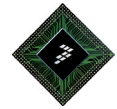
CodeWarrior™

Development Studio

for ColdFire® Architectures V2.5,
Linux® Application/Platform Edition



Quick Start for Linux

freescale™
semiconductor

CodeWarrior™ Development Studio

for ColdFire® Architectures

Linux® Platform Edition 2.5

Quick Start for Linux® Operating Systems

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	Red Hat® Linux version 9.0, Red Hat Enterprise Linux version 3 Red Hat Enterprise Linux version 4 Red Hat Enterprise Linux version 5
Disk Space	1.6 GB, plus space for projects and source code

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

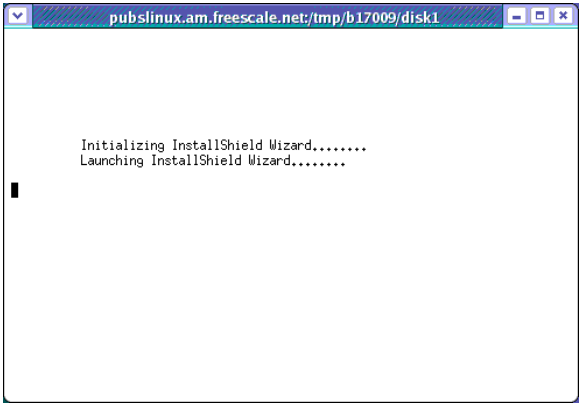
NOTE In this procedure, we assume the ColdFire target system you are using is already connected to your Local Area Network (LAN) through an Ethernet connection, and has an embedded Linux operating system up and running with the CodeWarrior Target Resident Kernel Linux binary file, AppTRK, installed.

Section A: Installing and Registering Software

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

1. Install CodeWarrior software.
   a. Insert CodeWarrior Development Studio for ColdFire Architectures, Linux Edition CD into the Linux host computer CD-ROM drive.
   b. On the Linux host computer, open a new terminal window — shell session starts.
   c. In the terminal window, log in as root or super user.
   d. Mount CD-ROM media on the Linux file system.
   e. Change working directory to CD-ROM mount directory.
   f. As root or super user, enter command: `./setuplinux.bin` — install wizard starts; the welcome page appears.

Starting the Installer

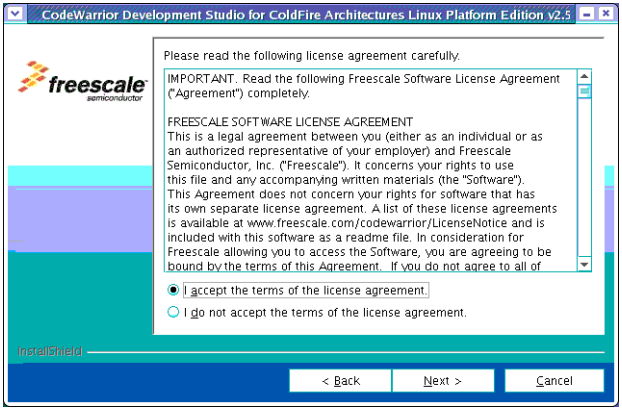


Install Wizard — Welcome Page

g. Click **Next** — the **License** page appears.

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

Installer — License Page



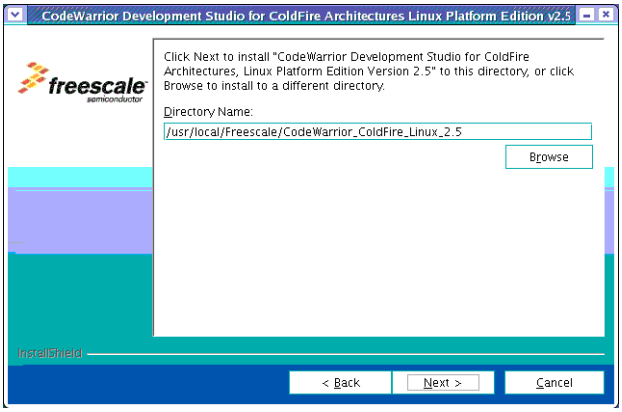
i. Click **Next** — next page appears.

j. Follow wizard instructions, accepting default settings until the **Install Location** page appears.

