

# NightView

## Version 5.9 Release Notes (PowerMAX)

September 2004

0890395-5.9



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## 1.0. Introduction

NightView™ is a general-purpose, graphical source-level debugging and monitoring tool specifically designed for real-time applications written in Ada, C, C++, and Fortran. NightView can monitor, debug, and patch multiple real-time processes running on multiple processors on the local system or on different targets with minimal intrusion. In addition to standard debugging capabilities, NightView supports application-speed eventpoint conditions, hot patches, synchronized data monitoring, exception handling and loadable modules.

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## 2.0. Documentation

Table 2-1 lists the NightView 5.9 documentation available from Concurrent.

**Table 2-1. NightView Version 5.9 Documentation**

Manual Name	Pub. Number
<i>NightView User's Guide</i>	0890395-280
<i>NightView Version 5.9 Release Notes (PowerMAX)</i>	0890395-5.9
<i>NightView Pocket Reference</i>	0890475-080

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 X Window System utility, **nhelp** (*NightView User's Guide* and *NightView Version 5.9 Release Notes (PowerMAX)* only)
- on the Concurrent Computer Corporation web site at [www.ccur.com](http://www.ccur.com)

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## 3.0. Prerequisites

Prerequisites for NightView Version 5.9 are as follows:

### 3.1. Software

- PowerMAX OS Version 4.3 or later

To use watchpoints, you must have PowerMAX OS 4.3 patch-level 6 (base-006) or PowerMAX OS 5.1 or later. NightView disables the use of watchpoints if it doesn't detect the corresponding support in the kernel.

- X Window System (X11 Version 6.3 or later)
- An X<sup>TM</sup> server is required if you are using NightView's graphical user interface.
- Élan License Manager<sup>TM</sup> 5.0.1 or later (See *System Installation* on page 4 for details)

For more information about configuring your system to support NightView, see Appendix A, "System Resource Requirements" in the *NightView User's Guide* (0890395).

### 3.2. Hardware

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

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## 4.0. System Installation

The NightView product is installed as standard PowerMAX OS software packages and utilizes the standard PowerMAX OS product installation mechanism, **pkgadd** (see **pkgadd (1)**).

The package names are **NightView** and **Nviewp**. These names are case-sensitive.

Please refer to the “Installing Add-on Software” chapter in the *System Administration Volume I* (0890429) manual and the *PowerMAX OS Release Notes* for instructions on software installation.

NightView may be installed in either the root directory or elsewhere. When you run **pkgadd (1M)** to install NightView, you are prompted to enter the name of the directory for installation. If you want to install in the root directory, just press the <return> key at the prompt. Otherwise, enter the name of the directory where you want NightView installed. If this directory does not exist, the installation procedures attempt to create it for you.

### NOTE

NightView consists of multiple packages. The **NightView** package must be installed on systems on which you want to run the NightView user interface. The **Nviewp** package must be installed on systems on which the user programs you want to debug will be running. Most customers will want both packages on the same system.

If the NightView package is installed before the **Nviewp** package, you will get a warning about the **Nviewp** package not being installed.

NightView **must** be run with the Élan License Manager. Follow the steps in the "Obtaining Licenses" section of the *Élan License Manager Release Notes* (0891055); the *feature alias* is **NightView**. If you are not already running the Élan License Manager, if you do not have a copy of the *Élan License Manager Release Notes*, or if you need a license key, contact Concurrent Software Distribution at 1-800-666-5405 (or 1-954-283-1836 outside the continental United States).

If your site has multiple license servers, and you need to indicate a server on a particular system, you can set the environment variable `POWERWORKS_ELMHOST` to the name of the server's system before invoking NightView. For more information, see the *Élan License Manager Release Notes* (0891055).



