PROM File Formatter Guide

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About This Manual

This manual describes Xilinx's PROM File Formatter program, a graphical user interface that allows you to create PROM files from individual Xilinx bitstream files.

Before using this manual, you should be familiar with the operations that are common to all Xilinx software tools. These operations are covered in the Quick Start Guide.

Manual Contents

This manual covers the following topics

- Chapter 1, "Introduction," introduces the PROM File Formatter.

- Chapter 2, "Getting Started," describes how to start the PROM File Formatter and use the PROM File Formatter interface. The chapter also describes the online help tool.

- Chapter 3, "Using the PROM File Formatter," explains how to create a new PROM file and open an existing PROM file, and how to use the PROM File Formatter to organize the contents of a new PROM file. The chapter also explains how to define the properties of your PROM file, retarget a PROM to multiple PROM devices, and save a PROM file.

- Chapter 4, "Menu Command Reference," describes each of the commands and dialog boxes available from the PROM File Formatter

- Appendix A, "Keyboard Shortcuts," lists the keyboard keys you can use as an alternative to the mouse to navigate in the PROM File Formatter and to select menu commands.

- Appendix B, "Multiple Configuration Setups," describes programming setups that you can use to support multiple applications in a system.

- "Glossary of Terms," defines the terms you should be familiar with to use the PROM File Formatter.

Additional Resources

For additional information, go to http://support.xilinx.com. The following table lists some of the resources you can access from this page. You can also directly access some of these resources using the provided URLs.

Resource	Description/URL
Tutorial	Tutorials covering Xilinx design flows, from design entry to verification and debugging http://support.xilinx.com/support/techsup/tutorials/index.htm
Answers Database	Current listing of solution records for the Xilinx software tools Search this database using the search function at http://support.xilinx.com/support/searchtd.htm
Application Notes	Descriptions of device-specific design techniques and approaches http://support.xilinx.com/apps/appsweb.htm
Data Book	Pages from *The Programmable Logic Data Book*, which describe device-specific information on Xilinx device characteristics, including readback, boundary scan, configuration, length count, and debugging http://support.xilinx.com/partinfo/databook.htm
Xcell Journals	Quarterly journals for Xilinx programmable logic users http://support.xilinx.com/xcell/xcell.htm
Tech Tips	Latest news, design tips, and patch information on the Xilinx design environment http://support.xilinx.com/support/techsup/journals/index.htm

Conventions

This manual uses the following conventions. An example illustrates each convention.

Typographical

The following conventions are used for all documents.

- Courier font indicates messages, prompts, and program files that the system displays.

  ```
  speed grade: - 100
  ```

- **Courier bold** indicates literal commands that you enter in a syntactical statement. However, braces "{ }" in Courier bold are not literal and square brackets "[ ]" in Courier bold are literal only in the case of bus specifications, such as bus [7:0].

  ```
  rpt_del_net=
  ```

  Courier bold also indicates commands that you select from a menu.

  File → Open

- *Italic font* denotes the following items.

  - Variables in a syntax statement for which you must supply values

    ```
    edif2ngd design_name
    ```

  - References to other manuals

See the *Development System Reference Guide* for more information.

♦ Emphasis in text

If a wire is drawn so that it overlaps the pin of a symbol, the two nets are *not* connected.

- Square brackets "[ ]" indicate an optional entry or parameter. However, in bus specifications, such as bus [7:0], they are required.

      edif2ngd *[option_name] design_name*

- Braces "{ }" enclose a list of items from which you must choose one or more.

      lowpwr ={**on**|**off**}

- A vertical bar "|" separates items in a list of choices.

      lowpwr ={**on**|**off**}

- A vertical ellipsis indicates repetitive material that has been omitted.

      IOB #1: Name = QOUT'

      IOB #2: Name = CLKIN'

      .

      .

      .

- A horizontal ellipsis "...." indicates that an item can be repeated one or more times.

      allow block   *block_name loc1 loc2locn;*

Online Document

The following conventions are used for online documents.

- Red-underlined text indicates an interbook link, which is a cross-reference to another book. Click the red-underlined text to open the specified cross-reference.

- Blue-underlined text indicates an intrabook link, which is a cross-reference within a book. Click the blue-underlined text to open the specified cross-reference.

Contents

Chapter 3   Using the PROM File Formatter 3-1

Chapter 4   Menu Command Reference 4-1

Appendix A Keyboard Shortcuts

Appendix B Multiple Configuration Setups

Glossary of Terms

Chapter 1

Introduction

This chapter introduces the PROM File Formatter. The chapter contains the following sections.

- "The PROM File Formatter"
- "What Is a Xilinx PROM File?"
- "PROM Description Area Display"
- "PROM File Formatter Files"
- "Implementing Your Applications"
- "Configuration Setups"
- "XILINX PROM Part Names"

The PROM File Formatter

The PROM File Formatter provides a graphical user interface that allows you to format BIT files into a PROM file compatible with Xilinx and third-party PROM programmers. It is also used to concatenate multiple bitstreams into a single PROM file for daisy chain applications. This program also enables you to take advantage of the Xilinx FPGA reconfiguration capability, as you can store several applications in the same PROM file.

PROM files are also compatible with the Xilinx Hardware Debugger software. You can use the Hardware Debugger to download a PROM file to a single FPGA or to a daisy chain of FPGA devices.

The PROM File Formatter performs the same function as the PROMGen program, which can be executed from the UNIX™ or PC command line. Refer to the Development System Reference Guide for details about PROMGen.
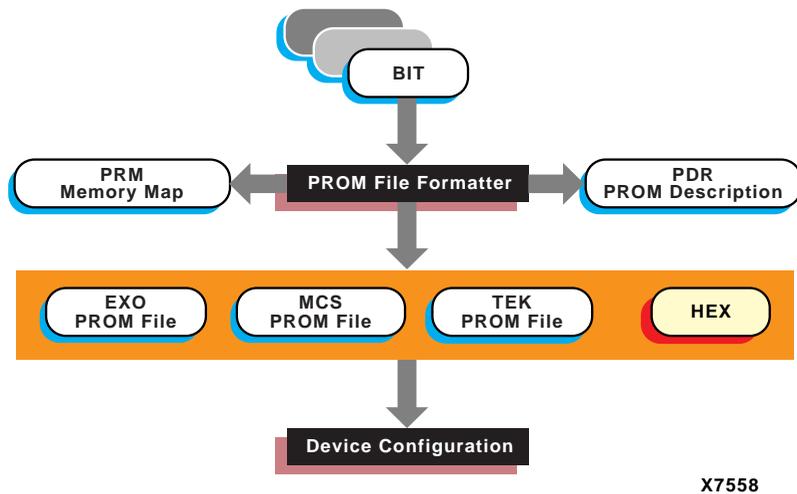
X7558

Figure 1-1 PROM File Formatter Data Flow

What Is a Xilinx PROM File?

A Xilinx PROM file consists of one or more data streams. In this context, a data stream represents all the configuration data required to implement a given application. Each data stream contains one or more BIT files and once saved, will have a separate preamble and length count. Figure 1-2 illustrates the structure of a PROM file.

The PROM file can be formatted in one of three industry standard formats: Intel MCS-86®, Tektronix TEKHEX, and Motorola EXOR-macs.

Note You can also format BIT files into a HEX format file. This file type is not considered a PROM file since you cannot use it to program PROM devices. A HEX format file is ordinarily used as input to user-defined programs for microprocessor downloads.

You can store PROM files in PROM devices or on your computer. In turn, you can use the files to program your FPGA devices either from a PROM device on your board or from your computer using a serial or parallel cable. Refer to the Hardware Debugger Reference/User Guide for more information
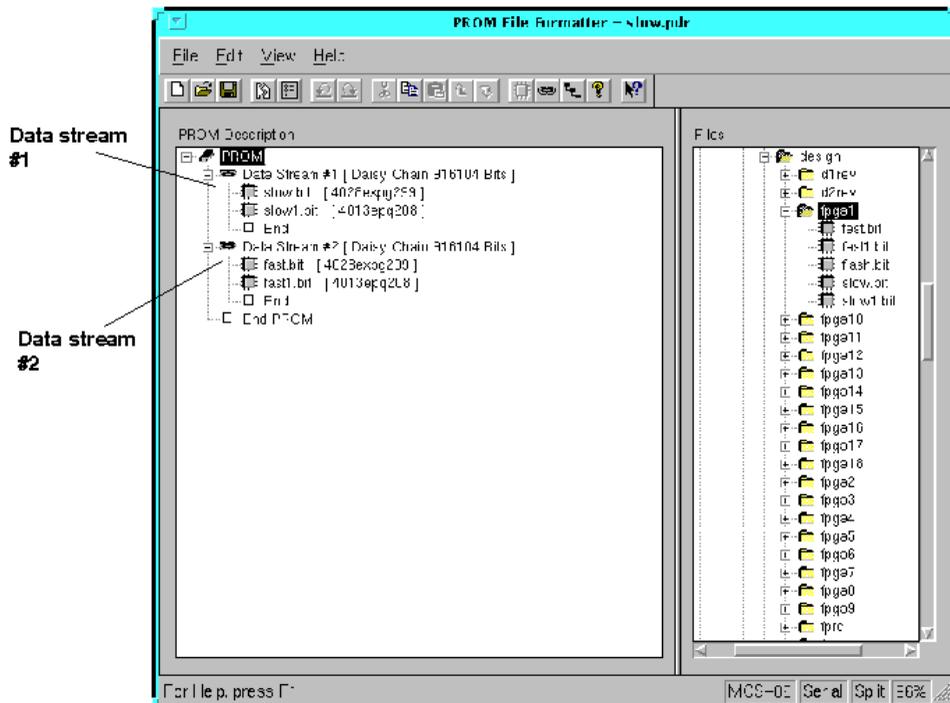
Figure 1-2 Configuration Data Streams

PROM Description Area Display

The PROM description area in the PROM File Formatter window represents the structure of your PROM file. It consists of one or more data streams. A data stream is a collection of one or more concatenated BIT files used to implement a single user application

- A data stream consisting of one BIT file contains data to configure a single device.

- A data stream consisting of more than one BIT file contains data to configure a group of devices connected in daisy chain fashion

The PROM description area display shows BIT files in the order they will be loaded into the devices on the chain. The top BIT file is loaded

into the first device, and the bottom BIT file is loaded into the last device.

Before programming a daisy chain of FPGA devices, you must first concatenate the BIT files together. Each BIT file corresponds to an FPGA in the daisy chain.

Figure 1-2 depicts the structure of a typical PROM file designed to configure a single daisy chain of devices in master mode. Data Stream #1 configures a daisy chain of two devices. Data Stream #2 reconfigures the same daisy chain to perform a different function.

PROM File Formatter Files

This section describes the PROM File Formatter input and output files.

Input Files

You can input one or more BIT files into the PROM File Formatter. A BIT file contains configuration information for a single FPGA device

Output Files

The PROM File Formatter generates the following files as outputs:

- PROM files—The file or files containing the PROM configuration information. Depending on the PROM file format your PROM programmer uses, you can output a TEK, MCS, or EXO file. If you are using a microprocessor to configure your devices, you can output a HEX file.

  If the data in the PROM File Formatter is going to be split into multiple PROMs, there will be a PROM file corresponding to each PROM.

- PDR file—A PROM description file. The file is an ASCII report file listing all the data streams and BIT files used to construct the PROM file, as well as the load direction and PROM file splitting information. A single PDR file describes all of the data in the PROM File Formatter. The PDR file has the same name as the PROM file and a .pdr extension.

The following is a sample PDR report file for a single data stream written in MCS-86 format. The Devices line indicates the data was split into three serial configuration PROMS.

```
# Created 1998/03/21 11:00:32
BeginProm
   Type    Serial
   Format MCS-86
   Info MaxAddress 0x00014642
   Devices Auto XC17256D XC17256D XC17256D
   BeginChain
      StartAddress    0x00000000
      Direction       UP
      Info EndAddress 0x00014642
      Info Size       0x00014643
      File "/design/fpga1/fpga1.bit"
   EndChain
EndProm
```

- PRM file—An ASCII file containing a memory map of the output PROM file. If the data in the PROM File Formatter is split into multiple PROM files, there will be a PRM file corresponding to each PROM file.

  The following is a sample PRM file.

```
PROM /design/fpga1/fpga100.prm map: Fri Feb 21
   11:00:50 1998
Format      Mcs86
Size        32K
PROM start  0000:0000
PROM end    0000:7fff
      Addr1       Addr2 File(s)
    0000:0000   0000:7fff /design/fpga1/fpga1.bit
```

Bit Swapping in PROM Files

The PROM File Formatter produces a PROM file in which the bits within a byte are swapped compared to the bits in the input BIT file. Bit swapping (also called "bit mirroring") reverses the bits within each byte, as shown in the following figure.

X8074
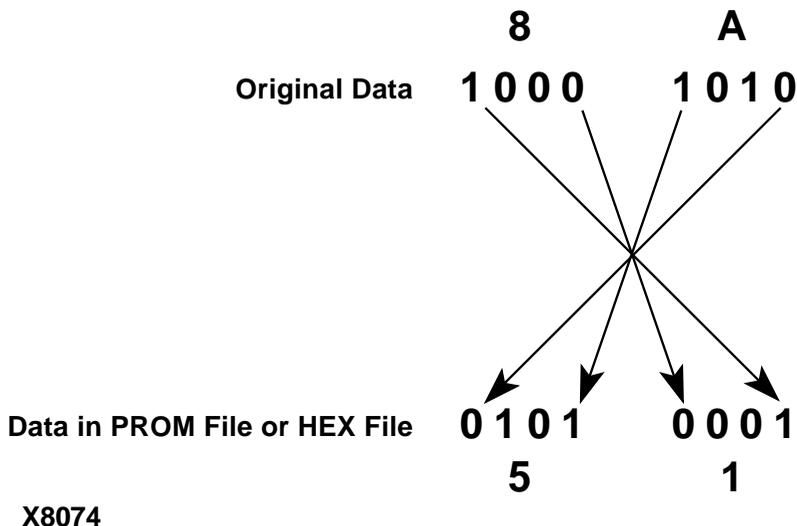
Figure 1-3 Bit Swapping

In a bitstream contained in a BIT file, the Least Significant Bit (LSB) is always on the left side of a byte. But when a PROM programmer or a microprocessor reads a data byte, it identifies the LSB on the right side of the byte. In order for the PROM programmer or microprocessor to read the bitstream correctly, the bits in each byte must first be swapped so they are read in the correct order.

