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Sun386i man Pages Supplement

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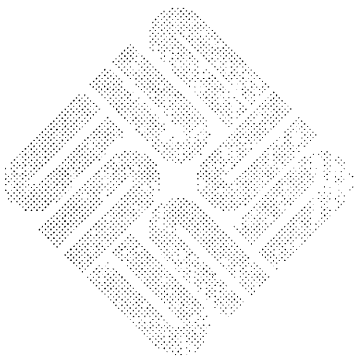
Revision History

Rev	Date	Comments
A	December 1988	First release of this manual.



Sun386i man Pages Supplement

The manual pages in this document augment and in some cases replace the manual pages in the *SunOS Reference Manual* (800-1751-10). The new and altered manual pages document enhancements and functionality in the Sun386i SunOS 4.0.1 release.

You can replace existing man pages and insert new pages in *SunOS Reference Manual* with the pages from this supplement. Replacement pages include the original page number, and new pages have no page number. Insert the new pages after these page numbers in *SunOS Reference Manual*:

fdformat(1) after page 181
fontflip(8) after page 1626
help_open(1) after page 224
keytables(5) after page 1402
loadkeys(1) after page 268
orgrc(5)after page 1410
start_applic(8) after page 1767
ypsync(8) – after page 1800

The man pages in this supplement are listed below according to section.

Section 1

bar(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

cc(1v) – updated for Sun386i SunOS release 4.0.1.

dos(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

fdformat(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

fontedit(1) – updated for Sun386i SunOS release 4.0.1.

help_open(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

help_viewer(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

input_from_defaults(1) – updated for Sun386i SunOS release 4.0.1.

ld(1) – updated for Sun386i SunOS release 4.0.1.

load(1), **loadc**(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

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loadkeys(1), **dumpkeys**(1) – Sun386i systems only, new for Sun386i SunOS release 4.0.1

organizer(1) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

strip(1) – updated for Sun386i SunOS release 4.0.1.

textedit(1) – updated for Sun386i SunOS release 4.0.1.

uucp(1c) – updated for Sun386i SunOS release 4.0.1.

Section 3

getmntent(3) – updated for Sun386i SunOS release 4.0.1.

Section 4

kb(4m) – updated for Sun386i SunOS release 4.0.1.

Section 5

bar(5) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

help(5) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

help_viewer(5) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

keytables(5) – new for Sun386i SunOS release 4.0.1.

orgrc(5) – Sun386i systems only, new for Sun386i SunOS release 4.0.1.

vfont(5) – updated for Sun386i SunOS release 4.0.1.

Section 8

fontflip_to_68k(8), **fontflip_to_i386**(8) – Sun386i systems only, new for Sun386i SunOS release 4.0.1.

ipallocd(8C) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

kadb(8s) – updated for Sun386i SunOS release 4.0.1.

modload(8) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

modstat(8) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1

mount(8) – updated for Sun386i SunOS release 4.0.1.

rarpd(8c) – updated for Sun386i SunOS release 4.0.1.

rwhod(8) – updated for Sun386i SunOS release 4.0.1.

start_applic(8) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1.

unconfigure(8) – Sun386i systems only, updated for Sun386i SunOS release 4.0.1.

ypsync(8) – Sun386i systems only, new for Sun386i SunOS release 4.0.1.

NAME

bar – create tape archives, and add or extract files

SYNOPSIS

bar [**–**] **crxtu** [**014578feovwbXlFmhpBisHSUGZRTINLODPVd**] [*barfile*] [*blocksize*] [*exclude-file*] [*Volume Header ID*] [*from-directory_to-directory*] [*user_id*] [*group_id*] [*include-file*] [*date (yymmddhhmm)*] [*prompt*] [*volume_number*] [*output_filename*] *filename* ... [**–C** *dir filename* ...]...

AVAILABILITY

Sun386i systems only.

DESCRIPTION

bar archives and extracts multiple files onto a single **bar**, file archive, called a *barfile*. It is quite similar to **tar**(1), but it has additional function modifiers , can read and write multiple volumes of tapes or diskettes, and writes and reads a format that is incompatible with **tar** (see **bar**(5)). A barfile is usually a magnetic tape, but it can be any file. **bar**'s actions are controlled by the first argument, the *key*, a string of characters containing exactly one function letter from the set **rxtuc**, and one or more of the optional function modifiers listed below. Other arguments to **bar** are file or directory names that specify which files to archive or extract. In all cases, the appearance of a directory name refers recursively to the files and subdirectories of that directory.

FUNCTION LETTERS

c Create a new **barfile** and write the named files onto it.

r Write the named files on the end of the *barfile*. Note: this option *does not work* with quarter-inch archive tapes.

x Extract the named files from the *barfile*. If a named file matches a directory with contents written onto the tape, this directory is (recursively) extracted. The owner, modification time, and mode are restored (if possible). If no *filename* arguments are given, all files in the archive are extracted. Note: if multiple entries specifying the same file are on the tape, the last one overwrites all earlier versions.

t List the table of contents of the *barfile*.

u Add the named files to the **barfile** if they are not there or if they have been modified since they were last archived. Note: this option *does not work* with quarter-inch archive tapes.

FUNCTION MODIFIERS

014578

Select an alternate drive on which the tape is mounted. The numbers **2**, **3**, **6**, and **9** do not specify valid drives. The default is **/dev/rmt8**.

f Use the next argument as the name of the *barfile*. If **f** is omitted, use the device indicated by the **TAPE** environment variable, if set. Otherwise, use **/dev/rmt8** by default. If *barfile* is given as '**–**', **bar** writes to the standard output or reads from the standard input, whichever is appropriate. Thus, **bar** can be used as the head or tail of a filter chain. **bar** can also be used to copy hierarchies with the command:

example% cd fromdir; bar cf – . | (cd todir; bar xfBp –)

o Suppress information specifying owner and modes of directories which **bar** normally places in the archive. Such information makes former versions of **bar** generate an error message like:

<filename>: **cannot create**

when they encounter it.

v Normally **bar** does its work silently; the **v** (verbose) option displays the name of each file **bar** treats, preceded by the function letter. When used with the **t** function, **v** displays the **barfile** entries in a form similar to '**ls –l** '. Each entry displayed is followed by the date the bar archive was created and the volume number on which the entry can be found.

w Wait for user confirmation before taking the specified action. If you use **w**, **bar** displays the action to be taken followed by the file name, and then waits for a **y** response to proceed. No action is taken on the named file if you type anything other than a line beginning with **y**.

b Use the next argument as the blocking factor for tape records. The default blocking factor is 20 blocks. The block size is determined automatically when reading tapes (key letters **x** and **t**). This determination of the blocking factor may be fooled when reading from a pipe or a socket (see the **B** key letter below). The maximum blocking factor is determined only by the amount of memory available to **bar** when it is run. Larger blocking factors result in better throughput, longer blocks on nine-track tapes, and better media utilization. Note: the blocking factor on tapes is forced to 126 and the blocking factor on diskettes is forced to 18. These are the optimal blocking factors for these devices and are necessary in reading and writing multi-volume archives.

X Use the next argument as a file containing a list of named files (or directories) to be excluded from the **barfile** when using the key letters '**c**', '**x**', or '**t**'. Multiple **X** arguments may be used, with one *exclude file* per argument.

l Display error messages if all links to archived files cannot be resolved. If **l** is not used, no error messages are printed.

F With one **F** argument specified, exclude all directories named SCCS from *barfile*. With two arguments **FF**, exclude all directories named SCCS, all files with **.o** as as their suffix, and all files named **errs**, **core**, and **a.out**.

m Do not extract modification times of extracted files. The modification time will be the time of extraction.

h Follow symbolic links as if they were normal files or directories. Normally, **bar** does not follow symbolic links. Note: symbolic links followed in this way are not archived as symbolic links; they are archived as directories or files. When these directories and files are restored, they are not restore as symbolic links, but as directories and files.

L Follow directory symbolic links as if they were normal directories. Note: these directories are archived and restored as symbolic links.

p Restore the named files to their original modes, ignoring the present **umask**(2). Setuid and sticky information are also extracted if you are the super-user. This option is only useful with the **x** key letter.

B Force **bar** to perform multiple reads (if necessary) so as to read exactly enough bytes to fill a block. This option exists so that **bar** can work across the Ethernet, since pipes and sockets return partial blocks even when more data is coming.

i Ignore directory checksum errors.

s Force the ownership of extracted files to match the user's effective user ID and group ID.

H The string of up to 128 characters is to be used as a volume header ID. A null volume header ID is written in each volume header of the archive when this function modifier is not specified. See **bar**(5) for the volume header's format. This option is only useful with the c key letter.

S Followed by two arguments: the 'from' directory and the 'to' directory. If the pathname of any extracted file begins with 'from' directory, then **bar** replaces 'from' directory with 'to' directory. This function is only useful with the **x** function letter and is useful in restoring files and directories to a different location.

U Use the next argument as the user ID in the volume header.

G Use the next argument as the group ID in the volume header.

Z Specify compression. **bar** will compress files when used with the **c** function letter and will uncompress files when used with the **x** function letter. **bar** will neither compress a compressed file, nor uncompress an uncompressed file. Uses **compress(1).**

O When extracting files with the **x** function letter, issue an error message if the user ID in the volume header of the **bar** archive does not match that of the user extracting the files.

R Read the volume header of the **bar** archive and print the information to stdout.

D Use the next argument (in the form 'yymmddhhmm', where 'yy' is a year, 'mm' is a month from 01-12, 'dd' is a day from 01-31, 'hh' is an hour from 01-24, and 'mm' is a minute from 00-59) as the date in the volume header, instead of the current date. This function modifier is only useful with the **c** function letter.

V Use the next argument as the starting volume number in the prompt for media changes. This function modifier is useful in situations where some volumes in a sequence are not written in **bar** format.

P Use the next argument as the prompt for media change conditions. If this argument, which is a string, contains a **printf(3S)** conversion specification in the form of '%d', then that conversion specification will be replaced with the current volume number.

N Do not overwrite **bar** archives with the **c** function letter if the user ID in the volume header of the archive does not match that of the user creating the new archive.

T When using the **x** or **t** function letters, terminate the search of the media after all the files specified are extracted (for **x**) or listed (for **t**).

I Use the next argument as a file containing a list of named files, one per line, to be included in the **bar** archive. The include file expects filenames to be followed by a semicolon and newline character.

In the case where excluded files (see **X** flag) also exist, excluded files take precedence over all included files. So, if a file is specified in both the include and exclude files (or on the command line), it will be excluded.

d Use the next argument, which is a filename, as a second output for the **bar** archive.

OPTIONS

–C dir filename
In a **c** (**create**) or **r** (**replace**) operation, **bar** performs a **chdir** (see **csh**(1)) to that directory before interpreting filename. This allows multiple directories not related by a close common parent to be archived using short relative path names. For example, to archive files from **/usr/include** and from **/etc**, one might use:

example% bar c –C /usr include –C /etc .

If you get a table of contents from the resulting **barfile**, you will see something like:

include/
include/a.out.h
and all the other files in **/usr/include ...**
/chown
and all the other files in **/etc**

Note: the **–C** option only applies to *one* following directory name and *one* following file name.

EXAMPLES

Here is a simple example using **bar** to create an archive of your home directory on a tape mounted on drive **/dev/rmt0**:

example% cd
example% bar cvf /dev/rmt0 .
messages

The **c** option means create the archive; the **v** option makes **bar** tell you what it's doing as it works; the **f** option means that you are specifically naming the file onto which the archive should be placed (**/dev/rmt0** in this example).

Here is another example: **/dev/rmt0**:

example% cd

example% bar cvfH /dev/rmt0 "THIS IS MY HEADER" .
messages

As in the first example, the **c** option means create the archive; the **v** option makes **bar** tell you what it's doing as it works; the **f** option means that you are specifically naming the file onto which the archive should be placed (**/dev/rmt0** in this example). The **H** option says to use the string **"THIS IS MY HEADER"** as the ID field in the volume header.

Now you can read the table of contents from the archive like this:

example% bar tvf /dev/rmt0
(access user-id/group-id size mod. date filename)
rw-r--r-- 1677/40 2123 Nov 7 18:15:1985 ./archive/test.c
...
example%

You can extract files from the archive like this:

example% bar xvf /dev/rmt0
messages

If there are multiple archive files on a tape, each is separated from the following one by an EOF marker. **bar** does not read the EOF mark on the tape after it finishes reading an archive file because **bar** looks for a special header to decide when it has reached the end of the archive. Now if you try to use **bar** to read the next archive file from the tape, **bar** does not know enough to skip over the EOF mark and tries to read the EOF mark as an archive instead. The result of this is an error message from **bar** to the effect:

bar: blocksize=0

This means that to read another archive from the tape, you must skip over the EOF marker before sbarting another **bar** command. You can accomplish this using the *mt* command, as shown in the example below. Assume that you are reading from **/dev/nrmt0**.

example% bar xvfp /dev/nrmt0 *read first archive from tape*
messages
example% mt fsf 1 *skip over the end-of-file marker*
example% bar xvfp /dev/nrmt0 *read second archive from tape*
messages
example%

Finally, here is an example using **bar** to transfer files across the Ethernet. First, here is how to archive files from the local machine (**example**) to a tape on a remote system (**host**):

example% bar cvfb - 20 *filenames* **|***rsh***host***dd*
messages
example%

In the example above, we are *creating* a **barfile** with the **c** key letter, asking for *verbose* output from **bar** with the **v** option, specifying the name of the output **barfile** using the **f** option (the standard output is where the **barfile** appears, as indicated by the **-** sign), and specifying the blocksize (20) with the **b** option. If you want to change the blocksize, you must change the blocksize arguments both on the **bar** command *and* on the **dd** command.

Now, here is how to use **bar** to get files from a tape on the remote system back to the local system:

example% rsh -n host dd if=/dev/rmt0 bs=20b | bar xvBfb - 20 *filenames*
messages
example%

In the example above, we are *extracting* from the **barfile** with the **x** key letter, asking for *verbose output from* **bar** with the **v** option, telling **bar** it is reading from a pipe with the **B** option, specifying the name of the input **barfile** using the **f** option (the standard input is where the **barfile** appears, as indicated by the '**–**' sign), and specifying the blocksize (20) with the **b** option.

FILES

/dev/rmt?	half-inch magnetic tape interface
/dev/rfd0?	diskette interface
/dev/rar?	quarter-inch magnetic tape interface
/dev/rst?	SCSI tape interface
/tmp/bar*	

ENVIRONMENT

TAPE If specified, in the environment, the value of **TAPE** indicates the default tape device.

NOTES

bar will handle multiple volumes gracefully. If a tape error is encountered, **bar** issues a message on the standard error requesting a new volume. The presence of a new volume is confirmed when **bar** reads a line beginning with **Y** or **y** on the standard input; a line beginning with **N** or **n** aborts the archive; with any other character **bar** reissues the prompt.

SEE ALSO

cpio(1), **umask**(2), **bar**(5), **tar**(5), **dump**(8), **restore**(8)

BUGS

Neither the **r** option nor the **u** option can be used with quarter-inch archive tapes, since these tape drives cannot backspace.

There is no way to ask for the *n*th occurrence of a file.

The **u** option can be slow.

There is no way selectively to follow symbolic links.

When extracting tapes created with the **r** or **u** options, directory modification times may not be set correctly.

Filename substitution wildcards do not work for extracting files from the archive. To get around this, use a command of the form:

bar xvf... /dev/rst0 'bar tf... /dev/rst0 | grep '*pattern***'**

If you specify '**–**' as the target file and the archive spans volumes, the request for a new volume may get lost.

Beta versions of **bar** archives cannot be read by later versions (4.0 and 4.0.1) of **bar** unless the **H** modifier is specified when the Beta version is created. Under Beta the **H** modifier causes the **bar** volume header to be written. The volume header is always written by post-Beta versions of **bar,** whether or not the **H** modifier is specified.

NAME

cc – C compiler

SYNOPSIS

cc [**–a**] [**–align** *_block*] [**–B** *binding*] [**–c**] [**–C**] [**–dryrun**] [**–D***name* [**=***def*]] [**–E**] [*float_option*] [**–fsingle**] [**–g**] [**–go**] [**–help**] [**–I***pathname*] [**–J**] [**–l***library*] [**–L***directory*] [**–M**] [**–misalign**] [**–o** *outputfile*] [**–O**[*level*]] [**–p**] [**–P**] [**–pg**] [**–pic**] [**–PIC**] [**–pipe**] [**–Qoption** *prog opt*] [**–Qpath** *pathname*] [**–Qproduce** *sourcetype*] [**–R**]

[**–S**] [*target_arch*] [**–temp=***directory*] [**–time**] [**–U***name*] [**–v**] [**–w**] *sourcefile* ...

SYSTEM V SYNOPSIS

/usr/5bin/cc *arguments*

Note: *arguments* to **/usr/5bin/cc** are identical to those listed above.

DESCRIPTION

cc is the C compiler. It translates programs written in the C programming language into executable load modules, or into relocatable binary programs for subsequent loading with the **ld**(1) link editor.

In addition to the many options, **cc** accepts several types of filename arguments. For instance, files with names ending in **.c** are taken to be C source programs. They are compiled, and each resulting object program is placed in the current directory. The object file is named after its source file — the suffix **.o** replacing **.c** in the name of the object. In the same way, files whose names end with **.s** are taken to be assembly source programs. They are assembled, and produce **.o** files. Filenames ending in **.il** are taken to be inline expansion code template files; these are used to expand calls to selected routines in-line when code optimization is enabled. See FILES, below for a complete list of compiler-related filename suffixes.

Other arguments refer to assembler or loader options, object programs, or object libraries. Unless **–c**, **–S**, **–E** **–P** or **–Qproduce** is specified, these programs and libraries, together with the results of any specified compilations or assemblies, are loaded (in the order given) to produce an output file named **a.out**. You can specify a name for the executable by using the **–o** option.

