IRIS® Channel Adapter
Administration Guide

Contributors

Written by Kameran Kashani
Edited by Nancy Schweiger
Production by Laura Cooper
Engineering contribution by Irene Kuffel, Ed Evans
Illustrations by Dan Young, Cheri Brown

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Silicon Graphics, Inc.
Mountain View, California

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Introduction

This guide describes how to configure and operate the IRIS® Channel Adapter. 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	"Product Overview" describes the operation of the IRIS Channel Adapter on an IBM® network and provides a summary of related software products.
2	"Preparing for System Generation (SYSGEN) and Configuration" describes IBM host SYSGEN parameters.
3	"Configuring the IRIS Channel Adapter" tells how to configure the software to support terminal emulation sessions between workstations and the host.
4	"Operating the IRIS Channel Adapter Gateway" describes using the *gateway* command to start the gateway process, perform diagnostic tracing, reset workstations, and stop the gateway.
Appendix A	"Software Messages and Error Recovery" describes information and error messages and suggests actions you can take in response.

Table I-1   Summary of Chapters

Using Menus

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, refer to the *IRIS Essentials* guide for detailed information.

Related Documentation

In addition to this guide, the manuals listed below will help you maintain the IRIS Channel Adapter and its associated software and hardware products:

- *5080 Emulator User's Guide* describes the user workstation software that allows users to operate the IRIS as if it were a 5080 terminal. Users can use the emulator to access 5080 graphics applications on an IBM host through the IRIS Channel Adapter. The guide describes peripheral device emulation and local image manipulation.

- *3270 Emulator User's Guide* provides information on using the IRIS 3270 Emulator. The 3270 emulator can be used to access IBM host applications through the IRIS Channel Adapter. The guide includes system administrator information.

- *MVS FastFile User's Guide* contains a description of the FastFile^{TM} MVS/SP or MVS/XA product, which transfers files between an IRIS workstation and an IBM host through the IRIS Channel Adapter. 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 IRIS Channel Adapter. 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

CA
: Communications Adapter—T1 or V.35

CA-F
: Communications Adapter—Fiber Optic

devices
: IBM devices, such as 5080 terminals, or IRIS software emulations of IBM devices

EBCDIC
: (see extended binary-coded decimal interchange code) alphanumeric and special characters used by IBM host computers

FCC
: Federal Communications Commission

FE
: Field service engineer

GAM/SP
: (graphics access method/system product) IBM host system software for managing graphics applications

host
: IBM mainframe (in the context of this guide)

MVS
: (multiple virtual storage) IBM host operating system

PF Key
: IBM-style keyboard programmable function key

session
: an active connection between a terminal or terminal emulator and a host

T1
: a telecommunications protocol for physical transmission of data

TCP/IP
: Transfer Control Protocol/Internet Protocol; a networking protocol

V.35
: a telecommunications protocol for physical transmission of data

VM
: (virtual machine) IBM host operating system

VME
: a 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

Product Overview

This chapter describes the IRIS Channel Adapter, which consists of a combination of hardware and software components installed on an IRIS workstation. These components allow the workstation to translate and route data between IRIS workstations on a TCP/IP local area network (LAN) and an IBM host.

This translation allows IRIS workstation users with 5080 Emulator or 3270 Emulator software to use applications running on a remote IBM host. In addition, users with FastFile or IRISXFR installed on their workstations can perform file transfer operations with the IBM host through the channel adapter (provided FastFile or IRISXFR is also installed on the IBM host).

The channel adapter connects directly to the host through Bus and Tag cables. Figure 1-1 shows an IRIS Channel Adapter in a typical networking configuration.
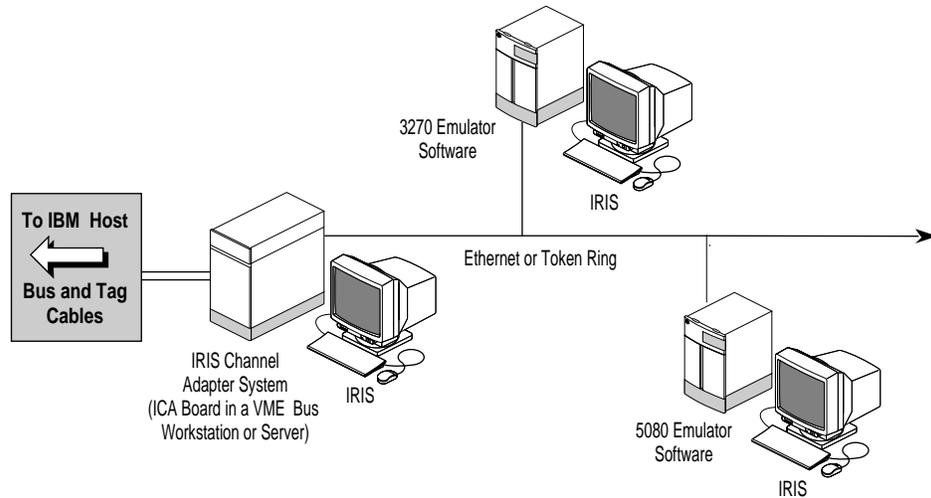
Figure 1-1   IRIS Channel Adapter in a Typical Networking Configuration

For details about 5080 emulation, refer to the *5080 Emulator User's Guide.* For details about 3270 emulation, refer to the *3270 Emulator User's Guide.*

1.1   IBM Host Communications

The IRIS Channel Adapter board, installed in an IRIS workstation, allows the workstation to act as both a gateway and channel controller to the IBM host. The gateway process translates IBM 5088 and 3274 Channel Commands to a protocol understood by IRIS 5080 and 3270 emulations.

At installation, you configure the channel adapter with addresses that user workstations can use to connect with the host. The channel adapter can be configured for a maximum of sixteen (16) 3270 addresses and sixteen (16) 5080 addresses, or a maximum of thirty-two (32) 3270 addresses if no 5080 addresses are configured. The maximum number of 5080 address is always sixteen (16).

1.2   Other Application Products

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

1.2.1   5080 Terminal Emulator

The 5080 Emulator software installed on IRIS workstations allows users to use a workstation as if it were an IBM 5085 Model 2A graphics terminal to manipulate graphics applications on an IBM host.

1.2.2   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 file transfers with the host.

1.2.3   IRIS 3270 Emulator

The IRIS 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.

1.2.4   IRISXFR

The IRISXFR 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 3270 Emulator software to initiate high-speed file transfers with the host.

Chapter 2

Preparing for System Generation (SYSGEN) and Configuration

This chapter describes

- what information you need to provide the IBM host administrator for the IBM System Generation (SYSGEN) process

- the maximum number of 3270 and 5080 emulation sessions supported by the IRIS Channel Adapter (ICA)

- channel addresses and supported device types

- what information about your network configuration to have on hand if a service (FE) configures your gateway

After you have followed the instructions in this chapter, go to Chapter 3, "Configuring the IRIS Channel Adapter" to configure the ICA board.

