

Programming Environment Releases Overview

004-5212-003

© 1999 Silicon Graphics, Inc. All Rights Reserved. This manual or parts thereof may not be reproduced in any form unless permitted by contract or by written permission of Silicon Graphics, Inc.

LIMITED AND RESTRICTED RIGHTS LEGEND

Use, duplication, or disclosure by the Government is subject to restrictions as set forth in the Rights in Data clause at FAR 52.227-14 and/or in similar or successor clauses in the FAR, or in the DOD, DOE or NASA FAR Supplements. Unpublished rights reserved under the Copyright Laws of the United States. Contractor/manufacturer is Silicon Graphics, Inc., 1600 Amphitheatre Pkwy., Mountain View, CA 94043-1351.

Autotasking, CF77, Cray, Cray Ada, CraySoft, Cray Y-MP, Cray-1, CRInform, CRI/*TurboKiva*, HSX, LibSci, MPP Apprentice, SSD, SUPERCLUSTER, UNICOS, X-MP EA, and UNICOS/mk are federally registered trademarks and Because no workstation is an island, CCL, CCMT, CF90, CFT, CFT2, CFT77, ConCurrent Maintenance Tools, COS, Cray Animation Theater, Cray APP, Cray C90, Cray C90D, Cray C++ Compiling System, CrayDoc, Cray EL, Cray J90, Cray J90se, CrayLink, Cray NQS, Cray/REELibrarian, Cray S-MP, Cray SSD-T90, Cray SV1, Cray T90, Cray T3D, Cray T3E, CrayTutor, Cray X-MP, Cray XMS, Cray-2, CSIM, CVT, Delivering the power . . . , DGauss, Docview, EMDS, GigaRing, HEXAR, IOS, ND Series Network Disk Array, Network Queuing Environment, Network Queuing Tools, OLNET, RQS, SEGLDR, SMARTE, SUPERLINK, System Maintenance and Remote Testing Environment, Trusted UNICOS, and UNICOS MAX are trademarks of Cray Research, L.L.C., a wholly owned subsidiary of Silicon Graphics, Inc.

IRIX and Silicon Graphics are registered trademarks and SGI and the Silicon Graphics logo are trademarks of Silicon Graphics, Inc. DynaWeb is a trademark of Inso Corporation. MIPS is a trademark of MIPS Technologies, Inc. Netscape and Netscape Navigator are trademarks of Netscape Communications Corporation. PostScript is a trademark of Adobe Systems, Inc. TotalView is a trademark of Bolt Beranek and Newman Inc. UNIX is a registered trademark in the United States and other countries, licensed exclusively through X/Open Company Limited. VAX is a trademark of Digital Equipment Corporation. X/Open is a registered trademark of X/Open Company Ltd. The X device and X Window System are trademarks of The Open Group.

The UNICOS operating system is derived from UNIX® System V. The UNICOS operating system is also based in part on the Fourth Berkeley Software Distribution (BSD) under license from The Regents of the University of California.

St. Peter's Basilica image courtesy of ENEL SpA and InfoByte SpA. Disk Thrower image courtesy of Xavier Berenguer, Animatica.

Contents

	<i>Page</i>
Introduction [1]	1
Release Components	1
Distribution of This Release Overview	2
Reader Comments	3
Dependencies [2]	5
CF90 Dependencies	5
Cray C/C++ Dependencies	5
CrayTools Dependencies	6
CrayLibs Dependencies	7
New Features [3]	9
CF90 Features	9
MSP Support on Cray SV1 Systems	9
Fortran Trigonometric Functions	9
Enhanced SIGN Intrinsic	9
Streamed Codes on Non-MSP Systems	9
Streaming Loop Nests	9
Streaming of Equivalenced Private Arrays	10
Inline Critical Streaming Ininsics	10
Streaming within a Parallel Region	10
Streaming Loops that Require Array Privatization	10
Message Level Change for Fortran	10
Variable Names with Leading Underscores	10
Specifying -c and -o Options Together	10