If a single C program is compiled and loaded all at once, the intermediate file is deleted.

OPTIONS

When debugging or profiling objects are compiled using the **–g** or **–pg** options, respectively, the **ld** command for linking them should also contain the appropriate option.

See **ld**(1) for link-time options.

–a (Available on Sun-2, Sun-3, and Sun-4 systems.) Insert code to count how many times each basic block is executed. Invokes a run-time recording mechanism that creates a **.d** file for every **.c** file (at normal termination). The **.d** file accumulates execution data for the corresponding source file. The **tcov**(1) utility can then be run on the source file to generate statistics about the program. Since this option entails some optimization, it is incompatible with **–g**.

–align *_block* Force the global uninitialized data symbol *block* to be page-aligned by increasing its size to a whole number of pages, and placing its first byte at the beginning of a page.

–B *binding* Specify whether bindings of libraries for linking are **static** or **dynamic**, indicating whether libraries are non-shared or shared, respectively.

–c Suppress linking with **ld**(1) and produce a **.o** file for each source file. A single object file can be named explicitly using the **–o** option.

–C Prevent the C preprocessor, **cpp**(1), from removing comments.

–dryrun Show but do not execute the commands constructed by the compilation driver.

–D*name*[**=***def*] Define a symbol *name* to the C preprocessor (**cpp**(1)). Equivalent to a **#define**

directive in the source. If no *def* is given, *name* is defined as '**1**'.

–E Run the source file through **cpp**(1), the C preprocessor, only. Sends the output to the standard output, or to a file named with the **–o** option. Includes the **cpp** line numbering information. (See also, the **–P** option.)

float_option Floating-point code generation option. Can be one of:

–f68881 Generate in-line code for Motorola MC68881 floating-point processor (supported only on Sun-3 systems).

–ffpa Generate in-line code for Sun Floating Point Accelerator (supported only on Sun-3 systems).

–fsky Generate in-line code for Sky floating-point processor (supported only on Sun-2 systems).

–fsoft Generate software floating-point calls. Supported only on Sun-2 and Sun-3 systems, for which it is the default.

–fswitch Run-time-switched floating-point calls. The compiled object code is linked at runtime to routines that support one of the above types of floating point code. This was the default in previous releases. Only for use with programs that are floating-point intensive, and must be portable to machines with various floating-point hardware options (supported only on Sun-2 and Sun-3 systems).

–fsingle (Sun-2, Sun-3 and Sun-4 systems)
Use single-precision arithmetic in computations involving only **float** expressions. Do not convert everything to **double**, which is the default. Note: floating-point *parameters* are still converted to double precision, and *functions* returning values still return double-precision values.

Although not standard C, certain programs run much faster using this option. Be aware that some significance can be lost due to lower-precision intermediate values.

–g Produce additional symbol table information for **dbx**(1) and **dbxtool**(1) and pass the **–lg** flag to **ld**(1). When this option is given, the **–O** and **–R** options are suppressed.

–go Produce additional symbol table information for **adb**(1). When this option is given, the **–O** and **–R** options are suppressed.

–help Display helpful information about **cc**.

–I*pathname* Add *pathname* to the list of directories in which to search for **#include** files with relative filenames (not beginning with slash /). The preprocessor first searches for **#include** files in the directory containing *sourcefile*, then in directories named with **–I** options (if any), and finally, in **/usr/include**.

–J Generate 32-bit offsets in **switch** statement labels (supported only on Sun-2 and Sun-3 systems).

–l*library* Link with object library *library* (for **ld**(1)).

–L*directory* Add *directory* to the list of directories containing object-library routines (for linking using **ld**(1).

–M Run only the macro preprocessor on the named C programs, requesting that it generate makefile dependencies and send the result to the standard output (see **make**(1) for details about makefiles and dependencies).

–misalign Generate code to allow loading and storage of misaligned data (Sun-4 systems only).

–o *outputfile* Name the output file *outputfile*. *outputfile* must have the appropriate suffix for the type of file to be produced by the compilation (see FILES, below). *outputfile* cannot be

the same as *sourcefile* (the compiler will not overwrite the source file).

-O[*level*] Optimize the object code. Ignored when either **-g**, **-go**, or **-a** is used. On Sun-2 and Sun-3 systems, **-O** with the *level* omitted is equivalent to **-O1**; on Sun-4 systems, it is equivalent to **-O2**. on Sun386i systems, all levels are the same as 1. *level* is one of:

- **1** Do postpass assembly-level optimization only.
- **2** Do global optimization prior to code generation, including loop optimizations, common subexpression elimination, copy propagation, and automatic register allocation. **-O2** does not optimize references to or definitions of external or indirect variables.
- **3** Same as **-O2**, but optimize uses and definitions of external variables. **-O3** does not trace the effects of pointer assignments. Neither **-O3** nor **-O4** should be used when compiling either device drivers, or programs that modify external variables from within signal handlers.
- **4** Same as **-O3**, but trace the effects of pointer assignments.

-p Prepare the object code to collect data for profiling with **prof**(1). Invokes a run-time recording mechanism that produces a **mon.out** file (at normal termination).

-P Run the source file through **cpp**(1), the C preprocessor, only. Puts the output in a file with a **.i** suffix. Does not include **cpp**-type line number information in the output.

-pg Prepare the object code to collect data for profiling with **gprof**(1). Invokes a run-time recording mechanism that produces a **gmon.out** file (at normal termination).

-pic Produce position-independent code. Each reference to a global datum is generated as a dereference of a pointer in the global offset table. Each function call is generated in pc-relative addressing mode through a procedure linkage table. The size of the global offset table is limited to 64K on MC68000-family processors, or to 8K on SPARC processors.

-PIC Like **-pic**, but allows the global offset table to span the range of 32-bit addresses in those rare cases where there are too many global data objects for **-pic**.

-pipe Use pipes, rather than intermediate files, between compilation stages. (Very cpu-intensive.)

-Qoption *prog opt*
Pass the option *opt* to the program *prog*. The option must be appropriate to that program and may begin with a minus sign. *prog* can be one of: **as**, **cpp**, **inline**, or **ld**.

-Qpath *pathname*
Insert directory *pathname* into the compilation search path (to use alternate versions of programs invoked during compilation). This path will also be searched first for certain relocatable object files that are implicitly referenced by the compiler driver (such files as ***crt*.o** and **bb_link.o**).

-Qproduce *sourcetype*
Produce source code of the type *sourcetype*. *sourcetype* can be one of:

- **.c** C source (from **bb_count**).
- **.i** Preprocessed C source from **cpp**(1).
- **.o** Object file from **as**(1).
- **.s** Assembler source (from **ccom**, **inline**(1) or **c2**).

-R Merge data segment with text segment for **as**(1). Data initialized in the object file produced by this compilation is read-only, and (unless linked with **ld -N**) is shared between processes. Ignored when either **-g** or **-go** is used.

-S Do not assemble the program but produce an assembly source file.

target_arch Compile object files for the specified processor architecture. Unless used in conjunction with one of the Sun Cross-Compilers, correct programs can be generated only for the architecture of the host on which the compilation is performed. *target_arch* can be one of:

–sun2 Produce object files for a Sun-2 system.
–sun3 Produce object files for a Sun-3 system.
–sun4 Produce object files for a Sun-4 system.

–temp=*directory*
Set directory for temporary files to be *directory*.

–time Report execution times for the various compilation passes.

–U*name* Remove any initial definition of the **cpp**(1) symbol *name*. (Inverse of the **–D** option.)

–v Verbose. Print the version number of the compiler and the name of each program it executes.

–w Do not print warnings.

ENVIRONMENT

FLOAT_OPTION (Sun-2, Sun-3, Sun-4 systems only.) When no floating-point option is specified, the compiler uses the value of this environment variable (if set). Recognized values are: **f68881**, **ffpa**, **fsky**, **fswitch** and **fsoft**.

FILES

a.out	executable output file
file.**a**	library of object files
file.**c**	C source file
file.**d**	**tcov**(1) test coverage input file (Sun-2, Sun-3, Sun-4 systems only)
file.**i**	C source file after preprocessing with **cpp**(1)
file.**il**	*inline* expansion file
file.**o**	object file
file.**s**	assembler source file
file.**S**	assembler source for **cpp**(1)
file.**tcov**	output from **tcov**(1) (Sun-2, Sun-3, Sun-4 systems only)
/usr/lib/c2	object code optimizer
/usr/lib/ccom	compiler
/usr/lib/compile	compiler command-line processing driver
/usr/lib/cpp	macro preprocessor
/usr/lib/crt0.o	runtime startup code
/usr/lib/Fcrt1.o	startup code for **–fsoft** option (Sun-2, Sun-3, Sun-4 systems only)
/usr/lib/gcrt0.o	startup for profiling with **gprof**(1)
/usr/lib/libc.a	standard library, see **intro**(3)
/usr/lib/mcrt0.o	startup for profiling with **prof**(1) **intro**(3)
/usr/lib/Mcrt1.o	startup code for **–f68881** option (for Sun-3 systems)
/usr/lib/Scrt1.o	startup code for **–fsky** option (for Sun-2 systems)
/usr/lib/Wcrt1.o	startup code for **–ffpa** option (for Sun-3 systems)
/usr/include	standard directory for **#include** files
/usr/lib/bb_link.o	basic block counting routine
/usr/lib/cg	code generator used with **/usr/lib/iropt**
/usr/lib/libc_p.a	profiling library, see **gprof**(1) or **prof**(1)
/usr/lib/inline	inline expander of library calls
/usr/lib/iropt	intermediate representation optimizer
/usr/lib/libm.a	math library
/usr/5lib/libc.a	System V standard compatibility library, see **intro**(3V)
/usr/5lib/libc_p.a	System V profiling library, see **gprof**(1) or **prof**(1)

/tmp/*	compiler temporary files
mon.out	file produced for analysis by **prof**(1)
gmon.out	file produced for analysis by **gprof**(1)

SEE ALSO

adb(1), **ar**(1V), **as**(1), **cpp**(1), **dbx**(1), **dbxtool**(1), **gprof**(1), **inline**(1), **ld**(1), **lint**(1V), **make**(1), **prof**(1), **tcov**(1), **intro**(3), **intro**(3V), **monitor**(3)

Floating Point Programmers Guide
SunOS Programming Utilities and Libraries
B. W. Kernighan and D. M. Ritchie, *The C Programming Language*, Prentice-Hall, 1978

DIAGNOSTICS

The diagnostics produced by the C compiler are intended to be self-explanatory. Occasional obscure messages may be produced by the preprocessor, assembler, or loader.

BUGS

The program context given in syntax error messages is taken from the input text *after* the C preprocessor has performed substitutions. Therefore, error messages involving syntax errors in or near macro references or manifest constants may be misleading.

Compiling with optimization level 2 or greater may produce incorrect object code if tail-recursion elimination is applied to functions called with fewer actual parameters (arguments) than the number of formal parameters in the function's definition. Such parameter-count mismatches can be detected using **lint**(1V).

NAME

dos – SunView window for IBM PC/AT applications

SYNOPSIS

dos [**–b**] [**–s**] [**–p** *config*] [**–q**] [**–w**] [**–c** *command*]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

A window created by **dos** looks and acts like the screen of an IBM PC/AT or compatible computer running MS-DOS 3.3, except that it has expanded features. It allows sharing of files with SunOS, copying and pasting data between windows, and piping and redirection. You may run any reasonable number of DOS windows simultaneously.

Shrinking or expanding the window will not change the contents to accommodate the new size.

USAGE

Menu

The menu available in the window by pressing the right mouse button allows various controls over the work in the window. **Edit** allows you to copy and paste between windows. The **Show Screen** menu item selects the type of screen display—either Hercules, CGA, or Monochrome (use the DOS MODE command to set the corresponding DOS display mode; see the Sun386i User's Guide or on-line help for more information). The **Mouse** menu item allows you to control whether the mouse operates like a Microsoft or compatible mouse or in normal SunView fashion (see Sun386i Advanced Skills for instructions on enabling Microsoft mouse driver software). The **Send to printer** menu item allows you to send queued jobs to the print spooler. **Sound** controls the volume of sounds from the DOS window. **Device** allows you to select which disks and other devices will be used and which are to be considered read only. The **Reboot DOS Window** item is equivalent to restarting the window. This can also be accomplished by pressing the CONTROL, ALT, and DELETE keys simultaneously.

Printer Assignments

DOS uses three printer designations: **LPT1**, **LPT2**, and **LPT3**. The default settings are: files sent to LPT1 go to the default system printer. Files sent to LPT2 are appended to the file **lpt-2** in your home directory. Epson-compatible print jobs can be sent to LPT3 to yield Epson FX-80 quality output on your default printer, as long as it is Postscript-compatible.

Drives

Drive A	The Sun386i 3-1/2" diskette drive, used for reading PC format diskettes onto the hard disk and writing data to be stored on floppy. Drive A is not accessible across a network.
Drive B	An optional 5-1/2" diskette drive. Same restrictions as Drive A.
Drive C	A virtual disk stored in the **~/pc/C:** file. Files written to drive C cannot be accessed from SunOS. Drive C is generally intended for storage of applications and copy protected software but not data. To DOS, drive C is a 20-megabyte drive. You can install copy-protected software on drive C, but not on other drives.
Drives D through S	Equivalents of SunOS directories. They can be accessed from either DOS or SunOS, and can contain any number of files and other directories. You cannot install copy-protected software on drives D through S (install it on drive C instead). The SunOS directories referenced by DOS drives other than D, H, and R (described below) are user-defined (using the DOS EXTEND command).
Drive D	The current SunOS directory when the DOS window was opened. May subsequently be changed to any other directory.
Drive H	The home directory of the user who opened the window. May subsequently be changed to any directory in the user's home directory tree.
Drive R	Initially equivalent to the root directory of SunOS

File Sharing between SunOS and DOS

File names under DOS consist of 8 characters, a period, and a 3 character extension. When a SunOS filename does not comply with these rules, its name is modified by placing a tilde (~) in an appropriate location so that the file name conforms to DOS specifications while remaining unique. It is recommended that filenames conform to DOS requirements for files to be used in both SunOS and DOS.

Because SunOS and DOS use different conventions for carriage returns, **dos2unix** and **unix2dos** are provided to convert text files between the two formats.

Command Sharing between SunOS and DOS

The **/etc/dos/unix** directory contains a list of SunOS commands accessible from DOS. Other SunOS commands not in this list can be executed from DOS with the command '**unix** *command*'. SunOS commands always use SunOS filename conventions and DOS commands always use DOS filename conventions, regardless of whether either type of command is executed from SunOS or DOS. Only DOS commands can use drives A and C.

OPTIONS

–b Boots (loads) DOS and opens a window using the AUTOEXEC.BAT and CONFIG.SYS files instead of ~**/pc/.quickpc**. A DOS sign-on message is displayed in the window. Normally, DOS boots from settings in **.quickpc** unless **C:AUTOEXEC.BAT**, **C:CONFIG.SYS**, or **/etc/dos/defaults/rom** has a date newer than the **.quickpc** file (see the **–s** option).

–s Boot DOS and save a new **.quickpc** file under the name specified on the SAVE line in ~**/pc/setup.pc**. Use this option after making changes to drive C's **AUTOEXEC.BAT** or **CONFIG.SYS**. Exits DOS after saving the **.quickpc** file.

–p *config*
Loads an alternate file instead of **setup.pc**.

–q Forces dos to read settings from the **quickpc** file (as specified in **setup.pc**) even if **C:AUTOEXEC.BAT**, **C:CONFIG.SYS** or **/etc/dos/defaults/rom** have been updated since you last typed **dos**–s.

–c *command*
Executes the given DOS command in the newly created window. If you use the **–c** option, **–c** and the command that follows it must be the last items on the command line.

–w Runs DOS text-only commands and applications in the current SunView Commands window.

ENVIRONMENT

DOS_LOCKING This environment variable determines which locking service is used to lock drive C for write access. If it is set to on, DOS uses the locking service on the server where the home directory is located. This locks drive C for access from any DOS window on the network. If it is set to off, DOS uses the local system's locking service. This locks drive C only for access from DOS windows running on the local system. The default is on. Some servers (for example, some VAX/Ultrix systems) do not provide an NFS locking service. For home directories stored on these servers, set the variable to off to avoid an error message when a DOS window starts up.

DOS_PRINTER The value of this environment variable indicates the timeout (in seconds) for printing. A value of 20 (the default) indicates that jobs will be sent to the UNIX print spooler after 20 seconds of no printing activity from DOS to that printer. A value of 0 indicates that the spooler must be flushed manually from the menu in the window.

DOSLOOKUP
If on, this environment variable indicates that a command should be tried as a DOS command if not recognized by SunOS. If DOS supports the command, a DOS window is created and the command executed in that window. If the command does not exist, the normal SunOS error message results.

FILES

/etc/dos/unix	Files in this directory indicate which SunOS commands are accessible from DOS.
/etc/dos/defaults/.quickpc	Default .quickpc file copied into user's home PC directory (~/pc) the first time a DOS window is started. Not used by DOS in this location.
/etc/dos/defaults/setup.pc	Default setup.pc file copied into user's home DOS directory (~/pc) the first time a DOS window is started. Not used by DOS in this location.
/etc/dos/defaults/boards.pc	Stores information about IBM PC/XT/AT-compatible boards installed in your system.
/etc/dos/defaults/C:	Default drive C file copied into a user's home PC directory the first time a DOS window is started.
~/pc/autoexec.bat	Contains drive assignments, search paths, and other startup commands. Searched after **C:AUTOEXEC.BAT** and **D:AUTOEXEC.BAT .**
C:AUTOEXEC.BAT	Contains commands to access system printers and special drives. You should not need to change the AUTOEXEC.BAT on drive C. Put your changes in the AUTOEXEC.BAT on drive H (in your home directory). **C:AUTOEXEC.BAT** is not accessible from SunOS.
D:AUTOEXEC.BAT	If an **AUTOEXEC.BAT** file exists in the current directory (represented by drive D), DOS executes it after running **C:AUTOEXEC.BAT**.
C:CONFIG.SYS	Specifies device drivers and other system parameters. **C:CONFIG.SYS** is not accessible from SunOS.
~/pc/setup.pc	Defines printers, standard PC devices, and drive C. One or more of these files may exist, under various names that you assign.
~/pc/.quickpc	An image of DOS as last saved with **dos -s**, including all DOS environment variables and drivers that were in effect at that time. DOS normally reads this file at startup.
~/pc/C:	A user's personal copy of drive C.

