

IRIS[®] 3270 Emulator User's Guide

Document Number 007-0805-040

CONTRIBUTORS

Written by Kameran Kashani, Sheri Chinen Biesen, Susan Thomas

Edited by Nancy Schweiger

Production by Julia LIn

Engineering contributions by Bob Horen, Rich Livingston, Ed Evans, Sam Sengupta

© Copyright 1992-1994, Silicon Graphics, Inc.— All Rights Reserved

This document contains proprietary and confidential information of Silicon Graphics, Inc. The contents of this document may not be disclosed to third parties, copied, or duplicated in any form, in whole or in part, without the prior written permission of Silicon Graphics, Inc.

RESTRICTED RIGHTS LEGEND

Use, duplication, or disclosure of the technical data contained in this document by the Government is subject to restrictions as set forth in subdivision (c) (1) (ii) of the Rights in Technical Data and Computer Software clause at DFARS 52.227-7013 and/or in similar or successor clauses in the FAR, or in the DOD or NASA FAR Supplement. Unpublished rights reserved under the Copyright Laws of the United States. Contractor/manufacturer is Silicon Graphics, Inc., 2011 N. Shoreline Blvd., Mountain View, CA 94039-7311.

Silicon Graphics and IRIS are registered trademarks and IRIX is a trademark of Silicon Graphics, Inc. Apollo is a registered trademark of Apollo Computer, Inc. FrameMaker is a registered trademark of Frame technology, Inc. Hewlett-Packard is a registered trademark of Hewlett-Packard Company. IBM is a registered trademark of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc.

Contents

	List of Examples	vii
	List of Figures	ix
	List of Tables	xi
	Introduction	xiii
	Features	xiv
	Typographical Conventions	xv
	Software and Hardware	xv
	Software	xvi
	Hardware	xvi
	Network Configuration	xvii
	Product Support	xxi
1.	Configuring the IRIS 3270 Emulator	1
	Configuring the Emulator for the First Time	1
	Configuring the Emulator for an ASCII Terminal	1
	Starting setup3270	2
	Changing the setup3270 Window Colors	4
	Changing the Character Set	5
	Choosing a Link Type	6
	Selecting a Terminal Model	7
	Changing the Font Size	8
	Choosing Link-Specific Options	9
	SNA Link-Specific Options	9
	TCP Link-Specific Options	11
	5080 Link-Specific Options	13

- Selecting Miscellaneous Options 14
 - 3270 Trace 14
 - Cursor Type 15
- Using the Actions Menu 15
- Getting Help 16
- Displaying the IBM Keyboard Map 17
- 2. Using the IRIS 3270 Emulator 19**
 - Before You Start 20
 - Starting the Emulator 20
 - Starting the Emulator from the Toolchest 20
 - Starting the Emulator in ASCII Mode 23
 - The Emulator Window 23
 - Quitting a 3270 Emulator Session 26
 - Displaying the IBM Keyboard Map 26
 - Saving Screen Images to a File 26
 - The IRIS 3270 Terminal Status Line 27
- 3. Using the IRIS 3270 Emulator with an ASCII Terminal 29**
 - Starting the 3270 Emulator with an ASCII Terminal 29
 - IBM Keyboard Mapping for Supported ASCII Terminals 29
 - Starting an Emulation Session 32
 - Quitting an Emulation Session 33
 - Saving Screen Images to a File 33
 - 3270 Terminal Status Line 33
 - IRISXFR Operations 33
 - IND\$FILE Operations 34

- 4. Transferring Files 35**
 - Basic File Transfer Steps 35
 - Using IRISXFR 35
 - Verifying IRISXFR Installation 36
 - Starting IRISXFR 36
 - Using IRISXFR to Set Up and Transfer Files 37
 - IRISXFR Transfer Summary Screen 41
 - IRISXFR Setup Menu Reference 42
 - Aborting IRISXFR 43
 - Automating File Transfers Using IRISXFR 44
 - Using IND\$FILE 44
 - Starting IND\$FILE 44
 - Using IND\$FILE to Set Up and Transfer Files 45
 - IND\$FILE Transfer Summary Screen 49
 - IND\$FILE Setup Menu and Host Option Reference 49
 - Aborting IND\$FILE 52
 - Receiving a Message During File Transfer 53
 - File Transfer Error Messages 53
- 5. Troubleshooting 55**
 - Troubleshooting Host Problems 55
 - Creating a VM/CMS Dump 55
 - Creating an MVS/TSO Dump 56
 - Troubleshooting File Transfer Problems 56
 - Resolving Errors 57
 - Error Logging 57
 - Error Information Sources 57
 - Configuration Errors 58
 - Nonconfiguration Errors 58
- A. Error Messages 59**
 - Configuration Errors 59
 - Terminal Emulation Errors 59
 - IRISXFR Menu Errors 60

- IRISXFR Run-Time Errors 60
- IND\$FILE Menu Errors 61
- IND\$FILE Run-Time Errors 62
- B. Editing the Emulator Configuration File 63**
 - Parameter Descriptions 64
 - Link Type 64
 - Character Set 64
 - Point Size 64
 - Trace 65
 - Cursor Type 65
 - SNA Parameters 65
 - Gateway 65
 - TCP Parameters 66
 - TCP Host 66
 - TCP Port 66
 - TCP Model 66
 - 5080 Parameters 66
 - 5080 Gateway 66
 - 5080 Address 67
 - 5080 Model 67
 - Required SNA Parameters 67
 - Required TCP Parameters 67
 - Required 5080 Parameters 68
- C. 3278 Status Line Codes and Messages 69**
- D. Automating Host File Transfers 73**
- E. Keyboards 77**
- Glossary 87
- Index 89

List of Examples

- Example D-1** *An updown profile File for a VM Host* 74
Example D-2 *An updown profile File for an MVS Host* 75

List of Figures

Figure i	3270 Emulator with IRIS Channel Adapter Board	xviii
Figure ii	3270 Emulator with IBM 3745 Channel Controller	xix
Figure iii	3270 Emulator with IBM 3172 LAN Gateway	xx
Figure 1-1	The setup3270 Window	3
Figure 1-2	Example Message in Message Box	4
Figure 1-3	The Char Set (Character Set) Box	5
Figure 1-4	The Link Type Box	6
Figure 1-5	The Model Box	7
Figure 1-6	The Font Size Box	8
Figure 1-7	The SNA Link-Specific Box	9
Figure 1-8	The SNA Gateways Dialog Box	10
Figure 1-9	The TCP Link-Specific Box	11
Figure 1-10	The TCP Hosts Dialog Box	12
Figure 1-11	The 5080 Link-Specific Box	13
Figure 1-12	The 5080 Gateways Dialog Box	13
Figure 1-13	The Miscellaneous Box	14
Figure 1-14	The Actions Menu	15
Figure 1-15	The Help Menu	16
Figure 1-16	Keyboard Layout for the IRIS 3270 Window in U.S. English	17
Figure 2-1	3270 Emulator Menu	21
Figure 2-2	Example Emulator Menu and Submenu	21
Figure 2-3	Set Up 3270 Menu	22
Figure 2-4	The Emulator Window	24
Figure 2-5	The 3270 Emulator Pop-Up Menu	25
Figure 2-6	The IRIS 3270 Terminal Status Line	27
Figure 4-1	Selecting the IRISXFR Menu	37

Figure 4-2	The IRISXFR Setup Menu Screen	38
Figure 4-3	IRISXFR Transfer Summary Screen	42
Figure 4-4	Selecting the IND\$FILE Menu	45
Figure 4-5	The IND\$FILE Setup Menu Screen	46
Figure 4-6	IND\$FILE Transfer Summary Screen	49
Figure E-1	IRIS 3270 Emulator French Keyboard Layout	78
Figure E-2	IRIS 3270 Emulator German Keyboard Layout	79
Figure E-3	IRIS 3270 Emulator Italian Keyboard Layout	80
Figure E-4	IRIS 3270 Emulator Katakana Keyboard Layout	81
Figure E-5	IRIS 3270 Emulator Portuguese Keyboard Layout	82
Figure E-6	IRIS 3270 Emulator Spanish Keyboard Layout	83
Figure E-7	IRIS 3270 Emulator Swedish Keyboard Layout	84
Figure E-8	IRIS 3270 Emulator U.K. English Keyboard Layout	85
Figure E-9	IRIS 3270 Emulator U.S. English Keyboard Layout	86

List of Tables

Table 3-1	Functions and Key Sequences	30
Table 4-1	IND\$FILE Setup Menu Screen Host Options	51
Table C-1	Status Line Codes and Messages	69

Introduction

The Silicon Graphics® IRIS® 3270 Emulator products provide a high-speed communications link between an IRIS-4D™ Series workstation and an IBM® host computer.

With the IRIS 3270 Emulator, you can use an IRIS-4D workstation or server—with Systems Network Architecture (SNA), Transmission Control Protocol (TCP), or 5080 Graphics System Workstation connectivity—to access your IBM mainframe.

This document describes how to use the IRIS 3270 Emulator. It is organized to provide user information, such as configuring the emulator, transferring files, and troubleshooting. For information on how to use Silicon Graphics' 3270 High-Level Language Application Program Interface (HLLAPI) to create HLLAPI applications that interact with IBM host applications, refer to the *IRIS 3270 Emulator Programming Guide*.

Chapter 1, "Configuring the IRIS 3270 Emulator," explains how to configure the 3270 terminal emulator software. It contains a section on configuring the emulator for the first time.

Chapter 2, "Using the IRIS 3270 Emulator," describes how to start and use the emulator. It covers starting and stopping the emulator and how to save screen images.

Chapter 3, "Using the IRIS 3270 Emulator with an ASCII Terminal," explains how to use the 3270 emulator with a character-based (ASCII) terminal.

Chapter 4, "Transferring Files," covers how to transfer files between your workstation and a host using either Silicon Graphics' file transfer program (IRISXFR) or IBM's IND\$FILE file transfer protocol.

Chapter 5, "Troubleshooting," describes troubleshooting techniques for both 3270 hardware and software.

Appendix A, "Error Messages," contains a list of error messages, divided into sections for configuration, terminal emulation, IRISXFR, and IND\$FILE.

Appendix B, "Editing the Emulator Configuration File," describes how to make changes to the plain-text configuration file for the emulator. This chapter is primarily for ASCII terminal users.

Appendix C, "3278 Status Line Codes and Messages," lists the various codes and messages displayed on the emulator status line.

Appendix D, "Automating Host File Transfers," describes how to automate file transfers between VM or MVS machines and your local workstation using IRISXFR and IND\$FILE.

Appendix E, "Keyboards," contains keyboard layouts for the languages supported by the IRIS 3270 Emulator.

Features

The IRIS 3270 Emulator enables any model of the IRIS-4D Series to:

- emulate a Model 2 IBM 3278 terminal using an ASCII terminal (including VT100, iris-ansi, and xterm terminals)
- transfer files between the IRIS workstation and an IBM host using either IBM's IND\$FILE or Silicon Graphics' IRISXFR file transfer protocol
- display an X Window System™/Motif™ graphical user interface to let users interactively customize the emulator's configuration settings
- support multiple 3270 products, multiple hosts or gateways, and multiuser environments using Silicon Graphics' mouse-driven Toolchest menus
- access an IBM host using French, German, Italian, Katakana, Portuguese, Spanish, Swedish, U.K. English, or U.S. English international character sets
- use the Silicon Graphics' 3270 HLLAPI to create programs that interact with host applications

- provide generalized structured field support for HLLAPI applications (for SNA, TCP, and 5080 link types only)
- access the on-line, Silicon Graphics-to-IBM keyboard maps

Typographical Conventions

These type conventions and symbols are used in this guide:

<i>Italics</i>	Filenames, variables, IRIX command arguments, command flags, titles of publications, icon names
UPPERCASE	IBM file names, command names and the names of keys used on IBM systems
Screen type	Code examples, file excerpts, and screen displays (including error messages)
Screen type	User input
()	(Parentheses) Following IRIX commands, they surround the reference page (man page) section where the command is described
[]	(Brackets) Surrounding optional syntax statement arguments
#	IRIX shell prompt for the superuser (<i>root</i>)

Software and Hardware

The IRIS 3270 Emulator software and hardware communicate between an IRIS workstation and an IBM-host system. For information on system requirements, refer to the release notes included with your 3270 emulator product.

Software

The IRIS 3270 Emulator software includes these key files and directories:

- /opt/3270/bin/* Contains all executable files for 3270
- /opt/3270/chest/* Contains Toolchest menu files
- /opt/3270/font/* Contains all fonts used by the emulator
- /opt/3270/lib* Contains libsgi3270.a, the 3270 HLLAPI link library.
- /var/opt/3270/example/*
Contains examples of 3270 HLLAPI, automation for IRISXFR and IND\$FILE file transfer, file transfer input redirection, and keyboard input tracing.
- /var/opt/3270/file/*
Contains all log files used in problem determination
- /var/opt/3270/spool/*
Default location for files transferred to or from the host and screen captures
- /var/opt/3270/lib/*
Contains the 3270 configuration files
- /usr/lib/X11/app-defaults/Setup3270*
Contains color schemes for *setup3270(1)*

To use Silicon Graphics' IRISXFR file transfer utility, you must install the IRISXFR program on your IBM host. This software is distributed on a 1/2-inch tape, generated at 1600 bytes per inch (BPI). For information on how to install the host software, refer to the installation instructions included with the IRISXFR distribution.

Hardware

Warning: Do not attempt to add boards or other upgrades in your system. Hardware upgrades should be installed only by Silicon Graphics-certified personnel. Upgrades performed by noncertified persons void your warranty and may damage your system, or cause injury to improperly trained individuals.

