



CodeWarrior™ Development Studio

for ColdFire® Architectures

Linux® Application Edition Version 2.4

Quick Start for Windows® Operating System

SYSTEM REQUIREMENTS

Hardware	PC with 1.4 GHz Intel® Pentium® III compatible processor, 512 MB RAM (1 GB recommended), CD-ROM drive, serial port, and Ethernet port
Operating System	Microsoft® Windows® 2000, Windows® XP, or Windows Vista™ Operating Systems
Disk Space	2 GB, plus space for projects and source code

This document shows how to install the included CodeWarrior development software on a Windows host computer, use the CodeWarrior tools to create an application, and then download and debug the application on a target ColdFire system.

NOTE In this procedure, we assume the ColdFire target system you are using is already connected to your Local Area Network (LAN) through an Ethernet connection, and has an embedded Linux operating system up and running with the CodeWarrior Target Resident Kernel Linux binary file, AppTRK, installed.

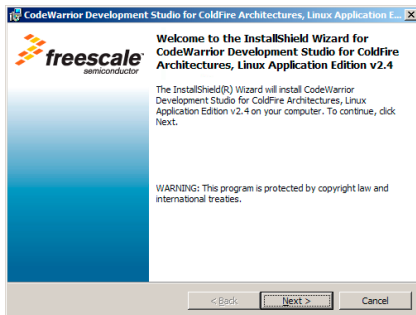
Section A: Installing Software

In this section, you install and register CodeWarrior development tools.

1. Install CodeWarrior software

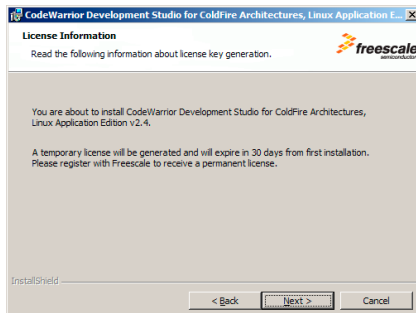
- Insert **CodeWarrior Development Studio for ColdFire CD** into host computer CD-ROM drive — welcome screen appears (If Auto Install is disabled, run program `launch.exe` in root directory of CD.)
- Click **Launch the Installer** — install wizard opens

Install Wizard — Welcome Page



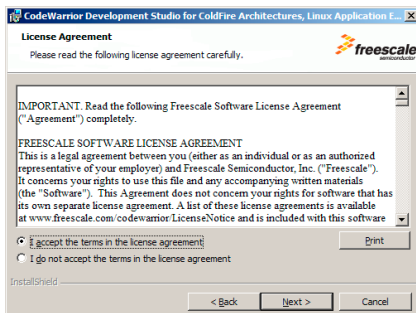
- c. Click **Next** — License Information page appears