	<i>Page</i>
Directory Specification for Module Files in Fortran	11
User Assertions to Influence Streaming Decisions	11
BLAS Performance Improvements	11
Vector Loop Scheduling Enhancements	11
Unique Branch Instructions for Each Stream	11
Cray C/C++ Features	12
Vector Loop Scheduling Enhancements	12
CrayTools Features	12
I/O Improvements for PAT	12
Exchange Package Printing	12
Multistreaming Processor Support	12
CrayLibs Features	13
Compatibilities and Differences [4]	15
c1d Release Discontinued	15
cF77 and cft77 Driver Scripts Discontinued	15
Release Package [5]	17
Hardware and Software Requirements	17
Licensing Information	18
Licensing Contacts for Customers in the U.S. and Canada	18
Licensing Contacts for Customers outside of the U.S. and Canada	18
European Regional Contract Administrators/Specialists	19
Japan Contract Negotiators	20
Release Package Contents	20
Ordering the Release Package	21
Obtaining Publications	21
Additional Information	22

	<i>Page</i>
Documentation [6]	23
Online Information Access	23
Documentation Included with the Releases	24
Other Available Documentation	27
Customer Services [7]	29
Training Support	29
Software Problem Reporting and Resolution Process	29
CRInform Program	30
<i>Pipeline and the Pipeline Supercomputing Supplement</i>	30
Index	33
Tables	
Table 1. Programming Environment 3.3 Updated Documentation	24
Table 2. Programming Environment 3.3 Documentation Added for Initial Installs	26

Introduction [1]

This release overview describes the Programming Environment 3.3 releases for the following platforms:

- Cray T3E systems
- The following Cray PVP systems:
 - Cray T90 IEEE systems
 - Cray T90 systems
 - Cray C90 systems
 - Cray J90 systems
 - Cray SV1 systems

This document gives an overview of the major features of the releases, including the following information:

- Dependencies
- New features
- Compatibilities and differences
- Release package contents
- Documentation information
- Customer services information

1.1 Release Components

Each Programming Environment 3.3 release consists of the CrayTools 3.3 and CrayLibs 3.3 packages and one of the following compilers or compiler groups:

- CF90 3.3 compiler
- Cray C++ 3.3 compiler and Cray Standard C 6.3 compiler

The Portland Group High Performance Fortran (PGHPF) 2.4 package is available but is separately licensed and must be ordered separately. This

version of PGHPF contains support for the HPF_CRAFT extrinsic. PGHPF is available on the following systems:

- Cray T90 systems
- Cray C90 systems
- Cray J90 systems

Two other products, C++ Mathpack 3.0.1 and C++ Tools 3.0.1, are also available with the Cray C/C++ Programming Environment release, but are separately licensed and must be ordered separately.

1.2 Distribution of This Release Overview

A copy of this release overview is included with the Programming Environment 3.3 release package; you can also order it separately through the Minnesota Distribution Center. You can access this release overview electronically through the DynaWeb server at your site if the CF90 3.3 or the C/C++ 3.3 Programming Environment package is loaded, or at our public web site at the following URL:

<http://www.cray.com/products/software/publications>

In addition, ASCII and PostScript files are available on the following systems:

- The CRInform system, which is an online information and problem-reporting system for customers. For more information on the CRInform program, see Section 7.3, page 30.
- The `craypark` system in the `/home/craypark/release_docs` directory. The `craypark` system is available only to SGI service personnel.

If you do not have access to these systems but would like a copy of the files, contact your SGI representative.

1.3 Reader Comments

If you have comments about the technical accuracy, content, or organization of this document, please tell us. Be sure to include the title and part number of the document with your comments.

You can contact us in any of the following ways:

- Send e-mail to the following address:

`techpubs@sgi.com`

- Send a fax to the attention of "Technical Publications" at: +1 650 932 0801.
- Use the Feedback option on the Technical Publications Library World Wide Web page:

`http://techpubs.sgi.com`

- Call the Technical Publications Group, through the Technical Assistance Center, using one of the following numbers:

For SGI IRIX based operating systems: 1 800 800 4SGI

For UNICOS or UNICOS/mk based operating systems or Cray Origin 2000 systems: 1 800 950 2729 (toll free from the United States and Canada) or +1 651 683 5600

- Send mail to the following address:

Technical Publications
SGI
1600 Amphitheatre Pkwy.
Mountain View, California 94043-1351

We value your comments and will respond to them promptly.

Dependencies [2]

This chapter provides dependency information for each of the products released with the 3.3 Programming Environment.

