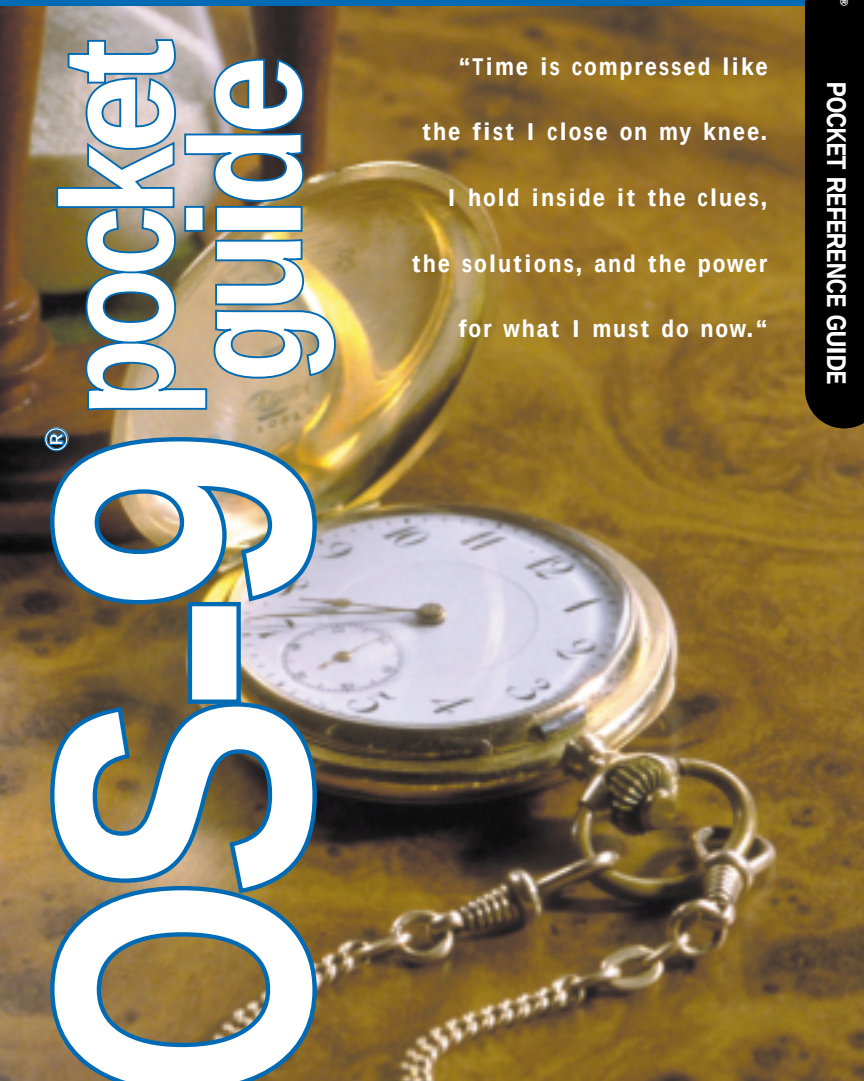
MICROWARE®

OS-9® pocket guide



"Time is compressed like
the fist I close on my knee.
I hold inside it the clues,
the solutions, and the power
for what I must do now."

MICROWARE'S OS-9®

POCKET REFERENCE GUIDE

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Chapter 2: Commands

OS-9 Command Options

For descriptions of individual utilities, enter one of the following commands:

`<utility name> -?` or `help <utility name>`

OS-9 Commands

`activ`	Activate suspended processes
`alias`	Assign alternate name to a device pathlist
`assign`	Equate a word to a string for command line substitution*
`attr`	Change/display file security attributes
`backup`	Make a backup copy of a disk
`bfed`	Enable editing of files/disks in binary sector format
`binex`	Convert binary files to S-record files
`bootgen`	Create/link the sysboot file to disk from which OS-9000 is bootstrapped
`break`	Invoke system level debugger/reset
`build`	Build a text file from standard input
`cfp`	Command file processor

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

`chd`	Change current data directory*
`chm`	Change primary module directory
`chx`	Change current execution directory*
`chown`	Change owner ID of file/directory
`cmp`	Compare two binary files
`code`	Print hex value of input character
`com`	Communicate with remote system
`compress`	Compress ASCII files
`copy`	Copy data from one file to another
`count`	Count characters/words/lines in a file
`date`	Display system date and time
`dcheck`	Check disk file structure
`deiniz`	Detach a device
`del`	Delete a file
`deldir`	Delete all files in a directory
`delmdir`	Delete existing module directories
`devs`	Display system's device table
`dir`	Display names of files in a directory
`dirs`	Display directory stack*
`diskcache`	Enable/disable/display cache status
`dosfile`	Convert DOS text tiles
`dpsplit`	Split the DPIO descriptor
`dsave`	Generate procedure file to copy files
`dump`	File data dump in hexadecimal and ASCII
`echo`	Echo text to output path
`editmod`	Create/display/edit modules
`edt`	Line-oriented text editor

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

`events`	Display active system events
`ex`	Execute program as overlay
`exbin`	Convert s-record files to binary files
`expand`	Expand a compressed file
`exit`	Terminate current shell*
`fdisk`	Create up to four primary partitions; convert extended partitions
`fixmod`	Fix module CRC and parity
`format`	Initialize disk media
`free`	Display free space on mass-storage device
`frestore`	Restore directory backup
`fsave`	Save incremental directory backup
`grep`	Search a file for a pattern
`help`	Look up on-line utility reference
`hist`	Display commands already entered*
`ident`	Print OS-9 module identification
`iniz`	Attach device
`irqs`	Display system's IRQ polling table
`kermit`	Transfer sequential files between computers
`kill`	Abort a process*
`link`	Link previously loaded module into memory
`list`	List contents of a text file
`lmm`	Load module at specified pathlist
`ln`	Create specified directory entry
`load`	Load module(s) from a file into memory

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

`login`	Timesharing system log-in
`logout`	Terminates current shell*
`makdir`	Create a directory
`make`	Maintain and update programs
`makmdir`	Create module directory
`mdattr`	Change security permissions of module directory
`mdir`	Display module directory
`merge`	Copy/combine files to standard output
`mfree`	Display free system RAM
`mkdatmod`	Package a file into a data module
`mshell`	Interpret commands
`mv`	Move file from one directory to another
`p2init`	Install os9p2 modules
`padrom`	Append bytes
`park`	Park hard-disk heads
`pcformat`	Creates PC File System on PCF formatted disks
`pd`	Print pathlist to working directory
`pinfo`	Display value of logical unit number and logical sector offset
`popd`	Pop directory from directory stack*
`pr`	Print files
`prenv`	Display selected environment variables*
`printenv`	Print environment variables
`procs`	Display processes
`profile`	Read commands from file and return*

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

`pushd`	Push directory onto directory stack*
`qsort`	Use in-memory quick-sort
`rename`	Change file name
`romsplit`	Split file
`save`	Save memory module(s) to a file
`set`	Set shell options*
`setenv`	Set environment variables*
`setime`	Activate and set system clock
`setpr`	Set process CPU priority*
`shell`	Interpret OS-9 commands
`sleep`	Suspend a process for a period of time
`su`	Start new shell with different user ID
`suspend`	De-activate/suspend active process
`sysid`	Print ID information of system
`tape`	Tape controller manipulation
`tapegen`	Put files on tape
`tar`	Archive multiple files/directories
`tee`	Copy input to multiple output paths
`tmode`	Change terminal operating mode
`touch`	Update last modification date of a file
`tr`	Transliterate characters
`tsmon`	Supervise idle terminal; initiate login
`umacs`	Create/modify text files
`unassign`	Discard assign command relationships*
`undel`	Recover undeleted files
`unlink`	Unlink memory module
`unsetenv`	Clear environment variable*

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

`what`	Search file name
`w,wait`	Wait for process(es) to terminate*
`xmode`	Examine/change device initialization mode

* Denotes built-in mshell command. These commands are not located in the CMDS directory.