For information on installing IRIS Channel Adapter software, refer to the release notes and to the *IRIS Software Installation Guide.*

If you have not already installed the IRIS Channel Adapter board in your IRIS workstation or server, you should do so before configuring the gateway software. Refer to the *IRIS Channel Adapter Installation Instructions* for information about installing the IRIS Channel Adapter board.

2.1 Preparing for IBM Host System Generation (SYSGEN)

When you configure the IRIS Channel Adapter, you specify device types and channel addresses that workstations and the IBM host will use to exchange data through the channel adapter. Before you can configure the ICA board, you must tell the IBM host system programmer to reserve *addresses* on the host for your devices.

Each address corresponds to a possible *session* between a workstation and the host. One client workstation can use multiple addresses to conduct simultaneous sessions with the host.

During host system generation (SYSGEN), the host system programmer will configure the host with the number of addresses you request. The host system programmer will then provide the information you need to configure the channel adapter. This chapter describes what you need to tell the host programmer, and the next chapter, Chapter 3, "Configuring the IRIS Channel Adapter," describes how to use the information he or she provides to configure the ICA board.

Provide the following information to the host system programmer:

- number of 5080 addresses (which can be used for both 5080 emulation sessions or FastFile sessions); there can be up to sixteen (16) 5080 sessions per ICA board

- number of 3270 addresses; there can be a maximum of sixteen (16) 3270 sessions if you are also running the maximum of sixteen 5080 sessions; see the next section, 2.1.1

- channel transfer protocol, either DC-interlock, 3MB streaming, or 4.5MB streaming; all of the devices defined for a single ICA board must use the same channel transfer mode

Note: You can have up to 32 addresses configured per channel adapter board, but no more than 16 of each device type if you are using both 3270 and 5080 emulation sessions. For details, see the next section, Section 2.1.1, "How Many Sessions (Devices) Can You Have?."

2.1.1 How Many Sessions (Devices) Can You Have?

The IRIS Channel Adapter can support a maximum of 32 simultaneous sessions, subject to the following:

- If you are running only 5080 emulation sessions, you can run up to sixteen (16) 5080 emulation sessions.

- If you are running only 3270 emulation sessions, you can run up to thirty-two (32) 3270 emulation sessions.

- When you configure combined 5080 and 3270 sessions, each 5080 session you configure subtracts from the maximum number of 3270 sessions (32) that you can run. So, for example, if you configure for eight (8) 5080 sessions, you can configure a maximum of twenty-four (24) 3270 sessions. Or, if you configure for the maximum of sixteen (16) 5080 sessions, you can configure for up to sixteen (16) 3270 sessions.

- FastFile sessions use addresses reserved for 5080 emulation sessions, and so count as 5080 sessions when calculating the maximum number of sessions you can run.

Note: There is a fundamental difference between real IBM terminals and the networked IRIS workstations that emulate them. Unlike the IBM terminals, IRIS workstations can each emulate multiple IBM devices.

In an IBM network, each channel address corresponds to a *device* (such as a terminal). Each device can have only one active session with the host at a time.

By comparison, each IRIS workstation on the network can emulate multiple IBM devices. Therefore, emulations on IRIS workstations are referred to as *sessions*, and channel addresses are configured on the IRIS Channel Adapter to correspond to *sessions* rather than devices.

Each terminal emulation workstation can use one or more addresses to conduct multiple sessions with the host. When the user logs out of an emulation session, the address is freed up for use by another session. Determine the number of addresses you will need based on the maximum number of sessions that will be required at any one time.

The following sections describe channel addresses and device types in more detail.

Channel Addresses

The host system programmer will assign *channel addresses* to be used by your emulation devices. Channel addresses are hexadecimal numbers that identify IBM devices. A channel address has two parts: a *channel number* and a *subchannel address.*

The ICA board connects to an I/O channel that has a *channel number* on the IBM host. Emulation sessions attached to the host through the ICA board have *subchannel addresses* that are used by the host to route messages.

ns attached to the host through the ICA board have *subchannel addresses* that are used by the host to route messages.

Thus, to configure device emulation on an IBM network, you specify the channel number for the I/O channel, as well as the subchannel addresses terminal emulators can attach to through the local network. For example, a session might have the address 218, which is channel address 2 and subchannel address 18. The address 620 is channel address 6 and subchannel address 20.

Device Types

A *device type* indicates the kinds of commands that an IBM device (such as a terminal or printer) can exchange with the IBM host.

The 3270 Emulator and 5080 Emulator products running on IRIS workstations also are identified by device types. The IRIS Channel Adapter supports communication with two device types: 3270 and 5080.

2.2   IBM Host Software Requirements for 3270 Terminal Emulation

This section describes the information the IBM host system programmer needs to generate the host system (SYSGEN) to support the 3270 Emulators with which it will communicate. It supplements the IBM SYSGEN procedure for supporting IBM 3279 terminals.

The SYSGEN should be accomplished before the field engineer (FE) installs any equipment.

The 3270 Emulator allows users to access IBM host application programs running under one of the following host operating systems:

- VM/XA
- VM/ESA
- MVS/XA
- MVS/ESA

All channel addresses assigned must be unshared Unit Control Words (UCWs):

```
SHARED=N
```

All 3270 emulation subchannels must be generated as 3279:

```
IODEVICE UNIT=3279
```

2.2.1   VM SYSGEN

RCTLUNIT Macro Instruction

The format for the RCTLUNIT macro instruction is as follows:

```
RCTLUNIT ADDRESS=address,
      CUTYPE=3274,
      FEATURE=N-DEVICE
```

In this macro instruction, *N* can be 16 or 32.

RDEVICE Macro Instruction

The format for the RDEVICE macro instruction is as follows:

```
RDEVICE ADDRESS=(address,number),
      DEVTYPE=3279,MODEL=2
```

In this macro instruction, *number* is the number of subchannels to allocate.

2.2.2   MVS SYSGEN

IODEVICE Macro Instruction

The format for the IODEVICE macro instruction is as follows:

```
IODEVICE ADDRESS=(address|address,number of units),
      UNIT=3279
```

2.2.3   IOCP Definition for 3270

CNTLUNIT Macro Instruction

Use the CNTLUNIT macro to define the 3274 Cluster Controller to the I/O configuration. Possible values for the PROTOCOL parameter include D (DC-interlock), S (3MB streaming), and S4 (4.5MB streaming). The recommended format for the CNTLUNIT macro instruction is as follows:

```
CNTLUNIT CUNUMBR=number,
      PATH=(chp id {,chp id}...),
      PROTOCOL=S4,
      SHARED=N,
      UNIT=3274,
      UNITADD=((address{,number})...)
```

IODEVICE Macro Instruction

Use the IODEVICE macro to define the device type to the I/O configuration.
The format for the IODEVICE macro instruction is as follows:

```
IODEVICE ADDRESS=(address{, number}),
     CUNUMBR=(number{,number}...),
     UNIT=3279,
     STADET=N
```

Be aware that the number of I/O devices specified by CNUMBER should
match the number specified in the CNTLUNIT macro.