DIAGNOSTICS

Cannot save *filename* **quick-start file.**
The **dos** command was unable to save the specified quick-start file. Check the SAVE setting in your PC setup file (normally **~/pc/setup.pc**) Also check file access permissions on the specified quick-start file.

Cannot load *filename* **quick-start file.**
dos was unable to read the specified quick-start file. Check the SAVE setting in your **setup.pc** file. Also check file access permissions on the specified quick-start file.

Possible software incompatibility. Unsupported 286 instruction *instruction* **at** *address.*
Possible software incompatibility. Unsupported 386 instruction.
Possible software incompatibility. Segment wrap.
Possible software incompatibility. Two-byte opcode not supported.
The application you are running was written specifically for 80286 or 80386 machines. Software run from a DOS window must be compatible with 8086 systems.

Copying default configuration files into your home directory.
This is the first time you have run the dos command. A **~/pc** directory is being set up, and DOS-related files are being copied into it.

Another DOS window already has access to *device*
Your PC configuration file (normally **~/pc/setup.pc**) is requesting access to a physical device that another DOS window is using.

Port number *number* **out of range for** *board* **board.**
The port number specified in the **/etc/dos/defaults/boards.pc** is invalid.

IRQ value *number* **out of range for** *board* **board.**
The interrupt level specified in the **/etc/dos/defaults/boards.pc** is invalid.

Interrupt level *number* **is used by DOS to support the** *device*

The interrupt level specified in the **/etc/dos/defaults/boards.pc** conflicts with an interrupt value currently being used by either a physical or emulated DOS device.

I/O address range *address - address* **requested for** *board* **already in use by** *device*.
The address range specified in the **/etc/dos/defaults/boards.pc** conflicts with range currently being used by either a physical or emulated DOS device.

Cannot share *device* **with a hardware interrupt.**
A shared device specified in the **/etc/dos/defaults/boards.pc** was also assigned an interrupt level in this file. Shared devices cannot be assigned interrupt levels.

Couldn't find *board* **in boards.pc.**
A file specified in the PC setup file (normally **~/pc/setup.pc**) is not listed in the **/etc/dos/defaults/boards.pc** file. Check the **setup.pc** file, or add an entry for the board in **boards.pc**.

ROM is newer than .quickpc. Rebooting *program name*.
Save a new **.quickpc** file by issuing the command **dos -s**.

Warning: Your personal drive C (*pathname*)
is not protected against simultaneous access by more than one workstation. Ask your system administrator to upgrade *server* **to use the lock manager. Until your home directory server is updated with this program, do not use** *program name* **when you are logged into more than one workstation.** The system on the network where your drive C is stored has not protected the drive against access by DOS windows in other workstations on the network. This usually means that the server where your home directory is stored does not provide an NFS locking service. To avoid this error message, set the environment variable DOS_LOCKING to off.

SEE ALSO

dos2unix(1), **unix2dos**(1)
Sun386i User's Guide
Sun386i Advanced Skills
DOS Reference Manual

NAME

fdformat – format diskettes for use under SunOS

SYNOPSIS

/usr/etc/fdformat [-L][-2]

AVAILABLITY

Sun386i systems only.

DESCRIPTION

fdformat is a program for formatting diskettes to use with the SunOS operating system. All new blank diskettes must be formatted before use. **fdformat** formats and verifies each track on the diskette, and terminates if it finds any bad sectors. **fdformat** destroys all existing data on the diskette.

By default, **fdformat** formats a 1.44 megabyte high density diskette. Use the **-L** option to format low density diskettes.

Use the **-2** option to format diskettes in the optional external 5 1/4" floppy drive.

To format a diskette for use under MS-DOS, use the MS-DOS format command in a DOS window on the Sun386i system.

OPTIONS

-L Format a low density diskette (720 kilobyte) diskette.

-2 Format a diskette in the optional external 5 1/4" floppy drive.

FILES

/dev/rfd0c /dev/rfdl0c /dev/rfd2c /dev/rfdl2c

BUGS

The SunOS system currently doesn't support bad sector mapping on diskettes. Therefore, a diskette is unusable if **fdformat** finds an error (bad sector).

SEE ALSO

dos(1)

NAME

fontedit – a vfont screen-font editor

SYNOPSIS

fontedit [*generic-tool-argument*] ... [*font_name*]

AVAILABILITY

This command is available with the *SunView 1 User's* software installation option. Refer to *Installing the Sun Operating System* for information on how to install optional software.

DESCRIPTION

fontedit is an editor for fixed-width fonts in *vfont* format (or Sun386i *vfont* format) whose characters are no taller than 24 pixels (larger characters will not fit completely onto the screen). For a description of *vfont* format, see **vfont**(5).

OPTIONS

generic-tool-argument

fontedit accepts any generic tool argument as described in **sunview**(1). Otherwise, you can manipulate the tool using the Frame Menu.

COMMANDS

To edit a font, type '**fontedit**'. A *font_name* may be supplied on the command line or may be typed into the Control panel once the program has started. If it exists, the *font_name* file must be in *vfont* format (or Sun386i vfont format). When the program starts, it displays a single large window containing four subwindows. From top to bottom, the four subwindows are:

1) The top subwindow, a message subwindow, displays messages, prompts, and warnings.

2) The second subwindow from the top, an Control panel, allows you to set global parameters for the entire font and specify operations for editing any single character. The options are:

(Load) Load in the font specified in the file name field. The program will warn you if you try to read over a modified font. For the Sun386i system, either vfont or Sun386i vfont format can be read.

(Store) Store the current font onto disk with the name in file name field. For the Sun386i system, **fontedit** always stores the font in Sun386i vfont format. Use **fontflip_to_68k** to create a corresponding vfont format file.

(Quit) Quit the program; warns you if you have modified the font.

Font name:

The name of the font. On the Sun386i system, the system appends the suffix **.i386** before opening the file and attempting to use it; if it does not find the font, it attempts to open the original font name specified. By convention, Sun386i vfonts have the **.i386** extension.

Max Width and **Max Height:**

The size, in pixels, of the largest character in the font. If you edit an existing font, these parameters are set automatically; you must set them if you are creating a new font. Changing either of these values for an existing font may alter the glyph of some characters of the font. If the glyph size of a character is larger than the new max size, then that character is clipped to the new size (its bottom and right edges are moved in). However, if a glyph's size is smaller than the new size, the glyph is left alone.

Caps Height and **X-Height:**

The distance, in pixels, between the top of a capital and lowercase letter and the baseline. When an existing font is edited, the values of **Caps Height** and **X-Height** are estimated by *fontedit*, and may require some adjustment.

Baseline: The number of pixels from the top (that is, the upper left corner) of the character to the baseline. For an existing font, the value of the largest baseline distance is used.

For a new font, each character will have the same baseline distance. If this value is changed, then the baseline distance for all characters in the font will be the new value.

(Apply) Apply the current values of **Max Width**, **Max Height**, **Caps Height**, **X-Height**, and **Baseline** to the font. That is, changes made to these values do not take effect until **Apply** is selected.

Operation:

This is a list of drawing and editing operations that you can perform on a character. For drawing, the left mouse button draws in black, and the middle draws in white. Operations are:

Single Pt Press a mouse button down and a grey cell will appear; move the mouse and the cell will follow it. Releasing the the button will draw.

Pt Wipe Pressing a button down will draw and moving with the button down will continue drawing until the button is released.

Line Button down marks the end point of a line; moving with the button down rubber bands a line; releasing button draws the line.

Rect Like **Line** except draws a rectangle.

Cut Button down marks one end of rectangle, and moving rubber bands the outline of the rectangle. Button up places the contents of the rectangle into a buffer and then "cuts" (draws in white) the rectangular region from the character. The **Paste** operation (below) gets the data from the buffer.

Copy Like **Cut** except that the region is just copied; no change is made to the character.

Paste Button down displays a rectangle the size of the region in the buffer. Moving with the button down moves the rectangle. Button up pastes the contents of the buffer into the character.
The contents of the **paste** buffer cannot be transferred between tools.
In **Copy** or **Cut** mode, holding down the shift key while pressing the left or middle mouse button will perform a **Paste** action. For best results, after placing a region in the buffer, press down the shift key and hold it down, then press down the mouse button. Release the mouse key to paste the region and then release the shift key.

3) The third subwindow echoes the characters in the current font as they are typed. Note that the cursor must be in this window in order to see the characters. Your character delete key will delete the echoed characters.

4) The bottom subwindow, the editing subwindow, displays eight smaller squares at its top; these are called **edit buttons**. The top section of each of these buttons contains a line of text in the form *nnn: c*, where *nnn* is the hexadecimal number of the character and *c* is the standard ASCII character corresponding to that number. In the lower section of the button the character of the current font, if it exists, is displayed. Clicking once over an editing button selects its character for editing.

Just below this row of buttons is a box with the characters "0 9 A Z a z" in it. This box is called a **slider**. The slider allows you to scroll around in the font and select which section of the font you want displayed in the edit buttons. The black rectangle near "a" is an indicator which shows the section of the font that is displayed in the buttons above. To move the indicator, select it by pressing the left or middle mouse button down over the indicator and then move the mouse to the left or right with the button down; the indicator will slide along with the cursor. Releasing the button selects the new section of the font. A faster method of moving about in the font is to just press down and release the mouse button above the area you want without bothering to drag the indicator. Another method of scrolling through the characters of the font is to press a key on the keyboard when the cursor is in the bottom window; that character is the first one displayed in the

edit buttons.

EDITING CHARACTERS:

To edit a character, click once over the edit button where the character is displayed. When you do this, an edit pad will appear in the bottom subwindow.

The edit pad consists of an editing area bordered by scales, a proof area, and 3 command buttons. The editing area is **Max Width** by **Max Height** when the pad opens, and displays a magnified view of the selected character. Black squares indicate foreground pixels. The editing area is surrounded by scales which show the current **Caps Height**, **X-Height** and **Baseline** in reverse video.

Just outside the scales, on the top, right side, and bottom of the pad, are three small boxes with the capital letters "R", "B", and "A" in them. These boxes are movable sliders that change the right edge, bottom edge, and x-axis advance of the character respectively. In a fixed-width font, these values are usually the same for all characters; however, in a variable-width font these controls can be used to set these properties for each character.

To the right of the pad is the proof area where the character is displayed at normal (that is, screen) resolution and three buttons. The three buttons are:

Undo Clicking the left or middle mouse button undoes the last operation.

Store Stores the current representation of the character in the font.

Quit Closes the edit pad.

In the bottom subwindow, the right mouse button displays a menu of operations. These operations are the same as those in the control panel discussed above; you can select the current operation by either picking the operation in the control panel or by selecting the appropriate menu with the right button of the mouse. When the cursor is in the other subwindows, the right button displays the standard tool menu.

FILES

/usr/lib/fonts/fixedwidthfonts
Sun-supplied screen fonts

SEE ALSO

sunview(1), **vswap**(1), **vfont**(5) **fontflip_to_68k**(8) **fontflip_to_i386**(8)

BUGS

Results are unpredictable with variable-width fonts. The baseline should be greater than 0 or else the font cannot be read in by **fontedit** or by **sunview**(1).

NAME

help_open – causes **help_viewer** to open a file

SYNOPSIS

help_open [-a] filename

AVAILABILITY

Sun386i systems only.

DESCRIPTION

help_open is used to cause a running **help_viewer** to open a file. 'filename' is typically the name of a **help_viewer** file. A call is made to **help_viewer** using the same RPC mechanism as is used by Spot Help.

If "filename" is relative, **help_viewer** looks for it relative to the default help directory (as defined in the user's defaults database). Otherwise, **help_viewer** treats "filename" as absolute.

If the RPC call to **help_viewer** fails, **help_open** attempts to spawn **help_viewer**, with "filename" as a command line argument. If the **–a** command line option was given, then "filename" is first converted to an absolute path name, as described in OPTIONS, below.

OPTIONS

–a Convert "filename" to absolute path; this option causes **help_open** to get the current working directory and append it to the front of "filename" (thus creating an absolute pathname) before passing "filename" on to **help_viewer**. This allows **help_open** to be used with other processes, such as Sun Organizer (see organizer (1)), which deal in relative pathnames. The **–a** option has no effect if "filename" begins with the character '/'.

EXAMPLES

maple% help_open help/Help_Basics

This causes **help_viewer** to open the file **help/Help_Basics**. This file is located relative to the default help directory (as defined in the user's defaults database). So in the case where the default help directory was set to **/vol/help/language/USA-English/**, this would be **/vol/help/language/USA-English/help/Help_Basics**.

maple% help_open help/Help_Basics 3

Same as previous example, but opens **Help_Basics** to page 3.

maple% help_open /home/mtravis/somefile

Causes **help_viewer** to open somefile, relative to /home/mtravis/.

maple% cd /home/ahinkle
maple% help_open -a anotherfile

Causes **help_viewer** to open /home/ahinkle/anotherfile.

FILES

/usr/lib/help/*

SEE ALSO

organizer(1), **help_viewer**(1), **help**(5), **help_viewer**(5), **Sun386i Developer's Guide**

NAME

help_viewer – SunView program providing help with applications and desktop

SYNOPSIS

/usr/bin/help_viewer [*options*]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

help_viewer gives you quick access to documentation about SunView applications and the SunView Desktop. This help consists of intermixed text and graphics displayed in a window called the Help Viewer.

You start and control **help_viewer** by one of these methods:

1. Typing **help_viewer** at a shell prompt.
2. Clicking on the More Help button in a Spot Help window.
3. Sending instructions to the Help Viewer using the **help_open** command.

The documentation within **help_viewer** is extendable, but as shipped it includes handbooks for the DeskTop, **mailtool**(1), **textedit**(1), **sunview**(1), **organizer**(1), **dos**(1), **coloredit**(1), **snap**(1), and itself (**help_viewer**).

Developers and users can include additional handbooks by modifying **/vol/help/format/Top_Level**. See **help_viewer**(5).

The user moves between the various pages of help with the assistance of hypertext *links*. Links are connections between pages of text. The convention is to use underlined text to indicate the presence of a link. When the user double-clicks on a link, the text associated with the topic indicated by the link is shown in the Help Viewer. There are links in many places to make it quick and easy to go from place to place within the **help_viewer** database.

Many help topics contain more than one page of text, and in these cases a link to the next page and to the previous page is available at the upper-right corner of the Help Viewer; this allows the user to page through the document.

The user's current position within the hierarchy of text is indicated by the links at the upper-left corner of the Help Viewer. The last link in the list is the level just above the user's current position.

OPTIONS

The standard SunView options for window size, position, fonts, and other options are accepted. But note that the font setting only affects the font in the Help Viewer namestripe. Also, Help Viewer text does not wrap as a window is resized. See **sunview**(1) for details.

–dir *dirname*

Name of help directory

filename [#]

Name of startup file relative to help directory (or **/vol/help** by default, as set in the Help category of defaultsedit). # is a page number separated from the filename by a SPACE. If # is omitted, the first page is shown.

FILES

/vol/help automount point of miscellaneous help files

The files in **/usr/lib/help** are used by the **help** and the **help_viewer** facilities, and the SCCS **help**(1) facility.

Directories within **/usr/lib/help** named after SunView applications and the DeskTop contain specific information used by **help_viewer**. See **help_viewer**(5) for information about the files in these directories.

SEE ALSO

help(1), **mailtool**(1), **shelltool**(1), **textedit**(1), **help_open**(1), **help_viewer**(5), **Sun386i User's Guide, Sun386i Developer's Guide**

DIAGNOSTICS

help_viewer(1) displays a pop-up error window if it cannot find the file required to show the requested help.

NAME

input_from_defaults, defaults_from_input – update the current state of the mouse and keyboard from the defaults database, and vice versa

SYNOPSIS

input_from_defaults
defaults_from_input

AVAILABILITY

This command is available with the *SunView 1 User's* software installation option. Refer to *Installing the Sun Operating System* for information on how to install optional software.

DESCRIPTION

input_from_defaults updates various parameters controlling mouse- and keyboard-processing on the machine on which it is run. It should be used on systems that are running the SunView window system. The parameters control the distribution of function keys on the keyboard, the assignment of buttons on the mouse, the scaling of mouse-to-cursor motion, and the effect of two filters on mouse-motion originally provided to compensate for defective mice. The new values are taken from the defaults database, starting with the file **.defaults** in the user's home directory.

On the Sun386i system, the value **/Input/Keyboard_Type** is read from the user's **.defaults** file. The values specified there are taken from the list of keyboard maps in **/usr/share/lib/keytables/***. If the value is blank, then the keyboard will be mapped to the default map setting. Keyboard maps can be created using the **dumpkeys** utility.

defaults_from_input is the inverse operation to **input_from_defaults**. It updates the user's private defaults database (used by **defaultsedit**(1)) to reflect the current state of kernel input parameters listed above.

FILES

$HOME/.defaults
/usr/lib/defaults/*.d
/usr/share/lib/keytables/*

SEE ALSO

defaultsedit(1), **loadkeys**(1), **dumpkeys**(1), **keytables**(5)

SunView Beginner's Guide

BUGS

input_from_defaults should be targetable to any user's **.defaults** file.

