5080 Emulator™ User's Guide

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Contributors

Written by Janet Van Wicklen, Kameran Kashani
Edited by Nancy Schweiger
Production by Laura Cooper
Engineering contribution by Bob Horen
Illustrations by Dan Young and Cheri Brown

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Silicon Graphics, Inc.
Mountain View, California

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Introduction

This guide describes how to use the 5080 Emulator, an emulation product installed on your IRIS® workstation, to emulate an IBM 5080 Model 2A graphics terminal. Table I-1 gives a quick summary of each chapter.

Chapter	Summary
Introduction	"Introduction" provides an introduction to this guide and a glossary of product-related terms.
1	"Overview of the 5080 Emulator" describes the product's features and provides a summary of related software products.
2	"Configuring the 5080 Emulator" tells you how to use Set Up5080 to configure the emulator for your workstation.
3	"Using the 5080 Emulator" describes how to start, stop, and operate the 5080 Emulator. It includes information on using keyboard functions, emulated peripherals, and 5080 pop-up menus.
4	"Using Local Images" discusses how to access and use images stored locally on the workstation disk. The chapter includes a series of practice sessions using the *i3dx* local image.
Appendix A	"5080 Software Messages and Error Recovery" describes information and error messages and suggests actions you can take in response.
Appendix B	"Troubleshooting" describes steps you can take to document and report problems with the emulator.

Table I-1 Summary of Chapters

Using Menus

The rest of this guide assumes you are familiar with the IRIS mouse and how to use it to display menus and issue commands. If you are new to using menus and operating a mouse, read the following procedures, which describe some of the basics. For more detail, refer to the *IRIS Essentials* guide for detailed information.

Toolchest menus are displayed when you select an item in the Toolchest window, the gray list that appears in the upper left corner of your screen.

To use Toolchest menus:

1. Move the mouse to position the cursor over the desired menu option. For example, to display the 5080 Main Menu, place the cursor over the 5080 option in the Toolchest window.
2. Keep holding down the left mouse button, until a submenu appears.
3. Still holding down the left mouse button, position the cursor over the desired submenu option.
4. Release the left mouse button. The option is selected.

Pop-up menus are not normally visible, but appear when you press a mouse button in a particular part of the screen. To use pop-up menus:

1. Move the mouse to position the cursor in the desired area of the window in which you are working. For example, to display the 5080 Pop-up Menu, move to the shaded area of the 5080 window.
2. Hold down the right mouse button until the pop-up menu is displayed.
3. While holding down the right mouse button, move the mouse to position the cursor over the desired option in the menu list.
4. Release the right mouse button. The option is selected.

Related Documentation

In addition to this guide, the manuals listed below will help you use the 5080 Emulator and its associated software and hardware products:

- *IRIS 3270 Emulator User's Guide* provides information on using the emulator and describes keyboard mapping from the IBM 3270 keyboard to the IRIS workstation keyboard. You can use the emulator to access applications through the 5080 gateway. The guide includes system administrator information.
- *MVS FastFile User's Guide* contains a description of the FastFile™ MVS/SP or MVS/XA product, which transfers files between an IRIS workstation and an IBM host through the 5080 gateway. The guide includes information on how to access and run FastFile in both the interactive and batch modes, as well as system administrator information.
- *VM/CMS FastFile User's Guide* contains a description of the FastFile VM/CMS product, which transfers files between an IRIS workstation and an IBM host through the 5080 gateway. It includes information on how to access and run FastFile in both the interactive and batch modes, as well as system administrator information.

Glossary

Some commonly used terms and acronyms are defined below:

ASCII	(American National Standard Code for Information Interchange) alphanumeric and special characters used by most computers
CADAM	host 5080 application program, a product of Dassault Systemes
CAEDS	host 5080 application program, a product of Structural Dynamics Research Corporation
CATIA	host 5080 application program, a product of Dassault Systemes
CP	Communications Processor card

devi5080	program that controls software peripherals for the 5080 Emulator
devices	terminals; workstations running terminal emulation software
EBCDIC	(extended binary-coded decimal interchange code) alphanumeric and special characters used by IBM host computers
em5080	5080 emulation program
FCC	Federal Communications Commission
ld5080	DOMAIN 5080 Emulator local image utility
LPFK	IBM lighted program function keyboard
MVS	(Multiple Virtual Storage) IBM host operating system
PF key	IBM-style keyboard programmable function key
session	active connection between a terminal or terminal emulator and a host
sh5080	5080 Emulator debugging utility
T1	telecommunications protocol for physical transmission of data
talk5080	5080 Emulator TALK program
V.35	telecommunications protocol for physical transmission of data
VM	(Virtual Machine) IBM host operating system
VME	hardware bus standard

Conventions

In-text descriptions, file names, IRIX™ commands, and command arguments are shown in *italics*. Command syntax descriptions, screen displays, and examples are shown in `typewriter` font. User entries are shown in **`bold typewriter font`**.

Product Support

Silicon Graphics® offers a comprehensive product support and maintenance program for IRIS products. For information about using support services for this product, refer to the release notes that accompany it.

Chapter 1

Overview of the 5080 Emulator

The 5080 Emulator is a software and hardware product that allows an IRIS workstation to emulate an IBM 5080 Model 2A graphics terminal. This emulation allows you to run IBM host-resident graphics programs on your IRIS workstation as if it were a 5080 graphics terminal. Programs you can run include graPHIGS Version 3.2 and the high-powered CAD/CAM applications CADAM™, CATIA™, and CAEDS™.

1.1 5080 Terminal Emulation

The 5080 Emulator software allows you to use your workstation as if it were an IBM 5080 Model 2A graphics terminal. The emulator software provides a terminal emulation window that displays the images you manipulate on the host. Thus, your terminal screen appears as an IRIS window that you can use or set aside while you perform other workstation functions.

The 5080 menu and pop-up menus provide commands you use to configure and operate the emulator.

The 5080 emulated keyboards and peripheral devices let you send graphics commands to host graphics applications that are designed to respond to the keyboard and peripheral devices of an IBM 5080 graphics terminal.

Peripheral devices on an IBM 5080 terminal include:

- Dials
- Puck
- Lighted Program Function Keyboard (LPFK)

The 5080 Emulator software and IRIS hardware provide a variety of software and hardware peripheral emulation possibilities. They let you choose between software peripherals, displayed as part of the graphical user interface (GUI), hardware peripherals, or a combination of both software and hardware peripherals.

Figure 1-1 shows the IRIS hardware that emulates 5080 peripheral devices, as well as the software peripherals that display on the screen.

Note: If only software peripherals are selected, the IRIS mouse serves as a hardware substitute for the IBM Tablet and Cursor.