2.1 CF90 Dependencies

The CF90 3.3 Programming Environment is supported on the following systems:

- Cray T3E systems running UNICOS/mk release 2.0.4 or later
- The following Cray PVP systems running UNICOS release 10.0.0.5 or later:
 - Cray T90 IEEE systems
 - Cray T90 systems
 - Cray C90 systems
 - Cray J90 systems
 - Cray SV1 systems

The CF90 3.3 Programming Environment release includes the following software:

- CF90 3.3 compiler
- CrayTools 3.3
- CrayLibs 3.3

2.2 Cray C/C++ Dependencies

The Cray C/C++ 3.3 Programming Environment release is supported on the following systems:

- Cray T3E systems running UNICOS/mk release 2.0.4 or later
- The following Cray PVP systems running UNICOS release 10.0.0.5 or later:
 - Cray T90 IEEE systems
 - Cray T90 systems

- Cray C90 systems
- Cray J90 systems
- Cray SV1 systems

The Cray C/C++ 3.3 Programming Environment release includes the following software:

- Cray C++ 3.3 compiler and the Cray Standard C 6.3 compiler
- CrayTools 3.3
- CrayLibs 3.3

Dependencies are as follows:

- If you are running a Cray C++ 3.0 or later compiler, you should upgrade to the Cray Assembler for MPP (CAM) version 2.3. The CAM product is not part of the Programming Environment 3.3 release; it must be ordered separately.

2.3 CrayTools Dependencies

CrayTools 3.3 is part of the following Programming Environment releases:

- Cray C/C++ 3.3
- CF90 3.3

CrayTools 3.3 is supported on the following systems:

- Cray T3E systems running UNICOS/mk release 2.0.4 or later
- The following Cray PVP systems running UNICOS release 10.0.0.5 or later:
 - Cray T90 IEEE systems
 - Cray T90 systems
 - Cray C90 systems
 - Cray J90 systems
 - Cray SV1 systems

2.4 CrayLibs Dependencies

CrayLibs 3.3 is part of the following Programming Environment releases:

- Cray C/C++ 3.3
- CF90 3.3

CrayLibs 3.3 is supported on the following systems:

- Cray T3E systems running UNICOS/mk release 2.0.4 or later
- The following Cray PVP systems running UNICOS release 10.0.0.5 or later:
 - Cray T90 IEEE systems
 - Cray T90 systems
 - Cray C90 systems
 - Cray J90 systems
 - Cray SV1 systems

New Features [3]

This chapter lists the new features in CF90, Cray C/C++, CrayTools, and CrayLibs for this release. The features described in this chapter are supported on Cray T3E systems running UNICOS/mk release 2.0.4 and later and Cray PVP systems running UNICOS release 10.0.0.5 and later.

3.1 CF90 Features

The following sections describe new CF90 features for UNICOS/mk and UNICOS systems.

3.1.1 MSP Support on Cray SV1 Systems

Multistreaming is a feature that lets you schedule four dedicated SV1 processors (SSPs) as one multistreaming processor (MSP) for a program. It automatically divides loop iterations among the four SSPs. You may get speedup factors of up to four on loops to which this technique can be applied.

3.1.2 Fortran Trigonometric Functions

The CF90 compiler now supports the modified Fortran trigonometric functions that accept arguments in degrees rather than radians.

3.1.3 Enhanced `SIGN` Intrinsic

The `SIGN` intrinsic has been enhanced to recognize `-0.0` on IEEE machines. For example, the command, `print *, SIGN(3.0, -0.0)`, prints `-3.0`.

3.1.4 Streamed Codes on Non-MSP Systems

You cannot run streamed codes on systems that are not configured with multistream processor (MSP) hardware.

3.1.5 Streaming Loop Nests

Loop nests that contain trapezoidal loops can be streamed.

3.1.6 Streaming of Equivalenced Private Arrays

Equivalenced private arrays can be streamed.

3.1.7 Inline Critical Streaming Intrinsic

Critical streaming intrinsic is inlined, thus providing performance enhancement.

3.1.8 Streaming within a Parallel Region

For performance enhancement, streaming occurs from within a task, or parallel, region.

3.1.9 Streaming Loops that Require Array Privatization

Loops that require array privatization for parallelization are streamed.

3.1.10 Message Level Change for Fortran

The `-M` option has been extended to allow users to turn a warning or lower level message (including ANSI) into an error level message or turn a message that is less than a warning into a warning message. This feature is enabled by prepending `E` for error or `W` for warning to the message number. The `-M#` option disables message processing. For example, `-M300,E600,W400` means that message 300 is disabled and will not be issued (provided it is not an error level message); message 600 will be issued as an error level message, no matter what level has been specified for it; and message 400 will be issued as a warning level message (provided it is not an error level message).

