Chapter 2

IRIX Developer Documentation

This chapter tells you about the documentation Silicon Graphics provides to describe the operating system, compilers, tools, and libraries you can use to develop your applications. It presents this information in three forms:

- A documentation roadmap that lists the available developer documentation in graphical form.
- A list of the manuals provided to everyone who orders the IRIS Developer's Option (IDO).
- An annotated list of all IRIX developer documentation, grouped by function:

Table 2-1	Operating system manuals
Table 2-2	Programming language manuals
Table 2-3	Documentation about user interface toolkits
Table 2-4	Manuals about software development tools
Table 2-5	Application libraries

A Documentation Roadmap

The diagram in Figure 2-1 shows the documentation provided by Silicon Graphics for application developers.

Operating System

IRIX

- **Programming on Silicon Graphics Systems: An Overview**
- **Topics in IRIX Programming**
- **IRIX Network Programming Guide**

Device Driver

- **IRIX Device Driver Programming Guide**
- **IRIX Device Driver Reference Pages**

Compilers

C++

- C++ Programming Guide
- C++ Language System Overview
- C++ Language System Guide

C

- **C Language Reference Manual**
- IRIS Power C User's Guide

Fortran

- Fortran 77 Language Reference Manual
- Fortran 77 Programmer's Guide
- POWER Fortran Accelerator User's Guide
- **MIPSpro Fortran 90 Programmer's Guide**
- **Fortran 90 Handbook**

Pascal

- Pascal Programming Guide

Ada

- Ada X/Motif Interface (AXI) Programmer Reference Manual

Assembly Language

- **MIPSpro Assembly Language Programmer's Guide**

User Interface Tools

Window System

- **Xlib Programming Manual**
- **X Toolkit Intrinsics Programming Manual**
- **X11 Input Extension Library Specification**

Desktop Environment Integration

- **Indigo Magic Desktop Integration Guide**
- **Indigo Magic User Interface Guidelines**

User Interface Toolkits

- IRIS Viewkit Programmer's Guide
- **OSF/Motif Programmer's Guide**
- **OSF/Motif Programmer's Reference**
- **OSF/Motif Style Guide**
- **IRIS IM Programming Notes**

Software Development Tools

Compiling and Performance Tuning

- **MIPS Compiling and Performance Tuning Guide**
- **MIPSpro 64-Bit Porting and Transition Guide**

Debugging

- ***dbx* User's Guide**
- ***dbx* Quick Reference**

Programming Tools

- CASEVision/WorkShop User's Guide, Vol. 1-2
- CASEVision/WorkShop MegaDev User's Guide
- Developer Magic: ProDev Workshop and MegaDev Overview
- Developer Magic: X/Motif Analyzer User's Guide
- Developer Magic: Application Builder User's Guide
- CASEVision/Workshop Pro MPF User's Guide
- CASEVision Environment Guide

Version Control/ Configuration Management

- CASEVision/Tracker Design Guide
- CASEVision/Tracker User's Guide
- CASEVision/ClearCase

Application Libraries

OpenGL

- **OpenGL Programming Guide**
- OpenGL Reference Manual
- **The OpenGL Porting Guide**

IRIS GL

- **Graphics Library Programming Guide, Vol. 1-2**
- **Graphics Library Programming Tools and Techniques**

Open Inventor

- The Inventor Mentor
- The Inventor Toolmaker
- Open Inventor C++ Reference Pages

Performer

- IRIS Performer Programming Guide
- IRIS Performer Reference Pages
- IRIS Performer Quick Reference

ImageVision Library

- ImageVision Library Programming Guide
- ImageVision Library Inheritance Hierarchy

Digital Media

- IRIS Digital Media Programming Guide

Printer/Scanner Management

- Impressario Programming Guide

Document titles shown in **bold** are part of the IDO (IRIS Developer's Option)

Figure 2-1 Documentation for Developers

The IRIS Developer’s Option

The IRIS Developer’s Option includes the manuals listed below. To order printed versions of these manuals, call SGI Express at 1-800-800-7441, and supply the desired product codes. The *Documentation Catalog for IRIX 5.3*, viewable from IRIS InSight, contains additional information about these manuals.