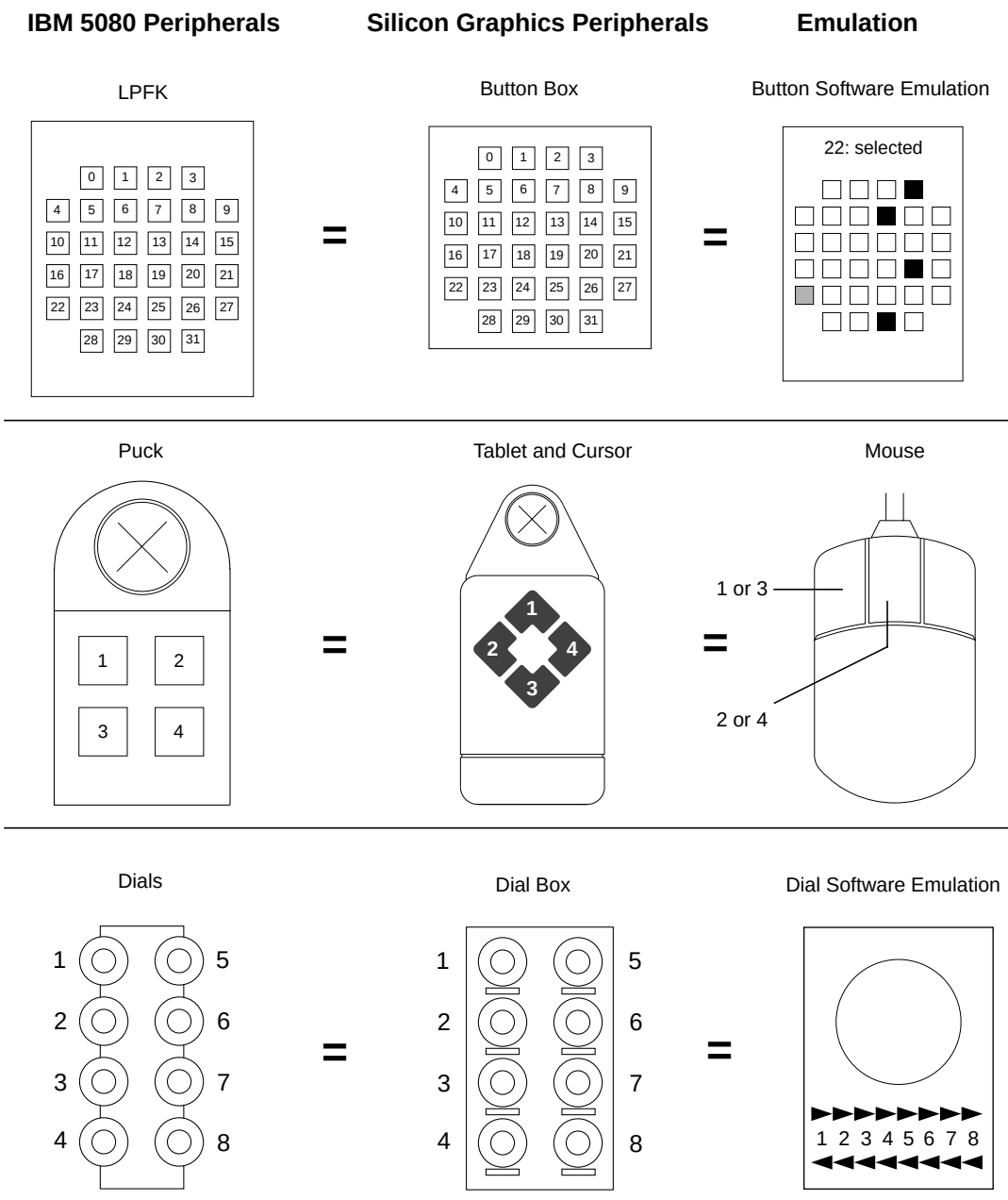


Figure 1-1 IBM Hardware Versus Silicon Graphics Hardware and Software

1.2 3270 Terminal Emulation

The 3270 Emulator installed on your workstation allows you to use a workstation as if it were an IBM 3279 Model 2 terminal. You might need to purchase additional software to enable this feature.

With 3270 terminal emulation on your workstation, you can open an emulation window and use 3270 key mapping to access applications on the host.

1.3 IRIS Workstation Hardware Requirements

The following hardware components are required for the user workstation:

- IRIS workstation with a three-button mouse and keyboard
- 5080 gateway interface board installed in the card tower
- Access to a 1/4-inch cartridge tape drive, either directly or through the network

The IRIS hardware peripherals are optional, but the following may be added to give the workstation full 5080 Emulator capability:

- Valuator dials module
- 32-button button box
- Digitizer tablet
- 4-button cursor for the Digitizer

1.4 IRIS Workstation Software Requirements

IRIX version 4.0.5 or higher must be running on all IRIS workstations that will use the 5080 Emulator. The VME driver must be configured into the kernel and running. In addition, the following software must be installed on all workstations:

- 5080 Emulator software, Release 2.0 or higher
- Diagnostic software, Release 1.0 or higher

1.5 Other Application Products

The 5080 Emulator supports the following applications running on user workstations: FastFile, the IRIS 3270 Emulator, and IRISXFR.

1.5.1 FastFile

The FastFile optional file transfer program is installed on the host, with a corresponding software module, *talkappc*, installed on the IRIS user workstation. It allows users with the 5080 Emulator software to initiate high-speed bidirectional file transfers with the host.

1.5.2 3270 Emulator

The 3270 Emulator, installed on IRIS workstations, provides IBM 3270 terminal emulation. Multiple 3270 windows can be used at the same time to direct various IBM host application programs from an IRIS workstation.

1.5.3 IRISXFR

The IRISXFR optional file transfer program is installed on the host, with a corresponding software module installed on the IRIS user workstation. It allows users with the 3270 Emulator software to initiate high-speed bidirectional file transfers with the host.

Chapter 2

Configuring the 5080 Emulator

To configure the 5080 Emulator, use the Set Up 5080 utility. This utility provides options that let you customize the 5080 Emulator software at your workstation.

2.1 Using Set Up 5080

To use the Set Up 5080 utility:

1. Select the 5080 option in the Toolchest window.
2. Hold down the right mouse button until the 5080 menu appears.
3. Select the Set Up 5080 option in the 5080 menu, as shown in Figure 2-1.

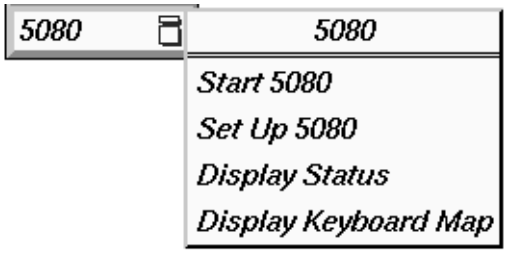


Figure 2-1 Set Up 5080 Option

Figure 2-2 and Figure 2-3 show the Set Up 5080 utility as it appears the first time it is invoked after product installation. Option fields are labeled with the various choices that are available:

