.”

Figure 5-8 CICS File Transfer in Progress



Transferring Files from the HP-UX Command Prompt

You can use the following methods to transfer files between your HP-UX computer and the host by issuing commands from the HP-UX command prompt while a 3270 display session is running:

- Use the TEMPEXIT keystroke from the character-based TN3270 emulation program to run another shell on the same terminal.
- Move to another terminal window on the Motif display.
- Log on at another terminal on the same HP-UX computer on which you started the TN3270 emulation program, using the same user ID.

The display session used by the file transfer must have a session ID assigned to it, because the TN3270 emulation program uses the session ID to associate the file transfer with a particular display session. See “Customizing Display Sessions” for information about session IDs, or “Starting the TN3270 Emulation Program” for information about specifying session IDs on the command line when starting the program.

You can also issue file transfer commands with the TN3270 emulation program running in the background (for more information, see “Running 3270 Emulation in the Background”). However, you cannot perform the logon sequence to the host (since you cannot access the 3270 display directly when the TN3270 emulation program is running in the background). Therefore, you need a HLLAPI application that logs on to the host and then disconnects to leave the session available for other applications; you have to run this application after starting the TN3270 emulation program and before issuing the file transfer command. Refer to the sample program in the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide* for an example of this type of application. The sample program will probably require modification to suit your particular host's logon sequence.

Sample file transfer commands for each host type are shown in “Sample File Transfer Commands”.

File Transfer Command Syntax

Most of the parameters you enter with the command are common to all host environments, but some are specific to the host environment.

If you want information about the valid parameters and options for a particular host type while attempting to start a command-line file transfer process, type either `tnsend` or `tnreceive` followed by the host type (TSO, VM or CICS) to generate help messages that explain the syntax for the particular host type. Syntax errors in the file transfer command (for example, not enough parameters supplied or incorrect parentheses) also generate messages.

If your host file transfer program requires any other parameters or options that are not described in the following sections, you can add them to the file transfer command in the format expected by the host program; the emulator will not attempt to interpret them, but will pass them unchanged to the host program. Your System Administrator or host support personnel can provide you with information about any additional parameters required.

You must use a backslash (\) before characters such as parentheses and quotation marks to prevent interpretation by the HP-UX shell. This may also apply to some special characters in host file names (for example \$). The backslash is shown in the following syntaxes where it is required.

Syntax for MVS/TSO:

```
tnsend | tnreceive [-h 0xnn] HP-UXfilename [SESSIONID:] [\'] datasetname
[\(membername\)] [\'] [/password] [options...]
```

Syntax for VM/CMS:

```
tnsend | tnreceive [-h 0xnn] HP-UXfilename [SESSIONID:] hostfilename filetype
[filemode] [\ (options...)]
```

Syntax for CICS:

```
tnsend | tnreceive [-h 0xnn] HP-UXfilename [ SESSIONID:] hostfilename \ (options...
[\]comments]
```

File Transfer Command Parameters

The Transfer command `tnsend` or `tnreceive` is required, and specifies whether to send a file to the host or receive a file from the host. This command must be in lowercase letters.

The following list describes the parameters that make up the transfer command:

`-h 0xnn`

Optional. The session ID of an active 3270 display session, specified as a hexadecimal value. If the session's ID was specified using the **-h** option when starting the TN3270 emulation program and is not in the range A–Z, you must specify it using this option; if the session ID is in the range A–Z, you can either use **SESSIONID:** or this option. Only one of these parameters can be specified.

HP-UX filename

The name of the HP-UX file sent to the host or the HP-UX file receiving data from the host. Specify any valid HP-UX file name, with or without a path.

SESSIONID:

Optional. Either the one-character session ID (in the range A–Z) or the long name of an active 3270 display session. The ID must be in uppercase characters and followed by a colon. The session must have a session ID assigned, even if you use the long name. For information about assigning session names and IDs, see Chapter 6, “Customizing 3270 Emulation.”

If the session's ID was specified using the **-h** option when starting the TN3270 emulation program, you must specify it using the **-h** option in the command and not using **SESSIONID:**. Only one of these parameters can be specified.

If neither **SESSIONID:** nor **-h 0xnn** is specified, the program tries to use the session configured with the lowest hexadecimal value for its session ID.

datasetname

MVS/TSO only: required. The name of the host data set to which a named HP-UX file is sent, or the name of the host data set from which data is received. If you specify a fully qualified data set name (that is, the first element of the name is a user ID), enclose the data set name in single quotation marks; the **membername** parameter, if used, must also be inside the quotation marks.

\(membername\)

*MVS/TSO only: required if the host data set is a partitioned data set. This is the member within the data set to which a named HP-UX file is sent, or from which data is received by the HP-UX file. Enclose **membername** in parentheses.*

If you are sending a file to a partitioned data set, the data set must already exist on the host. The INDSFILE program cannot create a new partitioned data set.

/password

MVS/TSO only: optional. A password is required only if the data set is password-protected. The password must be preceded by a slash.

hostfilename

VM/CMS or CICS: required. The name of the host file to which the data is sent, or the name of the host file from which data is received.

filetype

VM/CMS only: required. This is the VM/CMS file type of the host file.

filemode

*VM/CMS only: optional. This is the VM/CMS file mode of the host file. If **filemode** is not specified, the default A1 is used.*

options or \ (options

“File Transfer Command Options”, explains the available options. A left parenthesis before the options is required for VM/CMS and CICS, but is not valid for MVS/TSO.

\)comments

CICS only: optional for sending files, not applicable for receiving files. Any comment information that you want to send to the host; it is written into the first record of the host file. If you include a comment, it must be preceded by a right parenthesis. The comment can be up to 80 characters, although some hosts may impose a lower limit.

File Transfer Command Options

This section explains the options you can use on the command line when transferring files. Italics in the option names indicate variable parameters for each option, which are explained in the description of each option. The options are not case-sensitive; you can use either uppercase or lowercase letters.

The valid options differ according to the host type and whether you are sending or receiving files. See Table 5-4, “File Transfer Command Options,” for details of when each option is allowed; the list following the table explains each option.

Table 5-4

File Transfer Command Options

Option	Host TSO	VM/CMS	CICS
APPEND	X	X	R
ASCII	X	X	X
BINARY	-	-	X
H\ <i>(nnn\)</i>	X	X	X
P\ <i>(nnn\)</i>	X	X	X
CRLF	X	X	X
NOCRLF	-	-	X
T\ <i>(nn\)</i>	X	X	X
LRECL <i>\(n\)</i>	S	S	-
RECFM <i>F V U</i>	S	S	-
BLKSIZE <i>\(n\)</i>	S	-	-
SPACE <i>\(q, i \)</i> unit	S	-	-
Q or /Q	X	X	X
SO	X	X	X
NOSO	X	X	X

Key:

X

This parameter is used for both `Send` and `Receive`.

-

This parameter is not used for this host type.

R

This parameter is used for `Receive` only. Do not use for `Send`.

S

This parameter is used for `Send` only, when creating a new host data set or host file. Do not use for `Receive` or when replacing or appending to an existing host data set or host file.

For CICS, you must specify either `ASCII` or `BINARY`, and either `CRLF` or `NOCRLF`.

If you are communicating with a Japanese host, the keyword `ASCII` is replaced by `JISCI`. See the note on this parameter below.

The following list describes each of the file transfer options:

APPEND

Causes the file being sent to be added to the end of the target HP-UX file, host file, or host data set. If the file does not exist, it is created.

ASCII

Causes the file to be translated between ASCII (on the HP-UX computer) and EBCDIC (on the host). Specify this option only for text files, not for binary files. For CICS, you must specify either this option or the `BINARY` option. See also `H(nnn)` and `P(nnn)` later in this list. If you are communicating with a Japanese host, specify the keyword `JISCI` instead of `ASCII`.

JISCI

Equivalent to the `ASCII` option but used with Japanese hosts (which recognize the keyword `JISCI` instead of `ASCII`). If you are communicating with a Japanese host, specify the `JISCI` option; otherwise, specify `ASCII`. The two options are used in exactly the same way.

BINARY

CICS only; you must specify either this option or the **ASCII** option (**JISCI** instead of **ASCII** if you are communicating with a Japanese host). This option causes the file to be transferred without translation. Specify this option only for binary files, not for text files.

H(**nnn**)

Specifies the host (EBCDIC) code page for translation. This option is valid only if the **ASCII** option (or **JISCI** for a Japanese host) is used.

If **ASCII** or **JISCI** is specified but **H**(**nnn**) is not specified, the default code page is the appropriate code page for the host language you are using (defined by the **LANG** environment variable). For more information about host language selection and code pages, see “Supported Code Pages”.

P(**nnn**)

Specifies the local (ASCII) code page the host should use to translate the file received from the HP-UX computer. **P**(**nnn**) is valid only if the **ASCII** option (or **JISCI** for a Japanese host) is used.

If **ASCII** or **JISCI** is specified but **P**(**nnn**) is not specified, the default code page is the appropriate code page for the host language you are using (defined by the **LANG** environment variable). For more information about host language selection and code pages, see “Supported Code Pages”.

CRLF

Causes the program to delete line-feed characters before sending the file to the host or to add line-feed characters when receiving the file from the host. **CRLF** is normally required for text files. For CICS, you must specify either this option or the **NO****CRLF** option.

NO**CRLF**

CICS only; you must specify either this option or the **CRLF** option. **NO****CRLF** is the converse of **CRLF**, and specifies that line-feed characters are not to be added or deleted.

T(**nn**)

Specifies the timeout period. File transfer is canceled if the host does not respond within this time. The variable **nn** represents the number of 30-second intervals, between 00 and 99, to wait; for example, `T(02)` equals 1 minute. A TRANS010 message is generated every 30 seconds until the timeout period has expired (but see the `Q` option later in this list). If `T(nn)` is not specified, or if `T(00)` is specified, the file transfer process waits indefinitely for the host to respond. No timeout messages are displayed.

BLKSIZE (n)

Specifies the block size of the data set (**n** is the block size in bytes). If **BLKSIZE n** is omitted, the default is **LRECL**.

LRECL \ (n\)

Specifies one of the following:

- The logical record length of the host file if the value of **RECFM** is **(F)**.
- The maximum length if the value of **RECFM** is **(V)**.

If **LRECL(n)** is not specified, the default is 80.

RECFM \ (F|V|U\)

Specifies the record format of the host file:

- **RECFM \ (F)** specifies a file containing fixed-length records.
- **RECFM \ (V)** specifies a file containing variable-length records.
- **RECFM \ (U)** specifies a data set containing records of undefined length (this is valid only for MVS/TSO, not for VM/CMS).

If **RECFM** is not specified, the default is **F**, unless the **CRLF** option is specified, in which case the default is **V**. This option is valid only when creating a new MVS/TSO host data set; do not use it when replacing or appending to an existing data set.

SPACE \ (q, i\) unit

Specifies the space to allocate for a new data set. You can specify the **unit** of space measurement as **TRACKS**, **CYLINDERS**, or **AVBLOCK \ (n\)** (blocks of size *n* bytes). The value **q** indicates the amount of space

initially allocated, in the units specified by **unit**, and **i** is the increment to add, in the units specified by **unit**, each time the space previously added is filled. The increment **i** is optional. If it is not specified, and the initial space **q** is filled before the transfer is completed, the file transfer fails. If **i** is supplied, the comma before it is required.

Q

Specifies quiet mode, which suppresses the display of all file transfer messages. The format `/Q` is also accepted for this option.

SO

Use this option to add shift out / shift in (SO/SI) characters to any HP-UX text file sent to the host, or to convert SO/SI characters to right- and left- arrow symbols (0x2D3E and 0x3C2D) in any HP-UX text file received from the host.

This option is used only for files containing double-byte characters, and only when the **ASCII** option (or **JISCI** for Japanese) is specified. It is ignored if **ASCII** (or **JISCI**) is not specified. Do not use this option if the selected host language is a single-byte language.

When sending a file to the host, **SO** is the default unless you specify the **NOSO** option; when receiving from the host, **NOSO** is the default unless you specify **SO**. Do not specify both options together.

NOSO

Use this option to send any HP-UX text file to the host without adding shift out / shift in (SO/SI) characters, or to remove SO/SI characters from any HP-UX text file received from the host.

This option is used only for files containing double-byte characters, and only when the **ASCII** option (or **JISCI** for Japanese) is specified. It is ignored if **ASCII** (or **JISCI**) is not specified. Do not use this option if the selected host language is a single-byte language.

When sending a file to the host, the **SO** option (see above) is the default unless you specify **NOSO**; when receiving from the host, **NOSO** is the default unless you specify **SO**. Do not specify both options together.

Sample File Transfer Commands

This section contains sample command lines for file transfer to and from the different host types. Note the use of the backslash (\) character in all these examples; it is used as an escape character to prevent interpretation of parentheses and quotation marks by the HP-UX shell.

MVS/TSO tnsend Command

```
tnsend filea.txt A: \'id.text.mytext\' ASCII H\ (277\ ) P\ ( 8859\ ) CRLF
```

This command sends the file `filea.txt` (from the current HP-UX directory) to the member `filea` of the MVS/TSO partitioned data set `id.text.mytext`, using the 3270 session with a session ID of A. The host translates the file from ASCII to EBCDIC, using the host code page 277 and the PC (ASCII) code page 8859, and removes line-feed characters.

VM/CMS tnreceive Command

```
tnreceive /usr/jim/file2.txt SESS02: mytext script \ (crlf ascii t\ (03\ )
```

This command receives the VM/CMS file `mytext` with file type `script` (the file mode is not specified, so it is assumed to be A1) and stores it in the directory `/usr/jim` as a file named `file2.txt`; the host translates the file from EBCDIC to ASCII and adds line-feed characters. The file transfer uses the display session with long name `SESS02`. The transfer will be canceled if the host fails to respond within 90 seconds (three 30-second timeout periods).

CICS tnsend Command

```
tnsend -h 0x01 FILE3 mytext \ (ASCII NOCRLF\ ) Sales Meeting Report
```

This command sends the file named `FILE3` in the current directory to the CICS file `mytext`. The file transfer uses the display session with session ID `0x01` (this session ID will have been specified on the command line when starting the TN3270 emulation program). The host translates the file from ASCII to EBCDIC, but does not remove line-feed characters. The comment “Sales Meeting Report” is written to the first record of the host file.

MVS/TSO tnreceive Command to a Japanese Host

```
tnreceive /usr/jim/filea.txt SESS2: text.mytext.filea \ (crlf jiscii so\ )
```

This command receives the MVS/TSO partitioned data set `text.mytext.filea` and stores it in the directory `/usr/jim` as a file named `filea.txt`. The host translates the file from EBCDIC to JISCI (Japanese ASCII), converts SO/SI characters to right- and left-arrow symbols (`0x2D3E` and `0x3C2D`), and adds line-feed characters. The file transfer uses the display session with long name `SESS2`.

Stopping a File Transfer in Progress

To stop a file transfer that is in progress, use the following procedure:

- Step 1.** Select the session on which the file transfer is in progress.
- Step 2.** Choose `Abort transfer`. The dialog box shown in the figure “Abort File Transfer on SESSnn Dialog Box,” is displayed.
- Step 3.** Do one of the following:
- Choose `Continue with file transfer` to cancel the termination and continue with the file transfer.
 - Choose `Abort file transfer` to terminate the transfer.

Figure 5-9

Abort File Transfer on SESSnn Dialog Box



Finishing File Transfer

When a file has been transferred successfully, a message appears in the File Transfer dialog box. The Transfer Status of the session used to transfer the file changes to `Complete`, and the size of the transferred file is listed under Bytes Transferred.

When you have finished transferring files, choose `<Done>` or press **Esc** to leave the File Transfer dialog box. You return to the main screen of the TN3270 emulation program if you moved to the File Transfer dialog box from the menu interface, or to the current 3270 emulation session if you moved to the File Transfer dialog box from 3270 emulation.

Transferring Files
Finishing File Transfer

6 **Customizing 3270 Emulation**

Overview

To customize the TN3270 emulation program before beginning emulation or file transfer, follow the instructions and information in this chapter, which include the following:

- Descriptions of the menus used for customization
- Step-by-step instructions for opening, creating, and saving style files
- Step-by-step instructions for customizing your 3270 emulation

To accept the system defaults and begin display or printer emulation, turn to “Fast Path to 3270 Terminal Emulation”, or follow the more detailed instructions in Chapter 4, “Controlling 3270 Emulation.” To begin file transfer without changing your customization, refer to Chapter 5, “Transferring Files.”

The System Administrator may have configured the TN3270 emulation program so that you can use only the default customization settings. In this case, all the menu options described in this chapter except `Key Definitions` and `Exit` are not selectable and you cannot use them. Refer to the *HP-UX TN3270 Administrators Guide* for information about changing the configuration file to enable you to customize the TN3270 emulation program.

What Is a Style File?

A style file contains parameters that control the appearance and behavior of your HP-UX terminal in 3270 emulation. These parameters determine session characteristics, display colors, key definitions, audible signals, and file transfer parameters. The style file also contains any keystroke sequences you have recorded (for more information, see “Keystroke Recording and Replay”).

The name of the open style file is displayed on the main screen of the TN3270 emulation program. If the style file that you want to change is not open, use the `File` menu to open it. Then use one or more of the options on the `Customize` menu to make changes.

Search Path for Style Files

When you start the TN3270 emulation program, you can specify a style file name to be used (using the `-s` option on the command line). The TN3270 emulation program uses the following order to find a style file:

1. If you use the `-s` option on the command line to specify a style file name, this style file is used. The style file name must be 1–8 characters followed by the extension `.stu`, but you do not need to include the extension on the command line. If you specify a directory path for the file name with a fully qualified path name (for example `/usr/user1/user1.stu`), the program tries to open the file with the name you specify in the given directory. If you specify a directory path for the file name with a relative path name (for example `styles/user1.stu`), the program tries to open the file with the name you specify in the given directory relative to your current directory. If you do not specify a path, the file is assumed to be in your current directory.

If it finds the file, the TN3270 product starts the TN3270 emulation program using this style file. If it does not find the file, the TN3270 product uses default settings as described in Item 3.

2. If you do not specify a style file name on the command line, the entry you stored in the configuration file defines the default style file name. The TN3270 emulation program then looks in the following places to find a file with this name:

What Is a Style File?

- a. In your home directory (the directory specified on the `HOME` environment variable)
- b. In the same directory as the configuration file, `/etc`, if the `HOME` environment variable is not set up or if the file does not exist in your home directory.

Because of this order of searching, you can load the default style file created by your System Administrator (which will be in the configuration file directory), modify this style to create your own version, and then save this version with the same file name in your own home directory, without overwriting the original default file. When you start the TN3270 emulation program again, it looks first in your home directory, so that the style file it uses as the default will be your own version rather than the system default. Thus, you do not need to specify the name every time you start the TN3270 emulation program. You can, of course, override this default by specifying another file name on the command line when you start the program.

3. If neither the file you specify nor the default style file can be found, the TN3270 emulation program uses its own built-in default settings. An error message is displayed when the program starts, to warn you that the style file specified could not be found; choose `<Exit Message>` to acknowledge this message.

Permissions to Use and Modify Style Files

Your System Administrator can configure the TN3270 emulation program to restrict your use of style files in one of the following ways:

- You may be restricted to using the default style file specified in the configuration. In this case, the TN3270 emulation program uses the style file specified in the configuration (from the configuration file directory), or its own built-in default settings. It does not search your home directory for the style file. A warning message is displayed if you specify a style file on the command line, informing you that this file will not be used because you do not have permission to use it.
- You may be permitted to specify a style file on the command line when you start the TN3270 emulation program, but not to modify style files. In this case, check with your System Administrator to determine the style file name to use.

In either of these cases, most options on the `File` and `Customize` menus are not selectable, because you cannot open or save style files or modify customization settings. You can, however, use the `Key Definitions` menu option to check your key mappings, or the `Exit` menu option to exit the program. Apart from these options, the remaining functions described in this chapter are not available.

Menus Used for Customizing 3270 Emulation

The `File` and `Customize` menus, available as pull-down menus from the main screen menu, are used for customizing 3270 emulation. If you are logged on to a 3270 session, press `ACTIONS` (default keystroke `Ctrl + U`) to display the main screen. For more information about using the main screen menu, see Chapter 3, “Getting Started with 3270 Emulation.”

Motif

The `ACTIONS` keystroke is not required in the Motif program. You can access the menus from the top of the session window at any time, provided no menus or dialog boxes are displayed on any other 3270 session windows.

End of section

File Menu

Use the `File` menu to open a style file and apply its customization parameters to 3270 emulation. The style file's parameters control the appearance and behavior of your terminal during 3270 emulation. Also, if you use the `Customize` menu to change your terminal's appearance and behavior, use the `File` menu to save your changes to a new or existing style file, to exit the program, or to move to a 3270 emulation session.

Customize Menu

Use the `Customize` menu to change your 3270 emulation options.

The following changes take effect right away:

- Session characteristics
- Color mapping
- Keyboard mapping
- Use of an audible signal

The following changes take effect only after you exit and restart the 3270 emulation program:

- Assigning a session ID (short name) to a session

- Designating a session to be active when you start the 3270 emulation program
- Specifying how the status line is displayed when you start the program

For any customization to become permanent, you must save it in a style file.

Opening, Creating, and Saving Style Files

From the main screen, you can use the menu shown in Figure 6-1, “File Menu,” to open, create, and save style files.

Figure 6-1 File Menu



Opening a Style File

You can open any style file and apply its customization parameters to 3270 emulation. If you do not choose a style file, the 3270 emulation program implements its default settings.

Follow these steps to open a style file:

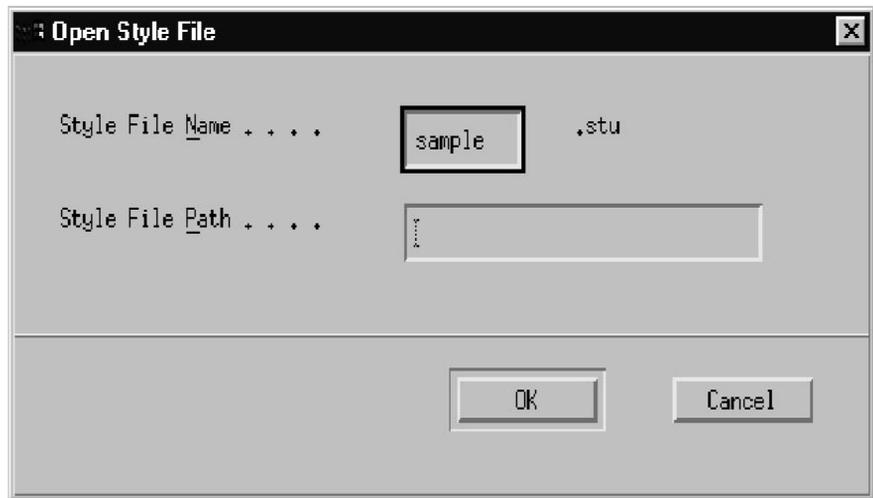
- Step 1.** Disable any enabled or active sessions. You can open a style file only when no sessions are enabled. For instructions for disabling sessions, see Chapter 4, “Controlling 3270 Emulation.”
- Step 2.** Save any changes to the current style file if you already have a style file open and want to keep the changes. For instructions for saving customization changes to a style file, see “Saving a Style File”.
- Step 3.** From the File menu, choose Open. The dialog box shown in Figure 6-2, “Open Style File Dialog Box,” is displayed.

