

CONCURRENT COMPUTER CORPORATION

NightView™ Pocket Reference

**For More Information**

See the *NightView User's Guide* (0890395).

See **nview(1)** and the on-line help.

Type **nview -help**.

See <http://www.ccur.com>

Call 800.245.6453 or 954.971.6248.

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NightView is a general-purpose, source-level debugger for Ada, C, C++ and Fortran. NightView can be used to debug multiple processes on the local system or on different hosts.

## Invoking NightView

```
nightview [-attach pid] [-editor program] [-help] [-ktalk]
            [-noquit] [-noktalk] [-nolocal] [-nx] [-prompt string]
            [-safely safe-mode] [-simplifyscreen] [-version]
            [-Xoption ...] [-x command-file] [-xeditor]
            [program-name] [corefile-name]
```

Compile with symbolic debugging information turned on (-g). Run programs by giving the program name as an argument on the NightView invocation or by using the **run** command within NightView. In the graphical user interface, you can type the program invocation directly into the dialogue shell in the Dialogue I/O section of the Dialogue Window.

## Command Syntax

*[(qualifier)] command [command-arg ...]*

## Controlling the Debugger

### Quitting NightView

Stop everything. Exit the debugger.

**quit**

Abbreviation: **q**

### Managing Dialogues

Login to a new dialogue shell.

**login** [/conditional] [/popup] [name=dialogue-name]  
[user=login-name] [others ...] machine

Specify names for programs you wish to debug.

**debug** pattern ...

Specify names for programs you do not wish to debug.

**nodebug** pattern ...

Translate object filenames for a remote dialogue.

**translate-object-file** [from [to]]

Abbreviation: **x1**

Terminate a dialogue.

**logout**

Specify debugger commands to be executed when a dialogue is created.

**on dialogue** [regexp]

**on dialogue** regexp command

**on dialogue** regexp do

commands

end on dialogue

Execute **on dialogue** commands for existing dialogues.

**apply on dialogue**

### Dialogue Input and Output

Pass input to a dialogue.

**!** [input line]

Control where dialogue output goes.

**set-show** [silent | notify=mode | continuous=mode]  
[log[=filename]] [buffer=number]

Control dialogue output.

**show** [number | all | none] [shell-command]

## Managing Processes

Run a program in a dialogue and wait for NightView to start debugging it.

**run input line**

Control how you are notified of events.

**set-notify** [silent | continuous=*mode*]

Ask about pending event notifications.

**notify**

Attach the debugger to a process that is already running.

**attach pid**

Stop debugging a list of processes.

**detach**

Terminate a list of processes.

**kill**

Establish the file containing symbolic information for a program.

**symbol-file** *program-name*

Create a pseudo-process for debugging an aborted program's core

image file.

**core-file** *corefile-name* [exec-file=*program-name*]

[with-translations]

Specify the location of the executable file corresponding to a process.

**exec-file** *program-name*

Specify debugger commands to be executed when a program is

'exec'd.

**on program** [*pattern*]

**on program** *pattern* do

**on program** *pattern* do

**commands**

end on program

Execute **on program** commands for existing processes.

**apply on program**

Specify debugger commands to be executed when a program is

restarted.

**on restart** [*pattern*]

**on restart** *pattern* command

**on restart** *pattern* do

**commands**

end on restart

Take a restart checkpoint now.

**checkpoint**

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## Source Line Decorations

A, B, M, P, T The eventpoint type that was set within this source line.

= Execution is stopped somewhere within or at the beginning of this line. When displaying instructions, the instruction that will be executed next.

< The line (or instruction) in the current frame where execution will resume when the called routine returns.

< The line (or instruction) in the current frame which was executing when the called frame was created.

\* This source line corresponds to executable code.

@ The first instruction for the corresponding source line.