3.1.11 Variable Names with Leading Underscores

You can now specify variable names that contain leading underscores, by using the `-eQ`(enable) option. To disable this feature, use the `-dQ`. `-dQ` is the default. Because a leading underscore can conflict with a name in the library, you must use this option carefully.

3.1.12 Specifying `-c` and `-o` Options Together

You can now specify the `-c` and `-o` options on the same command line. When they are both specified, the file specified with the `-o` option will contain the

binary output, rather than the executable output (that is, the loader will not be called).

3.1.13 Directory Specification for Module Files in Fortran

Users can now specify a directory in which to put the .mod files when the `-em` option is specified. The `-J` option provides this capability. `-J` specified without `-em` causes an error. The following command puts the module .mod file into the `out` directory:

```
f90 -Jout -em mod.f
```

3.1.14 User Assertions to Influence Streaming Decisions

Users can insert assertions that the compiler can use to assist with targeting specific pieces of code to stream.

3.1.15 BLAS Performance Improvements

Performance improvements have been made in the BLAS routines for the SV1 architecture.

3.1.16 Vector Loop Scheduling Enhancements

For the benefit of runtime performance for Cray SV1 codes, enhancements have been made to the scheduling for vector loops. Expect to see this performance improvement in large code blocks characterized by variable dimensioned array references requiring many addressing (A) registers. This change is intended to reduce the backup/spill register requirements and thus, reduce register spills to memory. The interlace of address computation with vector computation is improved. These enhancements are also available on the C++ compiler.

3.1.17 Unique Branch Instructions for Each Stream

The branching that is unique for each stream is performed in the code generator. The code generator reserves `b` registers, and the streaming library picks them up to go to each stream.

3.2 Cray C/C++ Features

The following sections describe new Cray C/C++ features for UNICOS and UNICOS/mk systems. For more information on these features, see the *Cray C/C++ Reference Manual*.

3.2.1 Vector Loop Scheduling Enhancements

For the benefit of runtime performance for Cray SV1 codes, enhancements have been made to the scheduling for vector loops. Expect to see this performance improvement in large code blocks characterized by variable dimensioned array references requiring many addressing (A) registers. This change is intended to reduce the backup/spill register requirements and thus, reduce register spills to memory. The interlace of address computation with vector computation is improved. These enhancements are also available on the Fortran compiler.

3.3 CrayTools Features

The following sections describe new CrayTools features for UNICOS/mk and UNICOS systems.

3.3.1 I/O Improvements for PAT

The time that PAT takes to read large PDF/PIF files has been reduced.

3.3.2 Exchange Package Printing

TotalView now supports the `print $xp` command to print the exchange package found in core files. This is a UNICOS feature. For Cray SV1 machines, the package is formatted. For other machines, the A and S registers are displayed in raw octal.

3.3.3 Multistreaming Processor Support

With the release of the Programming Environment 3.3, performance tools support for the MSP on Cray SV1 systems will be available only with the prof utility. Other performance tools provided in the CrayTools package, such as `procstat`, `jumpview`, `perfview`, and `flowview`, will continue to provide information on single-streaming processors (SSPs) as well as multitasked applications on Cray SV1 systems.

3.4 CrayLibs Features

This section describes new CrayLibs features for UNICOS/mk and UNICOS systems.

The *Scientific Libraries User's Guide* includes the following new appendixes:

- An appendix that describes the implementation of version 2 of the math library (`libm`), which is used on UNICOS systems
- An appendix that describes the algorithms used in `libm`

Compatibilities and Differences [4]

This chapter provides information on compatibilities and differences that you should consider when writing new code and porting code written for Programming Environment releases prior to 3.3.

4.1 c1d Release Discontinued

As of Programming Environment release 3.2, `c1dis` is no longer released for UNICOS systems.

4.2 cf77 and cft77 Driver Scripts Discontinued

The `cf77` and `cft77` driver scripts are no longer released for any mainframe.

Release Package [5]

This chapter contains the following information about the Programming Environment 3.3 release package:

- Summary of hardware and software requirements
- Licensing information
- Release package contents
- Ordering instructions

5.1 Hardware and Software Requirements

The Programming Environment 3.3 releases require one or more of the following hardware systems:

- Cray T3E systems
- The following Cray PVP systems:
 - Cray T90 IEEE systems
 - Cray T90 systems
 - Cray C90 systems
 - Cray J90 systems
 - Cray SV1 systems

The Programming Environment 3.3 releases require one or more of the following software products:

- CF90 3.3 compiler running under UNICOS/mk release 2.0.4 or later or UNICOS release 10.0.0.5 or later.
- Cray C++ 3.3 and Cray Standard C 6.3 compilers, running under UNICOS/mk release 2.0.4 or later or UNICOS release 10.0.0.5 or later.