In this release of the Xilinx Development System, the bits are swapped for all of the PROM formats: MCS, EXO, and TEK. For a HEX file output, bit swapping is on by default, but it can be turned off by deselecting a Swap Bits option that is available only for HEX file format.

In the XACTstep 6.0 release, all formats were swapped except for the HEX format. If you turn off HEX file bit swapping, you can generate a

HEX file that is compatible with a HEX file produced by the XACT 6.0 PROM File Formatter

Implementing Your Applications

You can use the PROM File Formatter to generate a PROM file containing data to configure a single FPGA device, or a PROM file to configure one or more groups of FPGA devices. You can also store multiple data streams in the same PROM file and use these data streams to reconfigure a device or daisy chain for different applications.

The following table summarizes the various ways of structuring a PROM file.

Table 1-1 Configuration Data Stream Combinations

Number of Applications	Number of FPGA Devices to Configure	Number of Data Streams and BIT Files
Single Application	Single device	One data stream with a single BIT file
	Daisy chain of devices	One data stream with multiple BIT files
	Multiple daisy chains of devices[a]	Multiple data streams with multiple BIT files in each data stream. Each data stream includes configuration data for a different daisy chain of devices.
Multiple Applications (Reprogramming)	Single device	Multiple data streams with a single BIT file in each data stream
	Daisy chain of devices	Multiple data streams with multiple BIT files in each data stream. Each data stream programs the group of devices for a different application

a. This type of application can be implemented with a byte-wide PROM only. Each data stream will use a different start-up address in the PROM file.

The following figure depicts the structure of a byte-wide PROM file loaded in master mode and designed to configure three daisy chains of devices. Data Stream #1 is for a daisy chain of two devices. Data

Stream #2 is for a second daisy chain of two devices. Data Stream #3 is for a single device
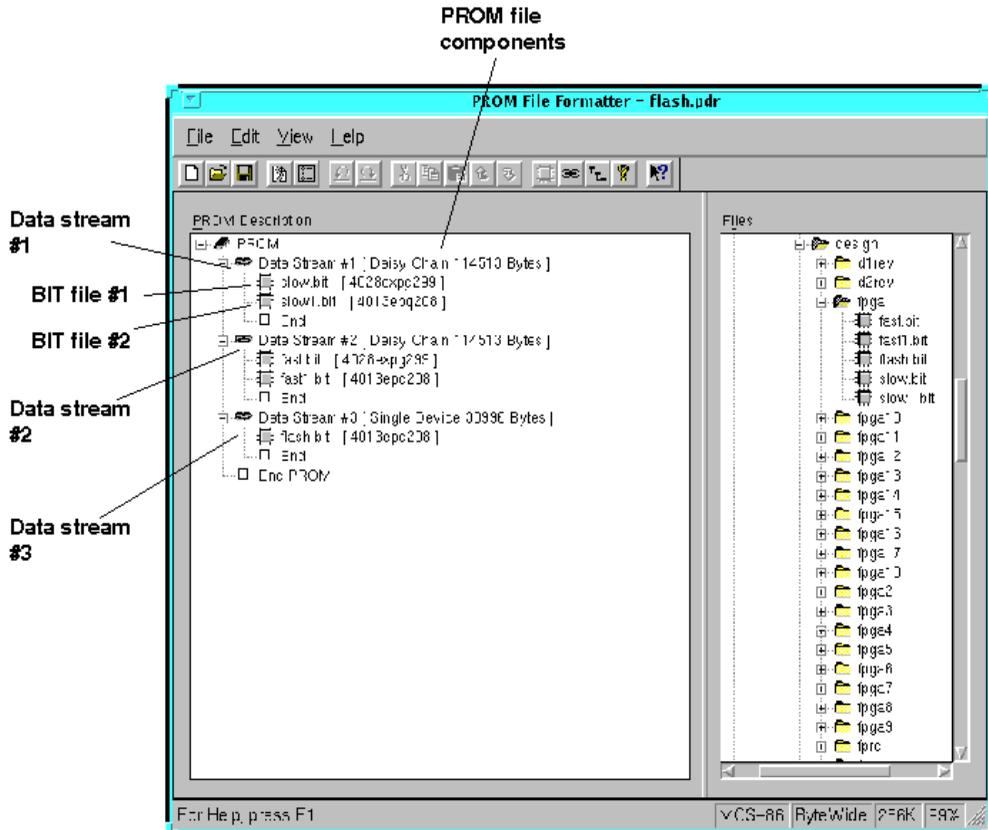
Figure 1-4 Configuration Data Streams for Multiple Daisy Chains

Single Application PROM Files

There are three different types of configuration data streams.

- Single Device

  To implement an application for a single device, use a data stream containing a single BIT file. Data Stream #3 in Figure 1-4 shows a configuration data stream for a single device.

- One group of daisy-chained devices

  To implement an application for a group of FPGA devices connected together in a daisy chain, use a single data stream containing multiple BIT files, that is, one BIT file for each device in the daisy chain. Data Stream #2 in Figure 1-4 shows a configuration data stream for a single daisy chain of devices.

- Several groups of daisy-chained devices

  To implement an application for several groups of daisy chained devices, you must build one data stream per daisy chain. Figure 1-4 is an example of a PROM file for multiple daisy chains of devices. This type of implementation is valid for byte-wide PROMs, which can be set for different start-up addresses, or for creating a bitstream for microprocessor download

Multiple Application PROM Files

The Xilinx SRAM FPGA technology allows you to design multiple applications for a single device or a daisy chain of devices. Each data stream in the PROM description area represents a different configuration or application for the same device or daisy chain of devices.

To implement several applications for a single device, build a PROM file made of several data streams, with each data stream containing a single BIT file. To implement several applications for a group of daisy chained devices, use several data streams containing multiple BIT files. Each data stream programs the group of devices for a different application.

Note The number of BIT files within each data stream must be the same.

Refer to Figure 1-4 for an example of a PROM file designed for multiple applications. In this figure, Data Stream #1 configures the daisy chain of devices with the "Slow" application. Data Stream #2 configures the same daisy chain with the "Fast" application. You can easily switch to the next application by reprogramming the FPGA from a PROM file formatted for multiple applications or from a microprocessor.

Configuration Setups

For information on setups for configuring FPGA devices and daisy chains for a single application, refer to The Programmable Logic Data Book. For information on setups to support multiple applications, see the "Multiple Configuration Setups" appendix

XILINX PROM Part Names

The part name for a Xilinx serial configuration PROM indicates the PROM's size and type. The fields in the part name are described in the following figure

XC17128EL

Xilinx Prefix
(Always XC)

Indicates this is a PROM Device
(Always 17)

PROM Size
(Approximate Kilobits)

Number	=	Configuration Bits
18	=	18,144
36	=	36,288
65	=	65,536
128	=	131,072
256	=	262,144
512	=	524,288
01	=	1,048,576

PROM Family

Letter(s) = Family
D = Standard 5 Volt PROM
E = 5 Volt PROM, smaller process
L = 3 Volt version of D Type
EL = 3 Volt version of E Type

X8073
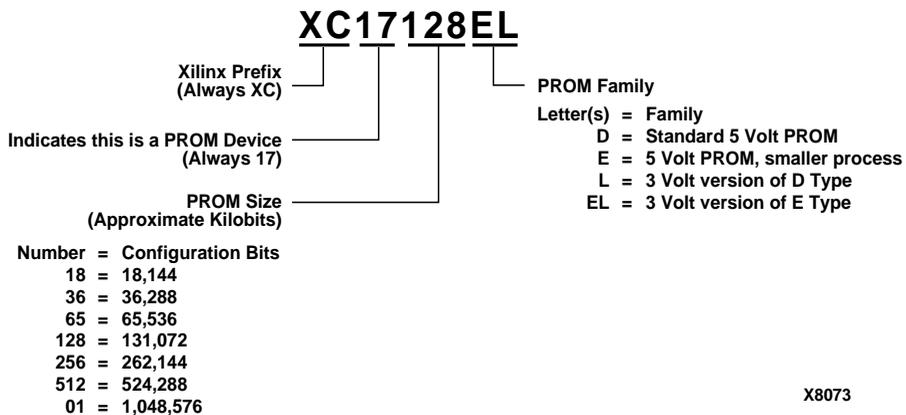
Figure 1-5 PROM Device Names

Chapter 2

Getting Started

This chapter explains how to invoke and exit the PROM File Formatter. It describes the PROM File Formatter window and how to use the PROM File Formatter interface. In addition, it outlines the features of the online help tool.

- "Starting the PROM File Formatter"

- "Exiting the PROM File Formatter"

- "Using the PROM File Formatter Interface"

- "Using Help"

Note Menus, dialog boxes, and parts of the application window are documented as they appear on a UNIX workstation. Differences between the PC and workstation applications are documented if there is a difference in operation between the two platforms

Starting the PROM File Formatter

The PROM File Formatter can be started in the following ways

- For Foundation, click the Device Programming phase button within the Project Manager

When the Select Program dialog box displays,select PROM File Formatter and click OK.

- For Alliance, start the PROM File Formatter from within the Xilinx Design Manager by clicking the PROM File Formatter button (shown following) in the Design Manager toolbox

- If you installed the PROM File Formatter as a stand-alone tool on a PC, click the PROM File Formatter icon (shown in the previous figure) on the Windows desktop or select the applicable entry accessed from the Windows 95® or Windows NT® Start button

- To start the PROM File Formatter from the UNIX or DOS command prompt, enter the following command:

  promfmtr [*design_name*{**.bit**|**.pdr**}]

  The PROM File Formatter opens in the following way:

  ♦ If you enter the command line without specifying a *design_name*, the PROM File Formatter opens displaying a new PROM file composed of a single empty data stream. The properties for the PROM file are the default properties.

  ♦ If you enter a *design_name*.**bit**, where *design_name*.**bit** is an existing BIT file, the PROM File Formatter opens displaying a new PROM file composed of a single data stream containing the BIT file. The file description area (the area on the right side of the window) displays the directory containing the BIT file. The properties for the PROM file are the default properties.

  ♦ If you enter a *design_name*.**pdr**, where *design_name*.**pdr** is an existing PROM description (PDR) file, the PROM File Formatter opens displaying the PROM file described by the PDR file. The file description area (the area on the right side of the window) displays the directory containing the PDR file. The properties for the PROM file are the properties set the last time the file was saved.

If you enter a design_name without an extension, the PROM File Formatter looks for the file *design_name*.**pdr** to open.

Exiting the PROM File Formatter

To exit the PROM File Formatter, select **File** → **Exit**.

If you have made any changes to the PROM file, a dialog box asks you if you want to save these changes. Click **Yes** to save these changes.

Using the PROM File Formatter Interface

The PROM File Formatter consists of the elements described in the following section.

PROM File Formatter Window

The PROM File Formatter window, shown in the following figure, is displayed when you invoke the PROM File Formatter. By default, the window displays a PROM description area, a file selection area, a menu bar, a toolbar, and a status bar. You can hide the toolbar and the status bar by toggling the Toolbar or Status Bar entries from the View menu

PROM description area

Menu bar

Toolbar

File selection area
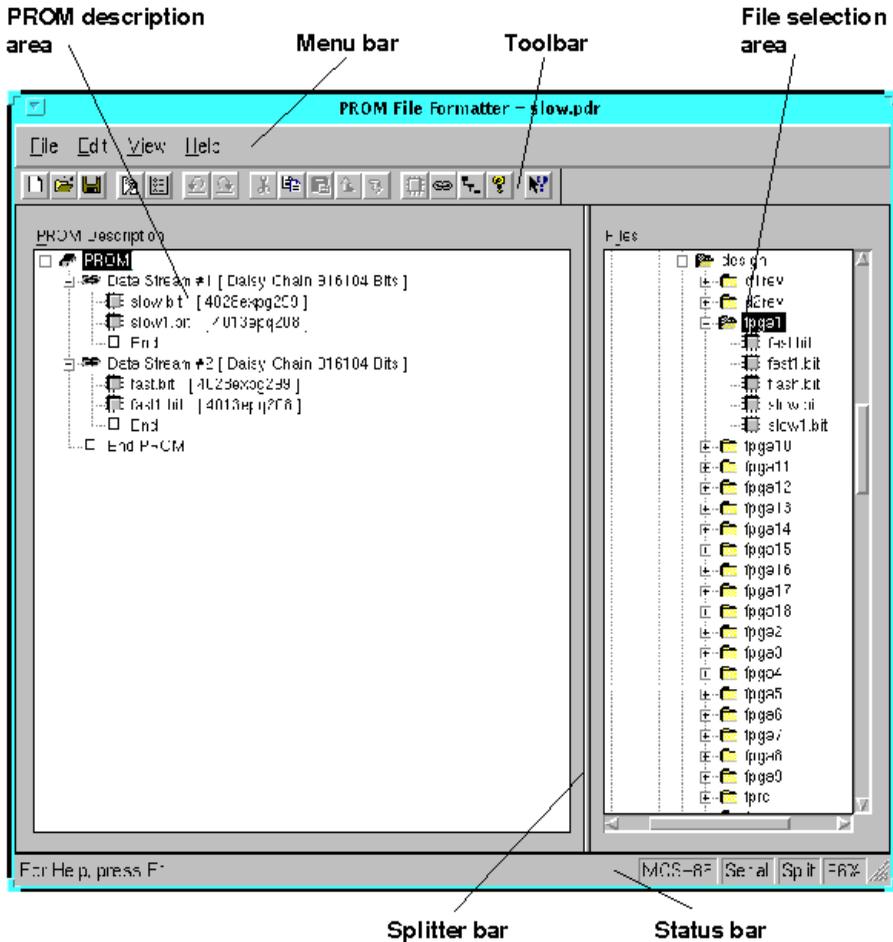
Figure 2-1 PROM File Formatter Window Areas

Splitter bar

Status bar

PROM Description Area

The PROM description area, shown in the preceding figure, is the area in which you assemble the data streams in the PROM file. In this area, you define one or more BIT files for a PROM file.

The PROM description area display is hierarchical. You can view the data streams alone or along with the BIT files they contain. A plus

sign (+) before a data stream indicates that the BIT files in the data stream are not displayed. A minus sign (–) indicates that the BIT files are displayed. Select the plus sign or minus sign to toggle the display between the two states. You can also toggle states by double-clicking the data stream.