## GUI Accelerators

**NightView Menu**

Ctrl+Q Exit (Quit NightView)

**Eventpoint Menu**

Ctrl+B Set Breakpoint

Ctrl+M Set Monitorpoint

Ctrl+P Set Patchpoint

Ctrl+T Set Tracepoint

Ctrl+W Set Watchpoint

Ctrl+U Summarize/Change

**View Menu**

Ctrl+D Display Group Area

Ctrl+N Display Command Buttons

Ctrl+S Single Process Mode

Ctrl+G Group Process Mode

Ctrl+O Source Only

Ctrl+C Source Preferred

Ctrl+X Mixed Preferred

Ctrl+A Disassembly Preferred

Ctrl+L Show Qualifier

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*line\_number:unit\_name* [*'specification* | *'body*]  
 An Ada unit name, which may be specified as a fully expanded unit name, preceded by the line number in the source file. *'body* is the default.

*\*expression*    The address given by *expression*.

## Special Expression Syntax

**\$**            Refers to the last value history entry.

**\$\$**           Refers to the value history entry immediately prior to **\$**.

**\$number**      Refers to that number entry in the value history.

**\${-number}**    Refers to command history values prior to the most recent one. E.g., **\${-0}** means **\$**, and **\${-1}** means **\$\$**.

**\$identifier**    Refers to a convenience variable.

**\$(file:line expression)**  
 Evaluates *expression* in the context specified by *file* and *line* number.

**\$(+number: routine expression)**  
 Goes up the stack to the *number*th previous occurrence of *routine* relative to the current frame. *expression* is then evaluated in that context. To go down the stack, use **\$(-number: routine expression)**.

**\$(+number expression)**  
 Refers to previous stack frames, regardless of the routine name. The immediately previous frame is +1. To go down the stack, use **\$(-number expression)**.

**\$(=number expression)**  
 Evaluates the expression in the context of the given absolute frame number, regardless of the current frame.

**\$(\*frame-addr expression)**  
 Uses *frame-addr*, a numeric constant, as an absolute frame address. It evaluates *expression* in the context of this frame address, regardless of the current frame.

## Selecting Overloaded Entities

*entity#?*      Query overloaded entity. An error message lists all choices.

*entity##*      Turn on overloading temporarily. If there is only one choice, it is used. Otherwise, an error message lists all choices.

*entity#digits*    Select a particular overloaded choice where *digits* is the number of the choice from the list printed in the error message.

Give a name to a family of one or more processes.  
**family** *family-name* [[-] *qualifier-spec* ...]

Control whether children should be debugged.  
**set-children** {all[resume] | exec | none}

Control whether a process stops before exiting.  
**set-exit** [stop] | [nostop]

Reserve a region of memory in a process.  
**mreserve** start=*address* {length=*bytes* | end=*address*}

## Setting Modes

Log session to file.  
**set-log** *keyword filename*

Establish a default language context for variables and expressions.  
**set-language** {ada | auto | c | c++ | fortran}

Specify the default list of processes or dialogues that will be affected by subsequent commands which accept qualifiers.  
**set-qualifier** [*qualifier-spec* ...]

Specify the number of items to be kept in the value history list.  
**set-history** *count*

Specify limits on the number of array elements, string characters, or program addresses printed when examining program data.  
**set-limits** {array=*number* | string=*number* | addresses=*number*} ...

Set the string used to prompt for command input.  
**set-prompt** *string*

Set the string used to recognize end of dialogue input mode.  
**set-terminator** *string*

Control debugger response to dangerous commands.  
**set-safety** [forbid | verify | unsafe]

Control whether restart information is applied.  
**set-restart** [always | never | verify]

Define process local convenience variables.  
**set-local** *identifier* ...

Control the size of patch areas created in your process.  
**set-patch-area-size** {data=*data-size* | eventpoint=*eventpoint-size* | monitor=*monitor-size* | text=*text-size*} ...

Control which subprograms are interesting

`interest [level] [[at] [location-spec]]`

`interest inLine [=level]`

`interest justLines [=level]`

`interest noDebug [=level]`

`interest threshold [=level]`

Control the positioning of the stack when a process stops.

`set-auto-frame args ...`

Control how overloaded operators and routines are treated in expressions:

`set-overload [operator={on|off}]`

`[ routine={on|off}]`

Control case sensitivity of regular expressions.

`set-search [ sensitive | insensitive ]`

Set the mode for editing commands in the simple full-screen interface.