Network Utilities

Utility	Description	Syntax
arp	Ethernet/IP address resolution display and control	arp [<opts>]
idbgen	Generate network database module(s)	idbgen [<opts>] [<filename>] [<opts>]
idbdump	Display internet database entries	idbdump [<opts>] [<inetdb_file>] [<opts>]
ifconfig	Configure network interface	ifconfig [<interface> [<address> [<dest_address]] [options]]
ndbmod	Dynamically update the internet data module	ndbmod <[opts]>
netstat	Report network information	netstat [<opts>]
route	Add/delete routes	route <opts>

Macros

os9make Macro Assignments

`<name> =`	Define but don't assign a value.
`<name> = <value>`	Assign a value if not already specified. In `-l` mode reassign.
`<name> += <value>`	Append another value.
`<name> ?= <value>`	Reassign a value. In `-l` mode assign if not previously assigned.
`<name> @= <value>`	Set an environment variable for commands.

`<value>` can contain references to other previously defined macros.

User defined macro names can contain any combination of normal characters and numbers.

Macro Modifiers

Macro	Description
E	Replace each word with its suffix
H	Replace each word with everything but the last component
L	Lowercase each word
M	Select words matching a pattern
N	Select words not matching a pattern
R	Remove suffix from all words
S	Substitute old string for new string
U	Uppercase each word
%=%	UNIX prefix/suffix syntax

Chapter 3: MShell

MShell Command Line Elements

Keyword — Show program, procedure file, command, or pathlist to execute

Parameters — Denote files, programs, values to pass to the executed program

Modifiers

#	Additional memory size
^	Process priority
>	Redirect output
<	Redirect input
>>	Redirect error output
-	Used with redirection modifiers; overwrites files
+	Used with redirection modifiers; appends to files

Separators

;	Sequential execution
&	Concurrent execution
!	Standard output
!!	Standard error
!!!	Standard output/error

Wildcards

*	Match any character(s)
?	Match a single character

Command Groupings()

(<valid shell commands>)

MShell Options

Option	Description
-a	Echo command line if altered after entry
-b	Execute batch files as profile
-c	Number of commands to keep in history [40]
-d	Procedure file interpreter debugging mode
-f	Use fancy readIn routine
-h	Compress similar history entries
-i	Process $(HOME)/.shellrc each invocation
-o	Time-out at prompt after <n> minutes
-q	Keep assigns in environment
-r	Pass history to children
-s	Save history across log-ins
-u	Output procedure file debugging information

MShell Editing Control Characters

To change the default editing keys shown below, set the _EDKEYS environment variable.

^p	Previous line
^n	Next line
^b	Cursor back
^f	Cursor forward
^d	Delete character under the cursor
^z	Go to visible ends of line*
^k	Kill to end of line
^i	Toggle insert mode

*When first used, the cursor moves to the beginning of the line. After that, the cursor goes to the end of the line, then toggles back and forth between the beginning and the end of the line.

MShell Directives

Command	Description
`call <id> ([<expr>] {,<expr>}`	Execute a procedure file function.
`case {<expr>} [:]`	Specify a test value in a `switch` construct.
`continue`	Restart a construct.
`data [reset] enddata`	Include BASIC-like data statement in script.
`default [:]`	Specify code to execute if a matching case is not found.
`do <expr>`	Process an expression.
`elif (<expr>)`	Conditional false execution point for an `if` or `elif` directive.
`else`	False execution point for an `if` or `elif` directive.
`end`	Terminate procedure file.
`endfor`	End of `for` loop construct.
`endfunction`	End of function.
`endif`	Terminate an if contsruct.
`endswitch`	Mark the end of a `switch` construct.
`endwhile`	Mark the end of a `while` loop construct.

Command	Description
`for <var> = <expr1> to <expr2> [by <expr3>]`	Beginning of `for` loop.
`function <id> ([<pid>] {,<pid>})`	Declare a location of a function.
`goto <expr>`	Transfer control to a label.
`if (<expr>)`	Beginning of conditional execution construct.
`label <name>`	Declare a label.
`let <id> = <expr>`	Assign a value to a global variable.
`llet [<id> = <expr>]`	Assign a value to a local variable.
`lunlet {<id>}`	Remove a local variable from memory.
`print (<format> {,<arg>})`	Print a format string with its arguments.
`repeat`	Mark beginning of `repeat`/`until` construct.
`return [<expr>]`	Return from a procedure file function.
`switch (<expr>)`	Beginning of `switch` construct.
`unlet {<id>}`	Remove global variables from memory.

Command	Description
`until (<expr>)`	End of `repeat`/`until` construct.
`wbreak`	Exit construct.
`while (<expr>)`	Beginning of a `while` loop construct.

Chapter 4: Module Format

The module header structure is contained in the following header file:

`MWOS/OS900/SRC/DEFS/module.h`

Note: The following tables list common offsets for each structure. However, offset values will vary with each processor. If you are unsure of a particular offset, use the `offsetof()` function to find the correct value. (`offsetof()` is described in the ***Ultra C Library Reference***, which is included with Enhanced OS-9 documentation.)

Module Header Fields

Offset	Name	Description
00	m_sync	Sync bytes
02	m_sysrev	System revision check value
04	m_size	Module size
08	m_owner	Group/user ID
0C	m_name	Offset to module name
10	m_access	Access permissions
12	m_tylan	Module type and language
14	m_attrev	Module attributes and revision
16	m_edit	Module edition number

Offset	Name	Description
24	m_needs	Module hardware requirements flags
28	m_share	Offset of shared data in statics
1C	m_symbol	Offset to symbol table
30	m_exec	Offset to execution entry point
34	m_excpt	Offset to exception entry point
44	m_data	Data storage requirement
48	m_stack	Stack size
40	m_idata	Offset to initialized data
56	m_idref	Offset to data reference lists
48	m_init	Offset to initialization routine
4C	m_term	Offset to termination routine
68	m_dbias	Data area pointer bias
72	m_cbias	Code area pointer bias
76	m_ident	Linkage locale identifier
20	m_spare [8]	Reserved
2E	m_parity	Header parity

Init Module

Offset	Name	Description
94	m_cachelist	Offset to the cache region list declared in the systype.des file in port directory
68	m_compat	Used for revision compatibility **Bit 0**: Set to ignore sticky bit in module headers **Bit 1**: Set to patternize memory when allocated/returned **Bit 2**: Set to inform the kernel not to automatically set during coldstart **Bit 3:** Set to not allow the kernel to expand system tables **Bit 4:** Set to disable the kernel's use of memory protection software
2E	m_consol	Offset to initial I/O pathlist string
78	m_cpucompat	Reserved for system-specific flags
52	m_cputyp	CPU type: 403, 603, 80386, etc.
76	m_dsptbl	Contains number of entries in the system call dispatch table