Step 4. In the Open Style File dialog box, enter the name of the style file you want to open. Do not include the `.stu` extension; it is added automatically. If the file is not in the current directory, also enter the correct directory path.

If the program cannot find the style file you specified, an error message is displayed. Choose `<Exit Message>` to acknowledge the message, verify the name of your style file, and reenter it.

Step 5. Choose `<OK>` to open the specified file.

Figure 6-2 **Open Style File Dialog Box**



Session IDs specified in a style file take effect only if the 3270 emulation program is started using that style file (either by default or by specifying it on the command line). If you open a style file from the `File` menu, and the file includes session IDs that are not in the style file that was used when starting the TN3270 emulation program, the new session IDs do not take effect immediately. A message is displayed, reminding you to stop the TN3270 emulation program and restart it using this style file if you need to use the session IDs. (For more information about session IDs, see “Customizing Display Sessions”.)

If you change the current style file and attempt to open another file before you save the changes, the dialog box shown in Figure 6-3, “Save Style File Dialog Box,” is displayed.

Figure 6-3 Save Style File Dialog Box



You have the following options:

- To save the changes and then open the new file, choose <Yes>.
- To open the new file without saving the changes, choose <No>.
- To continue using the current style file, choose <Cancel>.

Creating a New Style File

Follow these steps to create a style file:

- Step 1.** From the `File` menu, choose `New`. The message `Style file : new file` is displayed on the main screen. (You will specify a name for the file when you save it.)
- Step 2.** Use the menu options under the `Customize` menu to customize your 3270 emulation, and then follow the directions under “Saving a Style File”, to save the options you set in a style file. For instructions for customizing 3270 emulation options, see “Setting Customization Options”.

If you change the current style file and then attempt to create a style file before you save the changes, the Save Style File dialog box is displayed, as in Figure 6-3, “Save Style File Dialog Box.” You have the same options to save the changes, abandon the changes, or continue with the current style file.

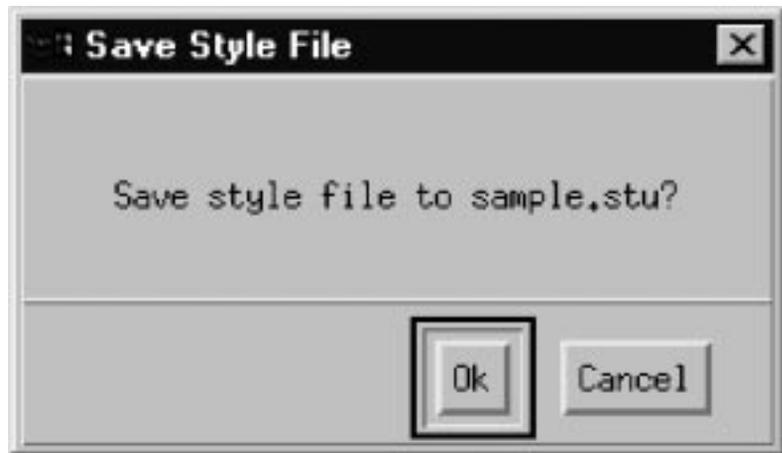
In the character-based program, you may also see a message indicating that some of your sessions are configured to use a screen model that your terminal cannot support (for example, if a session is configured for Model 3, which uses a 32 x 80 screen, and your terminal has a 24 x 80 screen). You may be able to change the screen model if your System Administrator has permitted this; see “Customizing Display Sessions”. Otherwise, you can use the sessions for file transfer or HLLAPI applications, but you cannot use them for 3270 emulation.

Saving a Style File

Follow these steps to save any changes you make to the current style file:

- Step 1.** From the `File` menu, choose `Save`. The message box shown in Figure 6-4, “Save Style File Message Box,” is displayed.
- Step 2.** Choose `<OK>` to save the changes, or `<Cancel>` to discard the command.

Figure 6-4 Save Style File Message Box



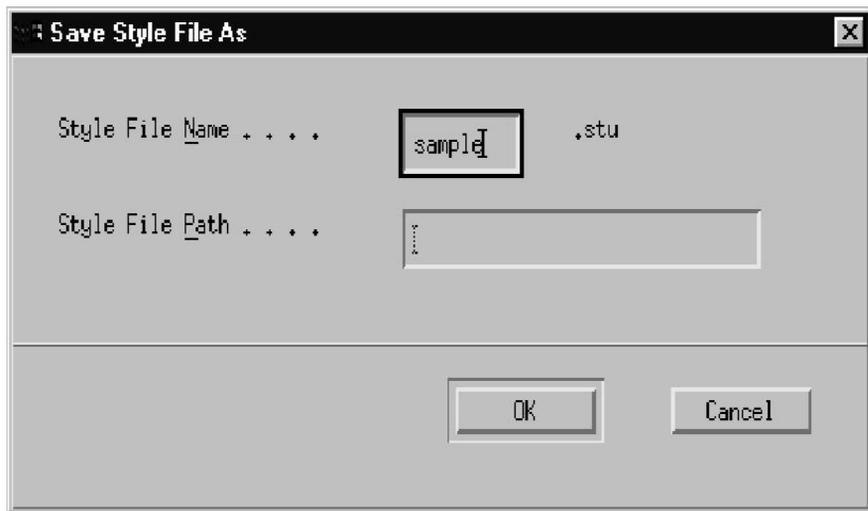
If you choose `Save` to save changes made after you have chosen `New` from the `File` menu, the Save Style File As dialog box (see the figure “Save Style File As Dialog Box”) is displayed.

Saving a Style File under a Different Name

Follow these steps to save the current style file under a different name, or to save a new style:

- Step 1.** From the `File` menu, choose `Save as`. If you are saving a new style, choose either `Save` or `Save as`. The dialog box shown in below is displayed.
- Step 2.** Type a style file name. The program adds the extension `.stu`; you do not need to type this.
- Step 3.** If you are saving the file to a directory other than the current directory, type the name of that directory.
- Step 4.** Choose `<OK>` to save the file, or `<Cancel>` to discard the command. The new file name replaces the old name on the `Style file:` line near the top of the main screen.

Figure 6-5 Save Style File As Dialog Box



Setting Customization Options

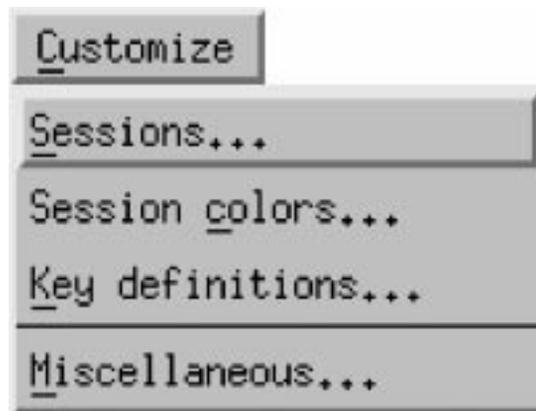
You can affect the way your terminal appears and functions during 3270 emulation by choosing parameters from the `Customize` menu and then modifying them. This menu provides options for customizing the following:

- Sessions (both display and printer)
- Display colors
- Assignment of functions to keys
- Miscellaneous options (audible signals, mono or color display, and status line display mode)

The menu is shown in Figure 6-6, “Customize Menu.”

Figure 6-6

Customize Menu



The first time you customize the TN3270 emulation program, review each parameter to determine whether you need to change it. You may need to change from the default values and assignments to accommodate your setup and circumstances.

If your HP-UX computer and your terminal support color, and you want to use it during 3270 emulation, set the `Use Color` option in the `Miscellaneous` dialog box before customizing colors. The other customization options can be set in any order.

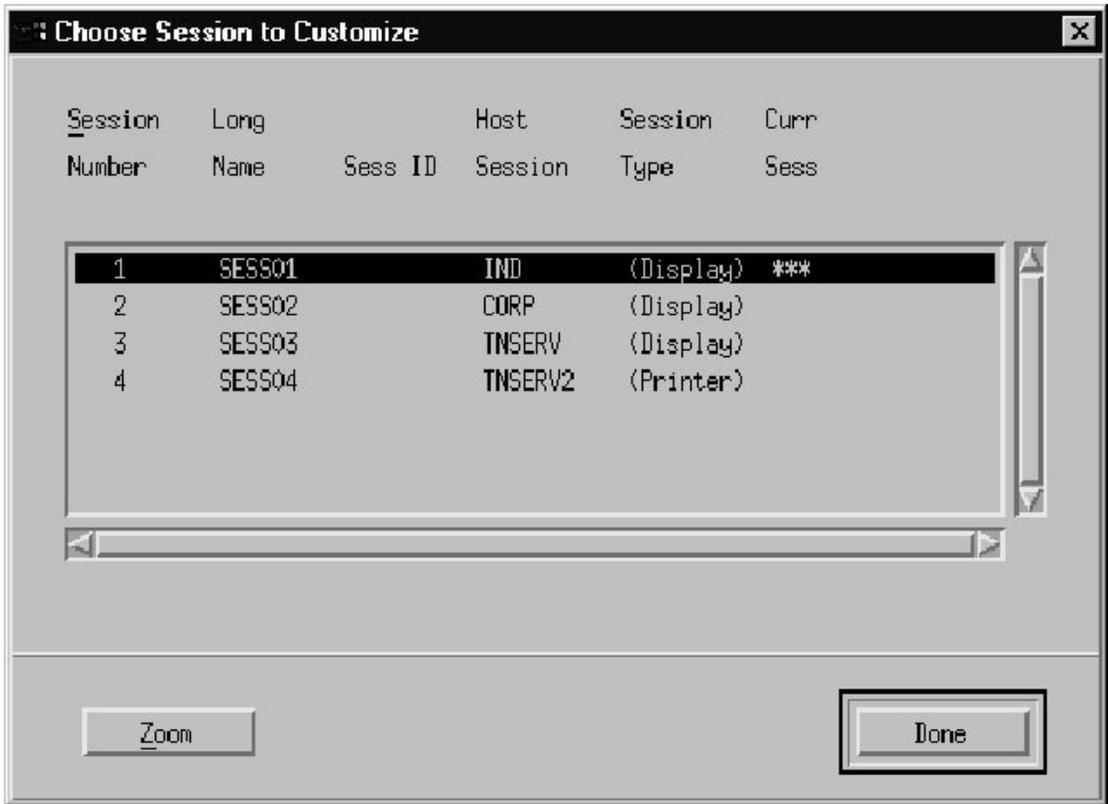
Customizing 3270 Emulation
Setting Customization Options

If you want to keep your customization settings and use them again, remember to save them to a style file. For more information, see “Opening a Style File”, “Creating a New Style File”, and “Saving a Style File”.

Customizing Sessions

To customize one or more sessions, start from the `Customize` menu and choose `Sessions`. The dialog box shown in Figure 6-7, “Choose Session to Customize Dialog Box,” is displayed.

Figure 6-7 Choose Session to Customize Dialog Box



Customizing Display Sessions

You can customize display sessions to specify the following:

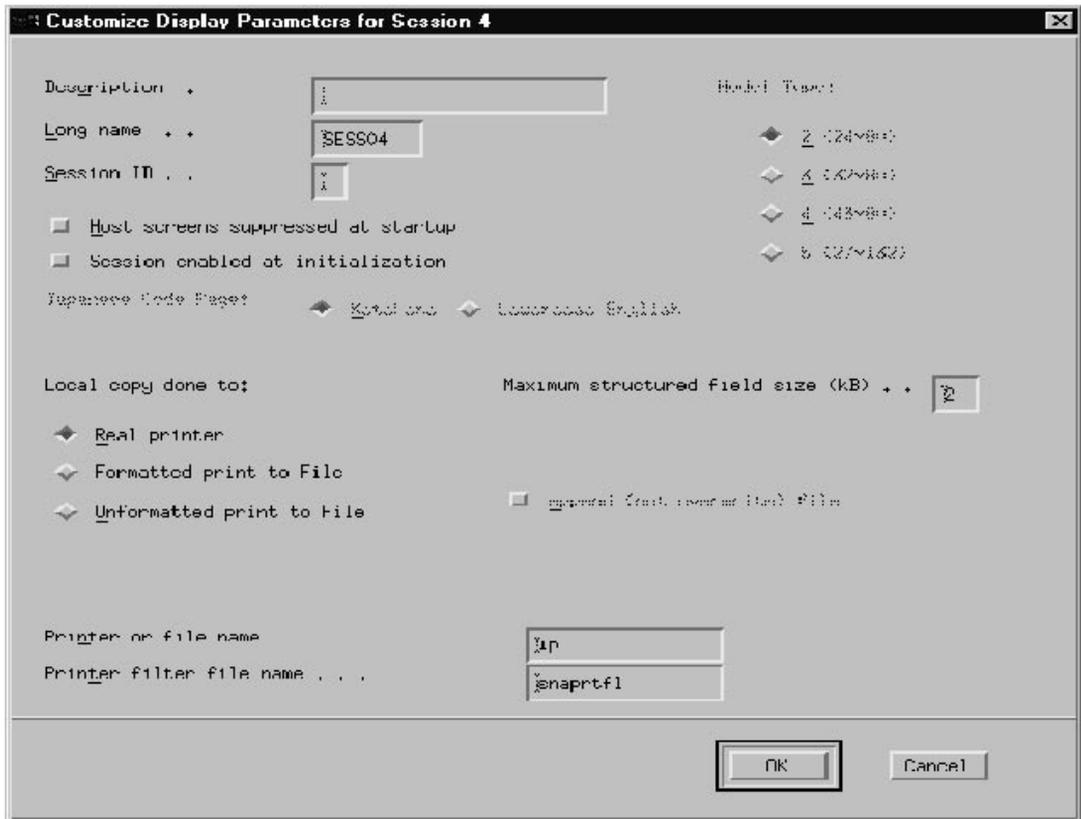
- Long name, session ID, and description of a session

- Whether a session is enabled or disabled when the TN3270 emulation program is started
- Whether the host screen is suppressed when a session is started, to enable a HLLAPI application to control the display
- Display model
- Maximum structured field size used for file transfers on this session
- Printer or disk file for local copy printing

To customize one or more display sessions, follow these steps:

- Step 1.** Highlight a display session from the list in the Choose Session to Customize dialog box, and choose <Zoom>. The dialog box shown in Figure 6-8, “Customize Display Parameters for SESSnn Dialog Box,” is displayed.
- Step 2.** Make appropriate choices and enter requested information in this dialog box.
- Step 3.** Choose <OK> to confirm the changes or <Cancel> to discard them. Either choice returns you to the Choose Session to Customize dialog box.
- Step 4.** Repeat this process for each display session.

Figure 6-8 **Customize Display Parameters for SESSnn Dialog Box**



The following list describes the parameters in the Customize Display Parameters for SESSnn dialog box.

Description

An optional description of up to 25 characters. This description helps you to identify the sessions that are listed in the menu interface.

Motif

This description is also used as the title of the Motif window for this session, so you can use it to distinguish between session windows on the screen.

End of section

Long name

A name of up to eight characters to identify this session. It must not match any other session long name you use, and (if only one character long) must not match the session ID of any other session (see the next parameter). Lowercase characters are converted to uppercase automatically.

Session ID

A one-character identifier for the session using any character in the range (A–Z). This identifier must not match any other session ID or any one-character long name.

An entry in this field is required if the session is to be used for running HLLAPI applications or command-line file transfer; otherwise, it is optional. A session ID typed in lowercase is converted to uppercase automatically.

The session can be activated when running in the background only if it has a session ID assigned. For more information, see “Running 3270 Emulation in the Background”.

If you started the TN3270 emulation program with the `-h` option to override one or more session IDs, this field is not selectable (for all sessions) and cannot be changed. It shows the session ID you specified on the command line for this session, if it is in the range A–Z, or an asterisk (*) otherwise. However, the original session ID from the style file is preserved if you save the style file; the command-line session ID only overrides this for a particular run of the program and cannot be saved.

Host screens suppressed at startup

Mark this check box to suppress display of the host screen when the session is started. Some HLLAPI applications may require this option; instead of displaying the host screen, they manage their own screen display. Leave the check box unmarked if you will not use this session with HLLAPI applications or if the application you use does not require it. If you mark this check box, you must also specify a session ID for the session.

Session enabled at initialization

Mark this check box if you want the session to be enabled each time you start the TN3270 emulation program, or leave it unmarked if you do not want the session to be enabled at startup. This parameter also indicates whether the session is to be activated if the TN3270 emulation program is run in the background using the `-b` option. The session is activated when the TN3270 emulation program is running in the background if both of the following are true:

- The “Session enabled at initialization” check box is selected.
- The session has a session ID assigned (see above).

For more information, see “Running 3270 Emulation in the Background”.

Japanese Code Page

If you use this session to communicate with a Japanese host, specify which of the following available code pages (character sets) the host uses:

- Katakana (Code Page 930) includes double-byte Japanese characters and Katakana characters
- Lowercase English (Code Page 931) includes double-byte Japanese characters and lowercase English characters

A particular host application can use only one of these character sets at a time. This radio group is not selectable if your host language (specified using the `LANG` environment variable) is not set to Japanese.

Model Type

Select the model number that represents the correct screen configuration for your monitor. The first number within the parentheses (24, 32, 43, or 27) represents the number of rows. The second number (80 or 132) indicates the number of columns. If this area of the Customize Display Parameters for `SESSnn` dialog box is not selectable, the configuration file does not allow you to change the screen model for this session.

Maximum structured field size

The size of the data buffer to be used for file transfers on this session. In general, a larger size speeds up the file transfer process. However, some hosts do not accept larger sizes; check this value with your host personnel or System Administrator.

An entry in this field is required. Specify a value (in KB) between 1 and 32. The default is 2. This field is not selectable if a file transfer is in progress on the session.

Local copy done to

Specifies how local copies are printed. A local copy is a printout of the contents of your display, created when you press the PRINT key. You can choose one of the following:

“Real printer”

The local copy is sent to a printer

“Formatted print to file”

The local copy is written to a file as formatted data (processed by the filter application, specified in the **Printer filter file name** parameter).

“Unformatted print to file”

The local copy is written to a file as unformatted data (the filter application is used only to check the data).

Append (not overwrite) file

If you selected either “Formatted print to file” or “Unformatted print to file” for the previous parameter, either mark this check box to specify that print output is to be added to the end of the file, or leave the check box unmarked to overwrite the contents of the file.

Printer or file name

The name of the printer (for example, 1p) or file (up to 64 characters including the directory path) to which print output is to be directed.

Printer filter file name

The name of the printer filter application (up to 64 characters including the directory path) to use for processing the print output.

If you selected “Real printer” or “Formatted print to file” in the “Local copy done to” parameter, the emulator uses this application to filter the printer output before sending it to the printer or file. If you

selected “Unformatted print to file,” the filter application is used to check the data, but the output is not filtered. Use the filter application to process the file before printing it.

Printer output is handled differently by different operating systems. Your TN3270 product supplier can provide you with information about how to use the “Printer or file name” and “Printer filter file name” fields.

The following push buttons are available on the Customize Display Parameter for SESS_{nn} dialog box:

<OK>

Choose <OK> to confirm your choices.

<Cancel>

Choose <Cancel> to abandon any changes to this dialog and retain existing settings.

Customizing Printer Sessions

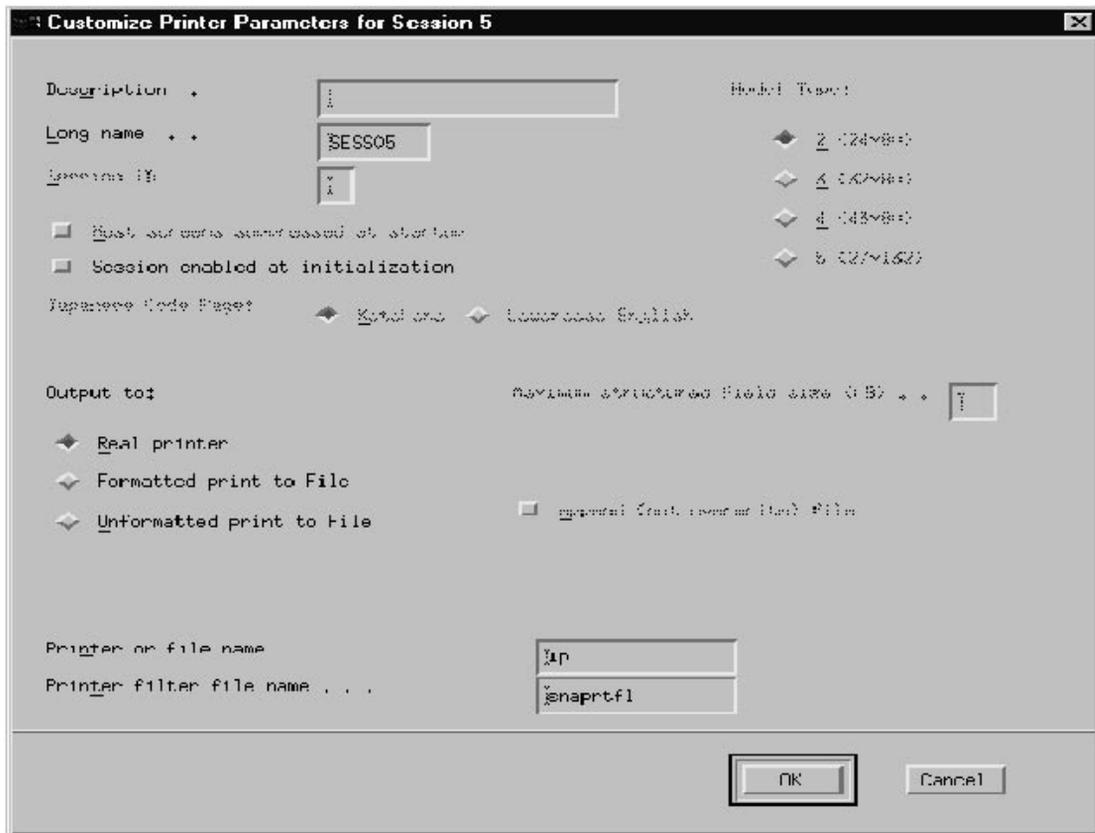
You can customize printer sessions to specify the following:

- Whether a session is enabled or disabled when the TN3270 emulation program is started
- Long name or description of a session
- Destination for printer session output

To customize printer sessions, follow these steps:

- Step 1.** Highlight a printer session listed in the dialog box shown in Figure 6-7, “Choose Session to Customize Dialog Box,” and choose <Zoom>. The dialog box shown in the following figure is displayed.
- Step 2.** Make appropriate choices and enter requested information in the dialog box shown in Figure 6-9, “Customize Printer Parameters for SESS_{nn} Dialog Box.”
- Step 3.** Choose <OK> to confirm the changes or <Cancel> to discard them.
- Step 4.** Repeat this procedure for each printer session that you plan to use.