Installer — License Information Page



- d. Click **Next** — License Agreement page appears

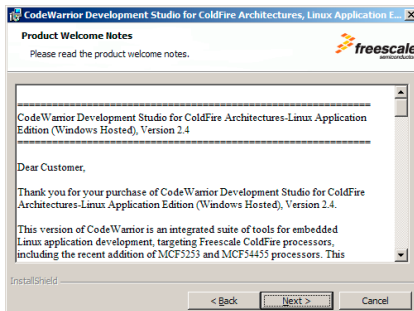
Installer — License Agreement Page



- e. Select **I accept the terms in the license agreement** option button

Next — Product Welcome Notes page appears

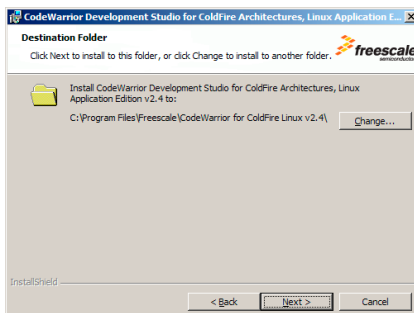
Installer — Product Welcome Notes Page



g. Read the information in the **Product Welcome Notes** page

h. Click **Next** — Destination Folder page appears

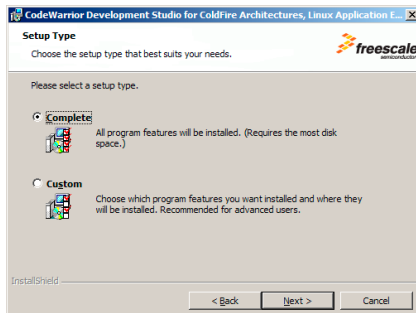
Installer — Destination Folder Page



i. Specify alternate location, if desired

Next — Setup Type page appears

Installer — Setup Type Page



k. Select **Complete** option button

l. Click **Next** — **File Associations** page appears

m. Click **Next** — **Select GCC Toolchains** page appears

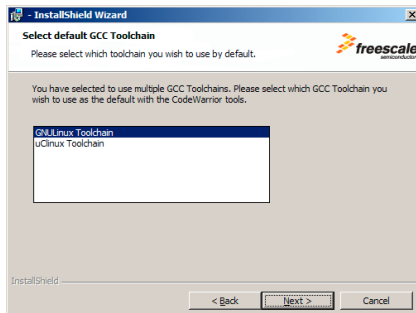
Installer — Select GCC Toolchains Page



n. Check **GNU/Linux Toolchain** checkbox

o. Check **uClinux Toolchain** checkbox

Next — Select Default GCC Toolchain page appears
Installer — Select Default GCC Toolchain Page



- q. Select default toolchain

NOTE The toolchain you choose depends upon your board. See the following table to determine which toolchain to use as default.

Table 1 Target Boards with Associated Toolchains

Board	Toolchain	Board	Toolchain
MCF5272	μCLinux	MCF5475	GNU/Linux
MCF5282	μCLinux	MCF5484	GNU/Linux
MCF5253	μCLinux	MCF5485	GNU/Linux
MCF54455	GNU/Linux	MCF5208	μCLinux
MCF5474	GNU/Linux	MCF5329	μCLinux

- r. Click **Next** — **Ready to Install the Program** page appears

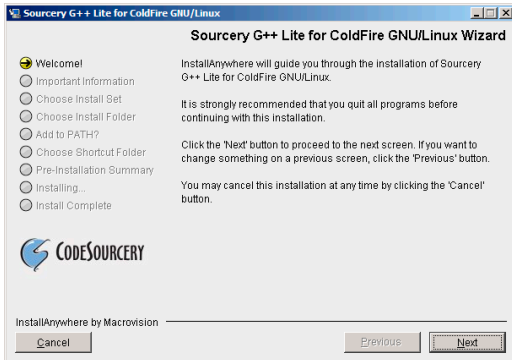
- s. Click **Install** — The installation process begins

During the installation process, a warning message appears containing important information concerning installation locations for GCC toolchains.

- t. Click **OK** — The installation process continues

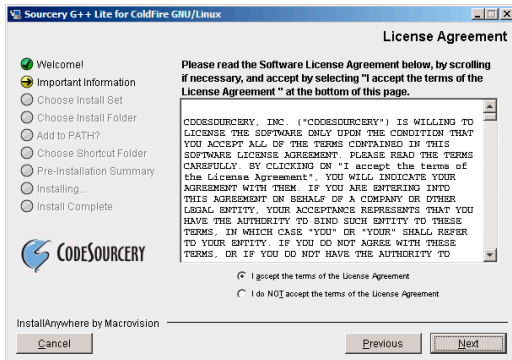
During the installation process, the Sourcery G++ Lite for ColdFire GNU/Linux Wizard opens

Sourcery G++ Lite for ColdFire GNU/Linux Wizard



- a. Read the information and click **Next** — **License Agreement** screen appears