`set-editor mode`

Control how NightView displays disassembled instructions.

`set-disassembly [ flavor={at|intel}]`

`[ symbol={on|off} | comment_level=number]`

## Debugger Environment Control

Set the debugger's default working directory.

`cd dirname`

Print NightView's current working directory.

`pwd`

## Source Files

### Viewing Source Files

List a source file.

`list where-spec`

`list where-spec, where-spec2`

`list ,where-spec`

`list +`

`list -`

`list =`

`list`

Abbreviation: `l`

Set the directory search path.

`directory [dirname ...]`

## Qualifier Specifiers

A user-defined name that identifies a set of processes

`family-name`

and/or dialogues, called a family.

A dialogue in your NightView session. In contexts where

`dialogue-name`

the qualifier is being used to specify a set of processes, a

`dialogue-name` refers to all the processes being debugged

in that dialogue.

The process ID of one of the processes being debugged by

`pid`

NightView.

A particular process when processes in different dia-

`dialogue-name:pid`

logues have the same process ID.

All processes or dialogues known to NightView.

`all`

Designates the one process that is currently stopped and

`auto`

has been stopped for the longest time.

## Predefined Convenience Variables

Holds the address of the last item dumped with the `x`

`$_`

command, the address of the last eventpoint listed by an

eventpoint status command, or the address of the first

instruction in a line described by the `info line` com-

mand.

Holds the contents of the last item dumped by the `x` com-

`$__`

mand. Depending on the dump, it holds the last word,

byte, etc.

Provides access to the machine registers. `reg` is any

`$reg`

machine register name, including `$pc` (program counter),

`$sp` (stack pointer), `$fp` (frame pointer), and

machine-specific registers.

## Location Specifiers

The beginning of the named function or Ada unit. 'body

`function_name` or `unit_name` | 'body]

is the default for Ada units.

The first instruction generated for the given line in the

`file_name:line_number`

given file.

The beginning of `function_name` declared in `file_name`.

`file_name:function_name`

(This is required for static functions that are not globally

visible).

The first instruction generated for `line_number` in the cur-

`line_number`

rent file.

## Symbol Table Information

Print description of current routine arguments.

**info args**

Print information about local variables.

**info locals** [*regexp*]

Print global variable information.

**info variables** [*regexp*]

Determine the location of a variable.

**info address** *identifier*

List names of source files.

**info sources** [*pattern*]

List names of functions, subroutines, or Ada unit names.

**info functions** [*regexp*]

Print type definition information.

**info types** [*regexp*]

Describe the result type of an expression visible in the current context.

**info whatis** *expression*

Abbreviation: **whatis**

Describe the storage representation of an expression.

**info representation** *expression*

Abbreviation: **representation**

Print the declaration of variables or types.

**info declaration** *regexp*

Abbreviation: **ptype**

Print the names of the executable, symbol table and core files.

**info files**

Describe location of a source line.

**info line** [*at*] *location-spec*

## Defining and Using Macros

Define a NightView macro.

**define** *macro-name* [ (*arg-name* [, *arg-name*] ...) ] [*text*]

**define** *macro-name* [ (*arg-name* [, *arg-name*] ...) ] *as*

*commands*

*end define*

Print a description of one or more NightView macros.

**info macros** [*regexp*]

Edit the current source file.

**edit**

## Searching

Search forward through the current source file for a specified regular expression.

**forward-search** [*regexp*]

Abbreviation: **fo**

Search backwards through the current source file for a specified regular expression.

**reverse-search** [*regexp*]

## Examining and Modifying Processes

Print an ordered list of the currently active stack frames.

**backtrace** [*number-of-frames*]

Abbreviation: **bt**

Print the value of a language expression.

**print** [/*print-format-letter*] *expression*

Abbreviation: **p**

where *print-format-letter* can be:

- a hexadecimal and relative address
- c character
- d signed decimal
- f floating-point
- o octal
- s string
- u unsigned decimal
- x hexadecimal

Evaluate a language expression without printing its value.

**set** *expression*

Print the contents of memory beginning at a given address.