Figure 6-9 Customize Printer Parameters for SESSnn Dialog Box



The following list describes the parameters in the Customize Printer Parameters for SESSnn dialog box.

Description

An optional description of up to 25 characters.

Long name

A name of up to eight characters to identify this session. It must not match any other session long name, and (if only one character long) must not match any display session's session ID (short name). A long name typed in lowercase is converted to uppercase automatically.

Session enabled at initialization

Mark this check box if you want the session to be enabled each time you start the TN3270 emulation program. Leave this unmarked to disable the session at initialization.

This check box also selects whether the session is enabled when running the TN3270 emulation program in the background using the `-b` option; for more information, see “Running 3270 Emulation in the Background”.

Japanese Code Page

If you use this session to communicate with a Japanese host, specify which of the following available code pages (character sets) the host uses:

- Katakana (Code Page 930) includes double-byte Japanese characters and Katakana characters.
- Lowercase English (Code Page 931) includes double-byte Japanese characters and lowercase English characters.

A particular host application can use only one of these character sets at a time. This radio group is not selectable if your host language (specified using the `LANG` environment variable) is not set to Japanese.

Output to

Specifies one of the following:

“Real printer”

The local copy is sent to a printer.

“Formatted print to file”

The local copy is written to a file as formatted data (processed by the filter application, specified in the **Printer filter file name** parameter).

“Unformatted print to file”

The local copy is written to a file as unformatted data (the filter application is used only to check the data).

Append (not overwrite) file

If you selected either “Formatted print to file” or “Unformatted print to file” for the previous field, either mark this check box to specify that print output is to be added to the end of the file, or leave the check box unmarked to overwrite the contents of the file.

Printer or file name

The name of the printer (for example, 1p) or file (up to 64 characters including the directory path) to which print output is to be directed.

Printer filter file name

The name of the printer filter application (up to 64 characters including the directory path) to use for processing the print output.

If you selected “Real printer” or “Formatted print to file” in the “Output to” parameter, the TN3270 emulation program uses this application to filter the printer output before sending it to the printer or file. If you selected “Unformatted print to file,” the filter application is used to check the data, but the output is not filtered. Use the filter application to process the file before printing it.

Printer output is handled differently by different operating systems. Your TN3270 product supplier can provide you with information about how to use the “Printer or file name” and “Printer filter file name” fields.

The following push buttons are available on the Customize Printer parameters for SESS_{nn} dialog box:

<OK>

Choose <OK> to confirm your choices.

<Cancel>

Choose <Cancel> to abandon any changes to this dialog and retain existing settings.

The “Session ID,” “Host Screens Suppressed at Startup,” “Model Type,” and “Maximum Structured Field Size” parameters in this dialog box are not selectable because they do not apply to printer sessions.

Customizing Display Colors

You can decide how your terminal shows the colors and highlighting attributes that the host application assigns to the 3270 display's contents, including the status line. You can even use different color combinations, called color mappings, for each display session to help differentiate one from another.

The character-based TN3270 emulation program provides only a monochrome display. You can still specify different combinations of reverse video, underline, intense and blinking terminal attributes to distinguish between different host colors. The Motif TN3270 emulation program provides full-color support.

The text and screen images in this section include full-color support, as provided by the Motif program. For the character-based program, the procedure for remapping colors is the same, but you will not have the choice of colors, only the choice of terminal attributes.

Customizing Colors for a Display Session

To begin customizing colors for display sessions, follow these steps:

- Step 1.** From the `Customize` menu, choose `Session Colors`. The dialog box shown in Figure 6-10, “Choose Session for Color Remapping Dialog Box,” is displayed. Display sessions are listed by session number and long name.
- Step 2.** To select a specific session, highlight the session and choose `<Zoom>`. The dialog box shown in Figure 6-11, “Choose Colors for SESSnn Dialog Box,” is displayed.

On the left side of the dialog box are the **Host highlight attribute** and the **Feature** (a particular host color or the status line) to be represented. On the right are the background and foreground colors available to represent the host attributes and features on your terminal. The way your terminal currently represents host attributes and features is shown in the list boxes and in the Sample column.

Figure 6-10 Choose Session for Color Remapping Dialog Box

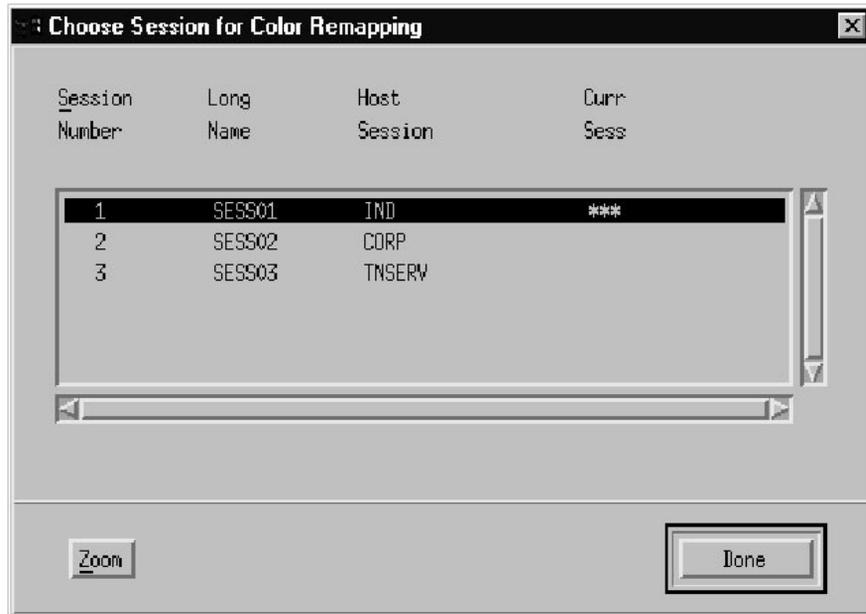
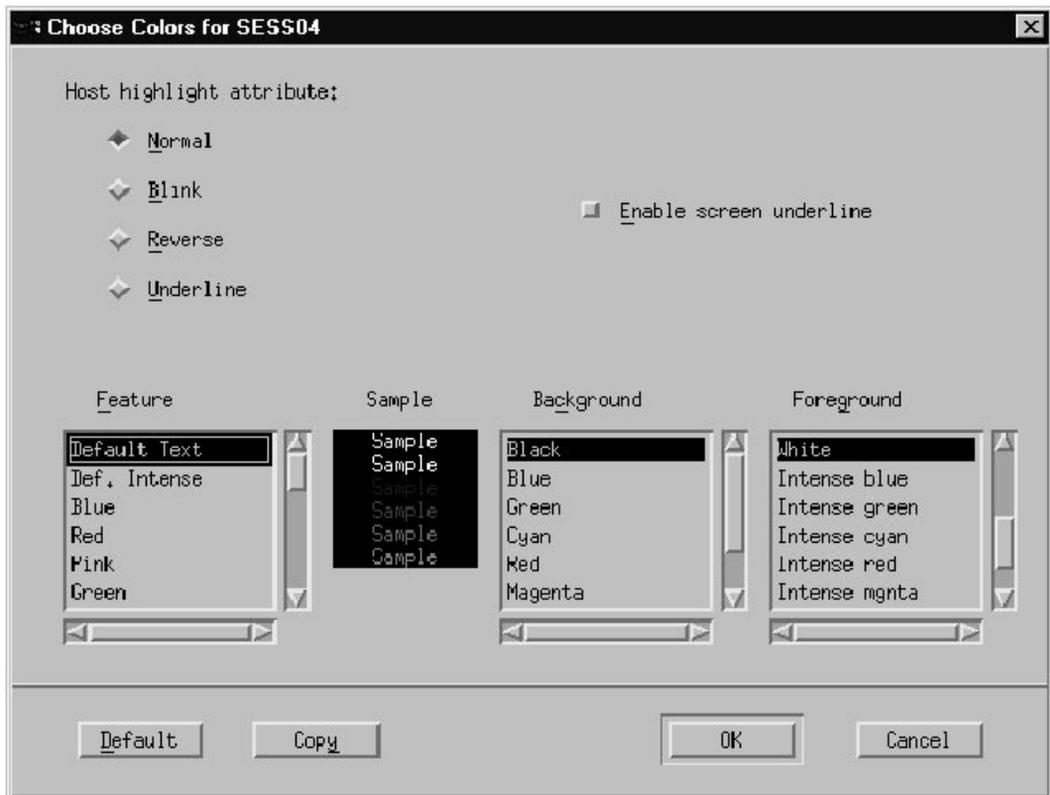


Figure 6-11 Choose Colors for SESSnn Dialog Box



The following list describes each parameter in the Choose Colors for SESSnn dialog box:

Host highlight attribute

Each attribute (Normal, Blink, Reverse, or Underline) corresponds to a highlighting character assigned to displayed data by the host. Each **Feature** except the status line can be modified by one of these four attributes. The status line is always normal and appears in the **Feature** list box only if Normal is the selected host highlight attribute.

Feature

One of the following features, which refer to 3270 display contents at the host:

- Default text
- Default intense text
- Four base colors (base blue, base red, base green, and base white)
- Seven extended colors (blue, red, pink, green, turquoise, yellow, and white)
- Seven intense colors (blue, red, pink, green, turquoise, yellow, and white)
- Status line

Each feature, except for the status line, is associated with four different **Host highlight attributes**. Each combination of feature and host highlight attribute is represented by a combination of color and highlighting on your terminal.

Sample

The word “Sample” and its immediate background reflect the foreground and background colors for the host feature to the left of “Sample,” as well as the host highlight attribute currently chosen. As you change your terminal's representation of each host feature/attribute combination, the sample column reflects the change immediately. Use the sample column to check that the colors appear as expected, because some terminals may not be able to distinguish between certain colors (for example, between yellow and intense yellow or between gray and white background).

Enable screen blink

Mark this check box to cause the foreground content of the 3270 display to blink for a particular combination of host feature and host highlight attribute.

Motif

Instead of “Enable screen blink,” this check box is called “Enable screen underline.” Mark this check box to cause the text on the 3270 display to be displayed as underlined for a particular combination of host feature and host highlight attribute.

End of section

Background

This list box lists all the background colors you can display on your terminal. The color highlighted in this box is the color currently designated to represent the background for the combination of host highlight attribute and host feature currently selected.

Foreground

This list box lists all the foreground colors you can display on your terminal. (If you are using a monochrome display, the colors listed here depend on the background color selected; for example, if you have selected `white` background, only `black` is listed, because this is the only valid foreground color.) The color highlighted in this box is the color currently designated to represent the foreground for the combination of host highlight attribute and host feature selected.

The following push buttons are available on the Choose Colors for SESSnn dialog box:

<Default>

Choose <Default> to specify the TN3270 emulation program's original color mapping for this session. For more information, see "Using Default Color Mapping".

<Copy>

Choose <Copy> to use the color mapping from another session to define the color assignments in this session. For more information, see "Copying Colors from Another Session". This push button is not selectable if you have only one display session.

<OK>

Choose <OK> to confirm your choices.

<Cancel>

Choose <Cancel> to abandon any changes you have made to the color mappings and retain existing settings.

To customize how your terminal uses color and highlighting characteristics to represent each combination of host feature and host highlight attribute, follow these steps:

- Step 1.** Display the dialog box shown in Figure 6-12, "Choose Colors Dialog Box."
- Step 2.** Choose a host highlight attribute.

- Step 3.** Choose a host feature.
- Step 4.** Choose a background color and a foreground color to represent the feature, and choose whether to use blinking foreground text (the “Enable screen blink” check box) or underlined text (the “Enable screen underline” check box). Blinking foreground text is available only in the character-based version of the program (not in the Motif version), and underlined text is available only in the Motif version.
- Step 5.** Repeat Steps 3 and 4 for each host feature you want to customize.
- Step 6.** Now repeat Steps 2 through 5 for the other host highlight attributes.
- Step 7.** After determining your terminal's representation of all combinations of host highlight attributes and features, choose <OK> to confirm the choices, or <Cancel> to discard them. Either choice returns you to the Choose Session for Color Remapping dialog box. If you choose <OK>, and the foreground and background colors for a feature are the same, an error message is displayed, as shown in Figure 6-13, “Error Message for Conflicting Color Specifications.”
- Step 8.** Choose <Exit Message> to acknowledge the error message. The first color mapping that is in error is highlighted so that you can correct it.

Figure 6-12 Choose Colors Dialog Box

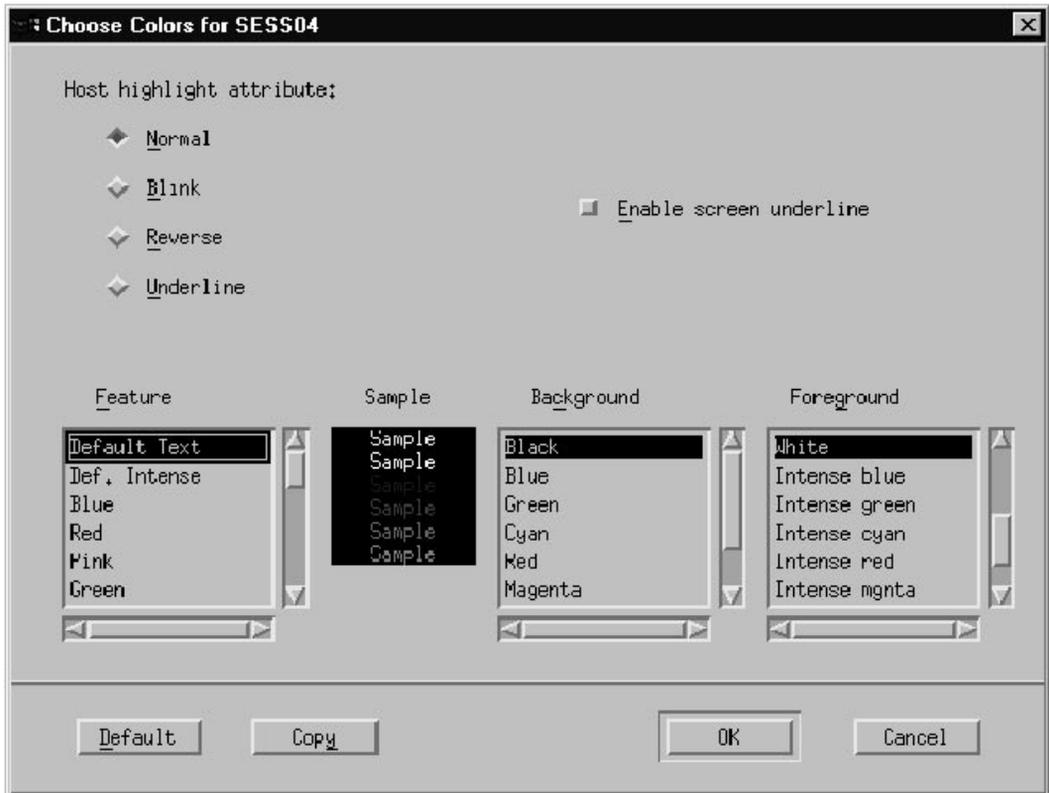
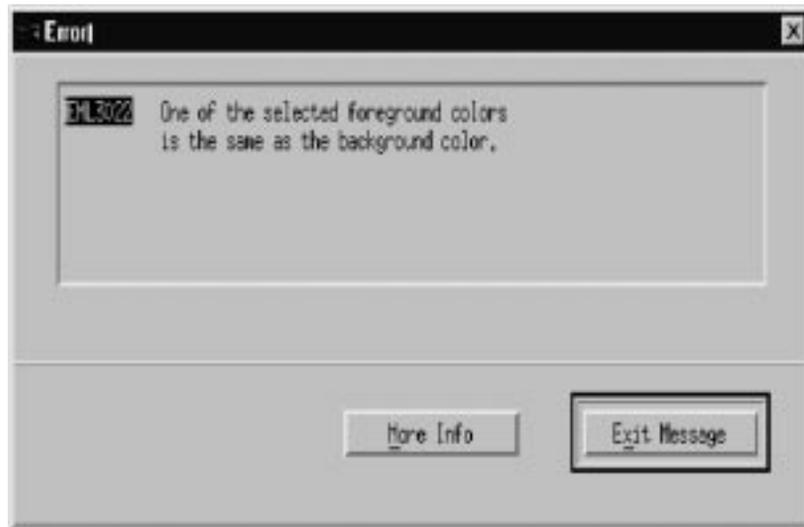


Figure 6-13 Error Message for Conflicting Color Specifications



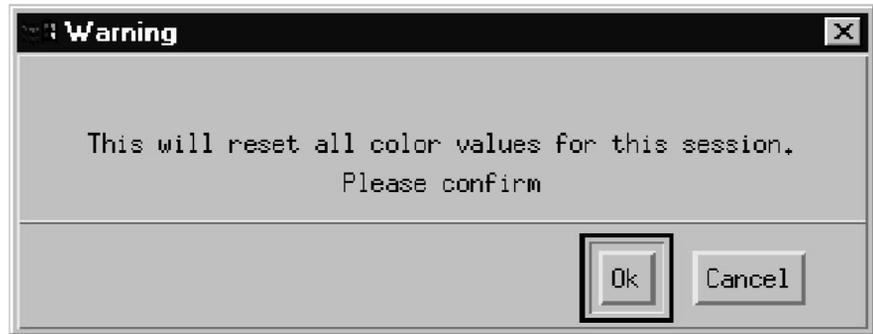
After customizing colors for a session, you can select another session for color remapping, or choose <Done> to return to the main screen.

Using Default Color Mapping

To use the default color mapping provided by the TN3270 emulation program, use the following procedure:

- Step 1.** On the Choose Colors for SESS_{nn} dialog box, choose <Default>. The dialog box shown in Figure 6-14, “Warning Dialog Box,” is displayed.
- Step 2.** Complete this procedure by making one of the following choices. Either choice removes the warning box and leaves the Choose Colors for SESS_{nn} dialog box displayed:
 - Choose <OK> to confirm choosing the default colors.
 - Choose <Cancel> to return to the color and attribute settings in effect before you chose <Default>.

Figure 6-14 **Warning Dialog Box**

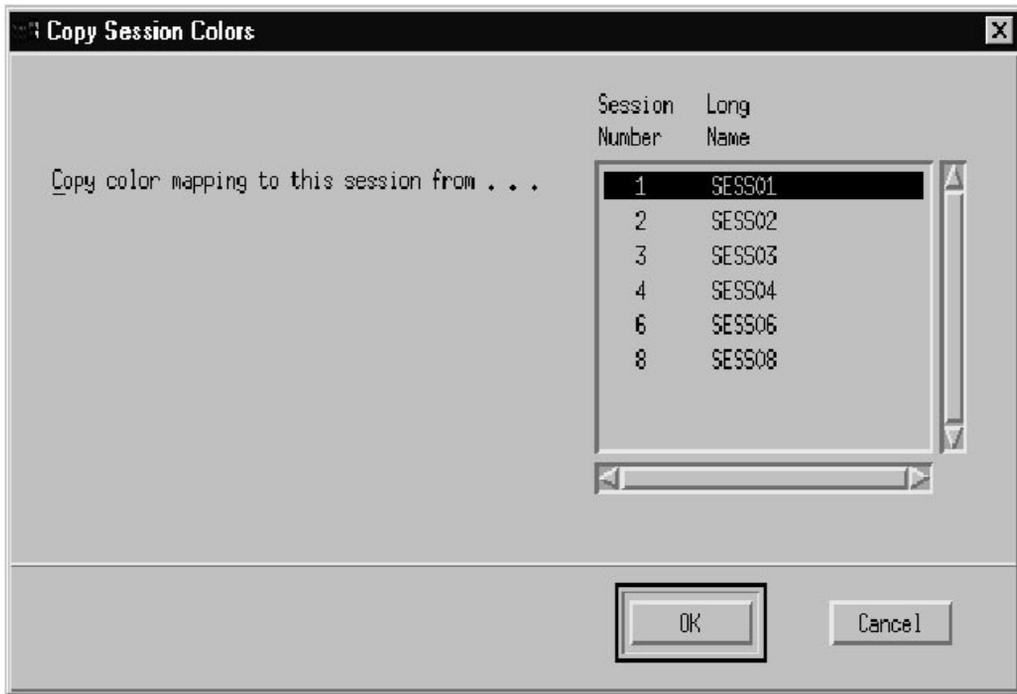


Copying Colors from Another Session

To copy the color mapping from another session, use the following procedure:

- Step 1.** In the Choose Colors for SESS_{nn} dialog box, choose <Copy>. The dialog box shown in Figure 6-15, “Copy Session Colors Dialog Box,” is displayed.
- Step 2.** From the list box, select a session whose color mapping you want to copy.
- Step 3.** Choose <OK> or <Cancel>. The Choose Colors for SESS_{nn} dialog box reappears. The color mapping is now the same as for the session you specified in Step 2.
- Step 4.** Make any changes you like to the new color mapping, or leave it as copied.
- Step 5.** Choose <OK> to accept the copied color map, with any subsequent modifications, or choose <Cancel> to return to the color map that was in effect when you opened the dialog box.