Offset	Name	Description
66	m_events	Indicates initial number of entries allowed in events table
44	m_extens	Offset to the name string of a list of customization modules
50	m_instal	Offset to installation name string
48	m_ioman	Offset to name string of module handling I/O system calls
60	m_maxage	Initial system maximum natural age
6A	m_memlist	Offset to the memory list declared in systype.des and defined in alloc.h
0	m_maxmem	Contains top limit of free RAM
88	m_maxsigs	Specifies default maximum number of queued signals
5E	m_minpty	Initial system minimum priority
56	m_os9lvl	OS-9 Level/Version/ Revision/ Edition. Divided into four bytes: For example, OS-9000 level 1 version 2.3 edition 0 is 0x01 0x02 0x03 0x00
3A	m_paths	Indicates initial number of paths in the system

Offset	Name	Description
90	m_preio	Offset to name string of a list of pre-I/O customization modules
60	m_procs	Number of entries in the process descriptor table; when full, the table expands automatically
44	m_rtclock	Offset to the real-time clock module name string
4C	m_site	Contains installation site code
48	m_slice	Number of clock ticks per time-slice
3C	m_sparam	Offset to the parameter string passed to the first executable module
40	m_sysdrive	Offset to initial default directory name string, usually /d0 or /h0
3E	m_sysgo	Offset to the name string of the first executable module
5C	m_syspri	System priority at which the first module is executed
40	m_ticker	Offset to the name string of the module used to generate the system clock tick

Offset	Name	Description
66	m_ticksec	Number of ticks a second of time is divided into; usually set to 100
80	m_tmzone	System time zone in minutes offset from GMT; 360 for six zones west of GMT and -360 for six zones east of GMT
52	m_usract	Offset to name string of user accounting module

Device Descriptor Modules

Offset	Name	Description
30	dd_port	Indicates port address
4	dd_lu_num	Distinguishes devices driven from a unique controller
6	dd_pd_size	Indicates size of path descriptor
8	dd_type	Identifies I/O class
10	dd_mode	Check validity of caller's access mode byte
38	fmgr_name	Contains name string of file manager module to use
20	dd_class	Identifies class of device

Chapter 5: System Data Structures

Path Descriptor Fields (io.h pd_com)

Offset	Name	Description
0	pd_id	Path number
4	pd_dev	Device list element pointer
8	ps_own	Group/user number of path's creator
c	pd_paths	List of open paths on device
10	pd_dpd	Default directory path
14	pd_mode	Mode (read/write/update)
16	pd_count	Actual number of open images
18	pd_type	Device type
1a	pd_class	Device class
1c	pd_cproc	Current process ID
20	pd_lbuf	Pointer to partial pathlist
24	pd_plist	Pointer to complete pathhlist
28	pd_plbsz	Size of pathlist buffer
2c	pd_lock	Queue ID for path descriptor
3c	pd_async	Asynchronous I/O resource pointer
40	pd_state	Status bits (i.e. pd_systate)
44	pd_rsrv	Reserved space (u_int32[7)

RBF Directory Entry (rbf.h dirent)

Offset	Name	Description
0	dir_name	Name of entry (char[44])
2c	dir_unused	Reserved space (char[16])
3c	dir_fd_addr	Entry's FD block address

RBF Identification Block (rbf.h idblock)

Offset	Name	Description
0	rid_sync	ID block sync pattern
4	rid_diskid	Disk ID number (psuedo random)
8	rid_totblocks	Total blocks on media
c	rid_cylinders	Number of cylinders
e	rid_cy10size	Cylinder 0 size in blocks
10	rid_cylsize	Cylinder size in blocks
12	rid_heads	Number of surfaces on disk
14	rid_blocksize	Size of a block in bytes
16	rid_flags	Various flags
1a	rid_unused1	32 bit padding
1c	rid_bitmap	Block offset to bitmap FD
20	rid_firstboot	Block offset to low level booter FD
24	rid_bootfile	Block offset to bootfile FD

Offset	Name	Description
28	rid_rootdir	Block offset to root directory
2c	rid_group	Group owner of media
2e	rid_owner	Owner of media
30	rid_ctime	Creation time of media
34	rid_mtime	Time of last write to ID block
38	rid_name	Volume name (char[32)
58	rid_endflag	Big/little endian padding
59	rid_unused2	Long word padding (char [3])
5c	rid_parity	ID block parity

SCF Device Descriptor (sbf.h sbf_desc)

Offset	Name	Description
0	dd_com	Device Descriptor common section
18	pd_numblk	Number of unused blocks
20	pd_prior	Priority (unused)
22	pd_flags	SBF/driver capability flags
24	pd_dmamode	DMA type/usage
26	pd_scsi_id	SCSI controller ID
27	pd_scsilun	SCSI controller drive LUN

RBF Device Descriptor (rbf.h rbf_desc)

Offset	Name	Description
18	pd_sid	Number of surfaces
1c	pd_vfy	Verify disable, 0 = verify disk writes
20	pd_format	Device format
24	pd_cyl	Number of cylinders
28	pd_blk	Default blocks/track
2c	pd_t0b	Default blocks/track for trk0/sec0
30	pd_sas	Segment allocation size

Offset	Name	Description
34	pd_ilv	Block interleave offset
38	pd_toffs	Track base offset
3c	pd_boffs	Block base offset
40	pd_trys	Number of tries
44	pd_bsize	Size of block in bytes
48	pd_cntl	Control word
4c	pd_wpc	First write precomp cylinder
40	pd_rwr	First reduced write current cylinder
44	pd_park	Park cylinder for hard disks
48	pd_lsnoffs	LSN offset for partition
4c	pd_xfersize	Maximum transfer size in bytes
40	pd_reserved	Reserved (u_int32[4])

RBF File Descriptor (rbf.h fd_status)

Offset	Name	Description
0	fd_sync	File descriptor sync field
4	fd_parity	Validation parity
8	fd_flag	Flag word, lower 16 bits permissions
c	fd_host	File host owner
e	fd_group	File group number
10	fd_owner	File owner number
12	fd_links	number of links to FD
14	fd_size	Size of file in bytes
18	fd_ctime	Creation timestamp
1c	fd_atime	Last access timestamp
20	fd_mtime	Last modified timestamp
24	fd_utime	Last changed timestamp
28	fd_btime	Last backed up timestamp
2c	fd_rev	RBF revision that wrote file
2e	fd_unused	Reserved

SCF Logical Unit Static Storage scf.h scf_lu_stat)

Offset	Name	Description
0	v_vector	IRQ vector number
1	v_irqlevel	IRQ interrupt level
2	v_priority	IRQ polling priority
3	v_pollin	Polled input flag 1 = polled 0 = IRQ driven
4	v_pollout	Polled output flag 1 = polled 0 = IRQ driven
5	v_inhalt	Input halted flag (non-zero if XOFF has been sent)
6	v_hangup	Set non-0 when data carrier is lost
7	v_outhalt	Output IRQ disabled when non-zero
8	v_lu_num	Driver accessible copy of logical unit number
a	v_wait	Flags whether a process is waiting on input/output
c	v_irqmask	Interrupt mask word
10	v_savirq_fm	Previous interrupt mask word (SCF use only)
14	v_savirq_dv	Previous interrupt mask word (driver use only)
18	v_savirq_11	Previous interrupt mask word (low level use only)
1c	v_wake	ID of process to wake up (process waiting on I/O)