2.3   IBM Host Software Requirements for 5080 Terminal Emulation

This section describes the information the IBM host system programmer needs
to generate the host system to support the 5080 Emulators with which it will
communicate. It supplements the IBM SYSGEN procedure for supporting IBM
5080 terminals.

The SYSGEN should be accomplished before the FE installs any equipment.

The 5080 Emulator allows users to access IBM host graphics application
programs running under one of the following host operating systems:

- VM/XA

- VM/ESA

- MVS/XA

- MVS/ESA

Regardless of the host operating system, Graphics Access Method/System Product (GAM/SP), Release 3 or higher, must be installed and running on the host.

All channel addresses assigned must be unshared Unit Control Words (UCWs):

```
SHARED=N
```

All devices must be generated as High Function Graphics Devices (HFGDs):

```
IODEVICE UNIT=HFGD
```

2.3.1   VM SYSGEN

For VM, all control units must be generated as High Function Control Units (HFCUs).

RCTLUNIT Macro Instruction

The format for the RCTLUNIT macro instruction is as follows:

```
RCTLUNIT ADDRESS=address,
      CUTYPE=HFCU,
      FEATURE=32-DEVICE
```

RDEVICE Macro Instruction

The format for the RDEVICE macro instruction is as follows:

```
RDEVICE ADDRESS=(address,number),
      DEVTYPE=HFGD
```

2.3.2   MVS SYSGEN

IODEVICE Macro Instruction

The format for the IODEVICE macro instruction is as follows:

```
IODEVICE ADDRESS=(address|address,number of units),
      UNIT=HFGD
```

2.3.3   IOCP Definition for 5080

CNTLUNIT Macro Instruction

Use the CNTLUNIT macro to define the 5088 Graphics Controller to the I/O configuration. Possible values for the PROTOCOL parameter include D (DC-interlock), S (3MB streaming), and S4 (4.5MB streaming). The recommended format for the CNTLUNIT macro instruction is as follows:

```
CNTLUNIT CUNUMBR=number,
      PATH=(chp id {,chp id}...),
      PROTOCOL=S4,
      SHARED=N,
      UNIT=5088,
      UNITADD=((address{,number})...)
```

IODEVICE Macro Instruction

Use the IODEVICE macro to define the graphics system to the I/O configuration. The format for the IODEVICE macro instruction is as follows:

```
IODEVICE ADDRESS=(address{, number}),
      CUNUMBR=(number{,number}...),
      UNIT=HFGD,
      STADET=N
```

2.4   The Next Step

Once you have received the necessary host SYSGEN information from the IBM host programmer, either you or the FE who installs your ICA board is ready to configure the gateway. Go to Chapter 3, "Configuring the IRIS Channel Adapter."

If an FE will be configuring the gateway, provide the engineer with a diagram of the ICA gateway relative to the workstations it supports.

Include in the layout the channel adapter workstation name (as specified in its local */etc/sys_id* files) or its IP address. As you install the 5080 Emulator or 3270 Emulator on various workstations, you need to enter the channel adapter name or IP address in the gateway field of each emulator's configuration utility. For details about emulator configuration, see the user guide for your specific emulator.

Chapter 3

Configuring the IRIS Channel Adapter

This chapter describes how to configure the IRIS Channel Adapter (ICA), including:

- how to interpret and use information from the Input/Output Configuration Program (IOCP) file to configure the ICA

- how to start and use the IRIS Channel Adapter configuration program *configICA*

- how to save, cancel, and store ICA configuration changes

- how to configure various aspects of the ICA, including the board number, channel transfer mode, channel addresses, and device types

- how to configure more memory for active devices

- how to configure optional gateway features

You should already have followed the steps in Chapter 2, "Preparing for System Generation (SYSGEN) and Configuration" to obtain SYSGEN parameters. You will need the output of the SYSGEN process, which is the IOCP file, to configure the ICA.

3.1   Interpreting IOCP Information

To configure the IRIS Channel Adapter, you should have a copy of the IOCP file (a printout or equivalent) from the IBM host system programmer. It should describe the addresses and corresponding device types with which the host is set up to communicate.

Figure 3-1 shows an example of host SYSGEN information contained in an
IOCP file.

```
*------------------------------------------------------------------*
* CHANNEL # 6 DEVICES                                              *
*------------------------------------------------------------------*
LVCA640 CNTLUNIT PATH=(26),SHARED=N,PROTOCL=S4,                    +
        UNIT=3274,UNITADD=((40,16)),CUNUMBR=640
LVCA64A IODEVICE UNIT=3279,ADDRESS=(640,16),CUNUMBR=640,MODEL=2A,+
        FEATURE=(DOCHAR,EBKY3277,KB78KEY,AUDALRM),STADET=N
LVCA650 CNTLUNIT PATH=(26),SHARED=N,PROTOCL=S4,                    +
        UNIT=5088,UNITADD=((50,16)),CUNUMBR=650
LVCA65A IODEVICE UNIT=HFGD,ADDRESS=(650,16),CUNUMBR=650,STADET=N
*------------------------------------------------------------------*
```

Figure 3-1   Example of IBM Host Configuration Information

The example in Figure 3-1 shows 32 addresses, with 16 configured for 3270
devices and 16 for 5080 devices. The channel number shown at the top is 6. The
information you need to configure the IRIS is explained below:

PROTOCL=   indicates the channel transfer mode.
            D represents DC-interlock.
            S represents 3MB streaming.
            S4 represents 4.5MB streaming.
            (Note that all devices defined for the same ICA board address
            range must use the same channel transfer mode.)

IODEVICE UNIT=
            indicates the device type of the terminal emulator.
            3279 represents 3270-model terminals.
            HFGD (High Function Graphics Devices) represents
            5080-model devices.

ADDRESS=   provides two numbers: the starting channel address of a block
            of device addresses, followed by the number of addresses in
            the block. The first number is hexadecimal and the second is
            decimal. For example, ADDRESS=(600,16) means 16 devices
            are mapped to addresses 600 through 60F.

3.2 Starting the IRIS Channel Adapter Configuration Program

The software that configures the IRIS Channel Adapter requires a graphics monitor. If there is no graphics monitor on the workstation or server in which you are installing the ICA board, you must log in to the system over the network (for example, using *rlogin*) from a remote workstation or server that has a graphics monitor.

- If the system in which you installed the ICA board has a graphics monitor, proceed with Section 3.2.1, "Configuring on the Local Gateway System," next.

