

**The
Connection Machine
System**

Prism Release Notes

**Version 1.2
March 1993**

**Thinking Machines Corporation
Cambridge, Massachusetts**

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Customer Support

Thinking Machines Customer Support encourages customers to report errors in Connection Machine operation and to suggest improvements in our products.

When reporting an error, please provide as much information as possible to help us identify and correct the problem. A code example that failed to execute, a session transcript, the record of a backtrace, or other such information can greatly reduce the time it takes Thinking Machines to respond to the report.

If your site has an applications engineer or a local site coordinator, please contact that person directly for support. Otherwise, please contact Thinking Machines' home office customer support staff:

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Prism Release Notes

Version 1.2

1 About Version 1.2

These are the release notes for Version 1.2 of the Prism programming environment. Important new features include:

- support for CM-5 C*
- extensive improvements to performance analysis
- a structure visualizer
- support for programs translated from Fortran 77 to CM Fortran via the CMAX Converter
- the ability to split the source window, so that you can view source code and assembly language (or, for CMAX-generated programs, CM Fortran and the corresponding Fortran 77 source code) simultaneously
- extensive improvements to on-line documentation
- a new Prism mailing list
- speedup in the time it takes to load a program into Prism

These and other new features are discussed in more detail below.

Please note that if you are going to be using Prism's performance analysis feature, you must relink your program with the Prism library before using Version 1.2.

For the CM-2 and CM-200, Prism Version 1.2 works with CMSS Version 6.1 or later and SunOS Version 4.1 or later. It does not support VAX front ends.

For the CM-5, Prism Version 1.2 works with CMOST Version 7.1.5 or later and SunOS Version 4.1.1 or later.

2 New and Changed Features

2.1 CM-5 C* Support

Prism supports the CM-5 implementation of C*. Compile with the `-g` option for debugging support, and compile with `-cmprofile` to collect performance data. As with C* on the CM-2/200, there are limitations to Prism's support for C* expressions. For example, Prism doesn't understand `pcoord`, dot notation, or communication using left-indexing.

2.2 Performance Analysis

Performance analysis has been extensively improved in Prism Version 1.2:

- The display has been redesigned. All three levels of performance data (resource, per-procedure, and per-source-line) appear as panes within a single window.
- Source-line data is now available in call-graph mode.
- I/O activity on the CM (for the CM-2/200) and the nodes (for the CM-5) is now measured.
- CM and node usage for CM library calls and other routines not compiled with `-cmprofile` is now measured in the CM not profiled resource (CM-2/200) or Node not profiled resource (CM-5). NOTE: This requires Version 2.1 of CM Fortran or Version 7.1 of CM-5 C*. The feature is not available for C* on the CM-2/200.

Choose **performance data, displaying** in the Help Index for more information.

In addition, you can now collect performance data and save it in a file without running Prism. See **performance data, collecting** in the Help Index for more information.

NOTE: Because of a previously unreported restriction, under certain circumstances the time assigned to the front-end or partition-manager CPU (user) resource will incorrectly include time spent waiting for the CM or the nodes. In such cases, this resource may appear to be the bottleneck for the program, when in fact it is not. When this is the most-used resource, the performance advisor now prints a warning, and the **Procedures** pane of the Performance Data window displays data for the most-used CM or Node resource instead.

Also please note: performance data files saved under Prism Version 1.1 are not readable under Version 1.2. If you attempt to read such a data file, you receive a message of the form:

File *filename* is not a performance data file.

2.3 Visualization

Prism Version 1.2 provides a new structure visualizer, which displays the values of fields of a structure and expands pointers in the structure. Choose **structure visualizer** in the Help Index for more information.

By default, Prism now prints doubles with full precision. You can now change the default precision with which Prism prints doubles and floating-point variables (both in the command window and in text visualizers) via arguments to the **set** command. See the discussion of **set** in the Commands Reference for complete information.

These fields have been added to the **Statistics** window of visualizers: the variable's type, its dimensions, the total number of its data elements, and the number of active elements.