Offset	Name	Description
20	v_busy	ID of process currently using device
24	v_lproc	Number of the last process to use this unit
28	v_sigproc	Signal on data ready information (u_int32[3] 0 = process, 1 = signal, 2 = path number)
34	v_dcdoff	Signal on loss of DCD information (u_int32[3] 0 = process, 1 = signal, 2 = path number)
40	v_dcdon	Signal on gain of DCD information (u_int32[3] 0 = process, 1 = signal, 2 = path number)
4c	v_outdev	Output device's logical unit static storage pointer
50	v_pdbufsize	Path buffer size for this device
54	v_maxbuff	Send XOFF when buffer is this full
58	v_insize	Size of input buffer
5c	v_incount	Number of bytes in input buffer
60	v_inbufad	Input buffer address
64	v_infill	Input buffer next-in pointer
68	v_inempty	Input buffer next-out pointer

Offset	Name	Description
6c	v_inend	Input buffer end of buffer pointer
70	v_outsize	Size of output buffer
74	v_outcount	Number of bytes in output buffer
78	v_outbufad	Output buffer address
7c	v_outfill	Output buffer next-in pointer
80	v_outempty	Output buffer next-out pointer
84	v_outend	Output buffer end of buffer pointer
88	v_lockid	I/O lock ID number
8c	v_use_cnt	Logical unit user counter
90	v_reservd	Reserved space (u_int32[5])
a4	v_pdopt	Pointer to path descriptor options section
a8	v_opt	Logical unit options section
c2	DEV_SPECIFICS	Driver specific data; if these have 4-byte alignment they begin at offset 0xc4

SCF Logical Unit Options (scf.h scf_lu_opts)

Offset	Name	Description
0	v_optsize	Options section size
2	v_class	Device type0 = SCF
3	v_err	Accumulated errors
4	v_pause	Immediate pause request
5	v_line	Lines left until end of page
6	v_intr	Keyboard interrupt character
7	v_quit	Keyboard quit character
8	v_psch	Keyboard pause character
9	v_xon	x-on character
a	v_xoff	x-off character
b	v_baud	Baud rate
c	v_parity	Parity
d	v_stopbits	Stop bits
e	v_wordsize	Word size
f	v_rtsstate	RTS state: disable = 0 enable = non-zero
10	v_dcdstate	Current state of DCD line
11	v_reserved	Reserved for future use (u_char[9])

Chapter 6: Error Codes

000:001		Process aborted.
000:002	S_Abort signal	Keyboard Quit (^E) typed.
000:003	S_Intrpt signal	Keyboard Interrupt (^C) typed.
000:004	S_HangUp signal	Modem hangup.
000:032	EOS_SIGABRT	Abort signal received.
000:033	EOS_SIGFPE	Erroneous math operation signal received.
000:034	EOS_SIGILL	Illegal function image signal received.
000:035	EOS_SIGSEGV	Segment violation (bus error) signal received.
000:036	EOS_SIGTERM	Termination request signal received.
000:037	EOS_SIGALRM	Alarm time elapsed signal received.
000:038	EOS_SIGPIPE	A write to pipe with no readers signal was received.
000:039	EOS_SIGUSR1	A user signal #1 was received.
000:040	EOS_SIGUSR2	A user signal #2 was received.
000:041	EOS_SIGCHECK	Machine check exception signal received.
000:042	EOS_SIGALIGN	Alignment exception signal received.

000:043	EOS_SIGINST	Instruction access exception signal received.
000:044	EOS_SIGPRIV	Privelege violation exception signal received.
000:064	EOS_ILLFNC	Illegal function code.
000:065	EOS_FMTERR	ASCII to numeric format conversion error.
000:066	EOS_NOTNUM	Number not found.
000:067	EOS_ILLARG	Illegal argument.
000:067	EINVAL	Invalid argument (POSIX).
000:080	EOS_MEMINUSE	Memory already in use.
000:081	EOS_UNKADDR	Do not know how to translate.
000:102	EOS_BUSERR	Bus trap error.
000:103	EOS_ADRERR	Address trap error.
000:104	EOS_ILLINS	An illegal instruction exception occurred.
000:105	EOS_ZERDIV	Zero divide exception.
000:106	EOS_CHK	A `chk` or `chk2` instruction trap occurred.
000:107	EOS_TRAPV	A `trapv` or `trapcc` instruction occurred.
000:108	EOS_VIOLAT	Privileged instruction violation.
000:109	EOS_TRACE	Uninitialized trace exception.
000:110	EOS_1010	1010 instruction exception.
000:111	EOS_1111	1111 instruction exception.
000:112	EOS_RESRVD	Invalid exception (#12).
000:113		Coprocessor protocol violation.
000:114		System stack frame format error.
000:115		Uninitialized interrupt.

000:116- 000:123		Invalid exception occurred (#16-#23).
000:124		Spurious interrupt.
000:133	EOS_TRAP	Uninitialized user TRAP (1-15) was executed.
000:148	E_FPUNORDC	Floating point coprocessor unordered condition.
000:149	E_FPINXACT	Floating point coprocessor inexact result.
000:150	E_FPDIVZER	Floating point coprocessor divide by zero.
000:151	E_FPUNDRFL	Floating point coprocessor underflow.
000:152	E_FPOPRERR	Floating point coprocessor operand error.
000:153	E_FPOVERFL	Floating point coprocessor overflow.
000:154	E_FPNOTNUM	Floating point coprocessor not a number.
000:155		Invalid exception (#55).
000:156	EOS_MMUCONF	PMMU Configuration exception.
000:157	EOS_MMUILLEG	PMMU Illegal Operation exception.
000:158	EOS_MMUACCES	PMMU Access Level Violation exception.
000:159- 000:163		Invalid exception occurred (#59-#63).
000:164	EOS_Permit	No permission.
000:164	EACESS	POSIX access denied (POSIX).
000:165	EOS_DIFFER	Arguments to F_CHKNAM do not match.
000:166	EOS_STKOVF	System stack overflow.
000:167	EOS_EVNTID	Invalid or illegal event ID number specified.
000:168	EOS_EVNF	Event name not found.

000:169	EOS_EVBUSY	The event is busy (and cannot be deleted).
000:170	EOS_EVPARM	Impossible event parameters supplied.
000:171t	EOS_DAMAGE	System data structures have been damaged.
000:172	EOS_BADREV	Module revision is incompatible with operating system.
000:173	EOS_PTHLOST	Path became lost because network was down.
000:174	EOS_BADPART	Bad (disk) partition data or no active partition.
000:175	EOS_HARDWARE	Hardware damage has been detected.
000:176	EOS_NOTME	Not my device.
000:177	EOS_BSIG	Fatal signal or no intercept routine.
000:178	EOS_BUF2SMALL	Buffer passed is too small.
000:179	EOS_ISUB	Illegal/used subroutine module number.
000:180	EOS_EVTFUL	Event descriptor table full.
000:196	EOS_SYMLINK	Symbolic link found in path list
000:197	EOS_EOLIST	End of alias list.
000:198	EOS_LOCKID	Illegal I/O lock identifier specified.
000:199	EOS_NOLOCK	Lock not obtained.
000:200	EOS_PTHFUL	The user (or system) path table is full.
000:201	EOS_BPNUM	Bad path number.
000:201	EBADF	Bad file descriptor (POSIX).
000:202	EOS_POLL	System IRQ table full.
000:203	EOS_BMODE	Bad I/O mode.