NAME

ld, ld.so – link editor, dynamic link editor

SYNOPSIS

ld [**–align** *datum*] [**–assert** *assertion-keyword*] [**–A** *name*] [**–B***binding-keyword*] [**–d**] [**–dc**] [**–dp**] [**–D** *hex*] [**–e** *entry*] [**–l***x*] [**–L***dir*] [**–M**] [**–n**] [**–N**] [**–o** *name*] [**–p**] [**–r**] [**–s**] [**–S**] [**–t**] [**–T** [**text**] *hex*] [**–Tdata** *hex*] [**–u** *name*] [**–x**] [**–X**] [**–y***sym*] [**–z**] *filename* ...

DESCRIPTION

ld combines object programs to create an *executable* file or another object program suitable for further **ld** processing (with the **–r** option). The object modules on which **ld** operates are specified on the command line, and can be:

- simple object files, which typically end in the **.o** suffix, and are referred to as dot-oh files
- **ar**(1V) library archives (**.a**), or libraries
- dynamically-bound, sharable object files (**.so**), are also referred to as shared libraries, which are created from previous **ld** executions.

Unless an output file is specified, **ld** produces a file named **a.out**. This file contains the object files given as input, appropriately combined to form an executable file.

OPTIONS

When linking debugging or profiling objects, include the **–g** or **–pg** option (see **cc**(1V)), as appropriate, in the **ld** command.

Options should appear before filenames, except for abbreviated library names specified with **–l** options, and some binding control options specified by **–B** (which can appear anywhere in the line).

–align *datum*

Force the global uninitialized data symbol *datum* (usually a FORTRAN common block) to be page-aligned. Increase its size to a whole number of pages, and place its first byte at the start of a page.

–assert *assertion-keyword*

Check an assertion about the link editing being performed. The assertion desired is specified by the *assertion-keyword* string. **ld** is silent if the assertion holds, else it yields a diagnostic and aborts. Valid *assertion-keyword*'s and their interpretations are:

nodefinitions	If the resulting program were run now, there would be no run-time undefined symbol diagnostics. This assertion is set by default.
nosymbolic	There are no symbolic relocation items remaining to be resolved.
pure-text	The resulting load has no relocation items remaining in its text.

–A *name*

Incremental loading: linking is to be done in a manner so that the resulting object may be read into an already executing program. *name* is the name of a file whose symbol table is taken as a basis on which to define additional symbols. Only newly linked material is entered into the text and data portions of **a.out**, but the new symbol table will reflect all symbols defined before and after the incremental load. This argument must appear before any other object file in the argument list. One or both of the **–T** options may be used as well, and will be taken to mean that the newly linked segment will commence at the corresponding addresses (which must be a multiple of the page size). The default value is the old value of **_end**.

-B*binding-keyword*

Specify allowed binding times for the items which follow. Allowed values of *binding-keyword* are:

dynamic Allow dynamic binding: do not resolve symbolic references, allow creation of run-time symbol and relocation environment. **-Bdynamic** is the default. When **-Bdynamic** is in effect, all sharable objects encountered until a succeeding **-Bstatic** may be added dynamically to the object being linked. Non-sharable objects are bound statically.

nosymbolic Do not perform symbolic relocation, even if other options imply it.

static Bind statically. Opposite of **-Bdynamic**. Implied when either **-n** or **-N** is specified. Influences handling of all objects following its specification on a command line until the next **-Bdynamic**.

symbolic Force symbolic relocation. Normally implied if an entry point has been specified with **-e**, or if dynamic loading is in effect.

-d Force common storage for uninitialized variables and other common symbols to be allocated in the current **ld** run, even when the **-r** flag is present (which would otherwise postpone this binding until the final linking phase).

-dc Do **-d**, but also copy initialized data referenced by this program from shared objects.

-dp Force an alias definition of undefined procedure entry points. Used with dynamic binding to improve sharing and the locality of run-time relocations.

-D *hex* Pad the data segment with zero-valued bytes to make it *hex* bytes long.

-e *entry*

Define the entry point: the *entry* argument is made the name of the entry point of the loaded program. Implies **-Bsymbolic**.

-l*x*[*.v*] This option is an abbreviation for the library name **lib***x***.a**, where *x* is a string. **ld** searches for libraries first in any directories specified with **-L** options, then in the standard directories **/lib**, **/usr/lib**, and **/usr/local/lib**. A library is searched when its name is encountered, so the placement of a **-l** is significant. If a dynamically loadable object is found, and **-Bdynamic** is in effect at that point on the command line, then **ld** prepares to access the object for relocation at run-time. In such a case, the optional *.v* suffix can be used to indicate a specific library version.

-L*dir* Add *dir* to the list of directories in which to search for libraries. Directories specified with **-L** are searched before the standard directories, **/lib**, **/usr/lib**, and **/usr/local/lib**.

-M Produce a primitive load map, listing the names of the files which will be loaded.

-n Arrange (by giving the output file a 0410 magic number) that when the output file is executed, the text portion will be read-only with the data areas placed at the beginning of the next address boundary following the end of the text. Implies **-Bstatic**.

-N Do not make the text portion read-only. (Use magic number 0407.) Implies **-Bstatic**.

-o *name*

name is made the name of the **ld** output file, instead of **a.out**.

-p Arrange for the data segment to begin on a page boundary, even if the text is not shared (with the **-N** option).

-r Generate relocation bits in the output file so that it can be the subject of another **ld** run. This flag also prevents final definitions from being given to common symbols, and suppresses the undefined symbol diagnostics.

-s Strip the output, that is, remove the symbol table and relocation bits to save space (but impair the usefulness of the debuggers). This information can also be removed by **strip**(1).

-S Strip the output by removing all symbols except locals and globals.

-t Trace: display the name of each file as it is processed.

-T [text] *hex*
Start the text segment at location *hex*. Specifying **-T** is the same as using the **-Ttext** option.

-Tdata *hex*
Start the data segment at location *hex*. This option is only of use to programmers wishing to write code for PROMs, since the resulting code cannot be executed by the system.

-u *name*
Enter *name* as an undefined symbol. This is useful for loading wholly from a library, since initially the symbol table is empty and an unresolved reference is needed to force the loading of the first routine.

-x Preserve only global (non-**.globl**) symbols in the output symbol table; only enter external symbols. This option saves some space in the output file.

-X Record local symbols, except for those whose names begin with **L**. This option is used by **cc** to discard internally generated labels while retaining symbols local to routines.

-y*sym* Display each file in which *sym* appears, its type and whether the file defines or references it. Many such options may be given to trace many symbols. It is usually necessary to begin *sym* with an '_', as external C, FORTRAN and Pascal variables begin with underscores.

-z Arrange for the process demand paged from the resulting executable file (0413 magic number). This is the default. Results in a (32-byte) header on the output file followed by text and data segments, each of which has a multiple of page-size bytes (being padded out with NULL characters in the file if necessary). With this format the first few BSS segment symbols may actually end up in the data segment; this is to avoid wasting the space resulting from rounding the data segment size. Implies **-Bdynamic**.

USAGE

Command Line Processing

In general, options should appear ahead of the list of files to process. Unless otherwise specified, the effect of an option covers all of **ld** operations, independent of that option's placement on the command line. Exceptions to this rule include some of the binding control options specified by '**-B**' and the abbreviated library-names specified by '**-l**'. These may appear anywhere, and their influence is dependent upon their location. Some options may be obtained from environment variables, such options are interpreted before any on the command line (see ENVIRONMENT, below).

Object File Processing

The files specified on the command line are processed in the order listed. Information is extracted from each file, and concatenated to form the output. The specific processing performed on a given file depends upon whether it is a simple object file, a library archive, or a shared library.

Simple object (**.o**) files are concatenated to the output as they are encountered.

Library archive (**.a**) files are searched exactly once each, as each is encountered; only those archive entries matching an unresolved external reference are extracted and concatenated to the output. If a member of an archive references a symbol defined by another member of that same archive, the member making the reference must appear before the member containing the definition.

On Sun386i, a library contains a dictionary of symbols, On other Sun systems, processing library archives through **ranlib**(1) provides this dictionary. In addition, you can use **lorder**(1), in combination with **tsort**(1) to place library members in calling order (see **lorder**(1) for details), or both (for fastest symbol lookup). The first member of an archived processed by **ranlib** has the reserved name of **__.SYMDEF**, which **ld** takes to be the dictionary of all symbols defined by members of the archive.

Sharable objects (**.so**) are scanned for symbol definitions and references, but are not normally included in the output from **ld**, except in cases where a shared library exports initialized data structures and the **–dc** option is in effect. However, the occurrence of each sharable object file in the **ld** command line is noted in the resulting executable file; this notation is utilized by an execution-time variant of **ld**, **ld.so**, for *deferred* and *dynamic* loading and binding during execution. See **Execution-Time Loading**, below, for details.

The **–l** option specifies a short name for an object file or archive used as a library. The full name of the object file is derived by adding the prefix **lib** and a suffix of either **.a** or **.so**[.*v*] to indicate an **ar**(1V) archive or a shared library, respectively. The specific suffix used is determined through rules discussed in **Binding and Relocation Semantics**, below.

ld searches for the desired object file through a list of directories specified by **–L** options, the environment variable **LD_LIBRARY_PATH**, and finally, the built-in list of standard library directories: **/lib**, **/usr/lib**, and **/usr/local/lib**.

Binding and Relocation Semantics

The manner in which **ld** processes a given object file is dependent in part upon the binding mode in which it is operating at the time the file is encountered. This binding mode is specified by the **–B** flag, which takes the keyword arguments:

dynamic Allow dynamic binding, do not resolve symbolic references, and allow creation of execution-time symbol and relocation information. This is the default setting.

static Force static binding, implied by options that generate non-sharable executable formats.

–Bdynamic and **–Bstatic** may be specified several times, and may be used to toggle each other on and off. Like **–l**, the influence of each depends upon its location within the command line. When **–Bdynamic** is in effect, **–l** searches may be satisfied by the first occurrence of either form of library (**.so** or **.a**), but if both are encountered, the **.so** form is preferred. When **–Bstatic** is in effect, **ld** refuses to use any **.so** libraries it encounters; it continue searching for the **.a** form. Furthermore, an explicit request to load a **.so** file is treated as an error.

After **ld** has processed all input files and command line options, the form of the output it produces is based on the information provided in both. **ld** first tries to reduce all symbolic references to relative numerical offsets within the executable it is building. To perform this symbolic reduction, **ld** must be able to determine that:

- all information relating to the program has been provided, in particular, no **.so** is to be added at execution time; and/or
- the program has an entry point, and symbolic reduction can be performed for all symbols having definitions existing in the material provided.

It should be noted that uninitialized common areas (for example, uninitialized C globals) are allocated by the link editor *after* it has collected all references. In particular, this allocation can not occur in a program that still requires the addition of information contained in a **.so** file, as the missing information may affect the allocation process. Initialized commons however, are allocated within the executable in which their definition appears.

After **ld** has performed all the symbolic reductions it can, it attempts to transform all relative references to absolute addresses. **ld** is able to perform this relative reduction only if it has been provided *some* absolute address, either implicitly through the specification of an entry point, or explicitly through **ld** command-line options. If, after performing all the reductions it can, there are no further relocations or definitions to perform, then **ld** has produced a completely linked executable.

Execution-Time Loading

In the event that one or more reductions can not be completed, the executable will require further link editing at execution time in order to be usable. Such executables contain a data structure identified with the symbol **__DYNAMIC**. An incompletely linked main program should be linked with a

bootstrap routine that invokes **ld.so**, which uses the information contained in the main program's **__DYNAMIC** to assemble the rest of the executables constituting the entire program. A standard Sun compilation driver (such as **cc**(1V)) automatically includes such a module in each main executable.

When **ld.so** is given control on program startup, it finds all **.so** files specified when the program was constructed (and all **.so**'s on which they depend), and loads them into the address space. **ld.so** then completes all remaining relocations, with the exception of procedure call relocations; failure to resolve a given non-procedural relocation results in termination of the program with an appropriate diagnostic.

Procedure relocations are resolved when the referencing instruction is first executed. It should be noted that it is possible for undefined symbol diagnostics to be produced during program execution if a given target is not defined when referenced.

Although it is possible for binding errors to occur at execution-time, such an occurrence generally indicates something wrong in the maintenance of shared objects. **ld**'s **-assert definitions** function (on by default) checks at **ld**-time whether or not an execution-time binding error would occur.

Version Handling for Shared Libraries

To allow the independent evolution of **.so**'s used as libraries and the programs which use them, **ld**'s handling of **.so** files found through **-l** options involves the retention and management of version control information. The **.so** files used as such shared libraries are post-fixed with a Dewey-decimal format string describing the version of the library contained in the file.

The first decimal component is called the library's major version number, and the second component its minor version number. When **ld** records a **.so** used as a library, it also records these two numbers in the database used by **ld.so** at execution time. In turn, **ld.so** uses these numbers to decide which of multiple versions of a given library is best or whether *any* of the available versions are acceptable. The rules are:

- Major Versions Identical: the major version used at execution time must exactly match the version found at **ld**-time. Failure to find an instance of the library with a matching major version causes a diagnostic to be issued and the program's execution to be terminated.
- Highest Minor Version: in the presence of multiple instances of libraries that match the desired major version, **ld.so** uses the highest minor version it finds. However, if the highest minor version found at execution time is less than the version found at **ld**-time, a warning diagnostic is issued; program execution continues.

The semantics of version numbers are such that major version numbers should be changed whenever interfaces are changed. Minor versions should be changed to reflect compatible updates to libraries, and programs will silently favor the highest compatible version they can obtain.

Special Symbols

A number of symbols have special meanings to **ld** and programs should not define these symbols. The symbols described below are those actually seen by **ld**. Note: C and several other languages prepend symbols they use with '_'.

_etext The first location after the text of the program.

_edata The first location after initialized data.

_end The first location after all data.

__DYNAMIC

Identifies an **ld**-produced data structure. It is defined with a non-zero value in executables which require execution-time link editing. By convention, if defined, it is the first symbol in the symbol table associated with an **a.out** file.

__GLOBAL_OFFSET_TABLE_

A position-independent reference to an **ld**-constructed table of addresses. This table is constructed from position-independent data references occurring in objects that have been assembled with the assembler's **-k** flag (invoked on behalf of C compilations performed with the

-pic flag). A related table (for which no symbol is currently defined) contains a series of transfer instructions and is created from position-independent procedure calls or, if **-dp** is specified to **ld**, a list of undefined symbols.

Symbols in object files beginning with the letter **L** are taken to be local symbols and unless otherwise specified are purged from **ld** output files.

ENVIRONMENT

LD_LIBRARY_PATH

A colon-separated list of directories in which to search for libraries specified with the **-l** option. Similar to the **PATH** environment variable. **LD_LIBRARY_PATH** also affects library searching during execution-time loading.

LD_OPTIONS

A default set of options to **ld**. **LD_OPTIONS** is interpreted by **ld** just as though its value had been placed on the command line, immediately following the name used to invoke **ld**, as in:

example% ld $LD_OPTIONS ... *other-arguments* ...

Note: Environment variable-names beginning with the characters '**LD_**' are reserved for possible future enhancements to **ld**.

FILES

/usr/lib/lib*.a	libraries
lib*.so.v	shared libraries
lib*.sa.v	exported, initialized shared library data
/usr/lib/ld.so	execution-time **ld**
/usr/lib/*crt*.o	default program bootstraps
a.out	output file
/usr/local/lib	

SEE ALSO

as(1), **ar**(1V), **cc**(1V), **lorder**(1), **ranlib**(1), **strip**(1), **tsort**(1)

BUGS

Options are being overloaded and are an inappropriate vehicle for describing to **ld** the wide variety of things it can do. There needs to be a link-editing language which can be used in the more complex situations.

The **-r** option does not properly handle programs assembled with the **-k** (position-independent) flag, invoked from **cc** with **-pic** or **-PIC**.

NAME

load, loadc – load Application SunOS or Developer's Toolkit clusters

SYNOPSIS

load [*filename* ...]

loadc [*cluster* ...]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

load loads the optional clusters in the Application SunOS or the Developer's Toolkit that contain the files specified in the filename arguments. **loadc** loads the optional clusters in the Application SunOS or the Developers Toolkit specified in the cluster arguments. When you specify the special cluster name appl with **loadc**, then **loadc** loads all the Application SunOS clusters; likewise, when you specify devel to **loadc**, it loads all the Developer's Toolkit clusters.

load and **loadc** require the user to specify the distribution media type (3.5" diskette or 1/4" tape) for the system and to insert the specified 3.5" diskette or 1/4" tape. The user will be asked to confirm that the specified media has been inserted. If the user confirmation is negative, no software will be loaded from the specified media.

Without arguments, **load** and **loadc** display a summary of the clusters in the Application SunOS and Developer's Toolkit, including the load state and size of each cluster.

EXAMPLES

To load the cluster that contains the **spell**(1) command:

```
% load spell
Enter your distribution media type (1=1/4" tape, 2=3.5" diskette): 2
Insert diskette n to load the spellcheck cluster, confirm (y/n): y
Loading the spellcheck cluster ...
The spellcheck cluster has been loaded.
space used by clusters: 6021K bytes
total space remaining: 20432K bytes
```

To load the **spellcheck** cluster:

```
% loadc spellcheck
Enter your distribution media type (1=1/4" tape, 2=3.5" diskette): 2
Insert diskette n to load the spellcheck, confirm (y/n): y
Loading the spellcheck cluster ...
The spellcheck cluster has been loaded.
space used by clusters: 6021K bytes
total space remaining: 20432K bytes
```

To display a summary of the clusters in the Application SunOS and Developer's Toolkit:

```
% load
Application SunOS Clusters:
  available cluster          size (bytes)
  --------- -------          ----
    yes     accounting       265K
    no      advanced_admin   501K
    ...
```

Developer's Toolkit Clusters:

available	cluster	size (bytes)
---	---	---
no	**base_devel**	**6907K**
...		

space used by clusters: 6021K bytes
total space remaining: 20432K bytes

A cluster is available if it has been loaded using **load** or **loadc** or if it has been mounted across the network.