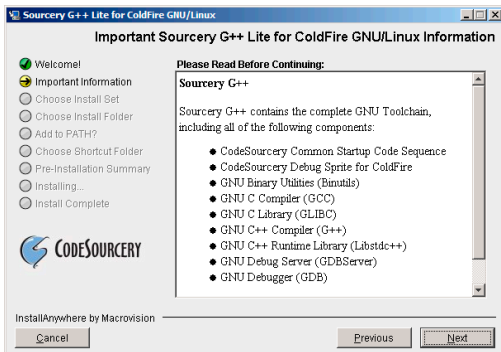
License Agreement Screen



- b. Select **I accept the terms of the license agreement** option button

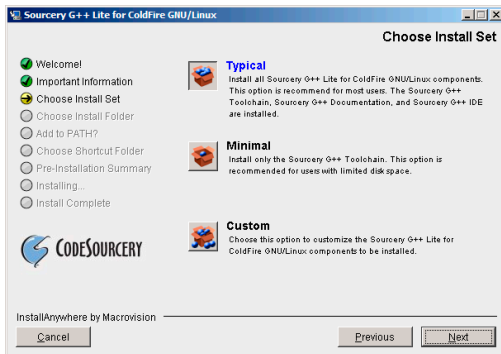
Next — Important Information screen appears

Important Information Screen



d. Read the information and click **Next** — **Choose Install Set** screen appears

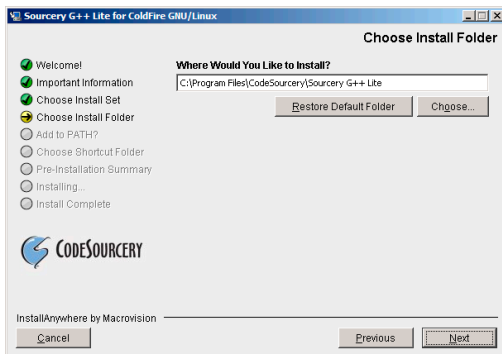
Choose Install Set Screen





Use the install set and click **Next** — the **Choose Install Folder** screen appears

Choose Install Folder Screen



- f. Accept the default location, navigate to the folder of your choice, or enter a folder name into which to install the software

NOTE If installing Sourcery G++ for both GNU/Linux and μ CLinux, specify unique folders for installation. (Default location may be the same for both GNU/Linux and μ CLinux.)

- g. Click **Next**
- h. Accept the defaults and click **Next** until the **Pre-Installation Summary** screen appears
- i. Review your installation choices
- j. Click **Previous** to change any selections
- k. When satisfied with the installation selections, click **Install** — **Sourcery G++ Lite for ColdFire GNU/Linux** installs on your system
- l. Repeat the process for **Sourcery G++ Lite for ColdFire μ CLinux**
- m. When both are installed, the CodeWarrior Development Studio installation final screen prompts you to check for updates
- n. Check the **Yes, check for updates** button and click **Finish** — CodeWarrior Updater opens

NOTE If the updater already has internet connection settings, you may proceed directly to sub-step f.

- a. Click **Settings** button — **CodeWarrior Updater Settings** page appears
- b. Click **Settings** button — **Connections** page of **Internet Properties** dialog box appears
- c. Modify settings, as appropriate, to successfully connect to internet
- d. Click **OK** button — **Internet Properties** dialog box disappears
- e. Select update period from **Update Check Schedule** list menu
- f. Click **OK** button — **Internet Properties** dialog box disappears
- g. In updater screen, click **Next** button
- h. If necessary, enter username and password
- i. If updates are available, follow on-screen instructions to download updates to your computer
- j. Click updater **Finish** button — installation completes

Section B: Registering Software

NOTE Free versions of the CodeWarrior tools include a permanent but feature-limited license. You do not need to register these tools to obtain a license.

You can obtain an evaluation license (full featured but time-limited) from the CodeWarrior Licensing and Registration web page at the Freescale website. Go to <http://freescale.com/cwregister> and click the **Request Evaluation License** link.

To obtain a permanent license for your product you need an entitlement ID (registration code), as detailed in this section.

