

# shmdefine

## Version 1.3 Release Notes (Linux)

September 2004

0898013-1.3



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## 1.0. Introduction

The **shmdefine** utility is designed to facilitate the use of shared memory by a set of cooperating programs. While most useful for sharing common blocks between Fortran programs, it helps Fortran, C, and Ada programs to effectively utilize the IPC shared memory services.

Input to the **shmdefine** utility defines the shared memory segment or segments that are to be used by the cooperating programs. The linker command script generated by **shmdefine** describes the shared memory regions to the linker.

**shmdefine** currently operates with the Concurrent native Ada and Fortran compilers (e.g., MAXAda™ and **cf77**), as well as the GNU C/C++ and Fortran compilers (e.g., **gcc**, **g++**, and **g77**) targeting RedHawk™ Linux® systems. It also operates with Concurrent C, C++, Fortran, and Ada cross-compilers (e.g., **ec**, **ec++**, **xf77**, and MAXAda) targeting PowerMAX OS™.

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## 2.0. Documentation

Table 2-1 lists the **shmdfine** 1.3 documentation available from Concurrent.

**Table 2-1. shmdfine Version 1.3 Documentation**

Manual Name	Pub. Number
<i>Quick Reference for shmdfine</i>	0898010-030
<i>shmdfine Version 1.3 Release Notes (Linux)</i>	0898013-1.3

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**
- in PDF format in the **documentation** directory of the RedHawk NightStar Tools 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 **shmdfine** Version 1.3 for both the host system and target system are as follows:

### 3.1. Host System

#### 3.1.1. Software

- RedHawk Linux *or* Red Hat® Linux\*
- Required capabilities\*\*

#### NOTE

The following capabilities are normally installed by the installation script on the CD containing the NightStar tools. The user will be notified if required capabilities do not exist on the Linux system.

Capabilities	RPMs providing these capabilities
<code>ccur-HyperHelp</code> <code>ccur-HyperHelp-scripts</code>	<code>ccur-x11progs-6.4.2-008</code> <code>ccur-HyperHelp-scripts-6.4.2-002</code>

#### 3.1.2. Hardware

- any iHawk™ Series 860 system *or* iHawk Series 870 system  
*or*  
an Intel®-based PC - 300Mhz or higher (*recommended minimum configuration*)

## 3.2. Target System

### 3.2.1. RedHawk Systems

#### 3.2.1.1. Software

- RedHawk Linux 1.4 or later

\* This product has been extensively tested on RedHawk Linux 1.4, 2.1, and 2.2; Red Hat Linux 8.0 and 9.0; and Red Hat Enterprise Linux WS 3.0. However, this product has not been tested with versions of Linux supplied by other vendors.

\*\* The “Capabilities” listed may be found in those versions of the RPMs listed under “RPMs providing these capabilities” or in later versions.

### 3.2.1.2. Hardware

- any iHawk Series 860 system *or* iHawk Series 870 system

## 3.2.2. PowerMAX Systems

### 3.2.2.1. Software

- PowerMAX OS 4.3 or later

### 3.2.2.2. Hardware

- Computer Systems:
  - Power Hawk™ 620 and 640
  - Power Hawk 710, 720 and 740
  - Power Hawk 910 and 920
  - PowerStack™ II and III
  - Night Hawk® Series 6000
  - TurboHawk™
  - PowerMAXION™
- Board-Level Products:
  - Motorola® MVME2604
  - Motorola MVME4604

### NOTE

**shmdfine** can be used to build programs for a variety of target systems, but not all host/target combinations are supported.

The following table shows the valid combinations:

Host System	Target System
Red Hat Linux ( <i>Intel-based PC</i> )	RedHawk Linux ( <i>iHawk Series 860</i> ) PowerMAX OS
RedHawk Linux ( <i>iHawk Series 860</i> )	RedHawk Linux ( <i>iHawk Series 860</i> ) PowerMAX OS
RedHawk Linux ( <i>iHawk Series 870</i> )	RedHawk Linux ( <i>iHawk Series 870</i> )

Use the appropriate compiler and linker for your host/target combination.



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## 4.0. System Installation

Installation of **shmdefine** is normally done as part of the general installation of the RedHawk NightStar Tools software suite. A single command installs (or uninstalls) all software components of the RedHawk NightStar Tools, as described in the *RedHawk NightStar Tools Release Notes* (0898008).

The following section describes how to install (or uninstall) **shmdefine** separately from the RedHawk NightStar Tools suite for those cases when this is necessary.

### 4.1. Separate Host Installation

At times, it may be necessary to install (or uninstall) **shmdefine** independent of the installation of the RedHawk NightStar Tools software suite. This may be done using the standard Linux product installation mechanism, **rpm** (see **rpm(8)**).

The RPM name associated with **shmdefine** 1.3 is:

```
ccur-shmdefine-1.3-000
```

and the file associated with this RPM is:

```
ccur-shmdefine-1.3-000.i386.rpm
```

which can be found in the **RPM** directory on the RedHawk NightStar Tools Installation CD.

#### NOTE

The user must be root in order to use the **rpm** product installation mechanism on the Linux system.

To install the **shmdefine** RPM, issue the following commands on your Linux system:

1. Insert the RedHawk NightStar Tools 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 **shmdefine** RPM

```
cd /mnt/cdrom/RPM
```

4. Install the RPM

```
rpm -i ccur-shmdefine-1.3-000.i386.rpm
```

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 PowerWorks Linux Development Environment Installation CD from the CD-ROM drive)

```
umount /mnt/cdrom
```

To uninstall the **shdefine** RPM, use the following command:

```
rpm -e ccur-shdefine-1.3-000
```

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## 5.0. Changes in this Release

**shdefine** 1.3 contains the following changes:

- The files generated by **shdefine** for Linux targets no longer cause GNU **ld** to allocate disk space to the shared regions in the generated executable file. This results in much smaller executable files for programs that make use of **shdefine**.
- The shared regions produced by **shdefine** for Linux targets no longer place shared regions at addresses beginning at `0x30000000` and increasing. Rather, shared regions are allocated near the end of the `.bss` section with normal program data. This area is always below the first address returned by **brk (0)** (below the heap).

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## 6.0. Known Issues

This release of **shmdfine** is incompatible with releases of MAXAda for RedHawk Linux up to and including **ccur-MAXAda-i86\_3.4-003-5**.

However, it is possible to properly link using GNU **ld** link scripts produced by **shmdfine** with releases of MAXAda for RedHawk Linux 3.4-004 and later.

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## 7.0. Cautions

Special consideration should be given to the following:

- The **-M** option is needed only on PowerMAX OS target compiler/linker commands. The **-M** option is *not* needed when linking the **.ld** link script for Linux targets. If the **-M** option is used on the compiler/linker command on Linux targets, it produces a lengthy memory map from the GNU linker.

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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.