000:204	EOS_DEVOVF	System device table is full.
000:205	EOS_BMID	Bad module ID.
000:206	EOS_DIRFUL	Module directory full.
000:207	EOS_MEMFUL	Memory full.
000:208	EOS_UNKSVC	Unknown service code.
000:209	EOS_MODBSY	The module is busy.
000:210	EOS_BPADDR	Bad page address.
000:210	EFAULT	Bad address (POSIX).
000:211	EOS_EOF	End of file reached.
000:212	EOS_VCTBSY	IRQ vector is busy.
000:213	EOS_NES	Non-existing segment.
000:214	EOS_FNA	File not accessible.
000:214	EPERM	Operation not permitted (POSIX).
000:215	EOS_BPNAM	Bad pathlist specified.
000:216	EOS_PNNF	File not found.
000:217	EOS_SLF	File segment list is full.
000:218	EOS_CEF	Tried to create an existing file.
000:218	EEXIST	File exists (POSIX).
000:219	EOS_IBA	Illegal memory block specified.
000:220	EOS_HANGUP	Telephone (modem) connection terminated.
000:221	EOS_MNF	Module not found.
000:222	EOS_NOCLK	No system clock.
000:223	EOS_DELSP	Deleting stack memory.
000:224	EOS_IPRCID	Illegal process ID.
000:224	ESRCH	No such process (POSIX).
000:225	EOS_PARAM	Bad parameter.
000:226	EOS_NOCHLD	No children.
000:226	ECHILD	No child process (POSIX).
000:227	EOS_ITRAP	Invalid trap number.
000:228	EOS_PRCABT	Process aborted.

000:229	EOS_PRCFUL	Too many active processes.
000:230	EOS_IFORKP	Illegal fork parameter.
000:231	EOS_KWNMOD	Known module.
000:232	EOS_BMCRC	Bad module CRC.
000:233	EOS_SIGNAL	Signal error.
000:234	EOS_NEMOD	Not executable module.
000:235	EOS_BNAM	Bad name.
000:236	EOS_BMHP	Bad module header parity.
000:237	EOS_NORAM	No RAM available.
000:237	ENOMEM	Insufficient RAM (POSIX).
000:238	EOS_DNE	Directory is not empty.
000:239	EOS_NOTASK	No available task number.
000:240	EOS_UNIT	Illegal unit number.
000:241	EOS_SECT	Bad sector number.
000:242	EOS_WP	Media is write protected.
000:243	EOS_CRC	Bad module cyclic redundancy check value.
000:244	EOS_READ	Read error.
000:244	EIO	POSIX I/O error.
000:245	EOS_WRITE	Write error.
000:246	EOS_NOTRDY	Device not ready.
000:246	ENODEV	No such device (POSIX).
000:246	ENXIO	No such device or address (POSIX).
000:247	EOS_SEEK	Seek error.
000:248	EOS_FULL	Media full.
000:249	EOS_BTYP	Bad type.
000:250	EOS_DEVBSY	Device busy.
000:250	EBUSY	POSIX resource busy.
000:251	EOS_DIDC	Disk ID change.
000:252	EOS_LOCK	Record is busy.
000:253	EOS_SHARE	Non-sharable file is busy.

000:254	EOS_DEADLK	I/O deadlock error.
000:255	EOS_FORMAT	Device is format protected.
000:256	ERANGE	ANSI C math out of range.
001:000	ERANGE	ANSI C number out of range error.
001:001	EDOM	ANSI C number not in domain.
006:000	EOS_IllPrm	Illegal parameter.
006:001	EOS_IDFULL	Identifier (ID) table full.
006:002	EOS_BADSIZ	Bad size error.
006:003	EOS_RGFULL	Region definition full.
006:004	EOS_UNID	Unallocated identifier number.
006:005	EOS_NULLRG	Null region.
006:006	EOS_BADMOD	Bad drawmap/pattern mode.
006:007	EOS_NOFONT	No active font.
006:008	EOS_NODM	No drawmap.
006:009	EOS_NOPLAY	No audio play in progress.
006:010	EOS_ABORT	Asynchronous operation aborted.
006:011	EOS_QFULL	Audio queue is full.
006:012	EOS_BUSY	Audio processor is busy.
007:001	EWOULDBLOCK	I/O operation would block.
007:001	EAGAIN	POSIX item temporarily unavailable (POSIX).
007:002	EINPROGRESS	I/O operation in progress.
007:003	EALREADY	Operation already in progress.
007:003	EINTR	Interrupted function call (POSIX).

007:004	EDESTADDRREQ	Destination address required.
007:005	EMSGSIZE	Message too long.
007:006	EPROTOTYPE	Protocol wrong type for socket.
007:007	ENOPROTOOPT	Bad protocol option.
007:008	EPROTONOSUPPORT	Protocol not supported.
007:009	ESOCKNOSUPPORT	Socket type not supported.
007:010	EOPNOTSUPP	Operation not supported on socket.
007:011	EPFNOSUPPORT	Protocol family not supported.
007:012	EAFNOSUPPORT	Address family unsupported by protocol.
007:013	EADDRINUSE	Address already in use.
007:014	EADDRNOTAVAIL	Cannot assign requested address.
007:015	ENETDOWN	Network is down.
007:016	ENETUNREACH	Network is unreachable.
007:017	ENETRESET	Network lost connection on reset.
007:018	ECONNABORTED	Software caused connection abort.
007:019	ECONNRESET	Connection reset by peer.
007:020	ENOBUFS	No buffer space available.
007:021	EISCONN	Socket already connected.
007:022	ENOTCONN	Socket is not connected.
007:023	ESHUTDOWN	Cannot send after socket shutdown.
007:024	ETOOMANYREFS	Too many references.
007:025	ETIMEDOUT	Connection timed out.
007:026	ECONNREFUSED	Connection refused.
007:027	EBUFTOOSMALL	Buffer too small for `F_MBuf` operation.

007:028	ESMODEXISTS	Socket module already attached.
007:029	ENOTSOCK	Path is not a socket.
007:030	EHOSTUNREACH	No route to host found.
007:031	EHOSTDOWN	Host is down.
008:001	EOS_LNKDWN	Layer 1 link down [driver].
008:002	EOS_CONN	Connection error [driver].
008:003	EOS_RXTHREADD	Error in receive thread.
008:004	EOS_ME	Management entity error.
008:005	EOS_SAPI	Unrecognized SAPI.
008:006	EOS_TEI	TEI not found.
008:007	EOS_MAX_TEI	Maximum number of TEI.
008:008	EOS_TSTATE	Illegal TEI state.
008:009	EOS_TEI_ DENIED	TEI request denied by network.
008:010	EOS_PRIMITIVE	Unrecognized primitive.
008:011	EOS_L2IN	Layer 2 error.
008:012	EOS_PEER_BUSY	Peer receiver busy condition.
008:013	EOS_K	Maximum number of call references.
008:014	EOS_CREF	Call reference does not exist.
008:015	EOS_CALLPROG	Error on call progress state.
008:016	EOS_RCVR	Receiver previously assigned.
008:017	EOS_REQDENIED	Request denied by far end.
008:018	EOS_RXSTART	Receive thread did not start.
008:019	EOS_NOSTACK	Last driver on path's stack.

