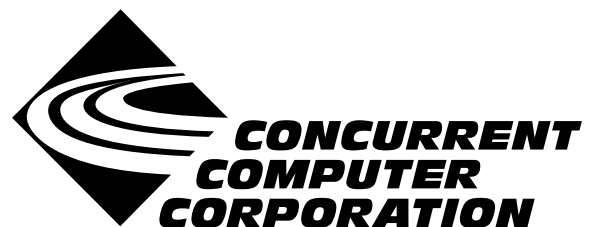


NightProbe

Version 2.6 Release Notes (PowerMAX)

December 2003

0890465-2.6



Copyright

Copyright 2003 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

NightProbe, NightTrace, NightStar, PowerMAXION, PowerMAX OS, TurboHawk, and Power Hawk are trademarks of Concurrent Computer Corporation.

Night Hawk is a registered trademark of Concurrent Computer Corporation.

Élan License Manager is a trademark of Élan Computer Group, Inc.

Motorola is a registered trademark of Motorola, Inc.

PowerStack is a trademark of Motorola, Inc.

OSF/Motif is a registered trademark of The Open Group.

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 Software | 3 |
| 3.2 Hardware | 3 |
| 4.0 System Installation | 4 |
| 5.0 Overview of NightProbe 2.6 | 5 |
| 5.1 Enhancements | 5 |
| 5.1.1 NightProbe Application Programming Interface | 5 |
| 5.1.2 NightTrace Specification dialog | 5 |
| 5.1.3 Program Output Specification dialog | 6 |
| 5.1.4 Frequency-Based Scheduler Selection dialog | 6 |
| 5.1.5 Target System Selection dialog | 6 |
| 5.2 Known Issues | 6 |
| 6.0 Direct Software Support | 8 |

1.0. Introduction

NightProbe™ provides a graphical user interface that permits real-time recording, viewing, and modification of program data within one or more executing programs. It can be used during development and operation of applications, including simulations, data acquisition, and system control.

The features and capabilities of NightProbe include:

- An X Window System™ and OSF/Motif™ graphical user interface provides data sampling control and a spreadsheet interface for data recording, monitoring, and modification.
- Several timing sources, including the system clock and the frequency-based scheduler, are provided for controlling the sampling rate. The user may explicitly start, suspend, and stop sampling using the graphical user interface.
- Any static memory location of any Ada, C, or Fortran process on any processor may be sampled by NightProbe.
- Sampled data can be monitored interactively, written to a file or shared memory area in real time, logged via the NightTrace™ daemon, or streamed in real time to a user-specified application.
- NightProbe can be run on a different processor from the target program, which minimizes NightProbe's impact on the target program's performance.
- NightProbe allows data locations to be specified using logical addresses or the symbolic names that appear in the program source code. The data addresses and data types are then located by searching the symbol table in the executable program file. NightProbe can present lists of the static variables in programs, and the user may select the variables of interest using the graphical user interface.
- Configuration files can be created, edited, and saved to retain target selections and display layout, allowing for fast start-up.
- No modifications to source code are required for use with NightProbe. Programs must be compiled with debug information (the `-g` compilation option).

2.0. Documentation

Table 2-1 lists the NightProbe 2.6 documentation available from Concurrent.

Table 2-1. NightProbe Version 2.6 Documentation

| Manual Name | Pub. Number |
|--|-------------|
| <i>NightProbe User's Guide</i> | 0890465-050 |
| <i>NightProbe Version 2.6 Release Notes (PowerMAX)</i> | 0890465-2.6 |

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**
- on the Concurrent Computer Corporation web site at www.ccur.com

3.0. Prerequisites

Prerequisites for NightProbe Version 2.6 are as follows:

3.1. Software

- PowerMAX OS 4.3 or later
- X Window System (X11 Version 6.4.2 or later)
- Élan License Manager™ 5.0.2 or later

3.2. 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
- An X Window System display device, such as an X™ terminal

4.0. System Installation

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

The package names are

| | |
|-------------------|--|
| nprobe | the NightProbe graphical user interface - must be installed on the NightProbe host |
| nprobeserv | the NightProbe server - must be installed on each target system and performs system-level actions on behalf of NightProbe |
| nprobeapi | the NightProbe real-time data monitoring and recording API - must be installed on host system where applications which read NightProbe recorded data using the NightProbe API will be built. For applications which are dynamically linked and executed on the target system, the nprobeapi package must also be installed on the target. |

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.

NightProbe may be installed in either the root directory or elsewhere. When you run **pkgadd (1M)** to install NightProbe, 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 NightProbe installed. If this directory does not exist, the installation procedures attempt to create it for you.

