CodeWarrior® for PlayStation Quick Start

metrowerks

Because of last-minute changes to CodeWarrior, some
parts of in this manual may be out of date. Please read
all the Release Notes files that come with CodeWarrior
to get important last minute information.

Copyright

How to Contact Metrowerks

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Welcome

Welcome to CodeWarrior. *CodeWarrior for PlayStation Quick Start* gives you an overview of what's in CodeWarrior, how to install it, and where to find more information. Read the "Software License" on page 29 and make sure you understand and agree with it. Then look at the following:

- Read the rest of "Welcome" to learn what CodeWarrior is.
- Follow the directions in "Installing CodeWarrior" on page 9.
- Check out the Read Me files on the CodeWarrior for PlayStation CD to find out new features.
- Refer to "Where Do I Go Next?" on page 17 to find out what's in the CodeWarrior documentation set.
- And if you need to ask Metrowerks any questions, check out "How to Contact Us" on page 25.

What Do I Need?

Metrowerks CodeWarrior for PlayStation requires either a Macintosh or Windows computer, with these minimum requirements.

Macintosh

- A Mac OS computer with a PowerPC processor. A Power Macintosh with a PCI bus is required to use the PCI development card.

- Either a PCI PlayStation development card, or the Let's Create Hobbyist Development System is required for PlayStation software development.

- Mac OS System 7.1.2 or later. CodeWarrior also needs Color QuickDraw, which is part of the Macintosh's ROM software.

There are also requirements specific to both platforms. These are listed below the Windows requirements.

Windows

- An IBM-compatible 486 or higher computer. For best performance, a Pentium is recommended.
- Either a PCI or ISA PlayStation development card, or the Let's Create Hobbyist Development System is required for PlayStation software development (see below for details).
- Windows 95, or Windows NT 4.0.

There are also requirements specific to both platforms. These are listed below.

Both

- A CD-ROM drive to install the software.
- A minimum of 16 MB RAM. 24MB or 32MB RAM is preferable for PlayStation development. When using the CodeWarrior IDE and debugger, 16MB may not provide the best performance.
- The Sony Programmer Tool Kit or the Let's Create Hobbyist Development System, available exclusively from Sony Computer Entertainment, Inc.
- An external television monitor for the PlayStation card, or a Power Macintosh equipped with video I/O. If your Mac OS computer has video I/O, you can use the Apple Video Player software as a PlayStation game console monitor on your Macintosh. The PlayStation card outputs NTSC as well as PAL.
- A CD-ROM drive to install CodeWarrior software, documentation and examples.
- Finally, the CodeWarrior for PlayStation Software Development CD.

What is CodeWarrior for PlayStation?

Metrowerks CodeWarrior for PlayStation is a set of development tools that allows you to write programs for the PlayStation game console by Sony Computer Entertainment, Inc.

CodeWarrior for PlayStation contains these tools, as well as many others:

- The CodeWarrior Integrated Development Environment (IDE), which runs native on either Macintosh or Windows.

- A C compiler that generates code for the MIPS family of processors.

- A graphical, source-level debugger.

- PlayStation OS development utilities. These utilities convert data files (such as pictures) from one format to another.

- Apple Guide files that contain a quick reference and tutorials for the Macintosh version of CodeWarrior for PlayStation. Full on-line documentation is available for both platforms in Adobe Acrobat format. The full documentation is also available in eDOC format for Macintosh users.

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Installing CodeWarrior

This chapter explains how to install your new software and install CodeWarrior updates that may appear on on-line services.

NOTE: The recommended way to install CodeWarrior is with the installer on the CodeWarrior for PlayStation CD.

Before You Install

Before installing the software on your computer, there are a few things you should do first:

1. Read the Metrowerks CodeWarrior software license.

    Make sure you understand and agree with the Software License on page 29.

2. Make sure your package is complete

    It should contain

    *   CodeWarrior for PlayStation CD, which contains the software the installer copies onto your hard drive. This software includes the development tools, utilities, and documentation. Generally, you'll use this CD once to install CodeWarrior and then store it away.

    If this is your first CodeWarrior purchase, your package also contains these items:

    *   *CodeWarrior for PlayStation Quick Start*, which is the book you're reading now. It's also available in an on-line format on the CD.

If this is your last free update to CodeWarrior, your package also contains this:

- Update form, which lets you purchase a new CodeWarrior for PlayStation at a reduced price (along with two free updates).

NOTE: If one of these items is missing, contact your local distributor or the Metrowerks main office. See "Metrowerks Addresses" on page 26 for more information.

3. Make sure your computer system meets the minimum requirements.

   For more information, see "What Do I Need?" on page 5.