Network Configuration

The IRIS workstation running 3270 emulator software can be connected to an IBM host through these network configurations:

- a leased line using Synchronous Data Link Control (SDLC) via an IBM 37X5 front end processor
- Ethernet, Token Ring, or FDDI using IBM 3172 or equivalent controller
- local non-SNA channel attach using the IRIS Channel Adapter (ICA)

The figures on the next pages illustrate sample IRIS 3270 Emulator hardware configurations, including:

- an IBM, or IBM compatible, mainframe computer
- an IBM host front-end processor running Network Control Program (NCP)
- an IRIS SNA workstation running the IRIS 3270 Emulator software (SNA mode) through an IRIS SNA gateway
- an IRIS SNA gateway running the IRIS 3270 Emulator software (SNA mode)
- an IRIS Channel Adapter gateway and connections

The following figures illustrate these connections:

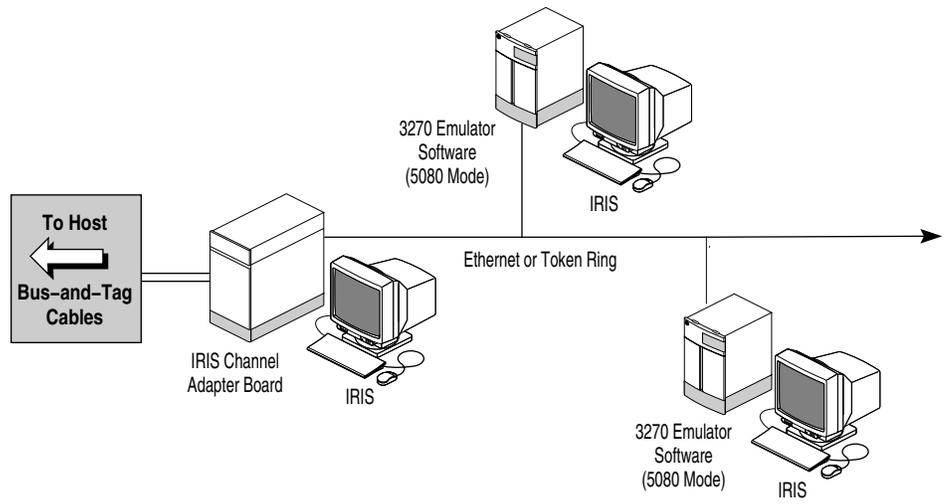


Figure i 3270 Emulator with IRIS Channel Adapter Board

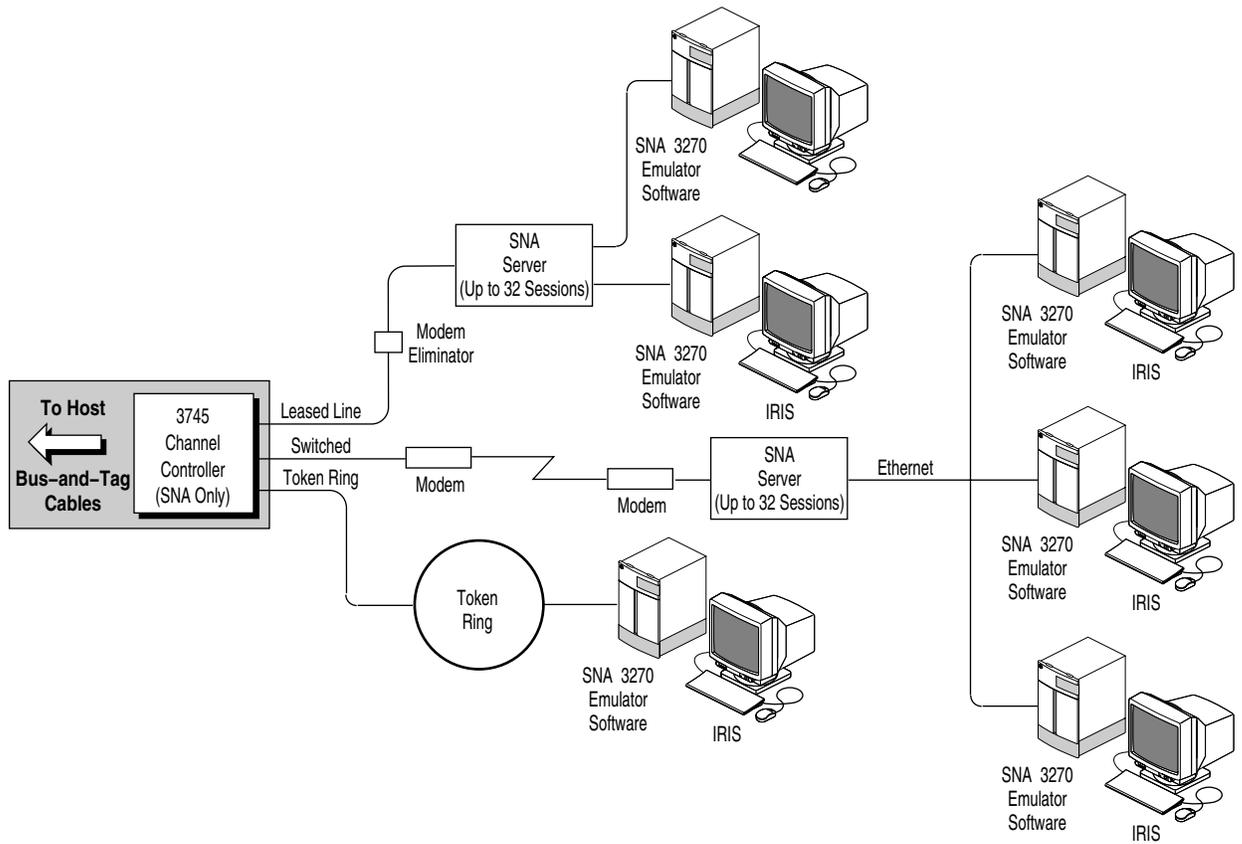


Figure ii 3270 Emulator with IBM 3745 Channel Controller

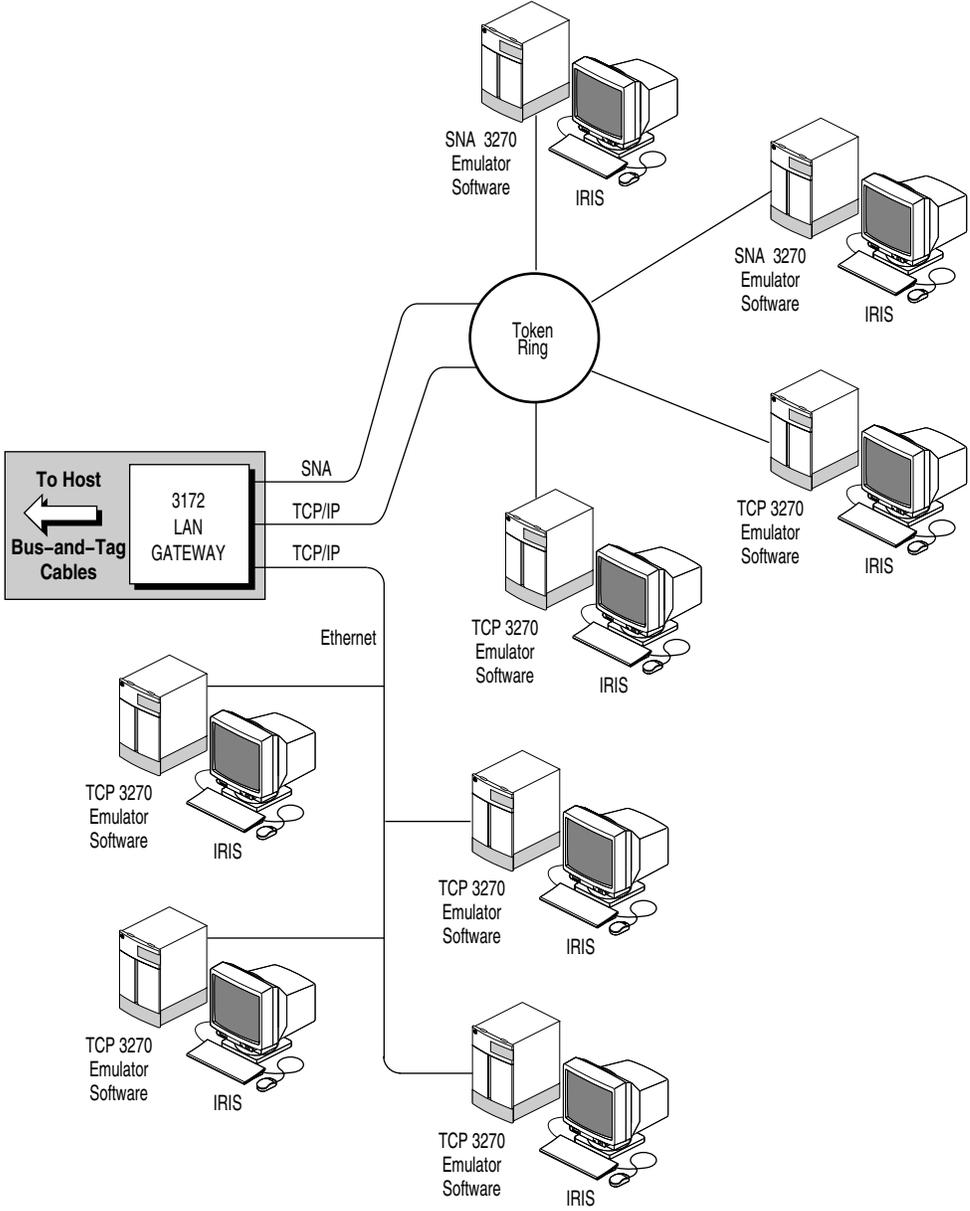


Figure iii 3270 Emulator with IBM 3172 LAN Gateway

Product Support

Silicon Graphics provides comprehensive technical hardware and software product support and a maintenance program for IRIS products. For more information, refer to the release notes that accompany this product.

Configuring the IRIS 3270 Emulator

Configuring the Emulator for the First Time

After you install the 3270 Emulator on your workstation for the first time, you need to set certain configuration options before you start the emulator and connect to the IBM host system. Follow these steps:

1. Run the *setup3270* program. See the section, “Starting setup3270.”
2. Set the appropriate character set. See the section “Changing the Character Set.”
3. Choose a link type (SNA, TCP, or 5080). See the section “Choosing a Link Type.”
4. Select a terminal model. See the section “Selecting a Terminal Model.”
5. If desired, choose a font size. See the section “Changing the Font Size.”
6. Select link-specific options. See the section “Choosing Link-Specific Options.”

Depending upon which link type you choose, you may have to set particular link-specific options. Depending upon the link type, these can include the name of the IBM host system, the names and number of gateways, and the model of IBM terminal to emulate.

Configuring the Emulator for an ASCII Terminal

If you are using the emulator in ASCII mode, you must edit a plain-text configuration file in the directory */var/opt/3270/lib*. There is a separate configuration file for each login on the workstation that uses the emulator. The configuration files are named:

t3279rc.LOGNAME

In the above example, *LOGNAME* is actually the name of a particular login. For example, if you log in as *ralph*, your configuration file in */opt/3270/lib* is called:

t3279rc.ralph

For information about the ASCII configuration file, see Appendix B, "Editing the Emulator Configuration File."

Starting setup3270

The *setup3270* program is the main configuration tool for the 3270 Emulator. Start the *setup3270* program by selecting Set Up "3270" from the 3270 Toolchest menu.

You cannot use the *setup3270* program from an ASCII terminal. To configure the emulator for an ASCII terminal, see the previous section, "Configuring the Emulator for an ASCII Terminal," and Appendix B, "Editing the Emulator Configuration File."

Once you start *setup3270*, you see a screen similar to Figure 1-1:

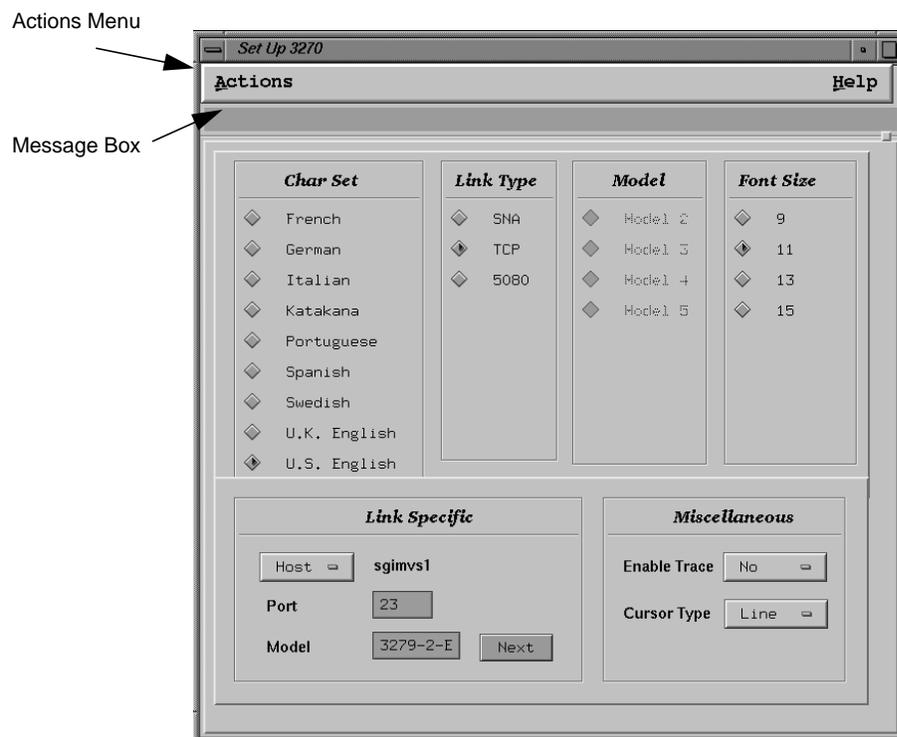


Figure 1-1 The setup3270 Window

The *setup3270* window allows you to change the character set, link type, terminal model, font size, as well as other link-specific and miscellaneous items for your emulation session.

Note that as you change settings in the *setup3270* window, messages are displayed in the message area. For example, Figure 1-2 shows a message confirming that you have changed the character set:



Figure 1-2 Example Message in Message Box

Changing the *setup3270* Window Colors

The colors of the *setup3270* window are controlled by the file */usr/lib/X11/app-defaults/Setup3270*. To change the colors of the *setup3270* window, edit that file and change the various color settings.

There are some examples of alternate color settings in the directory */usr/lib/X11/app-defaults/Setup3270*. In that directory are several example configuration files, each named after a particular color scheme. You can replace the default *Setup3270* configuration file with one of these example files. The default colors are described in the example file *DorianGray*.

Note: You can change the colors of only the *setup3270* window using this configuration file. The colors of the emulator window are set by the emulator and by host applications.

Changing the Character Set

To change the character set to match the host code page, click the left mouse button on the diamond button for one of the international character sets, as shown in Figure 1-3:



Figure 1-3 The Char Set (Character Set) Box

The default character set is U.S. English. You may also choose French, German, Italian, Katakana, Portuguese, Spanish, Swedish, or U.K. English.

Choosing a Link Type

To change the 3270 connection, click the left mouse button on the diamond button for one of the installed connections listed in the "Link Type" box. The example in Figure 1-4 shows the supported link types:

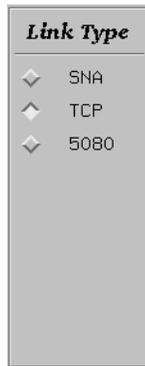


Figure 1-4 The Link Type Box

The following conditions apply to using the various link types:

- The TCP link type connects to a 3172 or equivalent controller.
- The 5080 link type connects to the Silicon Graphics IRIS Channel Adapter gateway.
- The SNA link type connects to the Silicon Graphics SNA Server product on the local or remote workstation.

Selecting a Terminal Model

For the 5080 link type, you can select terminal Model 2, 3, 4, or 5 by clicking the left mouse button on the diamond buttons in the "Model" box shown in Figure 1-5:

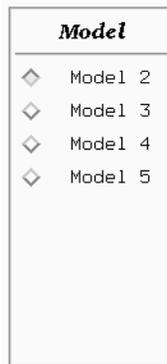


Figure 1-5 The Model Box

Terminal models shown in Figure 1-5 are grayed out and inactive for the SNA link type, which initially defaults to the Model 2 terminal type. (To change your SNA terminal model, specify the appropriate *LOGMODE* when you log in to the IBM host, or change the *LOGMODE* tables on the host.)

For TCP link types, you can choose one of several terminal models using the Link Specific box. See "TCP Link-Specific Options" for information about setting the terminal model for TCP link types.

Changing the Font Size

To change the size of the text in your 3270 terminal window, click the left mouse button on one of the diamond buttons in the "Font Size" box, as shown in Figure 1-6:

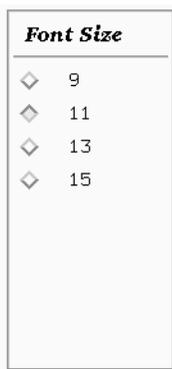


Figure 1-6 The Font Size Box

You can select point size 9, 11, 13, or 15. Keep in mind that changing the font size also changes the size of the 3270 terminal window.

For example, if you are using a 1280x1024 IRIS graphics terminal, Models 2, 3, 4, and 5 fit on the screen with point size 9; Models 2, 3, and 4 fit on the screen with point size 11; Models 2 and 3 fit on the screen with point size 13; and Model 2 fits on the screen with point size 15.