5.2 Licensing Information

The SGI software contract licenses the CF90 Programming Environment and the Cray C/C++ Programming Environment separately. Only binary code licenses are available. The Portland Group High Performance Fortran (PGHPF) package, supported on Cray T3E, Cray T90, Cray C90, and Cray J90 systems, is available but is separately licensed and must be ordered separately. C++ Mathpack 3.0.1 and C++ Tools 3.0.1 (components that are available for ordering with the Cray C/C++ Programming Environment release) are also licensed separately.

The Cray C/C++ Programming Environment 3.3 release for Cray T3E and Cray PVP systems contains the Cray C++ 3.3 compiler and the Cray Standard C 6.3 compiler.

The following sections provide licensing information for customers in and outside of the United States and Canada.

5.2.1 Licensing Contacts for Customers in the U.S. and Canada

For information on the licensing and pricing of the Programming Environment 3.3 products, customers in the United States and Canada should see their account representative or field contract negotiator. If those people are unavailable or if you are not sure who to call, contact SGI HPC Software Product Management as listed at the following location:

<http://hpc.cray.com/products/software/contact.html>

5.2.2 Licensing Contacts for Customers outside of the U.S. and Canada

Customers outside of the United States and Canada may obtain further licensing and export information by contacting their account representative or the individuals listed in the following sections.

5.2.2.1 European Regional Contract Administrators/Specialists

Customers in European sales regions can direct licensing inquiries to the following regional Contract Administrators/Specialists:

United Kingdom, Poland, and Russia:

Nick Jacobs
SGI United Kingdom
1530 Arlington Business Park
Theale
Reading
Berkshire, RG7 4SB
England
Telephone: +44 118 925 7041
Fax: +44 118 925 7716
E-mail: niknik@reading.sgi.com

Germany:

Thomas Wegener
SGI Germany
Am Hochacker 3
85630 Grasbrunn-Neukeferloh
Germany
Telephone: +49 89 461080
Fax: +49 89 46108 222
E-mail: thomasw@munich.sgi.com

France:

Cecile Goachet or Patricia Guillerme-Brillet
SGI France
21 rue Albert Calmette
78351 Jouy en Josas
France
Telephone: +33 01 34 88 80 00
Fax: +33 01 34 65 96 19
E-mail: cgoachet@paris.sgi.com or pguiller@paris.sgi.com

All other parts of Europe:

Simon Locke
SGI United Kingdom
1530 Arlington Business Park
Theale
Reading
Berkshire, RG7 4SB
England
Telephone: +44 118 925 7049
Fax: +44 118 925 7946
E-mail: simonl@reading.sgi.com

5.2.2.2 Japan Contract Negotiators

Customers in Japan can direct licensing inquiries to Joel Lee at the following address:

Joel Lee
Japan Legal Counsel
SGI Japan
P. O. Box 5011 Yebisu Garden Place Tower
4-20-3, Ebisu, Shibuya-ku, Tokyo 150
Japan
Telephone: +81-3-5488-1819
Fax: +81 3 5420 7020
E-mail: jlee@nsg.sgi.com

5.3 Release Package Contents

The Programming Environment 3.3 release package includes the following:

- Software media that contains the Programming Environment 3.3 releases.
- A set of publications provided online through the DynaWeb documentation reader. For a list of DynaWeb publications available with this release, see Section 6.2, page 24.
- A set of printed publications. For a list of printed publications available with this release, see Section 6.2, page 24.

5.4 Ordering the Release Package

The Programming Environment release package is distributed by order only to sites that have signed an SGI software license agreement for the initial shipment, and/or have a current maintenance contract for upgrade releases of the product.

Please make sure your site has signed an SGI software license agreement and/or maintenance contract before you order the Programming Environment 3.3 release package (for individual release licensing details, see Section 5.2, page 18).