4. If this is your first CodeWarrior purchase, register your software.

   For more information, see "Registration and Updates" on page 25.

5. If this is your last free update, it's time to purchase a new update.

   For more information, see "Sales, Renewals, and Site Licensing" on page 26.

Installing the Software

The software installer organizes and places the software on your hard drive for you. Since this is a hybrid CD-ROM, we'll list the installation process for Macintosh and Windows users.

Macintosh

1. Insert the CodeWarrior for PlayStation CD.

2. Double-click the Installer icon.

   The installer displays a splash screen.

3. Click Continue.

   If there are any installer release notes, the installer displays them now. Be sure to read them to find out any last-minute changes to the software. When you're done, click Continue.

4.   Decide what to install.

The installer displays options for installing all the available tools or just specific ones. To choose an option, click the checkbox beside it. If you choose options that share files, the installer installs the shared files only once.

Some options have a triangle beside them. Clicking on the triangle displays more options.

To get more information on an option, click the $\boxed{\text{I}}$ button to its right. The installer displays a dialog with the option's contents and size.

5.   Choose where to install your new software.

By default, the installer places the new software in a folder at the root of the disk displayed at the bottom of the dialog. To install the software somewhere else, click the Switch Disk button or choose an option from the pop-up menu above the Switch Disk button.

6.   Click Install.

The installer starts copying your new software onto your hard disk and displays its progress with a dialog.

7.   If you installed system extensions, restart your computer.

If the installer placed any system extensions in the System folder, it will ask you what to do next. Click Restart.

8.   Read the release notes.

For the latest information on what's in CodeWarrior, read the files in the Release Notes folder.

Windows

1.   Insert the CodeWarrior for PlayStation CD.

2.   Double-click the Installer icon.

The installer displays a splash screen.

3.   Choose an installation.

The installer displays options for installing all the available tools or just specific ones. To choose an option, click the checkbox beside it. If you choose options that share files, the installer installs the shared files only once.

4. Choose where to install your new software.

5. Click Install.

   The installer starts copying your new software onto your hard disk and displays its progress with a dialog.

6. Read the release notes.

   For the latest information on what's in CodeWarrior, read the files in the Release Notes folder.

Updating CodeWarrior

Occasionally, Metrowerks releases updates of CodeWarrior software between CD releases. These small updates and patches contain new features and bug fixes.

Metrowerks uploads these updates to various on-line services and networks. Generally, an update's filename begins with *metro*, contains the CodeWarrior release (7.1, for example), and describes which part of CodeWarrior (C libraries, for example) the update applies to.

You can find updates on these networks and on-line services:

America On-line	• Computing :: Development Forum :: Industry Connection :: Metrowerks
	• keyword: Metrowerks
Compuserve	• Macintosh Developers Support Board
	• shortcut: go metrowerks
	• GO MACDEV :: Lib #16 - Metrowerks Library
Internet WWW	• `<http://www.metrowerks.com/>`
Internet FTP	• anonymous ftp site at `sumex-aim.stanford.edu` in the `/info-mac/Development` directory
	• most of the info-mac mirror sites

Installing an update

You always apply an update to software on the latest CodeWarrior CD release, not to previous updates or CDs. To install an update, you must have the CodeWarrior software installed on a hard disk. You cannot apply an update to a CodeWarrior CD.

Macintosh

1. Make sure the UpdateUser and StuffIt Expander software are installed on your computer.

    If you followed the installation instructions on page 10, the UpdateUser and StuffIt Expander applications are in the CodeWarrior folder on your hard drive.

2. Download the update software.

    Download it from one of the sites mentioned above.

3. If the filename ends in `.hqx` or `.sit`, drag the file onto StuffIt Expander.

    Most updates are compressed as StuffIt archives. The StuffIt Expander application expands the archive into a new folder containing the update files.

4. Open and read the update's release note.

    This note contains information about this update and instructions you need to install it. You may need to add files to your CodeWarrior folder, patch more than one CodeWarrior file, or drag a new copy of the file from the CD before applying the patch.

5. To apply a patch to a CodeWarrior file, double-click the UpdateUser document.

    UpdateUser launches, finds the CodeWarrior file to patch, and prompts you for confirmation.

    UpdateUser displays a dialog. Click OK to continue.

6. Choose the file to update.

    At the bottom of the dialog are two options. To have UpdateUser delete the original file after it's created an updated version, turn on the first option. To have UpdateUser delete the UpdateUser document when it's done, turn on the second option.

    When the proper file is selected, click Update.