If you are using a 1024x768 IRIS graphics terminal, Models 2, 3, and 4 fit on the screen with point sizes 9 and 11.

Choosing Link-Specific Options

The *setup3270* window contains several link-specific options. These options differ depending on how the IRIS 3270 Emulator is connected to the IBM host. The link-type connection you choose—SNA, TCP, or 5080—determines which options are listed in the "Link Specific" box. For information about setting the link type, see the section "Choosing a Link Type," earlier in this chapter.

SNA Link-Specific Options

The SNA Link-Specific box contains the "Gateway" option shown in Figure 1-7:



Figure 1-7 The SNA Link-Specific Box

Gateway: To choose an SNA gateway, click the left mouse button on Gateway to display the SNA Gateways dialog box shown in Figure 1-8.

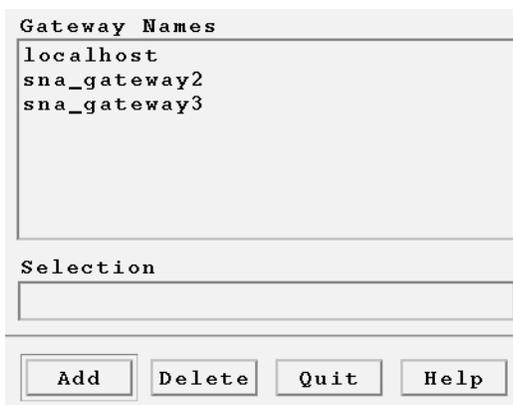


Figure 1-8 The SNA Gateways Dialog Box

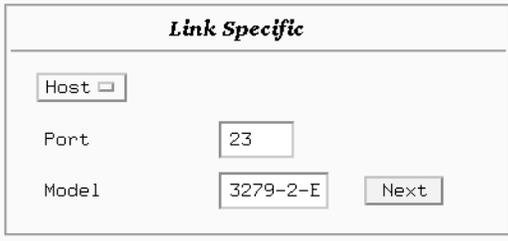
To select a gateway from among those listed, click the left mouse button on a gateway name in the Gateway Names area. To add a new gateway to the Gateway Names area, click the left mouse button on the Selection entry box, enter a new gateway name, and click the *Add* button.

To delete a gateway, click the left mouse button on a gateway name in the Gateway Names area, then click the *Delete* button. For help, click the *Help* button.

When you are finished, click the *Quit* button to exit from the dialog box and return to the Link-Specific menu box.

TCP Link-Specific Options

The TCP Link-Specific box includes the Port, Model, and Host options shown in Figure 1-9:



The screenshot shows a dialog box titled "Link Specific". It contains three input fields: "Host" with a dropdown arrow, "Port" with the value "23", and "Model" with the value "3279-2-E". A "Next" button is located to the right of the Model field.

Figure 1-9 The TCP Link-Specific Box

Port: To select a TCP port on the IBM host, double-click the left mouse button on the Port entry box to highlight it, then enter the port number. The default port is 23. Appropriate ports for a TCP connection support full-screen mode, rather than line mode. If you are not sure about which port to choose, ask your IBM host system programmer.

Model: With a TCP connection, you can choose Model 2, 3, 4, or 5 for either 3278 or 3279 terminals, as well as Model 2-E, 3-E, 4-E, or 5-E for 3279 extended-attribute-enable terminals. The default TCP terminal model is 3278-2. To select a different terminal model, click the left mouse button on the *Next* button to display the next terminal model in the Model list box.

Host: To choose a TCP host, double-click the left mouse button on the Host option to display the TCP Hosts dialog box shown in Figure 1-10. Then, click the left mouse button on a host name in the Host Names list box.

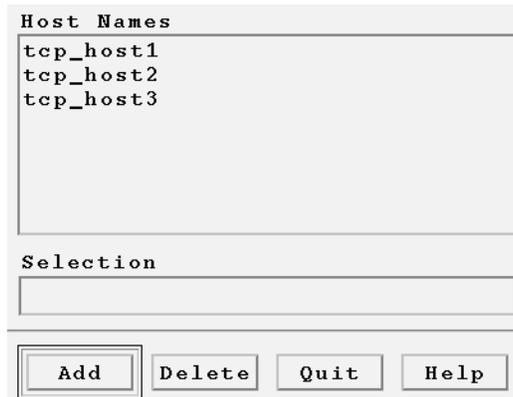


Figure 1-10 The TCP Hosts Dialog Box

To add a new host to the Host Names list box, click the left mouse button on the Selection entry box, enter a new host name, and click the *Add* button. To delete a host, click the left mouse button on a host name in the list box, then click the *Delete* button. For help, click the *Help* button. To quit the dialog box, click the *Quit* button.

5080 Link-Specific Options

When you select a 5080 link type, the Link-Specific box displays the Gateway Name, Channel Address, and Board Number options, as shown in Figure 1-11:

The screenshot shows a dialog box titled "Link Specific". It contains three input fields: "Gateway Name" with a dropdown menu showing "5080_gateway1", "Channel Address" with an empty text box, and "Board Number" with a numeric spinner box showing "0".

Figure 1-11 The 5080 Link-Specific Box

Gateway Name: To choose a 5080 gateway workstation or server, double-click the left mouse button on the Gateways option to display the 5080 Gateways dialog box shown in Figure 1-12. Then, click on a gateway name in the Gateway Names list box.

The screenshot shows a dialog box titled "5080 Gateways Dialog Box". It has a list box titled "Gateway Names" containing three entries: "5080_gateway1", "5080_gateway2", and "5080_gateway3". Below the list is a "Selection" text box. At the bottom are four buttons: "Add", "Delete", "Quit", and "Help".

Figure 1-12 The 5080 Gateways Dialog Box

To add a new gateway to the Gateway Names list box, click the left mouse button on the Selection entry box, enter a new gateway name, and click the *Add* button. To delete a gateway, click the left mouse button on a gateway name in the list box, then click the *Delete* button. For help, click the *Help* button. To quit the dialog box, click the *Quit* button.

Channel Address: Certain site configurations require that each 3270 device always use the same channel address. Normally, channel addresses are assigned dynamically, but you can enter a specific channel address for your emulation session. This address is stored and used for all subsequent sessions (unless you change it).

Board Number: Use the Board Number slider to choose a specific ICA gateway board in the gateway workstation or server. Valid board numbers are 0 through 3. The default is 0.

Selecting Miscellaneous Options

The *setup3270* window Miscellaneous box includes the 3270 Trace and cursor type options, shown in Figure 1-13:

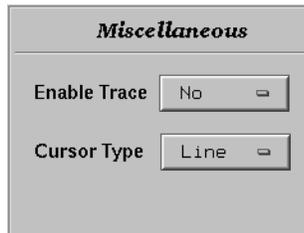


Figure 1-13 The Miscellaneous Box

3270 Trace

3270 Trace records what you see in the 3270 Presentation Space (PS), the location and value of all 3270 attributes, the 3270 status line, keyboard input, Silicon Graphics Message Mode data, and IBM structured field data. To turn the 3270 Trace option on or off, hold down the left mouse button on the *3270 Trace* button. A pop-up menu appears displaying the choices Yes and No.

Click on Yes to enable 3270 Trace and No to disable 3270 Trace. The default is No. The trace option is used primarily to troubleshoot errors. See Chapter 5, “Troubleshooting” for more information.

Cursor Type

This option is used to choose a cursor type. A block and an underline cursor are available with the underline being the default.

Using the Actions Menu

The Actions menu provides a way to use the 3270 emulator directly from the *setup3270* window. From the Actions menu, you can:

- save your 3270 emulator settings
- start the emulator
- display the IBM keyboard map

To display the Actions menu, click and hold down the left mouse button on Actions at the upper left of *setup3270* window; the keyboard shortcut is <Alt-a>. The Actions menu appears, similar to the one shown in Figure 1-14. Move the cursor to highlight a menu item, then release the left mouse button to select it.

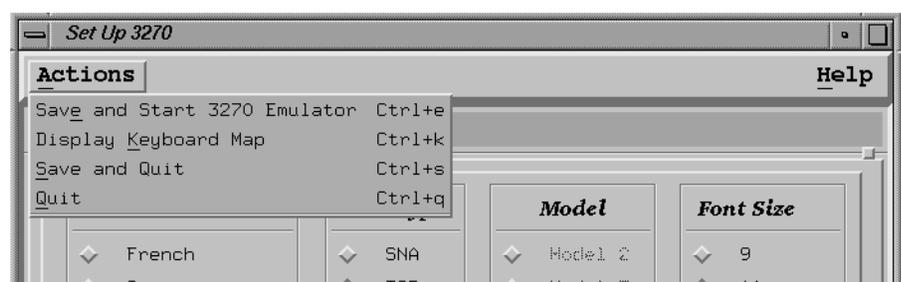


Figure 1-14 The Actions Menu

The Actions menu includes these items:

Save and Start 3270 Emulator

Saves your settings into the configuration file, exits the *setup3270* window, and starts the 3270 emulator; the keyboard shortcut is <Ctrl-E>.

Display Keyboard Map

Displays an IBM keyboard map; the keyboard shortcut is <Ctrl-K>.

Save and Quit

Saves your configuration settings and exits the *setup3270* window; the keyboard shortcut is <Ctrl-S>.

Quit

Exits the *setup3270* window without saving your configuration settings; the keyboard shortcut is <Ctrl-Q>.

Getting Help

To use the *setup3270* window's context-sensitive help, move the cursor to the item in question and press the <F1> key. To see additional information about the *setup3270* window user interface, Actions menu operations, host connections, and IRIS 3270 Emulator products, you can use the Help menu.

To display the Help menu, click and hold down the left mouse button on Help at the upper right of the *setup3270* window, or press <Alt-h>. The Help menu appears, similar to the one shown in Figure 1-15. Move the cursor to highlight a menu item, then release the left mouse button to select it.

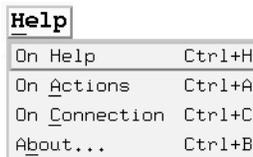


Figure 1-15 The Help Menu

The Help menu includes these items:

- On Help Provides information on how to use the *setup3270* window graphical user interface; the keyboard shortcut is <Ctrl-H>.
- On Actions Explains Actions menu operations; the keyboard shortcut is <Ctrl-A>.
- On Connection Provides information on different host connections; the keyboard shortcut is <Ctrl-C>.
- About... Provides general IRIS 3270 Emulator product information; the keyboard shortcut is <Ctrl-B>.

Displaying the IBM Keyboard Map

To see how the keys on an IRIS keyboard correspond to those on an IBM keyboard, you can display the IBM Keyboard Map at any time by selecting the "Display Keyboard Map" item from the IRIS 3270 Emulator Toolchest menu. The keyboard layout for the IRIS 3270 window appears, such as the one shown for U.S. English in Figure 1-16.

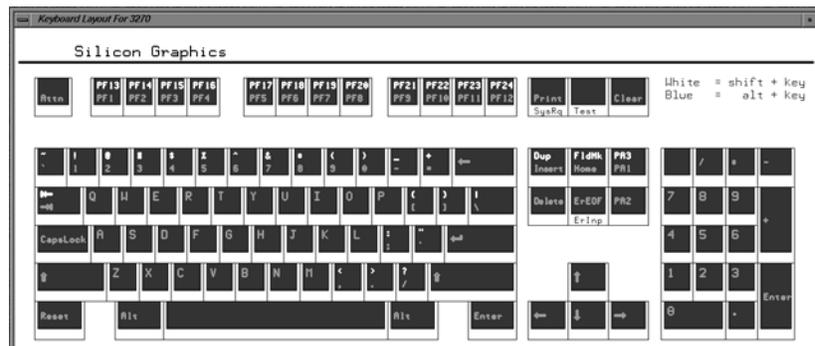


Figure 1-16 Keyboard Layout for the IRIS 3270 Window in U.S. English

Larger versions of all the keyboard maps, including the U.S. English map above, are included in Appendix E, "Keyboard Maps."

Note: Ignore the lighted <NUM LOCK> and <CAPS LOCK> on-off indicators during 3270 operation.

The keyboard map shows the setting for each key as determined by the character set selected in the Char Set box of the *setup3270* window. See the section “Changing the Character Set” earlier in this chapter for more information on setting and changing the keyboard character set.

Using the IRIS 3270 Emulator

This chapter describes how to start the 3270 Emulator and use various emulator functions on an IRIS graphics terminal. It also describes the basic emulator functions, including:

- starting and stopping the emulator
- displaying the IBM Keyboard Map
- reading the 3270 status line
- saving screen images

If you want to use the emulator on an ASCII terminal, or in ASCII terminal mode from a window shell, refer to Chapter 3, “Using the IRIS 3270 Emulator with an ASCII Terminal.” To use the emulator in ASCII terminal mode, you enter keyboard commands that do not use the pull-down emulator menus.

Within the 3270 emulator window, you can:

- use applications and data files on the IBM host
- transfer text or binary files between the IRIS and the IBM host
- run IRIS applications that use the High-Level Language Application Program Interface (HLLAPI) to interact with host applications

The emulator software changes the meanings of some of the keys on an IRIS workstation keyboard to match the key meanings found on an IBM 3278 or 3279 keyboard. For example, the <Esc> key on the IRIS keyboard becomes the <Attn> key on an IBM keyboard, and the right <Ctrl> key becomes <Enter>. These keyboard mappings enable you to use the IRIS workstation keyboard as if it were an IBM 3278 or 3279 keyboard. The keyboard mapping can be displayed on-line. See the section, “Displaying the IBM Keyboard Map,” later in this chapter.

Before You Start

Before you start the emulator for the first time, there are several functions that you must configure. These are:

- Character set
Available character sets are French, German, Italian, Katakana, Portuguese, Spanish, Swedish, and U.S. and U.K. English.
- Link type
Supported link types are SNA, TCP, and 5080.
- Link-Specific options
Depending upon which link type you choose, you may have to set particular link-specific options. Depending upon the link type, these can include the name of the IBM host system, the names and number of gateways, the channel address, and the model of IBM terminal to emulate.

All of these configuration items are described in Chapter 1, “Configuring the IRIS 3270 Emulator.” If you have not done so already, turn to that chapter and read the section “Configuring the Emulator for the First Time.”

Starting the Emulator

You can start the emulator from the Toolchest or the command line (in ASCII terminal mode).

Starting the Emulator from the Toolchest

To start the emulator from the Toolchest, you must first install the Toolchest menus by typing

```
/opt/3270/bin/inst_3270chestrc
```

The Toolchest menus disappear briefly. When they return, the 3270 menu bar is added to the rest of the menus. For more information about the *inst_i3270chestrc* command, see the *inst_i3270chestrc(1)* man page.