The contents of the PROM description area depend on how you start the PROM File Formatter. It may include an empty data stream, a data stream consisting of a single BIT file, or the data streams produced by a previous PROM File Formatter session. When you add files to the data stream, the order in which the files are displayed indicates how they will be loaded into the devices on the chain. The top BIT file is loaded into the first device, and the bottom BIT file is loaded into the last device.

File Selection Area

The file selection area is used to locate and select the BIT files that the PROM file will contain. It contains a hierarchical view of drives, directories, and BIT files. If your computer is networked, you can also view the BIT files in networked drives. After locating the BIT files for your PROM file, you move the names of these BIT files into the PROM description area.

A plus sign (+) before a directory name indicates that the hierarchy of that directory has not been expanded in the display. A minus sign (–) indicates that the directory's hierarchy has been expanded. Select the plus sign or minus sign to toggle the display between the two states. You can also toggle states by double-clicking the name of the directory.

Menu Bar

The menu bar is located at the top of the PROM File Formatter window. It includes the File, Edit, View, and Help menus. You can select menus and menu items with the mouse. You can also select menu commands by typing the letter underlined in the menu name while pressing the Alt key, then typing the letter underlined in the menu command. Refer to the "Menu Command Reference" chapter for information on the menu commands.

Toolbar

The toolbar is located at the top of the screen below the menu bar. It displays several buttons, which you can use to specify commands directly. The toolbar offers an alternative to the menu commands. The toolbar buttons are described in the following table

Button	Name	Function
	New	Clears data from the PROM description area, allowing you to build a new PROM file.
	Open	Allows you to open an existing PDR file.
	Save	Allows you to save the current data.
	Split PROM	Displays the Split PROM Wizard, which targets a PROM file to multiple PROM devices.
	Properties	Allows you to set properties for the PROM file currently displayed in the PROM File Formatter window.
	Undo	Reverses the last action performed.
	Redo	Redoes the last action that was undone.
	Cut	Removes selected items from the PROM description area and temporarily stores them in the clipboard.

Button	Name	Function
	Copy	Copies selected items from the PROM description area and temporarily stores them in the clipboard.
	Paste	Inserts the clipboard contents into the PROM description area.
	Move Up	Moves the item selected in the PROM description area closer to the start of the PROM.
	Move Down	Moves the item selected in the PROM description area closer to the end of the PROM.
	Add BIT File	Adds a selected BIT file to the data stream currently selected in the PROM description area.
	Add Data Stream	Adds a new data stream to the PROM description area.
	Open Design Directory	Returns the display in the file selection area to the display appearing when the PROM File Formatter was started or when you last opened a PDR file within the PROM File Formatter.

Button	Name	Function
	About	Displays information about the version number of the PROM File Formatter.
	Help	Invokes context-sensitive help. When you click this button, the cursor changes into a large question mark with an arrow. You can then select an object, such as a menu command or a toolbar button, and receive help for that object.

To get a short description of a toolbar button, place the mouse pointer over the button. After about 2 seconds, a small pop-up text box appears giving more information about that button. This utility, called Tool Tips, displays the name of the button function, while the status bar also displays the information.

On a PC, the toolbar can be arranged in a variety of ways. The toolbar can either be docked (that is, attached to the PROM File Formatter window) or floating (that is, contained in its own window).

You can arrange the toolbar in these ways:

- To move the toolbar, point to a spot between toolbar buttons (or to the title bar, if the toolbar is floating), then drag and drop the toolbar to the desired location. If you drop the toolbar near an edge of the PROM File Formatter window, it will be docked on that edge. If you drag the toolbar away from the window edge, it will float instead of being docked.

- To toggle between a floating toolbar and a docked toolbar, double-click a spot between toolbar buttons (or on the title bar, if the toolbar is floating).

- To prevent the toolbar from being docked, hold down the Ctrl key as you move the toolbar.

Status Bar

The status bar is located at the bottom of the PROM File Formatter window. The left side of the status bar provides command and processing information (for example, Ready or Saving PROM File...),

as well as additional help information about the toolbar buttons. The right side of the status bar shows the PROM file format, the PROM type (serial or byte wide), the PROM device, and the percentage of the device that is being used.

Commands and Dialog Boxes

You control the PROM File Formatter by selecting commands from a menu or from the toolbar. Most commands display dialog boxes (for example, the PROM Properties dialog box or the Save As dialog box), through which you specify information and options.

All dialog boxes have an OK button and a Cancel button. Most dialog boxes also have a Help button.

- Click **OK** to exit the dialog box and process the information defined on the dialog box.

- Click **Cancel** to exit the dialog box without processing the information defined on the dialog box.

- Click **Help** to get context-sensitive help for the current dialog box.

Selecting Commands and Dialog Box Options

To choose a menu item, a toolbar button, or a dialog box option, you can use the mouse or the keyboard.

Using the Mouse

Use the mouse to perform the following operations.

- You can select toolbar buttons, menus and menu items, entries in the PROM Description area or file selection area, and dialog box options using the left mouse button.

- You can select multiple bit files or data streams in the PROM description area

    ♦ To select two or more BIT files in a sequence, select the first file, then hold down the Shift key while you select the last file in the group.

    ♦ To select two or more BIT files out of sequence, hold down the Ctrl key while you select each file.

- To execute a "drag and drop" operation, place the cursor on the object you want to move, press and hold the left mouse button as you move the cursor to the location you want to move the object, then release the mouse button.

- To display a context-sensitive menu, move the mouse cursor over an entry in the PROM description area, an open area in the PROM description area, or an entry in the file selection area; then click the right mouse button. A menu then displays possible operations you can perform. Click the right mouse button on the desired operation.

Using the Keyboard

You can use the keyboard to select objects on your screen, such as a dialog box button or a menu option.

- To select a dialog box option, use the Tab key to position the cursor on that object and highlight it. Press the **Enter** key to process the selection.

  To cancel out of a dialog box without changing anything, press the **Escape** key.

- To choose a menu and display its options, press the **Alt** key and the appropriate underlined letter key corresponding to the menu you want. For example, press **Alt F** to select the File menu.

- Use the arrow keys to scroll down the list of options in a menu or list box. Press **Enter** when the option you want to use is high-lighted or, in the case of a menu item, press the underlined letter corresponding to the menu option you want. For example, press the N key to select the New command of the File menu.

- To get help, press the F1 function key.

Using Dialog Boxes

Many menu commands display dialog boxes in which you can enter information and set options.

Common Fields

The fields shown in the following table are common to most dialog boxes.

Table 2-1 Common Dialog Box Fields

Dialog Box Field	Function
OK	Closes the dialog box and implements the intended action according to the settings in the dialog box
Cancel	Closes the dialog box without effecting any action
Help	Displays information on that particular dialog box
Dialog Box Field	Function

Moving Items within List Boxes

Many of the dialog boxes feature list boxes. You can select and move items from one list box to another using either the mouse or the keyboard, or a combination of these methods.

Use the mouse to select items in list boxes as follows.

- To move an item to a list box on the right, select it with the left mouse button. Click the **>** button. To move an item to a list box on the left, select it, then click the **<** button.

- To move all items to a list box on the right, click the **>>** button. To move all items to a list box on the left, click the **<<** button.

- To move sequential items, select the first one with the left mouse button. Hold down the **Shift** key. Select the last item and release the **Shift** key. Click the **>** or **<** button to move the selected items to the right or left list box, respectively.

  You can also select the first item; drag the mouse up or down until all the desired items are highlighted; and then click the **>** or **<** button.

- To move multiple items in any order, hold down the **Ctrl** key while clicking individual items. When you finish selecting, release the **Ctrl** key and click the **>** or **<** button.

Use the keyboard to select items in list boxes as follows.

- To move an item in a list box, press the `Tab` key until the first item in the list box is highlighted. Press the down arrow key to select the desired item. Tab to the `>` or `<` button to move it to the right or left list box, respectively. Press `Enter`.

- To move all items to a list box on the right, tab to the `>>` button and press `Enter`. To move all items to a list box on the left, tab to the `<<` button and press `Enter`.

- To move consecutive items, tab to the first item in the list box. Use the down arrow key to highlight the first desired item. Press and hold the `Shift` key while using the down arrow key to select the other items in the sequence. Tab to the `>` button. Press `Enter`.

- *On workstations only:* To move multiple items in any order, tab to the list box and press `Shift F8`. Use the up and down arrow keys to navigate within the list box. Press the space bar to select each item. Tab to the `>` button. Press the `Enter` key.

Using Filters with Commands

Many menu commands have dialog boxes that allow you to filter a list of choices, that is, display a subset of the listed items. These dialog boxes contain a filter field, Apply buttons, and Clear or Reset buttons.

In filter fields, you can enter a text string consisting of characters and wildcards. You cannot enter a range of items in filter fields.

- Characters can be any alphanumeric characters, text spaces, and the characters that appear on the top of the number keys on a keyboard. Alphabetic characters are case-sensitive. Control characters are not permitted.

- A wildcard can be an asterisk (*), which can represent any number of characters, or a question mark (?), which represents a single character.

The software does not strictly match patterns; it matches entire text strings. It does not find a string if it is embedded in a larger string unless you use wildcards. For example, it does not find $1N36 if it is embedded in ABC$1N36XYZ. However, if you searched for *$1N36*, it would find that string in ABC$1N36XYZ.

To use the Filter dialog boxes, follow these steps.

1. Specify the pattern to include in your list by typing the characters.

2. Include one or more wildcards (*) to do a global search on the specified string.

   Precede the character string with a wildcard to retrieve all signal names that end with the string of specified characters.

   Append the wildcard to the character string to retrieve all signal names that start with the specified character string.

3. Click **Apply**.

   The list displays only the choices that match the selection criteria.

4. To clear the filter, click **Clear** or **Reset** or backspace over the information specified in the filter text box.

Using Help

Most graphical user interfaces (GUIs) contain context-sensitive help and a Help menu. You can obtain help on commands and procedures with the Help menu or by selecting the Help toolbar button. In addition, the dialog boxes associated with many commands have a Help button that you can click to obtain context-sensitive help.

Help Menu

Use the following Help menu commands to obtain help.

- The Help Topics command opens Help and lists the online help topics available. From the Contents page, you can jump to command information or step-by-step instructions. After you open help, you can click the Help Topics button in the Help window whenever you want to return to the help topic list.

- The About PROM File Formatter command displays a popup window that displays the version number of the PROM File Formatter software and a copyright notice

Toolbar Help Button

You can obtain context-sensitive help from the toolbar as follows.

1. Click the Help button in the toolbar.

The cursor changes to a question mark.

2. With the left mouse button, click the menu item or toolbar button for which you want help.

    Help appears for the selected command or option.

    Note You can also press Shift F1 to obtain context-sensitive help.

F1 Key

Pressing the F1 key on a dialog box displays help on that dialog box. Pressing the F1 key is the same as selecting Help Topics from the Help menu, if no dialog boxes are displayed.

Help Button in Dialog Boxes

Many of the dialog boxes have a Help button that you can click to obtain help for the dialog box with which you are working. You can also press **Alt H** on your keyboard while positioned over the dialog box to obtain help.

Chapter 3

Using the PROM File Formatter

This chapter describes the functions that you can perform with the PROM File Formatter.

The PROM File Formatter window areas referred to in this chapter are described in the "PROM File Formatter Window" section of the "Getting Started" chapter.

The chapter contains the following sections.

- "Creating a New PROM File"

- "Opening an Existing PROM File"

- "Building a PROM File"

- "Editing a PROM File"

- "Setting the PROM Properties"

- "Saving a PROM File"

- "Splitting a PROM File"

Creating a New PROM File

To create a new PROM file, select **File** → **New**.

The PROM description area displays a single empty data stream.

The default name of the new PROM file will be untitled.*format*, where format is the default format (.tek, .mcs, .exo, or .hex) set for the PROM File Formatter. The new PROM description file will be named untitled.pdr and the new memory map file will be named untitled.prm.

Opening an Existing PROM File

To open an existing PROM file:

1. Select **File** → **Open** to display the Open dialog box, as shown in the following figure
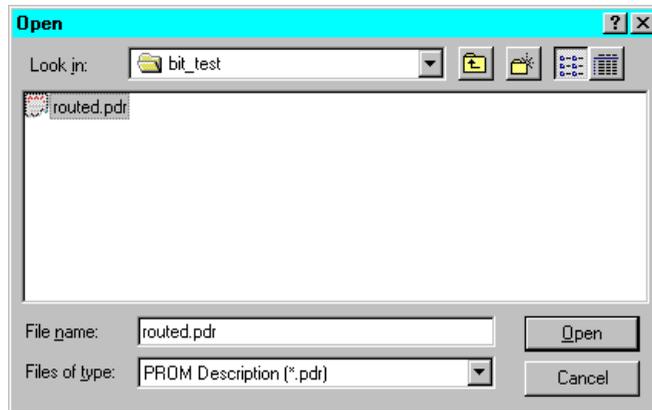
Figure 3-1 Open Dialog Box

2. Complete this dialog box and click **OK** to open the desired PROM description (PDR) file.

    This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Building a PROM File

You build a PROM file by adding BIT files and data streams to the PROM description area in the PROM File Formatter window. A data stream can contain one or more BIT files. A data stream that contains multiple files is referred to as a daisy chain.

To build the PROM file, you add BIT files to the data stream in the PROM description area. You can also create additional data streams, and add BIT files to them.

The size of a data stream is indicated as part of the Data Stream entry in the PROM description area. After you add a file to a data stream, the data stream size is updated to include the data in the added file.

Adding a BIT File to a Data Stream

To add a BIT file to a data stream, perform the following steps.

1. In the hierarchical display in the file selection area, select the BIT file you want to add to the data stream.

   You can only select one BIT file at a time.

2. In the PROM description area, select the entry below which you will add the BIT file.

   To add the BIT file to the end of a data stream, select the End entry for the data stream.

3. Select **Edit** → **Add Bit File**. The BIT file appears in the PROM description area. The Xilinx device for which the BIT file was created is included in this BIT file entry.

   Note You can also add a BIT file by selecting the PROM description area entry below which you will add the BIT file, then double-clicking the BIT file you want to add.

   On a PC only, you can add a BIT file to a data stream by dragging the file from the file selection area into the PROM description area, then dropping the file into the desired position in the data stream. As you move the file into the PROM description area, an arrow to the left of the display indicates the position at which the BIT file will be placed.