ENVIRONMENT

LOADMEDIA Used to specify the distribution media type for the system. It can be set to **diskette** to specify 3.5" diskette or **tape** to specify 1/4" tape. If it is set, **load** and **loadc** will not ask the user to enter the distribution media type.

FILES

/usr/loaded/appl	where Application SunOS clusters are loaded (or mounted)
/usr/loaded/devel	where Developer's Toolkit clusters are loaded (or mounted)
/usr/lib/load/*	data files

SEE ALSO

unload(1), **cluster(1)**, **toc**(5)

Sun386i System Setup and Maintenance

DIAGNOSTICS

Wrong *diskette/tape*
An incorrect diskette or tape was inserted. The user will again be asked to insert the specified media.

The file *filename* **is not in any of the optional software clusters.**
The specified file is not part of the Application SunOS or Developer's Toolkit.

There is no *cluster* **cluster.**
The specified cluster is not part of the Application SunOS or Developers Toolkit.

The cluster *cluster* **is already loaded, overwrite? (y/n):**
The specified cluster appears to have been loaded already. Type **y** followed by RETURN to have the cluster loaded or **n** followed by RETURN to cancel the loading of the cluster.

Cluster *cluster* **requires** *n***K; there is not enough disk space.**
There is not enough disk space to hold the specified cluster.

The *cluster* **cluster has not been loaded.**
The loading of the specified cluster has been canceled or interrupted by the user.

The Application SunOS (and/or) Developers Toolkit are mounted.
The Application SunOS or Developers Toolkit or both are mounted across the network and can not be loaded or unloaded.

The *tape/diskette* **drive is currently in use.**
You are trying to load a cluster from tape (or diskette) and another process currently has control of the tape (or diskette) drive.

NAME

loadkeys, dumpkeys – load and dump keyboard translation tables

SYNOPSIS

loadkeys [*filename*]

dumpkeys

DESCRIPTION

loadkeys

loadkeys reads the file specified by *filename*, or, if no file is specified and the keyboard is a Type 4 keyboard, a default file for the layout indicated by the DIP switches on the keyboard, and modifies the keyboard streams module's translation tables. The file is in the format specified by **keytables**(5).

If the layout code in the DIP switches on the keyboard has the hexadecimal value **0x dd**, the file loaded by **loadkeys** by default is **/usr/share/lib/keytables/layout_ dd**. These files specify only the entries that change between the different Type 4 keyboard layouts.

dumpkeys

dumpkeys writes, to the standard output, the current contents of the keyboard streams module's translation tables, in the format specified by **keytables**(5).

FILES

/usr/share/lib/keytables/layout_*dd*
default keytable files

SEE ALSO

kb(4M), **keytables**(5)

NAME

organizer – file and directory manager

SYNOPSIS

organizer

AVAILABILITY

Sun386i systems only.

DESCRIPTION

organizer is a SunView application for viewing and manipulating files and directories. It performs many of the functions of the **ls**, **cd**, **cp**, **rm**, **mv**, **mkdir**, **rmdir**, **backup**, **restore**, **find**, and **chmod** commands, and with a visual interface.

At any given time, the **organizer** window normally shows the files and directories in a single directory, representing each file or directory with an appropriate illustrated icon. The illustration indicates whether a file is a directory, contains text, is an executable program, or optionally a user-defined file type.

When **organizer** is switched into Map mode, the icons are arranged to indicate the hierarchy of files and directories. Double clicking on a directory icon shows the contents of that directory in a new column.

Several display modes are available, and can be set for an individual **organizer** window or for all **organizer** windows. You can select whether hidden files are shown, whether just the name, the name and information, or name and icon are shown for each file and directory, and how the contents are sorted.

Text files can be "edited" by double clicking on the file's icon. The contents of the file are then shown and can be edited in a separate text editor window. In the **.orgrc** file you can specify the EXECUTE, EDIT, and PRINT applications for your own user-defined file types.

You can move down through the directory hierarchy by double clicking on a directory icon, and up by double clicking on the parent directory name on the ancestor list in the upper left corner of the **organizer** panel.

Copying, moving, and deleting require you to select one or more files. To select a file, click the left button on it (don't double click—this will open the file). To select additional files to be operated on, click the middle button on each additional file. Copying and moving operations require a destination directory. After the files are selected, change directories to the desired destination as described above, and then "drop" the files with the Drop button on the command panel. If the copy involves overwriting an identically named file, an alert will allow you to confirm that you want to overwrite the file. If you copy a file and then "drop" it in the same directory, **organizer** will prepend **copy_of_** to the filename of the new file.

FILES

/usr/include/images/* file and directory icons

~/.orgrc

SEE ALSO

orgrc(5)

NAME

strip – remove symbols and relocation bits from an object file

SYNOPSIS

strip *filename...*

DESCRIPTION

strip removes the symbol table and relocation bits ordinarily attached to the output of the assembler and linker. This is useful to save space after a program has been debugged.

The effect of **strip** is the same as use of the **–s** option of **ld**(1).

SEE ALSO

ld(1), **a.out**(5) **coff**(5)

BUGS

Unstripped 2.0 binary files will not run if stripped by the 3.0 version. A message of the form:

pid *xxx*: **killed due to swap problems in I/O error mapping page.**

when attempting to run a program indicates that this is the problem.

NAME

textedit – SunView window- and mouse-based text editor

SYNOPSIS

textedit [*generic-tool-arguments*] [**–Ea on | off**] [**–adjust_is_pending_delete**] [**–Ei on | off**]
[**–auto_indent**] [**–Eo on | off**] [**–okay_to_overwrite**] [**–Er on | off**] [**–read_only**]
[**–Ec** *N*] [**–checkpoint** *count*] [**–EL** *lines*] [**–lower_context** *lines*] [**–Em** *pixels*]
[**–margin** *pixels*] [**–En** *N*] [**–number_of_lines** *lines*] [**–Es** *N*] [**–scratch_window** *lines*]
[**–ES** *N*] [**–multi_click_space** *radius*] [**–Et** *N*] [**–tab_width** *tabstop*] [**–ET** *N*]
[**–multi_click_timeout** *intrvl*] [**–Eu** *N*] [**–history_limit** *max*] [**–EU** *N*]
[**–upper_context** *lines*] *filename*

AVAILABILITY

This command is available with the *SunView 1 User's* software installation option. Refer to *Installing the Sun Operating System* for information on how to install optional software.

DESCRIPTION

textedit is a mouse-oriented text editor that runs within the SunView environment. It creates a window containing two text subwindows. The top subwindow (referred to as the scratch window) can be used to store small pieces of text. The bottom subwindow (referred to as the edit window) displays the contents of *filename*, if given.

The name of the file currently being edited is displayed in the left-hand portion of the frame header. The name of the current working directory is displayed in the right-hand portion.

OPTIONS

generic-tool-arguments

textedit accepts the SunView generic tool arguments listed in **sunview**(1).

–Ea on | off

–adjust_is_pending_delete

Choose whether or not an adjustment to a selection makes the selection pending-delete. The default is off. This option corresponds to, and overrides, the **adjust_is_pending_delete** Text defaults entry.

–Ei on | off

–auto_indent Choose whether or not to automatically indent newly-opened lines. The default is off. Corresponds to the **auto_indent** Text default.

–Eo on | off

–okay_to_overwrite

Set behavior to the **Store as New File** menu item. If **on** a **Store as New File** to the current file is treated as a **Save Current File**. If **off** (the standard default), **Store as New File** operations using the current filename result in an error message. Corresponds to **Store_self_is_save**.

–Er on | off

–read_only Turn read-only mode on or off. When on, text cannot be modified.

–Ec *N*

–checkpoint *count*

Checkpoint after every *count* editing operations. If *count* is 0 (the standard default), no checkpointing takes place. Each character typed, each **Paste**, and each **Cut** counts as an editing operation. Corresponds to **checkpoint_frequency**.

–EL *lines*

–lower_context *lines*

Specify the minimum number of lines to keep between the caret and the bottom of the text subwindow. The default is 2. Corresponds to **lower_context**.

–Em *pixels*
–margin *pixels*
Set the scrollbar margin width in pixels. The default is 4. Corresponds to **left_margin**.

–En *N*
–number_of_lines *lines*
Set the number of lines in the bottom subwindow. The default is 45.

–Es *N*
–scratch_window *lines*
Set the number of lines in the scratch window. A zero value means that there is no scratch window. The standard default is 1. Corresponds to **scratch_window**.

–ES *N*
–multi_click_space *radius*
Set the radius, in pixels, within which clicks must occur to be treated as a multi-click selection. The default is 3 pixels. Corresponds to **multi_click_space**.

–Et *N*
–tab_width *tabstop*
Set the number of SPACE characters displayed per TAB stop. The default is 8. This option has no effect on the characters in the file. Corresponds to **tab_width**.

–ET *N*
–multi_click_timeout *intrvl*
Set the interval, in milliseconds, within which any two clicks must occur to be treated as a multi-click selection. The default is 390 milliseconds. Corresponds to **multi_click_timeout**.

–Eu *N*
–history_limit *max*
Set the maximum number of editing operations that can be undone or replayed. The default is 50. Corresponds to **history_limit**.

–EU N
–upper_context *lines*
Set the minimum number of lines to keep between the caret and the top of the text subwindow. The default is 2. Corresponds to **upper_context**.

USAGE

For a description of how to use the facilities of the text subwindows, see the *SunView Beginner's Guide*.

Signal Processing

If **textedit** hangs, for whatever reason, you can send a **SIGHUP** signal to its process ID, which forces it to write any changes (if possible):

kill –HUP *pid*

The edits are written to the file **textedit.***pid* in its working directory. If that fails, **textedit** successively tries to write to a file by that name in **/var/tmp**, and then **/tmp**. In addition, whenever **textedit** catches a fatal signal, such as **SIGILL**, it tries to write out the edits before aborting.

Defaults Options

There are several dozen user-specified defaults that affect the behavior of the text-based facilities. See **defaultsedit**(1) for a complete description. Important defaults entries in the **Text** category are:

Edit_back_char Set the character for erasing to the left of the caret. The standard default is DELETE. Note: the tty erase character-setting has no effect on **textedit**. Text-based tools refer only to the defaults database key settings.

Edit_back_word Set the character for erasing the word to the left of the caret. The standard

default is CTRL-W.

Edit_back_line Set the character for erasing all characters to the left of the caret. The standard default is CTRL-U.

Checkpoint_frequency
If set to **0** (the standard default) no checkpointing is done. For any value greater than zero, a checkpoint is made each time the indicated number of editing operations has been performed since the last checkpoint. Each character typed, each **Paste**, and each **Cut** counts as an editing operation. The checkpoint file has a name of the form: *filename*%%, where *filename* is the name of the file being edited.

Making a selection

In **textedit**, the mouse is used to specify a selection, which is a character span to operate on. The mouse is also used to position the insertion point and to invoke a menu of commands.

The assignment of commands to the mouse buttons is:

Mouse button	Description
LEFT	Starts a new selection and moves the insertion point to the end of the selection nearest the mouse cursor.
MIDDLE	Extends a selection, and moves the insertion point.
RIGHT	Displays a menu of operations, explained below.

There are two types of selections: a primary selection is indicated by video-inversion of the span of characters, and tends to persist. A secondary selection is indicated by underlining the span of characters and only exists while one of the four function keys corresponding to the commands **Cut**, **Find**, **Paste**, or **Copy**, is depressed.

In addition, a selection can be pending-delete, as indicated by overlaying the span of characters with a light gray pattern. A selection is made pending-delete by holding the CTRL key while clicking the LEFT or MIDDLE mouse buttons. If a primary selection is pending-delete, it is only deleted when characters are inserted, either by type-in or by **Paste** or **Copy**. If a secondary selection is pending-delete, it is deleted when the function key is released, except in the case of the **Find**, which deselects the secondary selection.

You can make adjusted selections switch to pending-delete using the **adjust_is_pending_delete** defaults entry, or the **-Ea** option. In this case, **CTRL-Middle** makes the selection *not* pending-delete.

Commands that operate on the primary selection do so even if the primary selection is not in the window that issued the command.

Inserting Text and Command Characters

For the most part, typing any of the standard keys either inserts the corresponding character at the insertion point, or erases characters. However, certain key combinations are treated as commands. Some of the most useful are:

Command	Character	Description
Cut-Primary	Meta-X	Erases, and moves to the Clipboard, the primary selection.
Find-Primary	Meta-F	Searches the text for the pattern specified by the primary selection or by the Clipboard, if there is no primary selection.
Copy-to-Clipboard	Meta-C	Copies the primary selection to the Clipboard.
Paste-Clipboard	Meta-V	Inserts the Clipboard contents at the insertion point.
Copy-then-Paste	Meta-P	Copies the primary selection to the insertion point (through the Clipboard).
Go-to-EOF	CTRL-RETURN	Moves the insertion point to the end of the text, positioning the text so that the insertion point is visible.

Function Keys

The commands indicated by use of the function keys are:

Command	Sun-2|3 Key	Description
Stop	L1	Aborts the current command.
Again	L2	Repeats the previous editing sequence since a primary selection was made.
Undo	L4	Undoes a prior editing sequence.
Front	L5	Makes the window completely visible (or hides it, if it is already exposed).
Copy	L6	Copies the primary selection, either to the Clipboard or at the closest end of the secondary selection.
Open	L7	Makes the window iconic (or normal, if it is already iconic).
Paste	L8	Copies either the secondary selection or the Clipboard at the insertion point.
Find	L9	Searches for the pattern specified by, in order, the secondary selection, the primary selection, or the Clipboard.
Cut	L10	Erases, and moves to the Clipboard, either the primary or the secondary selection.
CAPSLOCK	F1	Forces all subsequently typed alphabetic characters to be upper-case. This key is a toggle; striking it a second time undoes the effect of the first strike.

Find usually searches the text forwards, towards the end. Holding down the SHIFT key while invoking **Find** searches backward through the text, towards the beginning. If the pattern is not found before the search encounters either extreme, it wraps around and continues from the other extreme. **Find** starts the search at the appropriate end of the primary selection, if the primary selection is in the subwindow that the search is made in; otherwise it starts at the insertion point, unless the subwindow cannot be edited, in which case it starts at the beginning of the text.

CTRL-**Find** invokes the **Find and Replace** pop-up frame.

The default assignment of function keys can be modified using **defaultsedit**(1).

Menu Items

File A pull-right menu item for file operations.

Edit A pull-right menu item equivalent of the editing function keys. The **Edit** submenu provides **Again**, **Undo**, **Copy**, **Paste**, and **Cut** (same as function keys L2, L4, L6, L8, and L10).

Display A pull-right menu item for controlling the way text is displayed and line display format.

Find A pull-right menu item for find and delimiter matching operations.

Extras A user definable pull-right menu item. The **Extras** standard submenu is controlled by **/usr/lib/text_extras_menu**. This file has the same syntax as **.rootmenu** file. See **sunview**(1).

Only those items that are active appear as normal text in the menu; inactive items (which are inappropriate at the time) are grayed out.

User Defined Commands

The file **/usr/lib/text_extras_menu** specifies filter programs that are included in the text subwindow **Extras** pull-right menu item. The file **~/.textswrc** specifies filter programs that are assigned to (available) function keys. These filters are applied to the contents of the primary selection. Their output is entered at the caret.

The file **/usr/lib/textswrc** is a sample containing a set of useful filters. It is not read automatically.

FILES

~/.textswrc	specifies bindings of filters to function keys
/usr/lib/text_extras_menu	specifies bindings of filters for the extras menu pull-right items
/usr/bin	contains useful filters, including **shift_lines** and **capitalize.**
filename%	prior version of *filename* is available here after a **Save Current File** menu operation
textedit.*pid*	edited version of *filename*; generated in response to fatal internal errors
/tmp/Text*	editing session logs

SEE ALSO

defaultsedit(1), **kill**(1), **sunview**(1),

SunView Beginner's Guide

DIAGNOSTICS

Cannot open file '*filename***', aborting!**

filename does not exist or cannot be read.

textedit produces the following exit status codes:

0	normal termination
1	standard SunView help message was printed
2	help message was requested and printed
3	abnormal termination in response to a signal, usually due to an internal error
4	abnormal termination during initialization, usually due to a missing file or running out of swap space

BUGS

Multi-click to change the current selection does not work for **Adjust Selection.**

Handling of long lines is incorrect in certain scrolling situations.

There is no way to replay any editing sequence except the most recent.

'**textedit** *newfile*' fails if *newfile* does not exist.

NAME

uucp, uulog, uuname – system to system copy

SYNOPSIS

uucp [**-acCdfmr**] [**-e***system*] [**-n***username*] [**-g***grade*] [**-s***spool*] [**-x***debug*] *source-file* ... *destination-file*

uulog [**-s***system*] [**-u***username*]

uuname [**-l**]

AVAILABILITY

This command is available with the **uucp** software installation option. Refer to *Installing the Sun Operating System* for information on how to install optional software.

DESCRIPTION

uucp copies each *source-file* to the named *destination-file*. A filename may be a path name on your machine, or may have the form

system-name!*pathname*

where *system-name* is taken from a list of system names that **uucp** knows about. Shell metacharacters **?**, *****, and [ ] appearing in the pathname part will be expanded on the appropriate system.

Pathnames may be one of:

- a full pathname;
- a pathname preceded by ~*username*/; where *username* is a username on the specified system and is replaced by that user's login directory;
- a pathname preceded by ~/; such a pathname will be replaced by the public uucp directory on the remote machine;
- anything else is prefixed by the pathname of the current directory.

