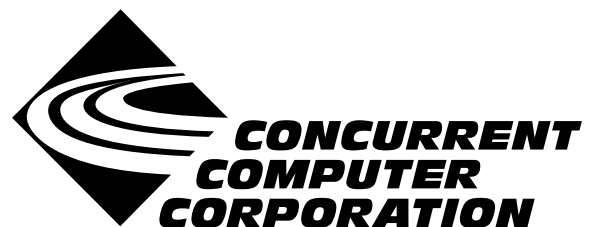


# Data Monitoring

## Version 3.4 Release Notes (Linux)

July 2004

0898493-3.4



---

## Copyright

Copyright 2004 by Concurrent Computer Corporation. All rights reserved. This publication or any part thereof is intended for use with Concurrent Computer Corporation products by Concurrent Computer Corporation personnel, customers, and end-users. It may not be reproduced in any form without the written permission of the publisher.

---

## Disclaimer

The information contained in this document is subject to change without notice. Concurrent Computer Corporation has taken efforts to remove errors from this document, however, Concurrent Computer Corporation's only liability regarding errors that may still exist is to correct said errors upon their being made known to Concurrent Computer Corporation.

---

## License

Duplication of this manual without the written consent of Concurrent Computer Corporation is prohibited. Any copy of this manual reproduced with permission must include the Concurrent Computer Corporation copyright notice.

---

## Trademark Acknowledgments

PowerWorks, PowerMAXION, PowerMAX OS, TurboHawk, and Power Hawk are trademarks of Concurrent Computer Corporation.

Night Hawk is a registered trademark of Concurrent Computer Corporation.

Motorola is a registered trademark of Motorola, Inc.

PowerStack is a trademark of Motorola, Inc.

Linux is a registered trademark of Linus Torvalds.

Red Hat is a registered trademark of Red Hat, Inc.

Intel is a registered trademark of Intel Corporation.

X Window System is a trademark of The Open Group.

---

---

# Contents

1.0 Introduction . . . . .	1
2.0 Documentation . . . . .	2
3.0 Prerequisites . . . . .	3
3.1 Host System . . . . .	3
3.1.1 Software . . . . .	3
3.1.2 Hardware . . . . .	3
3.2 Target System . . . . .	4
3.2.1 Software . . . . .	4
3.2.2 Hardware . . . . .	4
4.0 System Installation . . . . .	5
4.1 Separate Host Installation . . . . .	5
5.0 Overview of Data Monitoring 3.4 . . . . .	8
6.0 Direct Software Support . . . . .	9



---

---

## 1.0. Introduction

The PowerWorks™ Linux Development Environment (PLDE) Data Monitoring libraries and headers for cross-compilers hosted on Linux® and targeting Concurrent systems running PowerMAX OS provide Ada, C, and Fortran callable services for nonintrusive monitoring of variables in executing processes.

Data monitoring is effected through the use of the **usermap (3rt)** service, which employs the **/proc** file system (**proc (4)**) to read and write the address space of executing processes. Data monitoring services require symbolic information from the executable files of the processes to be monitored; thus, portions of the executable files must be built with the **-g** (debug) compilation option (C, Fortran, and Ada).

Data monitoring includes the following general capabilities:

- Retrieve values of variables (or components of variables) in a target process
- Modify variables (or components of variables) in a target process
- Retrieve/modify user-specified memory locations in a target process
- Retrieve information about variables (or components of variables) in a target process (type, address, dimensions, constraints, etc.)
- List the components of a composite variable (e.g. record, structure, array)
- Scan an executable file for variables that can be monitored

The following variables are eligible for monitoring:

- Variables in library-level Ada packages (including nested packages)
- C variables whose storage class is `static` or `extern`
- Fortran variables within subroutines
- Fortran common block members

The following variables are **not** eligible for monitoring:

- Variables allocated on a program stack

Examples include Ada variables within subprograms, C variables with storage class `auto`, and `procedure`, `function`, and `subroutine` parameters

- Variables whose base address cannot be statically determined
- Elements of array variables whose offsets are variable (for example, `array[variable]`)

Values are expressed in symbolic formats appropriate for their respective variables. For example, Ada variables of enumerated types are expressed in terms of their enumeration image rather than their underlying integer representation. In addition to the services that return and expect values expressed in symbolic format, a low-level interface that reads and writes variables without symbolic formatting is provided.

The C and Fortran interface services are available in a single library, **libdm.a**. The Ada interface is available in the MAXAda™ environment **/usr/ada/default/rtdm** and is shipped with the MAXAda product.

---

---

## 2.0. Documentation

Table 2-1 lists the Data Monitoring 3.4 documentation available from Concurrent.

**Table 2-1. Data Monitoring Version 3.4 Documentation**

Manual Name	Pub. Number
<i>Data Monitoring Reference Manual</i>	0890493-010
<i>Data Monitoring Version 3.4 Release Notes (Linux)</i>	0898493-3.4

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 PowerWorks Linux Development Environment utility, **nhelp**
- in PDF format in the **documentation** directory of the PLDE Installation CD
- on the Concurrent Computer Corporation web site at [www.ccur.com](http://www.ccur.com)

---

---

## 3.0. Prerequisites

Prerequisites for Data Monitoring Version 3.4 for both the host system and target system are as follows:

### 3.1. Host System

#### 3.1.1. Software

- Red Hat® Linux\*
- Required capabilities

#### NOTE

The following capabilities are normally installed as part of the standard installation of Red Hat Linux and the PowerWorks Linux Development Environment. During installation of the PLDE, the user will be notified if required capabilities do not exist on the Linux system.