To start the emulator, click once on the 3270 menu bar. You see the 3270 Emulator menu, as shown in Figure 2-1:



Figure 2-1 3270 Emulator Menu

Use one of the first three menu items to start the emulator for TCP, 5080, and SNA. When you select one of the first three menu items, you see an additional menu that provides options for starting the emulator. For example, when you choose Start 3270 for TCP, you see a cascading menu similar to the one shown in Figure 2-2:

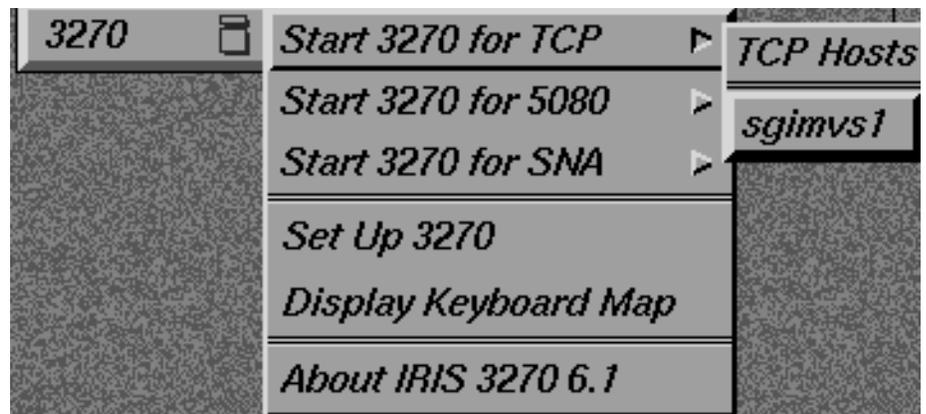


Figure 2-2 Example Emulator Menu and Submenu

In this example menu, you can start the emulator for TCP using "sgimvs1", "sgivm1", or one of the "tcp_host" selections. Use "Set Up 3270" to add additional selections or remove existing ones. See Chapter 1, "Configuring the IRIS 3270 Emulator," for more information about using "Set Up 3270".

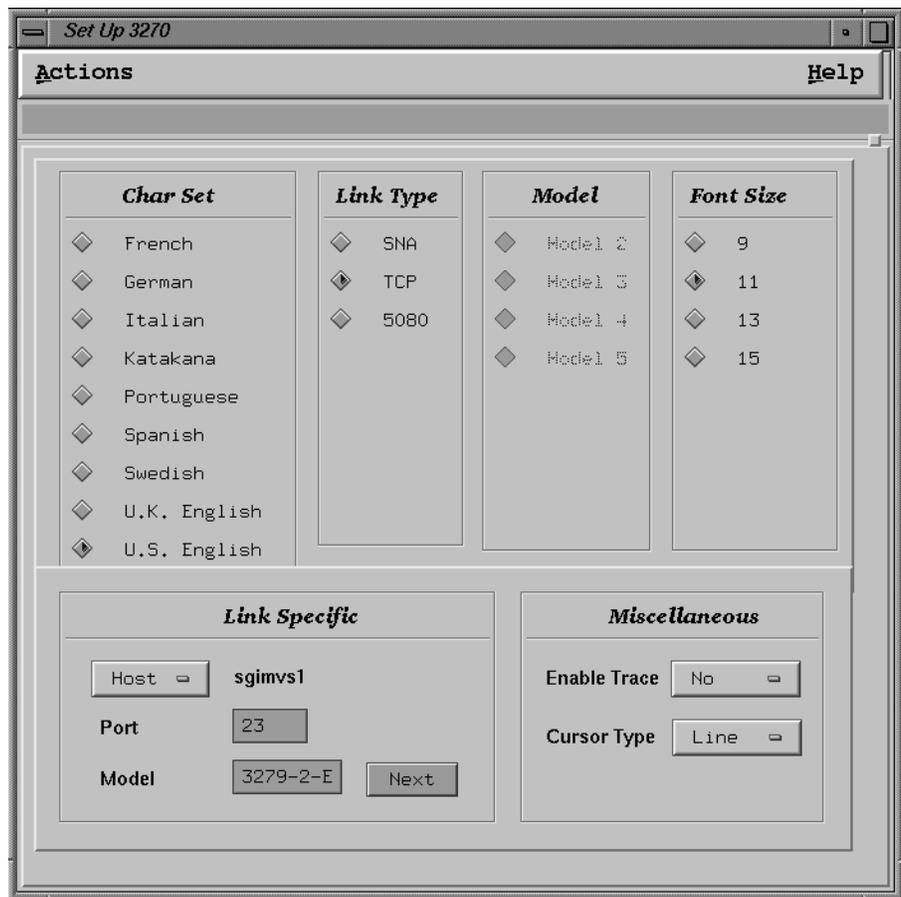


Figure 2-3 Set Up 3270 Menu

To start the emulator immediately, click on the Actions pull-down menu using the left mouse button. In the Actions pull-down menu, select "Save" and "Start 3270 Emulator".

If you want to start a different emulator session than the one currently configured, change the appropriate settings in the "Set Up 3270" menu. When you have set up the desired emulator type, select Save and Start Emulator from the "Actions" menu. For information about configuring the emulator, see Chapter 1, "Configuring the IRIS 3270 Emulator."

Starting the Emulator in ASCII Mode

You can run the emulator in ASCII mode using one of three terminal types:

- VT100
- iris-ansi
- xterm window

ASCII mode is useful not only for running the emulator on a character-based, VT100 terminal, but also for using the emulator in a standard window shell (*wsh* or *xwsh*) and while dialed into your workstation using a modem.

To start the emulator in ASCII mode, enter this command at a shell prompt:

```
/opt/3270/bin/t3278
```

With an ASCII terminal, the IRIS 3270 Emulator supports only IBM 3278 Model 2 terminal emulation.

The Emulator Window

Once you start the emulator, the 3270 terminal emulator window appears. Often, this window displays a VTAM, or host login screen, similar to the one shown in Figure 2-4. The identifier in the top bar of the window, for example TCP - sgivm1, reflects the terminal mode. The format of your login screen depends on your particular host configuration.

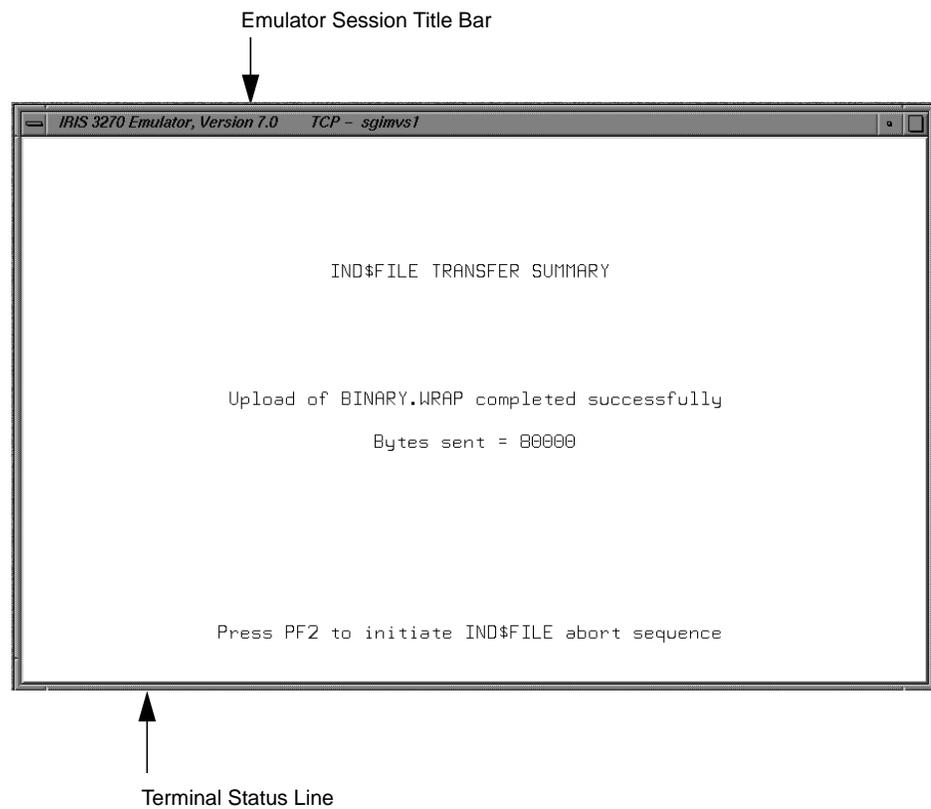


Figure 2-4 The Emulator Window

To log in, use the appropriate login procedure for your host environment. Then, use the IRIS workstation as though it were an IBM 3270 class terminal. To see how to use IBM-specific keystrokes, such as PA1 and PrintScreen, with your IRIS keyboard, you can display the IBM keyboard map using the "Display Keyboard Map" menu. This menu item is available from the Toolchest menu. See the upcoming section, "Displaying the IBM Keyboard Map."

Once you have opened a 3270 session, you can display the 3270 Emulator menu by pressing the right mouse button anywhere in the 3270 terminal emulator window. When you press the right mouse button, you see this pop-up menu:

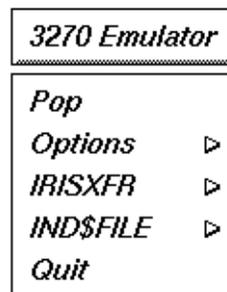


Figure 2-5 The 3270 Emulator Pop-Up Menu

These functions are available from the pop-up menu:

Pop	Raises the emulator window in a stack of open windows on your IRIS screen.
Options	Use this menu item to open a cascading menu that contains these options: <ul style="list-style-type: none"> • Points—Allows the point size to be changed. The available sizes are 9, 11, 13, and 15. • Cursor Position—Toggles on or off the location of current cursor position. When this option is on, the location of the cursor is displayed in the bottom right corner of the screen status line. • Alternate Cursor—Allows a choice of block or underline cursor. The default is the underline cursor. • Clone—Produces a duplicate 3270 window.
IRISXFR	Use this menu item to set up and transfer files with IRISXFR. When you are finished transferring files, use the right mouse button to return to the emulator window.

- IND\$FILE Use this menu item to set up and transfer files with IND\$FILE. When you are finished transferring files, use the use the right mouse button to return to the emulator window.
- Quit Exit from the emulator and close the emulator window.

Quitting a 3270 Emulator Session

To close a host session, press the right mouse button in the session window to display the 3270 Emulator Pop-Up menu, then select "Quit". To quit an emulator session in ASCII mode, press `<ctrl-d>`.

Displaying the IBM Keyboard Map

The emulator maps keys on your IRIS keyboard so that they behave like certain keys on an IBM keyboard. For example, the Page Up key on the IRIS may be used as the PA1 key on an IBM keyboard. To see how your particular keyboard is configured, use the "Display Keyboard Map" menu command.

To display the keyboard map, select the main 3270 Emulator menu from the Toolchest (see Figure 2-1). Select the menu item "Display Keyboard Map".

In ASCII mode, refer to Chapter 3, "Using the IRIS 3270 Emulator with an ASCII Terminal," to see how the IBM keyboard is mapped to ASCII terminals.

Saving Screen Images to a File

To print the contents of your current 3270 terminal emulation window during a host session, press the `<Print screen>` key on the IRIS keyboard.

When you press `<Print screen>`, the emulator saves the current screen as a file in the `/var/opt/3270/spool` directory and displays the following message in a new 3270 message window:

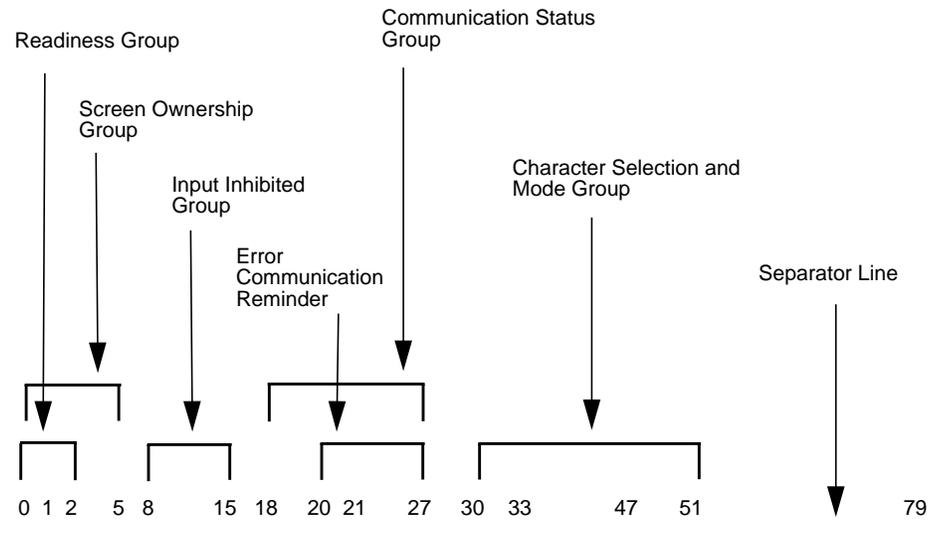
```
Saving screen image - file name is SCRNPRT.PID.NNN
```

where *PID* is the *t3279* process ID and *NNN* represents the number (from 001 to 999) of the file containing the display data. This number is increased every time you press the <Print Screen> key.

Note: For Katakana, Kana characters are not displayed as they appear on the host.

The IRIS 3270 Terminal Status Line

The IRIS 3270 terminal status line displays operational status information from the host and the 3270 system about the validity of session-specific operations. Figure 2-6 illustrates the status line:



Note: The column numbers (0-79) are not displayed on the emulator screen.

Figure 2-6 The IRIS 3270 Terminal Status Line

To see what messages appear in each area of the status line, refer to Appendix B, "Editing the Emulator Configuration File."

Using the IRIS 3270 Emulator with an ASCII Terminal

This chapter provides information on how to run the IRIS 3270 Emulator software on an ASCII terminal. The IRIS 3270 Emulator supports three ASCII terminal types: VT100, iris-ansi, and xterm terminals. With an ASCII terminal, the IRIS 3270 Emulator supports only IBM 3278 Model 2 terminal emulation. You can access a 3270 terminal emulation session by remotely logging in to a workstation running the IRIS 3270 Emulator. ASCII terminals can support only one active session at a time.

Starting the 3270 Emulator with an ASCII Terminal

This section explains how to run an IRIS 3270 Emulator session by establishing an active link to the host, starting a session, and operating the ASCII terminal as a 3278 terminal.

IBM Keyboard Mapping for Supported ASCII Terminals

During a 3270 emulator session, many of the standard keyboard characters are assigned added functions needed in the 3270 environment. You can make use of these functions by pressing keys in various combinations. To see an online list of key combinations for ASCII terminals, press <Ctrl-e> from the 3270 emulation window.

Table 3-1 shows the IBM 3270 keys and the equivalent VT100, iris-ansi, and xterm key sequences.

Note: Keys not identified in Table 3-1 have identical functions in all environments.

Table 3-1 Functions and Key Sequences

IBM Key	iris-ansi, vt100 or xterm Keys
ENTER	Enter
PF1	Esc 1
PF2	Esc 2
PF3	Esc 3
PF4	Esc 4
PF5	Esc 5
PF6	Esc 6
PF7	Esc 7
PF8	Esc 8
PF9	Esc 9
PF10	Esc 0
PF11	Esc -
PF12	Esc =
INSERT	Esc i
ERASE INPUT	Esc E
CLEAR	Esc c
PF13	Esc !
PF14	Esc @
PF15	Esc #
PF16	Esc \$
PF17	Esc %
PF18	Esc ^

Table 3-1 (continued) Functions and Key Sequences

IBM Key	iris-ansi, vt100 or xterm Keys
PF19	Esc &
PF20	Esc *
PF21	Esc (
PF22	Esc)
PF23	Esc _
PF24	Esc +
DELETE	Esc d
FIELD MARK	Esc f
DUP	Esc p
PA1	Esc q
PA2	Esc w
PRINT	Esc P
DEV CNCL	Esc D
ATTN	Esc a
RESET	Esc r
IDENT	Esc I
ERASE EOF	Esc e
SCREEN REFRESH	Ctrl r
SYS REQ	Esc s
UP ARROW	Up arrow
DOWN ARROW	Down arrow
LEFT ARROW	Left arrow
RIGHT ARROW	Right arrow
BACK TAB	Esc b

Table 3-1 (continued) Functions and Key Sequences

IBM Key	iris-ansi, vt100 or xterm Keys
TAB	Tab
HOME	Esc h
NEW LINE	Esc n
SWAP25	Ctrl a
QUIT	Ctrl d
IND\$FILE	Ctrl b
Test	Esc t
HELP	Ctrl e
IRISXFR	Ctrl f
BACKSPACE	Backspace
<can't find symbol>	^
<¢	[
]

Starting an Emulation Session

Enter this command in the IRIX shell to start the 3278 display session on an ASCII terminal:

```
/opt/3270/bin/t3278
```

Quitting an Emulation Session

To close a host session, press **<ctrl-d>**.