- *Programming on Silicon Graphics Systems: An Overview*
- *Topics in IRIX Programming*
- *IRIX Network Programming Guide*
- *IRIX Device Driver Programming Guide*
- *IRIX Device Driver Reference Pages*
- *C Language Reference Manual*
- *dbx User’s Guide*
- *dbx Quick Reference*
- *OpenGL Programming Guide*
- *OpenGL Porting Guide*
- *Graphics Library Programming, Volumes 1 and 2*
- *Graphics Library Programming Tools and Techniques*
- *Indigo Magic Desktop Integration Guide*
- *Indigo Magic User Interface Guidelines*
- *Xlib Programming Manual*
- *X11 Input Extension Library Specification*
- *X Toolkit Intrinsics Programming Manual*
- *IRIS IM Programming Notes*
- *OSF/Motif Programmer’s Guide*
- *OSF/Motif Programmer’s Reference*
- *OSF/Motif Style Guide*
- *IRIS Digital Media Programming Guide*
- *MIPS Compiling and Performance Tuning Guide*

- *MIPSpro 64-Bit Porting and Transition Guide*
- *MIPSpro Assembly Language Programmer's Guide*
- *Software Packager User's Guide*

An Annotated List of Manuals

The five tables in this section list the manuals available for developers, along with the production name for each manual and a brief description of the content of the manual.

Operating System Level Documentation

Table 2-1 lists manuals containing information about topics at the operating system level. You receive online versions of these manuals when you order the IDO.

Table 2-1 Operating System Level Manuals

Product Name	Title	Description
IDO	*Programming on Silicon Graphics Systems: An Overview*	Provides an overview of the IRIX operating system, programming languages, software development and user interface toolkits, and application libraries.
IDO	*Topics in IRIX Programming*	Describes selected topics in IRIX programming, including interprocess communication, file and record locking, fonts, and internationalization.
IDO	*IRIX Network Programming Guide*	Describes various approaches to writing software that sends or receives information through a network.
IDO	*IRIX Device Driver Programming Guide*	Tells you how to write device drivers to control peripheral devices.
IDO	*IRIX Device Driver Reference Pages*	Contains reference pages that describe the functions and data structures used in writing device drivers.

Compilers

Table 2-2 lists the manuals containing information about programming languages supported by Silicon Graphics. Some of these manuals come with IDO. Others you receive only when you order the associated product.

Table 2-2 Compiler Manuals

Product Name	Title	Description
C++	*C++ Programming Guide*	Tells you how to compile, link, and run a C++ program. Documents the interface between C and C++, and the differences between the 64- and 32-bit versions of the compiler. Describes how to use the Delta/C++ compiler.
	C++ Language System Overview	Contains an overview of the language features of C++. Describes the differences between C and C++.
	C++ Language System Library	Introduces the iostream support in the C++ library and describes facilities for using complex-number arithmetic.
IDO	*C Language Reference Manual*	Contains a summary of the syntax and semantics of the C programming language as implemented on Silicon Graphics platforms.
IRIS Power C	*IRIS Power C User's Guide*	Describes how to use IRIS Power C, a C compiler for developers who want to make efficient use of IRIX multiprocessors by executing parts of their programs concurrently.
Fortran	*Fortran 77 Language Reference Manual*	Describes the Fortran 77 language specifications as implemented on the IRIS workstations.
	Fortran 77 Programmer's Guide	Describes the implementation of Fortran 77 for IRIX and the IRIS workstations.
POWER Fortran	*POWER Fortran Accelerator User's Guide*	Describes the features of the POWER Fortran Accelerator™ (PFA), a source-to-source preprocessor that allows you to run Fortran 77 programs on multiprocessor systems.

Table 2-2 (continued) Compiler Manuals

Product Name	Title	Description
	MIPSpro Fortran 90 Programmer's Guide	Discusses the use of the MIPSpro Fortran 90 compiler, including run-time considerations, linking to other languages, optimization, and considerations for porting from Fortran 77. The optimization material covers the use of POWER Fortran 90, the multiprocessor parallel optimization tool.
	Fortran 90 Handbook	Contains a complete reference to the ANSI/ISO standard for the Fortran 90 language. It contains hypertext links to the MIPSpro Fortran 90 Programmer's Guide allow you to look up the SGI implementation of optional features immediately.
Pascal	*Pascal Programming Guide*	Describes the general syntax of the Pascal programming language, including data structures and program flow control.
IRIX5 AXM	*Ada X/Motif Interface (AXI) Programmer Reference Manual*	Contains information about programming in the AXM environment, including the Ada preprocessor, the Statistical Analyzer, and interfaces to libraries written in other languages.
IDO	*MIPSPro Assembly Language Programmer's Guide*	Describes the assembly language supported by the RISCompiler system, including its syntax rules.