Adding a New Data Stream

To add a new data stream, select **Edit** → **Add Data Stream.**

A new data stream is added to the end of the PROM file, and this data stream appears in the PROM description area. You can move BIT files into this new data stream.

The new data stream is used to reconfigure a single device or daisy chain of devices for a new function.

Editing a PROM File

After building a PROM file, you can edit the file by moving BIT files to change the sequence of files in a data stream. You can also move data streams to change their sequence, or delete BIT files and data streams.

Moving BIT Files

To move a BIT file to a different location in the PROM file:

1. In the hierarchical display in the PROM description area, select the BIT file you want to move.

2. Select **Edit** → **Cut**.

3. In the PROM description area, select the entry above which you will add the BIT file.

4. Select **Edit** → **Paste**.

    You can also move BIT files using the following menu commands:

    ♦   Move Up (Edit Menu)

    ♦   Move Down (Edit Menu)

    These commands are described in the "Menu Command Reference" chapter.

    On a PC only, you can move a BIT file by dragging it from its current position in the PROM description area and dropping it into the desired position. As you move the BIT file within the PROM description area, an arrow to the left of the display indicates the position at which the BIT file will be placed.

Moving Data Streams

To move a data stream, perform the following steps.

1. In the hierarchical display in the PROM description area, select the data stream you want to move.

2. Select **Edit** → **Cut**.

3. In the PROM description area, select the data stream above which you will add the cut data stream.

    To add the data stream to the end of the PROM Description area display, select the End PROM entry.

4. Select **Edit** → **Paste**.

    You can also move data streams using the following menu commands.

♦ Move Up (Edit Menu)

♦ Move Down (Edit Menu)

These commands are described in the "Menu Command Reference" chapter.

On a PC only, you can move a data stream by dragging it from its current position in the PROM description area and dropping the data stream into the desired position. As you move the data stream within the PROM description area, an arrow to the left of the display indicates the position at which the data stream will be placed.

Duplicating BIT Files and Data Streams

You can duplicate BIT files or data streams in the PROM description area by using either of these sequences of menu commands.

• Copy (Edit Menu) and Paste (Edit Menu)

• Cut (Edit Menu) and Paste (Edit Menu)

These commands are described in the "Menu Command Reference" chapter.

Deleting BIT Files or Data Streams

To delete a BIT file or a data stream, select the entry you want to delete from the PROM description area and perform any of these actions.

• Press the Delete key

• Select **Edit** → **Cut**

• Click the Cut button (shown following)

Setting the PROM Properties

To set properties for the PROM file you create:

1. Select **File** → **PROM Properties** to open the PROM Properties dialog box, as shown in the following figure.
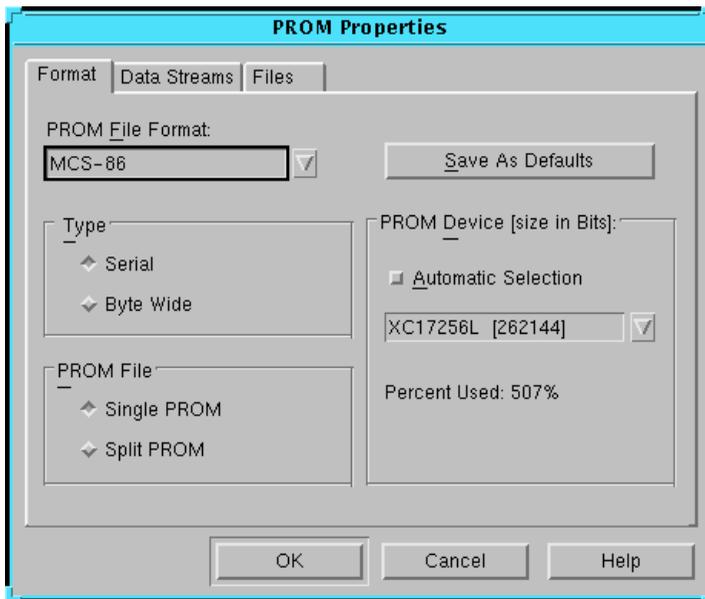
Figure 3-2 PROM Properties Dialog Box

2. In the PROM File Format field, select the format compatible with your PROM formatter or select HEX for a file to be used in microprocessor downloads.

    Some PROM formats support larger file sizes than others. The Table 4-1 of the "Menu Command Reference" chapter shows the capacity of each of the PROM formats supported by the PROM File Formatter.

3. *If you selected HEX in the PROM File Format field,* perform the following:

    ♦   If you want to disable bit swapping, deselect the Swap Bits field (not shown in the Figure 3-2). Bit swapping is described in the "Bit Swapping in PROM Files" section of the "Introduction" chapter

    ♦   Click **OK** to close the PROM Properties dialog box.

4. In the Type field, select Serial or Byte Wide PROM.

Xilinx PROMs are serial devices.

5. In the PROM File field, select Single PROM or Split PROM.

   To determine whether the data must be split into multiple PROMs, you can check the Percent Used field on the right side of the dialog box. If the Percent Used is above 100% (indicating the data is larger than the largest supported PROM), you may have to split the data into multiple PROMs.

6. *If you selected Single PROM in the PROM File field,* perform the following in the PROM Device (size) area:

   ♦ If you want the PROM File formatter to automatically select the smallest single PROM into which your data will fit, select the Automatic Selection box.

   ♦ If you want to select the PROM to use, deselect the Automatic Selection box and select a PROM from the PROM Device (size) selection box.

7. *If you selected Split PROM in the PROM File field,* so that the PROM Device (size) area appears as shown in the following figure, perform the following in the PROM Device (size) area

Figure 3-3 PROM Devices (Size) Area for Split PROM

   ♦ If you want the PROM File formatter to automatically select the smallest number of PROMs into which your data will fit, do nothing.

   ♦ If you want to select the PROMs to use, select Split PROM Wizard. When the Split PROM Wizard Appears, follow the instructions in the "Splitting a PROM File" section to specify the desired PROMs.

8. *If you selected Byte Wide in the Type field,* click the Data Streams tab of the dialog box.

   For a byte wide PROM, the Data Streams tab appears as shown in the following figure.
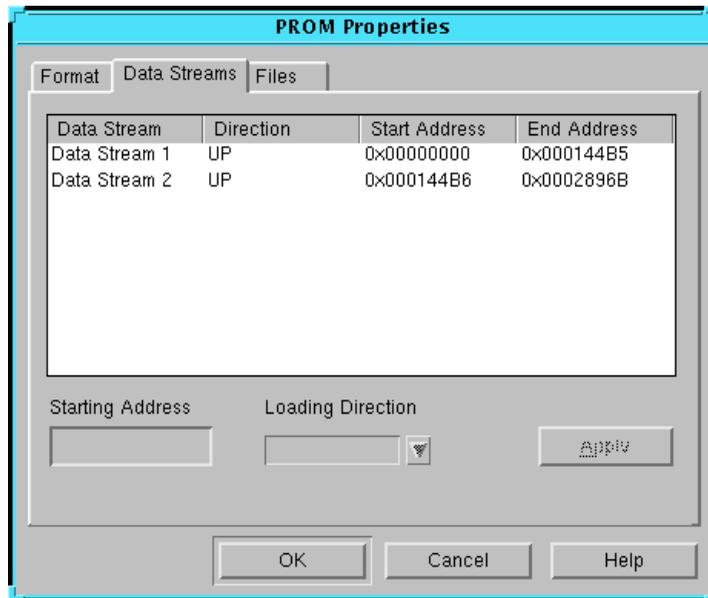
Figure 3-4 Data Streams Tab (Serial PROM)

   If desired, modify the data streams by selecting a stream in the list at the top of the dialog box, modifying the Starting Address or Loading Direction in the fields below the list, and clicking **Apply**.

   Choose the Up direction if you want to store the data starting at a low address and load it in the upward direction.

   Choose the Down direction, if you want to store the data starting at a high address and load it in the downward direction.

9. Click **OK** to close the PROM Properties dialog box.

Saving a PROM File

   To save a PROM file:

1. Select **File → Save**.

   If this is the first time you are saving the PROM file, the Save As dialog box appears, as shown in the following figure.
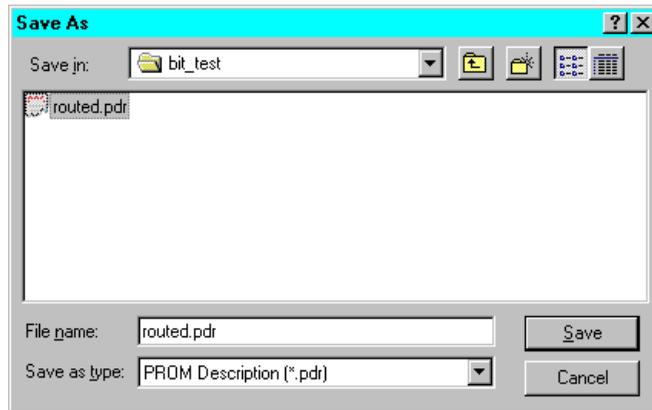
Figure 3-5 Save As Dialog Box (PROM File

2. Complete this dialog box and click **OK** to save the PROM files and the PROM description file.

   This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

If the properties currently set in the PROM File Formatter specify a PROM type smaller than necessary to hold the PROM data, the PROM File Formatter posts the dialog box shown in the Figure 3-6. The dialog box prompts you to perform one of these actions.

- Select a larger PROM

- Split the data across multiple PROMs using the Split PROM Wizard

- Save just the PROM description, without saving a PROM file
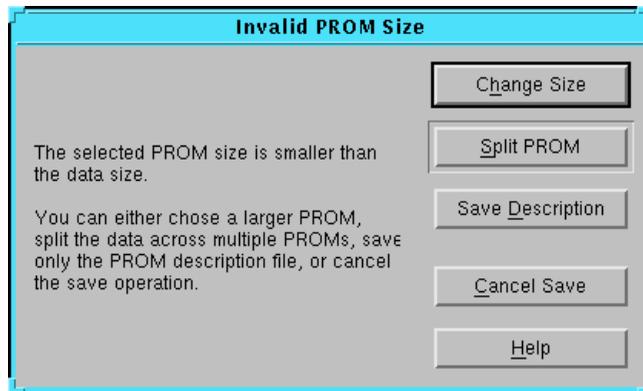
Figure 3-6 Invalid PROM Size Dialog Box

If you have chosen a PROM format that does not support the size of your PROM file, the PROM File Formatter posts the dialog box shown in the Figure 3-7. The dialog box prompts you to perform one of these actions.

- Edit the properties to change the PROM format

- Save the PROM description without saving a PROM file
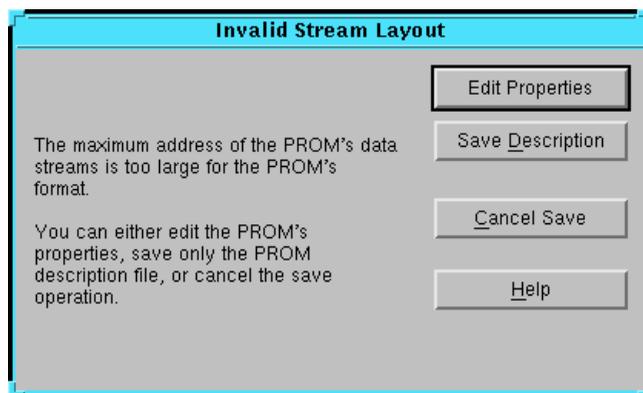
Figure 3-7 Invalid Stream Layout Dialog Box

In some cases, you may want to save only the PROM description file, without saving the related PROM files. For example, you may want to save just the PROM description file if the data in the PROM File Formatter is incomplete, and you want to ensure that no PROM files are saved, because they might be confused with completed PROM

files. To save just the PROM description file, select `File → Save Description` instead of `File → Save`.

Splitting a PROM File

You can retarget existing MCS, EXO, or TEK files to multiple serial or parallel PROM devices by splitting your PROM file into smaller files. Serial PROMs will be split into multiple serial PROMs, and byte wide PROMs will be split into multiple byte wide PROMs.

Note You can only retarget MCS, TEK, and EXO file formats. You cannot retarget a HEX file because you cannot use this format to program a PROM device. Use HEX files for user-defined processes (for example, a microprocessor download) or programs.

The Split PROM Wizard retargets a PROM file to multiple PROM devices. The Split PROM Wizard always acts on the PROM file currently displayed in the PROM File Formatter

1. Activate the Split PROM Wizard in any of the following ways.

   ♦ Select `File → Split PROM`.

     If you are setting properties for a PROM file, specify `Split PROM` in the Format tab of the PROM Properties dialog box. A Split PROM Wizard button will appear in the dialog box; select the button.

   ♦ If you try to save a PROM file into a PROM device that is too small, the Invalid PROM Size dialog box appears. Select the Split PROM option from this dialog box.

   The PROM File Formatter displays the Split PROM Wizard dialog box, shown in the following figure.
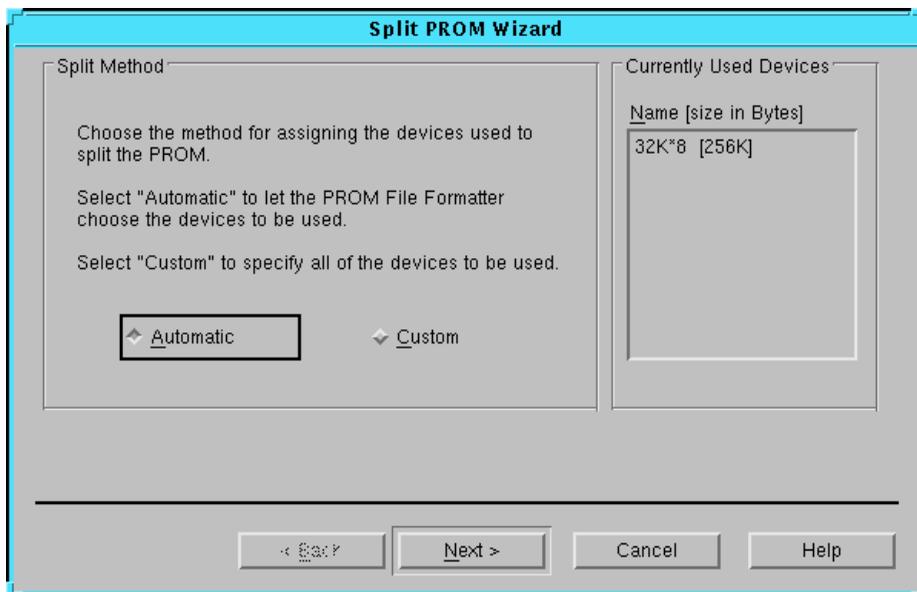
Figure 3-8 Split PROM Wizard Dialog Box

2. Select one of the options displayed in the dialog box (Automatic, or Custom), then click **Next**. Depending on the option you select, proceed to one of the following sections to complete splitting the PROM file.