You can order the Programming Environment 3.3 releases by using one of the following methods:

- Customers who subscribe to the CRInform program can order software release packages electronically by using the Order Cray Software option.
- Customers can contact the order desk at the Distribution Center by telephone (+1 651 683 5907 or 1 800 284 2729 extension 35907) or through e-mail (orderdesk@sgi.com).
- Customers outside of the United States and Canada should contact their account representative for ordering and documentation information.

Software will be shipped by ground service or 5-day international service unless otherwise requested.

5.4.1 Obtaining Publications

The Programming Environment 3.3 release package includes the publications indicated in Section 6.2, page 24. The *User Publications Catalog* describes the availability and content of all Cray hardware and software documents that are available to customers. Customers who subscribe to the Cray Inform (CRInform) program can access this information on the CRInform system.

SGI maintains information on available Cray publications at the following URL:

<http://www.cray.com/swpubs/>

This web site contains information that allows you to browse documents online and send feedback to SGI. To order a printed document, contact the order desk at the Distribution Center by telephone (+1 651 683 5907 or 1 800 284 2729 extension 35907) or through e-mail (orderdesk@sgi.com).

Customers outside of the United States and Canada should contact their local service organization for ordering information and documentation information.

5.4.2 Additional Information

If you have questions, or if your site has not signed an SGI software license agreement, either contact your regional contract negotiator or contact SGI HPC Software Product Management as listed at the following location:

<http://hpc.cray.com/products/software/contact.html>

This chapter describes the documentation that supports the Programming Environment 3.3 releases. It contains the following information:

- Online information access
- Documentation included with the releases
- Other available documentation

6.1 Online Information Access

The following types of online information products are available to Programming Environment 3.3 customers:

- The Cray Research Online Software Publications Library, which is available through the World Wide Web at the following URL:
`http://techpubs.sgi.com`
- The SGI DynaWeb server, which allows you to view manuals online using a World Wide Web browser such as Netscape Navigator or Mosaic. Please see your SGI system administrator for the local URL of the SGI DynaWeb server.
- The *User Publications Catalog*, which describes Cray product documentation available to customers. Customers who subscribe to the Cray Inform (CRInform) program can access this information on CRInform. For additional information about the CRInform program, see Section 7.3, page 30. You can access the catalog through the World Wide Web at the following URL:
`http://www.sdiv.cray.com/PUBLIC/pubs`
- Man pages, which describe a particular element of the UNICOS or UNICOS/mk operating system or a compatible product. To see a detailed description of a particular command or routine, use the `man(1)` command.
- UNICOS and UNICOS/mk message system, which provides explanations of error messages. To see an explanation of a message, use the `explain(1)` command.
- Cray online glossary, which explains the terms used in a manual. To get a definition, use the `define(1)` command.

This release overview is available online in various formats. For more information, see Section 1.2, page 2.

6.2 Documentation Included with the Releases

The Programming Environment 3.3 releases include manuals that have been updated online since the Programming Environment 3.2 releases and manuals that have not been updated. Some of the updated manuals are delivered in printed form as well. You can view most of these manuals online through the SGI DynaWeb server. The CD that contains the DynaWeb server application and online versions of the manuals also contains PostScript and Portable Document Format (PDF) versions of the manuals. Some manuals on this CD are delivered in PostScript and PDF only. (The PostScript and PDF files are not written to disk when DynaWeb is installed; a system or network administrator must copy them from the CD.)

Table 1 lists the manuals that have been updated for the Programming Environment 3.3 releases and indicates the systems that the manuals support and the availability of the manuals. These manuals are included with all releases.

Table 1. Programming Environment 3.3 Updated Documentation

Manual title	IRIX	UNICOS/mk	UNICOS	Availability
<i>Application Programmer's I/O Guide</i>	x	x	x	DynaWeb, PostScript, PDF, printed
<i>Application Programmer's Library Ready Reference</i>		x	x	Printed
<i>Application Programmer's Library Reference Manual</i>		x	x	PostScript, PDF
<i>CF90 Commands and Directives Reference Manual</i>		x	x	PostScript, PDF, printed
<i>Cray C/C++ Reference Manual</i>		x	x	PostScript, PDF, printed
<i>Fortran Language Reference Manual, Volume 1</i>	x	x	x	PostScript, PDF, printed