User Interface Tools

Table 2-3 lists the manuals containing information about the user interface libraries and toolkits supported by IRIX. Some of these manuals come with the IDO. Others you receive only when you order the associated product.

Table 2-3 Documentation About User Interface Tools

Product Name	Title	Description
IDO	*Xlib Programming Manual*	Describes the X library, the C interface to the X Window System.
IDO	*X11 Input Extension Library Specification*	Describes the input extension to the X11 server. This extension supports the use of additional input devices beyond the pointer and keyboard devices defined by the core X protocol.
IDO	*X Toolkit Intrinsics Programming Manual*	Describes how to use the Xt Intrinsics library to write X Window System programs.
IDO	*OSF/Motif Programmer's Guide*	Describes how to use the OSF/Motif API to create Motif applications.
IDO	*OSF/Motif Programmer's Reference*	Contains descriptions of the OSF/Motif toolkit, window manager, and user interface language commands and functions.
IDO	*OSF/Motif Style Guide*	Provides a framework of behavior specifications to guide developers in the design and implementation of products consistent with the OSF/Motif user interface.
IDO	*IRIX IM Programming Notes*	Describes how to develop applications using IRIS IM. Contains advice for X and Xt programmers about programming in the Silicon Graphics X environment.
IDO	*Indigo Magic Desktop Integration Guide*	Explains how to integrate applications into the Indigo Magic desktop environment.

Table 2-3 (continued) Documentation About User Interface Tools

Product Name	Title	Description
IDO	*Silicon Graphics User Interface Guidelines*	Helps you create products whose user interface is consistent with other applications in the Indigo Magic desktop environment.
C++	*IRIS ViewKit Programmer's Guide*	Describes how to create programs using IRIS ViewKit, a toolkit that provides user interface facilities for applications.

Software Development Tools

Table 2-4 contains a list of the manuals describing the tools for compiling, debugging, and tuning your application. Some of these manuals come with IDO. Others you receive only when you order the associated product.

Table 2-4 Software Development Tools Manuals

Product Name	Title	Description
IDO	*MIPS Compiling and Performance Tuning Guide*	Describes the compiler system, dynamic shared objects (DSOs), and program debugging tools. It explains ways to improve program performance using *prof*, *pixie*, and the optimization options.
IDO	*MIPSpro 64-bit Porting and Transition Guide*	Describes the IRIX 6 operating system and MIPSpro 32-bit and 64-bit compilers, calling conventions and language implementation differences, source code porting, compilation and runtime issues, and performance tuning for the R8000.
IDO	*dbx User's Guide*	Describes how to use *dbx*, a source level debugger, to debug C, C++, Fortran 77, Pascal, and assembler programs. This includes how to execute a program using *dbx*, examine source code, control program execution, debug machine language code, and debug multiple processes.
CASEVision WorkShop	*CASEVision/WorkShop User's Guide - Volume 1*	Describes how to use the Debugger and Static Analyzer tools in the WorkShop toolset.

Table 2-4 (continued) Software Development Tools Manuals

Product Name	Title	Description
	CASEVision/WorkShop User's Guide - Volume 2	Describes how to use the Performance Analyzer, Tester, and Build Manager tools in the WorkShop toolset.
	CASEVision/WorkShop MegaDev User's Guide	Describes the C++ Browser and the Fix and Continue utilities. The C++ Browser lets you view the structure of any set of C++ classes. Fix and Continue allows you to redefine functions and then continue execution without recompiling.
	Developer Magic: ProDev Workshop and MegaDev Overview	Describes the major tools in the ProDev WorkShop toolkit. It provides a user model for each tool, highlights some major features, and provides pointers to the user guides where you can get detailed information on the tools.
	Developer Magic: X/Motif Analyzer User's Guide	Describes the X/Motif Analyzer, a tool that provides special debugging support for X/Motif applications. The X/Motif Analyzer provides information unavailable through conventional debuggers. It lets you set widget-level breakpoints and collect X event history.
	Developer Magic: RapidApp User's Guide	Describes RapidApp, a tool for creating application interfaces. RapidApp generates C++ code, with interface classes based on the IRIS ViewKit toolkit and IRIX IM (the Silicon Graphics version of X/Motif). RapidApp also includes predefined interface components based on other Developer Magic libraries such as OpenGL(TM) and Open Inventor(TM). Applications produced by RapidApp are automatically integrated into the Indigo Magic Desktop environment, letting you take advantage of Silicon Graphics' interface and desktop technology.
	CASEVision/WorkShop Pro MPF User's Guide	Describes the Pro MPF tool, an interactive, visual comparison of the original source with transformed, parallelized code.
	CASEVision Environment Guide	Describes the common environment that all the tools in the CASEVision product line share.