Figure 6-15 Copy Session Colors Dialog Box



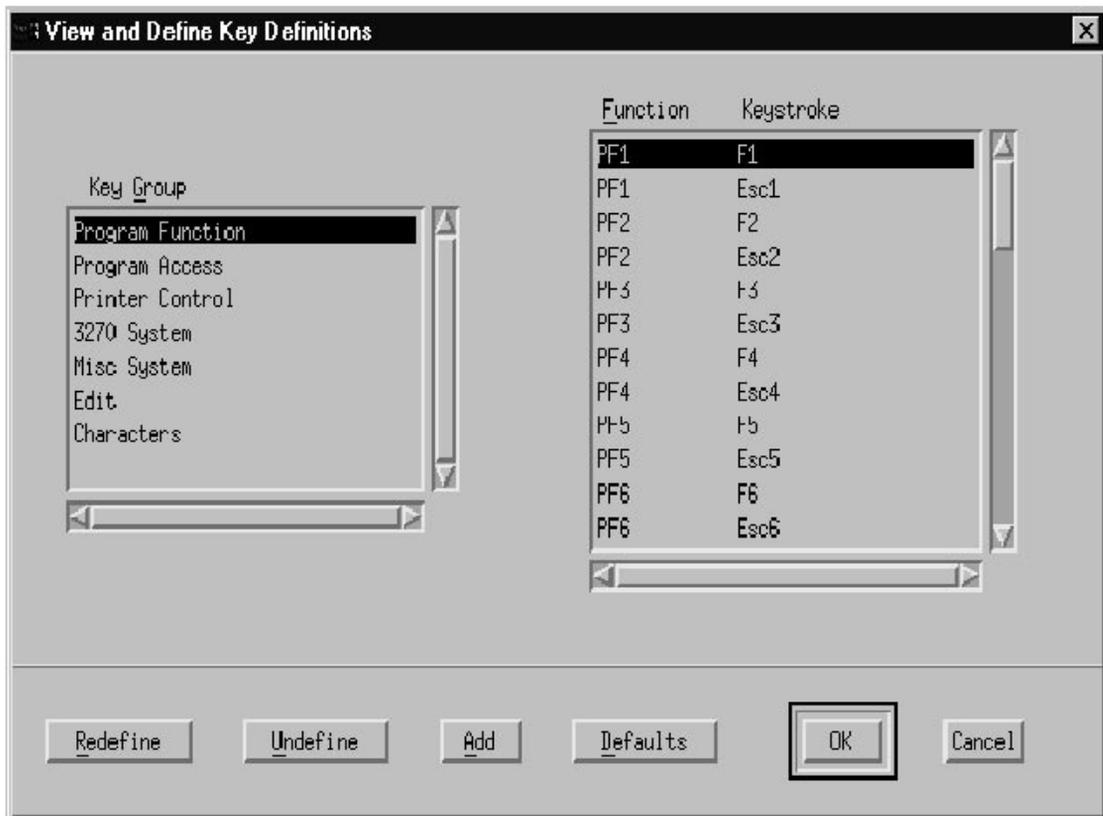
Customizing Key Definitions

The TN3270 emulation program maps the keys on your terminal's keyboard to functions used in 3270 emulation. You can review those definitions, and change them if you want, by choosing `Key Definitions` on the `Customize` menu.

When you change your keyboard definitions, the change affects all your 3270 sessions. You cannot customize keyboard mapping by session. If the configuration file does not allow you to modify style files, you can view the key mappings as described in this chapter, but you cannot change them.

To review current keyboard mapping, choose `Key definitions` from the `Customize` menu, or, from the main screen, press `KEYS` (default keystroke `Ctrl + K`). The dialog box shown in Figure 6-16, “View and Define Key Definitions Dialog Box,” is displayed.

Figure 6-16 View and Define Key Definitions Dialog Box



Viewing Key Definitions

The following list describes the contents of the View and Define Key Definitions dialog box:

Key Group

The TN3270 emulation program categorizes 3270 functions into different groups. These groups are listed in the Key Group box. To see which functions are included in each group, highlight an entry in the Key Group list. The functions in that group are listed in the Function column on the left side of the list box at right.

Function

3270 functions included in the Key Group are listed in this column. If more than one keystroke can be used for the same 3270 function, the function is listed once for each keystroke.

Keystroke

For each 3270 function in the Function column, the key or keystroke combination listed in this column is the keystroke on your terminal that performs that function. If more than one keystroke can be used for the same 3270 function, each keystroke is listed. If no keystrokes are currently assigned to the function, Undefined is listed.

The following push buttons are available on the View and Define Key Definitions dialog box:

<Redefine>

Choose this to change the key or key combination that represents a particular 3270 function. See instructions in “Redefining a Keystroke Used for a 3270 Function”.

<Undefine>

Choose this to remove a key or key combination that represents a 3270 function. See instructions in “Undefining Keystrokes”.

<Add>

Choose this to add a new key or key combination to represent a particular 3270 function (in addition to any keys already assigned). See instructions in “Adding a Keystroke to a 3270 Function”. This push button is not selectable if “Characters” is selected in the Key Group list box. You can only redefine mappings for character keys, not add them, because the TN3270 emulation program does not allow you to map more than one keystroke to a character key.

<Defaults>

Choose this to revert to the TN3270 emulation program's original mapping of keys to functions. See instructions in “Choosing Default Keyboard Mapping”.

<OK>

Choose this to confirm any changes you make to key definitions.

<Cancel>

Choose this to abandon any changes you make to key definitions.

Each 3270 function can be represented by one or more keys or key combinations on your terminal. You can change these either by redefining (replacing an existing keystroke with a new one) or by adding a new keystroke (leaving any existing ones unchanged). For information about adding a new keystroke, see “Adding a Keystroke to a 3270 Function”.

Redefining a Keystroke Used for a 3270 Function

To redefine a keystroke used for a 3270 function (replacing an existing keystroke), start from the View and Define Key Definitions dialog box, and use the following procedure:

- Step 1.** In the Key Group list box, highlight the key group that includes the function to be remapped.
- Step 2.** In the Function column, select the function to be redefined. If this function has multiple keystrokes assigned to it, select the entry corresponding to the keystroke that you want to replace.
- Step 3.** Choose <Redefine>. The dialog box shown in Figure 6-17, “Redefining Key n Dialog Box,” is displayed. This dialog box prompts you to press the key combination that you want to assign to the function you are redefining.
- Step 4.** Press the key combination on your terminal's keyboard that you want to correspond to the 3270 function. You can use a single key, or a single key with either **Shift** or **Ctrl**. You can also use one or two **Esc** keystrokes, followed by a single key or a single key with either **Shift** or **Ctrl**.

If you are using one or two **Esc** keystrokes followed by a character key with or without **Shift**, only the following character keys are available:

E G N O W X Y Z

If your terminal uses *xon()/xoff()* flow control, that flow control protocol uses the key combinations **Ctrl + Q** and **Ctrl + S**, and you cannot use them for key mappings.

Alternatively, choose the key or combination currently mapped to the function to retain that mapping.

Depending on existing key combinations, setting a new combination can have one of four possible outcomes:

- If the new key combination is not already used and the function is currently undefined, the new definition is displayed in the Function/Keystroke list box.
- If the new key combination is not already used but the function is currently defined as a different key combination, the dialog box shown in Figure 6-18, “New Key Combination Not Used but Defined Dialog Box,” is displayed.

Make one of the following choices:

- To assign the new key combination to the function, choose <Redefine>.
- To end the redefinition without making the change, choose <Cancel>.

The View and Define Key Definitions dialog is displayed again.

- If the new key combination is already in use and the function is currently undefined, the dialog box shown in Figure 6-19, “New Key Combination Currently Undefined Dialog Box,” is displayed.

Make one of the following choices:

- To reassign the new key combination to the function and clear its previous use, choose <Redefine>.
- To end the redefinition without making the change, choose <Cancel>.

The View and Define Key Definitions dialog is displayed again.

- If the new key combination is already in use and the function is currently defined as a different key combination, the dialog box shown in Figure 6-20, “New Key Combination in Use but Function Defined Differently Dialog Box,” is displayed.

Make one of the following choices:

- To reassign the new key combination to the function and clear its previous use, choose <Redefine>.

Customizing 3270 Emulation
Customizing Key Definitions

- To swap definitions between the two 3270 functions, choose <Swap>.
- To end the redefinition without making the change, choose <Cancel>.

The View and Define Key Definitions dialog is displayed again.

Figure 6-17 **Redefining Key n Dialog Box**

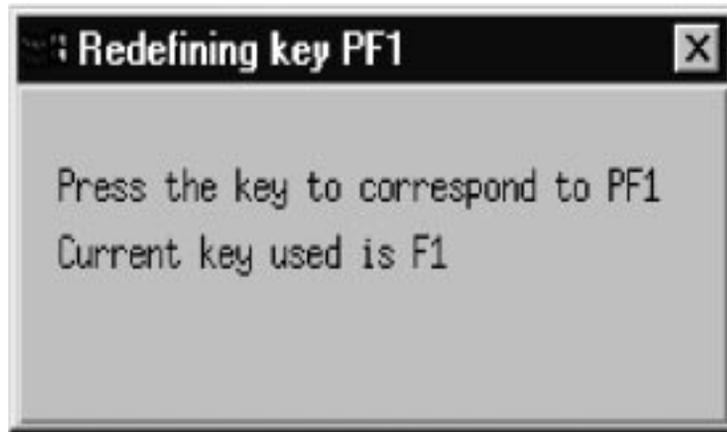


Figure 6-18 **New Key Combination Not Used but Defined Dialog Box**

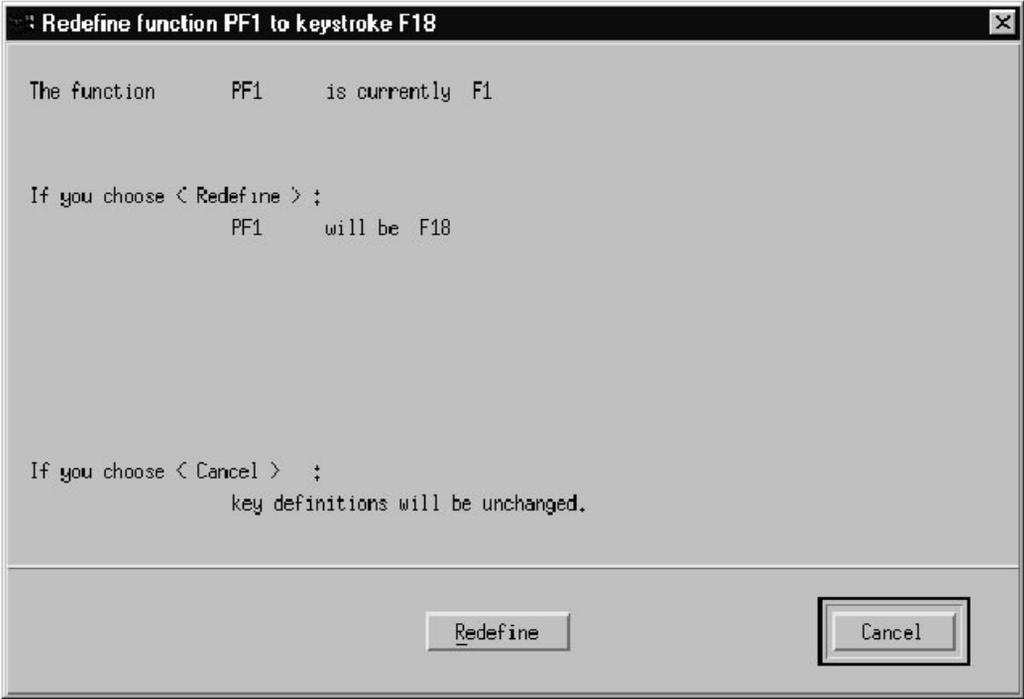


Figure 6-19 **New Key Combination Currently Undefined Dialog Box**

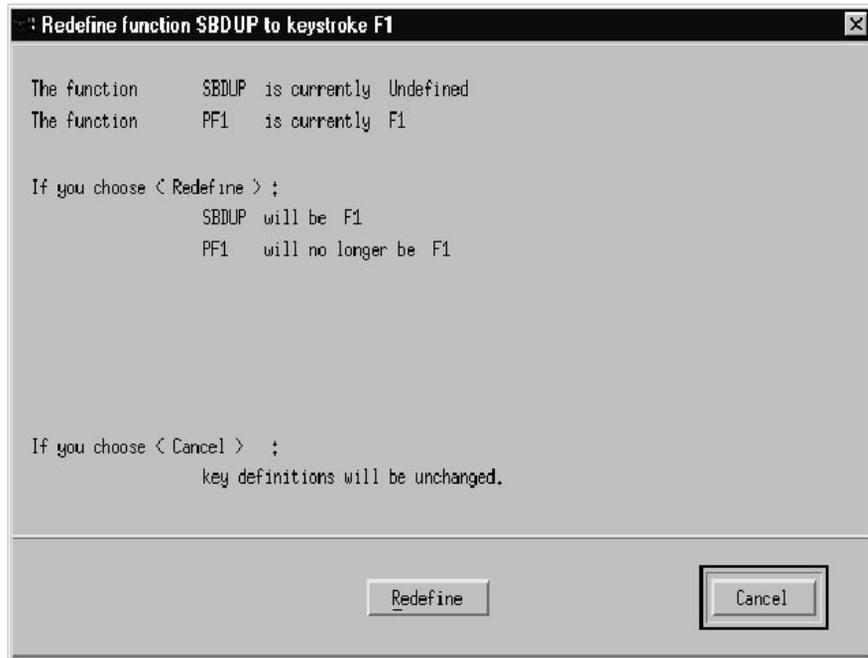
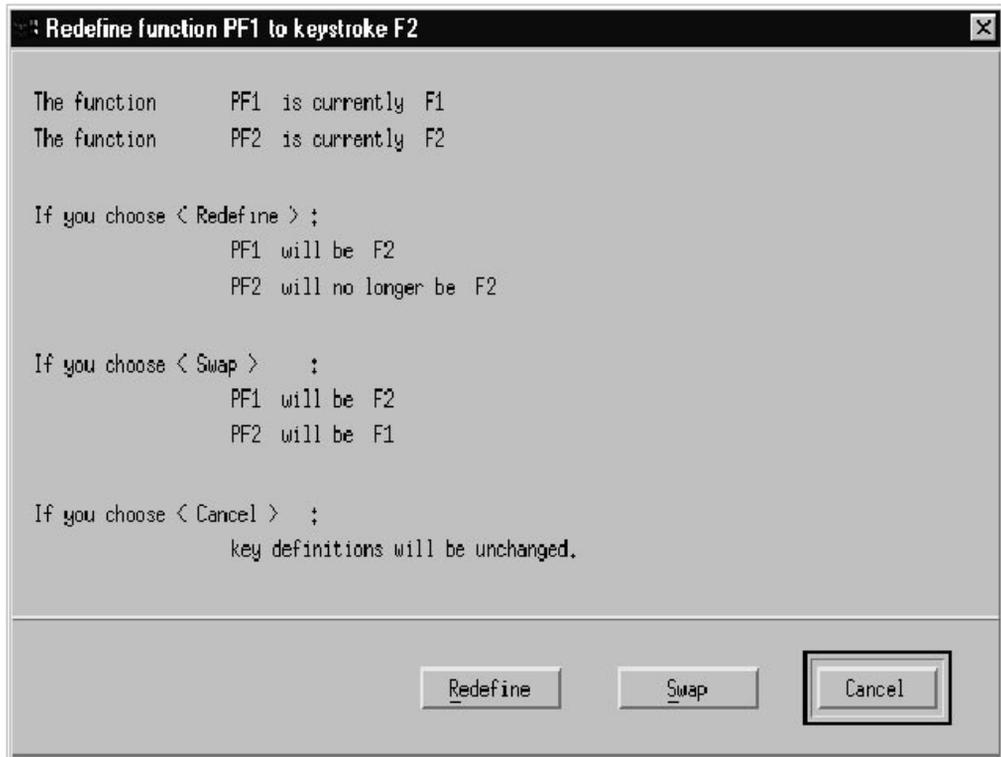


Figure 6-20 **New Key Combination in Use but Function Defined Differently
Dialog Box**



Adding a Keystroke to a 3270 Function

You cannot add a keystroke to a character key; you can only redefine it, because the TN3270 emulation program does not allow two different keystrokes to be mapped to the same character key. If you select “Characters” in the Key Group list box, the < Add > push button is not selectable. Also, you cannot have more than six keystrokes mapped to the same 3270 key; the < Add > push button is not selectable if you select a key that already has six keystrokes mapped to it.

To add a new keystroke to a 3270 function (leaving any existing keystrokes unchanged), start from the View and Define Key Definitions dialog box, and use the following procedure:

- Step 1.** In the Key Group list box, highlight the key group that includes the function.
- Step 2.** In the Function column, select the function. If multiple keystrokes are assigned to this function, you can select any of the entries for the function.
- Step 3.** Choose <Add>. The dialog box shown in Figure 6-21, “Adding Definition for n Dialog Box,” is displayed. This dialog box prompts you to press the new key combination that you want to add to the function.
- Step 4.** Press the key combination on your terminal's keyboard that you want to correspond to the 3270 function. You can use a single key, or a single key with either **Shift** or **Ctrl**. You can also use one or two **Esc** keystrokes, followed by a single key or a single key with either **Shift** or **Ctrl**.

If you are using one or two **Esc** keystrokes followed by a character key with or without **Shift**, only the following character keys are available:

E G N O W X Y Z

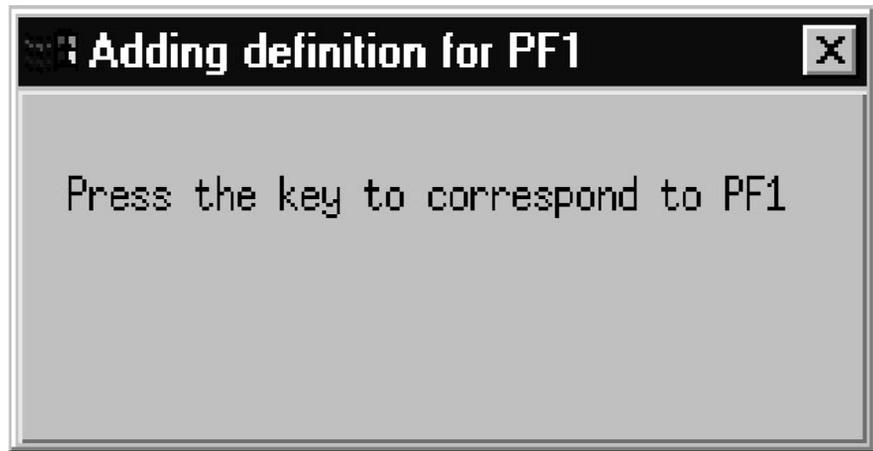
If your terminal uses *xon()/xoff()* flow control, that flow control protocol uses the key combinations **Ctrl + Q** and **Ctrl + S**, and you cannot use them for key mappings.

If the keystroke you choose is already assigned to this 3270 function, a pop-up message informs you of this. Choose <OK> to acknowledge the message; no change is made to your key mappings.

If the keystroke you choose is already assigned to another 3270 function, you are given the choice of adding the keystroke (removing it from the other 3270 function) or abandoning the addition. The dialog for this is similar to the equivalent dialog for redefining a key combination. (See the figure “New Key Combination in Use but Function Defined Differently Dialog Box”.)

Otherwise, the keystroke is added to the function and you are returned to the View and Define Key Definitions dialog box.

Figure 6-21 Adding Definition for n Dialog Box



Undefining Keystrokes

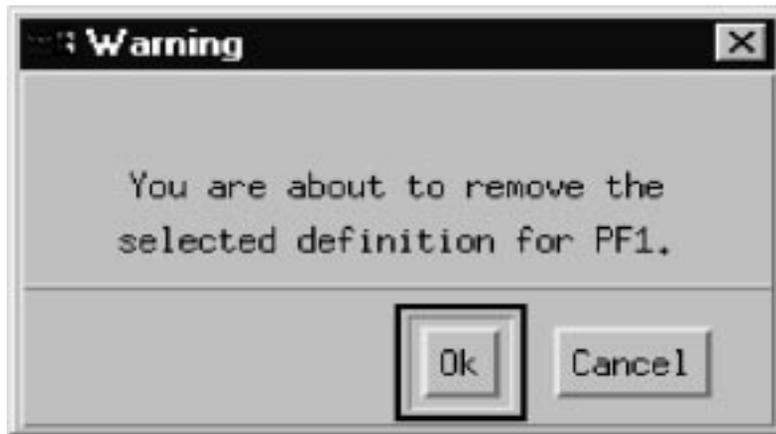
You can remove a keystroke from a 3270 function, so that it can no longer be used to represent that function. If you remove the only keystroke mapped to a 3270 function, you will no longer be able to use the function. To undefine a keystroke, use the following procedure:

- Step 1.** In the View and Define Key Definitions dialog box, select the keystroke you want to undefine from the Function/Keystroke list box. If multiple keystrokes are associated with the same function, be sure to select the correct keystroke.
- Step 2.** Choose <Undefine>. A Warning message box as shown in Figure 6-22, "Warning Message Box for Undefining a Keystroke," is displayed.

If you are removing the only keystroke mapped to a 3270 function the message reads You are about to undefine **functionname** instead of You are about to remove the selected definition for **functionname**.

- Step 3.** Choose <OK> to undefine the key, or <Cancel> to retain the definition. This removes the Undefine Warning box. The View and Define Key Definitions dialog box remains. If you removed the only definition of a function, Undefined appears in the Keystroke column.

Figure 6-22 **Warning Message Box for undefining a keystroke**



When you finish redefining keys, choose <OK> to confirm your changes or <Cancel> to abandon them. You return to the main screen.

Choosing Default Keyboard Mapping

To change the keyboard mapping to the TN3270 emulation program's original settings, use the following procedure:

- Step 1.** In the View and Define Key Definitions dialog box, choose < Defaults>. The dialog box shown in Figure 6-23, “Warning Dialog Box for Choosing Default Keyboard Mapping,” is displayed.
- Step 2.** Choose <OK> to confirm the choice of default settings, or <Cancel> to abandon the change. Either choice causes the View and Define Key Definitions dialog box to be displayed.

Figure 6-23 **Warning Dialog Box for Choosing Default Keyboard Mapping**



Customizing Miscellaneous Options

The TN3270 emulation program enables you to specify the following options:

- Whether or not an audible signal (beep) is produced to indicate errors while you are using 3270 emulation
- Whether the TN3270 emulation program's status line is displayed on the terminal's status line (if one is available) or on a separate line
- Whether the status line is displayed when you start the TN3270 emulation program

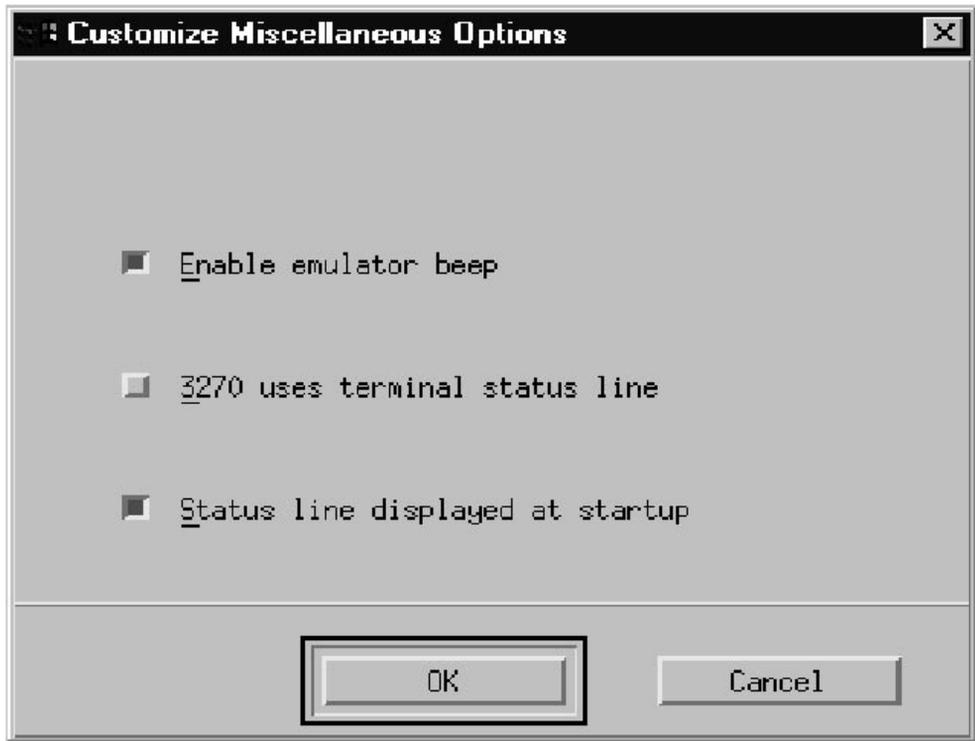
Motif

The Motif version of the program has no separate terminal status line, so it ignores the option related to separate status line.