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## 5.0. Overview of NightView 5.9

### 5.1. Enhancements

#### 5.1.1. Customizable Buttons and Keys

NightView 5.9 lets you customize the command buttons and the source keys in the Debug Window by specifying resources. The number of buttons and their arrangement and the commands that they run may all be changed. Two special macros are provided to refer to the position of the text cursor in the source pane and to the highlighted text. See the sections titled “Customizing Command Buttons” and “Customizing Source Keys” in Appendix D of the *NightView User’s Guide*.

#### 5.1.2. Data Window

The default scroll region size has changed from 20 lines to 10000 lines. See the section titled “Data Window Default Scroll Lines” in Chapter 9 of the *NightView User’s Guide*.

Some Data Window dialog boxes have checkboxes to determine if the changes should be applied to existing items. The default is now for the box to be checked: existing items will be changed. See the section titled “Data Window Dialog Boxes” in Chapter 9 of the *NightView User’s Guide*.

#### 5.1.3. Tabs in Source Files

Tabs are expanded when displaying source files to make the files look more like when they are being viewed in a text editor. Tab stops are assumed to be every 8 columns. See the section titled “Debug Source Display” in Chapter 9 of the *NightView User’s Guide*.

## 5.2. Changes in this Release

The following changes are included in NightView 5.9:

- The new **edit** command, which edits the current source file, is intended to be used primarily from customized buttons and source keys. See the section titled “edit” in Chapter 7 of the *NightView User’s Guide*.
- When a Debug Window command button is clicked, or a key is pressed in the source pane, a corresponding command is echoed to the window's message area. Some menu items also echo a command to the message area. See the section titled “Debug Command Buttons” in Chapter 9 of the *NightView User’s Guide*.
- Some eventpoint commands have been enhanced to take location specifiers in addition to name and number eventpoint specifiers. This is intended to make those commands useful from command buttons. See the section titled “Debug Command Buttons” in Chapter 9 of the *NightView User’s Guide*.

The commands are **name**, **commands**, **delete**, **enable**, **disable**, **mcontrol**, **info eventpoint**, **info breakpoint**, **info tracepoint**, **info agentpoint**, **info monitorpoint** and **info patchpoint**. See Chapter 7 of the *NightView User’s Guide* for information about these commands.

- The Tools menu now shows only one menu item for the NightBench™ Builder tool. A menu item appears for NightTune™ if that tool is installed on the system. See the section titled “Debug Tools Menu” in Chapter 9 of the *NightView User’s Guide*.
- Unlike other command streams, an on restart command stream continues if it gets errors. See the sections titled “Restarting a Program” and “Command Streams” in Chapter 3 of the *NightView User’s Guide*.
- If an eventpoint-setting command gets an error, the special eventpoint name '.' is cleared. See the section titled “Eventpoint Specifiers” in Chapter 7 of the *NightView User’s Guide*.
- Debug command buttons now become disabled (dimmed) when no process is being debugged. See the section titled “Debug Command Buttons” in Chapter 9 of the *NightView User’s Guide*.
- The **refresh** command has been modified to re-read source files in addition to clearing the terminal screen and redrawing it. See the section titled “refresh” in Chapter 7 of the *NightView User’s Guide*.

NightView 5.9 fixes these problems:

- A **watchpoint** command with no arguments would abort NightView. See the section titled “watchpoint” in Chapter 7 of the *NightView User’s Guide*.
- When attaching to a process from which you had detached, NightView could corrupt the eventpoint patch code, which could cause the program to behave erratically. See the section titled “Detaching” in Chapter 3 of the *NightView User’s Guide*.
- Some links in the HyperHelp error messages would take you to the glossary. Those links now take you to a description of the command. See the section titled “help” in Chapter 7 of the *NightView User’s Guide*.
- When the current context is in a C++ member function, you no longer need to explicitly use “this->” to refer to member functions for that class. See the section titled “Expression Evaluation” in Chapter 3 of the *NightView User’s Guide*.