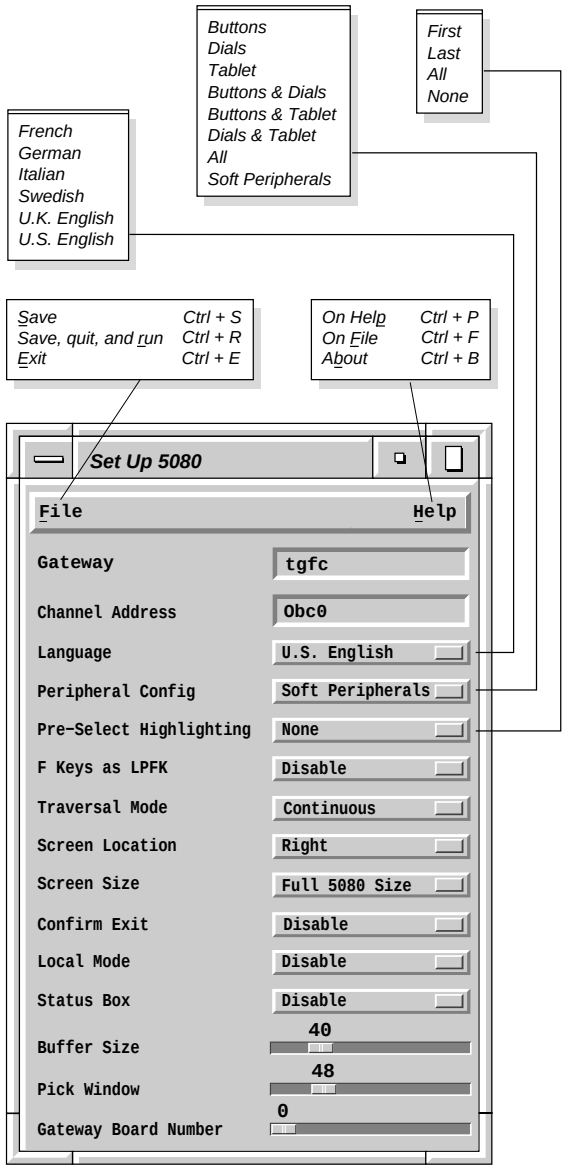


Figure 2-2 The Set Up 5080 Utility

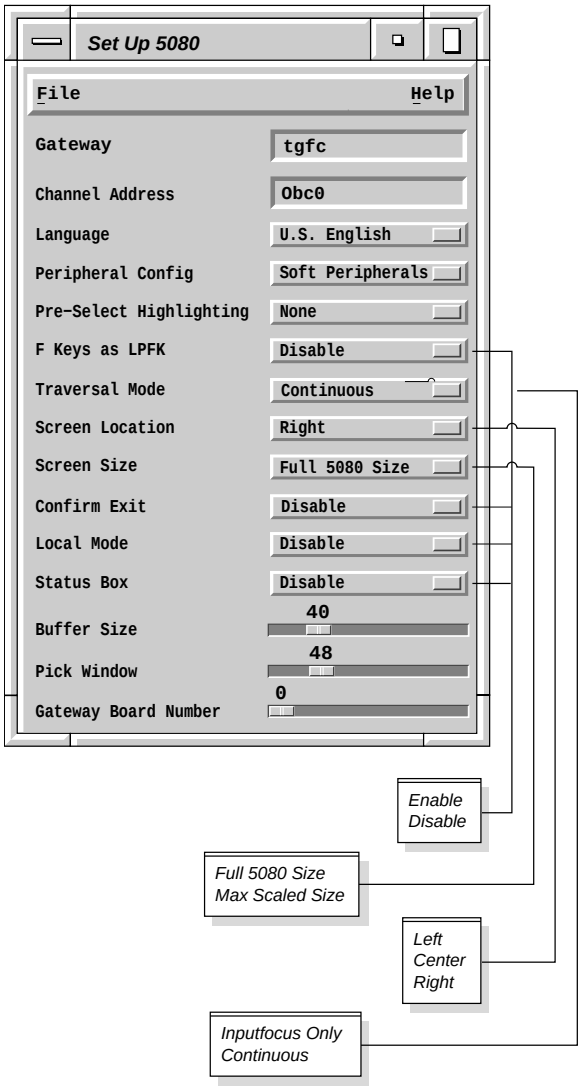


Figure 2-3 The Set Up 5080 Utility

2.2 Set Up 5080 Options

The options displayed by the Set Up 5080 utility are described below:

Gateway

Specify the name of the workstation that serves as the 5080 gateway. The name can be the fully qualified name, an alias, or the IP address. Enter the gateway name (or address) and press <**Enter**>.

Channel Address

Specify the channel address for a 5080 session. If the address is already in use, the connection is refused. If you do not specify an address, the 5080 Emulator chooses the first one available. The valid range in hexadecimal is 0000 to ffff. If you enter a channel address, press <**Enter**> to update the emulator configuration.

Language — Choose from French, German, Italian, Swedish, U.K. English, or U.S. English.

Peripheral Config

Choose a combination of hardware and software peripherals to emulate a 5080's Lighted Program Function Keyboard (LPFK), Dials, and Tablet and Cursor.

Pre-select Highlighting

Specify values for the Pre-select Highlight option. Option values and meaning are identical to those provided by the IBM 5080 Customization menu.

F Keys as LPFK

Specify whether or not the top row of keys on the keyboard will be used as F keys (default) or mapped to their LPFK values.

Traversal Mode

Choose one of two modes: Continuous and Inputfocus Only. In Continuous mode, the 5080 program updates the display regardless of cursor position. For Inputfocus Only mode, the 5080 program updates the screen only if the cursor is in a 5080 window.

Screen Location

Sets the location where the 5080 emulator window appears on your screen. The default location can be at the left of the screen, at the right of the screen, or in the center of the screen. The default is place the screen at the right.

Screen Size — Sets the size of the 5080 window. Options are Full 5080 Size and Max Scaled Size. The full 5080 size can be too large for some screen and graphics board combinations. The Max Scaled Size option creates a 5080 emulator window that is as large as your IRIS screen allows.

Confirm Exit — If this option is enabled, you are prompted whether or not you really want to exit the emulator after you select the Exit Emulator option from the 5080 Pop-up menu.

Local Mode

Use this option to demonstrate the software or to teach a new user how to use the peripheral devices. This feature must be disabled before you can interact with your IBM host application.

Status Box — Enable this to display status information.

Buffer Size

Specify the number of 64K byte pages available for the display list storage. The valid range is 10 to 150.

Pick Window

Specify the size of the pick window. Option values and meaning are identical to those provided by the IBM 5080 Customization Menu.

Gateway Board Number

Set this to the gateway board number you want to use for your emulation session.

In addition to configuration options, the Set Up 5080 utility provides two menus: File and Help.

2.2.1 File Menu

When you select File on the Set Up 5080 Menu, the File Menu appears. The File Menu provides three options:

Save — lets you save your configuration changes and continue to work in the Set Up 5080 utility

Save, quit, and run — lets you save your configuration changes, exit the Set Up 5080 utility, and run the emulator

Exit — lets you exit from the Set Up 5080 utility without making any changes

2.2.2 Help Menu

The Help Menu in the Set Up 5080 utility provides information about the Help Menu, the File Menu, and about specified Set Up 5080 utility fields.

Chapter 3

Using the 5080 Emulator

3.1 Starting the 5080 Emulator

When the 5080 Emulator is installed and configured, it is ready to run. To start the 5080 Emulator:

1. Select the 5080 option in the Toolchest window. The 5080 menu is displayed.
2. Select the Start 5080 menu option, as shown in Figure 3-1. The opening window for your host application or a host login screen is displayed, depending on how the 5080 Emulator is set up to communicate at your site.

Figure 3-1 shows the Start 5080 menu selection.

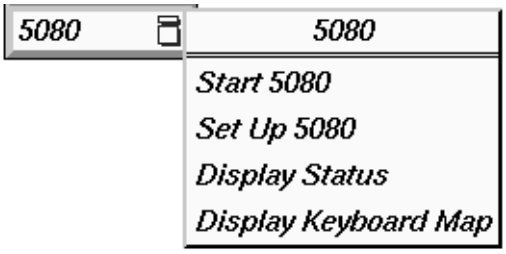


Figure 3-1 Start 5080 Menu Selection

Successful 5080 emulation depends upon the application program on the IBM host. The desired 5080 application program must be running on the IBM host.

The exact method for starting the host application is site-dependent. For more information on starting IBM host applications, see your IBM system administrator.

3.2 Using Software Peripherals

This section explains how to use the 5080 Emulator software peripherals. The procedures in this section apply only to IRIS workstations that have the three-button mouse. If the workstation has the IRIS button module, dial module, digitizing tablet, and/or puck, use the procedures described in Section 3.3, "Using Hardware Peripherals."

The software peripherals, illustrated in Figure 3-2, are displayed in three windows to the right of the 5080 terminal emulation window. To move the software peripheral windows, you can use the middle mouse button.

Note: If the dial module, the button box, or the tablet and cursor controller hardware peripheral has been selected, the corresponding software peripheral will not be activated.