End of section

To specify these miscellaneous options for your terminal, choose **Miscellaneous** from the **Customize** menu. The dialog box shown in Figure 6-24, "Specify Miscellaneous Options Dialog Box," is displayed.

Figure 6-24 Specify Miscellaneous Options Dialog Box



The following list describes the parameters on the Specify Miscellaneous Options dialog box:

Enable emulator beep

Mark this check box if you want audible signals to indicate errors, or leave it unmarked to suppress these signals.

The audible signal occurs (for example) when you type too many characters for the keyboard buffer to hold, when the host sends a signal to the TN3270 emulation program to indicate that an error has occurred, or when you use a PF key that already has a key sequence assigned while recording a new sequence. This option does not affect the audible signals that are produced when you make an error in the menus and dialog boxes of the 3270 control interface; these cannot be disabled.

3270 uses terminal status line

If the terminal you are using has the facility to allow programs to write to its status line, mark this check box if you want the TN3270 emulation program's status line to be written to the terminal's status line. Leave the check box unmarked if the terminal does not support this, or if you do not want to use it (for example, so that you can view both status lines). For more information about how the TN3270 emulation program displays its status line, see Appendix B, "Status Line Information."

The TN3270 emulation program checks this option only when a session is started. If you change it while a session is enabled, the change does not take effect until you stop and restart the session.

If your terminal does not support writing to the status line, the emulator ignores this option. For more information about whether your terminal supports this option, contact your System Administrator, or refer to the Installation chapter in the *HP-UX TN3270 Administrators Guide*.

Motif

The Motif version of the program ignores this option; there is no separate terminal status line.

End of section

Status line displayed at startup

Mark this check box if you want the status line to be "always on" when you start the program, or leave it unmarked if you want the status line to be displayed only when there is a condition leading to a Do Not Enter or Communications Check message.

You can switch between the two modes while the program is running by using the `STAT TOG` (Status Line Toggle) key. For more information, see Appendix B, "Status Line Information."

Overview

This chapter provides information to help you solve problems encountered while using the TN3270 emulation program. Specifically, it includes the following:

- List of problems you might encounter
- Suggested solution for each problem

If you encounter a problem that persists or is not listed, contact your System Administrator or technical support for assistance.

When you have a question about a menu or dialog box, display the menu or dialog box and then press F1 for online help.

This chapter lists some problems you may encounter in using the TN3270 emulation program, and suggests solutions to those problems. If you need more help, contact your System Administrator.

3270 Could Not Initialize due to Failure to Fork a Process

If you receive this message while trying to start the TN3270 emulation program, it indicates that an operating system command failed during initialization of the program. This generally happens because too many other processes are running at the same time.

Retry when other processes have finished, or when fewer users are on the system. If this problem occurs repeatedly, contact your System Administrator.

3270 Emulation Program Not Found

If you receive a message that the TN3270 emulation program (`tn3270` or `xtn3270`) is not found, the problem has one of the following causes:

- The program is not installed on your system.
- Your `PATH` environment variable is not set up to include the directory containing the program.

Contact your System Administrator if you need assistance.

Cannot Get from 3270 Session to TN3270 Emulation Program Main Screen

If pressing the key combination for the ACTIONS key (in the character-based TN3270 emulation program) does not move you from a 3270 session to the main screen, you may have started emulation using the `-e` option. If you need to use the menu interface, stop the emulation program and restart it without using the `-e` option.

This problem may also occur because the ACTIONS function is undefined or remapped to another key. To correct this, use the following procedure:

- Step 1.** Press KEYS to display the View and Define Key Definitions dialog box.
- Step 2.** From the Key Group list box, choose `Misc System`.
- Step 3.** Note the new key or key combination mapped to the ACTIONS function.
- Step 4.** Either press `Esc` to return to the 3270 emulation session and then use the key or key combination now mapped to ACTIONS to exit emulation, or follow the instructions under “Customizing Key Definitions” to remap the ACTIONS function.

Cannot Run 3270 Emulation in Background

You may get the following message when trying to start the TN3270 emulation program in the background using the `-b` option:

```
Cannot run 3270 emulation in the background
```

This message indicates that you do not have any sessions that can be used in the background. For a session to be activated when running in the background, it must be marked as “enabled at initialization” in the style file you are using (either a style file you specified on the command line or the default style file specified in the configuration file). In addition, if it is a display session, it must have a session ID assigned (you cannot access it when running in the background if it does not have a session ID). The session ID can be assigned in the style file, or you can specify it using the `-h` option when starting the TN3270 emulation program.

Use the following procedure to solve this problem:

- Step 1.** Start the TN3270 emulation program without the `-b` option to run it in the foreground.
- Step 2.** Load the style file.
- Step 3.** Ensure that at least one session is active at initialization. You can also assign a session ID at the same time (if it is a display session).
- Step 4.** Save the new style.
- Step 5.** Exit the program.
- Step 6.** Restart the program in the background, using the new style file, and optionally using the `-h` option to assign one or more session IDs.

For more information about the “enabled at initialization” option and about session IDs, see “Customizing Display Sessions” and “Customizing Printer Sessions”.

Cannot Run 3270 Emulation without a Menu Interface

You may get the following message when trying to start the TN3270 emulation program without the menu interface using the `-e` option:

```
Cannot run 3270 emulation without a menu interface
```

This message indicates that the style file you are using (either the style file you specified on the command line or the default style file specified in the configuration file) does not include any display sessions that can be used without the menu interface. For a display session to be activated when running without the menu interface, it must be marked as “enabled at initialization,” and must use a screen model that can be displayed on your terminal's screen.

Use the following procedure to solve this problem:

- Step 1.** Start the TN3270 emulation program without the `-e` option to run it with the menu interface.
- Step 2.** Load the style file.
- Step 3.** Assign at least one session to be active at initialization and to use an appropriate screen model.
- Step 4.** Save the new style.
- Step 5.** Start the program without the menu interface using the new style file.

For more information about the “enabled at initialization” option and about screen models, see “Customizing Display Sessions”.

Cannot Tell Which Terminal Keys Correspond to Various 3270 Keys

Press **KEYS** to display the View and Define Key Definitions dialog box, or press **ACTIONS** to return to the main screen and then choose **Key definitions** from the **Customize** menu.

Characters on Display Do Not Match Keys Pressed

When the letters, numbers, and punctuation you press on the keyboard show up as other characters on the display, your keys may have been remapped.

Verify that your keyboard is mapped correctly. Press `KEYS` to view your current key definitions.

Check that you have set the `LANG` environment variable to the correct host language. Also check that the style file you are using was set up using the same host language; the key mappings may change if you use the style file with a different language.

For more information about key definitions, see Chapter 6, “Customizing 3270 Emulation.”

Customize Menu Options Not Selectable

If all options on the `Customize` menu except `Key Definitions` are not selectable, your System Administrator has not given you permission to customize the emulator's default settings. Contact your System Administrator if you need assistance, or refer to the *HP-UX TN3270 Administrators Guide*.

Display Colors Are Different from Those Selected

If the colors displayed on your monitor differ from those you selected, check the color settings in the Customize Session Colors dialog box.

Verify that your terminal supports the required color and highlighting options, and that the terminal colors and attributes associated with each host color and attribute are correct. Generally, you can remap colors for each 3270 session to make the display more readable.

For more information about mapping session colors, see Chapter 6, “Customizing 3270 Emulation.”

Display Is Incomplete or Hard to Read

Verify that the display model number (screen size) used by the 3270 session is the right one for your terminal. For more information, see Chapter 6, “Customizing 3270 Emulation.” Also check that the `TERM` environment variable is set to the correct value for the type of terminal you are using.

The last line of your screen may be shared between the status line and the last line of the 3270 emulation screen (for example, if you are using display Model 2, 24 by 80, on a 24-line screen). To switch the display between the status line and the last line of the 3270 emulation screen, press `STAT TOG` (Status Line Toggle). On any screen size, you can also use this key to turn off display of the status line; it will reappear when the information about it changes, for example to show a “Do Not Enter” message.

Error Message—3270 User Not Found

If you get an error message when you start the TN3270 emulation program that says User (**your user ID**) not found in configuration file, the System Administrator has not included you in the configured list of 3270 emulation users. Contact your System Administrator if you need assistance.

Error Message—No 3270 Sessions

If you get an error message when you start the TN3270 emulation program that says `No 3270 sessions in configuration file`, contact your System Administrator. You are configured as a 3270 emulation user, but no sessions are configured for you to use.

Error Message—No 3270 Users

If you get an error message when you start the TN3270 emulation program that says `No 3270 user records in configuration file`, contact your System Administrator. None of the users on the HP-UX computer are configured as 3270 users.

Failed to Initialize Windowing System

Receiving this message when trying to start the character-based TN3270 emulation program in an X Window generally indicates that the window is too small to display the program's main screen. The screen requires a window large enough to display at least 80 by 24 characters.

Correct the window size and retry.

Fields Cannot Be Changed or Edited

The contrast on your terminal may be misadjusted, so nonselectable fields (which you cannot change) appear the same as selectable fields.

Adjust the contrast.

File Menu Options Not Selectable

If the `Open`, `New`, `Save`, and `Save As` options on the `File` menu are not selectable, your System Administrator has not given you permission to customize the emulator's default settings. Contact your System Administrator if you need assistance, or refer to the *HP-UX TN3270 Administrators Guide*.

File Transfer Process “Hung”

If a file transfer process appears to be “hung” without having transferred any data, first check the Messages list box in the Control File Transfer dialog box (unless you are running 3270 emulation in the background). Some host systems may write error messages to the 3270 display instead of using TRANSnnn file transfer messages; the emulator displays these messages in the list box and also writes them to the error log file.

Also check whether the list box includes the message `Error-host initiated transfer in screen mode`. If so, this indicates an error in the host 3270 configuration. Disable the session using the Control Display Sessions dialog box (this is the only way to clear the condition), and contact your System Administrator. Do not try to start any more file transfers on this session until the host configuration has been corrected.

If this message does not appear, the problem may be that the host cannot accept the structured field size you are using for the file transfer. For information about specifying the structured field size and checking that the host can accept this size, see “Customizing Display Sessions” or contact your System Administrator if you need assistance.

HLLAPI Application Does Not Work

If a HLLAPI application does not run, first make sure of the following:

- You are using the right program name for the application.
- The TN3270 emulation program and the HLLAPI application have been started on the same computer, using the same HP-UX login ID and the same effective user ID.
- The session ID that the HLLAPI application is set up to use matches the session ID of one of your 3270 display sessions, and this session is active and is not in use by another HLLAPI application or by a file transfer process.

For more information, refer to the *HP-UX SNAplus2 3270 & TN3270 HLLAPI Programmers Guide*.

Host Response Times Option Not Selectable

Your System Administrator has not configured the TN3270 emulation program to display host response times, or has not given you permission to view them. If you want to use this option, ask your System Administrator to configure it, or refer to the *HP-UX TN3270 Administrators Guide*.

Last Transaction Time Indicator (LTTI) on Status Line Does Not Appear

Your System Administrator has not configured the TN3270 emulation program to display host response times, or has not given you permission to view them; this also disables the LTTI. If you want to use this option, ask your System Administrator to configure it, or refer to the *HP-UX TN3270 Administrators Guide*.

Main Screen Invoked Instead of 3270 Session

When you start the TN3270 emulation program, you might see the main screen instead of a 3270 display. This means that none of your 3270 sessions are set to be active at initialization. To update your style file so that a session is active at initialization, see “Customizing Display Sessions”.

Model Type Radio Group Is Not Selectable

Your System Administrator has configured your 3270 sessions so that you do not have permission to override this option from the TN3270 emulation program. If you want to be able to make this change while in the TN3270 emulation program, ask your System Administrator to change the configuration, or refer to the *HP-UX TN3270 Administrators Guide*.

Open Option Is Not Selectable

If you pull down the `File` menu and see that the `Open` option is not selectable, use the `Control Display Sessions` and `Control Printer Sessions` dialog boxes to disable any enabled or active sessions. Then return to the `File` menu and open or create a style file. (You cannot open an existing style file or create a new one while a session is enabled or active.)

If the `New`, `Save`, and `Save As` options are also not selectable, your System Administrator has not given you permission to customize the emulator's default settings. Contact your System Administrator if you need assistance, or refer to the *HP-UX TN3270 Administrators Guide* for information about configuring this option.

Style File Contains Invalid Maximum Structured Field Size

If you start the TN3270 emulation program using a style file that was created using an earlier version of the TN3270 emulation program, you may see a message box indicating that the maximum structured field size specified in the style file is not valid. The program will use the default value of 2 KB, but will not change the style file.

To upgrade the style file for this version, use the Customize Display Sessions dialog box to assign a maximum structured field size for each display session, and then save the style file.

Unable to Obtain System Semaphores

If you receive this message when trying to start the TN3270 emulation program, the HP-UX computer does not have enough inter-process communication (IPC) queues configured. The TN3270 emulation program cannot be started at present. (You may be able to start it later when fewer users are on the system.)

The message is followed by other messages that tell you to clear this condition using `ipcs` and `ipcrm` or both. If you do not understand how to do this, contact your System Administrator.

Solving Problems
Unable to Obtain System Semaphores

A **Default Keyboard Mappings**

Overview

This appendix describes the default keyboard definitions for your terminal during 3270 emulation in the following ways:

- In tables that group keys by function
- In an alphabetical list of 3270 keys, with corresponding key combinations

Tables listing the default key definitions provide spaces for you to record your own key mappings (if you want to change or add key definitions, or if your System Administrator has changed the key mappings in the default style file).

You can check the key or key combination mapped to a 3270 function, change the definition, or add a new key or key combination either from the main screen or during a 3270 emulation session. Press KEYS to display the View and Define Key Definitions dialog box. For more information about customizing the keyboard for your applications, see Chapter 6, “Customizing 3270 Emulation.”

Some of the terminal keys listed here as defaults are `terminfo` keys; your keyboard may not have a key that has exactly the same name. If you do not know where to find these keys on your keyboard, contact your System Administrator.

Functions within Groups and Corresponding Keys

The tables in this section describe the attributes and functions that are associated with 3270 emulation and file transfer. The tables also list the specific terminal keys and key combinations assigned to these attributes and functions.

The functions are grouped as follows:

- Program function keys
- Program access keys
- Printer control keys
- 3270 system keys
- Miscellaneous system keys (including session selection keys)
- Edit keys
- Character keys

You or your System Administrator may have remapped these functions and attributes to match your terminal type or a specific host application. If so, you can record the new key mappings in the spaces provided.

You can find out your key mappings during a 3270 session by pressing KEYS (default keystroke `Ctrl + K`). The View and Define Key Definitions dialog box will be displayed. You can review its lists of functions and the keys or combinations to which they are currently mapped.

Program Function Keys

The particular host application determines the function of each of these keys. Other applications use them for different purposes and may use only some of the keys. The third column provides a space to record custom values if you change or add key definitions, or if your System Administrator changes the key mappings in the default style file.

Default Keyboard Mappings
Functions within Groups and Corresponding Keys

Table A-1

Program Function Keys

Host Key	Default Key Mapping	Current Key Mapping
PF1	F1	
PF2	F2	
PF3	F3	
PF4	F4	
PF5	F5	
PF6	F6	
PF7	F7	
PF8	F8	
PF9	F9	
PF10	F10	
PF11	F11	
PF12	F12	
PF13	Esc F1	
PF14	Esc F2	
PF15	Esc F3	
PF16	Esc F4	
PF17	Esc F5	
PF18	Esc F6	
PF19	Esc F7	
PF20	Esc F8	
PF21	Esc F9	

Host Key	Default Key Mapping	Current Key Mapping
PF22	Esc F10	
PF23	Esc F11	
PF24	Esc F12	

Program Access Keys

The Program Access keys instruct an application program to perform a single function rather than processing display data. The function performed by each of these keys is determined by the host application program; some programs do not support them.

Table A-2

Program Access Keys

3270 Key	Default Key Mapping	Current Key Mapping	Function
PA1	Esc Esc F1		Program Access 1
PA2	Esc Esc F2		Program Access 2
PA3	Esc Esc F3		Program Access 3

Printer Control Keys

The Printer Control keys are used to control printing operations during a 3270 emulation session. The following table shows each default 3270 key used for printer control, the key combination mapped to the 3270 function, and the function definition.

Table A-3 Printer Control Keys

3270 Key	Default Key Mapping	Current Key Mapping	Function
DEV CNCL	Esc D		Device Cancel: cancels a local copy printing operation. Also press DEV CNCL if you receive a message on the status line indicating that the printer is busy or has an error. This cancels the print attempt and continues 3270 emulation.
PRINT	Ctrl + P		Sends a copy of the 3270 display to the local printer.

3270 System Keys

The 3270 System keys are used to control access to sessions (host control and application), cursor appearance, and keyboard access.

Table A-4 3270 System Keys

3270 Key	Default Key Mapping	Current Key Mapping	Function
ATTN	Ctrl + A		Attention: TN3270 does not support this function. A Function Unavailable message is displayed if you use it.
CLEAR	Ctrl + C		Clears the display of all data and formatting information. The host application may or may not redraw the screen.
CURS SEL	Esc C		Cursor Select: selects application fields that use a light pen rather than the keyboard to send input to the host. To select a field, move the cursor to the start of the field and press CURS SEL.
ENTER	Enter or Ctrl + M		Sends data to the host for processing. Your keyboard is locked until the host responds.

3270 Key	Default Key Mapping	Current Key Mapping	Function
SYSREQ	Ctrl + Y		System Request: TN3270 does not support this function. A Function Unavailable message will be displayed if you use it.
ALT CURS	Esc A		Alternate Cursor: toggles between a normal cursor and a "visible" cursor. ("Visible" means that the cursor appears highlighted to make it easier to see; the appearance depends on your terminal, and some terminals cannot distinguish between this and a normal cursor.)
RESET	Esc R		Unlocks the keyboard when it locks due to an error. (If the keyboard locks due to a printer error, press DEV CNCL, Esc D.)

Miscellaneous System Keys

The Miscellaneous System keys are used to control system functions for information display and keystroke sequencing.

Table A-5 **Miscellaneous System Keys**

3270 Key	Default Key Mapping	Current Key Mapping	Function
EXIT	Ctrl + X		Ends 3270 emulation and returns to the operating system prompt.
TEMPEXIT	Ctrl + Z		<p>Performs a temporary exit to the HP-UX command prompt while the TN3270 emulation program is running. This starts a new HP-UX shell of the type specified by the <code>SHELL</code> environment variable (the default is <code>/bin/sh</code>). To return to 3270 emulation, use your terminal's EOF sequence (typically Ctrl + D).</p> <p>This key is not supported in the Motif emulation program. Instead, you can move to a new window by using the mouse as you normally do.</p>
REDRAW	Ctrl + R		Redraws the screen; you can use this keystroke if the display has become corrupted (for instance, by another program running on your terminal).
ACTIONS	Ctrl + U		Returns to the main screen from 3270 emulation. (Press Esc to move from the main screen to the current 3270 session.)
KEYS	Ctrl + K		Displays the View and Define Key Definitions dialog box.
FILE XFR	Ctrl + F		Displays the File Transfer dialog box to monitor, start, or terminate file transfer processes.

3270 Key	Default Key Mapping	Current Key Mapping	Function
STAT HELP	Ctrl + O		Status Line Help: interprets the contents of the current session's status line and displays the information about your screen in text format. To remove the status line help information from the screen when you have finished viewing it, press STAT HELP again.
NUM OVR	Esc N		Numeric Override: lets you enter non-numeric information in a field designated as a numeric field.
STAT TOG	Ctrl + W		Status Line Toggle: switches between displaying the status line all the time, and displaying it only when it contains a Do Not Enter or Communications Check message. For more information, see Appendix B, "Status Line Information."
			Motif This key is not supported in the Motif emulation program. The status line is always displayed.
			End of section
RECORD	Esc S		Records a sequence of 3270 keystrokes so that you can replay them later. Press RECORD followed by one of the keys PF1–PF24 (these are used as identifiers for up to 24 keystroke sequences) to start recording; press RECORD again to finish recording and save the keystrokes, or QUIT to abandon recording.

Default Keyboard Mappings
Functions within Groups and Corresponding Keys

3270 Key	Default Key Mapping	Current Key Mapping	Function
REPLAY	Esc P		Replays a sequence of 3270 keystrokes that you recorded using the RECORD key. Press REPLAY followed by one of the keys PF1–PF24 (these are used as identifiers for up to 24 keystroke sequences) to identify the keystroke sequence to replay; press QUIT to abandon replay. Also, press REPLAY to continue when the sequence you are replaying has paused for you to enter variable data.
PAUSE	Esc W		Pauses while recording a sequence of 3270 keystrokes so that you can insert variable data. Press PAUSE, type the variable data (which is not recorded), and press PAUSE again to continue recording.
QUIT	Ctrl + T		Abandons recording or replaying a keystroke sequence. When you are recording, press QUIT to stop recording and restore the previous keystroke sequence (if any) assigned to the PF key in use; when replaying, QUIT stops the output of further keystrokes from the recorded sequence.
SOSI TOG	Esc T		Toggles the display of SO/SI characters on or off. For information about how these characters are displayed, see Chapter 3, “Getting Started with 3270 Emulation.”

3270 Key	Default Key Mapping	Current Key Mapping	Function
KANA TOG	Ctrl + G		Toggles the display between Katakana and lowercase English characters. This key is used only with the Japanese host language.
KANA KEY	Esc K		Toggles the keyboard input between Katakana and lowercase English characters. This key can be used only if you are using the Japanese host language with the Katakana code page (930).
NEXTSESS	Ctrl + V		Moves to the next active 3270 display session in session number order. Motif This key is not supported in the Motif emulation program. Instead, you can move to another session by using the mouse to click on the new session's window. End of section

Session Selection Keys

Use the Session Selection keys to jump to a particular 3270 display session. Press the key combination that represents the session number that you want to select. (You can also get to a particular session by pressing NEXTSESS until you get to the session you want.)