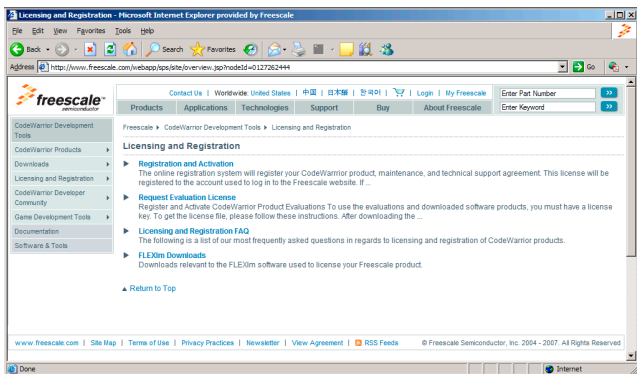


rowser, enter location:

<http://freescale.com/cwregister>

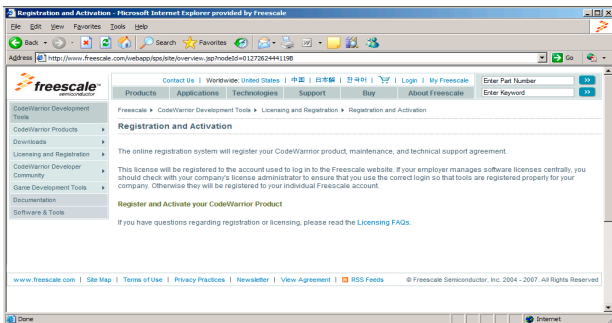
CodeWarrrior registration web page appears

Licensing and Registration Web Page



2. Click on Registration and Activation to register and activate your product — Registration and Activation page appears.

Registration and Activation page

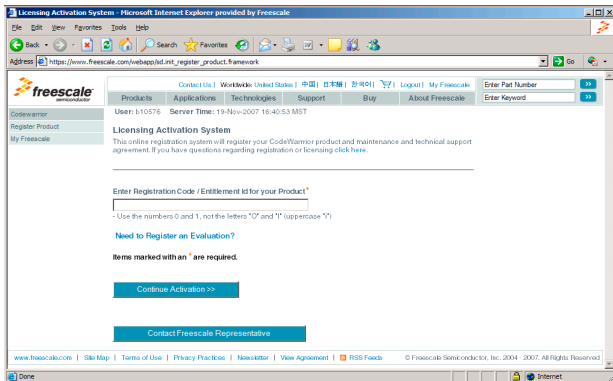


NOTE If you are not registered with Freescale, click on **Register Now** and follow all on-screen instructions to register. After you have successfully registered, a Welcome page appears with a link to **CodeWarrior Licensing**. Click on this link and the **CodeWarrior Technology** page appears. Click on **Click here to register a product or support**. The **Licensing Activation System** page appears.

NOTE If you are an existing member with Freescale and not already logged in to our site, click on the **Log-In** link, click Log in, and the **Licensing Activation System** page appears.

NOTE If you are an existing member with Freescale and already logged in to our site, the **Licensing Activation System** page appears.

License Activation System page





e Registration Code/Entitlement Code to register your software.

NOTE To register your product you need an Entitlement ID. If you do not have this code and believe you are entitled to a permanent license, go to: www.freescale.com/support and open a Service Request using Category: Technical Request and Topic: License Issues.

5. **Continue to follow instructions until the license file is presented**
6. **Download the license file, `license.dat`, to the installation root folder, the default is `C:\Program Files\Freescale\CW for ColdFire Linux V2.4` — you are now ready to use the CodeWarrior tools**

Section C: Configuring the Target Board

In this section, you connect a target ColdFire Linux board to the host computer and prepare the board for debugging with the CodeWarrior IDE.

1. **Make sure that power is *not* connected to the board, and that the power switch setting is OFF**
2. **Configure IDE preference settings**
 - a. Start CodeWarrior IDE and select **Edit > Preferences** — IDE Preferences Panel appears
 - b. Select **Remote Connections**
 - c. Add new remote connection definitions or modify parameters on existing definitions
 - d. Refer to target board documentation to find serial port parameters needed to communicate with the board in question

For example, appropriate settings might be:

- Linux host serial port device `/dev/ttyS0`
- 115200 baud
- 8 data bits
- 1 stop bit
- no parity
- no hardware flow control



Apply to save the settings.