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## 6.0. Cautions

Special consideration should be given to the following areas:

### 6.1. SFNOLIM Kernel Tunable

The `SFNOLIM` kernel tunable should not be set above 1024; doing so may cause NightView to fail during initialization or when communicating with other tools.

### 6.2. Next over Fork

If you **next** over a routine that creates a child process and waits for it to finish (e.g., `system()`), the **next** command will not complete because the debugger has the child process stopped. You cannot switch to the child process to resume it because you cannot switch away from the parent process while it is doing the **next** command. In this case, you need to interrupt the **next** operation with the **Interrupt** button. Then you can switch to the child process and control it.

This does not happen if the debugger does not stop the child process. See the section titled “nodebug” in Chapter 7 of the *NightView User’s Guide* (0890395). See the section titled “set-children” in Chapter 7 of the *NightView User’s Guide* (0890395).

### 6.3. Fortran 77 Arrays

There is currently a problem with Fortran 77 arrays passed as formal arguments on PowerMAX OS systems. The compiler generates a temporary variable to optimize references to the array. This temporary variable is then used in place of the original array argument. If the original array argument is not used later in the routine, then the lifetime of the argument is very short and its value is discarded. If you try to use the debugger to reference the argument later in the routine, the results are undefined. You can do two things to avoid running into this problem:

- Use the array later in the routine. For example, pass the array as an argument to another routine. This extends the lifetime of the original argument.
- Use the debugger to look at the array at the first executable line of the routine. The value of the original argument probably still exists at this point.

### 6.4. Scroll Bars

Some users have had a problem using the scroll bars in the graphical user interface. When the up-arrow button on a scroll bar is clicked, the window scrolls the length of the entire window contents, rather than just one line. This problem is caused by an inappropriate X resource, which has apparently been copied from one user to another in much the same way as `$HOME/.profile` files are often copied:

```
*XmScrollBar*translations: <Btn1Down>: Select()
```

You should remove this resource from your `$HOME/.Xdefaults` or whatever other means you use for setting X resources. This resource affects any Motif application, not just NightView.

## 6.5. Accessing Variables While in Subprogram Prologue

Because the compilers generate line-number information for code that comprises the prologue of a subprogram, you may inadvertently set an eventpoint or stop your program at such a location. The prologue is the code that the compiler generates to set up the execution environment for a subprogram; until that code completes execution, the environment is incomplete. Attempts to access variables while in the context of the prologue may result in errors from NightView or may result in erroneous values.

If you suspect such a problem, you can determine whether you are in the prologue by doing the following:

- Stop the program at the point where the referencing problem occurs.
- Enter the command **info frame**.
- If the output from this command says something like "Could not obtain frame description information", then you are probably stopped in the prologue.

To try and avoid this problem, do not set an eventpoint on the lines containing a subprogram heading. If you want to set the eventpoint at the beginning of the subprogram, use the *unit\_name* (for Ada) or *function\_name* form of location specifier, rather than a *file\_name* and *line\_number*. See the section titled "Location Specifiers" in Chapter 7 of the *NightView User's Guide* (0890395).

## 6.6. Shared Objects

For core files, NightView cannot always find correct stack description information (tdesc) for shared objects. This problem occurs when the shared objects are built without position-independent code. This problem can cause NightView to display the wrong results for any routine other than the most recently called routine. For example, a **backtrace** command may print the wrong information, or an **up** command may fail. This is true for any release of NightView, not just 5.9. This is not a problem for running processes, only for core files.

We recommend that you build shared objects with position-independent code if you plan to debug programs that use them. For C and Fortran, use the **-zpic** option. See **cc (1)** or **f77 (1)**. For Ada, use **-sm shared** or **-sm both**. For HAPSE Ada, see "Shared Libraries and Shared-Objects" in the *HAPSE Reference Manual* (0890288). For MAXAda, see "Compile Options" and "Shared Objects" in the *MAXAda Reference Manual* (0890516).

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## 7.0. 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.





