

UNICOS<sup>®</sup> System Libraries  
Reference Manual

SR-2080 10.0

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The UNICOS operating system is derived from UNIX® System V. The UNICOS operating system is also based in part on the Fourth Berkeley Software Distribution (BSD) under license from The Regents of the University of California.

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## New Features

This rewrite of the *UNICOS System Libraries Reference Manual*, Cray Research publication SR-2080, supports the 10.0 release of the UNICOS operating system. The following man page changes have been made since the UNICOS 9.0 release:

The following are new man pages to support the Array Services library (libarray):

- `intro_libarray(3X)` - Introduction to the Array Services library
- `aserrorcode(3X)`, `asmakeerror(3X)`, `aspperror(3X)`, `asstrerror(3X)` – Error messages
- `asopensever(3X)`, `asopensever_from_optinfo(3X)`, `asparseopts(3X)`, `assetserveropt(3X)` – Connections to the Array Services daemon
- `asgetattr(3X)`, `asgetdfltarray(3X)`, `aslistarrays(3X)`, `aslistmachines(3X)` – Database interrogation
- `asallocash(3X)`, `asashisglobal(3X)`, `asashofpid(3X)`, `aslistashs(3X)`, `aspidsinash(3X)` – Array session handle management and interrogation
- `asfreearray(3X)`, `asfreearraylist(3X)`, `asfreearraypidlist(3X)`, `asfreeashlist(3X)`, `asfreecmdrsltlist(3X)`, `asfreemachinelist(3X)`, `asfreemachinepidlist(3X)`, `asfreeoptinfo(3X)`, `asfreepidlist(3X)` – Data structure release
- `ascommand(3X)`, `askillash_array(3X)`, `askillpid_server(3X)`, `asrcmd(3X)` – Array Command Execution

Because the following tools or functions are not supported in UNICOS 10.0, all references to them have been deleted:

- `cdbx` debugging tool
- `getnetinfo` function

Information has been added on the `double l (el)` function to the following man pages: `abs`, `div`, `printf`, `strtoul`, `vprintf`.

The following are new man pages that support the IEEE floating-point implementation:

- `ieee_float` – Introductory page
- `fp.h` – Header page for macros and functions to support general IEEE floating-point programming
- `copysign` – Copies the sign of its second argument to the value of its first argument

- `fpclassify` – Identifies its argument as NaN, infinite, normal, subnormal, or zero
- `isgreater` – Determines the relationship between two IEEE floating-point arguments
- `logb` – Returns the signed exponent of its argument
- `nextafter` – Returns the next value in the direction of the second argument
- `remainder` – Divides its arguments and returns the remainder
- `rint` – Rounds its argument to an integral value in IEEE floating-point format
- `rinttol` – Rounds a floating-point number to a long integer value
- `scalb`, `scalbf`, `scalbl` – Computes  $x * FLT\_RADIX^n$  efficiently
- `signbit` – Determines if its argument value is negative
- `fenv.h` – Header page for IEEE floating-point environment
- `feclearexcept` – Manages IEEE floating-point exception flags
- `fegetround` – Manages the rounding direction of IEEE floating-point numbers
- `fegetenv` – Manages the IEEE floating-point environment
- `fedisabletrap` – Manages IEEE floating-point traps

The following man pages have been updated to include IEEE information:

- `asin`, `bessel`, `erf`, `exp`, `frexp`, `lgamma`, `math`, `pow`, `sin`, `sinh`, `sqrt` – Explains error handling on IEEE floating-point systems
- `float.h` – IEEE floating-point values added to table
- `math.h` – Defines new IEEE floating-point macros
- `strtod` – Uses new IEEE floating-point macros

The following man pages contain changes:

- `mtimesx(3F)` – `rarray` argument was changed to `CALL`; description of *overlap* argument was updated
- `regexec` – Added `REG_WORDS` function
- `cpused` – Updated wording of functionality
- `gethost` – Added `int sethostlookup (int lookup_type)` function
- `scanf` – Added description for `B` as valid conversion directive character; added information on double `l` (`el`) option
- `syslog` – Added `RETURN VALUES` section