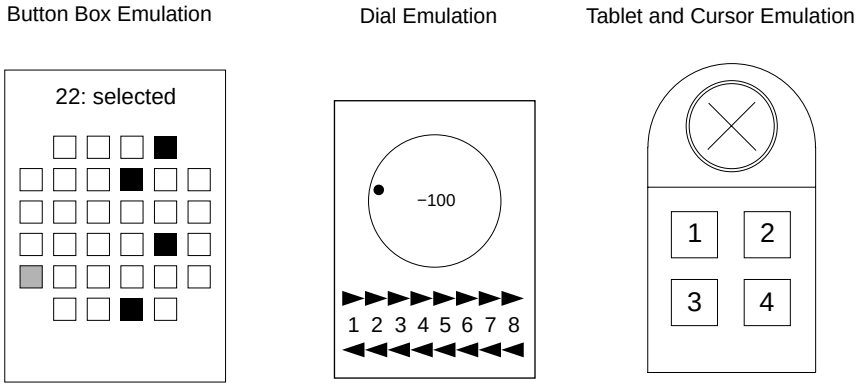


Figure 3-2 5080 Emulator Software Peripherals Windows

3.2.1 Selecting an LPFK Key

The 32 squares on the top portion of the software LPFK pad are arranged in the same way as the 32 keys on the LPFK and are numbered from 0 to 31, as shown in Figure 3-3.

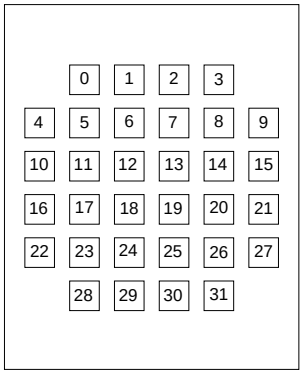


Figure 3-3 Software Peripheral Pad Numbering

Select a button by clicking on it with the mouse cursor. Figure 3-4 shows the cursor in position to select button 22.

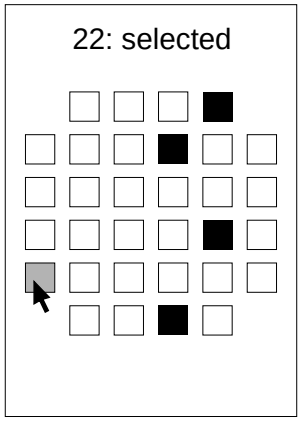


Figure 3-4 Selecting LPFK Button 22

After you press the left mouse button, the 5080 Emulator confirms a selection by momentarily turning the selected square red and displaying a message at the top of the button box. If no such confirmation appears, try selecting the square again.

The IBM host 5080 application controls the lighting of the keys. Green indicates an active key on the LPFK; black indicates an inactive key on the LPFK.

3.2.2 Using Dials

The software emulation of the 5080 dials looks different from the actual dials. Instead of showing all the dials, the dials window contains a representation of only one dial, and the dial numbers appear at the bottom of the window. Figure 3-5 shows the components of the software dial window.

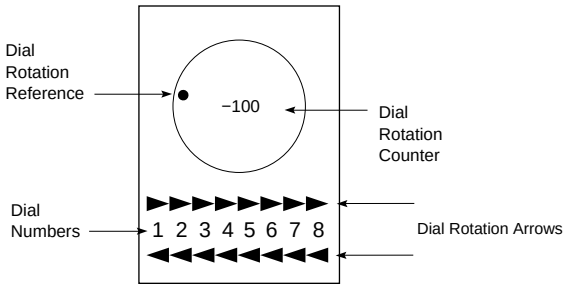


Figure 3-5 Software Dial Window

The dial window components are described below:

- Dial Rotation Reference is a dot that moves around the perimeter and tracks the emulated rotation of the dial.
- Dial Rotation Counter is a number that appears in the middle of the dial and indicates the degree of dial rotation.
- Dial Number is the number of the selected dial. These numbers correspond to the 5080 hardware dials (as shown in Figure 3-6 below).
- Dial Rotation Arrows turn a dial either clockwise (the top row of arrows) or counterclockwise (the bottom row of arrows). You click on an arrow to make the dial turn.

The eight dial numbers at the bottom of the dial window emulate the 5080 terminal's eight valuator dials. The 5080 dials are numbered as shown in Figure 3-6.

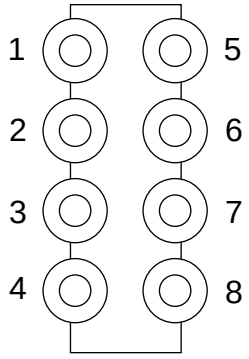


Figure 3-6 5080 Dial Module Numbering

Using a Software Dial

To use a software dial, click with the mouse cursor on one of the Dial Rotation Arrows either above or below the number of the dial you want to use. To rotate a dial clockwise, click on the arrow above the number of the dial. To rotate a dial counterclockwise, click on the arrow below the number of the dial.

As you click on a Dial Rotation Arrow, the Dial Rotation Counter increments or decrements to indicate the degree of rotation. The dial number that you selected is displayed on the face of the dial.

Figure 3-7 shows two example dials. Dial 1 is being rotated 45 degrees counterclockwise and dial 8 is being rotated 45 degrees clockwise.

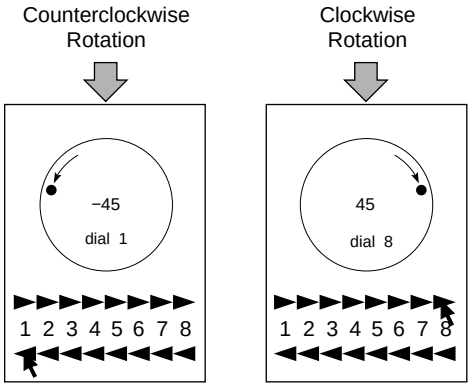


Figure 3-7 How Dial Rotation Changes the Dial Image

Selecting Dial Sensitivity

The dial sensitivity is the number of degrees a dial moves each time you click on a Dial Rotation Arrow. To change the dial sensitivity, use the Dial Sensitivity pop-up menu, shown in Figure 3-8.

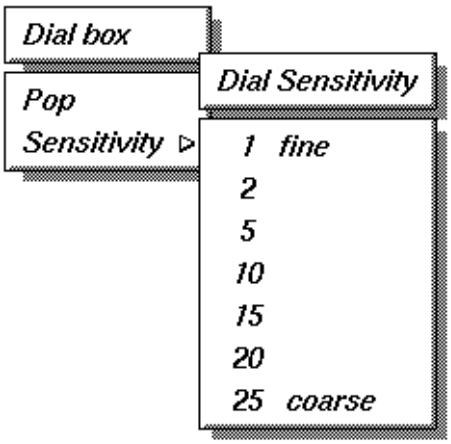


Figure 3-8 Dial Sensitivity Pop-up Menu

To select dial sensitivity:

1. Hold down the right mouse button in the Dials window to display the Dial pop-up menu.
2. While holding down the right mouse button, select the Sensitivity menu.
3. While still holding down the right mouse button, move the mouse cursor to the Dial Sensitivity menu and highlight the sensitivity option you want. When you release the right mouse button, the sensitivity level you highlighted is selected for that particular dial.

The default sensitivity is 10 degrees. Note that when you change the dial sensitivity, you are affecting only the currently selected dial. All other dials remain the same.

3.2.3 Selecting a Tablet and Cursor Button

If you want to use the tablet and cursor software peripheral, you can map tablet button 1 or 3 to the left mouse button and 2 or 4 to the middle mouse button, respectively. The default maps tablet buttons 1 and 2 to the mouse buttons.

For example, to map the left mouse button to tablet button 3, use the left mouse button to select button 3 in the Tablet and Cursor window.