Saving Screen Images to a File

Press **<ESC P>** to save your current screen image as described in Chapter 2, "Using the IRIS 3270 Emulator."

3270 Terminal Status Line

The 3270 terminal status line displays operational status information from the host and the 3270 system about the validity of session-specific operations.

Refer to Appendix C, "3278 Status Line Codes and Messages" for descriptions of the most commonly encountered status line codes and messages and the equivalent IBM 3278 graphic symbols for each message. If you encounter an error message not described in Appendix C, press the **<RESET>** function key and retry the operation. If this attempt is unsuccessful, refer the problem to the system administrator.

To display the status line, press the **<SWAP25>** key, which is **<Ctrl-a>** on the IRIS keyboard. The **<SWAP25>** key is a toggle. The first time you press it, it displays the status line, overwriting line 24. When you press **<SWAP25>** a second time, the status line disappears and line 24 is displayed again. Normally, the status line is not shown. Use **<SWAP25>** to check the status of your session if the host is taking an unusually long amount of time to respond and the status line is not currently displayed.

IRISXFR Operations

To activate the IRISXFR Set Up screen, press **<ctrl-f>**. Data entry instructions for each field of the menu are displayed in the help area. Once you have initiated the transfer, the IRISXFR Transfer Summary appears. For complete information about IRISXFR, see Chapter 4, "Transferring Files."

IND\$FILE Operations

To activate the IND\$FILE Set Up screen, press <Ctrl-b>. Data entry instructions for each field are displayed in the help area. Once you have initiated the transfer, the IND\$FILE Transfer Summary appears. For complete information about IND\$FILE, see Chapter 4, "Transferring Files."

Transferring Files

There are two programs for transferring files between a workstation and a host:

- Silicon Graphics' IRISXFR program
- the IBM IND\$FILE program

This chapter describes how to use both programs to transfer files.

Basic File Transfer Steps

The 3270 Display Emulator must be running before you can start any file transfer. To execute file transfers, follow these steps:

1. Establish a TSO or CMS session with the host.
2. Make certain the TSO or CMS command-level prompt is displayed and the keyboard is unlocked.
3. Invoke either the IRISXFR Set Up screen or the IND\$FILE Set Up screen and supply the appropriate information.
4. Start the file transfer by either clicking on the *START TRANSFER* box (from a graphics terminal), or by pressing <Enter> (from an ASCII terminal when using *curses* mode).

Using IRISXFR

Before you can use the IRISXFR program to transfer files between your workstation and a host, the Silicon Graphics Host 3270 File Transfer Software must be installed on both the IRIS workstation and the IBM host.

Note: IRISXFR is an optional software package. If it is not installed on your IBM host, you must use IND\$FILE to transfer files. The IND\$FILE program is described later in this chapter.

The IRIS 3270 Emulator "IRISXFR" file transfer menu enables you to transfer text or binary files to and from SGI's Host program also called IRISXFR. The file transfer requires a dedicated 3270 display session and uses SGI's 3270 HLLAPI programming interface.

You must have 3270 Structured Fields capability to achieve optimum IRISXFR file transfer speed. If 3270 Structured Fields are not supported, a warning message is written to the file */usr/3270/file/t3279_log*, and file transfer throughput may be severely degraded.

Verifying IRISXFR Installation

After you install IRISXFR on your host, read the file */var/opt/3270/example/CASE4/README* and follow the instructions to automatically verify that you have installed IRISXFR properly.

Starting IRISXFR

If you are using an IRIS graphics terminal, you can start IRISXFR file transfer operations from the 3270 Emulator menu. Press the right mouse button anywhere in the 3270 terminal emulation window to display the 3270 Emulator menu. Move the mouse to select "IRISXFR". See Figure 4-1.

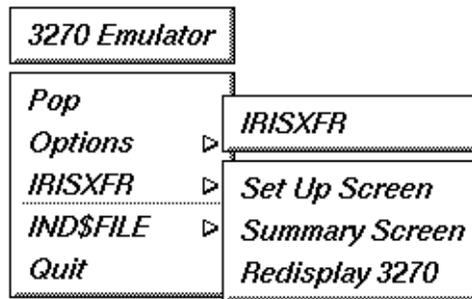


Figure 4-1 Selecting the IRISXFR Menu

If you are using an ASCII terminal (in *curses* mode), you can start IRISXFR file transfer operations during a 3270 emulator session by pressing <Ctrl-f>. For more information on IBM keyboard mapping with ASCII terminals, see Table 3-1 in Chapter 3, "Using the IRIS 3270 Emulator with an ASCII Terminal."

Using IRISXFR to Set Up and Transfer Files

To transfer files to and from the IBM host, you must:

- display the IRISXFR Set Up screen
- select and change Set Up screen menu items, depending upon the kind of the files you are transferring
- start the transfer

To display the IRISXFR Set Up screen on a graphics terminal, click and hold the right mouse button anywhere in the emulator window. Move the mouse pointer to "IRISXFR", then right to show the "IRISXFR" submenu. See Figure 4-1. While still holding the right mouse button, move the mouse pointer to the "Set Up Screen" option and release the mouse button. If you are using an ASCII terminal, type **a** to select "Set Up Screen".

You see the IRISXFR Setup Menu screen, as shown in Figure 4-2.

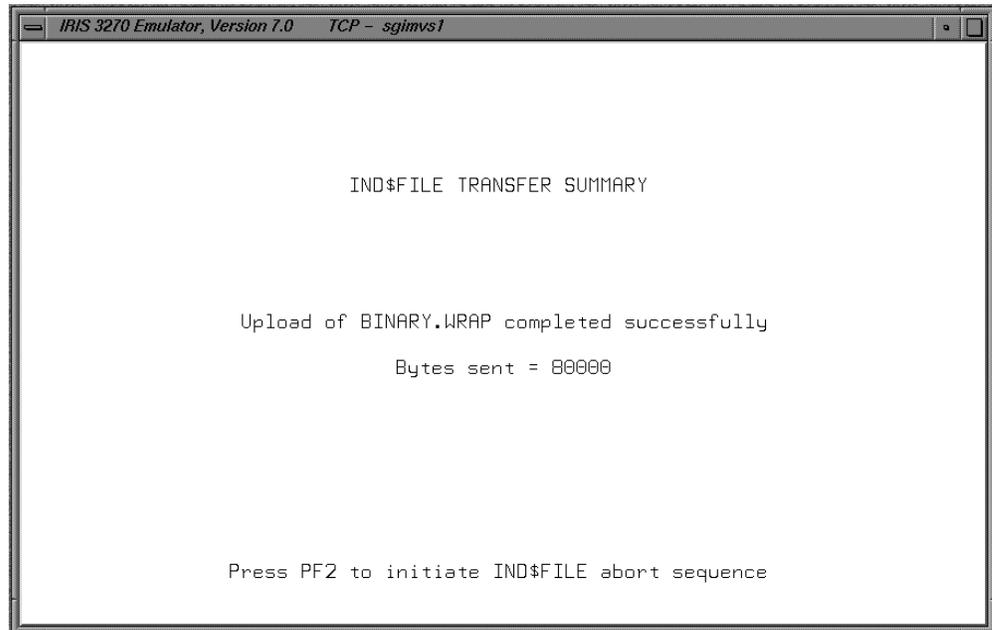


Figure 4-2 The IRISXFR Setup Menu Screen

Some of the menu items are set to default values, such as "Transmission Direction", "Translate Data", and others. You must supply the names of the files to transfer and what they will be named on the destination machine.

Select menu items by clicking on them with the left mouse button. Context-sensitive help is presented in the HELP INFORMATION area at the bottom of the window whenever you select a field. Error messages are also displayed in this area.

To change the value of one of the first five menu items and item seven, select the item, then click on the middle mouse button. Each time you press the middle mouse button, it cycles through the options available in each of these fields. The remaining menu items require you to type in the necessary information.

Note: Depending upon how you set certain fields, you may not be able to change the values of some other fields. For example, when you are receiving a file (the "Transmission Direction" field is set to *Receive*), you cannot set the *Record Format* field. If you try to set a field illegally, you see an error message in the HELP INFORMATION area explaining the problem.

To transfer a file between a workstation and the host, follow these steps:

1. Select the transmission direction. Using the left mouse button, click on the "Transmission Direction" menu item. Use the middle mouse button to select either *Send* or *Receive*. *Send* uploads files to the IBM host. *Receive* downloads files from the IBM host to the IRIS workstation.

For ASCII terminals, type **send** or **receive**. The selections *must* be spelled out completely and with an initial capital letter. You cannot use abbreviations.

2. Choose whether or not to translate data during the transfer. Click on the "Translate Data" menu item, using the left mouse button. Use the middle mouse button to cycle between *Yes* and *No*. Select *No* for binary file transfers. Select *Yes* for text data files.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **Yes** or **No**.

3. Choose whether or not to overwrite existing files on either the workstation (if you are downloading files) or the IBM host (if you are uploading files) using the "Overwrite File" menu item. IRISXFR overwrites a file only if you specify *Yes*. Otherwise, IRISXFR displays an error message and terminates the file transfer operation.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **Yes** or **No**.

4. Choose whether or not to restart an interrupted file transfer with the "Restart Interrupted Transfer" menu option. If your file transfer terminates before it is successfully completed, select *Yes* to resend only the data that was not already received.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **Yes** or **No**.

5. Set the "Record Format" menu option. If the "Translate Data" option (step 2, above) is set to *No* for binary files, set your Record Format to *Fixed*. For text data files, you can select *Fixed* or *Variable*.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **Fixed** or **Variable**.

6. Set the record size to a size appropriate for the file. For a variable length record size, set the size to the length of the longest record in the file.

For ASCII terminals, use the <Tab> key to move to this menu item, then enter the record size.

7. Determine whether the file type is VSAM. VSAM files are supported only on MVS hosts (not VM hosts). Use the middle mouse button to toggle between *Yes* and *No*.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **Yes** or **No**.

8. Fill in the IRIS file name field. Use standard IRIX conventions to specify a file name or a full pathname. If you enter only a file name, the file is assumed to be in */var/opt/3270/spool* (when sending a file) or is saved in */var/opt/3270/spool* (when receiving a file).

Remember to use only U.S. ASCII characters in IRIX file names. Note that for full pathnames, you cannot use IRIX environment variables, such as *\$HOME*, and shell pathname conventions, such as tilde (~).

If you want to alter or correct information in either this field or the "Host" file name field, use the arrow keys to move the cursor to the desired place on the line. Use the backspace key to erase characters. If you place the cursor on text in the line, then press backspace, the remainder of the line to the right and the character immediately to the left of the cursor are deleted. You can change characters by typing over them. As you enter information for the IRISXFR file transfer, note that the keyboard mapping is identical to that for your 3270 session.

9. Fill in the "Host" file name field. Use the IBM host file name format appropriate for TSO or CMS. You can edit this line in the same way as the IRIS file name field (using the arrow keys and the backspace key).
10. When the appropriate menu items are configured correctly, start the file transfer. From a graphics terminal, click the left mouse button anywhere in the *START TRANSFER* rectangle to start the transfer. From an ASCII terminal, press <Enter> to begin transferring the file.

When you start the file transfer, the IRISXFR Transfer Summary screen is automatically displayed. It shows you the name of the file, whether it is being uploaded or downloaded, and shows how many bytes have been transferred. For more information about the IRISXFR Transfer Summary screen, see the next section.

You can abort the transfer by pressing the PA1 key (<Esc-q> for ASCII terminals). When the transfer is complete (or aborted), you can return to the emulator window in one of three ways:

- Pop up the IRISXFR menu and select "Redisplay Emulator" (in graphics mode only).
- Press <Enter> on the IRIS keyboard (both graphics and ASCII mode).
- Press <ctrl-r> (in ASCII mode only).

You can exit from the Set Up screen at any time by pressing the right mouse button (from a graphics terminal). From an ASCII terminal, press <ctrl-r>. Your current setup information is retained for later use. While a file transfer is in progress, you can display the current setup information, but you cannot change it until the file transfer is either complete or stopped (aborted).

The next section describes how you can check the status of your file transfers.

IRISXFR Transfer Summary Screen

The Transfer Summary provides information on the status of an ongoing file transfer. It lists whether you are uploading (sending) or downloading (receiving) a file, the name of the file, and the current number of bytes transferred. See Figure 4-3.

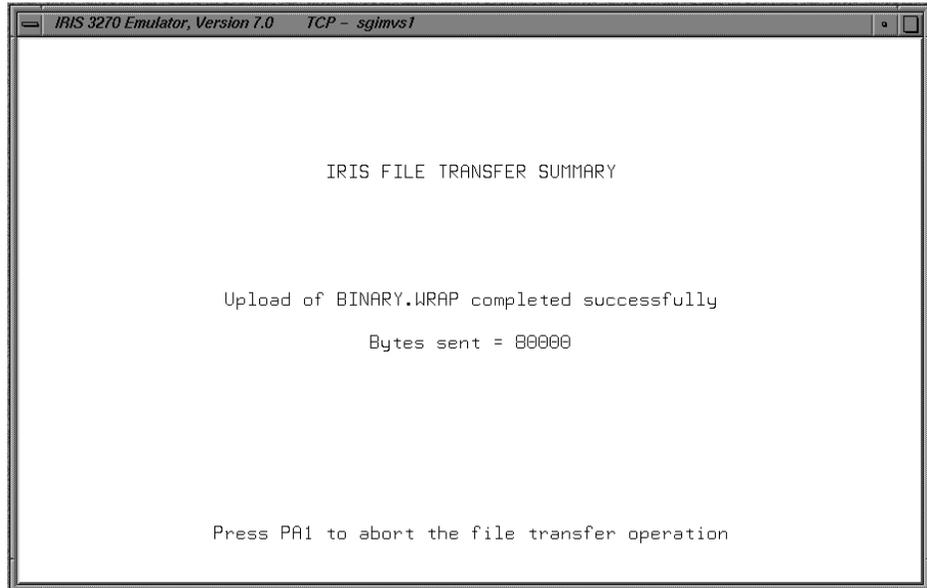


Figure 4-3 IRISXFR Transfer Summary Screen

The Transfer Summary is automatically displayed whenever you start transferring a file from the IRISXFR Set Up menu. Either `Download` or `Upload` is displayed with the local name of the file. To return to the current 3270 session screen, select "Redisplay 3270" from the IRISXFR menu if you are using an IRIS graphics terminal, or press `<ctrl-r>` from an ASCII terminal.

IRISXFR Setup Menu Reference

The following are the IRISXFR Set Up Menu options:

Transmission Direction

The middle mouse button cycles between *Send* and *Receive*. *Send* uploads files to the IBM host. *Receive* downloads files from the IBM host to the IRIS workstation.

Translate Data

The middle mouse button cycles between *Yes* and *No*. Select *No* for binary file transfers. Select *Yes* for text data files.

Overwrite File

IRISXFR overwrites a file only if you specify *Yes*. Otherwise, IRISXFR displays an error message and terminates the file transfer operation.