- `strptime` – Updated for year 2000 compliance

The following are new man pages:

- `pthread_atfork` – Register fork handlers (supports threading feature)
- `ndbm`, `dbm_open`, `dbm_close`, `dbm_fetch`, `dbm_store`, `dbm_delete`, `dbm_firstkey`, `dbm_nextkey`, `dbm_error`, `dbm_clearerr` – Database subroutines (maintains key/content pairs in a database)



# Record of Revision

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<i>Version</i>	<i>Description</i>
	June 1990 Original Printing. This manual supports the version of the UNICOS C library released with the Cray Standard C compiler releases 1.0 and 2.0.
6.0	January 1991 This manual supports the UNICOS 6.0 release.
7.0	August 1992 This manual supports the C library functions provided with the UNICOS 7.0 release.
8.0	January 1994 This manual supportst the C library functions provided with the UNICOS 8.0 release.
9.0	September 1995 This manual supports the UNICOS 9.0 release.
10.0	November 1997 This manual supports the UNICOS 10.0 release. The New Features page provides information about the changes documented in this manual.





# Preface

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This publication documents the UNICOS system library functions provided with the UNICOS 10.0 release running on Cray Research computer systems.

This is a reference manual for programmers. Readers should have a working knowledge of either the UNICOS or the UNIX operating system.

For closely related routines, two more more routines may be described on the same page.

## Related publications

The following man page manuals contain additional information that may be helpful.

**Note:** For the UNICOS 10.0 release, man page reference manuals are not orderable in printed book form. Instead, they are available as printable PostScript files provided on the same DynaWeb CD as the rest of the supporting documents for this release. Individual man pages are still available online and can be accessed by using the `man(1)` command.

- *UNICOS User Commands Reference Manual*, Cray Research publication SR-2011
- *UNICOS System Calls Reference Manual*, Cray Research publication SR-2012
- *UNICOS File Formats and Special Files Reference Manual*, Cray Research publication SR-2014
- *UNICOS Administrator Commands Reference Manual*, Cray Research publication SR-2022

The following ready references are available in printed form from the Distribution Center:

- *UNICOS User Commands Ready Reference*, Cray Research publication SQ-2056
- *UNICOS System Libraries Ready Reference*, Cray Research publication SQ-2147
- *UNICOS System Calls Ready Reference*, Cray Research publication SQ-2215
- *UNICOS Administrator Commands Ready Reference*, Cray Research publication SQ-2413

The following documents contain additional information that may be helpful:

- *Cray Standard C Reference Manual*, Cray Research publication SR-2074
- *Cray Standard C Ready Reference*, Cray Research publication SQ-2076
- *Scientific Libraries Reference Manual*, Cray Research publication SR-2081
- *Remote Procedure Call (RPC) Reference Manual*, Cray Research publication SR-2089
- *Intrinsic Procedures Reference Manual*, Cray Research publication SR-2138
- *Application Programmer's Library Reference Manual*, Cray Research publication SR-2165
- *Compiler Information File (CIF) Reference Manual*, Cray Research publication SR-2401
- *UNICOS Macros and Opdefs Reference Manual*, Cray Research publication SR-2403
- *Cray Assembly Language (CAL) for Cray PVP Systems Reference Manual*, Cray Research publication SR-3108
- *CF90 Ready Reference*, Cray Research publication SQ-3900
- *CF90 Commands and Directives Reference Manual*, Cray Research publication SR-3901
- *Fortran Language Reference Manual, Volume 1*, Cray Research publication SR-3902
- *Fortran Language Reference Manual, Volume 2*, Cray Research publication SR-3903
- *Fortran Language Reference Manual, Volume 3*, Cray Research publication SR-3905

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## Conventions

The following conventions are used throughout this document:

