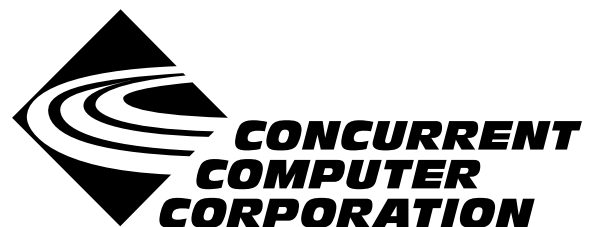


# Concurrent Fortran 77 for RedHawk Linux

Version 6.1 Release Notes

August 2004

0898101-6.1



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## 1.0. Introduction

Concurrent Fortran 77 for RedHawk Linux supports development of Fortran 77 programs running under Concurrent Computer Corporation's RedHawk™ Linux® real-time operating system.

Concurrent Fortran 77 for RedHawk Linux is based on Concurrent's Common Code Generator (CCG) technology and provides a command-line-based program development environment for building complex projects as well as various switches and enhancements for compatibility with a number of legacy F77 compilers.

Although this is the first release of Concurrent Fortran 77 for RedHawk Linux, the version is 6.1 to signify that this release is based on the same source as Concurrent C/C++ and Concurrent Fortran 77 for PowerPC® platforms.

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## 2.0. Documentation

Table 2-1 lists the Concurrent Fortran 77 for RedHawk Linux Version 6.1 documentation available from Concurrent.

**Table 2-1. Concurrent Fortran 77 for RedHawk Linux Version 6.1 Documentation**

Manual Name	Pub. Number
<i>Concurrent Fortran 77 Reference Manual</i>	0890240-100
<i>Concurrent Fortran 77 for RedHawk Linux Version 6.1 Release Notes</i>	0898101-6.1

Copies of the Concurrent documentation can be ordered by contacting the Concurrent Software Support Center. The toll-free number for calls within the continental United States is 1-800-245-6453. For calls outside the continental United States, the number is 1-954-283-1822 or 1-305-931-2408.

Additionally, the manuals listed above are available:

- online using the RedHawk Linux utility, **nhelp** (*release notes only*)
- in PDF format in the **documentation** directory of the Concurrent Fortran 77 for RedHawk Linux Installation CD
- on the Concurrent Computer Corporation web site at [www.ccur.com](http://www.ccur.com)

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## 3.0. Prerequisites

Prerequisites for Concurrent Fortran 77 for RedHawk Linux Version 6.1 for both the host system and target system are as follows:

### 3.1. Host System

#### 3.1.1. Software

- Red Hat® or RedHawk Linux

#### 3.1.2. Hardware

- an Intel®-based PC - 300Mhz or higher (recommended minimum configuration)
- 64MB physical memory (recommended minimum configuration)

### 3.2. Target System

#### 3.2.1. Software

- RedHawk 1.4 or later

#### 3.2.2. Hardware

- Any Pentium®-4 based machine supported by RedHawk.

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## 4.0. System Installation

A single command installs (or uninstalls) all of the RPMs for Concurrent Fortran 77 for RedHawk Linux.

The name of the RPMs associated with Concurrent Fortran 77 for RedHawk Linux Version 6.1 are:

```
ccur-invoker  
ccur-f77-6.1  
ccur-f77libs-6.1  
ccur-f77-tools-6.1  
ccur-f77-manpages  
ccur-f77help-6.1
```

and the files associated with these RPMs are:

```
ccur-invoker-000-1.i386.rpm  
ccur-f77-6.1-000-1.i386.rpm  
ccur-f77libs-6.1-000-1.i386.rpm  
ccur-f77-tools-6.1-000-1.i386.rpm  
ccur-f77-manpages-000-1.i386.rpm  
ccur-f77help-6.1-000-1.i386.rpm
```

### NOTE

The user must be root in order to install Concurrent Fortran 77 for RedHawk Linux.



To install Concurrent Fortran 77 for RedHawk Linux, issue the following commands on your Linux system:

1. Insert the Concurrent Fortran 77 for RedHawk Linux Installation CD in the CD-ROM drive
2. Mount the CD-ROM drive (assuming the standard mount entry for the CD-ROM device exists in `/etc/fstab`)

```
mount /mnt/cdrom
```

3. Change the current working directory to the directory containing the Concurrent Fortran 77 for RedHawk Linux RPMs

```
cd /mnt/cdrom
```

4. Invoke the Concurrent Fortran 77 for RedHawk Linux installation script

```
./ccur-install
```

You may see messages similar to the following during an install (or uninstall):

```
failed to stat /nfsfilesystem: Stale NFS file handle
```

where *nfsfilesystem* may be any NFS filesystem. These messages may be ignored.

5. Change the current working directory outside the `/mnt/cdrom` hierarchy

```
cd /
```

6. Unmount the CD-ROM drive (otherwise, you will be unable to remove the Concurrent Fortran 77 for RedHawk Linux Installation CD from the CD-ROM drive)

```
umount /mnt/cdrom
```

To uninstall the Concurrent Fortran 77 for RedHawk Linux, execute the following script:

```
ccur-uninstall
```

found on the Concurrent Fortran 77 for RedHawk Linux Installation CD. (Follow the installation instructions above for mounting the CD-ROM drive, maneuvering to the correct working directory, unmounting the CD-ROM drive, etc.)

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## 5.0. Using Concurrent Fortran 77

The following should be taken into consideration in order to use Concurrent Fortran 77 for RedHawk Linux.