7. Enter the name of the updated file.

    UpdateUser lets you change the name and location of the updated file with the dialog below. By default, UpdateUser saves the updated file in the same folder as the original file:

    When the proper name and location are chosen, click Save.

    UpdateUser creates an updated file and displays its progress.

    Windows

    Information for updating the Windows tools is located in the following directory of the CodeWarrior for PlayStation CD.

    ```
    \Other Metrowerks Tools\Tools for Netborne patches\
    ```

    For the latest information on updating your Windows software, please visit the technical section of the Metrowerks web site.

    <http://www.metrowerks.com/tools/>

    Information is also available from Metrowerks technical support via email at <support@metrowerks.com>. See page 26 for additional information on contacting Metrowerks technical support.

Road Map to CodeWarrior

This chapter describes what the CodeWarrior Installer puts on your hard disk and what's on the CodeWarrior for PlayStation CD.

What Does CodeWarrior Install

The most significant folder that CodeWarrior installs is the Metrowerks CodeWarrior folder, which contains the CodeWarrior development environment, compilers, linkers, and libraries. Depending on what you installed, it may include the following items:

- CodeWarrior IDE, which is a development environment that can run either on a Macintosh or Windows computer.

- CodeWarrior Plugins folder, which contains files that add capabilities to CodeWarrior. It can, in turn, contain these folders:

  - Language compilers for C and C++.

  - Target compilers and linkers for the MIPS processor.

  - Preferences, which contains preference panels for all the installed compilers and linkers.

- (Project Stationery) folder, which includes stationery pads for creating new projects with the New Project command.

- The PlayStation debugger, which let you examine and control PlayStation executables.

- The PlayStation Support folder, which contains PlayStation OS interface files.

- The MIPS Support folder, which contains the standard C and C++ libraries for MIPS processors.

- Other folders installed include:
- CodeWarrior Documentation folder, which contains all documentation related to C/C++ and PlayStation OS development.
- Documentation Viewers folder, which includes applications necessary to view the documentation.
- PlayStation Samples folder, which includes example code for PlayStation OS development.
- Release Notes folder, which contains the latest information on the status of Metrowerks development tools.

What's in CodeWarrior Documentation

This section describes what's in the CodeWarrior Documentation folder:

- Core folder, which includes the on-line books Targeting PlayStation, the IDE User Guide, Debugger Manual, the C, C++ and Assembly Language Reference, and the Error Reference.
- C/C++ folder, which contains the on-line books C, C++ and Assembly Language Reference, the MSL C Reference and the MSL C++ Reference.
- Plugin API folder, which contains the Plugin API Manual and Plugin API Reference.
- Release Notes folder, which includes information on CodeWarrior's new features and last-minute information that couldn't make it into the documentation.

NOTE: For some documentation, there will be two versions of the same manual—one for Macintosh developers and one for Windows developers.

Where Do I Go Next?

This chapter lists all the on-line documentation available in the CodeWarrior Documentation folder.

To learn how to target the PlayStation OS

If you want to learn to write software for the PlayStation OS, contact Sony Computer Entertainment, Inc. Their manuals, which are included with the Sony PlayStation developer toolkit, are the definitive reference for the details of the PlayStation game console development. None of these manuals are included on the CodeWarrior for PlayStation CD.

To learn CodeWarrior

The CodeWarrior for PlayStation CD includes these manuals, which are references on the CodeWarrior environment and debugger.

- *IDE User's Guide*
- *Debugger Manual*
- *Error Reference*
- *Targeting PlayStation*

To use C

The CodeWarrior for PlayStation CD contains the Metrowerks C and C++ compilers. The CD also contains this manual which explains how Metrowerks implements the C and C++ languages:

- *C, C++, Assembly Language Reference*

CodeWarrior for PlayStation also contains these manuals that explain how Metrowerks implements the ANSI-standard C and C++ libraries:

- *MSL C Reference*

- *MSL C++ Reference*

Quick Reference

This chapter lists some helpful shortcuts for CodeWarrior for Play-Station.

NOTE: The shortcuts listed here are for Macintosh. At the time of this writing, the shortcuts for Windows are not fully implemented. These will be documented as they are available.