008:020	EOS_NOSTACK	Last driver on path's stack.
008:021	EOS_BTMSTK	Attempt to pop last driver.
008:022	EOS_NPBNULL	Notify param block is NULL.
008:023	EOS_PPS_NOTFND	Per path storage not found.
008:024	EOS_STKFULL	Path's stack array is full.
008:025	EOS_MBNOTINST	Sysmbuf not installed.
008:026	EOS_TMRNTFND	Timer not found.
008:027	EOS_GETIME	Get time error.
008:028	EOS_TIMERINT	Timer interrupt.
008:029	EOS_RXMB_NODEVENTRY	No device entry in mbuf.
008:030	EOS_PGM_TBLBSY	PSI/SI table is in use.
008:031	EOS_PGM_TBLBSY	PSI/SI table is in use.
008:032	EOS_PGM_TBLOVF	Too many tables being read.
008:033	EOS_PGM_NFND	Program not found.
008:034	EOS_PGM_NOPLAY	No program currently playing.
008:035	EOS_NODNDRVR	No down driver.
008:040	EOS_RXMB_ERR	Receive data error base.
008:192	EOS_WANAPI_BASE	WAN API error.
008:224	EOS_GENDRVR_BASE	Custom 3rd party driver error.
008:256	EOS_IEEE1394_BASE	IEEE 1394 error.
008:257	EOS_MW1394_BUSRESET	Bus reset.
008:258	EOS_MW1394_NOIRM	No Isochronous Resource Managemer found.

008:259	EOS_MW1394_NNF	Requested node not found on the bus.
008:260	EOS_MW1394_TIMEDOUT	Timed out waiting for response.
008:261	EOS_MW1394_FAILED	Internal failure.
008:262	EOS_MW1394_BADSIZE	Bad size.
008:263	EOS_MW1394_ADDRINUSE	Address in use.
008:264	EOS_MW1394_ADDRNOTFND	Address not found.
008:265	EOS_MW1394_ADDRNOTAVAIL	Address not available.
008:266	EOS_MW1394_INVCHANNEL	Invalid channel.
008:267	EOS_MW1394_CHNLINUSE	Channel in use.
008:268	EOS_MW1394_NOCFGREG	No free Isochronous configuration registers.
008:269	EOS_MW1394_CHNLNOTFND	Channel not found.
008:270	EOS_MW1394_CHNL_STOPPED	Channel is stopped.
008:271	EOS_MW1394_NO_FREECHNL	Channel deallocation failed.
008:272	EOS_MW1394_NOXMIT	Could not transmit.
008:273	EOS_MW1394_INVTOPOMAP	Topology map invalid.
008:274	EOS_MW1394_INVSPEEDMAP	Invalid speedmap.
008:275	EOS_MW1394_BUSMGR_EXITS	Bus manager already present.

008:276	EOS_MW1394_BEBUSMGRFAIL	IRM refused request.
008:277	EOS_MW1394_BUSMGR_ALRDY	Already the Bus Manager.
008:278	EOS_MW1394_ALLOCCHNLFAIL	Channel allocation failed.
008:279	EOS_MW1394_FREECHNLFAIL	Channel deallocation failed.
008:280	EOS_MW1394_CHNLFREEALRDY	Channel already free.
008:281	EOS_MW1394_ALLOCBWDTHFAIL	Failed to allocate bandwidth.
008:282	EOS_MW1394_FREEBWDTHFAIL	Failed to deallocate bandwidth.
008:283	EOS_MW1394_BANDWIDTH_NOTAVAIL	Bandwidth is not available.
008:284	EOS_MW1394_INV_BANDWIDTH_HNDL	Invalid handle.
008:285	EOS_MW1394_NOBUFFERSATTCHD	No buffers attached.
008:286	EOS_MW1394_RCODE_ERROR	Remote response code not RCODE_COMPLETE.
008:287	EOS_MW1394_NOBUSMGR	No Bus Manager found.
008:288	EOS_MW1394_INVACCESSTYPE	Invalid access type.
009:000	EOS_NOROMINFO	No ROM information table found.
009:001	EOS_BADPARAM	Bad parameter passed.
009:002	EOS_NOHW	Hardware not present.
009:003	EOS_ROMMNF	ROM module not found.

009:004	EOS_TOOSMALL	First memory block too small.
009:005	EOS_NOTMINE	Not my interrupt.
009:006	EOS_NOMEMSVC	Memory services not found.
009:007	EOS_BDROMINF	Bad rominfo pointer.
009:008	EOS_NOOSSVC	OS services not found.
009:009	EOS_NOROMSVC	ROM services not found.
009:010	EOS_NOVERMATCH	Version mismatch.
009:016	EOS_CONSBASE	ROM console error code base.
009:017	EOS_DUPCONS	Duplicate console found.
009:018	EOS_NOCONS	Console module not found.
009:019	EOS_NO2CONS	`cons2` entry not found.
009:020	EOS_UNEXPINT	Unexpected interrupt.
009:032	EOS_BOOTBASE	ROM bootsys error code base.
009:033	EOS_DUPBOOTSYS	Duplicate boot system found.
009:034	EOS_NOBOOTSYS	Boot system not found.
009:035	EOS_NOBOOTERS	No booters configured.
009:036	EOS_NOBOOTLIST	Bootlist entry not found.
009:037	EOS_NOROMLIST	`romlist` entry not found.
009:038	EOS_NOTKERNEL	Not kernel module.
009:039	EOS_PSEUDOOK	Pseudo booter comopleted ok.
010:001	EOS_MAUI_BADACK	Command code not understood by protocol module.
010:002	EOS_MAUI_ BADCODEMETH	Coding method is not valid.

010:003	EOS_MAUI_BADCOLORTYPE	The color type specified is not valid.
010:004	EOS_MAUI_BADCOMPATLEVEL	Bad compatibility level.
010:005	EOS_MAUI_BADDEFCHAR	The glyph corresponding to the default character is not present in the font.
010:006	EOS_MAUI_BADDIMEN	The dimension specified is 0 or out of range for the attempted operation.
010:007	EOS_MAUI_BADFRAME	The frame specified is not valid.
010:008	EOS_MAUI_BADID	The ID specified is 0 or is not a vaid ID for the attempted operation.
010:009	EOS_MAUI_BADLINESIZE	The line size specified is not a legal value.
010:010	EOS_MAUI_BADMBC	An error was received trying to parse a multi-byte string.
010:011	EOS_MAUI_BADPOS	The position specified is out of range.
010:012	EOS_MAUI_BADPTR	The pointer value specified is NULL or is not valid.
010:013	EOS_MAUI_BADRANGE	The range specified is not legal.
010:014	EOS_MAUI_BADSHADE	The shade specified has not been created yet.
010:015	EOS_MAUI_BADSIZE	The size specified is 0.
010:016	EOS_MAUI_BADVALUE	The value is not legal.