Motif These keys are not supported in the Motif emulation program. Instead, you can move to another session by using the mouse to click on the new session's window.

End of section

Table A-6

Session Selection Keys

Session	Default Mapping	Current Mapping
SESS 1	Esc 1	
SESS 2	Esc 2	
SESS 3	Esc 3	
SESS 4	Esc 4	
SESS 5	Esc 5	
SESS 6	Esc 6	
SESS 7	Esc 7	
SESS 8	Esc 8	
SESS 9	Esc 9	
SESS 10	Esc 0	

Edit Keys

Use the Edit keys to move the cursor to a new position and adjust text during a 3270 display session.

Table A-7 **Edit Keys**

3270 Key	Default Key Mapping	Current Key Mapping	Function
UP	Up		Moves the cursor up one line. Pressing this key when the cursor is on line 1 at the top of the display moves the cursor to the last line.
DOWN	Down		Moves the cursor down one line. Pressing this key when the cursor is on the bottom line of the display moves the cursor to the first line.
LEFT	Left		Moves the cursor one space to the left. If the cursor is at the first character position in a line, LEFT moves the cursor to the last character position of the preceding line. If the cursor is at the first character position of line 1, LEFT moves the cursor to the last character position on the bottom line of the display.
LEFT DB	PageUp		Left Double: moves the cursor left two spaces.
RIGHT	Right		Moves the cursor one space to the right. If the cursor is at the last character position in a line, RIGHT moves the cursor to the first character position of the next line. If the cursor is at the last character position of the last line of the display, RIGHT moves the cursor to the first character position on the first line of the display.
RIGHT DB	PageDown		Right Double: moves the cursor right two spaces.
BACKSPACE	Ctrl + H		Moves the cursor one space to the left. This key provides the same function as LEFT.
TAB	Tab or Ctrl + I		Moves the cursor to the first position of the next input field on the display. If the display is unformatted (has no input fields), the cursor moves to the first position of line 1.

3270 Key	Default Key Mapping	Current Key Mapping	Function
BACKTAB	Backtab		Moves the cursor to the first position of the current input field. If the cursor is already in this position, BACKTAB moves the cursor to the first position of the preceding input field. If the display is unformatted (has no input fields), the cursor moves to the first position of line 1.
HOME	Home		Moves the cursor to the first position of the first input field of the display. If the display is unformatted (has no input fields), the cursor moves to the first position of line 1.
NEW LINE	Ctrl + N		Moves the cursor to one of several display locations. One of the following occurs when you press NEW LINE: <ul style="list-style-type: none">• In an unformatted display, the cursor moves to the first position in the next line.• In a formatted display, the cursor moves to the first unprotected character position on the next line or below.• When the display contains no unprotected lines, the cursor moves to the first position on line 1.
INSERT	Insert		Puts the keyboard into insert mode. New characters are inserted at the cursor, and existing text shifts to the right. To quit insert mode, press RESET Esc R . When you send data to the host by using an attention key such as ENTER, insert mode is cleared.

3270 Key	Default Key Mapping	Current Key Mapping	Function
DELETE	Del		Deletes a character at the cursor position. Characters to the right of the cursor shift one space to the left. This occurs only if the cursor is in an input field. Otherwise, the terminal beeps and the keyboard locks until you press RESET Esc R.
DUP	Ctrl + D		Puts the special Dup character (displayed as "*") in the selected field. Some host programs use the DUP key for special functions.
FMARK	Esc F		Field Mark: puts the special Field Mark character (displayed as ";") in the selected field. Some host programs use the FMARK key for special functions.
ERASE EOF	Ctrl + E		Erase to End of Field: erases all data from the cursor position to the end of the current field. If the display is not formatted, ERASE EOF erases all characters from the cursor to the end of the display.
ERASE INP	Esc E		Erase Input: erases the contents of all input fields on the display and moves the cursor to the first input field on the display. If you press ERASE INP when the cursor is not in an input field, the terminal beeps and the keyboard is disabled until you press RESET Esc R.

Character Keys

Character keys include uppercase and lowercase letters, numbers, and punctuation.

The set of valid characters will vary with your choice of host language. Select the host language you are using before attempting to remap character keys. For single-byte languages, the default key mapping in all cases is the standard character key corresponding to the character.

Default Keyboard Mappings

Functions within Groups and Corresponding Keys

For double-byte languages, the methods for entering characters from your HP-UX keyboard vary between different operating systems. If you need to use these characters, your TN3270 product supplier should provide information about how to enter them on your system.

Alphabetical List of Functions and Corresponding Keys

The following table lists all 3270 functions (other than character keys) in alphabetical order, and matches these functions to the default keys and key combinations assigned to them.

Table A-8 **All 3270 Function Keys**

Function	Default Mapping	Current Mapping	Key Group
ACTIONS	Ctrl + U		Miscellaneous system
ALT CURS	Esc A		3270 system
ATTN	Ctrl + A		Program access
BACKSPACE	Ctrl + H		Edit keys
BACKTAB	Backtab		Edit keys
CENT ¢	[Character keys
CLEAR	Ctrl + C		Program access
CURS SEL	Esc C		Program access
DELETE	Delete		Edit keys
DEV CNCL	Esc D		Printer control
DOWN	Down		Edit keys
DUP	Ctrl + D		Edit keys
ENTER	Enter or Ctrl + M		Program access
ERASE EOF	Ctrl + E		Edit keys
ERASE INP	Esc E		Edit keys
EXIT	Ctrl + X		Miscellaneous system

Function	Default Mapping	Current Mapping	Key Group
FILE XFR	Ctrl + F		Miscellaneous system
FMARK	Esc F		Edit keys
HOME	Home		Edit keys
INSERT	Insert		Edit keys
KANA KEY	Esc K		Miscellaneous system
KANA TOG	Ctrl + G		Miscellaneous system
KEYS	Ctrl + K		Miscellaneous system
LEFT	Left		Edit keys
LEFT DB	PageUp		Edit keys
NEW LINE	Ctrl + N		Edit keys
NEXTSESS	Ctrl + V		Miscellaneous system
NOT ~	^		Character keys
NUM OVR	Esc N		Miscellaneous system
PA1	Esc Esc F1		Program access
PA2	Esc Esc F2		Program access
PA3	Esc Esc F3		Program access
PAUSE	Esc W		Miscellaneous system
PF1	F1		Program function
PF2	F2		Program function
PF3	F3		Program function
PF4	F4		Program function
PF5	F5		Program function
PF6	F6		Program function

Function	Default Mapping	Current Mapping	Key Group
PF7	F7		Program function
PF8	F8		Program function
PF9	F9		Program function
PF10	F10		Program function
PF11	F11		Program function
PF12	F12		Program function
PF13	Esc F1		Program function
PF14	Esc F2		Program function
PF15	Esc F3		Program function
PF16	Esc F4		Program function
PF17	Esc F5		Program function
PF18	Esc F6		Program function
PF19	Esc F7		Program function
PF20	Esc F8		Program function
PF21	Esc F9		Program function
PF22	Esc F10		Program function
PF23	Esc F11		Program function
PF24	Esc F12		Program function
PRINT	Ctrl + P		Printer control
QUIT	Ctrl + T		Miscellaneous system
RECORD	Esc S		Miscellaneous system
REDRAW	Ctrl + R		Miscellaneous system
REPLAY	Esc P		Miscellaneous system

Default Keyboard Mappings

Alphabetical List of Functions and Corresponding Keys

Function	Default Mapping	Current Mapping	Key Group
RESET	Esc R		3270 system
RIGHT	Right		Edit keys
RIGHT DB	PageDown		Edit keys
SESS 1	Esc 1		Miscellaneous system
SESS 2	Esc 2		Miscellaneous system
SESS 3	Esc 3		Miscellaneous system
SESS 4	Esc 4		Miscellaneous system
SESS 5	Esc 5		Miscellaneous system
SESS 6	Esc 6		Miscellaneous system
SESS 7	Esc 7		Miscellaneous system
SESS 8	Esc 8		Miscellaneous system
SESS 9	Esc 9		Miscellaneous system
SESS 10	Esc 0		Miscellaneous system
SOSI TOG	Esc T		Miscellaneous system
STAT HELP	Ctrl + O		Miscellaneous system
STAT TOG	Ctrl + W		Miscellaneous system
SYSREQ	Ctrl + Y		3270 system
TAB	Tab or Ctrl + I		Edit keys
UNDERLINE	Esc Ctrl + U		3179G system
UP	Up		Edit keys
VERTBAR]		Character keys

B **Status Line Information**

Overview

During a 3270 session, the bottom line of your display becomes the status line—an operator information area that presents messages about the current session. This appendix explains the messages and symbols that appear on the status line for the current session.

How the Status Line Is Displayed

The way in which the status line is displayed on the screen depends on your terminal's hardware and software and on your 3270 customization, as follows:

- If your terminal's hardware and its `terminfo` entry both support a status line to which user programs can write, you can customize 3270 sessions to write the 3270 status line to the terminal's status line. For more information about `terminfo` requirements, contact your System Administrator or refer to the *HP-UX TN3270 Administrators Guide*.
- If status line display is not supported by your terminal, or if you choose not to use it, the TN3270 emulation program uses the last line of the terminal's screen to display the status line. If your terminal's screen has more lines than required for the 3270 emulation display (for example, if you are using screen model 2, which has 24 lines on a 25-line screen), the status line is shown below the 3270 emulation display. If not (for example, if you are using screen model 4, which has 43 lines on a 43-line screen), the status line shares the last line of the screen with the last line of the 3270 emulation display; pressing the STAT TOG (Status Line Toggle) key (default keystroke `Ctrl + W`) alternates between displaying the status line and displaying the last line of the 3270 display.

Status Line Display Modes

You have a choice between the following display modes for the status line:

Always on

The status line appears all the time.

On when required

The status line is blank unless a Do Not Enter or Communications Check message is displayed. It appears when a condition occurs that causes one of these messages and returns to blank when the condition is cleared.

Status Line Information

How the Status Line Is Displayed

The “Status line displayed at startup” option in the Customize Miscellaneous Options dialog box (see Chapter 6, “Customizing 3270 Emulation,”) specifies which mode the program uses when it first starts up.

While the program is running, you can switch between the two modes using the STAT TOG (Status Line Toggle) key (default keystroke **Ctrl + W**). If you press STAT TOG while the status line is shown, the status line disappears, and the status line display mode changes to “on when required” mode; that is, it reappears when there is a new Do Not Enter or Communications Check message to be displayed. If you press STAT TOG while the status line is not shown, the status line reappears, and the status line display mode changes to always on mode.

If the status line is shared with the last line of the 3270 emulation display, the STAT TOG key also switches between showing the status line and showing the last line of the 3270 emulation display. If you press STAT TOG while the status line is shown, to move into “on when required” mode, the last line of the 3270 emulation display appears instead. If you press STAT TOG while the last line of the 3270 emulation display is shown, the status line appears instead.

Motif

The status line is always displayed as a separate line below the 3270 emulation display and is not shared with the last display line. The STAT TOG key is not supported in the Motif program.

End of section

Status Line Display for Keystroke Recording and Replay

When you use the RECORD or REPLAY keys (see “Keystroke Recording and Replay”), the status line display is temporarily replaced by a list of the identifiers assigned to recorded keystroke sequences. The normal status line display is restored when you select an identifier for the keystroke sequence to record or replay.

Status Line Help

To obtain more information about the contents of the current session's status line, you can use the key STAT HELP (default keystroke **Ctrl + O**) to display a screen of help information. This screen interprets the status

line information for the current session and displays it as text strings instead of the symbols used on the status line. The screen includes the following:

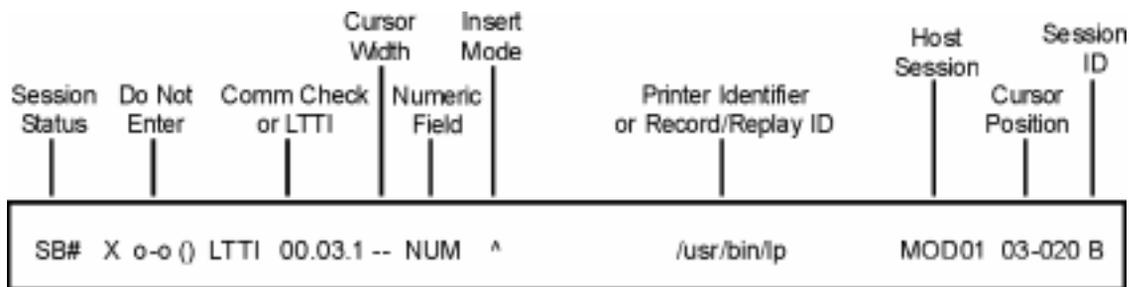
- Session state
- TN3270 emulation program state (for example a communications check code or a Do Not Enter message)
- Input state (insert/replace, numeric, and cursor width)
- Host session
- Session ID (if one is assigned)
- Last host response time
- Name of the printer or file to which local copy printing on this session is directed

When you have finished viewing this help information, press STAT HELP again to remove it from the screen.

Overview of the Status Line

Figure B-1, “TN3270 emulation program Status Line,” shows a typical TN3270 emulation program status line and identifies the types of messages displayed.

Figure B-1 TN3270 emulation program Status Line



Motif

The Motif TN3270 emulation program uses graphical symbols for some of the messages on the status line, which are similar to the symbols used on an IBM terminal, instead of the character messages shown here. The overall format of the status line and the meaning of individual messages is the same for both character-based and Motif versions.

The Motif symbols are shown in this appendix only where they are different from the character symbols; when no Motif information is shown, the Motif symbol is the same as the character symbol.

End of section

The status line messages are grouped into these categories:

- Session Status messages
- Do Not Enter messages
- Communications Check Codes
- Last Transaction Time Indicator (LTTI)
- Cursor Width indicator
- Numeric indicator

- Insert indicator
- Printer identifier
- Record/Replay ID
- Host session
- Cursor Position
- Session ID

The following sections explain the messages that can appear in each of these categories, and describes any actions necessary as a result of a given message.

Session Status Messages

The following Session Status messages tell you whether your computer and the host system are ready to communicate:

S

At initialization, this message indicates that the TN3270 emulation program is not yet connected to the host; after a few seconds, it should change to one of the other messages in this list.

If the session has started but has been interrupted, this message indicates that the connection to the host has failed. There should be a communications check code (-+z_ **nnn**) displayed; check this in “Communications Check Codes”.

SB?

The TN3270 emulation program is connected to the host, but the 3270 LU has not yet been activated. This message should change to SB* after a few seconds.

SBN

The session is in Network Virtual Terminal (NVT) mode, usually because it is negotiating whether to use TN3270, TN3270E, or TN3287 protocols. Data that appears on the screen is NVT data, not 3270 data.

SB*

The display station is in session with the host component called System Services Control Point (SSCP) which handles logging on. The LU has been successfully activated.

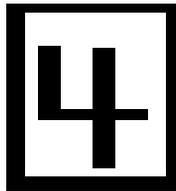
Either you have not yet logged on to a host application, in which case you should enter the appropriate logon command for the required host application, or you have used the SYSREQ key (default keystroke **Ctrl + Y**) to switch to the host control session, in which case you should use SYSREQ again to return to the application session.

SB#

The 3270 emulation session has established communication with the host application program. If the session is using TN3270E protocols, the name of the host application is shown in the Control Display Sessions dialog box. Log on to the host application if you have not already done so.

Motif

This symbol is used instead of the uppercase S character.



This symbol is used instead of the * character.



This symbol is used instead of the # character.



End of section

Do Not Enter Messages

Some Do Not Enter messages indicate normal conditions that occur during most sessions. Others indicate that your keyboard is disabled temporarily due to an error (you must use the RESET or DEV CNCL keystrokes before proceeding) or indicate abnormal conditions that your System Administrator should correct. One of the following Do Not Enter messages may be displayed:

X -f

Function Unavailable: You used a key that is not valid. For example, you may have used a Program Function key when the host is waiting for a logon message. Press RESET (default keystroke **Esc R**) to continue.

X o-o()

Printing: Local Copy printing is in progress. No action necessary.

X o-o() ()

Printer Busy: Your printer is printing data from the host and cannot perform the local copy print you requested. The RESET key does not unlock the keyboard when this message is displayed. Press DEV CNCL to continue.

X o-Ø

Printer Error: The Local Copy printer or print spooler is not working. The print request has been canceled. (Note that Ø indicates a zero character, which appears on most terminals as a crossed-out circle.) Press DEV CNCL (default keystroke **Esc D**) to proceed. Rectify the printer problem and retry the operation.

o-Ø>FIL

Print to File Error: the TN3270 emulation program cannot write to the file to which local copy output is directed. Possible causes of this error are that the file name is not valid, the directory specified does not exist, or you do not have write access to the specified file. The print request has been canceled. (Note that Ø here indicates a zero character, which appears on most terminals as a crossed-out circle.)

- Press DEV CNCL (default keystroke **Esc D**) to proceed. Check the reason for the file error, and retry the operation.
- X ?+
- Keystroke Lost: A keystroke has been lost. Either you were typing at a faster rate than can be serviced, or a keystroke you typed was not understood.
Press RESET (default keystroke **Esc R**) to continue.
- X PROGnnn
- Program Check Code: the TN3270 emulation program has detected a protocol error in the data coming from the host. The code nnn is a 3-digit numeric program check code.
Press RESET (default keystroke **Esc R**) to continue. If the error recurs, note the program check code nnn which is displayed, and report the problem to your System Administrator. (Program check codes are listed at the end of this appendix.)
- X *>
- Field Full: An attempt has been made to insert data into a full field.
Press RESET (default keystroke **Esc R**) to continue. If the field does not appear to be full, there may be blank characters at the end of the field; to remove them, move the cursor past the last visible character and use ERASE EOF (default keystroke **Ctrl + E**).
- X <*>
- Protected: An attempt has been made to enter data into a protected screen position.
Press RESET (default keystroke **Esc R**) to continue.
- X *NUM
- Range Check: A character that is not valid was entered for a numeric field.
Press RESET (default keystroke **Esc R**) to continue.
- X SYSTEM
- System Lock: The host has locked the keyboard.
Press RESET (default keystroke **Esc R**) to continue.
- X ()

Status Line Information
Do Not Enter Messages

Wait: The system is waiting for the host to reply, or for local processing to complete.

If the situation persists for an unreasonable time, contact your System Administrator. You may be able to stop and restart the 3270 session by using the ATTN key (default keystroke **Ctrl + A**) or SYSREQ (default keystroke **Ctrl + Y**) and logging off.

X () FT

Wait for File Transfer: File transfer is in progress. You can use the Control File Transfer dialog to check the progress of the file transfer; some hosts may also write messages to the screen.

Motif

This symbol (printer) is used instead of the o-o symbol.



This symbol (wait) is used instead of the () symbol.



This symbol (printer error) is used instead of the o-Ø symbol.



This symbol (operator) is used instead of the * character.



End of section

Communications Check Codes

Communications Check codes indicate the status of your connection to the host. They appear on the status line as `-+z_nnn`, where `nnn` is a three-digit number.

Some of these numbers indicate normal conditions that occur during initialization and will be cleared automatically; others indicate problems with either configuration or hardware. The values that can be displayed, and the actions required, are as follows:

Table B-1 **Communications Check Codes**

Number	Name	Description
900	Idle State	Session has not yet attempted to open a TCP/IP connection. Session is disabled.
910	Hunt State	Session is attempting to open a TCP/IP connection.
924	Failed to Open TCP/IP Connection	Session failed to open a TCP/IP connection (it will retry automatically).

Last Transaction Time Indicator

The Last Transaction Time Indicator (LTTI) measures the time between pressing ENTER or an AID key to send data to the host and receiving the response from the host. If the configuration file does not enable you to view host response times for your 3270 emulation sessions, this indicator does not appear.

This information occupies the same location on the status line as Communications Check codes, which override LTTI. Information is displayed as `LTTI mm:ss.t`, in which **mm** represents minutes, **ss** represents seconds, and **t** represents tenths of seconds.

Cursor Width Indicator

The Cursor Width indicator appears only if your host language (specified using the `LANG` environment variable) is a double-byte language. It appears as a single dash if the cursor is at a screen position where you can enter a single-byte character and as two dashes if the cursor is at a screen position where you can enter a double-byte character.

Motif

The Cursor Width indicator does not appear on the status line in the Motif program. Instead, the cursor itself appears as a single-width or double-width character to indicate the type of character that can be entered.

End of section

Numeric Indicator

When the cursor is in a field defined as being numeric only, NUM is displayed on the status line. The only valid characters you can enter are numerics (0–9), the minus sign (-), period (.), comma (,) and the Dup character (default keystroke **Ctrl + D**); any other characters will cause a *NUM system message. If you are sure that other characters will be accepted by the host, you can override the numeric restriction by using the NUM OVR keystroke (default keystroke **Esc N**).

Insert Indicator

When your keyboard is in Insert mode, the caret symbol (^) is displayed on the status line of your display. When you enter characters under Insert mode, they are inserted at the cursor position, and characters to the right of the cursor are moved to the right to make room for them. When Insert mode is not active, characters entered from the keyboard overwrite the existing data at the cursor position. Press the INSERT key (default keystroke `Insert`) to enter insert mode, and press the RESET key (default keystroke `Esc R`) to leave insert mode.

Printer Identifier

The Printer Identifier message displays the name of the HP-UX printer or print spooler to which local copy print data is sent for this session, or the file name if you specified Print to File. For details about how to specify the printer or file name for a 3270 session, see Chapter 6, “Customizing 3270 Emulation.” Where a file name is shown, the full directory path is included, unless it contains too many characters for the space available (in which case only the file name is shown).

Record/Replay ID

The Record/Replay ID messages remind you of the PF key identifier for a keystroke sequence you are recording or replaying.

RECORD **nn**

Indicates that you are recording a keystroke sequence identified by the PF key numbered **nn**.

RECORD PF KEY (list of PF keys)

Indicates that you pressed the RECORD key to start recording a keystroke sequence and shows the PF keys that already have sequences assigned to them. Press a PF key to identify the sequence.

REPLAY **nn**

Indicates that you are replaying a keystroke sequence identified by the PF key numbered **nn**.

REPLAY PF KEY (list of PF keys)

Indicates that you pressed the REPLAY key to start replaying a keystroke sequence and shows the PF keys that already have sequences assigned to them. Press one of the PF keys shown to identify the sequence to replay.

BUFFER LOW (mm)

Indicates that you have already entered 1475 keystrokes or more while recording a keystroke sequence (the maximum number of keystrokes in any one recorded sequence is 1500). The value **mm** is the number of further keystrokes you can record before reaching the limit (up to 25).