If the result is an erroneous pathname for the remote system, the copy will fail. If the *destination-file* is a directory, the last component of the *source-file* name is used.

uucp preserves execute permissions across the transmission and gives 0666 read and write permissions (see **chmod**(2)).

uulog maintains a summary log of **uucp** and **uux**(1C) transactions in the file **/var/spool/uucp/LOGFILE**, by gathering information from partial log files named **/var/spool/uucp/LOG.*.?**. It removes the partial log files.

uuname lists the **uucp** names of systems that can be accessed using **uucp.**

OPTIONS

uucp Options

-a Avoid doing a **getwd**(3) to find the current directory. This is sometimes used for efficiency.

-c Use the source file when copying out rather than copying the file to the spool directory. This is the default.

-C Make a copy of outgoing files in the **uucp** spool directory, rather than copying the source file directly to the target system. This lets you remove the source file after issuing the **uucp** command.

-d Make all necessary directories for the file copy.

-f Do not make intermediate directories for the file copy.

-m Send mail to the requester when the copy is complete.

-r Do not start the transfer, just queue the job.

–e*system*
Send the **uucp** command to the system *system* to be executed there. This works only when the remote machine allows **uucp** to be executed by **/usr/lib/uucp/uuxqt**.

–n*username*
Notify *username* on remote system (by mail) that a file was sent.

–g*grade*
grade is a single letter or number; lower ASCII values transmit a job earlier during a particular conversation. The default *grade* is **n**. By way of comparison, **uux**(1C) defaults to '**A**'; mail is usually sent at grade '**C**'.

–s*spool* Use *spool* as the spool directory instead of the default.

–x*debug*
Turn on the debugging at level *debug*.

uulog Options

–s*system*
Print information about work involving system *system.*

–u*username*
Print information about work done for the specified *username.*

uuname options

–l Display the local system-name.

FILES

/var/spool/uucp	spool directory
/usr/lib/uucp/sys	list of known systems and descriptions
/usr/lib/uucp/*	other data and program files
/var/spool/uucp/LOGFILE	

SEE ALSO

mail(1), **uux**(1C), **chmod**(2), **getwd**(3)

WARNING

The domain of remotely accessible files can (and for obvious security reasons, usually should) be severely restricted. You will very likely not be able to fetch files by pathname; ask a responsible person on the remote system to send them to you. For the same reasons you will probably not be able to send files to arbitrary pathnames.

BUGS

All files received by **uucp** will be owned by the user ID **uucp**.

The **–m** option will only work sending files or receiving a single file. Receiving multiple files specified by special shell characters **?**, *, and [ ] will not activate the **–m** option.

NAME

getmntent, setmntent, addmntent, endmntent, hasmntopt – get file system descriptor file entry

SYNOPSIS

```
#include <stdio.h>
#include <mntent.h>

FILE *setmntent(filep, type)
char *filep;
char *type;

struct mntent *getmntent(filep)
FILE *filep;

int addmntent(filep, mnt)
FILE *filep;
struct mntent *mnt;

char *hasmntopt(mnt, opt)
struct mntent *mnt;
char *opt;

int endmntent(filep)
FILE *filep;
```

DESCRIPTION

These routines replace the **getfsent()** routines for accessing the file system description file **/etc/fstab**. They are also used to access the mounted file system description file **/etc/mtab**.

setmntent() opens a file system description file and returns a file pointer which can then be used with **getmntent**, **addmntent**, or **endmntent**. The *type* argument is the same as in **fopen**(3). **getmntent()** reads the next line from *filep* and returns a pointer to an object with the following structure containing the broken-out fields of a line in the filesystem description file, **<mntent.h>**. The fields have meanings described in **fstab**(5).

```
struct mntent {
        char    *mnt_fsname;    /* file system name */
        char    *mnt_dir;       /* file system path prefix */
        char    *mnt_type;      /* 4.2, nfs, swap, or xx */
        char    *mnt_opts;      /* ro, quota, etc. */
        int     mnt_freq;       /* dump frequency, in days */
        int     mnt_passno;     /* pass number on parallel fsck */
};
```

addmntent() adds the **mntent** structure *mnt* to the end of the open file *filep*. Note: *filep* has to be opened for writing if this is to work. **hasmntopt()** scans the **mnt_opts** field of the **mntent** structure *mnt* for a substring that matches *opt*. It returns the address of the substring if a match is found, 0 otherwise. **endmntent()** closes the file.

FILES

/etc/fstab
/etc/mtab

SEE ALSO

fopen(3S), **getfsent**(3), **fstab**(5)

DIAGNOSTICS

NULL pointer (0) returned on EOF or error.

BUGS

The returned **mntent** structure points to static information that is overwritten in each call.

NAME

kb – Sun keyboard STREAMS module

CONFIG

pseudo-device kb*number*

SYNOPSIS

```
#include <sys/stream.h>
#include <sys/stropts.h>
#include <sundev/vuid_event.h>
#include <sundev/kbio.h>
#include <sundev/kbd.h>

ioctl(fd, I_PUSH, "kb");
```

DESCRIPTION

The **kb** STREAMS module processes byte streams generated by Sun keyboards attached to a CPU serial or parallel port. Definitions for altering keyboard translation, and reading events from the keyboard, are in **<sundev/kbio.h>** and **<sundev/kbd.h>**. *number* specifies the maximum number of keyboards supported by the system.

kb recognizes which keys have been typed using a set of tables for each known type of keyboard. Each translation table is an array of 128 16-bit words (**unsigned shorts**). If an entry in the table is less than 0x100, it is treated as an ISO 8859/1 character. Higher values indicate special characters that invoke more complicated actions.

Keyboard Translation Mode

The keyboard can be in one of the following translation modes:

TR_NONE	Keyboard translation is turned off and up/down key codes are reported.
TR_ASCII	ISO 8859/1 codes are reported.
TR_EVENT	**firm_events** (see *The SunView System Programmer's Guide — Appendix: Writing a Virtual User Input Device Driver*) are reported.
TR_UNTRANS_EVENT	**firm_events** containing unencoded keystation codes are reported for all input events within the window system.

Keyboard Translation-Table Entries

All instances of the **kb** module share seven translation tables used to convert raw keystation codes to event values. The tables are:

Unshifted	Used when a key is depressed and no shifts are in effect.
Shifted	Used when a key is depressed and a Shift key is being held down.
Caps Lock	Used when a key is depressed and Caps Lock is in effect.
Alt Graph	Used when a key is depressed and the Alt Graph key is being held down.
Num Lock	Used when a key is depressed and Num Lock is in effect.
Controlled	Used when a key is depressed and the Control key is being held down (regardless of whether a Shift key or the Alt Graph is being held down, or whether Caps Lock or Num Lock is in effect).
Key Up	Used when a key is released.

Each key on the keyboard has a key station code that is a number from 0 to 127. This number is used as an index into the translation table that is currently in effect. If the corresponding entry in that translation table is a value from 0 to 255, this value is treated as an ISO 8859/1 character, and that character

is the result of the translation.

If the entry is a value above 255, it is a special entry. Special entry values are classified according to the value of the high-order bits. The high-order value for each class is defined as a constant, as shown in the list below. The value of the low-order bits, when added to this constant, distinguishes between keys within each class:

SHIFTKEYS 0x100 — A shift key. The value of the particular shift key is added to determine which shift mask to apply:

CAPSLOCK 0	Caps Lock key.
SHIFTLOCK 1	Shift Lock key.
LEFTSHIFT 2	Left-hand Shift key.
RIGHTSHIFT 3	Right-hand Shift key.
LEFTCTRL 4	Left-hand (or only) Control key.
RIGHTCTRL 5	Right-hand Control key.
ALTGRAPH 9	Alt Graph key.
ALT 10	Alternate key on the Type 3 keyboard, or Alt key on the Type 4 keyboard.
NUMLOCK 11	Num Lock key.

BUCKYBITS 0x200 — Used to toggle mode-key-up/down status without altering the value of an accompanying ISO 8859/1 character. The actual bit-position value, minus 7, is added.

METABIT 0	The Meta key was pressed along with the key. This is the only user-accessible bucky bit. It is ORed in as the 0x80 bit; since this bit is a legitimate bit in a character, the only way to distinguish between, for example, 0xA0 as META+0x20 and 0xA0 as an 8-bit character is to watch for META key up and META key down events and keep track of whether the META key was down.
SYSTEMBIT 1	The System key was pressed. This is a place holder to indicate which key is the system-abort key.

FUNNY 0x300 — Performs various functions depending on the value of the low 4 bits:

NOP 0x300	Does nothing.
OOPS 0x301	Exists, but is undefined.
HOLE 0x302	There is no key in this position on the keyboard, and the position-code should not be used.
NOSCROLL 0x303	Alternately sends ^S and ^Q.
CTRLS 0x304	Sends ^S and toggles NOSCROLL key.
CTRLQ 0x305	Sends ^Q and toggles NOSCROLL key.
RESET 0x306	Keyboard reset.
ERROR 0x307	The keyboard driver detected an internal error.
IDLE 0x308	The keyboard is idle (no keys down).
COMPOSE 0x309	This key is the COMPOSE key; the next two keys should comprise a two-character COMPOSE key sequence.
NONL 0x30A	Used only in the Num Lock table; indicates that this

key is not affected by the Num Lock state, so that the translation table to use to translate this key should be the one that would have been used had Num Lock not been in effect.

0x30B — 0x30F Reserved for nonparameterized functions.

FA_CLASS 0x400 This key is a floating accent or dead key. Pressing this key causes the next key to generate an event for an accented character; for example, floating accent grave followed by the a key generates an event with the ISO 8859/1 code for the a with grave accent character. The low-order bits indicate which accent; the codes for the individual floating accents are as follows:

FA_UMLAUT 0x400	umlaut
FA_CFLEX 0x401	circumflex
FA_TILDE 0x402	tilde
FA_CEDILLA 0x403	cedilla
FA_ACUTE 0x404	acute accent
FA_GRAVE 0x405	grave accent

STRING 0x500 The low-order bits index a table of strings. When a key with a **STRING** entry is depressed, the characters in the null-terminated string for that key are sent, character by character. The maximum length is defined as:

KTAB_STRLEN 10

Individual string numbers are defined as:

HOMEARROW	0x00
UPARROW	0x01
DOWNARROW	0x02
LEFTARROW	0x03
RIGHTARROW	0x04

String numbers 0x05 — 0x0F are available for custom entries.

FUNCKEYS 0x600 Function keys. The next-to-lowest 4 bits indicate the group of function keys:

LEFTFUNC 0x600
RIGHTFUNC 0x610
TOPFUNC 0x620
BOTTOMFUNC 0x630

The low 4 bits indicate the function key number within the group:

LF(*n*)	(LEFTFUNC+(*n*)-1)
RF(*n*)	(RIGHTFUNC+(*n*)-1)
TF(*n*)	(TOPFUNC+(*n*)-1)
BF(*n*)	(BOTTOMFUNC+(*n*)-1)

There are 64 keys reserved for function keys. The actual positions may not be on left/right/top/bottom of the keyboard, although they usually are.

PADKEYS 0x700 This key is a numeric keypad key. These entries should appear only in the Num Lock translation table; when Num Lock is in effect, these events will be generated by pressing keys on the right-hand keypad. The low-order bits indicate which key; the codes for the individual keys are as follows:

PADEQUAL 0x700	= key
PADSLASH 0x701	/ key

PADSTAR 0x702	* key
PADMINUS 0x703	- key
PADSEP 0x704	, key
PAD7 0x705	7 key
PAD8 0x706	8 key
PAD9 0x707	9 key
PADPLUS 0x708	+ key
PAD4 0x709	4 key
PAD5 0x70A	5 key
PAD6 0x70B	6 key
PAD1 0x70C	1 key
PAD2 0x70D	2 key
PAD3 0x70E	3 key
PAD0 0x70F	0 key
PADDOT 0x710	
PADENTER 0x711	Enter key

In **TR_ASCII** mode, when a function key is pressed, the following escape sequence is sent:

<ESC>[0....9z

where <ESC> is a single escape character and 0...9 indicates the decimal representation of the function-key value. For example, function key R1 sends the sequence:

<ESC>[208z

because the decimal value of RF(1) is 208. In **TR_EVENT** mode, if there is a VUID event code for the function key in question, an event with that event code is generated; otherwise, individual events for the characters of the escape sequence are generated.

Keyboard Compatibility Mode

kb is in compatibility mode when it starts up. In this mode, when the keyboard is in the **TR_EVENT** translation mode, ISO 8859/1 characters from the upper half of the character set (that is, characters with the 8th bit set) are presented as events with codes in the **ISO_FIRST** range (as defined in **<sundev/vuid_event.h>**);**the**event**code**is **ISO_FIRST** plus the character value. This is for backwards compatibility with older versions of the keyboard driver. If compatibility mode is turned off, ISO 8859/1 characters are presented as events with codes equal to the character code.

IOCTLS

Two **ioctl**s set and retrieve the current translation mode of a keyboard:

KIOCTRANS The argument is a pointer to an **int**. The translation mode is set to the value in the **int** pointed to by the argument.

KIOCGTRANS The argument is a pointer to an **int**. The current translation mode is stored in the **int** pointed to by the argument.

ioctls for changing and retrieving entries from the keyboard translation table use the **kiockeymap** structure:

```
struct  kiockeymap {
        int     kio_tablemask;  /* Translation table (one of: 0, CAPSMASK,
                                   SHIFTMASK, CTRLMASK, UPMASK,
                                   ALTGRAPHMASK, NUMLOCKMASK) */
#define KIOCABORT1   -1         /* Special mask: abort1 keystation */
#define KIOCABORT2   -2         /* Special mask: abort2 keystation */
```

```
    u_char  kio_station;    /* Physical keyboard key station (0-127) */
    u_short kio_entry;      /* Translation table station's entry */
    char    kio_string[10]; /* Value for STRING entries (null terminated) */
};
```

KIOCSKEY The argument is a pointer to a **kiockeymap** structure. The translation table entry referred to by the values in that structure is changed.

kio_tablemask specifies which of the five translation tables contains the entry to be modified:

UPMASK 0x0080 Key Up translation table.

NUMLOCKMASK 0x0800
Num Lock translation table.

CTRLMASK 0x0030 Controlled translation table.

ALTGRAPHMASK 0x0200
Alt Graph translation table.

SHIFTMASK 0x000E Shifted translation table.

CAPSMASK 0x0001 Caps Lock translation table.

(No shift keys pressed or locked)
Unshifted translation table.

kio_station specifies the keystation code for the entry to be modified. The value of **kio_entry** is stored in the entry in question. If **kio_entry** is between STRING and STRING+15, the string contained in **kio_string** is copied to the appropriate string table entry. This call may return **EINVAL** if there are invalid arguments.

There are a couple special values of **kio_tablemask** that affect the two step break to the PROM monitor sequence. The usual sequence is **SETUP–a** or **L1–a**. If **kio_tablemask** is **KIOCABORT1** then the value of **kio_station** is set to be the first keystation in the sequence. If **kio_tablemask** is **KIOCABORT2** then the value of **kio_station** is set to be the second keystation in the sequence.

KIOCGKEY The argument is a pointer to a **kiockeymap** structure. The current value of the keyboard translation table entry specified by **kio_tablemask** and **kio_station** is stored in the structure pointed to by the argument. This call may return **EINVAL** if there are invalid arguments.

KIOCTYPE The argument is a pointer to an **int**. A code indicating the type of the keyboard is stored in the **int** pointed to by the argument:

KB_KLUNK	Micro Switch 103SD32-2
KB_VT100	Keytronics VT100 compatible
KB_SUN2	Sun-2 keyboard
KB_SUN3	Type 3 keyboard
KB_SUN4	Type 4 keyboard
KB_ASCII	ASCII terminal masquerading as keyboard

–1 is stored in the **int** pointed to by the argument if the keyboard type is unknown.

KIOCLAYOUT The argument is a pointer to an **int**. On a Type 4 keyboard, the layout code specified by the keyboard's DIP switches is stored in the **int** pointed to by the argument.

KIOCCMD The argument is a pointer to an **int**. The command specifed by the value of the **int** pointed to by the argument is sent to the keyboard. The commands that can be sent are:

Commands to the Sun-2, Type 3, and Type 4 keyboard:

KBD_CMD_RESET Reset keyboard as if power-up.

KBD_CMD_BELL Turn on the bell.
KBD_CMD_NOBELL Turn off the bell

Commands to the Type 3 and Type 4 keyboard:

KBD_CMD_CLICK Turn on the click annunciator.
KBD_CMD_NOCLICK Turn off the click annunciator.

Inappropriate commands for particular keyboard types are ignored. Since there is no reliable way to get the state of the bell or click (because we cannot query the keyboard, and also because a process could do writes to the appropriate serial driver — thus going around this **ioctl**) we do not provide an equivalent **ioctl** to query its state.

KIOCSLED The argument is a pointer to an **char**. On the Type 4 keyboard, the LEDs are set to the value specified in that **char**. The values for the four LEDs are:

LED_CAPS_LOCK Caps Lock light.
LED_COMPOSE Compose light.
LED_SCROLL_LOCK Scroll Lock light.
LED_NUM_LOCK Num Lock light.

KIOCGLED The argument is a pointer to a **char**. The current state of the LEDs is stored in the **char** pointed to by the argument.

KIOCSCOMPAT The argument is a pointer to an **int**. Compatibility mode is turned on if the **int** has a value of 1, and is turned off if the **int** has a value of 0.

KIOCGCOMPAT The argument is a pointer to an **int**. The current state of compatibility mode is stored in the **int** pointed to by the argument.

KIOCGDIRECT These **ioctl**s are supported for compatibility with the system keyboard device **/dev/kbd**. **KIOCSDIRECT** has no effect, and **KIOCGDIRECT** always returns 1.

SEE ALSO

click(1), **loadkeys**(1), **kbd**(4S), **termio**(4), **win**(4S)

The SunView System Programmer's Guide— Appendix: Writing a Virtual User Input Device Driver (describes **firm_event** format)

NAME

bar – tape archive file format

AVAILABILITY

Sun386i systems only.