- f. Click **OK**

3. Connect target board serial cable, Ethernet cable, and power cable

- a. Connect RS-232 serial cable to target board RS-232 port and Linux host computer serial port
- b. Connect standard Ethernet cable to target board Ethernet port and Local Area Network (LAN) hub, switch, or port
- c. Connect power supply to target board power connector
- d. Plug target board power supply into surge-protected power strip
- e. Connect surge-protected strip to AC power outlet
- f. Turn on surge-protected power strip

NOTE Refer to the documentation that came with your Board Support Package (BSP) for details about how to properly boot Linux on your target board.

4. Configure target board network interface

- a. In terminal window, at login prompt, enter username `root` — system logs you in as root user
- b. Enter command (where *IPAddress* is an available unique static IP address on your network, and *Mask* is the appropriate mask for your subnet):

```
ifconfig eth0 IPAddress netmask Mask
```

System configures network parameters with specified IP address and network mask

NOTE If you do not know an available unique static IP address on your network, contact your network administrator to obtain one.

- c. Exit terminal emulator



get board network interface configuration

- a. In terminal window, enter command (where *IPAddress* is the IP address you assigned the target board network interface):

```
ping IPAddress
```

Ping command shows ping reply messages

- b. Press **Control-C** on keyboard — ping program stops

6. Start AppTRK on target board

- a. In terminal window, enter command (where *IPAddress* is the IP address of the target board network interface):

```
telnet IPAddress
```

Telnet client connects to telnet daemon on target board

- b. If necessary, log in as root user — shell prompt appears in terminal window
- c. At shell prompt, enter:

```
AppTrk.elf :1000
```

AppTRK begins listening for CodeWarrior debugger connections

NOTE In this command, `:1000` indicates the number of the Linux host network port to which AppTRK listens for CodeWarrior debugger connections.

The target system is now ready for debugging with the CodeWarrior software.

Section D: Creating, Building, and Running a Project

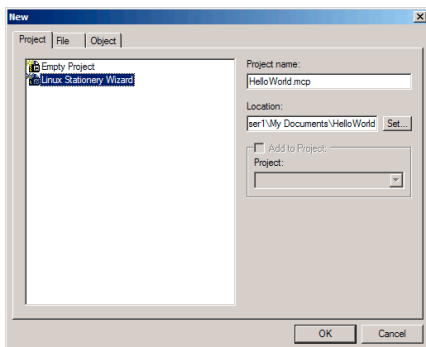
In this section, you create a new CodeWarrior application project, build the project, transfer the executable binary file to the target board, then debug the project with the CodeWarrior IDE.

1. Create new CodeWarrior project

- a. Select **Start > Programs > Freescale CodeWarrior > CodeWarrior for ColdFire Linux v2.4 > CodeWarrior IDE** from Windows task bar — IDE starts; CodeWarrior main window appears

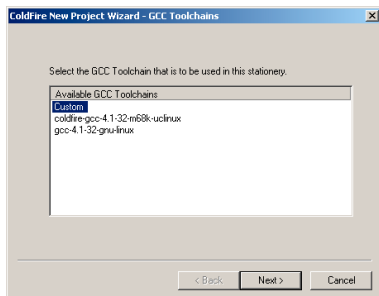
1 CodeWarrior menu bar, select **File > New** — **New window** appears

New Window



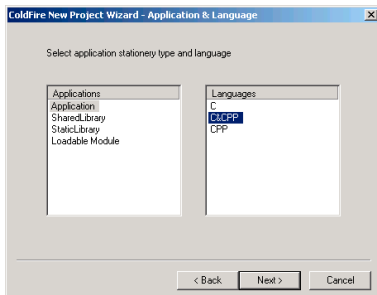
- c. From wizard list, select **Linux Stationery Wizard**
- d. In **Project name** text box, enter: HelloWorld.mcp
- e. If desired, click **Set** button to set alternate project location
- f. Click **OK** — IDE starts Linux Stationery Wizard; wizard dialog box appears