Host Session

The Host Session indicates the name of the host session record in the configuration file. It does not indicate the TCP/IP host name. When multiple sessions for different LUs on the same TCP/IP host exist, the sessions usually have different host session record names, so that you can distinguish them.

If you are reporting an error condition to your System Administrator, you should also report this name for the session on which the problem occurred.

Cursor Position Message

This message indicates the current position of the cursor on the 3270 display. It appears as `rr-ccc`, where `rr` represents the row number, and `ccc` represents the column number.

Motif

The Cursor Position message does not appear on the status line in the Motif program.

End of section

Session ID

The Session ID indicates the identifier of this session, if you have assigned one. The session ID can be assigned in the style file or specified on the command line when starting the TN3270 emulation program. If it is assigned in the style file, it is always in the range A–Z; if it is assigned on the command line, it may be any ASCII character between 0x01 and 0xFF. Characters other than uppercase A–Z are displayed as an asterisk (*).

You must assign a session ID if the session is to be used for file transfer or for running HLLAPI applications; otherwise, it is optional.

Program Check Codes

Program Check codes indicate protocol or data stream errors detected by the TN3270 emulation program. They appear on the 3270 status line as PROGnnn messages, where nnn is defined as follows:

Table B-2 **Program Check Codes**

Number	Description
401	Invalid command received or invalid alias for SFE, MF, or SA
402	Out of range address for SEA, RA, or EUA order MF order addressed non-field attribute location
403	Data stream data after Rd, Rd Mod, EAU command Invalid parameter following SFE, MF, SA, GE, or RA order
404	Data stream terminated before end of order
413	Function not supported
422	New response chains not allowed
423	FI bit not allowed for function management (FM) data
430	Sequence number error
431	Chaining error
432	Bracket error
433	Data traffic reset
434	Direction error
442	Request not executable
443	Change direction (CD) required
445	Activate LU (ACTLU) type not COLD or error recovery procedure (ERP) —internal error
470	Unsupported code point received

Number	Description
471	Extended data stream function not supported
472	Read state error
474	The device does not support extended data stream
475	WCC had "Start Print" but not last structured field
498	Negative response received
499	An internal error occurred; see the error log file for details
701	Unsupported category
702	Received RU was too large
703	Unsupported function
704	Unrecognized format indicator
705	Sequence number error
706	Chaining error
707	Bracketing error
708	Data received when in data traffic set state
709	Data received when not in receive state
711	Session constraints exceeded
712	Bracket bid refused—no ready to receive (RTR)
713	Session was already set up
726	Negative acknowledgement received
727	Exception request received
728	Change direction (CD) required
729	Read Partition Query structured field sent in incorrect state
747	SCS data stream error
750	Invalid command received

Status Line Information
Program Check Codes

Number	Description
752	Out of range address for SEA, RA, or EUA order MF order addressed nonfield attribute location
753	Data stream data after Rd, Rd Mod, EAU command Invalid parameter following SFE, MF, SA, GE, or RA order
754	Data stream terminated before end of order
755	Invalid command for data stream
756	Error in a structured field
758	Incorrect Set Reply Mode command
759	Incorrect Set Reply Mode attribute type indicator Read Partition was not the last structured field Incorrect structured field length indicator Structured field not complete Incorrect Read Partition type indicator
760	Invalid Set Reply Mode attribute byte
761	Incorrect partition indicated
771	Invalid command within a structured field
778	ACTLU type not COLD or error recovery procedure (ERP) —internal error
779	Violation of pacing rules
780	Error in a graphic program (graphic data, picture, SF command, and so on)
781	GDM check—mistake in a graphic SF command
782	GPP check—graphic command error

Number	Description
797	Shift-out (SO) received in a Kanji subfield Unpaired shift-out/shift-in (SO/SI)
798	Error in subcommand or control code in Kanji field. Shift-out/shift-in (SO/SI) included in Kanji field.
799	Address indicator incorrect for writing in Kanji field or Kanji subfield (did not specify an odd location following an attribute character or SO). Stop address in Kanji field or Kanji subfield, or with incorrect indicator (did not specify an odd location following an attribute character or SO).

Status Line Information
Program Check Codes

Overview

This appendix explains the file transfer messages generated by the TN3270 emulation program and the TRANS_{nnn} messages generated by the host file transfer program. It includes the following:

- Messages generated by the TN3270 emulation program during file transfer using the menu interface
- Messages generated during command-line file transfer. These messages include some messages that are generated by the host IND\$FILE or APVUFILE program, which may also appear in the File Transfer dialog box. Others are generated by the TN3270 emulation program and apply only to command-line file transfer.

In addition, some host programs may indicate error conditions by writing messages to the screen, rather than by sending TRANS_{nnn} messages. If the host program writes a message to the 3270 emulation screen during file transfer (which does not necessarily indicate an error), the emulator displays this message in the File Transfer dialog box and also logs it in the error log file.

If your host system generates messages other than TRANS_{nnn} (for example INW_{nnnn}), you can still use file transfer, but it is not fully supported. When you use the menu interface, the host file transfer message number and text are displayed as for TRANS_{nnn} messages, but you will need to refer to your host documentation for explanations of the messages.

The TN3270 emulation program command-line file transfer does not fully distinguish between different INW_{nnnn} messages. INW messages indicating a successful file transfer are replaced by the message TRANS098, and those indicating an unsuccessful file transfer are replaced by the message TRANS099.

Menu Interface File Transfer Messages

This section describes the file transfer messages generated during file transfer processes initiated from the menu interface. These messages are displayed in the File Transfer dialog box.

Completed successfully

The operation is complete; no action is required.

Error - host initiated transfer in screen mode

The host configuration is incorrect—the host attempted to start a file transfer process in screen mode, which the TN3270 emulation program cannot support. Use the Control Display Sessions dialog to disable the session (this is the only way to clear the condition), and then report the problem to your System Administrator.

File transfer aborted by user

You canceled the transfer operation. No action is required. (This message occurs if you cancel the file transfer before the host has accepted your file transfer request or after the host has completed it.)

File transfer could not be started due to lack of local resources

The TN3270 emulation program cannot allocate enough memory for the data buffer needed for a file transfer process (generally because too many other processes are running at the same time). Retry when other file transfer processes have finished or when there are not so many users on the system. If this problem occurs repeatedly, contact your System Administrator.

General I/O fault

The HP-UX computer has a problem reading or writing. Retry the operation. If unsuccessful, contact your System Administrator or technical support.

Number of bytes transferred: nn

Information message, after completion of the file transfer command.

Not allowed to delete the specified local file

A local file was created during an attempt to receive a host file, but the file transfer has failed. The access permissions of the file do not allow the emulator to delete it; you will have to remove it manually.

Not allowed to read from the specified local file

You attempted to send a file to the host, but you do not have read permission for the file. The file transfer was canceled.

Not allowed to write to the specified local file

You attempted to receive a file from the host, but you do not have write permission for the local file or directory which was to receive the host data. The file transfer was canceled.

Operator cancel

You canceled the file transfer. No action is required. (This message occurs when you cancel a file transfer in progress, and the host returns an acknowledgement that the process has been canceled.)

Request received out of sequence

This usually indicates that the version of `IND$FILE` (or other file transfer program) at the host is incompatible with the emulator. Report full details to the System Administrator.

Structured field not supported

The TN3270 emulation program supports structured field file transfer only if the Mainframe Administrator has set the query bit in VTAM. Report full details to the System Administrator or Host Administrator.

The specified local file or directory does not exist

The local file name or directory you specified does not exist. The file transfer was canceled. Check the correct file and directory, and retry.

Host File Transfer Messages

This section explains host file transfer messages, which are generated in two ways:

- Some of these messages are generated by the TN3270 emulation program and appear only during command-line file transfer.
- Other messages are generated by the host `IND$FILE` or `APVUFILE` program and may appear either in the TN3270 emulation program's menu interface or on a command-line file transfer process.

Different versions of the host file transfer program may use different wordings for some `TRANSnnn` messages. To look up a message in this list, match the `TRANSnnn` message number rather than trying to match the text.

Some versions of the host file transfer program may use a string other than `TRANS` to identify file transfer messages or may generate additional messages not listed here. If the menu interface displays a message that is not listed here, refer to the host program's documentation or contact your host system personnel for more information.

`TRANS000`

`An error occurred during file transfer. File transfer was canceled.`

Retry the file transfer. If it continues to fail, the TN3270 emulation program probably has an internal error. Contact your support personnel.

`TRANS003`

`File transfer complete.`

File transfer completed successfully.

`TRANS004`

`File transfer is complete. Some records were segmented.`

File transfer completed successfully. Some records were longer than the specified host record length and were divided into multiple records.

File Transfer Messages
Host File Transfer Messages

For files containing double-byte characters, the record length increases if you convert the file to EBCDIC and insert SO/SI characters while sending it to the host. This may result in records that exceed the specified record length. To avoid this error, either increase the host record length (if you are creating a new host file), or reduce the length of records in the HP-UX file before transferring it.

TRANS005

The local file name was incorrect or not found. File transfer was canceled.

The HP-UX file name specified was not a valid file name, or a file with that name was not found for sending to the host. Check the file name and retry.

TRANS006

A required parameter was not specified. File transfer was canceled.

A parameter required in the file transfer command was not supplied. Check the syntax of the command for the appropriate host type, and retry the command.

TRANS007

The host connection was not established. File transfer was canceled.

The specified 3270 session was not active, or you did not specify a 3270 session in the file transfer command. The TN3270 emulation program will find the configured session with the session ID that occurs first alphabetically and try to use that session. Activate the required session and retry the command, or retry the command specifying an active session.

TRANS010

The host has not responded during the last timeout period.

You used the **T(nn)** option on a command-line file transfer to specify a timeout period if the host did not respond. This message appears every 30 seconds until the specified timeout period (nn 30-second periods) has

expired or until the host responds. If you are not running 3270 emulation in the background, switch to the 3270 display session to see if the host has written any messages to the screen.

TRANS011

The host connection was lost. File transfer was canceled.

The connection with the host was lost during file transfer because of a link failure, or the session may have been deactivated. Check the reasons for the failure, reactivate the session, and retry.

TRANS012

No session was found configured for HLLAPI.

You issued a file transfer command from the command line without specifying a session identifier, and no 3270 session had a session ID assigned. Assign session IDs to one or more display sessions, restart the TN3270 emulation program so that the new session IDs take effect, and then reissue the command.

TRANS013

An error occurred sending the file to the host. File transfer was canceled.

This message normally means that the file transfer was terminated through the File Transfer dialog in the TN3270 emulation program. In other cases, it indicates an unidentified error. Retry the command.

TRANS014

An error occurred receiving the file from the host. File transfer was canceled.

This message normally means that the file transfer was terminated through the File Transfer dialog in the TN3270 emulation program. In other cases, it indicates an unidentified error. Retry the command.

TRANS015

The required amount of host storage (memory) is not available. File transfer was canceled.

The host did not have enough storage available for the file transfer to be completed. Contact host personnel to arrange for more storage.

File Transfer Messages
Host File Transfer Messages

TRANS016

An incorrect request code was detected. File transfer was canceled.

This error should not occur during normal operation. Retry the command; if it continues to fail, contact your support personnel.

TRANS017

The host data set name is incorrect or missing. File transfer was canceled.

The host data set name or file name specified was not valid or did not exist. Check the correct name and retry the command.

You specified an incorrect option on the file transfer command. Check the correct syntax of the command for the appropriate host type, and retry the command. (This message may also indicate that you specified a nonexistent host data set when attempting to receive from an MVS/TSO host.)

TRANS019

An error occurred while handling the host file. File transfer was canceled.

Indicates a problem at the host. Retry the command; if it continues to fail, contact the host personnel.

TRANS022

The host session ID **sessionid** is not valid. File transfer was canceled.

The session identifier you specified on the file transfer command did not match the long name or session ID of any of your 3270 sessions. Check the correct session identifier and retry.

TRANS025

The keyboard is inhibited for the host session. File transfer was canceled.

The specified session cannot be used for file transfer because the keyboard is locked. Locking can occur when you type characters that are not valid (in which case you can clear it by pressing the RESET key) or when a session is waiting for a host response to a 3270 command. Retry the command when the keyboard has been unlocked.

TRANS026

A critical system error occurred. File transfer was canceled.

An error, such as termination of the TN3270 emulation program, occurred on the HP-UX computer. Check for error conditions, correct, and retry.

TRANS027

File transfer was canceled when maximum timeout was reached.

Different hosts use TRANS027 to indicate different errors as listed below.

The host did not respond within the timeout value you specified on the file transfer command. Retry, using a longer timeout or specifying no timeout.

TRANS027

The communication sequence with the host was disrupted. File transfer was canceled.

Retry the command. If it continues to fail, contact host personnel.

TRANS027

File transfer was canceled at the user's request.

You stopped the command-line file transfer process from the TN3270 emulation program's menu interface.

TRANS028

Option **optionname** not valid.
File transfer was canceled.

You specified an option on the file transfer command that the host did not accept. Correct the syntax and retry the command.

TRANS029

Option **optionname** not valid with RECEIVE. File transfer was canceled.

You specified an option on the RECEIVE file transfer command that is valid only for the SEND command. Correct the syntax and retry the command.

File Transfer Messages
Host File Transfer Messages

TRANS030

Option **optionname** not valid with APPEND. File transfer was canceled.

You specified an option that is not valid when the APPEND option was also specified. Correct the syntax and retry the command.

TRANS031

Option **optionname** cannot be used without the SPACE option. File transfer was canceled.

You specified an option that is valid only when the SPACE option also is specified. Correct the syntax and retry the command.

TRANS032

Option **optionname** not valid with a partitioned data set. File transfer was canceled.

You specified an option that is not valid with the host data set being used. Correct the syntax and retry the command.

TRANS033

Only one of these options (TRACKS, CYLINDERS,AVBLOCK) is allowed. File transfer was canceled.

You specified more than one of the options shown; only one can be used. Correct the syntax and retry the command.

TRANS034

The specified VM/CMS file was not found. File transfer was canceled.

The host file you specified could not be found. Check the correct name of the file, and retry the command.

TRANS035

The specified VM/CMS disk is read-only. File transfer was canceled.

You attempted to send a file to a host disk for which you do not have write access. Check that you are accessing the correct disk, or contact host personnel if you need to change access permissions.

TRANS036

The specified VM/CMS disk cannot be accessed. File transfer was canceled.

You attempted to access a host disk that is not available or for which you do not have access permission. Check that you are accessing the correct disk, or contact host personnel if you need to change access permissions.

TRANS037

The specified VM/CMS disk is full. File transfer was canceled.

You attempted to send a file to a host disk, but there was not enough disk space at the host for the file transfer. Contact host personnel.

TRANS048, TRANS049

(No message)

The host data set name or member name you specified was not valid. Check the data set name and member name, and retry the command.

TRANS050, TRANS051

(No message)

The host data set name you specified was not valid. Check the data set name, and retry the command.

TRANS052, TRANS053

(No message)

The file transfer failed; the host may have sent a message to the 3270 emulation screen indicating the reason for the failure. Switch to the 3270 emulation screen to obtain more information. If you cannot switch because you are running the character-based program in the background, stop the TN3270 emulation program and restart it in the foreground. Then retry the file transfer command.

TRANS054

(No message)

The host file or host data set is in use by another host program. Wait for the other program to complete, and then retry.

File Transfer Messages
Host File Transfer Messages

TRANS055

(No message)

An error occurred while trying to access the specified host directory. Check that you specified the correct directory.

TRANS056

(No message)

You specified a member of a partitioned data set; the data set exists, but the member name you specified is not a valid member of this data set. Check the host data set name and member name, and retry the command.

TRANS057

(No message)

You specified an option on the RECEIVE file transfer command that is valid only for the SEND command. Correct the syntax and retry the command.

TRANS058

(No message)

You specified an option that is not valid for a partitioned data set. Correct the syntax and retry the command.

TRANS059

(No message)

You specified the host record length, record format, or block size when replacing or appending to an existing file, but the value you specified did not match the value already set for the file. You cannot override these options for an existing file. Either specify values that match the existing file, or send the file without specifying these values so that they default to the values of the existing file. Alternatively, send the data to a new file.

TRANS098

File transfer to non-standard host program completed successfully.

The host file transfer program generated an INWnnnn message (instead of a TRANSnnn message), indicating that the file transfer completed successfully.

TRANS099

File transfer to non-standard host program failed. Retry from 3270, or check trace file.

The host file transfer program generated an INWnnnn message (instead of a TRANSnnn message), indicating that the file transfer failed. The command-line file transfer programs do not distinguish between INW messages.

To obtain more information about the failure, retry the file transfer from the 3270 menu interface (which displays the INW message number and text), or check the SNA message trace for the TN3270 emulation program (refer to the *HP-UX TN3270 Administrators Guide* for information about tracing).

TRANS108

The specified host code page is not valid. File transfer was canceled.

The host (EBCDIC) code page you specified on the file transfer command was not valid. For more information about valid code pages, see Chapter 5, "Transferring Files." Retry the command.

TRANS109

The specified local code page is not valid. File transfer was canceled.

The local (ASCII) code page specified on the file transfer command was not valid. For more information about valid code pages, see Chapter 5, "Transferring Files." Retry the command.

TRANS110

The specified 3270 emulation program session is already in use. File transfer was canceled.

The session you specified on the file transfer command is already in use by another file transfer process or by a HLLAPI application. Retry the file transfer when the current process has finished, or use another 3270 session.

File Transfer Messages
Host File Transfer Messages

TRANS111

An error occurred while accessing the local file. File transfer was canceled.

This error may be caused by a faulty disk or diskette or by a diskette door that is not closed properly, or the specified HP-UX file name may not be valid. Check for these conditions and retry the command.

TRANS112

The specified local drive is locked. File transfer is canceled.

Unlock the drive and retry the command.

TRANS113

The local disk or diskette is full. File transfer is canceled.

Disk or diskette space on the HP-UX computer is insufficient for the new file. Clear some space by deleting unnecessary files and then retry; or use another diskette.

TRANS114

Cannot read or write to the specified local disk or diskette.

A data error on the disk or diskette may have caused this error. Retry the operation.

TRANS115

The maximum number of files for the specified directory has been reached. File transfer was canceled.

The new file cannot be created because the directory already contains its maximum number of files. Delete any unnecessary files from the directory and retry; or transfer the file to another directory.

TRANS116

The maximum number of local files is open. File transfer was canceled.

The file transfer process cannot take place because the maximum number of open files (either the overall limit for the HP-UX computer or the limit for an individual process) has already been reached. Close any unnecessary files used by other processes, or wait for any other file transfers currently in progress to complete. Then retry the command.

TRANS117

The specified local file is already in use. File transfer was canceled.

The file specified has already been opened by another process that prevents you from accessing it. Stop the other process and retry the command. (This message might also be displayed if the file name you specified was the name of a directory.)

TRANS118

The local disk or diskette is write protected. File transfer was canceled.

Check that you are accessing the correct disk or diskette, or remove the write-protect tab from the diskette. Then retry the operation.

TRANS119

The local diskette drive is not ready. File transfer was canceled.

Check that you are accessing the correct diskette drive or that the diskette is inserted properly and the drive door is closed. Then retry the operation.

TRANS124

Message below was received from the host: `messagetext`

Consult your host personnel for information about the host message shown.

TRANS999

The 3270 emulation program has not been loaded. File transfer was canceled.

You tried to use a file transfer command when the TN3270 emulation program was not running. Start the TN3270 emulation program and retry the command.

File Transfer Messages
Host File Transfer Messages

D **Print Style File Utility**

Overview

With the print style file utility, you can generate a text listing of a style file and send it either to a text file or to a printer. The basic listing contains information from the Customize Miscellaneous Options dialog box and the Customize Session Parameters dialog boxes for each session. Additional options enable you to include color mapping data and file transfer options for each session and to list the key definitions and recorded key sequences in the style file.

Command Format

The syntax of the command is:

```
tnprtsty -s stylefile [-c] [-f] [-k] [-r]
```

The name of the style file to be printed is **stylefile**. If you do not specify a directory path, the TN3270 emulation program searches the current directory and then the default directory `/etc`. You do not need to add the `.stu` extension to the file name.

Command options are:

-c

Include full color mapping data for each display session. The default is not to include color mapping data.

-f

Include file transfer options for each session. The output contains information for file transfer to TSO, VM/CMS, and CICS host applications, although only one set of options are used at any one time. The default is not to include file transfer options.

-k

Include the key definitions for the file. To use this option, the `LANG` environment variable must be set to the same value that was used to create the style file. The default is not to include the key definitions.

-r

Include the recorded key sequences in the style file. To use this option, the `LANG` environment variable must be set to the same value that was used to create the style file. The default is not to include recorded key sequences.

Output

The output is sent to standard output (`stdout`) and consists of the following information:

General characteristics

Information from the Customize Miscellaneous Options dialog box and information about the host language used to create the style file (specified by the `LANG` environment variable).

Session characteristics

Information from the Customize Session Parameters dialog box for each display and printer session.

Display colors

Information from the Choose Colors dialog box for each display session. This information is listed only when you specify the `-c` option.

File transfer options

Information from the File Transfer Options dialog box for each display session. This information is listed only when you specify the `-f` option.

Key definitions

Information from the View and Define Key Definitions dialog box. This information is listed only when you specify the `-k` option.

Recorded key sequences

Information about any key sequences recorded in the style file. This information is listed only when you specify the `-r` option.