DESCRIPTION

bar(1), (the tape archive command) dumps several files into one, in a medium suitable for transportation. This format is not compatible with the format generated by **tar**(1).

A "bar tape" or file is a series of blocks. Each block is of size TBLOCK. A file on the tape is represented by a header block that describes the file, followed by zero or more blocks that give the contents of the file. At the end of the tape are two blocks filled with binary zeros, as an end-of-file indicator.

The blocks are grouped for physical I/O operations. Each group of *n* blocks (where *n* is set by the **b** keyletter on the **bar**(1) command line — default is 20 blocks) is written with a single system call; on nine-track tapes, the result of this write is a single tape record. The last group is always written at the full size, so blocks after the two zero blocks contain random data. On reading, the specified or default group size is used for the first read, but if that read returns less than a full tape block, the reduced block size is used for further reads, unless the **B** keyletter is used.

The header block looks like:

```
#define TBLOCK      512

union hblock {
        char dummy[TBLOCK];
        struct header {
                char mode[8];
                char uid[8];
                char gid[8];
                char size[12];
                char mtime[12];
                char chksum[8];
                char rdev[8];
                char linkflag;
                char bar_magic[2];
                char volume_num[4];
                char compressed;
                char date[12];
                char start_of_name;
        } dbuf;
};
```

start_of_name is a null-terminated string. *date* is the date of the archive. *bar_magic* is a special number indicating that this is a **bar** archive. *rdev* is the device type, for files that are devices. The other fields are zero-filled octal numbers in ASCII. Each field (of width w) contains w-2 digits, a space, and a null, except *size*, *rdev*, and *mtime*, which do not contain the trailing null. *start_of_name* is the name of the file, as specified on the *bar* command line. Files dumped because they were in a directory that was named in the command line have the directory name as prefix and */filename* as suffix. *mode* is the file mode, with the top bit masked off. *uid* and *gid* are the user and group numbers that own the file. *size* is the size of the file in bytes. Links and symbolic links, and special files, are dumped with this field specified as zero. *mtime* is the modification time of the file at the time it was dumped. *chksum* is a decimal ASCII value that represents the sum of all the bytes in the header block. When calculating the checksum, the *chksum* field is treated as if it were all blanks. *linkflag* is ASCII 0 if the file is "normal" or a special file, 1 if it is an hard link, 2 if it is a symbolic link, and 3 if it is a special file (device or FIFO). The name linked-to, if any, is in a null-terminated string, following *start_of_name*. Unused fields of the header are binary zeros (and are included in the checksum).

The first time a given i-node number is dumped, it is dumped as a regular file. The second and subsequent times, it is dumped as a link instead. Upon retrieval, if a link entry is retrieved, but not the file it was linked to, an error message is printed and the tape must be manually re-scanned to retrieve the linked-to file.

An additional header block (one that does not pertain to a particular file) is written to the first block of each volume of the archive. The volume header ID is copied to *start_of_name* and is a NULL string, unless one is specified with the **bar(1) H** function modifier. The size in the volume header reflects the number of bytes to skip to the start of the first full file (always zero on the first volume).

The encoding of the header is designed to be portable across machines.

SEE ALSO

bar(1)

NAME

help – help file format

SYNOPSIS

/usr/lib/help/*

AVAILABILITY

Sun386i systems only.

DESCRIPTION

Each SunView application using the **help** feature has a simple ASCII file with the name *application-name*.**info** and stored in the user's default help directory. The default help directory for a user typically is **/vol/help/language/USA-English**; this has links to various places, including the help files (that Sun Microsystem supplies) in **/usr/lib/help/language/USA-English**.

This file contains the text of help messages for each SunView object within that program. Each help message is separated in the file by a line beginning with a colon and identified by a keyword that matches the HELP_DATA attribute of the SunView object.

The first character of each line in the file may be:

#	comment line
:	keyword line
any other	1-32 help text lines

If the line is a keyword line, it has the following structure:

:keyword[s]:datastring [pagenumber]<cr>

keyword is a 1-65 character keyword
--any displayable characters may be used
--several keywords may be present
--keywords are separated by 1-or-more blanks

datastring is 1-256 ASCII bytes, and describes the path of the data files. If it is a help_viewer file, and it is a relative file name, then help_viewer looks for the file relative to the default help directory as defined in the user's defaults database.

pagenumber is an optional page number within the help_viewer data file.

The help text that follows the :keyword line will be displayed in an Alert Box when help is requested for one of the keywords by pressing the help key.

The datastring will be sent (by RPC) to the **help_viewer** procedure when the user selects the More Help box in the Alert Box window.

EXAMPLE

Here is part of a typical help file, called mailtool.info.

:abort
Abort button

o Quits the Mail application (click left on button). Tentative message deletions do not become permanent.

o Provides a menu of Abort options
(click right on button).

:cancel:mailtool/Writing_and_Sending_Mail 1
Cancel button

o Closes the message composition
window without sending message
(click left on button).

o Provides a menu of Cancel options
(click right on button).

Pressing the help key while the mouse cursor is over the Cancel or Abort button triggers the display of the corresponding text. The words *cancel* and *abort* in this file are the keywords. In the case of abort, there is no More Help available. For cancel, More Help is available and it is stored in the first page of the Writing_and_Sending_Mail file in the mailtool directory.

FILES

/usr/lib/help/* files for the pop-up help facility

SEE ALSO

help_viewer(1), **help_viewer**(5)

Sun386i Developer's Guide

NAME

help_viewer – help viewer file format

SYNOPSIS

/usr/lib/help/*/*

AVAILABILITY

Sun386i systems only.

DESCRIPTION

The **help_viewer** reads and displays the following types of files:

1. Specially formatted ASCII text (for tables of contents). Example:

   /usr/lib/help/language/USA-English/Top_Level

2. FrameMaker document files. Example:

   /usr/lib/help/language/USA-English/sunview/Desktop_Basics

3. Interleaf files. Example:

   /usr/lib/help/language/USA-English/help_guide/Help_Writer's_Handbook

Each directory within **/usr/lib/help/language/USA-English** that corresponds to a SunView application name contains detailed information about that application. These are also FrameMaker files. The ***.rf** files in these directories store some of the pictures that appear in the help handbooks (other pictures are integral to the FrameMaker files). Thes *.rf files are stored in standard Sun compressed raster file format.

The Frame and Interleaf subdirectories of **/usr/lib/help/format** contain topic, contents, and index templates that can be used to create new Help Viewer handbooks.

By default, Help Viewer reads help files through **/vol/help**. The **/vol/help/language/USA-English** directory contains symbolic links to the individual help files and directories for the various applications on the system. Help files for Sun-supplied applications reside in **/usr/lib/help/language/USA-English.**

Developers who wish to add their own document directories to the system should create links to them from **/vol/help.master/language/USA-English**. Installation scripts should have the name of new handbooks added to the Top_Level file in **/vol/help.master/language/USA-English.**

FILES

/usr/lib/help/*/*

SEE ALSO

help(5), **help_viewer**(1), **Sun386i Developer's Guide**

NAME

keytables – keyboard table descriptions for loadkeys and dumpkeys

DESCRIPTION

These files are used by **loadkeys**(1) to modify the translation tables used by the keyboard streams module **kb**(4M), and generated by **dumpkeys**(1) from those translation tables.

Any line in the file beginning with # is a comment, and is ignored. # is treated specially only at the beginning of a line.

Other lines specify the values to load into the tables for a particular keystation. The format is either:

key *number list_of_entries*

or

swap *number1* **with** *number2*

or

key *number1* **same as** *number2*

or a blank line, which is ignored.

key *number list_of_entries*

sets the entries for keystation *number* from the list given. An entry in that list is of the form

tablename code

where *tablename* is the name of a particular translation table, or **all**. The translation tables are:

base entry when no shifts are active

shift entry when "Shift" key is down

caps entry when Caps Lock is in effect

ctrl entry when "Control" is down

altg entry when "Alt Graph" is down

numl entry when Num Lock is in effect

up entry when a key goes up

All tables other than **up** refer to the action generated when a key goes down. Entries in the **up** table are used only for shift keys, since the shift in question goes away when the key goes up, except for keys such as "Caps Lock" or "Num Lock"; the keyboard streams module makes the key look as if it were a latching key.

A table name of **all** indicates that the entry for all tables should be set to the specified value, with the following exception: for entries with a value other than **hole**, the entry for the **numl** table should be set to **nonl**, and the entry for the **up** table should be set to **nop**.

The *code* specifies the effect of the key in question when the specified shift key is down. A *code* consists of either:

1) A character, which indicates that the key should generate the given character. The character can either be a single character, a single character preceded by ^ which refers to a "control character" (for instance, **^c** is control-C), or a C-style character constant enclosed in single quote characters ('), which can be expressed with C-style escape sequences such as \r for RETURN or \000 for the null character. Note that the single character may be any character in an 8-bit character set, such as ISO 8859/1.

2) A string, consisting of a list of characters enclosed in double quote characters ("). Note that the use of the double quote character means that a *code* of double quote must be enclosed in single quotes.

3) One of the following expressions:

shiftkeys+leftshift
the key is to be the left-hand "Shift" key

shiftkeys+rightshift
the key is to be the right-hand "Shift" key

shiftkeys+leftctrl
the key is to be the left-hand "Control" key

shiftkeys+rightctrl
the key is to be the right-hand "Control" key

shiftkeys+alt
the key is to be the "Alt" shift key

shiftkeys+altgraph
the key is to be the "Alt Graph" shift key

shiftkeys+capslock
the key is to be the "Caps Lock" key

shiftkeys+shiftlock
the key is to be the "Shift Lock" key

shiftkeys+numlock
the key is to be the "Num Lock" key

buckybits+systembit
the key is to be the "Stop" key in Sunview; this is normally the L1 key, or the SETUP key on the VT100 keyboard

buckybits+metabit
the key is to be the "meta" key, i.e. the "Left" or "Right" key on a Sun-2 or Type 3 keyboard or the "diamond" key on a Type 4 keyboard

compose
the key is to be the "Compose" key

ctrlq on the "VT100" keyboard, the key is to transmit the control-Q character (this would be the entry for the "Q" key in the **ctrl** table)

ctrls on the "VT100" keyboard, the key is to transmit the control-S character (this would be the entry for the "S" key in the **ctrl** table)

noscroll
on the "VT100" keyboard, the key is to be the "No Scroll" key

string+uparrow
the key is to be the "up arrow" key

string+downarrow
the key is to be the "down arrow" key

string+leftarrow
the key is to be the "left arrow" key

string+rightarrow
the key is to be the "right arrow" key

string+homearrow
the key is to be the "home" key

fa_acute
the key is to be the acute accent "floating accent" key

fa_cedilla
the key is to be the cedilla "floating accent" key

fa_cflex
the key is to be the circumflex "floating accent" key

fa_grave
the key is to be the grave accent "floating accent" key

fa_tilde the key is to be the tilde "floating accent" key

fa_umlaut
the key is to be the umlaut "floating accent" key

nonl this is used only in the Num Lock table; the key is not to be affected by the state of Num Lock

pad0 the key is to be the "0" key on the numeric keypad

pad1 the key is to be the "1" key on the numeric keypad

pad2 the key is to be the "2" key on the numeric keypad

pad3 the key is to be the "3" key on the numeric keypad

pad4 the key is to be the "4" key on the numeric keypad

pad5 the key is to be the "5" key on the numeric keypad

pad6 the key is to be the "6" key on the numeric keypad

pad7 the key is to be the "7" key on the numeric keypad

pad8 the key is to be the "8" key on the numeric keypad

pad9 the key is to be the "9" key on the numeric keypad

paddot the key is to be the "." key on the numeric keypad

padenter
the key is to be the "Enter" key on the numeric keypad

padplus
the key is to be the "+" key on the numeric keypad

padminus
the key is to be the "-" key on the numeric keypad

padstar the key is to be the "*" key on the numeric keypad

padslash
the key is to be the "/" key on the numeric keypad

padequal
the key is to be the "=" key on the numeric keypad

padsep the key is to be the "," (separator) key on the numeric keypad

lf(*n*) the key is to be the left-hand function key *n*

rf(*n*) the key is to be the right-hand function key *n*

tf(*n*) the key is to be the top function key *n*

bf(*n*) the key is to be the "bottom" function key *n*

nop the key is to do nothing

error this code indicates an internal error; to be used only for keystation 126, and must be used there

idle this code indicates that the keyboard is idle (that is, has no keys down); to be used only for all entries other than the **numl** and **up** table entries for keystation 127, and must be used there

oops this key exists, but its action is not defined; it has the same effect as **nop**

reset this code indicates that the keyboard has just been reset; to be used only for the **up** table entry for keystation 127, and must be used there

swap *number1* **with** *number2*

exchanges the entries for keystations *number1* and *number2*.

key *number1* **same as** *number2*

sets the entries for keystation *number1* to be the same as those for keystation *number2*. If the file does not specify entries for keystation *number2*, the entries currently in the translation table are used; if the file does specify entries for keystation *number2*, those entries are used.

EXAMPLES

The following entry sets keystation 15 to be a "hole" (that is, an entry indicating that there is no keystation 15); sets keystation 30 to do nothing when Alt Graph is down, generate "!" when Shift is down, and generate "1" under all other circumstances; and sets keystation 76 to be the left-hand Control key.

```
key 15  all hole
key 30  base 1 shift ! caps 1 ctrl 1 altg nop
key 76  all shiftkeys+leftctrl up shiftkeys+leftctrl
```

The following entry exchanges the Delete and Back Space keys on the Type 4 keyboard:

```
swap 43 with 66
```

Keystation 43 is normally the Back Space key, and keystation 66 is normally the Delete key.

The following entry disables the Caps Lock key on the Type 3 and U.S. Type 4 keyboards:

```
key 119 all nop
```

The following specifies the standard translation tables for the U.S. Type 4 keyboard:

```
key 0   all hole
key 1   all buckybits+systembit up buckybits+systembit
key 2   all hole
key 3   all lf(2)
key 4   all hole
key 5   all tf(1)
key 6   all tf(2)
key 7   all tf(10)
key 8   all tf(3)
key 9   all tf(11)
key 10  all tf(4)
key 11  all tf(12)
key 12  all tf(5)
key 13  all shiftkeys+altgraph up shiftkeys+altgraph
key 14  all tf(6)
key 15  all hole
key 16  all tf(7)
key 17  all tf(8)
key 18  all tf(9)
key 19  all shiftkeys+alt up shiftkeys+alt
key 20  all hole
key 21  all rf(1)
key 22  all rf(2)
key 23  all rf(3)
key 24  all hole
key 25  all lf(3)
```

```
key 26  all lf(4)
key 27  all hole
key 28  all hole
key 29  all ^[
key 30  base 1 shift ! caps 1 ctrl 1 altg nop
key 31  base 2 shift @ caps 2 ctrl ^@ altg nop
key 32  base 3 shift # caps 3 ctrl 3 altg nop
key 33  base 4 shift $ caps 4 ctrl 4 altg nop
key 34  base 5 shift % caps 5 ctrl 5 altg nop
key 35  base 6 shift ^ caps 6 ctrl ^^ altg nop
key 36  base 7 shift & caps 7 ctrl 7 altg nop
key 37  base 8 shift * caps 8 ctrl 8 altg nop
key 38  base 9 shift ( caps 9 ctrl 9 altg nop
key 39  base 0 shift ) caps 0 ctrl 0 altg nop
key 40  base - shift _ caps - ctrl ^_ altg nop
key 41  base = shift + caps = ctrl = altg nop
key 42  base ` shift ~ caps ` ctrl ^^ altg nop
key 43  all '
key 44  all hole
key 45  all rf(4) numl padequal
key 46  all rf(5) numl padslash
key 47  all rf(6) numl padstar
key 48  all bf(13)
key 49  all lf(5)
key 50  all bf(10) numl padequal
key 51  all lf(6)
key 52  all hole
key 53  all ''
key 54  base q shift Q caps Q ctrl ^Q altg nop
key 55  base w shift W caps W ctrl ^W altg nop
key 56  base e shift E caps E ctrl ^E altg nop
key 57  base r shift R caps R ctrl ^R altg nop
key 58  base t shift T caps T ctrl ^T altg nop
key 59  base y shift Y caps Y ctrl ^Y altg nop
key 60  base u shift U caps U ctrl ^U altg nop
key 61  base i shift I caps I ctrl '' altg nop
key 62  base o shift O caps O ctrl ^O altg nop
key 63  base p shift P caps P ctrl ^P altg nop
key 64  base [ shift { caps [ ctrl ^[ altg nop
key 65  base ] shift } caps ] ctrl ^] altg nop
key 66  all '177'
key 67  all compose
key 68  all rf(7) numl pad7
key 69  all string+uparrow numl pad8
key 70  all rf(9) numl pad9
key 71  all bf(15) numl padminus
key 72  all lf(7)
key 73  all lf(8)
key 74  all hole
key 75  all hole
key 76  all shiftkeys+leftctrl up shiftkeys+leftctrl
key 77  base a shift A caps A ctrl ^A altg nop
key 78  base s shift S caps S ctrl ^S altg nop
```

```
key 79  base d shift D caps D ctrl ^D altg nop
key 80  base f shift F caps F ctrl ^F altg nop
key 81  base g shift G caps G ctrl ^G altg nop
key 82  base h shift H caps H ctrl '
gkey 83 base j shift J caps J ctrl '0 altg nop
key 84  base k shift K caps K ctrl 'altg nop
key 85  base l shift L caps L ctrl ^L altg nop
key 86  base ; shift : caps ; ctrl ; altg nop
key 87  base ''' shift '"' caps ''' ctrl ''' altg nop
key 88  base '\' shift | caps '\' ctrl ^ altg nop
key 89  all '
key 90  all bf(11) numl padslash
key 91  all string+leftarrow numl pad4
key 92  all rf(11) numl pad5
key 93  all string+rightarrow numl pad6
key 94  all bf(8) numl pad0
key 95  all lf(9)
key 96  all hole
key 97  all lf(10)
key 98  all shiftkeys+numlock
key 99  all shiftkeys+leftshift up shiftkeys+leftshift
key 100 base z shift Z caps Z ctrl ^Z altg nop
key 101 base x shift X caps X ctrl ^X altg nop
key 102 base c shift C caps C ctrl ^C altg nop
key 103 base v shift V caps V ctrl ^V altg nop
key 104 base b shift B caps B ctrl ^B altg nop
key 105 base n shift N caps N ctrl ^N altg nop
key 106 base m shift M caps M ctrl '
key 107 base , shift < caps , ctrl , altg nop
key 108 base . shift > caps . ctrl . altg nop
key 109 base / shift ? caps / ctrl ^_ altg nop
key 110 all shiftkeys+rightshift up shiftkeys+rightshift
key 111 all '0
key 112 all rf(13) numl pad1
key 113 all string+downarrow numl pad2
key 114 all rf(15) numl pad3
key 115 all hole
key 116 all hole
key 117 all hole
key 118 all lf(16)
key 119 all shiftkeys+capslock
key 120 all buckybits+metabit up buckybits+metabit
key 121 base ' ' shift ' ' caps ' ' ctrl ^@ altg ' '
key 122 all buckybits+metabit up buckybits+metabit
key 123 all hole
key 124 all hole
key 125 all bf(14) numl padplus
key 126 all error numl error up hole
key 127 all idle numl idle up reset
```

SEE ALSO

loadkeys(1), **kb**(4M)

NAME

.orgrc – organizer configuration and initialization file

AVAILABILITY

Sun386i systems only.