The emulator confirms your selection by highlighting the button. Repeat the above procedure with the middle mouse button to select tablet button 4.

After selecting tablet buttons 3 and 4, return the cursor to the 5080 window. The left mouse button now emulates tablet button 3 and the middle mouse button emulates tablet button 4.

Within the 5080 window, the **<Shift>** key allows you to toggle between tablet buttons 1 and 2 and buttons 3 and 4. To toggle between the tablet button hold down **<Shift>**, then press and release the left or middle mouse button.

3.3 Using Hardware Peripherals

If your IRIS workstation uses hardware peripheral devices, you can map 5080 peripheral devices to your existing hardware. The 5080 Emulator can be configured to map 5080 peripheral functions to any of the following IRIS devices:

- Valuator dials module
- 32-button button box
- Digitizer tablet
- 4-button cursor for the Digitizer

The button box, dial module, and digitizer tablet and four-button cursor operate identically to their IBM 5080 counterparts. However, the arrangement of the buttons on the IRIS four-button tablet and cursor differs from the IBM puck. The 5080 Emulator maps the four 5080 cursor functions to the four buttons on the IRIS cursor controller as shown in Figure 3-9.

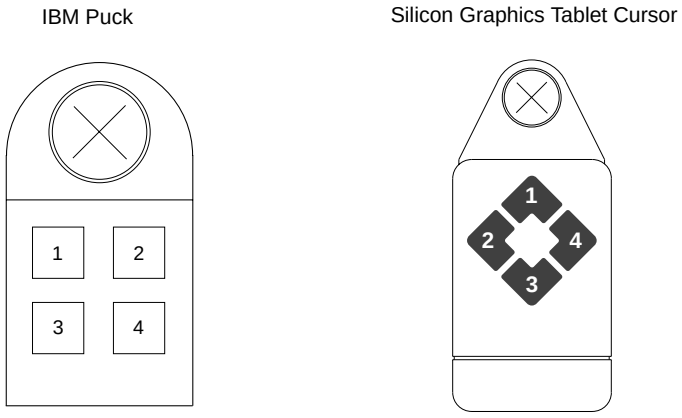


Figure 3-9 Hardware Mapping of Four-Button Cursor Functions

Note: If your digitizer tablet and four-button cursor are configured to emulate the 5080 tablet and cursor, the IRIS mouse will not be active during a 5080 session.

3.4 Stopping the 5080 Emulator

Before stopping the emulator, make sure you have saved your work and exited the 5080 application on the host. If necessary, stop the application on the assigned channel address.

To exit 5080 emulation, display the 5080 pop-up menu by holding down the right mouse button within the 5080 Emulator window and select the “Exit 5080” option.

Chapter 4

Using Local Images

Local images are graphics files you can access without initiating a session with the IBM host. This chapter describes how to manipulate local images.

When you use a host-resident 5080 application program, most of the graphics information and instructions used to manipulate images are located on the host. While on-line to the host, your workstation is primarily a terminal that displays images and tells the host which 5080 application functions you want to use.

Unlike host-resident images, local images reside on your workstation's disk and contain the data and instructions you need to display the images and operate available functions.

4.1 Local Image Files

If you are new to IBM-based CAD/CAM and graphics application programs, you can use local images to learn about the kinds of interactive functions offered by common 5080 application programs. Local image files are located in the */usr/CommSet/5080/images* directory and are named with a *.img* extention.

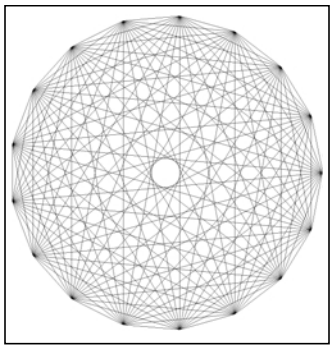
The 5080 Emulator includes two local image files with interactive functions:

i3dx.img	Contains three images: fuzzball, beachball, and rings
mekshd.img	Contains a single image

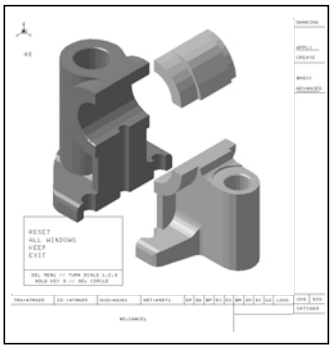
The following static local images are also available:

- *flower.img*
- *meklin.img*
- *porsch.img*
- *shuttl.img*
- *supshd.img*

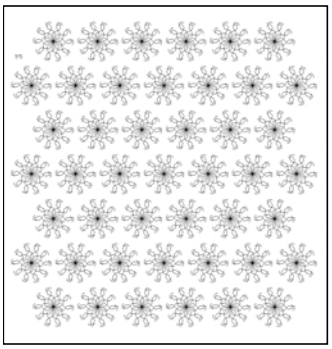
Figure 4-1 illustrates the wireframe local images supplied with the 5080 Emulator and provides the file name for each image.



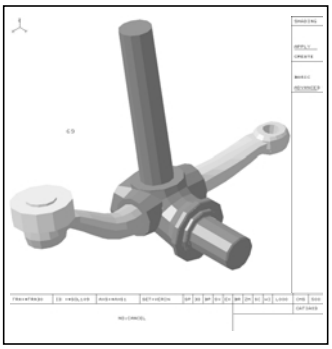
i3dx.img



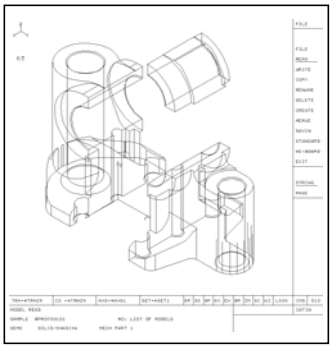
mekshd.img



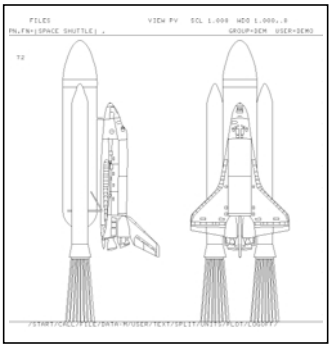
flower.img



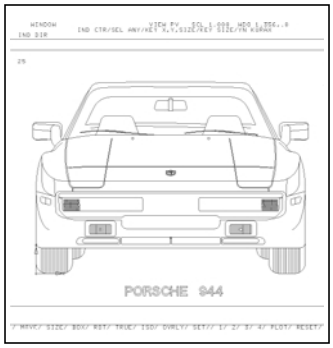
supshd.img



meklin.img



shutl.img



porsch.img

Figure 4-1 5080 Emulator Wireframe Local Images

4.2 Loading Local Images

Note: Make sure local mode is enabled in the Set Up 5080 utility before you load a local image.

To load a local image, use the following procedure:

1. At an IRIX prompt, enter the following command line to move to the directory containing the image-loading utility, *ld5080*:

   `cd /usr/CommSet/5080`

2. Enter the following command to load the image you want:

   `ld5080` [*local_image_filename*]

   In the preceding command line, *local_image_filename* represents the name of the file. It can be entered without the *.img* extension.

When the local image is loaded, the following message is displayed:

```
ld5080: End of load, xxxx bytes loaded
```

The *xxxx* equals the total number of bytes in the local image file.

4.3 Stopping a Local Image Session

Select "exit 5080" from the 5080 pop-up menu to stop the local image session.

4.4 Practicing Interactive Functions

This section describes available functions you can practice with the *i3dx.img* local image file. The *i3dx* local image file offers the most interactive functions of the local images and is the only interactive image with wireframe objects.