### 5.1. Invoking the Compiler

There are now three Concurrent Fortran 77 for RedHawk Linux products available separately. Each is invoked differently.

- Concurrent Fortran 77 for RedHawk Linux (PowerMAX)  
Native PowerPC® - invoked with the **f77** or **hf77** commands (as has always been the case).
- Concurrent Fortran 77 for RedHawk Linux (Linux®)  
Intel™-to-PowerPC cross-compiler - invoked with the **xf77** command.
- Concurrent Fortran 77 for RedHawk Linux for RedHawk™ Linux  
Native Intel Pentium® - invoked with the **cf77** command (due to the fact that **f77** and **hf77** already exist on Linux systems).

### 5.2. PATH and PDE\_RELEASE Considerations

To utilize the Concurrent Fortran 77 for RedHawk Linux compiler, specify the following in your PATH environment variable:

```
PATH=$PATH:/usr/ccs/bin
```

The compiler should then be invoked with **cf77**. (This contrasts with PLDE cross-compiler product which is invoked with **xf77**, or with the native PowerPC product which is invoked with **hf77** or **f77**).

Installing 6.1 compilers on your system will set the default release to 6.1.

If the default PLDE release on your system is not 6.1, it will be necessary to select the 6.1 release by one of the following methods:

- use the **--rel=6.1** option on the **hf77** / **cf77** / **xf77** command line
- set the **PDE\_RELEASE** environment variable to **6.1**
- set the user default release (**c.release -rel 6.1 -u**)
- set the system default release (**c.install -rel 6.1 -d**)

### 5.3. Makefile Considerations

Makefiles may already contain references to **f77**, **hf77**, or **g77** commands explicitly within them. Additionally, if default rules for compilation, such as

```
.f.o:
```

are not explicitly mentioned, the **make** processor will also attempt to invoke **hf77**, **f77**, or **g77**.

To invoke the Concurrent Fortran 77 for RedHawk Linux compilers you can take any of the following approaches.

### 5.3.1. Explicit Modification Using **hf77** / **cf77** / **xf77**

Ensure that **/usr/ccs/bin** is in your **PATH** environment variable.

Modify all occurrences of **f77**, **hf77**, and **g77** to utilize **hf77**, **cf77**, or **xf77** as appropriate.

Supply default **.f.o** rules (and the like) to explicitly utilize the appropriate command.

### 5.3.2. Use of F77 Environment or Make Variables

One approach that requires minimal changes to Makefiles, etc., is to use environment variables or **make** variables to control which compiler you're using. The following commands will all build using Concurrent Fortran 77 for RedHawk Linux for RedHawk Linux:

Short-lived environment variables:

```
# F77=cf77 make arguments
```

**make** variables:

```
# make arguments F77=cf77
```

Long-lived environment variables:

```
# export F77=cf77
# make arguments
```

You can also use the long-lived environment variable approach by adding the following to your login script (e.g. **.profile** or **.login**, depending on your shell):

```
export F77=cf77
```

Or, if you prefer finer-grained control, you can add lines like the following to the top of any Makefiles that should use the Concurrent Fortran 77 for RedHawk Linux compiler:

```
F77=cf77
```

The changes will then only affect the modified Makefiles. Note that this solution only works for Makefiles that use the default **.f.o** rules. If they contain hard-coded references to **f77** or **g77**, then the Makefiles must be changed to use **\$(F77)** instead. If the Makefile references anything such as **g77** (Linux's GNU F77 compiler), then it will need to be changed, regardless.

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## 6.0. Changes in This Release

Users should be aware of the following changes in Concurrent Fortran 77 for RedHawk Linux Version 6.1:

- Files with the `.fpp` extension will be passed through the `cpp` tool to be preprocessed.
- Source files may end in Carriage Return/Line Feed now instead of just Line Feed.

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## 7.0. Cautions

Users of Concurrent Fortran 77 for RedHawk Linux Version 6.1 should be aware of the following issues.

### 7.1. Byte Endian Issues

FORTTRAN source code that makes assumptions about byte order may require modification to run on both PowerPC and Intel processors. Such dependencies usually occur in `EQUIVALENCE` statements, Hollerith constants, intrinsics that extract bits, and passing by reference wrong-sized integer variables to functions.

### 7.2. CPP

The FORTRAN compiler uses the system `cpp` tool. There may be subtle incompatibilities between `/lib/cpp` on PowerMAX OS and `/usr/bin/cpp -traditional` on Linux.

### 7.3. NaN

Programs that generate a Not a Number (NaN) may cause a signal when compiled for Intel processors where they don't on the PowerPC. This is because PowerPC allows a NaN to be loaded into a floating point register without generating a signal.

### 7.4. CALL used on floating-point functions

On Concurrent Fortran 77 for RedHawk Linux for RedHawk Linux, if the `CALL` statement is used to call a function that returns a floating-point value, the compiler has no way to know that the function has pushed a value onto the floating-point register stack. This will usually result in a floating-point register stack overflow signal being raised.

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## 8.0. Direct Software Support

Software support is available from a central source. If you need assistance or information about your system, please contact the Concurrent Software Support Center at 1-800-245-6453. Our customers outside the continental United States can contact us directly at 1-954-283-1822 or 1-305-931-2408. The Software Support Center operates Monday through Friday from 8 a.m. to 7 p.m., Eastern Standard time.

Calling the Software Support Center gives you immediate access to a broad range of skilled personnel and guarantees you a prompt response from the person most qualified to assist you. If you have a question requiring on-site assistance or consultation, the Software Support Center staff will arrange for a field analyst to return your call and schedule a visit.