Restart Interrupted Transfer

If your file transfer terminates before it is successfully completed, select *Yes* to resend only the data that was not already received.

Record Format

If "Translate Data" is set to *No* for binary files, set your "Record Format" to *Fixed*. For text data files, you can select *Fixed* or *Variable*.

Record Size

The record size is displayed only if the "Record Format" is "Fixed."

VSAM File

The middle mouse button cycles between *Yes* and *No*. *Yes* is only valid for MVS systems.

IRIS file name

Use standard IRIX conventions to specify a file name or a full pathname. If only a file name is specified, the file name is appended to */var/opt/3270/spool* to create a full pathname.

Host file name

Use the IBM host file name format.

START TRANSFER

From a graphics terminal, click the left mouse button anywhere in the *START TRANSFER* box to start the transfer. From an ASCII terminal, press <Enter>.

Aborting IRISXFR

To abort IRISXFR, press the keyboard equivalent for IBM key PA1. When the program is aborted, a text message appears on the IRISXFR Transfer Summary screen. Press <Enter> (in graphics mode) to redisplay the emulator window. In ASCII mode, press <ctrl-r>.

Automating File Transfers Using IRISXFR

You can automate the process of transferring files between your workstation and the host using the file *updown profile*. After validating the IRISXFR installation, you can modify this file to suit your particular needs. See Appendix D, “Automating Host File Transfers” for more information.

Using IND\$FILE

The IRIS 3270 Emulator IND\$FILE menu enables you to transfer text or binary files to and from IBM S/370, 43XX, or 30XX systems running CMS, TSO, or CICS.

The file transfer requires a dedicated 3270 display session. The IND\$FILE must be installed on the mainframe and available from the user’s account.

Note: IBM maps EBCDIC values onto ASCII values at the host end. Some characters appear differently on your IRIS-4D Series workstation from how they appear on the host. For example, for the U.S. character set, the EBCDIC ¬ (“not” sign) is mapped onto an ASCII ^ (caret).

Starting IND\$FILE

If you are using an IRIS graphics terminal, you can start IND\$FILE file transfer operations from the 3270 menu. Press the right mouse button anywhere in the 3270 terminal emulation window to display the 3270 menu. Move the mouse to select IND\$FILE. The IND\$FILE menu displays as shown in Figure 4-4. For more information on starting the IRIS 3270 Emulator using the Toolchest menu, see Chapter 2, “Using the IRIS 3270 Emulator.”

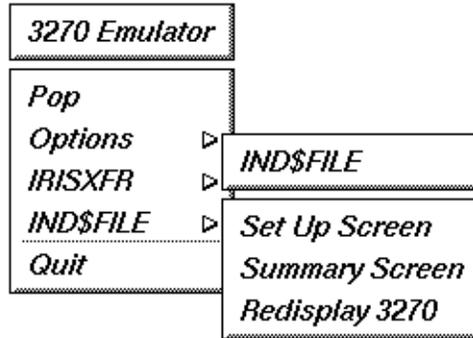


Figure 4-4 Selecting the IND\$FILE Menu

If you are using an ASCII terminal, you can start IND\$FILE file transfer operations during a 3270 emulator session by pressing <Ctrl-b>. See Table 3-1 in Chapter 3, "Using the IRIS 3270 Emulator with an ASCII Terminal" for more information on IBM keyboard mapping.

Using IND\$FILE to Set Up and Transfer Files

To set up and transfer files using IND\$FILE with a graphics terminal, click the right mouse button on the "Set Up Screen" option of the IND\$FILE menu. If you are using IND\$FILE with an ASCII terminal, type **a** to select "Set Up Screen". You see the IND\$FILE Setup Menu:

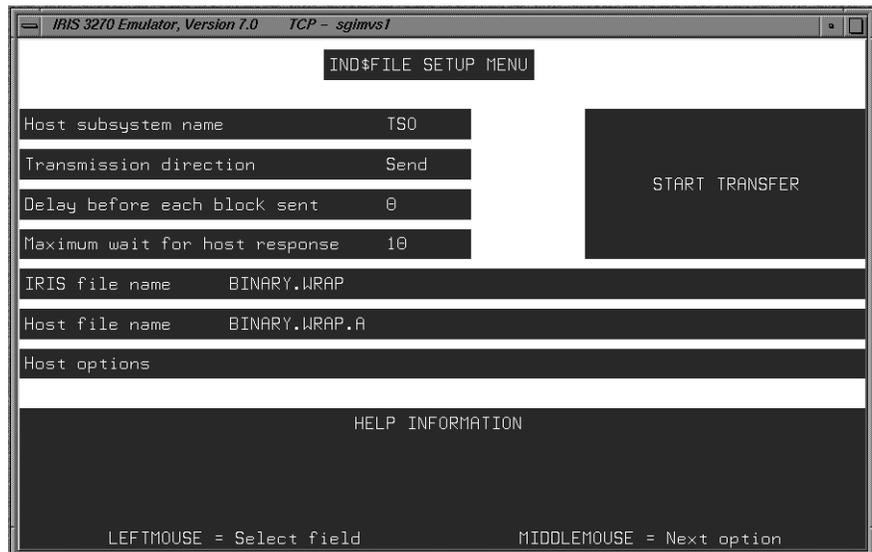


Figure 4-5 The IND\$FILE Setup Menu Screen

Some of the menu items are set to default values, such as the Host subsystem name, the Transmission Direction, and others. You must supply the names of the files to transfer, what they will be named on the destination machine, and any host options.

Select menu items by clicking on them with the left mouse button. Context-sensitive help is presented in the HELP INFORMATION area at the bottom of the window whenever you select a field. Error messages are also displayed in that area.

To change the value of one of the first two menu items, select the item, then click on the middle mouse button. Each time you press the middle mouse button, it cycles through the options available in each of these fields. The remaining menu items require you to type in the necessary information.

To transfer a file between a workstation and the host, follow these steps:

1. Select the host subsystem name. direction. Using the left mouse button, click on the "Host subsystem name" menu item. Use the middle mouse button to select one of *TSO*, *CMS*, or *CICS*.

For ASCII terminals, type **TSO**, **CMS**, or **CICS**.

2. Select the transmission direction. Using the left mouse button, click on the "Transmission Direction" menu item. Use the middle mouse button to select either *Send* or *Receive*. *Send* uploads files to the IBM host. *Receive* downloads files from the IBM host to the IRIS workstation.

For ASCII terminals, use the <Tab> key to move to this menu item, then type either **send** or **receive**. The selections *must* be spelled out completely and with an initial capital letter. You cannot use abbreviations.

3. Choose the delay between blocks. Click on the "Delay" before each block sent menu item, using the left mouse button. Enter the desired delay. The range of values is between 1 and 5 seconds.

For ASCII terminals, use the <Tab> key to move to this menu item, then enter the desired delay (0 to 5 seconds).

4. Specify how long to wait for a response from the host. Click on the "Maximum" wait for host response menu item with the left mouse button, then enter an appropriate time. The range is between 10 and 5000 seconds.

For ASCII terminals, use the <Tab> key to move to this menu item, then enter the desired maximum time to wait (10 to 5000 seconds).

5. Fill in the IRIS file name field. Use standard IRIX conventions to specify a file name or a full pathname. If you enter only a file name, the file is assumed to be in */var/opt/3270/spool* (when sending a file) or is saved in */var/opt/3270/spool* (when receiving a file).

Remember to use only U.S. ASCII characters in IRIX file names. Note that for full pathnames, you cannot use IRIX environment variables, such as *\$HOME*, and shell pathname conventions, such as tilde (~).

If you want to alter or correct information in either this field or any other field in which you enter information from the keyboard, use the arrow keys to move the cursor to the desired place on the line. Use the backspace key to erase characters. If you place the cursor on text in the

line, then press backspace, the remainder of the line to the right and the character immediately to the left of the cursor are deleted. You can change characters by typing over them.

6. Fill in the "Host file name" field. Use the IBM host file name format.
7. Provide any host options. Click on this field with the left mouse button, then enter the desired options.

For ASCII terminals, use the <Tab> key to move to this menu item, then enter the desired options.

For a complete list of available host options, see the next section, "IND\$FILE Setup Menu and Host Option Reference."

8. When the appropriate menu items are configured correctly, start the file transfer. From a graphics terminal, click the left mouse button anywhere in the *START TRANSFER* rectangle to start the transfer.

From an ASCII terminal, press <Enter> to begin transferring the file.

When you start the file transfer, the IND\$FILE Transfer Summary screen is automatically displayed. It shows you the name of the file, whether it is being uploaded or downloaded, and shows how many bytes have been transferred. For more information about the IND\$FILE Transfer Summary screen, see the next section.

You can abort the transfer by pressing the PF2 key (<Esc-q> for ASCII terminals). When the transfer is complete (or aborted), you can return to the emulator window in one of two ways:

- Pop up the IRISXFR menu and select "Redisplay Emulator" (in graphics mode only).
- Press <ctrl-r> (in ASCII mode only).

You can exit from the Set Up screen at any time by pressing the right mouse button (from a graphics terminal). From an ASCII terminal, press <ctrl-r>. Your current setup information is retained for later use. While a file transfer is in progress, you can display the current setup information, but you cannot change it until the file transfer is either complete or stopped (aborted).

The keyboard mapping for IND\$FILE input is identical to that for a 3270 session.

IND\$FILE Transfer Summary Screen

The Transfer Summary provides information on the status of an ongoing file transfer. The screen shown in Figure 4-6 is automatically displayed when a file transfer is initiated via the *START TRANSFER* option of the IND\$FILE Setup Menu screen. Either *Download* or *Upload* is displayed with the local name of the file involved.

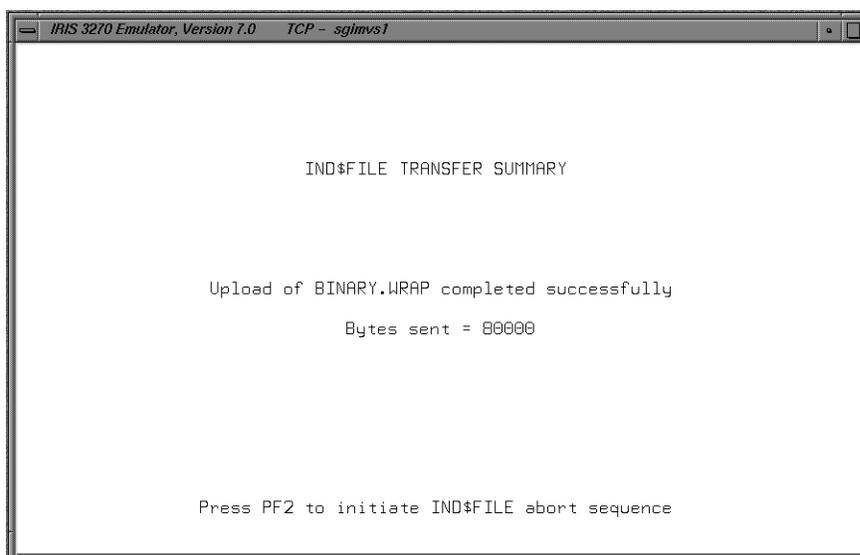


Figure 4-6 IND\$FILE Transfer Summary Screen

To return to the current 3270 session screen, select "Redisplay 3270" from the IND\$FILE menu if you are using an IRIS graphics terminal, or press <ctrl-r> from an ASCII terminal.

IND\$FILE Setup Menu and Host Option Reference

This section summarizes the IND\$FILE Setup Menu items and lists the available host options.

Host subsystem name

The middle mouse button cycles the options: *TSO*, *CMS*, *CICS*.

Transmission direction

Send is an upload to the IBM host. Receive is a download from the IBM host.

Delay before each block sent

This is the amount of time to delay before sending to the host. The valid range is 0 to 5 seconds.

Maximum wait for host response

This defines the length of time to wait for a host response before terminating the IND\$FILE transfer. The valid range is 10 to 5000 seconds

IRIS file name Use standard IRIX conventions to specify a file name or a full pathname. If only a file name is specified, the file name is appended to */var/opt/3270/spool* to create a full pathname.

Host file name Use the IBM host file name format.

Host options Enter multiple options by separating them with a space only. Do not use parentheses or other delimiters. See Table 4-1 for a listing and description of the host options.

START TRANSFER

From a graphics terminal, click the left mouse button anywhere in the *START TRANSFER* rectangle to start the transfer. From an ASCII terminal, press the <Tab> key to highlight the *START TRANSFER* box and press <Enter>.

You can cancel the setup operation and return to the current 3270 session screen at any time by pressing the right mouse button from a graphics terminal or pressing <ctrl-r> from an ASCII terminal. (Your current setup information is retained for later use.) While a file transfer is in progress, the current setup information can be displayed but not altered.

Table 4-1 describes the host options used with the host name in the IND\$FILE Setup Menu screen.

Table 4-1 IND\$FILE Setup Menu Screen Host Options

Host Option	TSO	VM/CMS	CICS	Definition
APPEND	S*	S	—	Append the transferred file to the end of an existing file.
ASCII	S/R ^a	S/R	S/R	Store local text files in ASCII and convert them to or from EBCDIC during the transfer.
BINARY	—	—	S/R	Transfer file in binary format; do not translate.
CRLF	S/R	S/R	S/R	Add or remove carriage return (hex 0D) and line feed (hex 0A) characters to or from the end of each line because they are not used in host text files.
LRECL nnnn	S	S	—	Specifies the logical record length of the host file. "nnnn" must be a four-digit positive number. The default value is 0080. When you append or overwrite a file, the logical record length of the existing file is used.
NOCRLF	—	—	S/R	The transferred file lacks records delimited by carriage return or line feed characters.

Table 4-1 (continued) IND\$FILE Setup Menu Screen Host Options

Host Option	TSO	VM/CMS	CICS	Definition
RECFM <i>a</i>	S	S	—	Specifies the record format of the host file. Valid values for <i>a</i> are: F for fixed record length on TSO and VM, V for variable length on TSO and VM, and U for undefined length on TSO. If not specified, ASCII files default to variable length; all other files default to fixed length.
BLKSIZE	S	—	—	Specifies the byte size of each data set block. When you omit this parameter, use the logical record length. When you append or replace existing data sets, ignore this parameter.
SPACE	S	—	—	Entered as SPACE (<i>Q</i> [<i>I</i>]). Specifies how much space to allocate for the host file. <i>Q</i> (quantity) and <i>I</i> (increment) can be specified as AVBLOCK , TRACKS , or CYLINDERS . The default is BLKSIZE .

a. S= Send, R = Receive

Aborting IND\$FILE

To abort IND\$FILE, press the keyboard equivalent for IBM key PF2. When the program is aborted, a text message appears in the IND\$FILE Transfer Summary screen.

To return to the current 3270 session screen, select "Redisplay 3270" from the IND\$FILE menu if you are using an IRIS graphics terminal, or press <ctrl-r> from an ASCII terminal.

Receiving a Message During File Transfer

During a file transfer, a message can be sent to your terminal by another user, the operator, or a system utility. Any message causes the IND\$FILE File Transfer to halt. If your byte counter stops incrementing, use the "Redisplay 3270 PS" option to check if you have received a message. To recover, press PF2 and reinitiate the file transfer.

Messages can be suppressed on VM/CMS and MVS/TSO. Consult your system administrator for details on how to do this.

File Transfer Error Messages

If a problem occurs during a file transfer, error messages appear in a 3270 message window.

Each error message is also recorded in */var/opt/3270/file/t3279_log.[PID]*. For explanations of these messages, see Appendix A, "Error Messages."