“Sample Output of `tnprtsty` Utility” shows sample output that contains one display session and one printer session, with the `-c`, `-f`, `-k`, and `-r` options selected:

Sample Output of tnprtsty Utility

```

*****
*****
**          3270 Style File Print Utility          **
**          X.00.00.001                          **
**                                                **
** Copyright (C) 1992 Data Connection Limited    **
*****
STYLE FILE ..... /usr/da/dasty.stu
Operating System ..... UNIX
Style file Version Number ..... 1
Style file last modified at ... 17:05:52, 11 September 1992
tnprtsty run at .. ..... 17:50:13, 11 September 1992
*****
**          General Characteristics              **
**          (relevant to all sessions in 3270)  **
*****
Host Language ..... 0          United States
Monitor Code ..... 1          color
Emulator Beep Enabled ..... Yes
Use terminal status line if available .. No
Display status line at startup ..... Yes
*****
**          Session Characteristics              **
*****
* Session number ..... 1          *
* Name ..... SESS01              *
* DISPLAY SESSION              *
*****
Session description:
Session enabled when 3270 initialized?No
Suppress host screens at session start?      No
Model Type ..... 2 (24 x 80)
Max structured field size for file transfers 2 KB
Local copy done to real printerlp
Printer filter file name /opt/snaprtfl
*****
* Display Colors *
*****
HOST HIGHLIGHT      FEATURE                SETTINGS                Blink
ATTRIBUTE          Background            Foreground              enabled?
NORMAL
Default Text       Black                White                   No
Def. Intense      Black                Intense white           No
Blue               Black                Blue                     No
Red                Black                Red                       No
Pink               Black                Magenta                  No
Green              Black                Green                    No
Turquoise          Black                Cyan                     No

```

Print Style File Utility

Output

	Yellow	Black	Yellow	No
	White	Black	White	No
	Int. Blue	Black	Intense blue	No
	Int. Red	Black	Intense red	No
	Int. Pink	Black	Intense mgnta	No
	Int. Green	Black	Intense green	No
	Int. Turquoise	Black	Intense cyan	No
	Int. Yellow	Black	Intense yellow	No
	Int. White	Black	Intense white	No
	Base Red	Black	Red	No
	Base Blue	Black	Blue	No
	Base Green	Black	Green	No
	Base White	Black	White	No
	Status Line	Blue	Intense red	No
BLINK				
	Default Text	Black	White	Yes
	Def. Intense	Black	Intense white	Yes
	Blue	Black	Blue	Yes
	Red	Black	Red	Yes
	Pink	Black	Magenta	Yes
	Green	Black	Green	Yes
	Turquoise	Black	Cyan	Yes
	Yellow	Black	Yellow	Yes
	White	Black	White	Yes
	Int. Blue	Black	Intense blue	Yes
	Int. Red	Black	Intense red	Yes
	Int. Pink	Black	Intense mgnta	Yes
	Int. Green	Black	Intense green	Yes
	Int. Turquoise	Black	Intense cyan	Yes
	Int. Yellow	Black	Intense yellow	Yes
	Int. White	Black	Intense white	Yes
	Base Red	Black	Red	Yes
	Base Blue	Black	Blue	Yes
	Base Green	Black	Green	Yes
	Base White	Black	White	Yes
REVERSE				
	Default Text	White	Black	No
	Def. Intense	White	Black	No
	Blue	Blue	Black	No
	Red	Red	Black	No
	Pink	Magenta	Black	No
	Green	Green	Black	No
	Turquoise	Cyan	Black	No
	Yellow	Yellow	Black	No
	White	White	Black	No
	Int. Blue	Blue	Black	No
	Int. Red	Red	Black	No
	Int. Pink	Magenta	Black	No
	Int. Green	Green	Black	No
	Int. Turquoise	Cyan	Black	No
	Int. Yellow	Yellow	Black	No
	Int. White	White	Black	No
	Base Red	Red	Black	No
	Base Blue	Blue	Black	No
	Base Green	Green	Black	No
	Base White	White	Black	No

UNDERLINE

Default Text	Black	White	No
Def. Intense	Black	Intense white	No
Blue	Black	Blue	No
Red	Black	Red	No
Pink	Black	Magenta	No
Green	Black	Green	No
Turquoise	Black	Cyan	No
Yellow	Black	Yellow	No
White	Black	White	No
Int. Blue	Black	Intense blue	No
Int. Red	Black	Intense red	No
Int. Pink	Black	Intense mgnta	No
Int. Green	Black	Intense green	No
Int. Turquoise	Black	Intense cyan	No
Int. Yellow	Black	Intense yellow	No
Int. White	Black	Intense white	No
Base Red	Black	Red	No
Base Blue	Black	Blue	No
Base Green	Black	Green	No
Base White	Black	White	No

* File Transfer Options *

Host application selected TSO- Send

Last local filename entered

Host file name

Comments

***** TSO OPTIONS *****

ASCII <-> EBCDIC translation? No
 LF conversion? No
 Append file? No
 Record format (send only)..... default
 Record Length (send only)..... Unspecified
 Block size (send only)..... Unspecified
 Units of space (send only)..... Blocks
 Average block size (send only)..... Unspecified
 Initial units of space (send only)..... Unspecified
 Incremental units of space (send only)... Unspecified

***** VM/CMS OPTIONS *****

ASCII <-> EBCDIC translation? No
 LF conversion? No
 Append file? No
 Record format (send only)..... default
 Record Length (send only)..... Unspecified

***** CICS OPTIONS *****

ASCII <-> EBCDIC translation? No
 LF conversion? No
 Append file? (receive only)..... No

 * Session number 2 *
 * Name SESS02 *
 * PRINTER SESSION *

Session description:
 Session enabled when 3270 initialized?No

Print Style File Utility Output

Output to real printer lp

Printer filter file name/usr/bin/snaprtfl

```
*****
*****
**
**
*****
*****
```

Key Definitions

KEY GROUP	FUNCTION	KEYSTROKE
Program Function		
	PF1	F1
	PF2	F2
	PF3	F3
	PF4	F4
	PF5	F5
	PF6	F6
	PF7	F7
	PF8	F8
	PF9	F9
	PF10	F10
	PF11	F11
	PF12	F12
	PF13	Esc F1
	PF14	Esc F2
	PF15	Esc F3
	PF16	Esc F4
	PF17	Esc F5
	PF18	Esc F6
	PF19	Esc F7
	PF20	Esc F8
	PF21	Esc F9
	PF22	Esc F10
	PF23	Esc F11
	PF24	Esc F12
Program Access		
	ATTN	Ctrl+A
	CLEAR	Ctrl+C
	CURS SEL	Esc C
	ENTER	Send
	PA1	Esc Esc F1
	PA2	Esc Esc F2
	PA3	Esc Esc F3
Printer Control		
	DEV CNCL	Esc D
	PRINT	Ctrl+P
3270 System		
	SYSREQ	Ctrl+Y
	ALT CURS	Esc A
	RESET	Esc R
Misc System		
	EXIT	Ctrl+X
	TEMPEXIT	Ctrl+Z
	REDRAW	Ctrl+R
	ACTIONS	Ctrl+U
	KEYS	Ctrl+K
	FILE XFR	Ctrl+F
	NUM OVR	Esc N

	STAT HELP	Ctrl+O
	STAT TOG	Ctrl+W
	RECORD	Esc S
	REPLAY	Esc P
	PAUSE	Esc W
	QUIT	Ctrl+T
	NEXTSESS	Ctrl+V
	SESS 1	Esc 1
	SESS 2	Esc 2
	SESS 3	Esc 3
	SESS 4	Esc 4
	SESS 5	Esc 5
	SESS 6	Esc 6
	SESS 7	Esc 7
	SESS 8	Esc 8
	SESS 9	Esc 9
	SESS 10	Esc 0
Edit		
	UP	Up
	DOWN	Down
	LEFT	Left
	LEFT DB	PgUp
	RIGHT	Right
	RIGHT DB	PgDn
	BACKSPACE	Ctrl+H
	TAB	Tab or Ctrl+I
	BACK TAB	Back Tab
	HOME	Home
	NEW LINE	Ctrl+N
	INSERT	Ins
	DELETE	Delete char
	DUP	Ctrl+D
	FMARK	Esc F
	ERASE EOF	Ctrl+E
	ERASE INP	Esc E
Characters		Space
	!	!
	"	"
	#	#
	\$	\$
	%	%
	&	&
	'	'
	((
))
	*	*
	+	+
	,	,
	-	-
	.	.
	/	/
	:	:
	;	;
	<	<
	=	=

Print Style File Utility
Output

>	>
?	?
@	@
/	/
'	'
{	{
}	}
~	~
0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
A	A
B	B
C	C
D	D
E	E
F	F
G	G
H	H
I	I
J	J
K	K
L	L
M	M
N	N
O	O
P	P
Q	Q
R	R
S	S
T	T
U	U
V	V
W	W
X	X
Y	Y
Z	Z
a	a
b	b
c	c
d	d
e	e
f	f
g	g
h	h
i	i
j	j

```

k      k
l      l
m      m
n      n
o      o
p      p
q      q
r      r
s      s
t      t
u      u
v      v
w      w
x      x
y      y
z      z
NOT    ^
VERTBAR ]
CENT   [

```

```

*****
***** Recorded Keystroke Sequences *****
*****
Key ID      Sequence
           Function Characters
F1
           ENTER      n
           TAB        userxyz
           ENTER      zyxwvu
*****
**          - End of Data -          **
**          ( tnprtsty )              **
*****
*****

```

Error Messages

If an error occurs during the running of the program, a self-explanatory message is sent to standard error (`stderr`). Messages can indicate errors, such as failing to read from a style file because the information in the file is not valid or corrupted.

Overview

The domain name of hosts for sessions are configured in `host` records in the TN3270 configuration file. The TN3270 product enables you to override the configured host domain names when you start the emulator. The default configuration file for the TN3270 emulation program enables you to override the host domain names. The System Administrator can change any existing configuration files to grant the user permission to override the host domain names. For information about how the System Administrator grants this permission, refer to *HP-UX TN3270 Administrators Guide*.

Overriding Host Domain Names

To override host domain names, enter the following on the command line:

```
tn_3270 -1 domain[:port], domain[:port]
```

Supply the following options and parameters:

-1

Specifies that the host domain names configured in the configuration file are to be overridden by the domain names specified on the command line.

domain

Specifies the symbolic domain name or the dotted-decimal Internet address of the TN3270 host.

port

Specifies the TCP/IP port number that the host uses for TN3270 data.

You can specify up to ten **domain[:port]** addresses, separated by commas. These addresses are assigned to each session in turn. Two consecutive commas indicate that no address is being assigned to the session from the command line; the address specified in the configuration file is used instead.

If the command contains fewer addresses than the configuration file, addresses in the configuration file that are not specifically overridden are used. If the command contains more addresses than the configuration file (up to a maximum of ten), additional sessions are assigned, and you can activate them as required.

For example, if you have three `host` records in your configuration file, whose **domain** fields are set to `1.2.3.4`, `100.101.102.103`, and `40.50.60.70`, and you enter `tn_3270 -1 99.99.99.99,,1.2.3.4`, the first session will use address `99.99.99.99`, the second session will use address `100.101.102.103` (as configured in the configuration file), and the third session will use address `1.2.3.4`.

Configuring TN3270 Hosts from the Command Line
Overriding Host Domain Names

F **Printer Filter Application for
Double-Byte Character Sets**

Overview

The TN3270 emulation program supports double-byte printer by using an intermediate format, the SNA Printer Output File (SPOF) to format the 3270 printer datastream. The SPOF is designed to be interpreted by a Printer Filter Application (PFA) which is associated with a particular model file and physical printer.

A sample filter application, `snprtfl`, is provided for HP Laserjet printers. This sample application does not support the **Field Outline Information** command and does not support output destination.

Specifying Output Method

The Customize Printer Parameters for Session dialog enables the 3270 user to specify one of three output methods for printing:

“Real printer”

The output from the TN3270 emulation program is sent to the PFA, which converts from SPOF format to printer format, and sends the output to `stdout`. This is piped directly to the printer device.

“Formatted print to file”

The output from the TN3270 emulation program is sent to the PFA, which converts from SPOF format to printer format, and sends the output to the specified file. The file may later be printed by sending it directly to the printer.

“Unformatted print to file”

The output from the TN3270 emulation program is sent to the PFA, which sends the SPOF output directly to the specified file, without any conversion. The file may later be printed by filtering through the PFA and sending to the printer.

The user may select which PFA to use, the printer name, and whether to append or overwrite the output file. For more information about the Customize Session dialog, see “Customizing Printer Sessions”.

SPOF Format

The SPOF output from the TN3270 emulation program contains a number of model control commands (MCCs) which control the format of the output. When invoked, the filter application decodes the MCCs found in the SPOF and translates them to the appropriate printer function.

It may also be necessary to modify the printer Model File (for example, to download the correct fonts for a particular language).

Model Control Commands

The Model Control Commands are:

- Header Information
- Footer Information
- Data Information
- Field Outline Information
- Set Printer Tabs: Horizontal
- Set Printer Tabs: Vertical
- Set Printer Density
- New Line
- Carriage Return
- Line Feed
- Backspace
- Form Feed
- Horizontal Tab
- Vertical Tab
- Bell
- Transparent Mode

The following sections detail the contents and purpose of each of the commands.

Header Information

The **Header Information** is used to initialize the printer and has the following format:

0-1	2	3	4	5	6	7	8	9	10	11	12	. .	9+N
CC EA	count	CPL	LPP	LPI	SDS	CPI	lang	fmt	len	ch1	ch2	. .	chN

0xCC 0xEA

These two bytes identify the **MCC Header Information**.

count

The total number of bytes in the **Header Information**, including the count byte but excluding 0xCC 0xEA.

CPL

Model Control Commands

	<p>Characters per line. Valid numbers are: 1–158 For 6 double-byte or 12 single-byte characters per inch 1–132 For 5 double-byte or 10 single-byte characters per inch</p>
LPP	<p>Lines per page (the number of lines per logical page). Valid numbers are 1–127.</p>
LPI	<p>Lines per inch. Supported numbers are 4 and 6 LPI.</p>
SDS	<p>Single or double space per line selection. Valid numbers are: 0 Single spacing 1–255 Double spacing</p>
CPI	<p>Characters per inch. Valid numbers are: 5 or 6 For double-byte characters 10 or 12 For single-byte characters</p>
lang	<p>To help determine field outlining coordinates, it is necessary to know the size of the font. This byte represents the host language that was selected for the TN3270 emulation program as shown in the table “Host Language Selected for SPOF.”</p>

Table F-1

Host Language Selected for SPOF

Num	Country
0	United States
1	United Kingdom
2	Germany

Num	Country
3	France
4	Italy
5	Spain
6	Denmark
7	Finland
8	Netherlands
9	Norway
10	Portugal
11	Sweden
12	Belgium
13	Canada-French
14	Latin American
15	Switzerland-French
16	Switzerland-German
17	Iceland
18	Arabic
19	Turkish
20	Russian
21	Greek
22	Hebrew
23	Japan
24	China (Traditional)
25	Korea (Simplified)
26	Korea

Model Control Commands**fmt**

This controls the destination of the output, and whether the SPOF input is translated from MCC commands into printer-specific commands, as shown in the following table.

Format and Destination for SPOF

Value	Action
0	Format SPOF; send to <code>stdout</code>
1	Format SPOF; create a new file
2	Format SPOF; append to an existing file
3	Do not format SPOF; create a new file
4	Do not format SPOF; append to an existing file

len

Length of filename (when the **fmt** parameter is set to 1, 2, 3, or 4)

ch1 through chN

Filename (when the **fmt** parameter is set to 1, 2, 3, or 4). The length of this filename is specified by the **len** parameter.

Footer Information

The **Footer Information** command indicates that any character following the count byte should not be interpreted. It should pass through the filter application to its final destination. This condition remains until another MCC **Header Information** control is found.

```
0-1      2
CC EB    count
```

```
0xCC 0xEB
```

These two bytes identify the MCC **Footer Information**.

count

Must be set to 1.

Data Information

The **Data Information** command informs the filter application that the following characters do not need to be interpreted; the characters should pass through the filter application to its final destination.

0-1	2	3	4	. .	2+N
CC DA	count	ch1	ch2	. .	cnN

0xCC 0xDA

These two bytes identify the **MCC Data Information**.

count

The number of data bytes in the **MCC Data Information**, including the one byte 'count' field, and excluding 0xCC 0xDA.

ch1 through chN

Data bytes.

Field Outline Information

The command **Field Outline Information** is designed to inform the filter application that field outlining (Kei-sen) is to be performed.

0-1	2	3
CC 28	count	value

0xCC 0x28

These two bytes identify the **MCC Field Outline**.

count

Must be set to 2.

value

Represents the type of field outlining to perform. The following table shows the valid settings for this field.

Table F-2 **Field Outlining Settings**

Decimal	Binary	Action
0	0000 0000	Reset/No Field Outline
1	0000 0001	Draw bottom line only
2	0000 0010	Draw right vertical line only
3	0000 0011	Draw bottom and right vertical lines
4	0000 0100	Draw top line only
5	0000 0101	Draw top and bottom lines
6	0000 0110	Draw top and right vertical lines
7	0000 0111	Draw top, bottom, and right vertical lines
8	0000 1000	Draw left vertical line only
9	0000 1001	Draw left vertical and bottom lines
10	0000 1010	Draw left and right vertical lines
11	0000 1011	Draw left, right, and bottom lines
12	0000 1100	Draw left vertical and top lines
13	0000 1101	Draw left, top, and bottom lines
14	0000 1110	Draw left, top, and right lines
15	0000 1111	Draw box

The printer application should use **Field Outline** commands to determine how to print field outlining on the characters that follow it. The following points should be noted:

- **Field outline begins with the character directly after the MCC **Field Outline** command and ends with the character directly after the next MCC **Field Outline** command. Character data includes the space character and blank space of the MCC **Horizontal Tab skip**.**
- **Field outline should be printed for transparent data specified by the MCC **Transparent Mode**.**

- Field outline should be printed at positions skipped by the MCC **Horizontal Tab**.
- Field outline should not be printed at positions skipped by MCC **New Line, Form Feed, Carriage Return, Line Feed, Backspace, and Vertical Tab** commands.

Set Printer Tabs: Horizontal

The **Set Printer Tabs: Horizontal** command is designed to inform the filter application of any horizontal printer control information.

0-1	2	3	4	5	6	7	8	. .	N+6
CC 2B	count	C1	MPP	LM	RM	tab1	tab2	. .	tabN

0xCC 0x2B

These two bytes identify the MCC **Set Printer Tabs** command.

count

The total number of bytes in the MCC **Set Printer Tabs** command, including the count field but excluding 0xCC 0x2B.

0xC1

Identifies the **Horizontal Tab** selection.

MPP

Maximum print pitch (the maximum number of characters to be printed on a line). The maximum value is 158 for 6/12 characters per inch or 132 for 5/10 characters per inch. If the value exceeds the maximum, then the default value is used.

LM

Left margin. The **LM** setting cannot exceed the **MPP** setting. **LM** is also the first horizontal tab stop position. If the value is not valid, then the default value is used.

RM

Right margin. The **RM** setting cannot exceed the **MPP** setting and must be greater than the **LM** setting. If the value is not valid, then the default value is used.

tab1 through tabN

Set a stop position on a line. The tab number can be any value between the value specified for **LM** and the value specified for **MPP**.

Table F-3, “Default Values for Set Printer Tabs: Horizontal,” shows the default settings for these parameters. If no value is set in the SPOF then the default value is used.

Table F-3 **Default Values for Set Printer Tabs: Horizontal**

Parameter	Default Value
MPP	158 (when 6/12 CPI is set) 132 (when 5/10 CPI is set)
LM	1
RM	MPP
Horizontal Tab	Each Column

Set Printer Tabs: Vertical

The **Set Printer Tabs: Vertical** command is designed to inform the filter application of any tab settings concerning vertical movement.

```
0-1    2    3    4    5    6    7    8    . . N+6
CC 2B  count  C2  MPL  TM   BM   tab1  tab2 . . tabN
```

0xCC 0x2B These two bytes identify the **MCC Set Printer Tabs** command.

count The number of total bytes in the **MCC Set Printer Tabs: Vertical** command, including the count field but excluding 0xCC 0x2B.

0xC2 Identifies the **Vertical Tab** selection.

MPL Maximum page length (the maximum number of lines per page). This value cannot exceed 127; otherwise the default value is used.

TM

Top margin. This specifies the last line of printable characters. **TM** cannot exceed **MPL**. If so, then the default value is used.

BM

Bottom margin. This specifies the last line of printable characters. **BM** cannot exceed **MPL** and cannot be less than **TM**. If a value that is not valid is specified, then the default value is used.

tab1 through tabN

These bytes represent vertical stop positions. Only values between **TM** and **MPL** are allowed. Any number that is not valid is ignored.

Table F-4, “Default Values for Set Printer Tabs: Vertical,” shows the default settings for these parameters. If no value is set in the SPOF then the default value is used.

Table F-4

Default Values for Set Printer Tabs: Vertical

Parameter	Default Value
MPL	1
TM	1
BM	MPL
Vertical Tab	Each Line

Set Printer Density

The **Set Printer Density** command is designed to inform the filter application of the number of lines per inch. There are only four possible values: two, three, four or six lines per inch (LPI). The default value is 6.

```
0-1      2      3      4
CC 2B   count  C6   value
```

0xCC 0x2B

These two bytes identify the MCC **Set Printer Density** command.

count

Must be set to 3.

0xC6

Set Printer Density command.
value

The number of lines per inch. The only valid values are 6, 4, 3, and 2. If a value that is not valid is specified, the default of 6 will be used.

New Line

The **New Line** command is designed to inform the filter application to perform the printer new line function.

0-1 2 3
CC 15 count value

0xCC 0x15

These two bytes identify the MCC **New Line** command.

count

Must be set to 2.

value

The number of times to repeat this command (1–255).

Carriage Return

This **Carriage Return** command is designed to inform the filter application to perform a printer carriage return function.

0-1 2
CC 0D count

0xCC 0x0D

These two bytes represent the MCC **Carriage Return** command.

count

Must be set to 1.

Line Feed

The **Line Feed** command is designed to inform the filter application to perform a printer line feed function.

0-1 2 3
CC 25 count value

0xCC 0x25

These two bytes represent the MCC **Line Feed** command.

count

Must be set to 2.

value

The number of times to repeat this command (1–255).

Backspace

The **Backspace** command is designed to inform the filter application to perform a printer backspace function.

0-1 2 3
CC 16 count value

0xCC 0x16

These two bytes represent the MCC **Backspace** command.

count

Must be set to 2.

value

The number of times to repeat this command (1–255).

Form Feed

The **Form Feed** command is designed to inform the filter application to perform a printer form feed function.

0-1 2 3
CC 0C count value

0xCC 0x0C

These two bytes represent the MCC **Form Feed** command.

count

Must be set to 2.

value

The number of times to repeat this command (1–255).

Horizontal Tab

The **Horizontal Tab** command is designed to inform the filter application to perform a horizontal tab to the next stop position.

```
0-1      2      3
CC 05   count  value
```

0xCC 0x05 These two bytes represent the MCC **Horizontal Tab** command.

count Must be set to 2.

value The number of times to repeat this command (1–255).

Vertical Tab

The **Vertical Tab** command is designed to inform the filter application to perform a vertical tab to the next stop position.

```
0-1      2      3
CC 0B   count  value
```

0xCC 0x0B These two bytes represent the MCC **Vertical Tab** command.

count Must be set to 2.

value The number of times to repeat this command (1–255).

Bell

The **Bell** command is designed to inform the filter application to perform the bell function of the printer.

```
0-1      2      3
CC 2F   count  value
```

0xCC 0x2F These two bytes represent the MCC **Bell** command.

count

Must be set to 2.

value

The number of times to repeat this command (1–255).

Transparent Mode

The **Transparent Mode** command is designed to inform the filter application that the following information is not to be interpreted; the characters should pass through the filter application to its final destination.

```
0-1      2      3      4      . . 2+N  
CC 35   count  ch1   ch2   . . chN
```

0xCC 0x35

These two bytes identify the **MCC Transparent Mode** command.

count

The number of data bytes in the **MCC Transparent Mode**, including the one byte 'count' field, and excluding 0xCC 0x35.

ch1 through chN

Data bytes.

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