<u>Convention</u>	<u>Meaning</u>																				
<code>command</code>	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.																				
<code>manpage(x)</code>	Man page section identifiers appear in parentheses after man page names. The following list describes the identifiers: <table><tbody><tr><td>1</td><td>User commands</td></tr><tr><td>1B</td><td>User commands ported from BSD</td></tr><tr><td>2</td><td>System calls</td></tr><tr><td>3</td><td>Library routines, macros, and opdefs</td></tr><tr><td>4</td><td>Devices (special files)</td></tr><tr><td>4P</td><td>Protocols</td></tr><tr><td>5</td><td>File formats</td></tr><tr><td>7</td><td>Miscellaneous topics</td></tr><tr><td>7D</td><td>DWB-related information</td></tr><tr><td>8</td><td>Administrator commands</td></tr></tbody></table> <p>Some internal routines (for example, the <code>_assign_asgcmd_info()</code> routine) do not have man pages associated with them.</p>	1	User commands	1B	User commands ported from BSD	2	System calls	3	Library routines, macros, and opdefs	4	Devices (special files)	4P	Protocols	5	File formats	7	Miscellaneous topics	7D	DWB-related information	8	Administrator commands
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<i>variable</i>	Italic typeface denotes variable entries and words or concepts being defined.
<b>user input</b>	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
[ ]	Brackets enclose optional portions of a command or directive line.
...	Ellipses indicate that a preceding element can be repeated.

The following machine naming conventions may be used throughout this document:

<u>Term</u>	<u>Definition</u>
Cray PVP systems	All configurations of Cray parallel vector processing (PVP) systems.
Cray MPP systems	All configurations of the CRAY T3D series. The UNICOS operating system is not supported on CRAY T3E systems. CRAY T3E systems run the UNICOS/mk operating system.
All Cray Research systems	All configurations of Cray PVP and Cray MPP systems that support this release.

The default shell in the UNICOS and UNICOS/mk operating systems, referred to in Cray Research documentation as the *standard shell*, is a version of the Korn shell that conforms to the following standards:

- Institute of Electrical and Electronics Engineers (IEEE) Portable Operating System Interface (POSIX) Standard 1003.2-1992
- X/Open Portability Guide, Issue 4 (XPG4)

The UNICOS and UNICOS/mk operating systems also support the optional use of the C shell.

Cray UNICOS Version 10.0 is an X/Open Base 95 branded product.

## Man page sections

The entries in this document are based on a common format. The following list shows the order of sections in an entry and describes each section. Most entries contain only a subset of these sections.

<u>Section heading</u>	<u>Description</u>
NAME	Specifies the name of the entry and briefly states its function.
SYNOPSIS	Presents the syntax of the entry.
IMPLEMENTATION	Identifies the Cray Research systems to which the entry applies.
STANDARDS	Provides information about the portability of a utility or routine.
DESCRIPTION	Discusses the entry in detail.
NOTES	Presents items of particular importance.
CAUTIONS	Describes actions that can destroy data or produce undesired results.
WARNINGS	Describes actions that can harm people, equipment, or system software.
ENVIRONMENT VARIABLES	Describes predefined shell variables that determine some characteristics of the shell or that affect the behavior of some programs, commands, or utilities.
RETURN VALUES	Describes possible return values that indicate a library or system call executed successfully, or identifies the error condition under which it failed.
EXIT STATUS	Describes possible exit status values that indicate whether the command or utility executed successfully.
MESSAGES	Describes informational, diagnostic, and error messages that may appear. Self-explanatory messages are not listed.
ERRORS	Documents error codes. Applies only to system calls.

FORTRAN EXTENSIONS	Describes how to call a system call from Fortran. Applies only to system calls.
BUGS	Indicates known bugs and deficiencies.
EXAMPLES	Shows examples of usage.
FILES	Lists files that are either part of the entry or are related to it.
SEE ALSO	Lists entries and publications that contain related information.

## Reader comments

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