Editing Files

Moving the insertion point

To move insertion point to the …	Press this…
Previous word	Option–Left Arrow
Next word	Option–Right Arrow
Beginning of the line	Command–Left Arrow
End of the line	Command–Right Arrow
Previous page	Option–Up Arrow
Next page	Option–Down Arrow
Beginning of the file	Command–Up Arrow
End of the file	Command–Down Arrow

Searching for text

To do this…	Press this…
Enter selected text as the Find string	Command-E
Enter selected text as the Replace string	Shift-Command-E
Find next occurrence of the Find string	Command-G

To do this…	Press this…
Find previous occurrence of the Find string	Shift-Command-G
Replace and find next occurrence	Command-L
Replace and find previous occurrence	Shift-Command-L
Find next occurrence of the selected text	Command-H
Find previous occurrence of selected text	Shift-Command-H

Looking up symbols

To go to…	Do this…
Documentation on a symbol	Command–double-click the symbol
The definition of a symbol	Option–double-click the symbol
The symbol (after seeing its definition)	Shift-Command-' (apostrophe)

Using a Project Window

To do this…	Do this…
Select a file	Type its name
Select next file (alphabetically)	Press Tab
Delete selected file	Press Option-Delete
View a file's path	Option-click the file's name
Turn debugging on or off for all files	Option-click a Debug marker
Create a new group	Drag a file below the last group
Split a group into two	Select the file to split at and press Command-Return
Combine two groups	Select group to remove and press Shift-Command-Return
Change a group's name	Double-click group's name
Expand all groups	Option-click the triangle of a collapsed group
Collapse all groups	Option-click the triangle of an expanded group
Remove a project's binaries and compact it	Hold down Option while choosing Remove Projects & Compact from the Project menu.
Run with debugger, if Enable Debugging is off	Hold down Option while choosing Run with Debugger from the Project menu.

Using the Debugger

Controlling execution

To do this…	Do this…
Pause execution	Press Command-. (Period)
Stop execution (such as during an infinite loop)	Press Command-Control-\ (Backslash)
Skip or repeat statements	Drag the current statement arrow
Execute to a statement (a temporary breakpoint)	Option-click the breakpoint column beside statement

Displaying and editing files and functions

To do this…	Do this…
Display a function in the source pane	Choose the function from the function popup menu
Display a function from the calling chain	Click the function name in the Call Chain pane
See a function from another file in the project	Select the file in the Files pane of the SYM window, then select the function with the function menu
Edit source code on display in the source pane	Press Command-E (CodeWarrior must be running)
Edit original source file	Double-click the file in the Files pane of the SYM window

Displaying and editing variables

To do this…	Do this…
See global variables in the Globals pane	Select the Global Variables item in the Files pane of the SYM window
See a variable in a separate window	Double-click the variable name
Change a variable value	Double-click the variable value

Displaying and editing expressions

To do this…	Do this…
Add a variable or expression	Select it in any window and press Command-D
Make a new expression	Press Command-N while the Expressions window is active
Edit an expression	Double-click the expression entry
Edit an expression's value	Double-click the value
Delete an expression	Select it and press Delete

Using breakpoints

To do this…	Do this…
Set a breakpoint	Click the dash in the breakpoint column beside the statement
Clear a breakpoint	Click the circle (breakpoint) beside the statement
Set a temporary breakpoint)	Option-click the breakpoint column beside the statement (the program will resume immediately)
See all breakpoints	Choose Show Breakpoints from the Window menu
Activate or deactivate a breakpoint	Click the dash or breakpoint to the left of the location
Set a condition for a breakpoint	Double-click the condition column and enter the condition *or* drag an expression from another window and drop it in the condition column
See the code at a breakpoint	Double-click the location for the breakpoint

How to Contact Us

This chapter describes how to contact Metrowerks with your questions on technical support, sales, and registration. You can find out the latest information about CodeWarrior updates and news on the Internet. Check out these resources:

- Our WWW site `<http://www.metrowerks.com/>`

- The Usenet news group `comp.sys.mac.programmer.codewarrior`

Registration and Updates

After you register, you will receive the next two CodeWarrior updates free of charge and have access to CodeWarrior technical support. To register your copy of CodeWarrior or ask questions about your update, contact Metrowerks one of these ways:

- Send mail to Metrowerks at this address.

    Metrowerks Corporation
    Dept. 334
    P.O. Box 9700
    Austin, TX 78766-9700

- Send e-mail to one of these addresses:
    - To register, send mail to `register@metrowerks.com`
    - To ask about your registration or update, send mail to `reg.questions@metrowerks.com`.

- Fax your registration to (512) 873-4901

- Fill out the registration form at the Metrowerks World-Wide Web site `<http://www.metrowerks.com/>`.

Technical Support

If you have problems installing or using Metrowerks CodeWarrior software, contact Metrowerks Technical Support. Metrowerks offers technical support free of charge to registered users; however, you pay for toll charges and on-line service fees.