   ♦ "Automatic Selection" section

   ♦ "Custom Selection" section

Automatic Selection

The Automatic selection option of the Split PROM Wizard selects the minimum number of PROMs required to contain the data. If you selected Automatic in the Split PROM Wizard dialog box, the dialog box shown in the following figure appears.
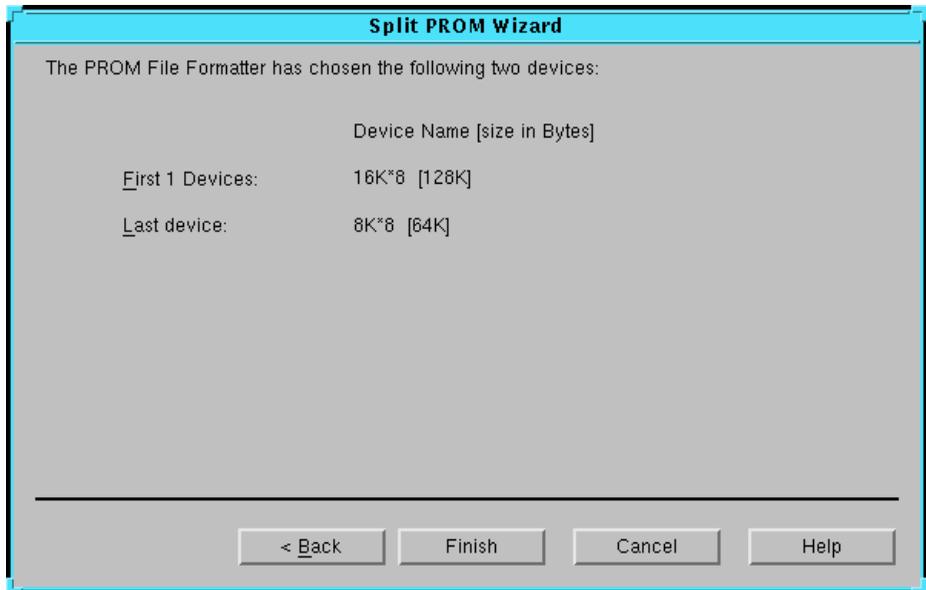
Figure 3-9 Split PROM Wizard—Automatic

The information in this dialog box is read-only; it indicates the devices into which the PROM File Formatter divided the existing PROM file and the size of each device.

Click Finish to complete the PROM Wizard.

Custom Selection

The Custom selection option of the Split PROM Wizard allows you to select the PROMs into which you will target your data. If you selected Custom in the Split PROM Wizard dialog box, the dialog box shown in the following figure appears.
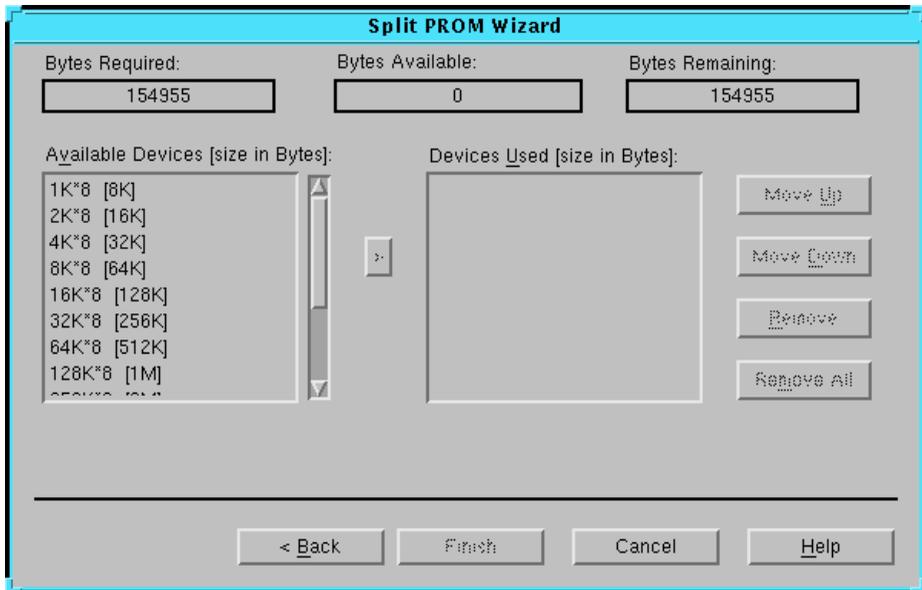
Figure 3-10 Split PROM Wizard—Custom

The three fields at the top of the dialog box provide information on the status of the current PROM file allocation.

- Bytes Required indicates the size of the PROM file you are splitting or total number of bytes to be allocated.

- Bytes Available indicates the number of bytes available in the set of devices you have chosen.

- Bytes Remaining indicates the number of bytes that still need to be allocated

To build up the list of devices in the Devices Used list, perform the following operations.

- To add the first device to the Devices Used list, select the device in the Available Devices list and click >, or double-click the device in the Available Devices list.

- To add an additional device to the list, select the entry in the Devices Used list under which you want to enter the new device. Then perform either of the following:

♦ In the Available Devices list, select the device you want to add and click >.

♦ In the Available Devices list, double-click the device you want to add to the list.

The selected PROM device appears in the Devices Used list, which displays the target PROMs in the order in which the PROM file is to be split.

• To change the order of the devices, select a device in the Devices Used list and click **Move Up** or **Move Down**.

• To delete a device from the list, select a device in the Devices Used list and click **Remove**.

• To empty the Devices Used list, click **Remove All**.

When you have finished building the Devices Used list, click **Finish** to split the PROM file using the devices you just specified *in the listed order*. The Finish button is grayed out and cannot be used until you have allocated all the bytes of your PROM file and the Bits Remaining box reaches 0.

When you click Finish, the PROM File Formatter creates a single PDR report file, multiple PRM files, and multiple PROM files as you specified in the Split PROM Wizard. The PDR report lists all the data streams and BIT files used to construct the PROM files as well as the load direction and PROM file splitting information. Each PRM file contains a memory map of the data for one PROM.

Each PROM file is assigned a default file name in the form of an appended 00, 01, ..., 0n suffix to the input file name. For example, if the original file name is design.mcs and the PROM file is split into three smaller PROM files, they will be named as follows: design00.mcs, design01.mcs, and design02.mcs.

The files are written to disk when you perform a Save or Save As command. The files are saved in the design directory.

Chapter 4

Menu Command Reference

This chapter lists and describes all the commands available in the main window of the PROM File Formatter. The commands are listed in alphabetical order. When applicable, the corresponding toolbar button is included in the command description.

The chapter contains the following sections.

- "Menus"
- "Alphabetical Listing of Commands"

Menus

The PROM File Formatter has four menus, which are described in the following sections.

- "File Menu"
- "Edit Menu"
- "View Menu"
- "Help Menu"

File Menu

The File menu contains commands to create, open, save, split, and set properties for PROM File Formatter files. Following are the File menu commands and a brief explanation of each

New	Clears the data from the PROM File Formatter window and creates a new, empty PROM file.
Open	Displays a dialog box that allows you to open an existing PROM file.
Save	Saves the current PROM file and PROM description file.
Save As	Displays a dialog box that allows you to save the current PROM file and PROM description file with a file name and a location you specify.
Save Description	Saves the current PROM description (PDR) file.
Save Description As	Displays a dialog box that allows you save the current PROM description (PDR) file with a file name and a location you specify.
Split PROM	Displays the Split PROM Wizard, which allows you to split the current PROM file into multiple files.
PROM Properties	Displays the PROM Properties dialog box, which allows you to set properties for the file displayed in the PROM File Formatter window.

Recent Files	Displays the names of the last four PROM description files opened in the PROM File Formatter.
Exit	Exits the PROM File Formatter program.

Edit Menu

The Edit menu contains commands to build and edit the information in the PROM description area. The following are the Edit menu commands and a brief explanation of each

Undo	Reverses the last action performed.
Redo	Redoes the last action that was undone.
Cut	Removes selected items from the PROM description area and temporarily stores them in the clipboard.
Copy	Copies selected items from the PROM description area and temporarily stores them in the clipboard.
Paste	Inserts the clipboard contents into the PROM description area.
Move Up	Moves the item selected in the PROM description area closer to the start of the PROM.
Move down	Moves the item selected in the PROM description area closer to the end of the PROM.
Add Data Stream	Adds a new data stream in the PROM description area.
Add Bit File	Inserts the BIT file selected in the file selection area into the PROM description area.

View Menu

The View menu includes commands to display special screen areas and to modify the appearance of the information displayed within

the PROM File Formatter window. Following are the View menu commands and a brief explanation of each.

Toolbar	Toggles the toolbar on or off.
Status Bar	Toggles the status bar on or off.
Show File Paths	Displays the BIT files in the PROM description area with their full path names.
Collapse All Streams	Collapses the hierarchical display in the PROM description area, leaving a display of data streams without BIT files.
Expand All Streams	Expands the hierarchical display in the PROM description area to show all data streams and all BIT files.
Design Directory	Returns the display in the file selection area to the display appearing when the PROM File Formatter was started or when you last opened up a PDR file within the PROM File Formatter.
Move Splitte	Places the cursor on the splitter bar, allowing you to change the relative sizes of the PROM description area and the file selection area

Help Menu

The Help menu contains commands that enable you to access online help for the PROM File Formatter. Following are the Help menu commands and a brief explanation of each.

Help Topics	Lists online help topics.
About PROM File Formatter	Displays the program version.

Alphabetical Listing of Commands

The following commands are available in the menus of the PROM File Fomatter's graphical user interface.

About PROM File Formatter (Help Menu)

This command displays information about the version number of the PROM File Formatter.

Add Bit File (Edit Menu)

Adds a BIT file to the display in the PROM description area.

The following toolbar button executes the Add Bit File command.

To add a BIT file using the Add Bit File command, follow these instructions:

1. In the hierarchical display in the file selection area, select the BIT file you want to add to the data stream

    You can only select one BIT file at a time.

2. In the PROM description area, select the entry below which you will add the BIT file.

    To add the BIT file to the end of a data stream, select the End entry for the data stream.

3. Select **Edit** → **Add Bit File** or select the Add Bit File toolbar button.

    The BIT file appears in the PROM description area. The Xilinx device for which the BIT file was created is included in this BIT file entry

    Note You can also add a BIT file by selecting the PROM description area entry below which you will add the BIT file, then double-clicking the BIT file you want to add

Add Data Stream (Edit Menu)

This command adds an empty data stream to the display in the PROM description area. The data stream is added before the `End PROM` entry.

The following toolbar button executes the Add Data Stream command.

Collapse All Streams (View Menu)

This command collapses the hierarchical display in the PROM description area, leaving a display of data streams without BIT files.

Copy (Edit Menu)

This command copies a selected data stream or BIT file from the PROM description area and temporarily stores it on the clipboard.

The command is available only if there is a selected file or data stream.

The following toolbar button executes the Copy command.

To copy multiple data streams or BIT files to the clipboard, use the multiple object selection method described in the "Using the Mouse" section of the "Getting Started" chapter before you execute the Copy command.

To duplicate data streams or BIT files, you can first copy them, then paste them back to insert as many copies as needed.

Cut (Edit Menu)

This command removes a data stream or a BIT file from the PROM description area and temporarily stores it on the clipboard. The command is available only if there is a selected file or data stream.

The following toolbar button executes the Cut command.

To cut multiple data streams or BIT files, use the multiple object selection method described in the "Using the Mouse" section of the "Getting Started" chapter before you execute the Cut command.

To duplicate data streams or BIT files, you can first copy them, then paste them back to insert as many copies as needed.

Design Directory (View Menu)

Changes the contents of the file selection area so the design directory (and the BIT files in that directory) are displayed.

The following toolbar button executes the Design Directory command.

When you start the PROM File Formatter, the design directory has an initial value depending on how you started the program.

- If the program is started without any options, the design directory will be the current directory.

- If the program is started with an option that specifies a BIT file to place in the PROM file or a PDR file to open, the design directory will be the directory containing the BIT file or PDR file.

Once the PROM File Formatter is open, the design directory may be changed by the following operations:

- Opening up a different PDR file causes the design directory to be set to the location of the PDR file.

- Creating a new PROM description resets the design directory back to the current directory.

- Creating a new PROM description resets the design directory back to the current directory.

  - ♦ Save As

♦   Save Description As

♦   Save (for a new PROM description file)

♦   Save Description (for a new PROM description file)

Exit (File Menu)

Use this command to exit from the PROM File Formatter program. If you are in the process of creating a PROM file, the program prompts you to save the current data.

Expand All Streams (View Menu)

Expands the hierarchical display in the PROM description area to show all data streams and all BIT files.

Help Topics (Help Menu)

This command displays a dialog box that lists the contents of the Help facility.

Move Down (Edit Menu)

This command moves the entry currently highlighted in the PROM description area down (that is, closer to the end of the PROM). The highlighted entry may be either a data stream or a BIT file.

The following toolbar button executes the Move Down command.

Move Splitter (View Menu)

This command moves the cursor to the splitter bar, allowing you to change the relative sizes of the PROM description area and the file selection area.

Move Up (Edit Menu)

This command moves the entry currently highlighted in the PROM description area up (that is, closer to the beginning of the PROM). The highlighted entry may be either a data stream or a BIT file.

The following toolbar button executes the Move Up command.

New (File Menu)

This command clears the data currently loaded in the PROM File Formatter window, and creates a new, empty PROM file, PROM description file, and memory map file. The new PROM file will be named untitled.*format*, where *format* is the default format (.tek, .mcs, .exo, or .hex) set for the PROM File Formatter.

The new PROM description file will be named untitled.pdr and the new memory map file will be named untitled.prm.

The following toolbar button executes the New command.