k. Specify alternate location; for example:

```
/usr/local/Freescale/
CodeWarrior_ColdFire_Linux_2.5
```

Installer — Install Location Page

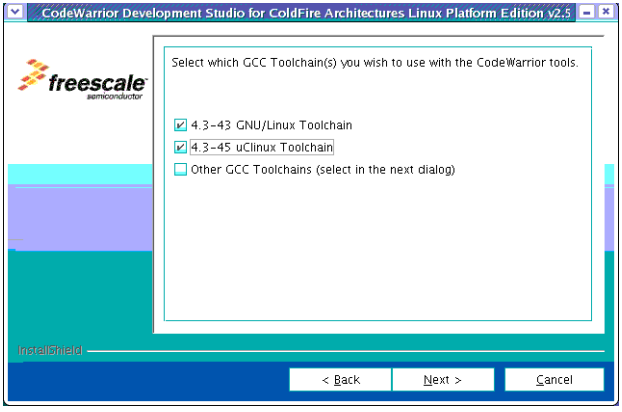


l. Click **Next** — the **GCC Toolchains** page appears.

m. Check the **4.3-43 GNU/Linux Toolchain** checkbox.

n. Check the **4.3-45 uClinux Toolchain** checkbox.

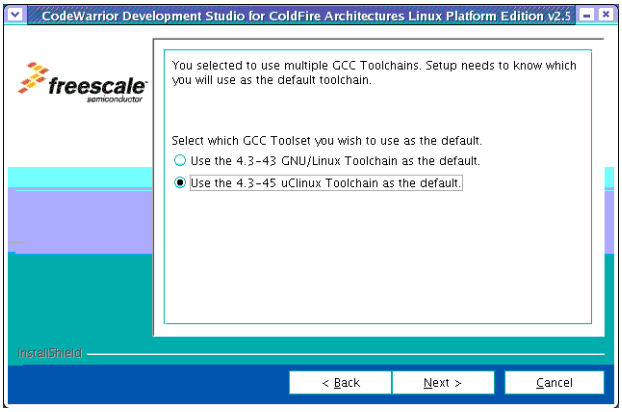
Installer — GCC Toolchains Page



o. Click **Next** — the **Default Toolchain** page appears.

p. Select the **Use the 4.3-45 uClinux Toolchain as the default** option button.

Installer — Default Toolchain Page



q. Click **Next** — the **Summary** page appears.

r. Continue following install wizard directions until the installation is finished.

s. Click **Finish** — the install wizard exits.

NOTE For licensing and activation of your CodeWarrior Development Studio for ColdFire Architectures, refer to the *CodeWarrior Development Suite Quick Start*. Save the license file, `license.dat` to the installation root folder, the default is `/usr/local/Freescale`.

Section B: 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. Configure terminal emulation.

   a. On the Linux host computer, open the terminal window.

   b. Refer to the target board documentation to learn serial port parameters needed to communicate with the board in question.

   c. As root or super user, enter command `minicom -s` to configure **minicom** program with the appropriate parameters for the Linux host computer serial port and the target board.

   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

2. Connect target board serial cable, Ethernet cable, and power cable.
   a. Connect the RS-232 serial cable to the target board RS-232 port and the Linux host computer serial port.
   b. Connect the standard Ethernet cable to the target board Ethernet port and the Local Area Network (LAN) hub, switch, or port.
   c. Connect power supply to the target board power connector.
   d. Plug the target board power supply into the surge-protected power strip.
   e. Connect the surge-protected strip to the AC power outlet.
   f. Turn on the surge-protected power strip — target board boots; boot messages appear in the terminal window; when system is ready, prompt appears in the terminal window.
3. Boot Linux.

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 the 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 the 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.

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

        `ping IPAddress`

        Use ping command to show ping reply messages.
    b. Press **Control-C** on keyboard — ping program stops.
6. Start AppTRK on target board.
    a. In the terminal window, enter command (where *IPAddress* is the IP address of the target board network interface):

        `telnet IPAddress`

        Telnet client connects to the telnet daemon on the target board.
    b. If necessary, log in as root user — shell prompt appears in the terminal window.
    c. At shell prompt, enter:

        `AppTrk.elf :1000`

        AppTRK begins listening for the CodeWarrior debugger connections.