The *i3dx* images can be rotated, scaled, or translated. Continuous and incremental functions similar to those used by most 5080 applications are available.

The *i3dx* local image file contains three screen displays:

- Fuzzball
- Beachball
- Rings

Each can be interactively manipulated with either software or hardware peripherals. However, none of the interactive functions permanently changes the local image files.

Table 4-1 lists available functions and the corresponding peripheral you can use to perform each function.

Note: The peripheral functions for the *i3dx* image are unique. Other 5080 application programs are mapped to different 5080 controls. See the documentation for your 5080 host application for information on which peripherals perform which functions.

5080 Peripheral Device	Function
Dial 1	Performs X-axis rotation (continuous)
Dial 2	Performs Y-axis rotation (continuous)
Dial 3	Performs Z-axis rotation (continuous)
Dial 4	Scales image
Dial 5	Performs X-axis rotation (incremental)
Dial 6	Performs Y-axis rotation (incremental)
Dial 7	Performs Z-axis rotation (incremental)
Dial 8	Scale Window
Tablet Button 1	Restores image to its original screen orientation after rotation and scaling functions
Tablet Button 2	Cycles between the three images in the *i3dx* file
Tablet Button 3	Translates the image in all directions
Tablet Button 4	Changes the aspect ratio of the image

Table 4-1 Interactive Functions for the *i3dx.img* Local Image

4.4.1 Loading the *i3dx* Image

To load the *i3dx.img* local image, enter the following command line:

```
ld5080 i3dx
```

The fuzzball image appears, as shown in Figure 4-2. This is the first of three images you can display.

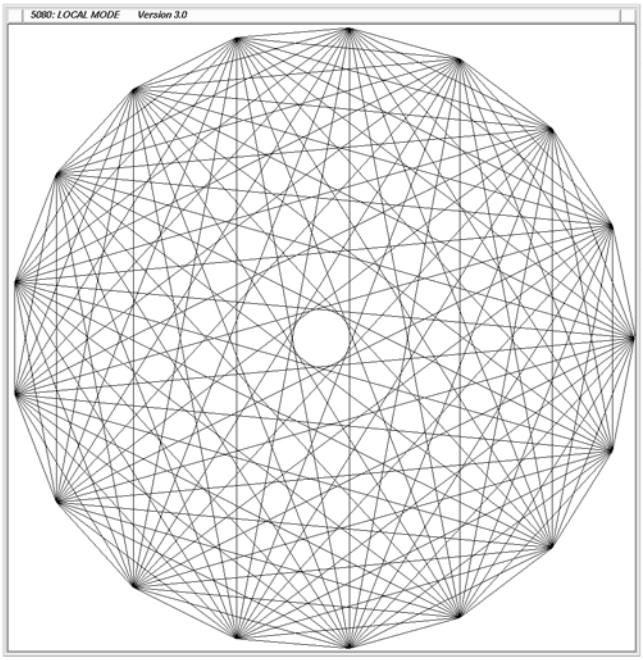


Figure 4-2 Initial Screen Display for the *i3dx* Local Image

4.4.2 Restoring the *i3dx* Image

If, after you practice a particular function, you want to restore the *i3dx* local image to its original form, press button 1 (the left mouse button or the top tablet cursor button).

Note: The image restore function is unique to *i3dx*. It is not a general 5080 Emulator function.

For a description of how IBM hardware, Silicon Graphics hardware, and 5080 emulation peripherals are equivalent, see Figure 1-1 in Chapter 1, "Overview of the 5080 Emulator."

4.4.3 Cycling through *i3dx* Images

How you cycle through the *i3dx* images depends on your peripheral emulation device:

- For software emulated peripherals, use tablet button 2.
- For a three-button mouse, press the middle mouse button.
- For hardware emulated peripherals, press and momentarily hold down the left button on the tablet cursor.

Cycle through the images until you see the rings display shown in Figure 4-3. Use this image to practice the functions described in the following sections.

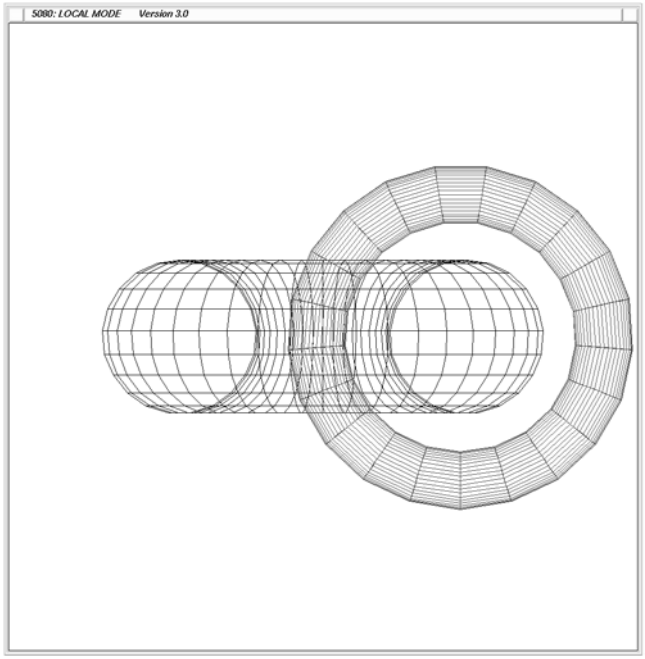


Figure 4-3 The *i3dx* Rings Display

4.4.4 Rotating Images

To rotate *i3dx* images, use software or hardware emulated dials.

Turning a dial mapped for continuous rotation functions determines the direction and velocity of the rotation. The image continues to rotate at these values after the mechanical dial rotation stops.

Turning a dial mapped for incremental rotation functions determines the direction and rotational distance. The image rotation is directly proportional to the mechanical dial rotation and stops when the dial rotation stops.

4.4.5 Scaling Images

Scaling functions for this image are assigned to tablet cursor button 4. If you using a three-button mouse, press **<Shift>-<middle mouse button>**.

Valuator dial 4 controls image scaling:

- To enlarge the image, turn the dial clockwise.
- To shrink the image, turn the dial counterclockwise.

Valuator dial 8 controls frame scaling:

- To enlarge the frame, turn the dial clockwise.
- To shrink the frame, turn the dial counterclockwise.

Figure 4-4 shows the rings display as it might appear after x-axis rotation.

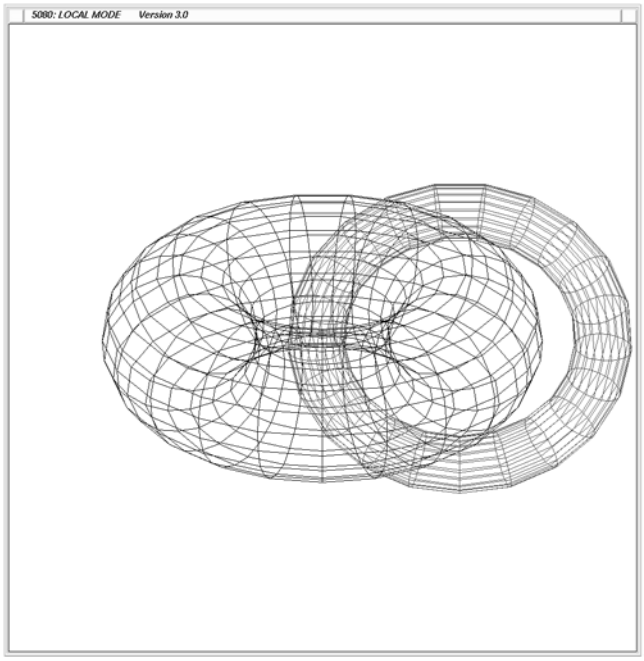


Figure 4-4 The *i3dx* Rings after X-Axis Rotation

4.4.6 Translating Images

The *5080 gateway* image can be translated in all directions.