Once you have removed the old data from the window, you can start building a new PROM file. If you click New while you are in the process of creating a data stream, a warning message asks you if you want to save changes to the current PROM file before you open a new one.

Open (File Menu)

This command opens an existing PROM file (stored in PDR format).

The following toolbar button executes the Open command.

When you select this command the Open dialog box appears, as shown in the following figure.

Note The dialog box shown in the figure is the dialog box as it appears on a PC.
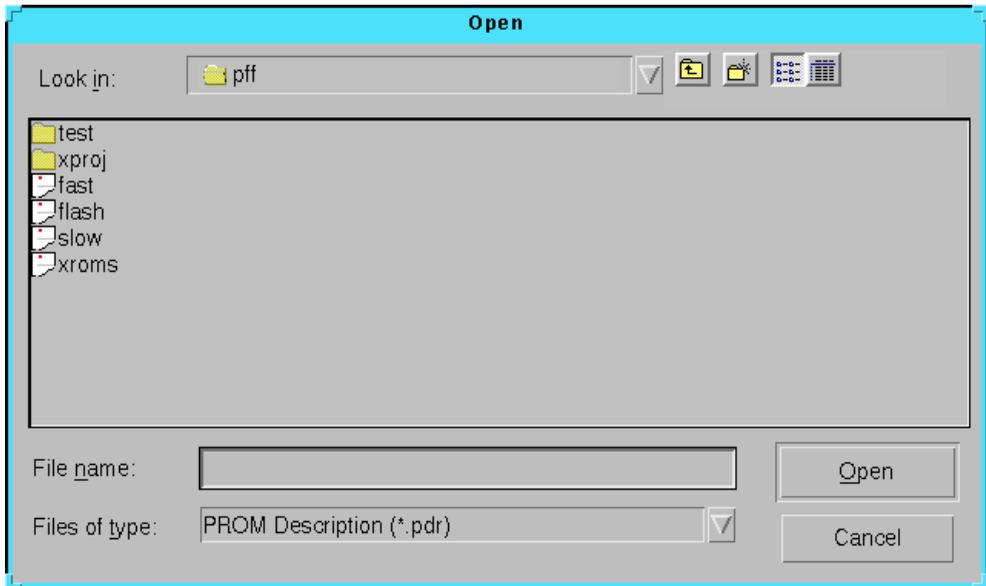
Figure 4-1 Open Dialog Box

This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Paste (Edit Menu)

This command inserts the data stream or BIT file currently in the clipboard into the PROM description area. If an item is selected in the PROM description area, and the item is of the same type as the cut or copied item (that is, both are data streams or both are BIT files), the command pastes before the selected item.

The following toolbar button executes the Paste command.

To duplicate data streams or BIT files, you can first copy them, then paste them back to insert as many copies as needed.

PROM Properties (File Menu)

This command opens the PROM Properties dialog box, which lets you set properties for the PROM file currently displayed in the PROM File Formatter window.

The following toolbar button executes the PROM Properties command.

Format Tab (PROM Properties Dialog Box)

You set the PROM file format in the Format tab of the PROM Properties dialog box. The Format tab is shown in the following figure.
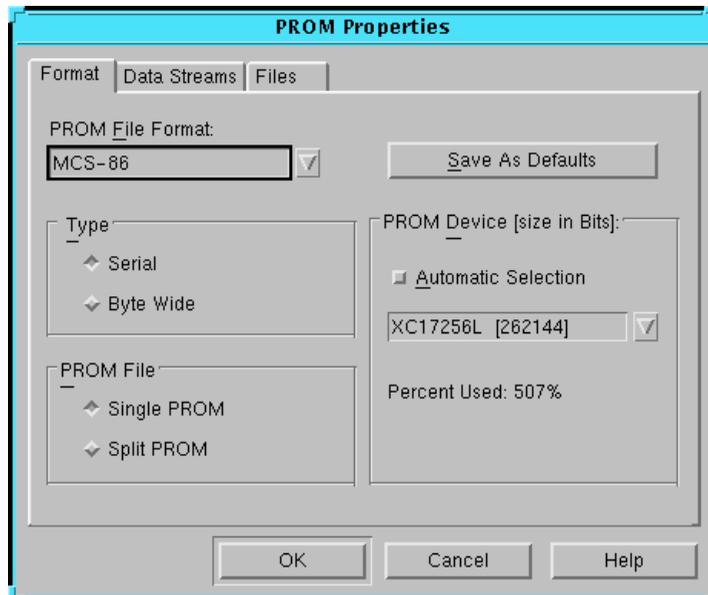
Figure 4-2 PROM Properties Dialog Box—Format

Xilinx recommends that you first decide which PROM type and which PROM file format you will be using. Some PROM formats support larger file sizes than others. The following table shows the capacity of each of the PROM formats supported by the PROM File Formatter.

Table 4-1 PROM Formats and Sizes

Format	Number of Addresses (Bytes)	Total Number of Bits
TEKHEX	65,536	524,288
MCS-86	1,048,576[a]	8,388,608
EXORmacs	16,777,216[b]	134,217,728
HEX	No limit	No limit

a.   This size applies to the Up loading direction only. The Down loading direction is limited to 64 K.

b.   Files with up to 65,536 addresses are formatted in S19 format. Files with more than 65,536 addresses are formatted in S28 format.

The Format tab contains the following fields.

- PROM File Format

    Specifies the PROM format compatible with your PROM programmer. Click the down arrow to view the available formats: TEKHEX, MCS-86, EXORmacs, and HEX.

    If you choose a format that does not support the size of your PROM file, you receive a warning when you try to close the PROM Properties dialog box.

- Type

    By default, the Serial radio button is selected. If you are targeting byte wide PROMs, click the Byte Wide radio button. Xilinx PROMs are serial devices.

- PROM File

    Specifies whether the PROM file will be implemented in a single PROM or will be split into multiple PROMs. A separate PROM file is created for each PROM.

    If you select Split PROM, additional fields appear on this tab of the dialog box.

- Save As Defaults

  Saves the current settings in the Format tab as the default setting for new PROM files. These defaults will remain in effect the next time you open the PROM File Formatter.

- PROM Device (Size)

  The fields in this area vary depending on the selection in the PROM File field. If Single PROM is selected in the PROM File field, the PROM Device (Size) area displays as shown in the Figure 4-2. If Split PROM is selected in the PROM File field, the PROM Device (Size) area displays as shown in the following figure.
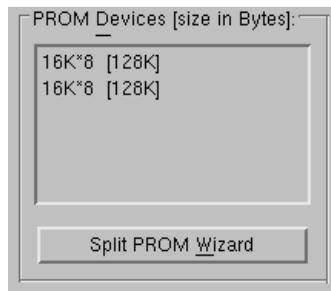
Figure 4-3 PROM Devices (Size) Area—Split PROM

The area contains the following fields.

- ◆ Automatic Selection (Single PROM only)

  If Automatic Selection is enabled, the PROM File Formatter automatically selects the smallest single PROM into which your data will fit.

  If Automatic Selection is disabled, click the down arrow to view available devices and their sizes. The list displays the sizes for either serial or byte wide PROMs depending on the Type selected. From the list, you can select the desired PROM.

- ◆ PROM Device (Size) box

  For a single PROM, this box specifies the PROM to be used and its size. The size is expressed in bits for a serial PROM and in bytes for a byte wide PROM.

This is a read-only field if Automatic Selection is enabled and a selection box if Automatic Selection is disabled. If this field specifies a PROM size smaller than your data size, you receive a warning when you try to close the PROM Properties dialog box.

For a split PROM, the PROM Device (Size) box indicates the PROMs to be used and the size of each PROM. The size is expressed in bits for a serial PROM and in bytes for a byte wide PROM. By default, the largest available PROM device is used for the first N-1 devices and the smallest device that will hold the remainder of the data is chosen for the last device. You can click the Split PROM Wizard button to change the PROMs shown in this box.

♦   Percent Used (Single PROM only)

Indicates the percent of the PROM used by the data currently in the PROM description area.

♦   Split PROM Wizard button (Split PROM only)

When selected, this button opens the Split PROM Wizard dialog box, which allows you to specify how the data will be split into multiple PROMs. The Split PROM Wizard is described in the "Split PROM (File Menu)" section.

•   Swap Bits

This option (which is not shown in the Figure 4-2) only appears if HEX is selected in the PROM File Format field. If Swap Bits is selected, bits in the HEX file will be swapped compared to bits in the input BIT files. Bit swapping is described in the "Bit Swapping in PROM Files" section of the "Introduction" chapter.

In the XACTstep 6.0 release, HEX files were not bit swapped. If you disable the Swap Bits option, you can produce a HEX file that is compatible with a HEX file produced by the XACT 6.0 PROM File Formatter.

•   OK button

Click OK to save the settings in the PROM Properties dialog box.

If the selected PROM device is smaller than the data size or if the specified PROM file format is inadequate for the data size, you receive a warning when you try to close the PROM Properties

dialog box. You can save these properties even though you receive a warning, but you will be warned again if you try to save the PROM file with these properties.

Data Streams Tab (PROM Properties Dialog Box)

The Data Streams tab indicates the loading direction, start address and end address of each data stream stored in the PROM. If you are targeting the byte wide PROM type, you can also use this tab to change the starting address and loading direction of the data streams.

The fields in this tab vary depending on the PROM type (serial or byte wide). The following figures illustrate the two versions of the tab

- The Data Streams tab for serial PROMs is shown in the following figure.

- The Data Streams tab for byte-wide PROMs is shown in the Figure 4-5.
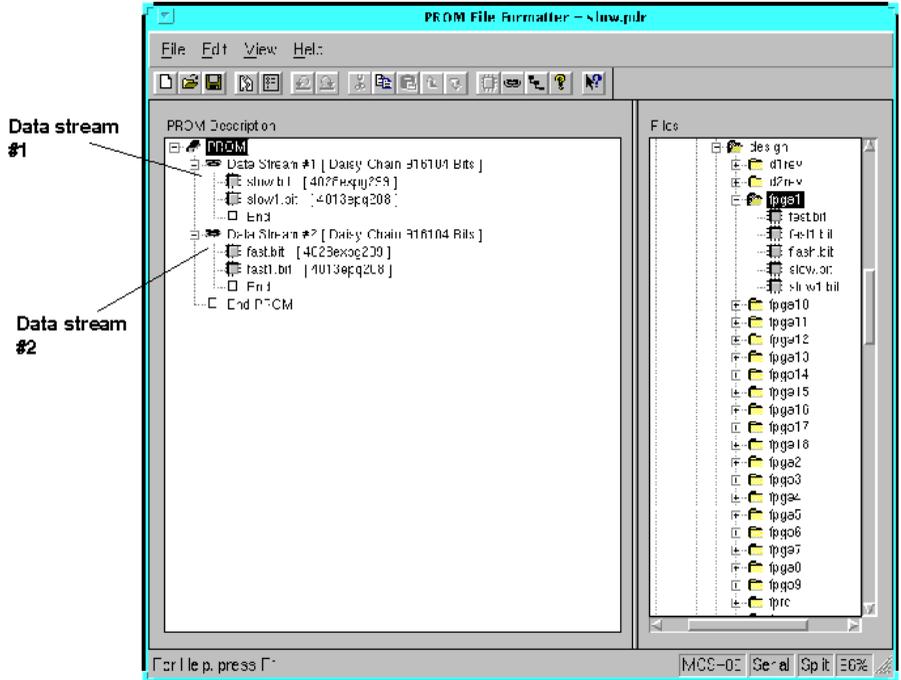
Figure 4-4 PROM Properties Dialog Box—Data Streams (Serial PROM)
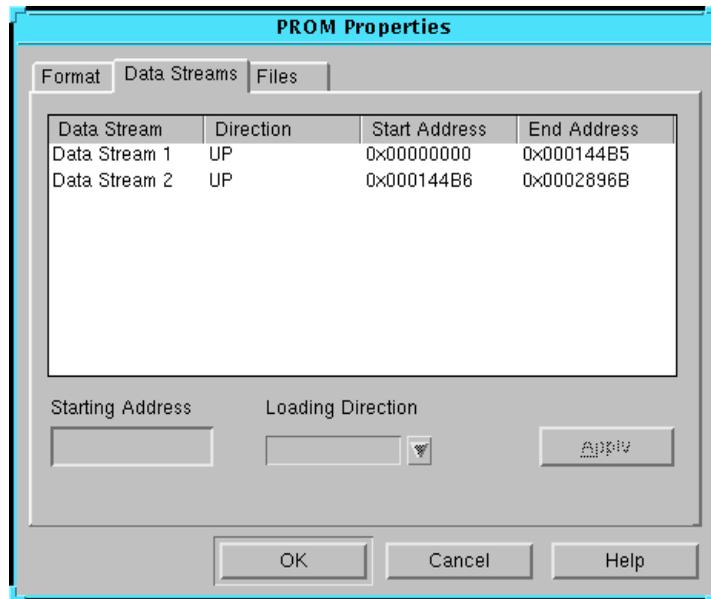
Figure 4-5 PROM Properties Dialog Box—Data Streams (Byte Wide PROM)

The Data Streams tab includes the following fields.

• Data Stream box

Indicates the loading direction, start address and end address of all the data streams in the PROM file.

If you are targeting byte-wide PROMs and you want to change an entry in the Data Stream box, select the data stream you need to modify. Once you have highlighted a data stream, the Starting Address and the Loading Direction fields located below the list box are loaded with the appropriate information and can be modified.

• Starting Address and Loading Direction boxes (byte wide only)

Edit the starting address and select the loading direction as needed.

To change the loading direction, perform the following steps.

♦ Choose the Up direction if you want to store the data starting at a low address and load it in the upward direction.

♦ Choose the Down direction, if you want to store the data starting at a high address and load it in the downward direction.

• Apply button (byte wide only)

Click this button to update the data stream box with the changes you have made to a data stream's Starting Address, Loading Direction, or both.

After clicking Apply, the Start and End addresses of the current data stream and those of adjacent data streams are updated to accommodate the change. If a change forces Data Stream 1 to load below the address 0, an error message will be displayed.