- If the system in which you installed the ICA board does not have a graphics monitor, skip ahead to Section 3.2.2, "Starting the ICA Configuration Program from a Remote System."

3.2.1 Configuring on the Local Gateway System

If the system in which the ICA board is installed has a graphics monitor, start the ICA configuration program. Follow these steps:

1. Log in as root.

2. Enter the following line to move to the directory containing the configurator:

   ```
   # cd /usr/CommSet/ica
   ```

3. To start the configurator, enter:

   ```
   # ./configICA
   ```

3.2.2 Starting the ICA Configuration Program from a Remote System

To run the ICA configuration software from a remote workstation or server, follow these steps:

1. From the remote system, open a window shell.

2. Using the *rlogin* command, log in to the system in which you have installed the ICA board. For example, if the system with the ICA board is called *khyber*, you would enter the following command:

   ```
   % rlogin root@khyber
   ```

3. At the *khyber* root prompt, verify that the *DISPLAY* environment variable is set correctly:

```
# echo $DISPLAY
```

The DISPLAY variable should be set to display 0 on the name of the remote system, for example:

```
 remotesys:0
```

If the DISPLAY variable is not set correctly, set it using this command (for *csh*):

```
# setenv DISPLAY remotesys:0
```

For *sh* or *ksh*:

```
# DISPLAY=remotesys:0 ; export DISPLAY
```

4. Run the ICA configuration command:

```
# cd /usr/CommSet/ica
```

```
# ./configICA
```

If the ICA configuration program fails to display on the remote system, try again using the *-d* option to set the display name explicitly:

```
# ./configICA -d remotesys:0
```

If the *configICA* program fails to display on your screen, even if you specify the display with the *-d* option, verify that the local system allows remote programs to access its X display server. Setting access permissions for the X display server is done with the *xhost*(1) command.

For example, to allow programs running on the remote system *khyber* to access the display on the current workstation, follow these steps:

1. Log in as root on the workstation whose display you want to use.

2. Enter:

```
# xhost +khyber
```

3. This allows any program running on *khyber* to access the local system's display.

4. When you are finished configuring the ICA, you can return the display access permissions of the local workstation to what they were previously with this command:

    ```
    # xhost -khyber
    ```

For more information about using *xhost*, see the *xhost*(1) manual page and the *IRIX Advanced Site and Server Administration Guide*.

3.2.3 Using the ICA Configuration Program

The IRIS Channel Adapter Configurator window is displayed. The message panel, located at the top of the window just under the menu bar, displays a message telling you which board you are about to configure. The default is 0 (zero).

Figure 3-2 shows the IRIS Channel Adapter Configurator window as it would appear after the devices described in Figure 3-1 have been configured.

[Paste In Figure of Channel Adapter Configuration Window]

Figure 3-2   IRIS Channel Adapter Configurator Window

During configuration, messages confirming your actions or describing errors
will be displayed in the message panel of the configurator window.

Note: To save your configuration choices, you must select either the "Done"
or "Save" option on the File menu.

3.3　Selecting the Channel Adaptor Board Number

When the IRIS Channel Adaptor Configurator window first appears, a message tells you the number of the board you are configuring. The default is 0. You can have up to four channel adapter boards in the IRIS, numbered from 0 to 3. To select the board number you wish to configure:

1.　Move the mouse cursor to the Board Number selection bar.

2.　While holding down the left mouse button, move the slider until the desired board number appears above the bar, then release the mouse button.

3.　If you have a single board in the system, it should be configured as board 0 (zero).

3.4　Configuring Channel Transfer Mode

The channel transfer mode for the channel adaptor can be:

- DC-Interlock
- 3MB streaming
- 4.5MB streaming

When you click on this option field, a menu displays from which you can select the desired channel transfer mode. The three modes displayed match IOCP device definitions PROTOCOL=D, PROTOCOL=S, and PROTOCOL=S4, respectively.

3.5　Configuring Channel Addresses and Device Types

A channel address has two parts, a channel number and a subchannel address, as explained in Chapter 2. You specify the two parts separately, as described in the following sections.

3.5.1   Specifying the Channel Number

To specify the channel number of the device you are configuring, double-click with the left mouse button on that field, then type the hexadecimal channel number in the Channel Number field.

You can enter a single-digit number alone (without a leading blank) or preceded by a zero. A single-digit number preceded by a blank will not be accepted by the configuration program. Figure 3-3 shows an example of correctly and incorrectly specifying a single-digit channel address:
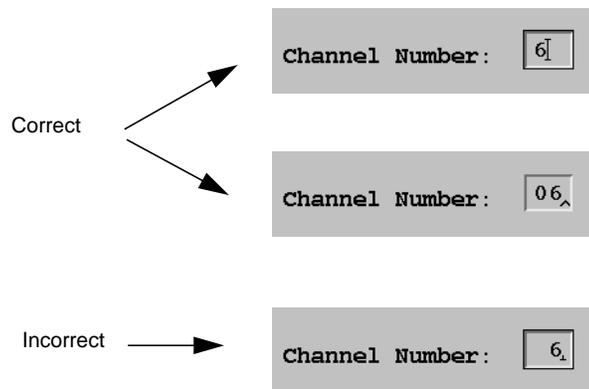
Figure 3-3   Specifying a Single-digit Channel Address

3.5.2   Specifying the Subchannel Address and Device Type

You specify both the subchannel addresses and device types for the terminal emulators by selecting boxes on the grid labeled Subchannel Device Types. The numbers along the side of the grid represent the first hexadecimal digit of the two-digit subchannel address. The numbers along the top of the grid represent the second digit of the subchannel address.

For example, to specify a device at subaddress 1F:

1.   Move the cursor to the row with 1 beside it.

2.   Move along the row until you reach the column labeled F.

3. Click with the left mouse button.

Notice each time you click on a box, the device type changes. Clicking the left mouse button cycles through the following device types:

- 3270

- 5080 (which can also be used for FastFile)

- no device type (blank)

When no device type is selected, that address is not enabled for communication. For FastFile transfers, select the 5080 device type.

3.5.3 Selecting a Range of Subchannel Addresses

Usually you need to specify a range of subchannel addresses for a particular device type. The Device-definition Range Size selection bar provides a shortcut to doing this without having to individually select each address.

To select a range of addresses:

1. Move the mouse cursor to the Device-definition Range Size selection bar.

2. With the left mouse button held down, move the slider until the number of devices needing addresses appears above the bar, then release the mouse button.

3. On the Subchannel Device Types grid, click on the first address in the block of addresses you want to define, until the desired device type appears. All the boxes representing addresses in the chosen range will display the selected device type.

   For example, to define subaddress 40 to 4F as 3270 device types, move the slider to 16, then click on the box representing device 40.