Manual title	IRIX	UNICOS/mk	UNICOS	Availability
<i>Fortran Language Reference Manual, Volume 2</i>	x	x	x	PostScript, PDF, printed
<i>Fortran Language Reference Manual, Volume 3</i>	x	x	x	PostScript, PDF, printed
<i>Guide to Parallel Vector Applications</i>			x	PostScript, PDF, printed
<i>Installing Programming Environment Products</i>		x	x	PostScript, PDF, printed
<i>Intrinsic Procedures Reference Manual</i>		x	x	PostScript
<i>Optimizing Application Code on UNICOS Systems</i>			x	PostScript, PDF, printed
<i>Programming Environment Releases Overview (this document)</i>				PostScript, PDF, printed, CRInform system (see Section 7.3, page 30) on the craypark system in the /home/craypark/release_docs directory
	x	x	x	
<i>Scientific Libraries Ready Reference</i>		x	x	Printed
<i>Scientific Library Reference Manual</i>		x	x	PostScript, PDF, printed
<i>Scientific Libraries User's Guide</i>		x	x	PostScript, PDF, printed

Table 2, page 26, lists the manuals that have not been updated for the Programming Environment 3.3 releases but are included with all initial installs. This table also indicates the systems that the manuals support. The manuals are in online and printed form unless otherwise specified.

Table 2. Programming Environment 3.3 Documentation Added for Initial Installs

Manual title	IRIX	UNICOS/mk	UNICOS	Availability
<i>CF90 Co-array Programming Manual</i>		x	x	DynaWeb, PostScript, PDF, printed
<i>CF90 Ready Reference</i>		x	x	Printed
<i>Compiler Information File (CIF) Reference Manual</i>		x	x	DynaWeb, PostScript, PDF, printed
<i>Cray Assembler for MPP (CAM) Reference Manual</i>		x		DynaWeb, PostScript, PDF, printed
<i>Cray Assembly Language (CAL) for Cray PVP Systems Ready Reference</i>			x	Printed
<i>Cray Assembly Language (CAL) for Cray PVP Systems Reference Manual</i>			x	DynaWeb, PostScript, PDF, printed
<i>Cray C/C++ Ready Reference</i>		x	x	Printed
<i>Cray TotalView Debugger Reference Card</i>		x	x	Printed
<i>Cray T3E and Cray T3D Programming Environment Differences</i>		x		DynaWeb, PostScript, PDF
<i>CRAY T3E C and C++ Optimization Guide</i>		x		DynaWeb, PostScript, PDF, printed
<i>CRAY T3E Fortran Optimization Guide</i>		x		DynaWeb, PostScript, PDF, printed
<i>Introducing the Cray TotalView Debugger</i>		x	x	DynaWeb, PostScript, PDF, printed

Manual title	IRIX	UNICOS/mk	UNICOS	Availability
<i>Introducing the MPP Apprentice Tool</i>		x		DynaWeb, PostScript, PDF, printed
<i>Introducing the Program Browser</i>		x	x	DynaWeb, PostScript, PDF, printed
<i>Migrating to the Cray T90 Series IEEE Floating Point</i> (available for all new IEEE systems)			x	DynaWeb, PostScript, PDF, printed
<i>SHMEM Library Ready Reference</i>	x	x	x	Printed

6.3 Other Available Documentation

The *CRAY T3E Hardware Access for Application Programmers* is a technical note for application programmers. This manual is not included in this release package but you can purchase it through the Distribution Center. For ordering information, see Section 5.4.1, page 21.

Customer Services [7]

This chapter describes the following customer services that SGI offers to support the Programming Environment 3.3 releases:

- Training support
- Software problem reporting and resolution process
- CRInform program
- *Pipeline* and the *Pipeline Supercomputing Supplement*

7.1 Training Support

For information about SGI courses, training office locations, current class schedules, and training services listed by country, contact us in one of the following ways:

- On the World Wide Web at the following URL:
`http://www.sgi.com/support/custeducation.html`
- Call one of the following numbers:
1 800 800 4744 (in the United States or Canada, toll free)
+1 651 683 3825 (from all other locations)

7.2 Software Problem Reporting and Resolution Process

If you experience problems with the Programming Environment products, contact your SGI service representative; your service representative will work with you to resolve the problem. If you choose to have full-time or part-time on-site support, your on-site support personnel are your primary contacts for service. If you have elected not to have on-site support, please call the call center and report your problem to them or submit a request for technical assistance (RTA) through the CRInform program.

For UNICOS and UNICOS/mk customers who need current information on the status of reported problems, see the Software Problem Report (SPR) section of the CRInform program.