Use of NightProbe requires a license which must be obtained from an Élan License Manager server. Follow the steps in the "Obtaining Licenses" section of the *Élan License Manager Release Notes* (0891055); the *feature alias* is NightProbe. 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).

5.0. Overview of NightProbe 2.6

5.1. Enhancements

5.1.1. NightProbe Application Programming Interface

The NightProbe Application Programming Interface provides a basic interface to the data recording output produced by NightProbe and consists of a number of functions and data structures.

This API can be used to read data recording output which has been saved to an external file via the **To File** output method in NightProbe. In addition, a program can use the API to process data recording output streamed directly from NightProbe using the **To Program** output method (see “Program Output Specification dialog” on page 6 for more information on configuring the program used by the **To Program** output method).

Applications using the NightProbe API should include the NightProbe header file `/usr/include/nprobe.h` with the following line:

```
#include <nprobe.h>
```

In addition, programs using this interface must link dynamically with `libnprobe.so` or else statically with `libnprobe.a`.

NOTE

If your application links dynamically with `libnprobe.so` and executes on a PowerMAX OS target system other than the NightProbe host, then the `nprobeapi` package must also be installed on the target system. See “System Installation” on page 4 for more information.

See the chapter titled “Using the NightProbe API” in the *NightProbe User’s Guide* (0890465) for details.

5.1.2. NightTrace Specification dialog

The NightTrace Specification dialog is presented when you select the **To NightTrace** output method.

This output method allows the user to save data sampled by NightProbe in the form of NightTrace records that can be streamed to a NightTrace daemon for collection.

When this output method is selected, each sampled data value is logged as a trace event that can be viewed using NightTrace. NightProbe gives the user the option of starting a NightTrace session when it first connects to the target program. A NightTrace display page containing Data Graphs which display the values of the sampled variables as either vertical lines or bars of varying height is created for the user. The height of the line or bar reflects the value of the sampled data. The user can configure which variables are to be displayed as well as the style and color of the items on the Data Graphs.

NightTrace session files containing information such as display page configurations and daemon definitions are automatically generated by NightProbe and are saved in a directory specified by the user.

See the section “To NightTrace” in the chapter titled “Using the Data Recording Window” in the *NightProbe User’s Guide* (0890465) for details.

5.1.3. Program Output Specification dialog

The Program Output Specification dialog is presented when the user selects the **To Program** output method from the **Output** menu of the Data Recording window. This dialog allows the user to specify a program to process the data recording output streamed from NightProbe.

The user can select the desired scheduling policy and priority of the program as well as constrain the execution of the program to certain CPUs.

In addition, the Program Output Specification dialog allows the user to specify a frequency-based scheduler on which to schedule the program which processes the data recording output from NightProbe. Scheduling the program in cycles unused by the probed application allows for minimal interference with that application.

The user may also set NUMA flags for those programs running on PowerMAX OS systems.

See the section “To Program” in the chapter titled “Using the Data Recording Window” in the *NightProbe User’s Guide* (0890465) for details.

5.1.4. Frequency-Based Scheduler Selection dialog

The Frequency-Based Scheduler Selection dialog is opened when the user presses the **Select...** button for the **Scheduler Key** field on either the Frequency-Based Scheduler Configuration dialog or the Program Output Specification dialog (see “Program Output Specification dialog” on page 6). This dialog allows the user to select a frequency-based scheduler on the target system.

See the section “Frequency-Based Scheduler Selection” in the chapter titled “Using the Data Recording Window” in the *NightProbe User’s Guide* (0890465) for details.

5.1.5. Target System Selection dialog

The Target System Selection dialog has been enhanced so as to allow the user to specify the run-time attributes associated with data monitoring activities on the target.

The user can select the desired scheduling policy and priority of those processes associated with data monitoring and recording on the target system as well as constrain the execution of those processes to certain CPUs on the target system.

Also, on platforms belonging to the local/global/remote subclass of non-uniform memory access (NUMA) architectures, the user can influence the page placement decisions made by the kernel by specifying policies for the different parts of their address spaces.

See the chapter titled “Using the Target System Selection Window” in the *NightProbe User’s Guide* (0890465) for details.

5.2. Known Issues

The following items describe NightProbe issues which may be addressed in future patches and releases:

- NightProbe prints Ada95 fixed point types using their underlying integer representation, not as a fractional number.

- NightProbe prints Ada95 enumeration values as the underlying integer representation, not the textual image of the corresponding enumeration constant.

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.