Table 2-4 (continued) Software Development Tools Manuals

Product Name	Title	Description
	CASEVision/Tracker Design Guide	Describes the CASEVision/Tracker, a tool for creating systems to track bugs and enhancement requests.
	CASEVision/Tracker User's Guide	Describes how to use the Request Tracking System (RTS), a system for tracking bugs and requests for enhancements.
	CASEVision/ClearCase	Describes the CASEVision/ClearCase software configuration management system.
DESK	*Software Packager User's Guide*	Describes how to use the Software Packager (*swpkg*), a graphical tool for packaging software for installation on Silicon Graphics workstations. Products packaged with Software Packager can be installed with Software Manager (*swmgr*), an Indigo Magic Desktop utility for installing software.

Application Libraries

Table 2-5 contains a list of the manuals describing the graphics, image processing, digital media, and printer/scanner libraries available on an IRIS system. Some of these manuals come with IDO. Others you receive only when you order the associated product.

Table 2-5 Application Libraries Manuals

Product Name	Title	Description
IDO	*OpenGL Programming Guide*	Describes how to use OpenGL, a platform-independent standard for rendering 3D graphics.
	OpenGL Reference Manual	Contains the reference pages for OpenGL, the OpenGL Utility Library (GLU), and GLX—the OpenGL extension to X. Also includes an overview and summary of OpenGL routines and commands.
IDO	*The OpenGL Porting Guide*	Provides directions, hints, and tips for porting your IRIS Graphics Library software to OpenGL.

Table 2-5 (continued) Application Libraries Manuals

Product Name	Title	Description
IDO	*Graphics Library Programming Guide, Volumes 1-2*	Describes the IRIS Graphics Library API.
IDO	*Graphics Library Programming Tools and Techniques*	Describes useful software tools and programming techniques for use with IRIS GL.
Open Inventor	*The Inventor Mentor*	Provides basic information on programming with Open Inventor.
	The Inventor Toolmaker	Provides advanced information on extending Open Inventor by creating new C++ classes and customizing existing classes.
	Open Inventor C++ Reference Pages	Contains the C++ reference pages for Open Inventor.
ImageVision	*ImageVision Library Programming Guide*	Describes how to use the ImageVision Library to perform image processing tasks.
	The ImageVision Library Inheritance Hierarchy	A quick reference card that shows the entire inheritance hierarchy of the ImageVision Library.
IRIS Performer	*IRIS Performer Programming Guide*	Provides an overview of IRIS Performer and describes the API of IRIS Performer's two main libraries: *libpf*—the high-level visual simulation library, and *libpr*—the low-level high-performance graphics library.
	IRIS Performer Reference Pages	Contains the reference pages for all the functions in the two primary IRIS Performer libraries and the adjunct IRIS Performer utilities library.
	IRIS Performer Quick Reference	Lists the function prototype for each function in the IRIS Performer libraries: *libpr*, *libpf*, *libpfutil*, and *libpfsgi*.

Table 2-5 (continued) Application Libraries Manuals

Product Name	Title	Description
IDO	*IRIS Digital Media Programming Guide*	Describes the API's of the libraries that comprise the IRIS Digital Media Development Environment. This environment includes the Audio, Audio File, CD, DAT, MIDI, Video, IndigoVideo™, Compression, and Movie Libraries.
Impressario	*Impressario Programming Guide*	Describes Impressario™, which provides tools for developers who need to print and scan from their applications, or who need to write printer or scanner drivers.