3.6   Saving, Canceling, and Restoring the Configuration

Use the File menu options to save, cancel, or restore configuration changes. The File menu is displayed when you click on "File" in the upper left corner of the IRIS Channel Adapter Configurator window.

Note: Configuration changes are downloaded to the ICA board only when the gateway starts. If you make configuration changes, they do not take effect until you stop the gateway (if it is running) then restart it.

3.6.1   Saving the Configuration

To save your configuration choices, select the File menu "Save" option.

To save your choices and exit the configurator, select the File menu "Done" option.

3.6.2   Exiting without Saving

To exit the configurator without saving changes you made, select the File menu "Cancel" option.

3.6.3   Restoring Previous Configuration Parameters

If, after making configuration changes, you want to cancel your changes and start over without having to exit the configurator, select the File menu "Re-read" option. The previously saved configuration parameters will be read from disk and displayed in the configurator window.

3.7   Configuring More Memory for Active Devices

The *ica* driver allocates buffer memory based on the number of active devices the gateway is expected to support. This number is configured into the UNIX kernel from the *numClients* parameter in the file */usr/sysgen/master.d/ica*. For the default configuration of 16 devices per board, the *ica* driver allocates 392KB of memory.

Configure more memory if:

- you configure significantly more than 16 devices to the channel adapter
- you expect the devices will be fully used or heavily used
- the gateway process drops connections and writes an "insufficient memory" error message to the *gate_logN* file (for board number *N*)

To configure the *ica* driver to allocate more memory for devices, use the following procedure:

1. Enter the following line to move to the directory containing the driver configuration files:

   ```
   # cd /usr/sysgen/master.d
   ```

2. Use an IRIX editor to open the channel adapter driver configuration file *ica*. For example:

   ```
   # vi ica
   ```

3. Edit the *numClients* parameter to indicate the number of devices you want to configure for the board. The default *numClients* parameter has the following form:

   ```
   int numClients[ ] = {16, 16, 16, 16}
   ```

   The numbers in curly brackets indicate the number of devices per board, for up to four boards. The first number corresponds to the first board (board 0), the second number to the second board (board 1), and so forth. The *ica* driver ignores values for any boards that are not installed. For example, if only board 0 is installed, the driver ignores the remaining three values.

   For example, to configure the first board (board 0) to support 32 devices, edit the *numClients* parameter as follows:

   ```
   int numClients[ ] = {32, 16, 16, 16}
   ```

   To configure board 2 to support 24 devices, edit the *numClients* parameter as follows:

   ```
   int numClients[ ] = {16, 16, 24, 16}
   ```

   For each board, the driver allocates 3N + 50 pages of memory, at 4KB per page. It uses the *numClients* value for the board to equal N. For example, if *numClients* is set to 32 for board 0, the driver would allocate:

   ((3 x 32) + 50 pages)*4KB = 584KB memory

Each IRIS Channel Adapter board can support the following number of sessions:

- up to sixteen (16) simultaneous 5080 sessions, or

- up to thirty-two (32) simultaneous 3270 sessions, or

- when you configure for both 5080 and 3270 sessions, each 5080 session you configure subtracts from the maximum number of 3270 sessions (32) that you can run. For example, if you configure for eight (8) 5080 sessions, you can configure a maximum of twenty-four (24) 3270 sessions. Or, if you configure for sixteen (16) 5080 sessions, you can configure for up to sixteen (16) 3270 sessions.

You can configure up to thirty-two (32) devices per board.

4. Rebuild the kernel and reboot the gateway system to make the change take effect.

3.8   Configuring Optional Gateway Features

The ICA gateway provides some optional features that may be defined through an ASCII configuration file in the directory */usr/CommSet/ica*. These features include:

tn3270 support

> The gateway process uses a proprietary protocol in its communications with the IRIS 5080 and 3270 emulations. In order to support third-party 3270 emulations that do not use this protocol, the gateway can be configured to open an additional port for tn3270 messages. If you do not need tn3270 support, do not define this port.

device-reservation system

> You can reserve specific device addresses for specific workstations. In this way, emulation sessions originating on particular workstations can always have the same device addresses. This saves having to set up the address on each individual client workstation.

To enable either of these features, refer to the *gateway_params*(1M) manual page. These parameters may be defined at any time, either during the installation or afterward.

Chapter 4

Operating the IRIS Channel Adapter Gateway

This chapter provides procedures for operating the IRIS Channel Adapter gateway.

Operating procedures include using the *gateway* command to:

- restart the gateway
- use diagnostic tracing
- reset workstations and servers
- read gateway status information
- stop the gateway process
- display help information

This chapter also describes where to read system and error message information.

4.1   Issuing Gateway Commands

Log in as *root* to use the *gateway*(1M) command. Since the directory containing the *gateway* commands is not typically in the command search path of the *root* account, you should use the following command to change to the directory containing the *gateway* software:

```
# cd /usr/CommSet/ica
```

4.2   Restarting the Gateway

Once you install the IRIS Channel Adapter software, the gateway process starts automatically in the background every time you boot the channel adapter workstation or server. The gateway process is automatically started by the */etc/rc2.d/S55ica* script and stopped by the */etc/rc0.d/K15ica* script. Normally, you do not have to start the gateway manually.

However, if during operation you need to stop the gateway process, you can restart it in the background again by entering the following command line:

```
#./gateway &
```

Wait for the "on-line" message.

The gateway process runs continuously as a background process on each channel adapter workstation or server. Users can start and stop 5080 Emulator, 3270 Emulator, or FastFile sessions without having to stop or restart the channel adapter.

Note: The 5080 Emulator, 3270 Emulator, and FastFile products use the same gateway process. If you have already started the gateway process on a workstation for one of these products, you do not need to restart the gateway to support an additional emulation product. If unsure, use the following command line to check if the gateway process is already running:

```
# ps -ef | grep gateway
```

4.3   Using Diagnostic Tracing

If you have system problems, you might need to run diagnostics that trace the gateway software or board activity, so you can provide trace information to a support representative. Two kinds of tracing are provided with the IRIS Channel Adapter:

- gateway process tracing
- board tracing

4.3.1   Using Gateway Tracing

Gateway tracing has a long and short form and can be started in two ways: in conjunction with starting the gateway process and during gateway operation.

Starting and Stopping Gateway Tracing

The following command starts the gateway with gateway tracing turned on and records all trace data:

```
# ./gateway -t
```

Most of the time, you need only the headers and the first few bytes of the trace data. The following command line starts the gateway with short-form gateway tracing, which records only the first 56 bytes of every trace message:

```
# ./gateway -ts
```

We recommend using short-form tracing for performance reasons and because of trace-file size constraints. (See below.)

You can turn gateway tracing on and off during gateway operation, without having to restart the gateway process. The following command line turns tracing on if it is off, or off if it is already on:

```
# ./gateway -o
```

If gateway tracing is turned on, the gateway process continually traces all messages to and from the ICA board and the network.