If you are using hardware peripherals, translate the *i3dx* image by pressing and holding down the bottom tablet cursor button (button 3) while moving the tablet cursor across the tablet. If you are using a three-button mouse, press and hold down **<Shift>-<left mouse button>** while moving the mouse in any direction.

Figure 4-5 shows how the screen might look if you translate the rings to the right.

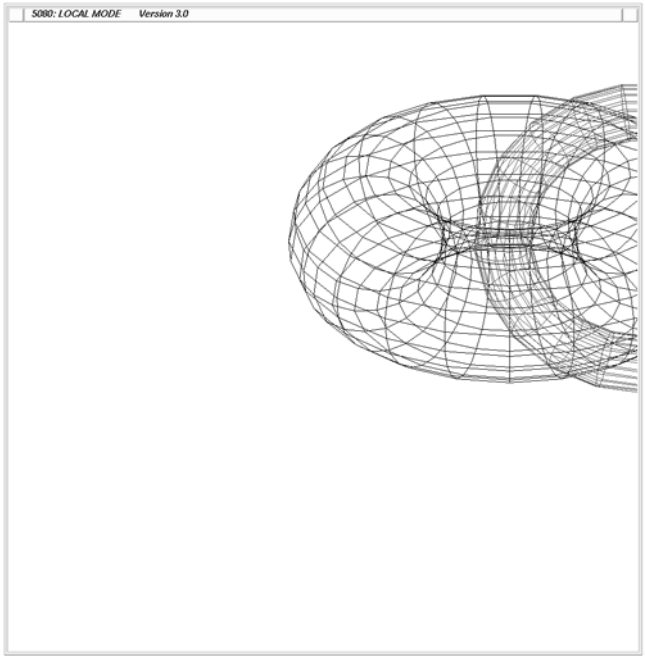


Figure 4-5 The *i3dx* Image after Translation

4.4.7 Changing the Aspect Ratio

The aspect ratio of the *i3dx* image can be translated vertically or horizontally.

If you are using hardware peripherals, change the *i3dx* image aspect ratio by pressing and holding down the bottom tablet cursor button (button 3) while moving the cursor across the tablet.

If you are using the mouse, press and hold down **<Shift>-<middle mouse button>** while moving the mouse in any direction.

Figure 4-6 shows how the image looks after an aspect ratio change to the left.

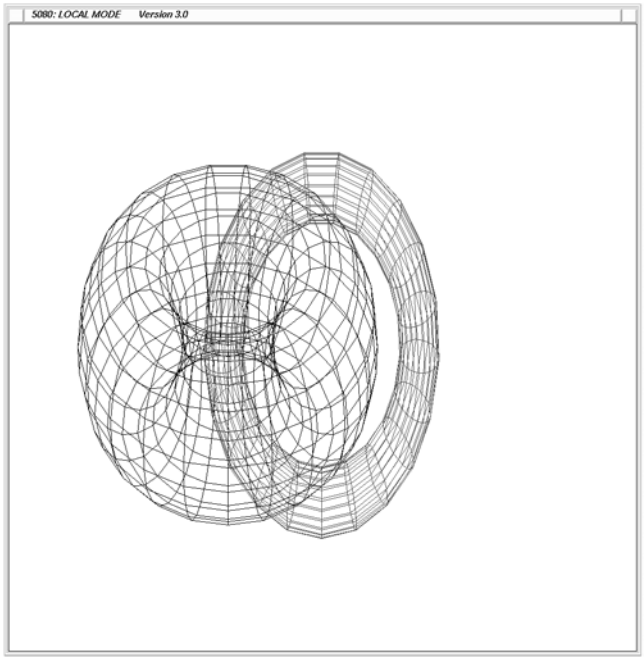


Figure 4-6 The *i3dx* Image after Aspect Ratio Change

4.4.8 Stopping the Practice Session

To exit the 5080 Emulator and stop the practice session, select “exit 5080” from the 5080 pop-up menu.

4.5 Interactive Functions for Local Image *mekshd.img*

Table 4-2 lists the interactive functions and corresponding peripheral devices for the local image *mekshd.img*.

5080 Control	Function
Dial 1	Translates images horizontally
Dial 2	Translates images vertically
Dial 3	Scales images
Tablet Button 3	Translates images in all directions. Active only while the left mouse button (or bottom cursor controller button) is held down. The images move in the direction of the mouse (or cursor) movement.
Tablet Button 4	Translates the CATIA pop-up window and the image. Active only while the middle mouse button (or right cursor controller button) is held down. The pop-up window moves in the direction of the mouse (or cursor) movement.

Table 4-2 Interactive Functions for the *mekshd.img* Local Image

Appendix A

5080 Software Messages and Error Recovery

The 5080 Emulator programs and utilities return various messages during use. These messages provide information, confirm successful operation, or notify the operator of errors. The 5080 Emulator prints these messages after you execute a command or during program execution. The 5080 Emulator displays these messages in the same window where the command was initially executed, unless you have directed output to a file. This chapter lists the software messages produced by the 5080 Emulator software programs and provides appropriate responses to error messages.

Each message refers to a specific program or utility. These messages are organized into sections according to the program or utility to which each refers. The sections are:

- *talk5080* program messages
- *em5080* program messages
- *devi5080* program messages

This appendix then describes the error-recovery utility *clean-pgm,* which you can use to clear portions of memory after an error occurs.

A.1 *talk5080* Program Messages

The messages in this section pertain to the communications portion of the *em5080* program, *talk5080*, which manages communications between user workstations and the gateway. The *talk5080* program executes whenever you execute the *em5080* program (except in local image mode).

A.1.1 Channel Busy Messages

Message: `No channel addresses available`

Response: All host addresses are currently in use by other network users. Try again later.

Message: `*** 5080 channel already in use on this node Channel address for this node is xxxx IBM 5080 channel communication has been terminated`

Response: A 5080 Emulator session is in progress on this workstation. Only one 5080 Emulator session can be run at a time.

A.1.2 LAN Communications Messages

Message: `<host_name> not found in /etc/hosts`

Response: Check that the host name matches the name of a host defined in */etc/hosts* or by the network information service (NIS).

Message: `Unable to connect to remote`

Response: Communications between the workstation and remote gateway have failed. Reinitialize the *em5080* program. If the error occurs again, check LAN connections.

Message: `Unable to create socket`

Message: `Unable to read socket address`

Response: LAN drivers might not be installed in the operating system. Consult the *IRIS Advanced Site and Server Administration Guide* and *Selected Site Administration Man Pages*.

Message: `Unable to shutdown socket`

Response: Reinitialize the *em5080* program. If the error occurs again, check LAN connections.

Message: `Connection aborted on error`

Response: The gateway may have been inadvertently terminated by an operator action. Try starting the gateway again.

Message: `Gateway is not running on this workstation`

Response: Restart the gateway.

A.1.3 Channel Communications Messages

Message: `Cannot send SELMEM attention message`

Response: This condition is not always fatal. If the gateway crashes, try restarting it. If the error persists, check gateway hardware components (for example, the channel controller and cabling). Then contact field service.

A.1.4 Miscellaneous Messages

Message: `Init failed!`

Response: *talk5080* could not secure an address. Log into the gateway workstation. Get the current gateway status by typing:

```
cd /usr/CommSet/gateway
gateway -s
cat gate_log
```

Message: `Abnormal exit`

Response: The emulation session may have been inadvertently terminated by an operator action. Try starting the session again.