Troubleshooting

This chapter explains how to gather information and resolve or report problems that might appear when using the IRIS 3270 Emulator.

Troubleshooting Host Problems

If you have difficulty installing or running the Silicon Graphics File Transfer software on your IBM host, refer to your release notes for product support information. To help diagnose the problem, you might be asked to create a dump of your session. This section describes how to create such a dump.

When you are through, mark the tape with your name, company address, and telephone number, and refer to your release notes for instructions on where to mail the tape of the dump.

Creating a VM/CMS Dump

To create a *vmdump*, follow these steps:

1. Log in to your account from another terminal. Make certain that you are in the CP READ state. (Press <return> to toggle to CP READ.) Enter:

```
VMDUMP 0.END DSS
```

2. Verify that *vmdump* exists. Enter:

```
RL
```

3. Get the four-digit file identification (spoolid) of the *vmdump*. Enter:

```
Q RDR ALL *
```

4. Mount a tape on an available tape drive noting the reel address. At the operator's console, or from a privileged account, enter:

```
SPT DUMP reeladdress rdr spoolid
```

This tells you the spool ID address. Write this address down and include it when you send in the tape.

Creating an MVS/TSO Dump

Ask your site system programming staff to create a dump of the session in which you tried to install the software.

Troubleshooting File Transfer Problems

The IRIS 3270 Emulator maintains a log file of all file transfer operations. During file transfer, the file transfer software creates a file called `/usr/3270/file/t3279_log.pid`. In the actual file name, *pid* is the process-ID number of the specific *t3279* process. View this file by displaying it on the IRIS terminal or printing it on a local printer.

Here is an example of log file information:

```
ULOAD JVW.DOC3      Size: 490070      Time info: 4743 18 7
DLOAD VM10.DATA     Size: 330000     Time info: 2312 76 83
```

The words `ULOAD` and `DLOAD` indicate an upload or download file transfer.

The next string is the file name. `Size` is the file size in bytes.

The `Time info`, presented in 10-millisecond units (100 units = 1 second), is organized in three fields:

- the time taken to perform the file transfer
- user time spent on the process
- system time spent on the process

For details about these values, refer to the `times(2)` online man page.

This information helps determine the throughput of the IRIS 3270 Emulator software on your network.

In addition to throughput information, the log file prints messages about errors that occur during file transfer. If an error occurs, the error message appears above the log file information for the transfer. For example:

```
Read call failed:  errno = N
DLOAD VM100.3300  Size: 330000  Time Info: 1912  51  66
```

Resolving Errors

This section deals with the process for resolving errors. Error messages are listed in Appendix A, “Error Messages.”

Error Logging

Errors reported by the IRIS 3270 Emulator are logged in the file */var/opt/3270/file/t3279_log.pid*, where *pid* is the process-ID number of the specific *t3279* process. All errors in this file are also displayed in an error message window. Errors reported by the Silicon Graphics HLLAPI library are logged in */usr/adm/SYSLOG*. These errors are not visually displayed, since it is expected that each 3270 emulator coded on top of the Silicon Graphics HLLAPI interface has its own style of user interface.

Error Information Sources

For configuration errors, the error information in the log files should be enough to deduce the problem. For other errors, additional information can be gathered by setting the 3270 Trace option to *Yes*. See Chapter 1, “Configuring the IRIS 3270 Emulator,” for information about setting the 3270 Trace option.

Configuration Errors

For configuration errors, look up the error message and make the appropriate correction using the Set Up 3270 window. If you are using an ASCII terminal, see Appendix B, "Editing the Emulator Configuration File," for more information on editing the configuration file.

If the error does not go away, refer to your release notes for product support information.

Nonconfiguration Errors

To find and correct errors that are not related to configuration problems, perform these steps:

1. Set the 3270 Trace option to *Yes* using the Set Up 3270 window.
2. Start the terminal emulator from the icon.
3. Re-create the problem.
4. Report the problem. Refer to your release notes for instructions on where to send the files below:
 - all executable files from your */opt/3270/bin* directory
 - */var/opt/3270/file/*_log** (all log files)
5. If the Silicon Graphics 3270 Emulator is terminated by program error, a core file is saved in */usr/var/opt/spool*. Send this file in addition to those mentioned in step 4.
6. If the problem occurs during a file transfer using IRISXFR, enter **sgixfr versions** while logged in to your host ID. Report the returned information along with the information collected in steps 1-3.

Error Messages

The messages listed alphabetically in the sections of this appendix reside in the file `/var/opt/3270/file/t3279_log.pid` (where *pid* is the process-ID number of the specific *t3279* process).

Error messages generated by the IRIS 3270 Emulator include: configuration errors, `IND$FILE` errors, `IRISXFR` errors, and *t3279* errors. Report all system errors immediately. Refer to the release notes that accompany this product for product support information.

Configuration Errors

To eliminate or correct configuration errors, change the values of the appropriate configuration parameters using the Set Up 3270 window, as described in Chapter 1, "Configuring the IRIS 3270 Emulator."

```
RECORD_SEPARATOR value invalid.
```

Terminal Emulation Errors

If you receive a *t3279* error, refer to your release notes for product support information.

```
t3279Open of <filename> failed: errno = N.  
Read call for <filename> failed:  errno = N.  
Write call for <filename> failed:  errno = N.  
Invalid option passed to t3279.  
Option missing from command line.  
Open of 3270 configuration file failed.  
Query ID operation failed.  Check if session defined.
```

IRISXFR Menu Errors

To eliminate or correct IRISXFR menu errors, change the values of the appropriate parameters using the IRISXFR Set Up screen, as described in Chapter 4, "Transferring Files."

Invalid input. Only alphanumeric data is accepted.
Not in a field selection area. Reposition cursor and try again.
A field must be selected before using MIDDLEMOUSE.
MIDDLEMOUSE not valid for this field.
Invalid input. Only numeric data is accepted.
Define the host file name before starting the file transfer.
Define the IRIS file name before starting the file transfer.
Start up message too long. Clear screen or shorten file names.
Field can not be selected if "Transmission Direction = Receive".
Field can not be selected if "Translate Data = No".
Field can not be selected if "Record Format = Variable".
File exists and "Overwrite File = No".
The file does not exist and the "Overwrite File = Yes".

IRISXFR Run-Time Errors

If you receive an IRISXFR run-time error, refer to your release notes for product support information.

Open of <filename> failed: errno = N.
Read call for <filename> failed: errno = N.
Write call for <filename> failed: errno = N.
Locked keyboard could not be reset.
Misaligned data. File transfer terminated.
Sequence number error detected. File transfer terminated.
Invalid command code. File transfer terminated.
No response from host. File transfer terminated.
File transfer terminated by host notification: code = N.
Host file size (N1) differs from workstation file size (N2).
Hl_read_msg call for <filename> failed: error = N (hex).
IRISXFR could not access the host file. File transfer terminated.
IRISXFR could not open the host file. File transfer terminated.

Send file size <= Receive file size. Restart terminated.
Host file does not exist.
IRISXFR has detected a read I/O error. File transfer terminated.
IRISXFR has detected a write I/O error. File transfer terminated.
IRISXFR has detected a disk full condition. File transfer terminated.
File can not be written to R/O disk. File transfer terminated.
IRISXFR has detected out-of-sequence data at the host. File transfer terminated.
The file exists and "overwrite" not enabled. File transfer terminated.

IND\$FILE Menu Errors

To eliminate or correct IND\$FILE menu errors, change the values of the appropriate parameters using the IND\$FILE Set Up Menu screen, as described in Chapter 4, "Transferring Files."

Invalid input. Only alphanumeric data is accepted.
Not in a field selection area. Reposition cursor and try again.
A field must be selected before using MIDDLEMOUSE.
MIDDLEMOUSE not valid for this field.
Invalid input. Only numeric data is accepted.
Define the host file name before starting the file transfer.
Define the IRIS file name before starting the file transfer.
Start up message too long. Clear screen or shorten file names.

IND\$FILE Run-Time Errors

If you receive an IND\$FILE run-time error, refer to your release notes for product support information.

Open of <filename> failed: errno = N.
Read call for <filename> failed: errno = N.
Write call for <filename> failed: errno = N.
Unknown Structured Field received.
Unknown function type received in D0 Structured Field.
Incorrect frame type. File transfer terminated.
Zero length data frame received. File transfer terminated.
Retry limit exceeded. File transfer terminated.

Editing the Emulator Configuration File

This appendix provides information on 3270 configuration parameters so you can edit the configuration file to change emulator settings if you are using an ASCII terminal. Observe these guidelines when entering a configuration parameter:

- Enter parameter names in UPPERCASE letters.
- Do not include any spaces in the parameter definition. Be certain there are no spaces on either side of the equal sign (=).
- Express numbers in decimal notation, except for 5080_ADDRESS.
- Parameters in the configuration files preceded by a pound sign (#) are ignored (commented) until they are uncommented by removing the # character. Use commenting to activate or deactivate parameters instead of actually removing and reentering them.

The IRIS 3270 Emulator operates in several modes, as SNA, TCP, or 5080. The operational mode is determined by the LINK = [SNA, TCP, 5080] parameter in the */var/opt/3270/lib/t3279rc.\$LOGNAME* configuration file, where *\$LOGNAME* is your login ID. You must have this file on the system running the IRIS 3270 Emulator for the software to function properly. To create a new configuration file, copy */var/opt/3270/lib/t3279rc.default* and rename the *default* extension to your login ID name.

The sections that follow address the parameters that must be changed to establish one of these particular configurations: SNA, TCP, or 5080 link type, and Silicon Graphics IRISXFR file transfer support.

Parameter Descriptions

This section describes the `/var/opt/3270/lib/t3279rc.$LOGNAME` configuration file parameters. Some parameters are specific to particular link modes or file transfer operations.

Link Type

`LINK=[SNA,TCP,5080]`

This parameter specifies the Silicon Graphics host interface to which the 3270 emulator is connected.

SNA	The IRIS 3270 Emulator is attached to an IBM host via the IRIS SNA SERVER gateway. An IBM control unit is not needed. The workstation running the IRIS 3270 Emulator may be connected to the SNA SERVER gateway through Ethernet.
TCP	The IRIS 3270 Emulator is attached via Ethernet to an IBM host.
5080	The IRIS 3270 Emulator is attached to an IBM host via the IRIS Channel Adapter. This mode emulates an IBM 3270 terminal session using the IRIS Channel Adapter.

Character Set

`CHAR_SET=[FRENCH, GERMAN, ITALIAN, KATAKANA, PORTUGUESE, SPANISH, SWEDISH, UK_ENGLISH, US_ENGLISH]`

This parameter defines the national character set used for keyboard input and display. There is no default character set.

Point Size

`POINT_SIZE=[9,11,13,15]`

This parameter defines the point size of window characters. Keep in mind that the font size changes the size of the emulation window.

For example, if you are using a 1024x1280 IRIS graphics terminal, models 2, 3, 4, and 5 fit on the screen with point size 9; models 2, 3, and 4 fit on the screen with point size 11; models 2 and 3 fit on the screen with point size 13; and model 2 fits on the screen with point size 15.

If you are using a 768x1024 IRIS graphics terminal, models 2, 3, and 4 fit on the screen with point sizes 9 and 11.

Trace

TRACE=[0,1]

This parameter turns the 3270 Trace option on and off. The values are:

- | | |
|---|---|
| 0 | This is the default value. No trace is generated when trace=zero. |
| 1 | Records the 3270 Presentation Space (PS), the status line, keyboard input, Silicon Graphics Message Mode data, and IBM structured fields. |

Cursor Type

CURSOR_TYPE=[0,1]

This parameter determines the style of cursor. The values are:

- | | |
|---|----------------------------|
| 0 | Block cursor |
| 1 | Underline cursor (default) |

SNA Parameters

These parameters are used only with SNA link types.

Gateway

SNA_GATEWAY=*hostname*

This parameter specifies the TCP host name of the SNA gateway workstation. If the SNA gateway is the same workstation running the IRIS

3270 Emulator, comment out this parameter by placing a pound sign (#) at column 1.

TCP Parameters

These parameters are used only with TCP link types.

TCP Host

TCP_HOST=hostname or IP_address

This parameter can be the TCP name for the IBM host or the IP address.

TCP Port

TCP_PORT=portnumber

This parameter is the TCP port number for 3270 full-screen emulation on the IBM host. The default port number is 23.

TCP Model

TCP_MODEL=tcp_model

This parameter determines the terminal model emulated if LINK=TCP. Possible values are: 3278-2, 3278-3, 3278-4, 3278-5, 3279-2, 3279-3, 3279-4, 3279-5, 3279-2-E, 3279-3-E, 3279-4-E, and 3279-5-E.

5080 Parameters

These parameters are used only with 5080 link types.

5080 Gateway

5080_GATEWAY=hostname

This parameter specifies the 5080 host name of the 5080 gateway workstation.

5080 Address

5080_ADDRESS=0-0xffff

This parameter determines the channel address for the 3270 session, if specified.

5080 Model

5080_MODEL=[2,3,4,5]

This parameter determines the terminal model emulated if LINK=5080.

Required SNA Parameters

To emulate an SNA 3270 terminal, you must define these parameters:

```
LINK=SNA
CHAR_SET=[FRENCH, GERMAN, ITALIAN, KATAKANA, PORTUGUESE,
SPANISH, SWEDISH, UK_ENGLISH, US_ENGLISH]
SNA_GATEWAY=hostname
POINT_SIZE=[9, 11, 13 15]
TRACE=[0,1]
```

Required TCP Parameters

To emulate a TCP 3270 terminal, you must define these parameters:

```
LINK=TCP
CHAR_SET=[FRENCH, GERMAN, ITALIAN, KATAKANA, PORTUGUESE,
SPANISH, SWEDISH, UK_ENGLISH, US_ENGLISH]
TCP_HOST=hostname
TCP_PORT=portnumber
TCP_MODEL=[2, 3, 4, 5]
POINT_SIZE=[9, 11, 13, 15]
TRACE=[0,1]
```

Required 5080 Parameters

To emulate a 3270 terminal for the 5080, you must define these parameters:

```
LINK=5080
CHAR_SET=[FRENCH, GERMAN, ITALIAN, KATAKANA, PORTUGUESE,
SPANISH, SWEDISH, UK_ENGLISH, US_ENGLISH]
5080_GATEWAY=hostname
5080_MODEL=[2, 3, 4, 5]
POINT_SIZE=[9, 11, 13, 15]
TRACE=[0,1]
```

3278 Status Line Codes and Messages

Table C-1 Status Line Codes and Messages

Field	Code or Message	IBM Symbol	Description	Recovery Procedure
SNA Mode	SNA	N	Terminal is attached to an SNA 9370 in-line controller.	N/A
5080 Mode	5080	N A	Terminal is attached to an IRIS Channel Adapter.	N/A
TCP Mode	TCP	NA	Telnet session to IBM host.	N/A
Input Inhibited	—	—	Input not inhibited, data can be entered via the keyboard.	N/A
	DATA TRAFFIC RESET	—	Indication from the system that the LU-LU session is being set up, but the host is not yet ready to receive data. It will clear automatically.	None. Call the system administrator if condition persists.
	FIELD IS FULL	X	The user has attempted to enter too much information into a field.	Press the reset key. Enter the operation with corrected entry.