The trace software writes information to a file called *trace_fileN*, where *N* is the number of the channel adapter board. The default file is *trace_file0* for a single-board configuration. The file is placed in the */usr/CommSet/ica* directory.

If the trace file grows larger than 1 million bytes, the file is truncated, all data is discarded, and file tracing restarts at the beginning of the file.

Formatting Gateway Tracing

Although your support representative may use the binary trace file to help you solve a problem, most likely you won't need to use the trace information yourself. However, if you need to read the file for some reason, this section describes how to extract and format various information from the trace file.

To read the gateway trace information, you first need to format it. The *formatGWtrace* command reads the trace information from the file *trace_fileN* (*N* is the board number) and writes it to an ASCII file. If you do not specify a board number, the *formatGWtrace* command reads the default *trace_file0* (for board 0).

The *formatGWtrace* command takes the following syntax:

```
./formatGWtrace -bN -t<target_id> -n -i <trace_file>
```

The command line uses the following optional parameters:

-b*N*   formats the trace file *fileN*, where *N* indicates the board number. In a multiboard system, boards are numbered from 0 to 3. The default for a single board is -b0.

-t*<target_id>*   prints only the trace records for the specified connection ID.

-n   traces only network messages sent to or received from connected terminal emulation devices.

-i   traces only messages sent to or received from the IRIS Channel Adapter.

<trace_file>   replaces the *-b* parameter in formating a trace file that has been renamed.

For example, to format the trace information from the default file *trace_file0* and write it to the ASCII file named *gate0.doc*, enter the following command line:

```
# ./formatGWtrace > /usr/tmp/gate0.doc
```

To format the trace information for board 3 (stored in the file *trace_file3*) and write it to a file named *gate3.doc*, enter the following command line:

```
# ./formatGWtrace -b3 > /usr/tmp/gate3.doc
```

4.3.2   Using Board Tracing

Board tracing writes board activity as binary data to a memory buffer on the channel adapter board. You can only turn board tracing on by stopping the gateway, then restarting it with the *-T* flag.

To turn on board tracing, first stop the gateway. Then, restart the gateway with the following command:

```
# ./gateway -T
```

See Section 4.7, "Stopping the Gateway" for complete information about stopping the gateway.

To read board, trace data, first move to the diagnostics directory by entering the following command line:

```
# cd /usr/CommSet/ica/diags
```

Then use the *getICAtrace* command to move the data to a file. Finally, use the *formatICAtrace* command to format the data as ASCII text. These commands are described in the following sections.

Retrieving Board-Trace Data

The *getICAtrace* program retrieves board-trace data and writes it to a binary file. The command takes the following syntax:

```
./getICAtrace -bN binary_filename
```

This command line uses the following optional parameters:

-b*N*   *N* indicates the board number. In a multiboard system, boards are numbered from 0 to 3. The default for a single board system is -b0.

binary_filename specifies the name of the file to which the trace data is written. The default file name is *ica_trace*.

For example, if you are using the default board number 0 and want the trace data written to the default file *ica_trace*, enter the following command line:

```
./getICAtrace
```

Formatting Board-Trace Data

The *formatICAtrace* command reads the binary file created by *getICAtrace* and formats the data into ASCII characters. It writes the ASCII data to a file. The command takes the following syntax:

```
./formatICAtrace binary_filename > ASCII_filename
```

This command line uses the following parameters:

binary_filename   (optional) specifies the name of the file in which *getICAtrace* has stored binary trace data. The default binary file name used by both *getICAtrace* and *formatICAtrace* is *ica_trace*.

ASCII_filename   (required) specifies the name of the ASCII file to which the reformatted data is written.

For example, to read the default binary file *ica_trace* and format the data to an ASCII file called *trace0.doc*, enter the following command line:

```
# ./formatICAtrace > /usr/tmp/trace0.doc
```

4.4   Resetting the Gateway

Sometimes after an operational error, the gateway process and ICA board might need to be reset. This command resets the gateway process and an ICA board in a workstation or server:

```
# ./gateway -r -bN
```

In the above command, *N* is the board number (by default, board 0).

If the gateway process is not running, you can also reset the board with the following command:

```
# ./diags/resetICA
```

This command sends the same software reset message to the ICA board as starting the gateway with the *gateway* command or resetting the gateway process with *gateway -r*.

Note that after some kinds of errors, using the software reset command to reset the ICA may not correct the problem. You might have to shut down or reset the entire gateway workstation or server. Refer to either the *Personal System Administration Guide* or the *IRIX Advanced Site and Server Administration Guide* for complete instructions on shutting down or resetting the system.

4.5 Resetting User Emulation Sessions

Occasionally, a terminal emulation session hangs abruptly, and you might need to reset that session. You can reset an emulation session from the gateway machine using the *gateway* command.

The following command line resets a specific emulation session:

```
# ./gateway -rN
```

In this command, *N* is the channel address of the session you want to reset. For example, to reset a session with channel address 630, you would enter the following command line:

```
# ./gateway -r630
```

You can also reset a channel address on a specific board with the *-bN* option, where *N* is the board number. The default board number is 0 (zero).

4.6 Reading Gateway Status Information

Issue the following command to get status information about the gateway process running on the channel adapter:

```
# ./gateway -s
```

In response to this command, the gateway process writes information about active sessions in the *gate_logN* file for channel adapter board number *N*. To read the gateway status, open the *gate_logN* file, or issue the status command followed by the UNIX *tail*(1) command:

```
# ./gateway -s
# tail gate_logN
```

If you want to watch status messages as they are appended to the log file, use the *-f* option to the *tail* command:

```
# tail -f gate_logN
```

Press < **ctrl-c**> to stop the *tail* process.

Status information indicates the device address of workstations engaged in active sessions through the channel adapter, the type of session, and the workstation network address. For example:

```
Gateway channel status:
    Address 650 has a 5080 session from ladyhawk.wpd.xyz.com
    Address 640 has a 3270 session from hollywood.wpd.xyz.com
```

4.7   Stopping the Gateway

Stopping the channel adapter gateway process severs the communications link between the IBM host and workstations that have active emulation sessions with the host.

Caution: Stopping the gateway process will cause a nonrecoverable break in host communication for all emulation sessions.

Before stopping the gateway process, check the gateway status (as described in the preceding section) to see if there are 5080 Emulator, 3270 Emulator, or FastFile sessions communicating with the host. Be sure to notify active users that you are about to stop the gateway process.

You can stop the gateway process with or without sending a warning message to users.

4.7.1   Stopping the Gateway with Warning

To stop the gateway process with a 60-second warning, enter the following command line:

```
# ./gateway -w
```

The gateway issues the following warning to all workstations running emulation sessions:

```
Gateway will come down in 1 minute, please log off.
```

It then waits 60 seconds, terminates all currently active emulation sessions, and shuts down.