A.1.5 Informational Messages

The following messages are informational only and require no response.

Message: `Channel addr = %x, target = %d`

Message: `Connected to %s on port %u at %s`

Message: `tcp_recv: Size < = 0`

Message: `tcp_recv: Len < 12`

Message: `tcp_recv: connection shutdown`

Message: `Inv channel cmd rec'd`

Message: `Wait_request:`

Message: `Channel online`

Message: `Channel offline`

A.2 *em5080* Program Messages

The messages in this section pertain to the emulation portion of the 5080 Emulator.

A.2.1 Command Syntax Messages

Message: `Invalid option argument <argument>`

Response: Option argument not entered correctly. Check that you have selected the proper option argument and reinitialize the *em5080* program.

Message: `(4) Must have at least 1 bit plane for graphic display`

Response: Unable to access the workstation image planes. Try reinitializing the *em5080* program. If the error persists, contact field service.

A.2.2 Shared Memory Messages

All of the following messages abort the session. Verify that 5080 emulation is not already running in another window or icon. Run the *cleanup* utility before trying to execute *em5080* again. A procedure for running the *cleanup* utility is provided at the end of this appendix.

Message: `(1) Shared memory error: ftok: <file name> <system error msg>`

Message: `(1) Shared memory error: shmget: key <key (hex)> <system error msg>`

Message: `(1) Shared memory error: shmget: key <key (hex)> already exists`

Message: `(1) Shared memory error: shmat: <system error msg>`

Message: `(1) Shared memory error: shmctl: <file name> <system error msg>`

A.2.3 Signal Handler Messages

Message: `(6) Error starting signal handler: signal: <system error message>`

Message: `(6) Error starting signal handler: setpgrp: <system error message>`

Response: Note circumstances when messages appear. Try starting *em5080* again. If these errors persist, verify that the software is installed correctly.

A.2.4 Communications Messages

All of the following messages indicate serious problems. The system might have run out of swap space if you were using an especially large display list or running several other programs concurrently with the 5080 Emulator. Verify that the software is installed correctly. If these errors persist, contact field service.

Message: `(11) Error in starting talk process: fork: <system error msg>`

Message: `(11) Error in starting talk process: execl: <system error msg>`

Message: `(11) Error signaling talk process: kill: <system error msg>`

A.2.5 File Messages

All of the following messages indicate serious problems. Check to make sure you have permissions set to be able to execute code in the working directory. If these errors persist, contact field service.

Message: `File errors: creat: <file name>`
`<system error message>`

Message: `File error: fopen: <file name>`

Message: `File error: fclose: <file name>`

A.2.6 Miscellaneous Messages

Message: `Abnormal exit`

Response: The emulation session may have been inadvertently terminated by an operator action. Try starting the session again.

Message: `Error getting process ID: getpid: xz<system error message>`

Message: `Error getting system time: gettimeofday: <system error message>`

Message: `Invalid event type returned from workstation: <event # (decimal)>`

Response: Note circumstances when messages appear and contact field service.

A.2.7 Local Image Messages

Message: `Larger buffer size required for local_image_filename`

Response: The buffer size selected is too small. Select a larger buffer size from the configuration menu.

A.3 *devi5080* Program Messages

The messages in this section pertain to the *devi5080* program, which controls the software peripherals for the *em5080* program.

A.3.1 Informational Messages

Message: `peripheral task started`

Message: `peripheral task terminated with no errors`

Response: Informational; no response required.

A.3.2 Error Messages

When the following errors occur, the *devi5080* program terminates.

Message: `abnormal exit`

Message: `peripheral task terminated with errors`

Response: *devi5080* was "killed" in an abnormal manner. You can restart the *devi5080* program without stopping *em5080* by changing to the */usr/CommSet/5080* directory and issuing the *devi5080 &* command.

Note: In the following messages, <*n*> is a value returned or a standard error (stderr) string.

Message: `(7) Error getting process ID: getpid: <n>`

Message: `winopen failed - pid(<n>) returned: <n>`

Response: Problems exist within the window manager. Log out, then log back into the window system and try again.

Message: `(9) Error getting system time <n>`

Message: `em5080 may not be running: <n>`

Message: `(19) Error signalling em5080: kill: <n>`

Message: `(1) Shared memory error: <n>`

Message: `(2) File error: <n>`

Response: The *em5080* program is not running or exited abnormally. Terminate *em5080* and start again.

When the following error message occurs, the *devi5080* program does not necessarily terminate.

Message: `SIGUSR1 handler: unknown command: <n> value: <n>`

Response: Note circumstances when the message appears. Try starting *em5080* again. Verify that the software has been installed correctly. If this error persists, contact field service.

A.4 Using the *clean_pgm* Utility

The *clean_pgm* utility is a workstation maintenance and housekeeping utility provided to help you respond to some of the 5080 Emulator errors described in previous sections. In normal operations, the 5080 Emulator automatically triggers a file housekeeping function that clears certain portions of memory and several registers whenever you stop an emulation session. However, if an error occurs, the workstation operating system may abort the 5080 Emulator before these housekeeping functions can be run. Before you can successfully start a new session, you must manually execute the 5080 Emulator housekeeping function by typing:

```
/usr/CommSet/5080/clean_pgm
```

Appendix B

Troubleshooting

This appendix explains how to gather information necessary to report a problem to your field service representative.

There are two basic areas where problems can occur:

- in the emulator itself
- in other software that is part of the 5080 Emulator distribution (such as the keyboard display or the configuration scripts)

The following sections describe how to report problems that occur in each area.

Note: After you have noted a problem, use the *clean_pgm* utility to clean up after a failed session. Refer to Appendix A, "5080 Software Messages and Error Recovery" for a description of *clean_pgm*.

B.1 Troubleshooting the 5080 Emulator

Problems that occur in the 5080 emulator can be manifest in several ways, including:

- improperly displayed data in the emulator window
- input not accepted by the emulator
- the emulator terminating abnormally

If the emulator exhibits any of the above symptoms, follow these steps to gather information about the cause of the problem:

1. Log in to a local workstation and start a 5080 emulation session.
2. Use the emulator in such a way as to duplicate the problem, but *stop just before the problem occurs*.
3. If tracing is not already enabled on the gateway workstation, log in as *root* on the gateway and enable tracing using this command:

   ```
   # gateway -o
   ```

4. Cause the problem to occur.
5. Check for a core dump file (*core*) in /usr/CommSet/5080 of the local workstation. If you find a core dump file, verify that it is from the 5080 emulator or related process by using the *file*(1) command:

   ```
   file core
   ```

   If you cannot find a core dump file on the local workstation, create a buffer dump file (*buffer_dump*) using the following commands:

   ```
   cd /usr/CommSet/5080
   sh5080 -b
   ```

   This creates a file called *buffer_dump*.
6. If you had enabled tracing for this test, disable it on the gateway workstation by entering

   ```
   # gateway -o
   ```

Collect the information you have gathered and place it on removable media (such as tape). The information should include the following:

- either a core dump file (*core*) or */usr/CommSet/buffer_dump*
- */usr/CommSet/gateway/trace_file* (from the gateway)

Label the media with your name, company address, and telephone number, and refer to your release notes for instructions on where to mail the information.

B.2 Other Problems

Problems outside the 5080 emulator include the following:

- trouble installing the 5080 emulator software, including Toolchest and WorkSpace configuration
- problems configuring the 5080 emulator, including software
- inability to display the keyboard map
- failure of shell scripts that start 5080

If problems occur with 5080 Emulator software outside of the emulator, you do not need to create a buffer dump or provide a core dump file. Simply provide a written description of the problem to your field service representative.

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