Files Tab (PROM Properties Dialog Box)

The Files tab lets you view the files associated with the data in the PROM File Formatter. The files are shown in a read-only list. The tab is shown in the following figure.
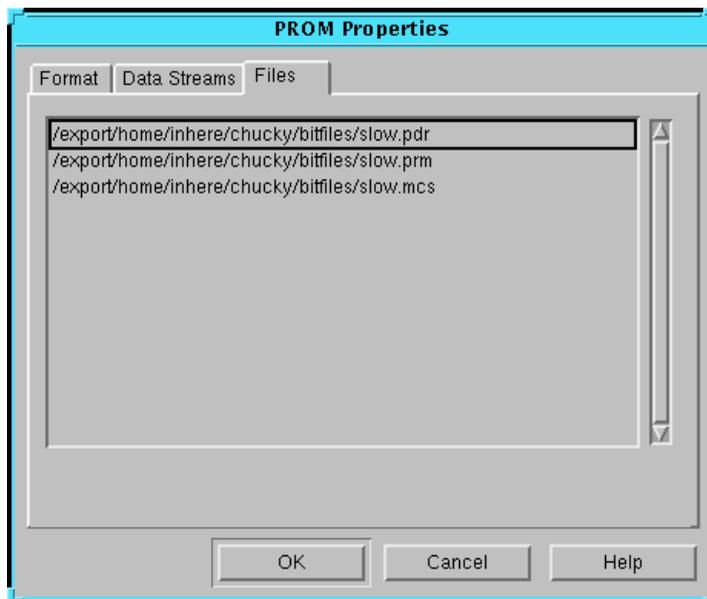
Figure 4-6 PROM Properties Dialog Box—Files

Following are the three file types listed in the Files tab.

- PDR File—An ASCII report file listing all the data streams and BIT files used to construct the PROM file, as well as the load direction and PROM file splitting information. The file has the same name as the PROM file and a .pdr extension.

- PRM File—An ASCII file containing a memory map of the output PROM file. If the data in the PROM File Formatter is split into multiple PROM files, there will be a PRM file corresponding to each PROM file.

- PROM Files—The file or files containing the PROM configuration information. Depending on the PROM file format you have chosen, the PROM files will have either a .tek, .mcs, .exo, or .hex extension.

  For split PROMs, there will be one PROM file for each targeted PROM. The files are named by adding a 00, 01, ..., 0n suffix to the input file name.

  For example, if the original file name is design.mcs and the PROM file is split into three smaller PROM files, they will be named as follows: design00.mcs, design01.mcs, and design02.mcs.

  Each PROM file will have a matching PRM file.

  There is only a single PDR file to describe the data in the PROM File Formatter, even if the data has been split into multiple PROM files.

Redo (Edit Menu)

This command redoes the last action that was undone.

The following toolbar button executes the Redo command.

Save (File Menu)

The Save command saves all of the files associated with the data in the PROM File Formatter—the PDR file, the PRM file, and the PROM files. The files are saved with their current file names and location.

The following toolbar button executes the Save command.

If you are saving the information in the PROM File Formatter for the first time, the Save As dialog box appears, as shown in the following figure.

Note The dialog box shown in the figure is the dialog box as it appears on a PC.
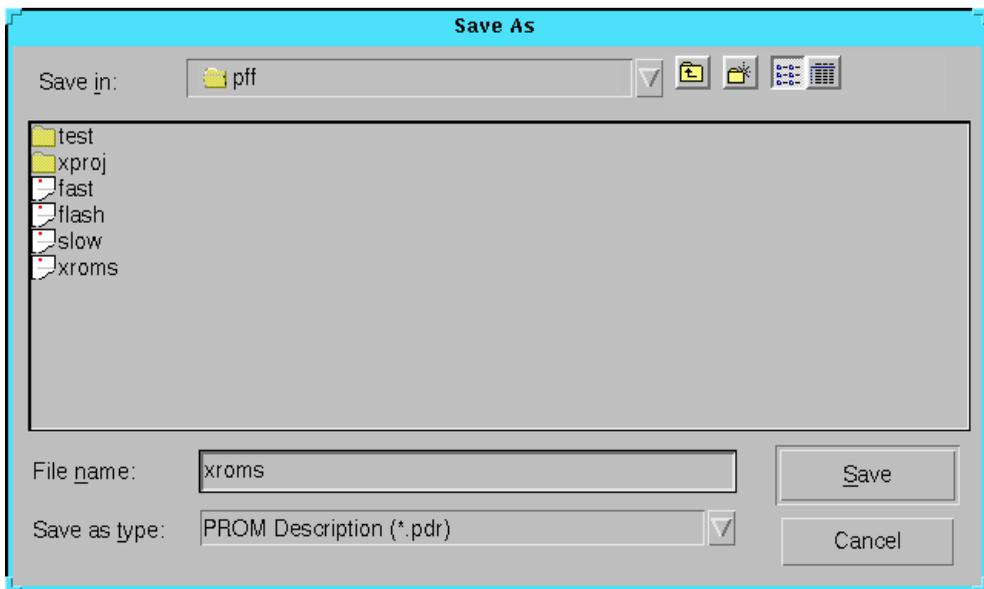

Figure 4-7 Save As Dialog Box

This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Save As (File Menu)

The Save As command saves the PROM File Formatter data to the file names and directory you specify.

When you select this command, the Save As dialog box appears, as shown in the preceding figure. This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Save Description (File Menu)

The Save Description command saves the PROM description (PDR) file, without saving the PROM file or the PRM file. The PDR file is saved with its current file name and location.

If you are saving the PROM description file for the first time, the Save As dialog box appears, as shown in the Figure 4-7. This is a standard file selection dialog box.

For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Save Description As (File Menu)

The Save Description As command saves the PROM description (PDR) file (without saving the PROM file) to the file name and directory you specify.

When you select this command the Save As dialog box appears, as shown in the Figure 4-7. This is a standard file selection dialog box. For a description of the fields in the dialog box, refer to the documentation and online help for the applicable windowing system.

Show File Paths (View Menu)

This command displays the BIT files in the PROM description area with their full path names.

Split PROM (File Menu)

This command retargets a PROM file to multiple PROM devices. If the PROM file has already been split, the Split PROM command lets you modify the way the split is performed.

The following toolbar button executes the Split PROM command.

The procedure for splitting a PROM is described in the "Splitting a PROM File" section of the "Using the PROM File Formatter" chapter. The Split PROM Wizard dialog boxes are described below.

When you select Split PROM, the dialog box shown in the following figure appears.
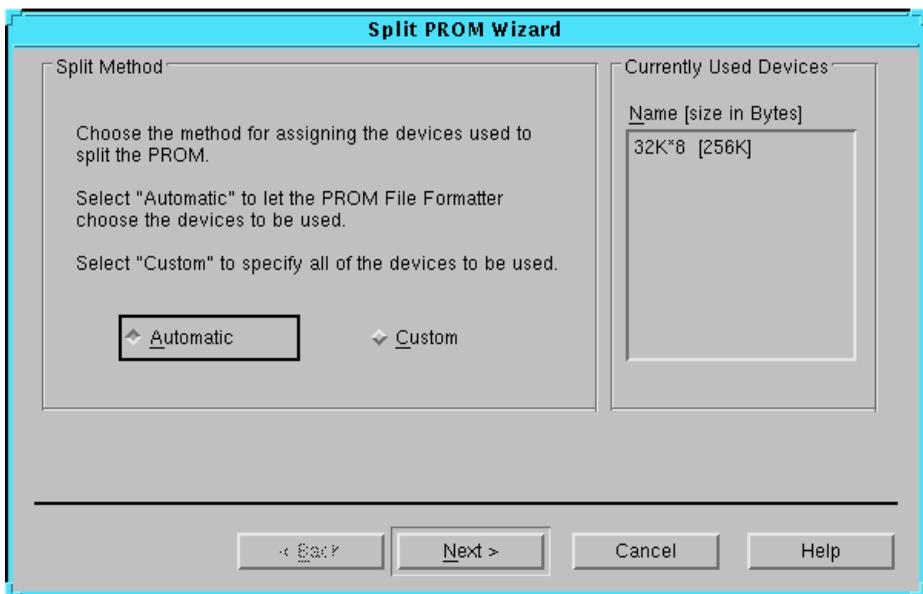
Figure 4-8 Split PROM Wizard Dialog Box

The options in this dialog box are listed as follows.

- Automatic and Custom radio buttons

  Determines whether the PROM file will be split automatically by the PROM File Formatter (Automatic button enabled) or will be split as you direct (Custom button enabled).

- Currently Used Devices

  Indicates the devices into which the PROM File Formatter data is currently targeted.

When you have selected an option, click Next to continue the Split PROM Wizard.

Split PROM Wizard Dialog Box Options—Automatic

The Automatic selection option of the Split PROM Wizard selects the minimum number of PROMs required to contain the data. If you selected Automatic in the Split PROM Wizard dialog box, the dialog box shown in the following figure appears.
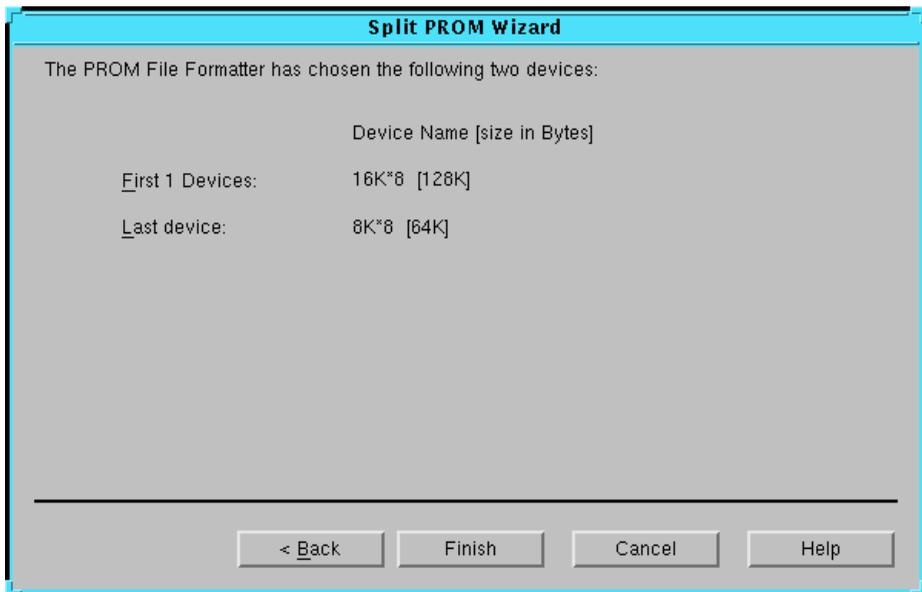
Figure 4-9 Split PROM Wizard Fields—Automatic

The information in this dialog box is read-only; it indicates the devices into which the PROM File Formatter divided the existing PROM File and the size of each device.

Click Finish to complete the PROM Wizard.

Split PROM Wizard Dialog Box Options—Custom

The Custom selection option of the Split PROM Wizard allows you to specify how PROM File Formatter will split the PROM data. If you selected Custom in the Split PROM Wizard dialog box, the dialog box shown in the following figure appears.
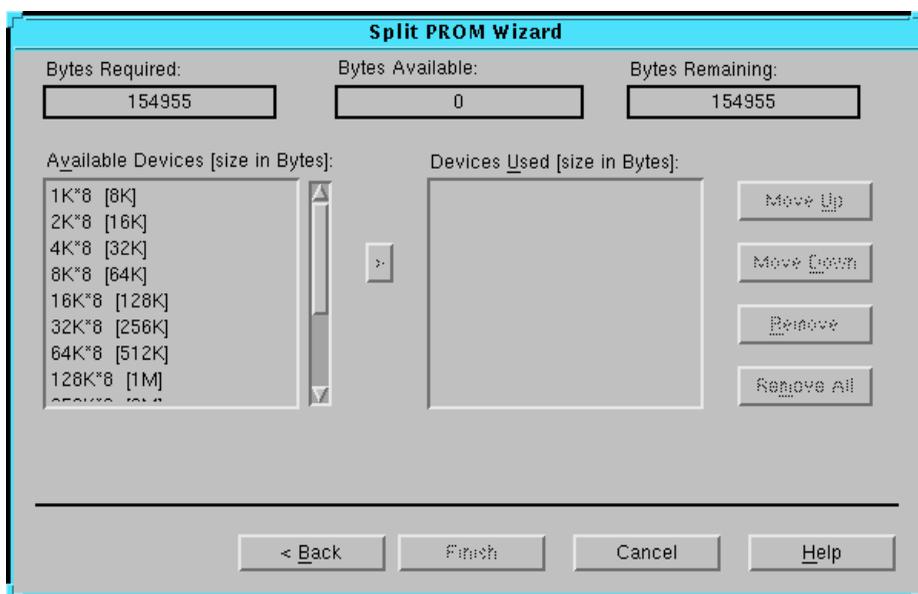
Figure 4-10 Split PROM Wizard Fields—Custom

The Split PROM File dialog box for custom selection includes the following options:

- Bytes Required box

   Indicates the size of the PROM file you are splitting or total number of bytes to be allocated.

- Bytes Available box

   Indicates the number of bytes available in the set of devices you have chosen.

- Bytes Remaining box

   Indicates the number of bytes that still need to be allocated.

- Available Devices list box

   Displays the PROM list, which provides a listing of available PROMs and corresponding PROM sizes. You select devices in this list to add to the Devices Used list.

- Devices Used list box

Displays the selected PROMs in the order they will receive the PROM data.

- \> button

  Adds the device currently selected in the Available Devices list to a position under the device currently selected in the Devices Used list.

- Move Up button

  Moves the device currently selected in the Devices Used list one position closer to the top of the list.

- Move Down button

  Moves the device currently selected in the Devices Used list one position closer to the bottom of the list.

- Remove button

  Removes the entry currently selected in the Devices Used list from the list.

- Remove All button

  Removes all entries from the Devices Used list box, clearing the box.

- Back button

  Returns to the previous Split PROM Wizard dialog box.

- Finish

  Closes the Split PROM Wizard and applies the splitting information to the data currently displayed in the PROM description area.

Note The files created by the Split PROM Wizard are not saved to disk until you execute a Save command

Status Bar (View Menu)

This command displays or hides the status bar, located at the bottom of the PROM File Formatter window. The status bar provides command and processing information and information about the PROM properties.

Toolbar (View Menu)

This command displays or hides the toolbar located at the top of the PROM File Formatter window. The toolbar displays several buttons, which you can use to specify commands directly. Use the toolbar as an alternative to the menu commands. See the "Toolbar" section of the "Getting Started" chapter for descriptions.