2.4 Split Source Window

Prism now lets you split the source window into multiple panes. For ordinary programs, you can display source code in one pane and the corresponding assembly code in the other pane (see below for another use of the split source window). Choose **source window** in the Help Index for more information.

2.5 CMAX Support

With the split source window mentioned above, you can now use Prism to debug and analyze the performance of programs that have been converted from Fortran 77 to CM Fortran via the CMAX Converter. CM Fortran source code appears in one pane of the source window, and the corresponding Fortran 77 source code appears in the other pane. You can debug in terms of either source code. For more information, choose **CMAX** in the Help Index.

2.6 On-Line Documentation

On-line documentation is now available in commands-only Prism via the new **doc** command.

On-line bug-update files and release notes for CM products are now available via the **Bug Updates** and **Release Notes** selections in the **Doc** menu.

Choose **documentation, obtaining** in the Help Index for more information.

Postscript versions of the *Prism User's Guide* and *Prism Reference Manual* may be on-line at your site. Typically, the files would be in **/usr/cm/doc/prism** at CM-2/200 sites and **/usr/doc/prism** at CM-5 sites. Check with your system administrator if the files are not available in these locations.

2.7 New Prism Mailing List

Thinking Machines Corporation has set up an electronic mailing list, `prism-talk@think.com`, where Prism users can discuss how to get the most out of the Prism programming environment. If you have comments, questions, or insights about Prism, we urge you to join this list and share them with others.

Prism developers may monitor this list and, at their discretion, participate in discussions, but they are not obligated to do so. For this reason, bug reports should not be sent to this list. If you want to ensure a prompt, official response to your mail, use the Prism email feature, or contact your applications engineer or Thinking Machines' Customer Support group directly.

To join this new list, simply send e-mail to:

`prism-talk-request@think.com`.

2.8 Miscellaneous Changes and Enhancements

2.8.1 Faster Loading

Loading of programs into Prism has been speeded up; they now load almost twice as fast as they did in the previous version of Prism.

2.8.2 New Scope and Execution Symbols

In the line-number region, Prism now puts the `-` symbol next to a line to indicate the current scope. It uses the `>` symbol to indicate the current execution point. If the current scope and the current execution point are identical, Prism puts the `*` symbol next to the appropriate line.

2.8.3 New Behavior of After Counts

The behavior of after counts has been changed in Prism Version 1.2. When you specify an after count as part of an event, Prism now counts down from the specified value each time the triggering condition is met; when the count reaches 1,

the event takes place. Prism then resets the after count to the specified value and starts counting down again (previously, the after count was not reset, and the event would take place each subsequent time the triggering condition was met). Prism updates the event table to show the current value of the after count.

2.8.4 New Behavior of PN Debug Selection

The PN Debug selection of the Utilities menu (CM-5 only) is now a toggle. If the toggle box next to the selection is filled in, Prism starts up **pndbx** in a separate window when a program is running.

2.8.5 64-Bit Integer Support

As of CM Fortran Version 2.1, Prism supports 64-bit integers.

2.9 Calling Prism from DJM

If your site is running the Distributed Job Manager (DJM), you may not be able to log in directly to a partition manager or front end to use Prism. If so, you must use the **jrun** command to execute a shell script that invokes Prism along with the appropriate **jsub** commands. Here is an example:

```
#! /bin/csh
#JSUB -nproc 64
#JSUB -cpu 8hrs
#JSUB -mem 64M
#
/bin/prism
```

Note that you should change the values for the **-nproc**, **-cpu**, and **-mem** options to reflect the requirements of your site. You can include other DJM options in the script. See your local DJM documentation for information on these options.

To execute the script, issue a **jrun** command with this format:

```
* jrun -export scriptname
```

where *scriptname* is the name of your shell script. Issuing this command will bring up Prism on your local display.

3 Restrictions

Restrictions are now listed in the Prism bug-update file. To display this file, choose **Bug Updates** from the **Doc** menu. In the window that is displayed, choose the bug update file for Prism Version 1.2 from the **Bug Update Files** list.