**x** [/*repeat-count*] [*size-letter*] [*x-format-letter*] [*addr-expression*]

where *size-letter* can be:

- b one byte
- h two bytes (halfword)
- w four bytes (word)
- g eight bytes (giant word)
- t size of a long double

Describe convenience variables. **info convenience**

Describe expressions that are automatically displayed. **info display**

Print history information. **info history** *[number]*

Print information about limits on expression and location output. **info limits**

Print information about registers. **info registers** *[regexp]*

Print information about signals. **info signal** *[signal ...]*

Describe processes being debugged. **info process**

Print information about the virtual address space. **info memory** *[/verbose]*

Print information about active dialogues. **info dialogue**

Print information about an existing process family. **info family** *[regexp]*

Print information about an existing eventpoint-name. **info name** *[regexp]*

Print on dialogue commands. **info on dialogue** *[name]*

Print on program commands. **info on program** *[filename]*

Print on restart commands. **info on restart** *[output=outname | append=outname]* *[program]*

Print information about Ada exception handling. **info exception** *unit-name ...*

**info exception**

Abbreviation: **exception**

Describe lightweight processes, Ada tasks and C threads. **info threads**

and *x-format-letter* can be:

a	hexadecimal and relative address
c	character
d	signed decimal
f	floating-point
l	instruction disassembly
o	octal
s	string
u	unsigned decimal
x	hexadecimal
z	hexadecimal and ASCII

Print the value of a language expression with minimum output. **output** *[/print-format-letter] expression*

Print arbitrary text. **echo** *text*

Control items in a Data Window. **data-display** *[/window="window name" { /kind=value | expression}]*

Add to the list of expressions to be printed each time the process stops. **display** *[[ /print-format-letter] expression] display* *[/repeat-count] [size-letter] [x-format-letter] addr-expression*

Disable an item from the display expression list. **undisplay** *item-number ...*

Enable a display item. **redisplay** *item-number ...*

Print the values of language expressions using a format string. **printf** *format-string, expression ...*

Dynamically load an object file, possibly replacing existing routines. **load** *object*

Set the value of a vector. **vector-set** *-value = component, component, ... vector-set -value = repeat-count, component*



## Miscellaneous Commands

Access the online help system.

**help** [*section*]

Re-read source files and refresh the terminal screen.

**refresh**

Run an arbitrary shell command.

**shell** [*shell-command*]

Input commands from a source file.

**source** *command-file*

Delay NightView command execution for a specified time.

**delay** [*milliseconds*]

## Info Commands

### Status Information

Describe any open log files.

**info log**

Describe current state of breakpoints, tracepoints, patchpoints, monitorpoints, and agentpoints.

**info eventpoint** [/verbose] [*eventpoint-spec*] ...

Describe current state of breakpoints.

**info breakpoint** [/verbose] [*eventpoint-spec*] ...

Abbreviation: **i b**

Describe current state of tracepoints.

**info tracepoint** [/verbose] [*eventpoint-spec*] ...

Describe current state of patchpoints.

**info patchpoint** [/verbose] [*eventpoint-spec*] ...

Describe current state of monitorpoints.

**info monitorpoint** [/verbose] [*eventpoint-spec*] ...

Describe current state of agentpoints.

**info agentpoint** [/verbose] [*eventpoint-spec*] ...

Describe current state of watchpoints.

**info watchpoint** [/verbose] [*eventpoint-spec*] ...

Describe a stack frame.

**info frame** [/v] [*\*expression* [at *location-spec*]]

Print the search path used to locate source files.

**info directories**

## Manipulating Eventpoints

Give a name to a group of eventpoints.

**name** [/add] *name* [[-] *eventpoint-spec*] ...

Set a breakpoint.

**breakpoint** [/disabled] [*name=breakpoint-name*]  
[[at] *location-spec*] [*if conditional-expression*]

Abbreviation: **b**

Install a small patch to a routine.

**patchpoint** [/disabled] [*name=patchpoint-name*]  
[[at] *location-spec*] *eval expression*

**patchpoint** [/disabled] [*name=patchpoint-name*]  
[[at] *location-spec*] *goto location-spec*

Initialize tracing.