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

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

Section C: 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, and then debug the project with the CodeWarrior IDE.

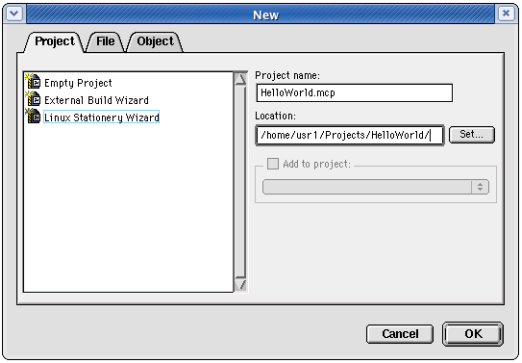
1. Create a new CodeWarrior project.
    a. Open the terminal window.
    b. Change the working directory to this directory (where *CWInstallDir* is the directory in which you installed the CodeWarrior software).

        CWInstallDir`/CodeWarriorIDE/`
    c. Enter command: `./cwide` — the CodeWarrior IDE starts; the CodeWarrior menu bar appears.

CodeWarrior Menu Bar

d. From the CodeWarrior menu bar, select **File > New** — the **New** dialog box appears.

New Dialog Box



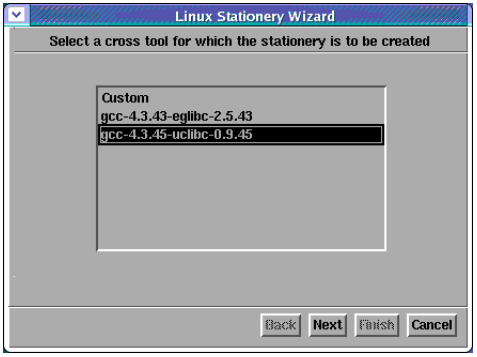
e. From the wizard list, select **Linux Stationery Wizard**.

f. In the **Project name** text box, enter: `HelloWorld.mcp`.

g. If desired, click **Set** to set alternate project location.

h. Click **OK** — IDE starts Linux Stationery Wizard; the wizard dialog box appears.

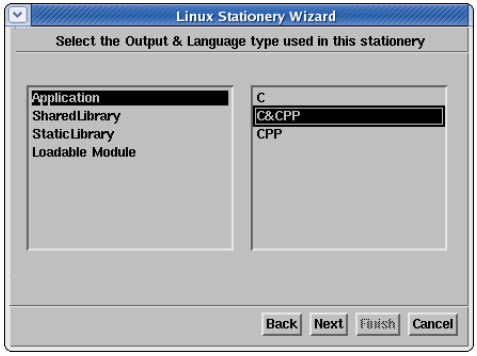
Wizard — Cross Tool Page



i. Select GCC version corresponding to the BSP used.

j. Click **Next** — the **Output Type and Language** page appears.

Wizard — Output Type and Language Page



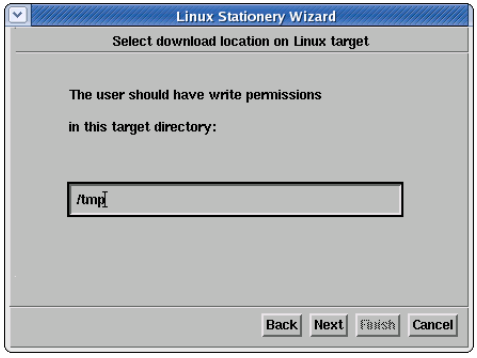
k. From the **Output Type** list (left), select **Application**.

l. From the **Language** list (right), select **C&CPP**.

m. Click **Next** — the **Download Location** page appears.

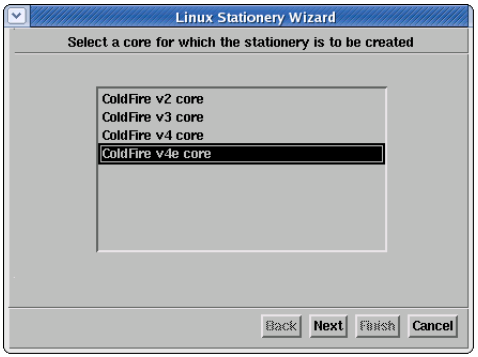
n. In the text box, enter the full path to the directory on the target file system to which you have write access (for example: `/tmp`).