Undo (Edit Menu)

This command reverses the last action you performed.

The following toolbar button executes the Undo command.

Appendix A

Keyboard Shortcuts

Use the following keyboard shortcuts to navigate and select objects on the PROM File Formatter screen and to navigate in the Help tool.

The following table is a summary of the PROM File Formatter keyboard shortcuts

Table A-1 Keyboard Shortcuts

Key	Action
Ctrl N	Runs the File → New command.
Ctrl O	Runs the File → Open command.
Ctrl S	Runs the File → Save command.
Alt Enter	Runs the File → PROM Properties command.
Ctrl Z	Runs the Edit→ Undo command.
Ctrl R	Runs the Edit→ Redo command.
Ctrl X	Runs the Edit→ Cut command.
Ctrl C	Runs the Edit→ Copy command.
Ctrl V	Runs the Edit→ Paste command.
Alt ↑	Runs the Edit→ Move Up command.
Alt ↓	Runs the Edit→ Move Down command.
Tab	In the PROM File Formatter window, toggles the keyboard focus between the PROM description area and the file selection area. In a dialog box, traverses forward through objects and highlights them.
Shift Tab	In a dialog box, traverses backward through objects and highlights them.

Table A-1 Keyboard Shortcuts

Key	Action
Enter	Activates a selection button or a highlighted item in a list.
Delete	Deletes the selected file or data stream.
Arrow keys	Scrolls up or down inside selection boxes, including menus. Also, scrolls up or down the hierarchical display in the PROM description area or the file selection area.
Alt *Character*	Selects a menu (for example, Alt F selects the File menu).
Esc	Deselects a menu or exits a dialog box.

Appendix B

Multiple Configuration Setups

This appendix describes programming setups that you can use to support multiple applications in a system. Three possible scenarios are covered. These are described in the following sections.

- "Reconfiguring a Daisy Chain from a Serial PROM"
- "Reconfiguring a Single Device or Daisy Chain from a Parallel PROM"
- "Configuring Multiple Device Daisy Chains from One Parallel PROM"

Note For information about Virtex configurations, see the Xilinx web page (http://www.xilinx.com)

Reconfiguring a Daisy Chain from a Serial PROM

You can download multiple applications to a single device or to a daisy chain of multiple devices in master serial mode from a serial PROM device. The master serial mode forces you to reconfigure your FPGAs with the applications in a fixed sequence (the sequence in which the data streams are saved in the serial PROM).

1. Use the PROM File Formatter to build a PROM file that includes a separate data stream for each application that you wish to implement in the FPGA or daisy chain. Save it in serial PROM format. Each data stream will have its own header and length count, which the FPGA or daisy chain uses to determine when it has read in all the data for a particular application.

2. Burn the PROM file into a serial PROM device using a PROM programmer.

3. If you are configuring a daisy chain, build the daisy chain of devices, ensuring you connect the DOUT output of each slave device to the DIN input of the next device. Refer to the connections given in The Programmable Logic Data Book.

4. If you want to configure a single device, connect the serial PROM directly to the FPGA; if you want to configure a daisy chain, connect the PROM to the master device of the daisy chain.

5. Power up the daisy chain of devices.

    The PROM's internal address counters are reset upon power-up. The FPGA or daisy chain reads the length count in the first data stream and clocks the serial PROM a length count number of times to configure the FPGA or daisy chain with the first application. At the end of the first configuration cycle, the PROM internal address pointer is left pointing to the end of the first data stream.

6. Reconfigure the daisy chain by pulling the PROG pin of XC4000 and XC5200 devices Low for at least 300 ns; pull the D/P pin of XC3000A devices Low for at least 6 µs (microseconds).

    This action causes the FPGA or daisy chain to read the next data stream in the PROM.

    If the PROM has been configured for active High Reset, you must tie the RESET/$\overline{\text{OE}}$ pin to GND; if the PROM has been programmed for active Low Reset, tie the $\overline{\text{RESET}}$/OE pin to VCC.

    Note Do not use this procedure if there is any chance that your system might be reset before you try to reprogram the FPGAs with the second configuration. Any accidental system resets can cause the PROM's internal address counter to be reset to 0 also, which makes it point back to the first data stream.

Reconfiguring a Single Device or Daisy Chain from a Parallel PROM

You can program a single device or daisy chain with multiple configurations loaded from a parallel PROM. This method allows you to select the desired application in any order by selecting the appropriate start address.

Planning the PROM Structure

This section describes how to create a PROM structure

1. Use the PROM File Formatter to build a PROM file that includes one data stream for each daisy chain that needs to be configured.

2. Look at the numbers in the PROM description area to determine the total number of bytes required for the largest data stream.

3. Compute the number of address bits required to address this number of bytes. For example, if the size of the largest data stream is 25,000 bytes, then 15 address bits are needed to address them.

4. Use the remaining high order bits as the external select bits to select the data stream for the desired application.

Setting the PROM Properties

This section describes how to set PROM Properties.

1. Select **File → PROM Properties**.

2. In the Format tab of the PROM Properties dialog box, select Byte Wide in the Type field.

3. In the Data Streams tab of the PROM Properties dialog box, enter the starting address for each data stream in the PROM file. Set the address such that the desired data stream can be selected out of 2^n data streams by asserting n address bits.

    For example, a single data bit can select two different applications. If the PROM file contains two data streams, select the starting addresses for the two applications such that they differ by only one address bit; this is typically the high order address bit.

4. Save the PROM file.

Implementing the Setup

1. Burn the PROM file into a parallel PROM device using a PROM programmer.

2.   Connect the components on your board as shown in *The Program-mable Logic Data Book.*

3.   To control the *n* address bits, you can use either a microcontroller or a state machine implemented in an XC9500 CPLD.

4.   To reconfigure the daisy chain, pull the $\overline{\text{PROG}}$ pin of XC4000 and XC5200 devices Low for at least 300 μs; pull the D/P pin of XC3000A devices Low for at least 6 μs.

Example

This example explains how to use a microcontroller or CPLD device to configure a daisy chain for four separate functions using four data streams stored on the parallel PROM. The daisy chain is 12,500 bytes long.

Because the daisy chain requires 12,500 bytes of configuration bits, 14 address bits are required to address the data (2^{14}=16,384 bytes). You must use two external selection bits to select each of the four data streams individually. Use the two high order bits of each data stream starting address for this purpose (bits 14 and 15).

Table B-1 Data Stream Addressing—Single Device or Daisy Chain Example

Data Stream	Select Bits	Starting Address	Ending Address
1	00	00 00000000000000	00 11111111111111
2	01	01 00000000000000	01 11111111111111
3	10	10 00000000000000	10 11111111111111
4	11	11 00000000000000	11 11111111111111

To configure the FPGA daisy chain on power-up with the first application, the microcontroller or CPLD must drive the two high order address bits to 00 to select data stream #1 for the first application. To reconfigure FPGA or daisy chain for application #4, drive the two high order address bits to 11 and assert the appropriate REPRO-GRAM signal

Configuring Multiple Device Daisy Chains from One Parallel PROM

Some applications might require that you store the configuration data for multiple daisy chains of FPGAs on the same parallel PROM device. To implement such a setup, use additional logic to address the different daisy chains, to hold all unconfigured daisy chains in reset mode, and to tristate the configured daisy chains while another chain is being configured.

Planning the PROM Structure

This section how to plan the PROM structure.

1. Use the PROM File Formatter to build a PROM file that includes one data stream for each daisy chain that needs to be configured.

2. Determine the total number of bytes required for the largest data stream.

3. Compute the number of address bits required to address this number of bytes. For example, if the size of the largest data stream is 25,000 bytes, then 15 address bits are needed to address them.

4. Use the remaining high order bits as the external select bits to select the data stream for the desired application.

Setting the PROM Properties

This section describes how to set PROM properties.

1. Select **File → PROM Properties**.

2. In the Format tab of the PROM Properties dialog box, select Byte Wide in the Type field.

3. In the Data Streams tab of the PROM Properties dialog box, enter the starting address for each data stream in the PROM file. Set the address such that the desired data stream can be selected out of 2^n data streams by asserting n address bits.

   For example, a single data bit can select two different applications. If the PROM file contains two data streams, select the starting addresses for the two applications such that they differ

by only one address bit; this is typically the high order address bit.

4. Save the PROM file.

Implementing the Setup

This section explains how to implement the PROM file.

1. Burn the PROM file into a parallel PROM device using a PROM programmer.

2. Connect the components on your board as shown in *The Programmable Logic Data Book.*

3. To control the *n* address bits, you can use either a microcontroller or a state machine implemented in an XC9500 CPLD.

4. As each daisy chain is being configured, use the microcontroller or the state machine to hold unconfigured daisy chains in reset mode by pulling RESET/INIT Low and to tristate the address lines leading to all configured daisy chains.

5. Use the microcontroller to hold the second daisy chain in reset mode while you configure the first daisy chain. Keep the second daisy chain in Reset mode until the DONE signal of the first daisy chain goes High. When the DONE signal goes High, the first daisy chain has completed configuration.

6. When the DONE signal for the first device goes High, the address pins of the master device in the first daisy chain must be tristated while the second chain is allowed to configure. This step prevents contention with the active outputs of the first daisy chain.

Example

This example explains how to use a microcontroller or CPLD device to configure four daisy chains using four data streams stored on the parallel PROM. The size of the largest data stream is 12,500 bytes.

Because the largest of these daisy chains requires 12,500 bytes of configuration bits, 14 address bits are required to express the size of the data (2^{14}=16,384 bytes). You must use two external selection bits

to select one out of the four data streams. Use the two high order bits of each data stream starting address for this purpose.

Table B-2 Data Stream Addressing—Multiple Daisy Chain Example

Data Stream	Select Bits	Starting Address	Ending Address
1	00	00 00000000000000	00 11111111111111
2	01	01 00000000000000	01 11111111111111
3	10	10 00000000000000	10 11111111111111
4	11	11 00000000000000	11 11111111111111

1. To configure daisy chain #1 on power-up, the microcontroller or CPLD must drive the two high order address bits to 00 to select data stream #1 for the first application.

2. Use the microcontroller or CPLD to hold the other three unconfigured daisy chains in Reset mode by pulling RESET/INIT Low.

   To hold an XC3000A device in Reset mode, hold the RESET pin Low; for the XC4000 and XC5200 devices, hold the INIT pin Low.

3. When the DONE pin goes High on the first daisy chain, the daisy chain is configured. The microcontroller or CPLD must respond by tristating the address lines leading to the master device of the first daisy chain. The controller also drives the 01 value on the high-order address bits to select the second data stream, then releases RESET on the second daisy chain so that it can configure.

4. Repeat the previous step for the third daisy chain after DONE goes High on the second daisy chain, this time tristating the address pins on both the first and second daisy chain, driving a value of 10 on the high order address bits, and releasing the RESET on the third daisy chain.

5. For the fourth daisy chain, after DONE goes High on the third daisy chain, tristate the address pins on the first, second, and third daisy chains, drive a value of 11 on the high order address bits, and release RESET on the fourth daisy chain.

Glossary of Terms

byte wide PROM

A PROM that is read one byte at a time. The other PROM type is a serial PROM, which is read one bit at a time.

daisy chain

In the context of the PROM File Formatter, a data stream used to configure a set of devices that are connected in series such that the DOUT pin of a device in the daisy chain is connected to the DIN pin of the next device. You can generate a daisy chain data stream by concatenating two or more bitstreams (BIT files) together using the PROM File Formatter.

data stream

In the context of the PROM File Formatter, a data stream is a collection of one or more concatenated BIT files used to implement a single user application. To implement multiple applications, concatenate data streams — one data stream per application — to form a multiple data stream PROM file that allows you to reprogram a single FPGA or a daisy chain.

EXORmacs (Motorola)

A PROM file format supported by the Xilinx tools. Its maximum address is 16,777,216. This format supports PROM files of up to (8 x 16,777,216) = 134,217,728 bits

Express mode

FPGA configuration mode (XC5200 only) in which configuration data is loaded into the FPGA in parallel; one byte per clock cycle instead of

one bit per clock cycle.

file selection area

The area located on the right side of the PROM File Formatter window. The area presents a hierarchical view of the drives, directories, and BIT files in your system. The area is used to locate and select the BIT files that the PROM file will contain.

hexadecimal format (HEX)

An ASCII hexadecimal version of the PROM data. It has unlimited data capacity.

loading direction

The direction in which data is stored on your PROM. In the Up direction, the data is stored in ascending order, starting at a low address. In the Down direction, the data is stored in descending order, starting at a high address.

MCS-86 (Intel)

An Intel PROM format supported by the Xilinx tools. Its maximum address is 1,048,576. This format supports PROM files of up to (8 x 1,048,576) = 8,388,608 bits.

menu bar

The area located at the top of the PROM File Formatter window that provides access to the menus. It includes the File, Edit, View, and Help menus.

PROM

A programmable read only memory.

PROM description area

The area located on the left side of the PROM File Formatter window. The area shows the structure of your PROM file. It is a hierarchical view of the data streams and BIT files in the PROM file.

PROM description (PDR) file

An ASCII report file listing all the data streams and BIT files used to

construct the PROM file, as well as the load direction and PROM file splitting information. The PROM File Formatter uses this file to determine the structure and properties you have specified for the PROM file.

PROM file

A file consisting of one or more BIT files (bitstreams) formatted into a standard PROM file format. If generated using the PROM File Formatter, the file is formatted in one of three industry-standard formats: Intel MCS-86, Tektronics TEKHEX, or Motorola EXORmacs. The PROM file includes headers that specify the length of the bitstreams, as well as all the framing and control information necessary to configure the FPGAs. It can be used to program one or more devices.

PROM File Formatter

The program used to format one or more bitstreams into an MCS-86, TEKHEX, EXORmacs, or HEX format.

serial PROM

A PROM whose data is read serially, one bit at a time. The other PROM type is a byte wide PROM, which is read one byte at a time.

status bar

An area located at the bottom of a window that provides information about the commands that you are about to select or that are being processed.

TEKHEX (Tektronix)

A Tektronix PROM format supported by Xilinx. Its maximum address is 65,536. This format supports PROM files of up to (8 x 65,536) = 524,288 bits.

toolbar

The area located under the menu bar at the top of your window. It contains a series of buttons that you click to execute some of the most commonly used commands. These buttons constitute an alternative to the menu commands.