**set-trace** [*eventmap=event-map-file*]

Set a tracepoint.

**tracepoint** [/disabled] *event-id* [*name=tracepoint-name*]  
[[at] *location-spec*] [*value=logged-expression*]  
[*if conditional-expression*]

Monitor the values of one or more expressions at a given location.

**monitorpoint** [/disabled] [*name=monitorpoint-name*]  
[[at] *location-spec*]

Control the monitor display window.

**mcontrol** [*display | nodisplay*] [*monitorpoint-spec* ...]

**mcontrol** *delay milliseconds*

**mcontrol** [*off | on | stale | nostale | hold | release*]

Abbreviation: **hold**

Abbreviation: **release**

Insert a call to a debug agent at a given location.

**agentpoint** [/disabled] [*name=agentpoint-name*]  
[[at] *location-spec*]

Set a watchpoint.

**watchpoint** [*eventpoint-modifier*] [/once] [/read] [/write]  
[*name=watchpoint-name*] [at] *lvalue* [*if conditional-expression*]

**watchpoint** [*eventpoint-modifier*] [/once] [/read] [/write]  
/address [*name=watchpoint-name*] [at] *address-expression*  
{*size size-expression* | *type expression*}  
[*if conditional-expression*]

Clear all eventpoints at a given location.

**clear** [[at] *location-spec*]

Attach commands to a breakpoint or monitorpoint.  
**commands** *eventpoint-spec*  
end

Attach a condition to an eventpoint.

**condition** *eventpoint-spec* [*conditional-expression*]

Delete an eventpoint.

**delete** [*eventpoint-spec* ...]

Abbreviation: **d**

Disable an eventpoint.

**disable** [*eventpoint-spec* ...]

Enable an eventpoint for a specified duration.

**enable** [*once* | *delete*] [*eventpoint-spec* ...]

Attach an ignore-count to an eventpoint.

**ignore** *eventpoint-spec count*

Set a temporary breakpoint.

**break** [*name=breakpoint-name*] [*at*] [*location-spec*]

[*if* *conditional-expression*]

Set a patchpoint that will execute only once.

**patch** [*name=patchpoint-name*] [*at*] [*location-spec*]

*eval expression*

**patch** [*name=patchpoint-name*] [*at*] [*location-spec*]

*goto location-spec*

## Controlling Execution

Continue execution and wait for something to happen.

**continue** [*count*]

Abbreviation: **c**

Continue execution.

**resume** [*sigid*]

Execute one line, stepping into procedures.

**step** [*repeat*]

Abbreviation: **s**

Execute one line, stepping over procedures.

**next** [*repeat*]

Abbreviation: **n**

Execute one instruction, stepping into procedures.

**step1** [*repeat*]

Abbreviation: **s1**

Execute one instruction, stepping over procedures.  
**next1** [*repeat*]  
Abbreviation: **n1**

Continue execution until the current function finishes.

**finish**

Stop a process.

**stop**

Continue execution at a specific location.

**jump** [*at*] *location-spec*

Continue execution with a signal.

**signal** *sigid*

Specify how to handle signals and Ada exceptions in the user process.

**handle** [*/signal*] *sigid keyword* ...

**handle** /*exception* *exception-name keyword* ...

**handle** /*exception* *unit-name keyword* ...

**handle** /*exception* *all keyword* ...

**handle** /*unhandled* *\_exception keyword* ...

## Selecting Context

Select a new stack frame or print a description of the current stack

Frame.

**frame** [*frame-number*]

**frame** \**expression* [*at*] *location-spec*

Abbreviation: **f**

Move one or more stack frames toward the caller of the current stack

Frame.

**up** [*number-of-frames*]

Move one or more stack frames toward frames called by the current

stack frame.

**down** [*number-of-frames*]

Select the context of an Ada task, of a thread, of a lightweight process

(LWP), or of a thread process.

**select-context** default

**select-context** task=*expression*

**select-context** thread=*expression*

**select-context** lwp=*hwpid*

**select-context** pid=*pid*