- For the fastest response, fill out the form in the `Release Notes ƒ` folder on the CD, and mail it to one of these:
  - On the Internet, mail it to `support@metrowerks.com`
  - On America On-Line, mail it to `metrowerks`.
- Fill out the technical support form at the Metrowerks World-Wide Web site `<http://www.metrowerks.com/>`.
- Call or mail Metrowerks Technical Support at Metrowerks main office, listed below

Sales, Renewals, and Site Licensing

For information on a site license or buying a new CodeWarrior at a reduced price (with two free updates), contact Metrowerks:

- If you're in USA or Canada, contact Metrowerks Sales and Site Licensing at the Metrowerks main office, listed below.
- If you're outside the USA and Canada, contact your local distributor, if there is one, or contact Metrowerks Sales and Site Licensing at the Metrowerks main office, listed below.
- Send e-mail to one of these addresses:
  - For academic site licensing, send mail to `academia@metrowerks.com`
  - For general sales and site licensing, send mail to `sales@metrowerks.com`

Metrowerks Addresses

Here's the address for the main office of Metrowerks:

Metrowerks	(800) 377-5416 (USA sales)
2201 Donley Drive, Suite 310	(512) 873-4700 (main office)
Austin, TX 78758	(512) 873-4900 (main fax)
	(512) 873-4901 (sales fax)

Here are Metrowerks CodeWarrior's international distributors. If you live outside the USA or Canada, contact the one in your area for more information.

Australia & New Zealand
Techflow Pty Ltd
5/17 Mooramba Road
Dee Why, NSW 2099
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WWW: <`http://www.essai.it/Apple/Ssd/servdistrapda.html`>

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E-mail: `systrade@applelink.apple.com`

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* Object-code derivations of sample code and final versions of the following files:

* AppleScript runtime files (AppleScript, Inline Filter, AppleScriptLib, ObjectSupportLib, Beep, Choose Application, Choose File, Current Date, Display Dialog, File Commands, Load Script, New File, Numerics, Read/Write Commands, Run Script, Scripting Components, Store Script, String Commands, Time to GMT, English Dialect).

* XTND runtime files (Claris XTND System, contents of Claris Translators folder, XTNDInterfaceLib.o, XTNDInterfaceLib.o, XTND Power Enabler).

* MacODBC runtime files (ODBC Configuration Manager, ODBC Setup, ODBC Driver Manager).

* Serial Switch

* Thread Manager

* Sound and Sound Manager

* File System Manager

* Macintosh Drag and Drop, Clipping Extension, and Dragging Enabler, provided that the Licensee includes in a conspicuous place on the exterior of the packaging of the licensee programs, the following language: "Macintosh Drag and Drop included".

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* Apple Shared Library Manager files: Shared Library Manager and ASLM Resources

* AppleSearch Client, AppleSearch Authentication, AppleSearch Communication, and ASClientLib.o.

* Apple Guide

* UGLibrary.o (Appleshare API glue)

* Apple MIDI Driver and MIDI Manager

* Mathlib

* Telephone Manager and TelMgrGlue.o

* The following Communications Toolbox files: CTB Resources, CommToolbox-Extensions.o, Apple Modem Tool, Text Tool, AppleTalk ADSP Tool, TTY Tool, XMODEM Tool, VT102 Tool, SerialTool, TTYFont, VT102Font, ADSP, AdminLAT, LAT, LAT Prep, and LAT Tool

* The following MacSNMP, MacTCP, and MacX25 files: SNMPLibrary.cln.o, SNMPLibrary.clf.o, LibraryManager.n.o, LibraryManager.o, LAP802.a.o, LAP802.c.o, LAP802Arp.c.o, LAP802Mdev.c.o, LAPAsmUtil.a.o, LAPloopBack.a.o, FSDES.o, IPCGlue.o, X25_Interface_Library.o

* The following Network Software Installer files: Apple Token Ring NB, AppleTalk, EtherTalk Phase 2, Network, Responder, Token Ring, TokenTalk Phase 2, and TokenTalk Prep

* The following MacTCP-related HyperCard XCMDs (built from the sample source code in the HyperCard MacTCP Toolkit folder): TCPActiveOpen, TCPCharsAvailable, TCPClose, TCPNameToAddr, TCPOverview, TCPPassiveOpen, TCPRecvChars, TCPRecvMsg, TCPRecvUpTo, TCPRelease, TCPSend, TCPState, and TCPVersion

Motorola Software and Redistributable Libraries

* The following LibMoto files: atan.o, fatan.o, fpow.o, fsqrt.o, ftrig.o, memmove.o, pow.o, sqrt.o, strcmp.o, strlen.o, stncmp.o, trig.o, in both statically linkable and dynamically linkable object code formats for all PowerPC based operating systems for which Motorola provides a version of LibMoto.

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Information about the people who worked on this
documentation and references to other documentation
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