010:017	EOS_MAUI_BUSY	The resource attempted is already in use and not sharable.
010:018	EOS_MAUI_CANTDISPLAY	The drawmap specified cannot be displayed by the specified graphics device.
010:019	EOS_MAUI_DAMAGE	MAUI data structures are damaged.
010:020	EOS_MAUI_DEFINED	There has been an attempt to define something already defined.
010:021	EOS_MAUI_DMAPTOOSMALL	The drawmap specified is too small for the viewport.
010:022	EOS_MAUI_INCOMPATCM	The coding methods specified are not copatible.
010:023	EOS_MAUI_INTERNAL	MAUI has detected an initernal error.
010:024	EOS_MAUI_INUSE	Resource still being used.
010:025	EOS_MAUI_ISINIT	The `maui_init()` function has already been called.
010:026	EOS_MAUI_ISRESERVED	A reserve attempt on a resource failed because the resource is already reserved.
010:027	EOS_MAUI_MASKED	There has been an attempt to write a message to a mailbox, but the mailbox is configured to reject it.
010:028	EOS_MAUI_MBOXFULL	The mailbox is currently full.
010:029	EOS_MAUI_MISSINGFEP	The driver is missing the fast-entry-point.

010:030	EOS_MAUI_NOCALLBACK	There is no callback function pointer.
010:031	EOS_MAUI_NODMAP	A drawmap has not been assigned to the viewport.
010:032	EOS_MAUI_NODSTDMAP	No destination drawmap has been specified.
010:033	EOS_MAUI_NOEXPTABLE	No expansion table has been specified.
010:034	EOS_MAUI_NOFONT	No font has been assigned to the text context object.
010:035	EOS_MAUI_NOHWSUPPORT	The hardware does not support the attempted operation.
010:036	EOS_MAUI_NOINIT	The API function called requires the API to be initialized first.
010:037	EOS_MAUI_NOMASKDMAP	No mask drawmap specified.
010:038	EOS_MAUI_NOMAUIP	MAUI input process not found.
010:039	EOS_MAUI_NOPIXMEM	No pixel memory has been assigned to the drawmap.
010:040	EOS_MAUI_NOPMOD	Specified protocol module could not be found.
010:041	EOS_MAUI_NOSPRITE	No sprite has been assigned to the animation object.
010:042	EOS_MAUI_NOSRCDMAP	No source drawmap has been specified.
010:043	EOS_MAUI_NOTALIGNED	Lines of the pixel memory within a drawmap are not properly aligned.
010:044	EOS_MAUI_NOTFOUND	The object specified was not found.

010:045	EOS_MAUI_NOTIMPLEMENTED	Feature not implemented.
010:046	EOS_MAUI_NOTPENDING	The asynchronous operation attempted is not pending.
010:047	EOS_MAUI_NOTRESERVED	The resource attempted has not been reserved.
010:048	EOS_MAUI_SIGNAL	A signal caused the operation to abort.
010:049	EOS_MAUI_TOOCOMPLEX	The operation is too complex for the hardware to support.
010:050	EOS_MAUI_TOOLONG	The specified string is too long.
010:051	EOS_MAUI_CANTRESIZE	The size of the object cannot be changed at this time.
010:052	EOS_MAUI_NOPALETTE	A palette has not been specified.
010:053	EOS_MAUI_BADNUMCHAN	The number of channels specified is not valid.
010:054	EOS_MAUI_NOTBUSY	The specified device is not busy.
010:055	EOS_MAUI_NOTPAUSED	The specified device is not paused.
010:056	EOS_MAUI_ABORT	The operation was aborted prematurely.
010:057	EOS_MAUI_TOOOLD	The feature requested is not present because an old MAUI component is being used.
010:058	EOS_MAUI_INCOMPATVER	An incompatibility exists between two MAUI components.

010:059	EOS_MAUI_NOTALLOWED	The operation attempted is not allowed.
010:060	EOS_MAUI_NOTOWNER	The process is not the owner of the object being modified.
010:061	EOS_MAUI_DISABLED	The feature attempted has been disabled.
010:062	EOS_MAUI_NOTRAP	MAUI trap module not found.
010:063	EOS_MAUI_DEVNOTFOUND	The specified device was not found.
010:064	EOS_MAUI_CMAPFULL	The colormap is full.
010:065	EOS_MAUI_PAUSED	There was an operation pause attempt while the operation was paused.
010:066	EOS_MAUI_BADRATE	The data rate specified is not valid.
010:067	EOS_MAUI_NODVSUPPORT	The operation requested requires support by the device driver.
010:068	EOS_MAUI_NOTVISIBLE	The object referenced is not currently visible.
011:001	EOS_THRD_INVLD	Not valid with threads.
012:001		FTL bad function.
012:002		FTL file not found.
012:003		FTL path not found.
012:004		FTL too many open files.
012:005		FTL no write access.
012:006		FTL bad file handle.
012:018		FTL no more files.
012:019	EOS_WRITEPROTECT	FTL write protected.

012:020		FTL bad drive handle.
012:021		FTL drive not ready.
012:022		FTL unknown command.
012:023	EOS_BAD_FORMAT	FTL bad format.
012:024		FTL bad length.
012:025		FTL seek error.
012:026	EOS_UNKNOWN_MEDIA	Media not known.
012:027	EOS_SECTOR_NOT_FOUND	Sector out of bounds.
012:028		FTL out f paper.
012:029	EOS_WRITE_FAULT	Write error.
012:030		FTL read fault.
012:031	EOS_GENERAL_FAILURE	Device error.
012:034		FTL disk change.
012:050		FTL vpp failure.
012:051		FTL bad parameter.
012:052		FTL no space in volume.
012:053		FTL invalid FAT chain.
012:054		FTL root directory full.
012:055		FTL not mounted.
012:056		FTL path is root directory.
012:057		FTL not a directory.
012:058		FTL directory not empty.
012:059		FTL file is a directory.
012:060		FTL adapter not found.
012:062		FTL formatting error.
012:063	EOS_NOT_ENOUGH_MEMORY	Not enough memory.
012:064	EOS_VOLUME_TOO_SMALL	Volume too small.
012:065		FTL buffering error.

012:080		FTL file already exists.
012:100		FTL incomplete.
012:101		FTL timed out.
020:001	E2BIG	Argument list too long.
020:003	EBADMSG	Bad message.
020:004	ECANCELED	Operation cancelled.
020:005	EDEADLK	Resource deadlock avoided.
020:006	EFBIG	File too big.
020:007	EISDIR	Is a directory.
020:008	EMFILE	Too many process open file.
020:009	EMLINK	Too many links.
020:010	ENAMETOOLONG	Filename too long.
020:011	ENFILE	Too many system open files.
020:012	ENOEXEC	Exec format error.
020:013	ENOLCK	No locks available.
020:014	ENOSPC	No space left on device.
020:015	ENOSYS	Function not implemented.
020:016	ENOTDIR	Not a directory.
020:017	ENOTEMPTY	Directory no empty.
020:018	ENOTSUP	Not supported.
020:019	ENOTTY	Bad I/O control operation.
020:020	EROFS	Read-only file system.
020:021	ESPIPE	Invalid seek.
020:022	EXDEV	Improper link.
100:002	EOS_PPC_MACHCHK	Machine check exception.
100:003	EOS_PPC_DATAACC	Data access exception.
100:004	EOS_PPC_INSTACC	Instruction access exception.
100:005	EOS_PPC_ETINT	External interrupt.
100:006	EOS_PPC_ALIGN	Alignment exception.