7.3 CRInform Program

The Cray Inform (CRInform) program is a World Wide Web-based information and problem-reporting service for UNICOS and UNICOS/mk customers. Using the CRInform program, you can do the following:

- Report software problems
- Request technical assistance
- Communicate directly with other UNICOS and UNICOS/mk customers
- Read about software problems similar to yours reported at other sites
- Learn about solutions to various problems
- Find information about classes
- Read about new products, and more

The CRInform program automatically logs as news items those events that are pertinent to your site, so you do not have to search through the system for new information. The logged events include changes in Software Problem Report (SPR) or request for technical assistance (RTA) activity, new orderable software, new issues of the *Pipeline Supercomputing Supplement*, new field notices (FNs), new software release documents, new software problem fix information, new marketing information, and new CRInform program information. You can also get automatic e-mail notification of any or all of the news items.

Version 5.0 of the CRInform program is available through the World Wide Web. You need access to the CRInform Web server and a browser (such as Mosaic, Netscape, or Lynx), which allows you to view information or make service requests. You can use your own site's browser, or use either the Mosaic or Lynx browsers available on the `crinform` system.

7.4 Pipeline and the Pipeline Supercomputing Supplement

Customers who have a support contract receive *Pipeline*, the SGI customer newsletter. Customers who have a support contract for a Cray system also receive the *Pipeline Supercomputing Supplement*. *Pipeline* provides product and support information about SGI workstations and servers, and the *Pipeline Supercomputing Supplement* provides product and support information about Cray supercomputers. *Pipeline* and the *Pipeline Supercomputing Supplement* are both published six times a year (January/February, March/April, and so on). *Pipeline* is available on the World Wide Web in Supportfolio Online

(<http://support.sgi.com/>), and the *Pipeline Supercomputing Supplement* is available in CRInform (<http://crinform.cray.com/>) (see Section 7.3, page 30).

A

- algorithms in libm, 13
- assertions, 11

B

- BLAS improvements, 11
- branch instructions, 11

C

- c and -o together, 10
- C/C++ dependencies, 5
- cf77 and cft77 driver scripts discontinued, 15
- CF90 dependencies, 5
- CF90 features, 9
- cld release discontinued, 15
- compatibility waivers, 15
- contract administrators/specialists
 - Europe, 19
- contract negotiators
 - Japan, 20
- Cray C/C++ features, 12
- CrayLibs dependencies, 7
- CrayLibs features, 13
- CrayTools dependencies, 6
- CrayTools features, 12
- customer services
 - CRInform, 30
 - Pipeline, 30
 - Pipeline Supercomputing Supplement, 30
 - software problem reporting, 29
 - training, 29

D

- dependencies
 - C/C++, 5
 - CF90, 5
 - CrayLibs, 7
 - CrayTools, 6
- distribution of release overview, 2
- documentation, 23

E

- equivalenced private arrays, 10
- exchange package printing, 12

H

- hardware and software requirements, 17
- HPF_CRAFT package, 1

I

- inline critical streaming intrinsics, 10
- introduction, 1

L

- leading underscores, 10
- libm version 2, 13
- licensing information
 - Europe, 19
 - Japan, 20
 - license agreement, 18
 - miscellaneous, 22

- U.S. and Canada, 18
- loops
 - trapezoidal, 9
- loops that require array privatization, 10

M

- Mathpack and Tools, 2
- message level changes, 10
- module file directory specification, 11

N

- new features list, 9

O

- online problem reporting service, 30
- ordering
 - publications, 21
 - release package, 21
- other documentation, 27

P

- parallel region streaming, 10
- PAT improvements, 12
- Pipeline, 30
- Pipeline Supercomputing Supplement, 30
- publications
 - included with releases, 24
 - ordering, 21
 - User Publications Catalog, 23
- publications library, 23

R

- reader comments, 3
- release components, 1
- release overview distribution, 2
- release package
 - contents, 20
 - ordering, 21
- release platforms, 1
- reporting new problems, 29

S

- SIGN intrinsic enhancement, 9
- Software Problem Reports, 29
- streamed codes on non-MSP systems, 9
- streaming
 - equivalenced private arrays, 10
 - intrinsic, 10
 - loop nests, 9
 - loops that require array privatization, 10
 - on non-MSP systems, 9
 - unique branching, 11
 - with user assertions, 11
 - within a parallel region, 10

T

- training support, 29
- trapezoidal loops, 9
- trigonometric functions, 9

U

- User Publications Catalog, 23

V

vector loop scheduling, 11, 12