Table C-1 (continued) Status Line Codes and Messages

Field	Code or Message	IBM Symbol	Description	Recovery Procedure
X -f		X -f	A currently unavailable function key was pressed.	Press the reset key. Enter the operation with corrected entry.
	LINK IDLE	X <i>nnn</i> where <i>nnn</i> is 504, 505, 520,521	The communications link to the host is not active. The SNA 3270 might have been shut down or not yet started. Or the host might have been timed out.	None. Call the system administrator if condition persists.
X SYSTEM		X SYSTEM	The application has disabled the keyboard following an entry.	Press the reset key. Then enter the corrected entry.
	LU NOT ACTIVE	—	The host has opened communications with SNA 3270, but is not talking to the workstation on which this message is displayed.	None. Call the system administrator if condition persists.
	NUMERIC ONLY	X NUM	The user entered a non-numeric character into a numeric-only field. Note: Numeric-only fields are a configurable option for each workstation (LU). Refer to the system administrator if this feature is desired.	Press the reset key. Then retry operation with a numeric entry.

Table C-1 (continued) Status Line Codes and Messages

Field	Code or Message	IBM Symbol	Description	Recovery Procedure
X Clock		X	The system is working on a function. When completed, the message is cleared and the keyboard is unlocked automatically.	None. Call the system administrator if condition persists.
	PROTECTED		The user has attempted an operation on a protected field (such as trying to enter or change the data in the field).	Press the reset key to continue.
	PU NOT ACTIVE	X 510	The host is not communicating with the SNA 3270—PU is being activated. When PU is active, status message changes to LU NOT ACTIVE.	None. Call the system administrator if condition persists.
X ? +	What?	X ? +	Keystroke sequence not accepted or function temporarily unavailable for continuing.	Press the reset key.

Automating Host File Transfers

You can automatically transfer files between VM or MVS machines and your workstation by using IRISXFR and IND\$FILE.

When using IRISXFR to transfer files, you can use the *updown* program on the VM host and *sgixfr.clist (updown)* on an MVS host. When you start *updown*, the program checks the file *updown profile*, also on the host, to determine which files to transfer automatically. An example of *updown profile* is shown in Example D-1.

The *updown profile* contains information about which files to transfer. The information, such as the name of the file and its type, is organized into data fields.

Before setting up IRISXFR to transfer files automatically, make sure that it is installed correctly on the IBM host and on your machine. If you have not done so already, see the file */var/opt/3270/example/CASE4/README* for instructions on verifying the IRISXFR installation.

Make a copy of *updown profile*. Then, change the various fields to meet your particular needs. Read the comments in the file to determine the function of each field and which ones to change.

When you have finished modifying *updown profile*, run *updown* on the IBM host. It automatically uploads or downloads any files specified in *updown profile*. With *updown* and *updown profile*, you can transfer several files without using the IRISXFR Setup Menu for each individual file.

Example D-1 shows the default *updown profile* for a VM host. Lines that begin with two slash marks (//) are comments.

Example D-1 An *updown profile* File for a VM Host

```
// This file contains the information necessary for updown
// to work. It supplies all of the information necessary to automate
// the file upload and download process. Comment lines must begin with
// a '/' in the first two columns, otherwise, updown will treat
// the line as input data. Field definitions are provided below:
//
//          1          2          3          4          5          6
// 123456789012345678901234567890123456789012345678901234567890
// nnnnnnnn tttttttt mm wwwwwwwwwwwwwwwwwwwwwwww u t f nnnn n n rnn
// nnnnnnnn tttttttt mm wwwwwwwwwwwwwwwwwwwwwwww d b v nnnnn r o rnn
//
// 01 - 08 is the IBM host file name
// 10 - 17 is the IBM host file type
// 19 - 20 is the IBM host file mode
//
// 22 - 46 is the workstation file name
//
// 48 is u or d (upload or download)
// 50 is t or b (text or binary)
// 52 is f or v (fixed or variable)
//
// 54 - 58 is the IBM host record size
//
// 60 is n or r (no-restart or restart)
// 62 is n or o (no-overwrite or overwrite)
// 64 is the expected return code
//
// Use lines 31 to 38 to validate that IRISXFR has been properly installed
// on your VM system. After validating the installation, modify
// this file to automate your file transfers to and from the host.
//          1          2          3          4          5          6          7
//34567890123456789012345678901234567890123456789012345678901234567890
display wrap      a DISPLAY.WRAP                u t f 79   n n 000
display data      a DISPLAY.DATA                 u t v 16   n n 000
binary  wrap      a BINARY.WRAP                 u b f 80   n n 000
binary  data      a BINARY.DATA                 u b f 16   n n 000
display wrap      a DISPLAY.WRAP                d t f 79   n o 000
display data      a DISPLAY.DATA                 d t v 16   n o 000
binary  wrap      a BINARY.WRAP                 d b f 80   n o 000
binary  data      a BINARY.DATA                 d b f 16   n o 000
```

Example D-2 is an *updown profile* file for an MVS host.

Keyboards

This appendix contains keyboard layouts for the languages supported by the IRIS 3270 Emulator. See Chapter 1, “Configuring the IRIS 3270 Emulator” for instructions on displaying keyboard maps.

The IRIS 3270 Emulator supports the following keyboard layouts:

- French
- German
- Italian
- Katakana
- Portuguese
- Spanish
- Swedish
- U.K. English
- U.S. English

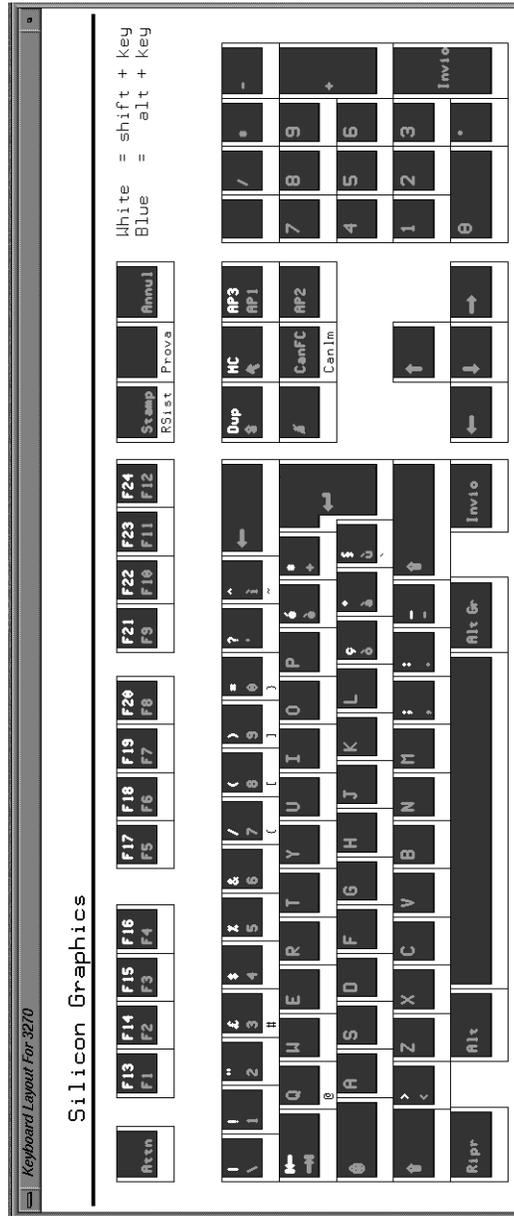


Figure E-3 IRIS 3270 Emulator Italian Keyboard Layout

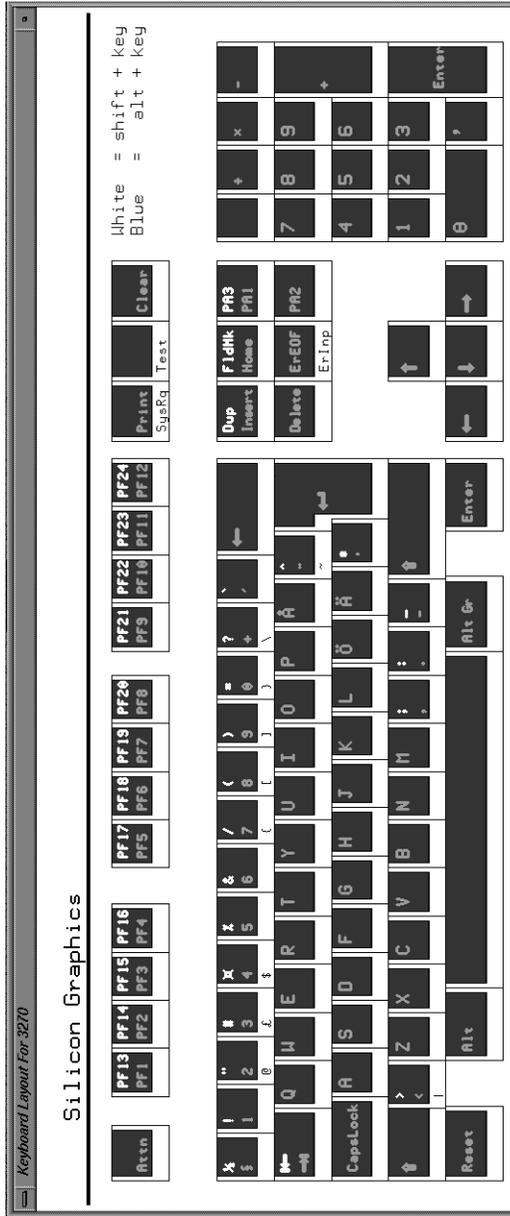


Figure E-7 IRIS 3270 Emulator Swedish Keyboard Layout

Glossary

5080

The IBM 5080 Graphics System Workstation.

data stream

A stream of data elements being transmitted, or intended for transmission, in character or binary-digit defined format form.

download

To move a file from an IBM host to an IRIS workstation.

Ethernet

A popular local area packet-switched network technology. It is a 10 Mbps broadcast bus with distributed access control. An Ethernet network supports *Transmission Control Protocol/Internet Protocol* (TCP/IP) and *Network File System* (NFS).

HLLAPI

High-Level Language Application Program Interface. A library of C-programming routines that can be used in an IRIS application. These routines enable the application to interact directly with an IBM host application in a manner similar to a human operator.

IRISXFR

Silicon Graphics' proprietary file transfer program, which transfers files between the IRIS workstation and IBM MVS/TSO or VM/CMS systems.

link type

The type of connection the IRIS 3270 Emulator uses to communicate with an IBM host, for example TCP.

Presentation Space

The current contents of a TSO3270 screen image.

SNA

System Network Architecture is the description of the logical structure, formats, protocols, and operational sequences for transmitting information units through and controlling the configuration and operation of IBM networks.

TCP

Transmission Control Protocol is the major transport protocol in the Internet suite of protocols providing reliable, connection-oriented, full-duplex streams. TCP uses *Internet Protocol* (IP) for delivery.

Telnet

The Internet standard protocol for remote terminal connection service. This protocol runs on top of TCP/IP and is the basis of IRIS TCP 3270.

terminal emulation

The act of imitating a terminal. When a workstation mimics a terminal, it performs terminal emulation. The 3270 terminal emulation software enables the IRIS workstation to function as a 3278 or 3279 terminal. During terminal emulation, you can access files and commands on your IBM system from the IRIS workstation.

terminal emulator

The emulation software, window display, and key mappings that perform the functions of a terminal.

upload

To move a file from an IRIS workstation to an IBM host.

Index

Numbers

- 3270 display session
 - quitting, 33
 - starting, 32
 - status line, 33
 - SWAP25 key, 33
- 3270 status line, 27, 33
- 3278 Status Line Codes and Messages, 69
- 5080, 87
- 5080 Link Specific Options, 13

A

- ASCII Mode
 - starting the emulator in, 23
- ASCII terminal
 - IND\$FILE operations, 34
 - IRISXFR operations, 33
 - key functions, 29
- automating file transfer from the UNIX command line, 75
- Automating Host File Transfers, 73
- Automating IRISXFR File Transfers, 44

C

- Changing the Character Set, 5
- Changing the Font Size, 8

- Choosing a Link Type, 6
- Choosing Link Specific Options, 9
- configuration file, 63
 - parameters, 64
 - t3279rc, 64
- configuration file parameters
 - LINK, 64
 - POINT_SIZE parameter, 64
 - TRACE, 65
- Customizing the Set Up 3270 Window colors, 4

D

- data stream, 87
- Displaying the IBM keyboard map, 17

E

- emulator log file, 56
- error messages
 - configuration errors, 59
 - IND\$FILE errors, 62
 - IND\$FILE menu errors, 61
 - IRISXFR errors, 60
 - IRISXFR menu errors, 60
 - terminal emulation errors, 59
- Ethernet, 87

H

High-Level Language Application Program
Interface, see HLLAPI

HLLAPI, 87

host

- troubleshooting, 55
- troubleshooting, MVS/TSO dump, 56
- troubleshooting, VM/CMS dump, 55

I

IBM 5080 Graphics System Workstation, see 5080

IND\$FILE File Transfer
receiving messages during, 53

IND\$FILE file transfer
aborting, 52
Setup screen, 45
Transfer Summary screen, 49

IND\$FILE Set Up menu, 34

IND\$FILE Setup Screen, 45

IRIS 3270 Emulator
features, xiv
host troubleshooting, 55
introduction, xiii
network configuration, xvii
product support, xxi
quitting, 26
software and hardware requirements, xv

IRISXFR, 87

IRISXFR file transfer
aborting, 43
Setup screen, 37
Transfer Summary screen, 41

IRISXFR Set Up menu, 33

IRISXFR Setup Screen, 37

K

Keyboard
online display, 17

L

LINK parameter, 64

M

MVS/TSO
dump, 56

P

presentation space, 87
product support, xxi

Q

quitting the IRIS 3270 Emulator, 26

R

Redisplay 3270 PS option, 53
resolving errors, 57

S

Saving screen images to a file, 26
saving screen images to a file, 33
screen print, 26
Selecting a Terminal Model, 7

Selecting Miscellaneous Options, 14
Silicon Graphics proprietary file transfer program,
 see IRISXFR
SNA, 88
SNA Link Specific Options, 9
status line
 3270, 33
SWAP25 key, 33

T

TCP Link Specific Options, 11
Telnet, 88
terminal emulation, 88
terminal emulator, 88
TRACE parameter, 65
transferring files, 33, 34
 aborting, 43, 52
 IND\$FILE, 44
 IND\$FILE Transfer Summary Screen, 49
 IRISXFR Transfer Summary Screen, 41
 receiving messages during, 53
 Setup screen, 37, 45
 troubleshooting, 56
Transmission Control Protocol, 88
troubleshooting
 file transfer, 56
 host, 55
troubleshooting, host
 MVS/TSO dump, 56
 VM/CMS dump, 55
troubleshooting configuration errors, 58
troubleshooting nonconfiguration errors, 58

U

updown exec, 73
updown profile, 73
Using the Actions menu, 15
Using the Help menu, 16

V

Verifying IRISXFR Installation, 36
VM/CMS
 dump, 55

Tell Us About This Manual

As a user of Silicon Graphics products, you can help us to better understand your needs and to improve the quality of our documentation.

Any information that you provide will be useful. Here is a list of suggested topics:

- General impression of the document
- Omission of material that you expected to find
- Technical errors
- Relevance of the material to the job you had to do
- Quality of the printing and binding

Please send the title and part number of the document with your comments. The part number for this document is 007-0805-040.

Thank you!

Three Ways to Reach Us

- To send your comments by **electronic mail**, use either of these addresses:
 - On the Internet: techpubs@sgi.com
 - For UUCP mail (through any backbone site): *[your_site]!sgi!techpubs*
- To **fax** your comments (or annotated copies of manual pages), use this fax number: 650-932-0801
- To send your comments by **traditional mail**, use this address:

Technical Publications
Silicon Graphics, Inc.
2011 North Shoreline Boulevard, M/S 535
Mountain View, California 94043-1389