100:007	EOS_PPC_PROGRAM	Program exception.
100:008	EOS_PPC_FPUUNAV	FPU unavailable exception.
100:009	EOS_PPC_DEC	Decrementer exception.
100:010	EOS_PPC_IOCONT	I/O controller exception.
100:012	EOS_PPC_SYSCALL	System call exception.
100:032	EOS_PPC_TRACE	Trace exception.
100:002	EOS_PPC_MACHCHK	Machine check exception.
100:003	EOS_PPC_DATAACC	Data access exception.
100:004	EOS_PPC_INSTACC	Instruction access exception.
100:005	EOS_PPC_ETINT	External interrupt.
100:006	EOS_PPC_ALIGN	Alignment exception.
100:007	EOS_PPC_PROGRAM	Program exception.
100:008	EOS_PPC_FPUUNAV	FPU unavailable exception.
100:009	EOS_PPC_DEC	Decrementer exception.
100:010	EOS_PPC_IOCONT	I/O controller exception.
100:012	EOS_PPC_SYSCALL	System call exception.
100:032	EOS_PPC_TRACE	Trace exception.
102:000	EOS_MIPS_EXTINT	External Interrupt.
102:001	EOS_MIPS_MOD	TLB Modification exception.
102:002	EOS_MIPS_TLBL	TLB Miss exception (load or instruction fetch).
102:003	EOS_MIPS_TLBS	TLB Miss exception (store).
102:004	EOS_MIPS_ADEL	Address Error Exception (load or instruction fetch).
102:005	EOS_MIPS_ADES	Address Error Exception (store).

102:006	EOS_MIPS_IBE	Bus Error exception (instruction fetch).
102:007	EOS_MIPS_DBE	Bus Error exception (load or store).
102:008	EOS_MIPS_SYS	SYSCALL exception.
102:009	EOS_MIPS_BP	Breakpoint exception.
102:010	EOS_MIPS_RI	Reserved Instruction exception.
102:011	EOS_MIPS_CPU	CoProcessor Unusable exception.
102:012	EOS_MIPS_OVF	Arithmetic Overflow exception.
102:013	EOS_MIPS_TR	Trap exception.
102:023	EOS_MIPS_WATCH	Watch exception.
102:032	EOS_MIPS_UTLB	User State TLB Miss exception.
103:001	EOS_ARM_UNDEF	Undefined instruction exception
103:003	EOS_ARM_PFABORT	Instruction pre-fetch abort exception.
103:004	EOS_ARM_DTABORT	Data abort exception.
103:008	EOS_ARM_ALIGN	Alignment exception.
104:002	EOS_SH_TLBMISSLD	TLB miss on a load.
104:003	EOS_SH_TLBMISSST	TLB miss on a store.
104:004	EOS_SH_INITPG	Initial page write.
104:005	EOS_SH_TLBPROTLD	TLB protection violation on a load.
104:006	EOS_SH_TLBPROTST	TLB protection violation on a store.
104:007	EOS_SH_ADDRLD	Address error on a load.
104:008	EOS_SH_ADDRST	Address error on a store.

104:011	EOS_SH_TRAPA	TRAPA instruction.
104:012	EOS_SH_ RSRVINSTR	Reserved instruction.
104:013	EOS_SH_ ILLSLOT	Illegal slot instruction.
104:015	EOS_SH_BRKPT	User break point.
106:000		x86 Divide error.
106:001		x86 Debug error.
106:002		x86 NMI.
106:003		x86 Breakpoint.
106:004		x86 Overflow.
106:005		x86 Bounds check.
106:006		x86 Invalid opcode.
106:007		x86 Device not available.
106:008		x86 Double fault.
106:009		x86 Invalid TSS.
106:010		x86 Segment not present.
106:011		x86 Stack fault.
106:012		x86 General protection fault.
106:013		x86 Page fault.
106:014		x86 Floating point error.
106:016		x86 Alignment error.
106:017		x86 Machine check.
106:018		x86 Machine check.
107:001	EOS_SPARC_ INSTRBLK	Instruction access exception.
107:002	EOS_SPARC_ ILLINSTR	Illegal instruction.
107:003	EOS_SPARC_ PRIVINSTR	Privileged instruction.
107:004	EOS_SPARC_ FPDISABLE	Floating point disbled.

107:005	EOS_SPARC_WINDOWOV	Window overflow.
107:006	EOS_SPARC_WINDOWUF	Window underflow.
107:007	EOS_SPARC_UNALIGNED	Memory address unaligned.
107:008	EOS_SPARC_FP	Floating point exception.
107:009	EOS_SPARC_DATABLK	Data access exception.
107:00A	EOS_SPARC_TAGOV	Tagged arith. overflow.
107:00B	EOS_SPARC_WATCHPNT	Watchpoint detected.
107:020	EOS_SPARC_RREGACC	Register access error.
107:021	EOS_SPARC_INSTRPER	Instruction access error.
107:024	EOS_SPARC_CPDISABLE	Coprocessor disabled.
107:025	EOS_SPARC_NOFLUSH	Unimplemented FLUSH.
107:028	EOS_SPARC_CP	Coprocessor exception.
107:029	EOS_SPARC_DATAPER	Data access error.
107:02A	EOS_SPARC_ZERODIV	Divide by zero.
107:02B	EOS_SPARC_DATAST	Data store error.
107:02C	EOS_SPARC_DATAMMU	MMU data miss.
107:03C	EOS_SPARC_INSTRMMU	MMU instruction miss.

Chapter 7: ASCII Chart

HEX	DEC	Char	HEX	DEC	Char
00	0	NUL	20	32	blank
01	1	SOH	21	33	!
02	2	STX	22	34	“
03	3	ETX	23	35	#
04	4	EOT	24	36	$
05	5	ENQ	25	37	%
06	6	ACK	26	38	&
07	7	BEL	27	39	‘
08	8	BS	28	40	(
09	9	HT	29	41	)
0A	10	LF	2A	42	*
0B	11	VT	2B	43	+
0C	12	FF	2C	44	’
0D	13	CR	2D	45	-
0E	14	SO	2E	46	.
0F	15	SI	2F	47	/
10	16	DLE	30	48	0
11	17	DC1	31	49	1
12	18	DC2	32	50	2
13	19	DC3	33	51	3
14	20	DC4	34	52	4
15	21	NAK	35	53	5
16	22	SYN	36	54	6
17	23	ETB	37	55	7
18	24	CAN	38	56	8
19	25	EM	39	57	9
1A	26	SUB	3A	58	:
1B	27	ESC	3B	59	;
1C	28	FS	3C	60	<
1D	29	GS	3D	61	=
1E	30	RS	3E	62	>
1F	31	US	3F	63	?

HEX	DEC	Char	HEX	DEC	Char
40	64	@	60	96	‘
41	65	A	61	97	a
42	66	B	62	98	b
43	67	C	63	99	c
44	68	D	64	100	d
45	69	E	65	101	e
46	70	F	66	102	f
47	71	G	67	103	g
48	72	H	68	104	h
49	73	I	69	105	i
4A	74	J	6A	106	j
4B	75	K	6B	107	k
4C	76	L	6C	108	l
4D	77	M	6D	109	m
4E	78	N	6E	110	n
4F	79	O	6F	111	o
50	80	P	70	112	p
51	81	Q	71	113	q
52	82	R	72	114	r
53	83	S	73	115	s
54	84	T	74	116	t
55	85	U	75	117	u
56	86	V	76	118	v
57	87	W	77	119	w
58	88	X	78	120	x
59	89	Y	79	121	y
5A	90	Z	7A	122	z
5B	91	[	7B	123	{
5C	92	\	7C	124	|
5D	93	]	7D	125	}
5E	94	^	7E	126	~
5F	95	_	7F	127	DEL

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