4.7.2   Stopping the Gateway without Warning

If you have already warned active users that you are stopping the gateway, or if no sessions are active, you can issue the following command to stop the gateway without warning:

```
# ./gateway -q
```

When you terminate the gateway process without warning, all currently active emulation sessions are terminated before the gateway process is stopped.

4.8   Displaying Help

You can use either of the following two commands to display usage information about the gateway process:

```
# ./gateway -?
```

or

```
# ./gateway -h
```

For more detailed help, refer to the *gateway*(1) online manual page:

```
# man gateway
```

4.9   Retrieving Error Messages

When an operational error occurs in the gateway process, the gateway writes an error message to the ASCII file *gate_logN* in the */usr/CommSet/ica* directory. The *N* in the file name represents a board number from 0 to 3. The default file name is *gate_log0*.

Error messages generated by the gateway process are described in Appendix A of this guide.

To read error messages, use your text editing program to open the *gate_logN* file. You can also use the following command line after any *gateway* command to display *gate_logN* messages on your screen:

```
# tail gate_logN
```

If you want to continuously display messages in a window, you can use the *-f* option to the *tail* command:

```
# tail -f gate_logN
```

Press <**ctrl-c**> to stop the *tail* process. You can also run the tail process in the background:

```
# tail -f gate_logN &
```

Appendix A

Software Messages and Error Recovery

Messages generated by the gateway process provide information, confirm successful operation, or notify the operator of errors. IRIS Channel Adapter gateway messages can be sent to one or both of two general places:

- The gateway process sends messages to the *gate_logN* file (where *N* is the board number) on the gateway machine, and writes to standard output.

- If the gateway process was started from a shell prompt, error messages are sent to the standard output from which the process was started (such as a window shell or a terminal screen) as well as to the *gate_logN* file.

There are two caveats to the above model:

- When the gateway process is started at boot time, standard output is redirected to */dev/null.*

- If you start the gateway process from a shell prompt and you exit from the shell, any error messages that would have been written to the standard output are lost.

This chapter lists the messages produced by the channel adapter gateway and suggests operator responses. These messages are organized into sections according to message type.

A.1   Connection Failures

Message: `Bad channel number in request from node NODE.`

Response: In this message, *NODE* is the name of a workstation requesting an emulation session through the channel adapter. The request is addressed to a channel number that does not match the one configured for the channel adapter.

Use the emulator configuration program running on the client workstation to reconfigure the channel address to match the channel number of the channel adapter. (Refer to Chapter 2 and Chapter 3 for a discussion of channel addresses.)

Message: `Invalid device in request from node NODE.`

Response: In this message, *NODE* is the name of a workstation requesting an emulation session through the channel adapter. The workstation subchannel address does not match any of the ones configured on the channel adapter.

Use the emulator configuration program running on the client workstation to reconfigure the subchannel address to match one of those expected by the channel adapter. Verify that the subchannel address matches one of those created in the SYSGEN process. (Refer to Chapter 2 and Chapter 3 for a discussion of channel addresses.)

Message: `Device ADDRESS requested by node NODE is in use.`

Response: A terminal emulator tried to open a channel address that was in use, or the emulator requires resetting. In an actual error message, address is indicated by *ADDRESS* and the name of the workstation that tried to use the address is indicated by *NODE*.

Use the *gateway -s* command to determine who is currently using the address. Depending upon what the *gateway* command reports, there are several possible solutions.

There may be a simple conflict where one user has started an emulation session with an address that is reserved for another user. Resolve the conflict by contacting the person using the incorrect address and notifying him or her of the correct address to use.

If there is no conflict with another user attempting to run an emulation session using the same address, reset the gateway with this command:

```
# gateway -rN
```

In this command, *N* is the channel address that is reported as being in use.

If resetting the gateway does not correct the problem, check for a frozen emulation session on the workstation that is using the address. Even if no emulation windows are running on the workstation, it is possible a session failed to exit properly when it was closed. Log in as *root* to the workstation that was using the address and run the *ps -aef* command. If you see an emulation process that is not supposed to be running, terminate it with the *killall*(1) command. See the *killall*(1) manual page for more information about killing processes.

Note that killing 5080 processes may leave the emulator in and inconsistent state. The IRIS 5080 Terminal Emulation software includes a program called *clean_pgm* that you might have to run after killing a 5080 emulation session on a workstation. If you are using the IRIS 5080 Terminal Emulator, refer to the *5080 Emulator User's Guide* for information abotu running *clean_pgm*.

Message: `Terminating connection (insufficient memory).`

Response: The gateway process does not have access to enough memory to support all the devices using it. Increase the value for the *numClients* parameter in the */usr/sysgen/master.d/ica* file to support the number of devices that will communicate through the channel adapter. For details about the *numClients* parameter, refer to the section "Configuring More Memory for Active Devices" in Chapter 3.

A.2   Success Messages

Message: `DMA pages successfully allocated (X read, Y write, Z indirect).`

Response: This message requires no action on your part. It indicates the pages of Direct Memory Access (DMA) buffers allocated in response to the setting of the *numClients* parameter located in the file */usr/sysgen/master.d/ica*. In the actual error message, *X*, *Y*, and *Z* are replaced by values that are determined according to the following formulas, in which *N* represents the *numClients* setting:

- $N/2 + 17$ read

- $2N + 16$ write

- $N/2 + 17$ indirect

Message: `Initialization complete`

Response: This message requires no action. It indicates the gateway process is ready to accept connections.

A.3   Permissions Problems

Message: `Open of gateway PID file`
                `/usr/CommSet/ica/gate_pid[0-3] failed.`

Message: `Can't open device-type definition file`
                `/usr/CommSet/ica/config[0-3].`

Message: `Can't open reset address file`
                `/usr/CommSet/ica/gate_reset_address[0-3].`

Message: `Can't open gateway log file`
                `/usr/CommSet/ica/gate_log[0-3].`

Message: `Can't open gateway trace file`
                `/usr/CommSet/ica/trace_file[0-3].`

Response: To use the gateway software, you need correct permissions set for the */usr/CommSet/ica* directory. User *root* should have read/write permissions in the directory, and the sticky bit should be turned on for the *gateway* program file.

To set the sticky bit on, log in as root, change directories to */usr/CommSet/ica*, and enter the following command:

```
# chmod 4755 gateway
```

A.4   Installation and Configuration Problems

Message: `Can't open device-type definition file`
             `/usr/CommSet/ica/config[0-3]`

Response: The device definition file is created by the IRIS Channel Adapter Configurator when you use it to configure device types and addresses. Check to see if the file exists and is readable.

Message: `Device-type definition file`
             `/usr/CommSet/ica/config[0-3] is corrupted. Please`
             `reconfigure device types`

Response: Either the configuration file is corrupted or a new software release requires new configuration parameters that are not in the old file. Run the IRIS Channel Adapter Configurator (as described in Chapter 3), and reconfigure the emulation devices.