- PowerWorks Linux Development Environment

Capabilities	RPMs providing these capabilities
<code>ccur-HyperHelp-scripts</code> <code>plde-pmax-crossdev</code>	<code>ccur-HyperHelp-scripts-6.4.2-007</code>  <i>any or all of the following:</i> <code>plde-pmax-crossdev-4.3-P14-1</code> <code>plde-pmax-crossdev-5.1-SR8-1</code> <code>plde-pmax-crossdev-6.1-SR0-1</code>

If using Data Monitoring services in Ada programs, the following capabilities are also required:

Capabilities	RPMs providing these capabilities
<code>plde-MAXAda</code>	<code>plde-MAXAda-3.3.3-002-1</code>

#### 3.1.2. Hardware

- an Intel®-based PC - 500Mhz or higher (recommended minimum configuration)

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

## 3.2. Target System

### 3.2.1. Software

- PowerMAX OS 4.3 or later

### 3.2.2. Hardware

- Computer Systems:
  - Power Hawk™ 620 and 640
  - Power Hawk 710, 720 and 740
  - Power Hawk 900 Series
  - PowerStack™ II and III
  - Night Hawk® Series 6000
  - TurboHawk™
  - PowerMAXION™
- Board-Level Products:
  - Motorola® MVME2604
  - Motorola MVME4604



---

---

## 4.0. System Installation

Installation of the Data Monitoring libraries and headers is normally done as part of the general installation of the PowerWorks Linux Development Environment software suite. A single command installs (or uninstalls) all software components of the PLDE, as described in the *PowerWorks Linux Development Environment Release Notes* (0898000).

The following section describes how to install (or uninstall) the Data Monitoring libraries and headers separately from the PLDE suite for those cases when this is necessary.

### 4.1. Separate Host Installation

At times, it may be necessary to install (or uninstall) the Data Monitoring libraries and headers independent of the installation of the PowerWorks Linux Development Environment software suite. This may be done using the standard Linux product installation mechanism, **rpm** (see **rpm (8)**).

The RPM names associated with Data Monitoring 3.4 are:

```
plde-datamon-3.4
plde-datamon-pmax4.3
plde-datamon-pmax5.1
plde-datamon-pmax6.1
```

and the files associated with this RPM are:

```
plde-datamon-3.4-000-1.i386.rpm
plde-datamon-pmax4.3-3.4-000.i386.rpm
plde-datamon-pmax5.1-3.4-000.i386.rpm
plde-datamon-pmax6.1-3.4-000.i386.rpm
```

which can be found in the **linux-i386** directory on the PowerWorks Linux Development Environment Installation CD.

#### NOTE

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

To install the Data Monitoring RPMs, issue the following commands on your Linux system:

1. Insert the PowerWorks Linux Development Environment 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 Data Monitoring RPMs

```
cd /mnt/cdrom/linux-i386
```

4. Install the RPM

```
rpm -i plde-datamon-3.4-000-1.i386.rpm
```

By default, the product is installed in **/usr/opt**. To install in a different directory, add

```
--relocate /usr/opt=directory
```

to the **rpm** command where *directory* is the desired directory.

#### **NOTE**

The above RPM contains the actual libraries and headers, but is not useful with any PowerWorks cross-compilers by itself. This is to provide the flexibility to associate various versions of **plde-datamon** with various versions of **plde-pmax-crossdev**.

One or more of the PowerMAX OS version-specific Data Monitoring RPMs must be installed to link the libraries and headers to appropriate locations associated with libraries and headers from PowerMAX OS version-specific **plde-pmax-crossdev** RPMs.

To install Data Monitoring support for PowerMAX OS 4.3 target systems, issue the following command:

```
rpm -i plde-datamon-pmax4.3-3.4-000.i386.rpm
```

To install Data Monitoring support for PowerMAX OS 5.1 target systems, issue the following command:

```
rpm -i plde-datamon-pmax5.1-3.4-000.i386.rpm
```

To install Data Monitoring support for PowerMAX OS 6.1 target systems, issue the following command:

```
rpm -i plde-datamon-pmax6.1-3.4-000.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 PowerMAX OS version-specific portions of Data Monitoring, issue the following commands:

To remove Data Monitoring support for PowerMAX OS 4.3 target systems:

```
rpm -e plde-datamon-pmax4.3
```

To remove Data Monitoring support for PowerMAX OS 5.1 target systems:

```
rpm -e plde-datamon-pmax5.1
```

To remove Data Monitoring support for PowerMAX OS 6.1 target systems:

```
rpm -e plde-datamon-pmax6.1
```

To uninstall the base Data Monitoring RPM, use the following command:

```
rpm -e plde-datamon-3.4
```

---

---

## 5.0. Overview of Data Monitoring 3.4

Data Monitoring Version 3.4 is a maintenance release.

In the previous release, portions of the system library **libud.a** were statically linked into the API library. This is no longer the case. Users of the Data Monitoring API must now add the **-lud** link option when linking programs.

---

---

## 6.0. 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.