Wizard — GCC Toolchains Window



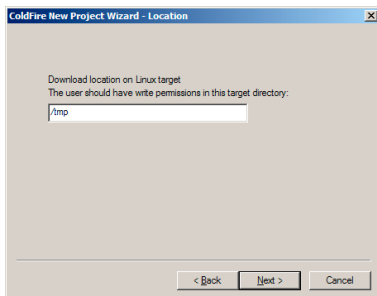
- g. Select the appropriate predefined GCC toolchain or “Custom” to manually enter the location of a toolchain

Next — Application and Language window appears
Wizard — Application and Language Window



- i. From **Applications** list, select **Application**
- j. From **Language** list, select **C&CPP**
- k. Click **Next** — **Download Location** window appears

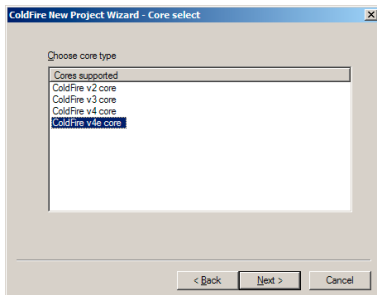
Wizard — Download Location Window



- i. In text box, enter full path to directory in target file system to which you have write access (for example: /tmp)

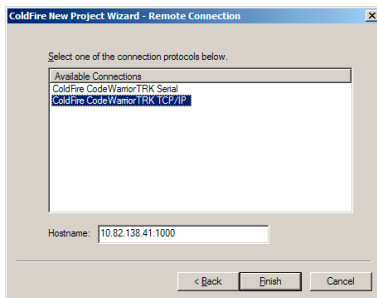
Next — Core Selection window appears

Wizard — Core Selection Window



- n. From list, select core of target board
- o. Click **Next** — **Connection** window appears

Wizard — Connection Window

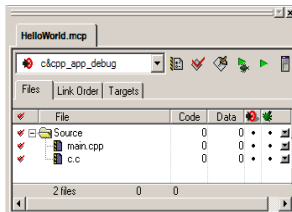


- p. From list, select **ColdFire CodeWarriorTRK TCP/IP**
- q. In **Hostname** text box, enter IP address of target board and CodeWarriorTRK listening port number on target board, in this form:

IPAddress:PortNum

Finish — IDE creates new project; project window appears

Project Window



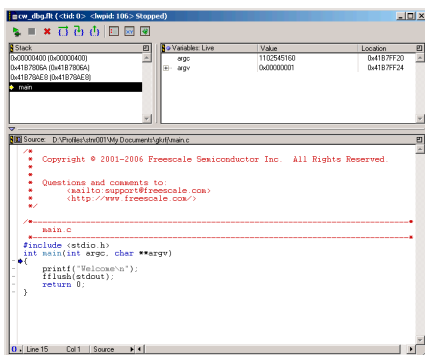
2. From CodeWarrior menu bar, select **Project > Make** — CodeWarrior IDE compiles project

NOTE The CodeWarrior IDE creates the output binary executable file locally, on the Linux host computer, in *CWProjectDir/Bin/*.

3. Start CodeWarrior debug session

- a. From CodeWarrior menu bar, select **Project > Debug** — debugger stack crawl window appears; debugger starts program, then halts program execution at program entry point

Debugger Stack Crawl Window



NOTE The stack crawl window title bar displays the Thread ID (TID) and the Process ID (PID) of the current thread and process.



ft side of window, click breakpoint column next to `cout <<`
"Welcome !" source code line — Red dot appears in breakpoint
column

- c. Select **Project > Run** — debugger executes program and halts execution at specified breakpoint
- d. Select **Debug > Step Over** — debugger advances Program Counter (PC) to next line of source code; PC indicator (blue arrow) moves to next line in stack crawl window; second **CodeWarrior TRK Console** window appears displaying "Welcome !" message
- e. Select **Debug > Step Over** again — new **CodeWarrior TRK Console** window appears; "Welcome !" message appears in new **CodeWarrior TRK Console** window
- f. Select **Debug > Kill** — debugger stops program execution; debugger window disappears

Congratulations!

You just used CodeWarrior software to create, build, and run a simple program for your target ColdFire Linux board.



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