Message: `No devices defined in the configuration file.`
             `Exiting.`

Response: You tried to use the channel adapter without first configuring devices. Run the IRIS Channel Adapter Configurator, as described in Chapter 3, and define the channel addresses and device types that the channel adapter will support.

Message: `Unable to open device driver /dev/ica[0-3]`

Response: The device node might not have been created during installation or it might have been deleted.

             To verify that the device node exists, use the following command:

             ls -l /dev/ica*N*

In the above command, *N* is the board number specified in the original error message. If the *ls* command does not show the device node, run the following command (as *root*):

```
# /usr/sbin/install_ICA
```

The *install_ICA* command will create the proper device nodes and check other aspects of the ICA installation.

Check to be sure that the major and minor device numbers specified in the driver configuration file */usr/sysgen/master.d* file match those in the *ls -l* listing of the device node */dev/icaN*. Also, check the file */usr/adm/SYSLOG* for the ICA driver initialization string:

IRIS Channel Adapter Version *NNN*

In the initialization string, *NNN* is the version number of your ICA software. Check for messages that might indicate the ICA driver was not present in the system.

Finally, make sure that the kernel was built after the board was installed in the system. For more information about device driver files and automatically building a new kernel, see *master*(4), *system*(4), and *lboot*(1M) and the *IRIX Advanced Site and Server Administration Guide*.

Message: Driver could not allocate physical memory for dma.

Response: The driver could not allocate sufficient memory to support even a single device. This should not happen on a dedicated channel adapter system. If this error message occurs regularly, you should consider installing more memory in the workstation or server.

If the workstation or server is not a dedicated channel adapter system, making it so (to allow the most possible system memory to be used by the *gateway* process) might alleviate the problem. You might also be able to tune the operating system to use less memory. See the *IRIX Advanced Site and Server Administration Guide* for information about tuning system performance. However, if at all possible, installing additional memory is probably the best course of action.

A.5   System Errors

Message: `Error in mapping memory for ICA card`

Response: This message is accompanied by system error messages that
              indicate the cause of the problem. See the *IRIX Advanced Site
              and Server Administration Guide* for descriptions of various
              system error messages.

A.6   Host Reset Notification Messages

Message: `Received system reset notification from host.`

Response: This message occurs when the *Operational Out* signal on the
              channel is dropped by the host. This usually happens when
              the host is rebooting, or on an IPL, Selective Reset, or System
              Reset. This message should followed by the message
              `Received online notification from ICA` when the
              Operational Out signal is raised. at the completion of the reset
              or reboot operation. No action is required on your part at this
              point,

              However, if you do not see the message `Received online
              notification from ICA` when the channel is reactivated,
              you should reset or restart the gateway and report this to your
              service representative.

Message: `Received online notification from ICA`

Response: No action required. This message is logged whenever the
              channel is reactivated.

A.7   Hardware Problems

Message: `Unable to reset gateway hardware`

Response: The IRIS Channel Adapter board is not responding to the reset
              command (*gateway -r*). Shut down and power-cycle the
              channel adapter system. If failures continue, check the board
              for proper installation and switch settings.

Message:	`Could not bring the ICA device online!`
Response:	The IRIS Channel Adapter board could not go online on the channel. Check the board's connection to the channel. Make sure that the switch on the board's front panel is in the online position.
Message:	`Waiting for channel to be activated.`
Response:	The IRIS Channel Adapter board has detected that the *Operational Out* signal on the channel is down. This usually means that the host is down or the channel is de-activated. No action is required on the ICA gateway system. The ICA board will resume functioning when the channel is reactivated.

A.8   Network Messages

Message:	`Unable to bind listen address`
Response:	Another process might be using the address. The gateway processes for a four-board system uses sockets 22377, 22378, 22379, and 22380, respectively (for boards 0-3). To see if other processes are using any of these addresses, enter the following command line at a shell prompt:

`/usr/etc/netstat -a | grep 223`

This shows all processes that are binding to any of the sockets used by the gateway process. One problem to look for in the output of the above command is this:

`tcp 0 0 client.net.com..3730 server.net.com..22377 FIN-WAIT-`*N*

This shows an emulation session on the machine *client* that was in the process of quitting but has not completely exited. This can happen when a gateway process terminates but the emulation session that was connected to it does not close properly. In an actual error message, the value of *N* is either 1 or 2. The actual value of *N* is not important for the purposes of correcting the problem.

Either contact the user who was running the emulation session and ask him or her to properly close the emulation session, or log in to the remote workstation and kill the emulation process. Wait 1 to 2 minutes, then restart the gateway.

A.9 Responding to Unexpected Errors

The error messages listed at the end of this section require customer support. If you see one of these messages, use the following procedure to report the error condition to your customer service representative.

A.9.1 Reporting Unexpected Errors

When you read an unexpected error in the *gate_logN* file (where *N* is a number from 0 to 3 indicating the number of the IRIS Channel Adapter board), do the following:

1. Log in as *root* to the channel adapter system.

2. Enter the following line to move to the channel adapter software directory:

   ```
   # cd /usr/CommSet/ica
   ```

3. If the *gateway* process is not currently running, enter the following command to start the process and turn software tracing on:

   ```
   # gateway -ts
   ```

   If the gateway is running, but tracing is turned off, enter this command to toggle tracing on:

   ```
   # gateway -o
   ```

4. Repeat the action that caused the error condition.

5. Enter the following command to toggle tracing off:

   ```
   # gateway -o
   ```

6. Retrieve a copy of the trace file *trace_fileN* (where *N* is the board number).

7. Retrieve a copy of the board-trace data using the *getICAtrace* command. See Section 4.3.2, "Using Board Tracing" for a complete description of retrieving board-trace data. Place this file and the trace file from the previous step on a tape.

8. Send the following to your service representative:

    •   a tape containing copies of *trace_fileN* and the binary board-trace file

    •   a copy of the *gate_logN* file

    •   the device address of the emulation that was disconnected

    •   a brief description of the actions and events leading to the error condition

    •   the version number of the ICA product

A.9.2   Unexpected Error Messages

If you see any of the following messages, you should contact your service representative:

```
net_recv ( ) : Badly formatted message.

Incomplete open message.

Terminating, malformed attn message.

Terminating, received out_of_state SRMA/SWMA msg.

Terminating, malformed end SMA message.

Terminating, bad length in SRMA final msg.

Received unexpected device end_message.
```

```
Received unknown ATN message from talk5080.

Terminating connection (out_of_state Sel Rd Mem Area message).

Terminating connection (out_of_state Read data response).

Terminating connection (data msg with bad offset).

Terminating connection for device %x - received data when none
requested.
```

Software Messages and Error Recovery

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