Wizard — Download Location Page



o. Click **Next** — the **Core Selection** page appears.

Wizard — Core Selection Page



p. From list, select core of target board.

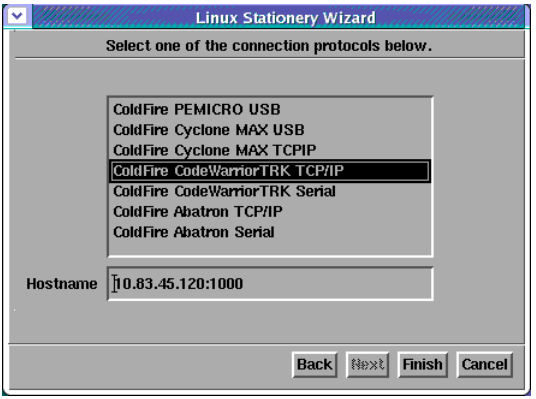
q. Click **Next** — the **Connection** page appears.

r. From list, select **ColdFire CodeWarriorTRK TCP/IP**.

s. In the **Hostname** text box, enter IP address of target board and CodeWarriorTRK listening port number on target board, in this form:

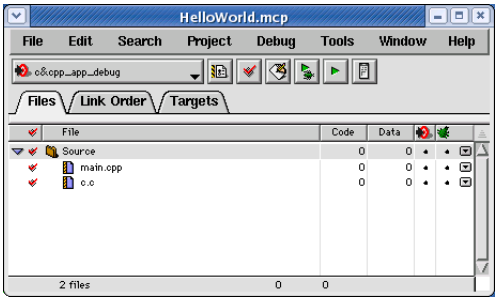
`IPAddress:PortNum`

Wizard — Connection Page



t. Click **Finish** — IDE creates new project; the project window appears.

Project Window



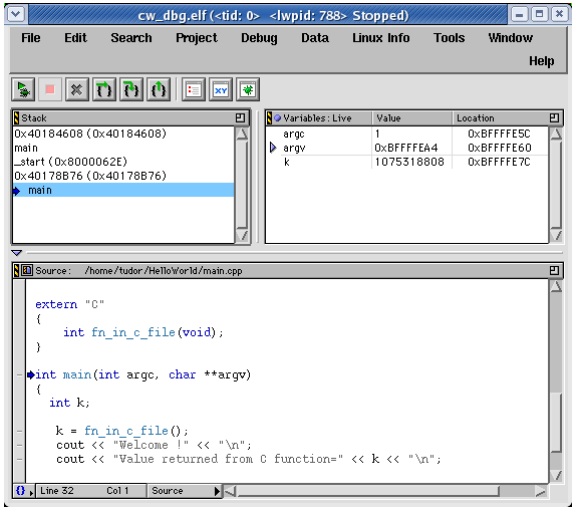
2. From the CodeWarrior menu bar, select **Project > Make** — CodeWarrior IDE compiles project.

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 the CodeWarrior menu bar, select **Project > Debug** — the debugger stack crawl window appears; debugger starts program, then halts program execution at the 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.

b. At the left side of the window, click the breakpoint column next to the `cout << "Welcome !"` source code line — a red dot appears in the breakpoint column.

c. Select **Project > Run** — the debugger executes the program and halts the execution at the specified breakpoint.

d. Select **Debug > Step Over** — the debugger advances Program Counter (PC) to the next line of the source code; PC indicator (blue arrow) moves to the next line in the stack crawl window; the second **CodeWarrior TRK Console** window appears displaying the "Welcome !" message.

e. Select **Debug > Step Over** again — new **CodeWarrior TRK Console** window appears; "Welcome!" message appears in the new **CodeWarrior TRK Console** window.

f. Select **Debug > Kill** — the debugger stops program execution; the debugger window disappears.

Congratulations!

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

How to Contact Us

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Revised: 3 March 2009

926-75438 Rev I