DESCRIPTION

The **organizer**(1), a SunView application for viewing and manipulating files and directories, saves its parameters in the **.orgrc** file between runs. The user can use this file to configure the **organizer.**

The first parameter in the file should always be the version number.

Version = 1.1

Do not change the version number gratuitously; if the **organizer** determines that this version is "old", then it will save this version in **~/.orgrc.old** and try to copy **/usr/lib/Orgrc** into **~/.orgrc**.

The next two parameters assign default names for the system DOS Program and the default Text Editor.

DOS Program = dos
Text Editor = textedit

The DOS Program parameter should not be changed. However, the user can change the default text editor. For example:

Text Editor = shelltool vi

is an option to **textedit**(1) The Properties section initializes or customizes certain properties. The possible values for each item are listed below. The braces and vertical bars below indicate choices, they are not used in the **.orgrc** file.

 # Properties
PROPERTY Display Style = {Name and Icon | Name Only | Name and Info}
PROPERTY Roadmap = {Yes | No}
PROPERTY Show Hidden Files = {Yes | No}
PROPERTY Sort Type = {Name | File Type | Size | Date}
PROPERTY Sort Direction = {Ascending | Descending}
PROPERTY Update Interval = [5-300]

The Color Palette specifies all the color values used by the **organizer**'s buttons and icons. These values must be RGB triplets. It is listed below.

Begin Color Palette
Background Color = 255, 255, 255
Directory Name Color = 0, 146, 236
Directory Icon Foreground Color = 114, 45, 0
Directory Icon Background Color = 255, 227, 185
Directory Highlight Name Color = 255, 255, 255
Text Name Color = 0, 166, 143
Text Icon Foreground Color = 0, 0, 0
Text Icon Background Color = 255, 255, 255
Text Highlight Name Color = 255, 255, 255
Executable Name Color = 255, 0, 0
Executable Icon Foreground Color = 157, 162, 187
Executable Icon Background Color = 255, 255, 255
Executable Highlight Name Color = 255, 255, 255
Device Name Color = 113, 117, 135
Device Icon Foreground Color = 0, 0, 0
Device Icon Background Color = 174, 255, 159
Device Highlight Name Color = 255, 255, 255
Button Group1 Color = 255, 220, 187
Button Group2 Color = 201, 211, 232

```
    Button Group3 Color = 255, 244, 113
    Button Foreground Color = 0, 0, 0
    Button Background Color = 255, 255, 255
    Button Shadow Color = 180, 180, 184
    Button Highlight Color = 0, 0, 0
    Scrollbar Color = 142, 106, 146
End Color Palette
```

The Color Labels section allows the labelling or "aliasing" of RGB triplets. The right side of a label assignment can contain an RGB triplet, a palette entry, or another label that has already been assigned. Here's an example:

```
Begin Color Labels
    Black = Text Icon Foreground Color
    White = Background Color
    Orange = 255, 213, 127
    Dark Red = 232, 0, 0
    Red = Dark Red
    Dark Blue = 0, 75, 161
    Light Gray = 223, 223, 223
End Color Labels
```

The rest of the **.orgrc** file contains user defined filetypes. The user can specify that certain files be grouped together and treated in a similar fashion. That is, the same icon is used to display all files in a filetype, and the same command is used when a file is opened or edited. In the default **.orgrc** (**/usr/lib/Orgrc**) there are ten user defined file types. Here is an example of a user defined file type:

```
Begin File Type Definition
    Name = *.sh
    Background Icon = ~/images/scriptBackGround.icon
    Foreground Icon = ~/images/scriptForeGround.icon
    Name Color = Black
    Icon Background Color = Orange
    Icon Foreground Color = Black
    Highlight Name Color = White
    Execute Application = cmdtool "$(FILE)"
    Edit Application = cmdtool vi "$(FILE)"
    Print Application = pr -f "$(FILE)" | lpr
End File Type Definition
```

The right side of the Name field can contain any combination of **csh**(1) **Filename Substitution** characters. This field specifies the file type by way of its name. The next six fields together specify an **organizer** icon. This model allows a rich variety of icons. For more information, see the **Sun386i Advanced Skills** manual. The right side of the Execute Application specifies the command to execute when the user either opens or double clicks on a file of that type. Edit Application and Print Application specify the command to execute when the user requests that a file of that type be edited or printed.

FILES

~/.orgrc	Read at beginning of execution by the Organizer
/usr/lib/Orgrc	Default .orgrc

SEE ALSO

Sun386i User's**Guide**, **Sun386i**Advanced**Skills**, **organizer**(1)

LIMITATIONS

The right side of Color Palette entries must be RGB triplets.
Forward references for Color Labels are not allowed.

BUGS

The **organizer** saves its parameters as it exits; unfortunately, it doesn't know how to save user's comments in the file. So, comments get blown away.

NAME

vfont – font formats

SYNOPSIS

#include <vfont.h>

DESCRIPTION

The fonts used by the window system and printer/plotters have the following format. Each font is in a file, which contains a header, an array of character description structures, and an array of bytes containing the bit maps for the characters. The header has the following format:

```
struct header {
        short           magic;          /* Magic number VFONT_MAGIC */
        unsigned short  size;           /* Total # bytes of bitmaps */
        short           maxx;           /* Maximum horizontal glyph size */
        short           maxy;           /* Maximum vertical glyph size */
        short           xtend;          /* (unused) */
};
#define  VFONT_MAGIC                    0436
```

maxx and *maxy* are intended to be the maximum horizontal and vertical size of any glyph in the font, in raster lines. (A glyph is just a printed representation of a character, in a particular size and font.) The **size** is the total size of the bit maps for the characters in bytes. The *xtend* field is not currently used.

After the header is an array of **NUM_DISPATCH** structures, one for each of the possible characters in the font. Each element of the array has the form:

```
struct dispatch {
        unsigned short  addr;           /* &(glyph) - &(start of bitmaps) */
        short           nbytes;         /* # bytes of glyphs (0 if no glyph) */
        char            up, down, left, right; /* Widths from baseline point */
        short           width;          /* Logical width, used by troff */
};
#define  NUM_DISPATCH                   256
```

The *nbytes* field is nonzero for characters which actually exist. For such characters, the *addr* field is an offset into the bit maps to where the character's bit map begins. The *up , down*, *left*, and *right* fields are offsets from the base point of the glyph to the edges of the rectangle which the bit map represents. (The imaginary "base point" is a point which is vertically on the "base line" of the glyph (the bottom line of a glyph which does not have a descender) and horizontally near the left edge of the glyph; often 3 or so pixels past the left edge.) The bit map contains *up+down* rows of data for the character, each of which has *left+right* columns (bits). Each row is rounded up to a number of bytes. The *width* field represents the logical width of the glyph in bits, and shows the horizontal displacement to the base point of the next glyph.

FILES

/usr/lib/vfont/*
/usr/lib/fonts/fixedwidthfonts/*

SEE ALSO

troff(1), **vfontinfo**(1), **vswap**(1) **fontflip_to_68k**(8) **fontflip_to_i386**(8)

BUGS

A machine-independent font format should be defined. The **short**s in the above structures contain different bit patterns depending whether the font file is for use on a VAX or a Sun. The **vswap** program must be used to convert one to the other.

NAME

fontflip_to_i386 – change a vfont file

fontflip_to_68k – change a Sun386i vfont

SYNOPSIS

fontflip_to_i386 fontname [**-o** *newfontname*]

fontflip_to_68k fontname [**-o** *newfontname*]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

fontflip_to_386i takes as input a vfont file (Sun-3 fixedwidthfont) and creates a Sun386i vfont. This new font is a bitflipped version of its input. The new font is named oldfont.i386 unless otherwise specified.

fontflip_to_68k takes as input a Sun386i vfont file (fixedwidthfont) and creates a Sun-3 vfont file (also used by Sun-2 and Sun-4 systems). If the input font has the name font.i386, the new font will have the .i386 extension stripped off, resulting in the name font. If the input file does not have the .i386 extension, then the **–o** switch must be used to specify the output file.

By default, the system appends the suffix **.i386** to a font name before it opens the font and attempts to use it. If the system doesn't find the font, it then opens the font name specified, which by convention is a Sun-3 font. You can use either format of font, but system performance improves with use of the Sun386i format fonts. These two utilities allow you to convert between the two formats. Sun ships both formats in **/usr/lib/fonts/fixedwidthfonts**. Typically only developers will need to employ these utilities.

OPTIONS

-o *filename* Specify the name of the new flipped font.

FILES

/usr/lib/fonts/fixedwidthfonts

SEE ALSO

vfont(5) **fontedit**(1)

NAME

ipallocd – Ethernet-to-IP address allocator

SYNOPSIS

/usr/etc/rpc.ipallocd

AVAILABILITY

Sun386i systems only.

DESCRIPTION

ipallocd is a daemon that determines or temporarily allocates IP addresses within a network segment. The service is only available on the system which is home to the address authority for the network segment, currently the YP master of the *hosts.byaddr* map although the service is not tied to Yellow Pages. It has complete knowledge of the hosts listed in the yellow pages, and, if the system is running the name server, of any hosts listed in internet domain tables automatically accessed on that host through the standard library *gethostbyaddr()* call.

This protocol uses DES authentication (the Sun Secure RPC protocol) to restrict access to this function. The only clients privileged to allocate addresses are those whose net IDs are in the *networks* group. For machine IDs, the machine must be a YP server.

The daemon uses permanent entries in the */etc/ethers* and */etc/hosts* files when they exist and are usable. In other cases, such as when a system is new to the network, *ipallocd* will enter a temporary mapping in a local cache. Entries in the cache are removed when there have been no references to a given entry in the last hour. This cache survives system crashes so that IP addresses will remain consistent.

The daemon also provides corresponding IP address to name mapping.

If the file */etc/ipalloc.netrange* exists, *ipallocd* refuses to allocate addresses on networks not listed in the *netrange* file, or for which no free address is available.

FILES

/etc/ipalloc.cache
/etc/ipalloc.netrange

SEE ALSO

pnp(3R), **ipalloc**(3R), **ipalloc.netrange**(5), **ipallocd**(8C), **pnpboot**(8C), **netconfig**(8C), **rarpd**(8C)

NAME

kadb – adb-like kernel and standalone-program debugger

SYNOPSIS

> b kadb [**–d**] [*boot-flags*]

DESCRIPTION

kadb is an interactive debugger that is similar in operation to **adb**(1), and runs as a standalone program under the PROM monitor. You can use **kadb** to debug the kernel, or to debug any standalone program.

Unlike **adb**, **kadb** runs in the same supervisor virtual address space as the program being debugged — although it maintains a separate context. The debugger runs as a *coprocess* that cannot be killed (no '**:k**') or rerun (no '**:r**'). There is no signal control (no '**:i**', '**:t**', or '**$i**'), although the keyboard facilities (CTRL–C, CTRL–S, and CTRL–Q) are simulated.

While the kernel is running under **kadb**, the abort sequence (**L1-A** or **BREAK**) drops the system into **kadb** for debugging — as will a system panic. When running other standalone programs under **kadb**, the abort sequence will pass control to the PROM monitor. **kadb** is then invoked from the monitor by jumping to the starting address for **kadb** found in **/usr/include/debug/debug.h** (currently this can be done for both Sun-2 and Sun-3 system machines with the monitor command '**g fd00000**', and with the monitor command '**g fe005000**' for Sun386i systems). **kadb**'s user interface is similar to **adb**. Note: **kadb** prompts with

kadb>

Most **adb** commands function in **kadb** as expected. Typing an abort sequence in response to the prompt returns you to the PROM monitor, from which you can examine control spaces that are not accessible within **adb** or **kadb**. The PROM monitor command **c** will return control to **kadb**. As with **$p** works when debugging kernels (by actually mapping in new user pages). The verbs **?** and **/** are equivalent in **kadb ,** since there is only one address space in use.

Sun386i System Operations

kadb on the Sun386i system can also be used to debug loadable modules. To do so, use the **-sym** option to the **modload** command. If you need to debug the module entry point routine, be sure to set a breakpoint on the kernel routine vd_entry. This is the routine that calls the module entry point routine. When **kadb** hits the breakpoint, the symbols for the module are usable and a breakpoint can be set in the module itself.

Care must be taken to remove **kadb** breakpoints before unloading modules. Since **kadb** inserts **bpt** instructions in the module itself, unloading and loading new modules while breakpoints are set can cause **kadb** to insert **bpt** instructions at incorrect places. This may cause the system to crash.

The symbol "vddebug" can be set to -1 to enable all kernel printf's in the pseudo-driver (/dev/vd). These printf's may be helpful when trying to load or unload modules.

OPTIONS

kadb is booted from the PROM monitor as a standalone program. If you omit the **–d** flag, **kadb** automatically loads and runs **vmunix** from the filesystem **kadb** was loaded from. The **kadb vmunix** variable can be patched to change the default program to be loaded.

–d Interactive startup. Prompts with

kadb:

for a file to be loaded. From here, you can enter a boot sequence line to load a standalone program. Boot flags entered in response to this prompt are included with those already set and passed to the program. If you type a RETURN only, **kadb** loads **vmunix** from the filesystem that **kadb** was loaded from.

boot-flags

You can specify boot flags as arguments when invoking **kadb.** Note: **kadb** always sets the **–d** (debug) boot flag, and passes it to the program being debugged.

USAGE

Refer to **adb** in *Debugging Tools for the Sun Workstation.*

Kernel Macros

As with **adb**, kernel macros are supported. With **kadb**, however, the macros are compiled into the debugger itself, rather than being read in from the filesystem. The **kadb** command **$M** lists macros known to **kadb.**

Setting Breakpoints

Self-relocating programs such as the SunOS kernel need to be relocated before breakpoints can be used. To set the first breakpoint for such a program, start it with '**:s**'; **kadb** is then entered after the program is relocated (when the system initializes its interrupt vectors). Thereafter, '**:s**' single-steps as with **adb**. Otherwise, use '**:c**' to start up the program.

Sun386i System Commands

The Sun386i system version of **kadb** has the following additional commands. Note, for the general syntax of **adb** commands, see **adb**(1).

:i Read a byte (with the INB instruction) in from the port at *address.*

:o Send a byte (with the OUTB instruction) containing *count* out through the port at *address.*

:p Like **:b** in **adb**(1), but sets a breakpoint using the hardware debug register instead of the breakpoint instruction. The advantage of using **:p** is that when setting breakpoints with the debug register it is not necessary to have write access to the breakpoint location. Four (4) breakpoints can be set with the hardware debug registers.

$S Switch I/O from the console to the serial port or vice versa.

[Like **:e** in **adb**(1), but requires only one keystroke and no RETURN character.

] Like **:s** in **adb**(1), but requires only one keystroke and no RETURN character.

Automatic Rebooting with kadb

You can set up your workstation to automatically reboot **kadb** by patching the *vmunix* variable in **/boot** with the string **kadb**. (Refer to **adb** in *Debugging Tools for the Sun Workstation* for details on how to patch executables.)

FILES

/vmunix
/boot
/kadb
/usr/include/debug/debug.h

SEE ALSO

adb(1), **boot**(8S), **modload**(8), **modunload**(8)

Debugging Tools for the Sun Workstation
Writing Device Drivers

BUGS

There is no floating-point support, except on Sun386i systems.

kadb cannot reliably single-step over instructions that change the status register.

When sharing the keyboard with the operating system the monitor's input routines can leave the keyboard in a confused state. If this should happen, disconnect the keyboard momentarily and then reconnect it. This forces the keyboard to reset as well as initiating an abort sequence.

Most of the bugs listed in **adb**(1) also apply to **kadb**.

NAME

modload – load a Sun386i module

SYNOPSIS

modload *filename* [**–conf** *config_file*] [**–entry** *entry_point*] [**–exec** *exec_file*] [**–o** *output_file*] [**–nolink**] [**–A** *vmunix_file*]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

modload loads a loadable module into a running system. The input file *filename* is an object file (**.o** file).

OPTIONS

–conf *config_file*

Use this configuration file to configure the loadable driver being loaded. The commands in this file are the same as those that the **config**(8) program recognizes. There are two additional commands, **blockmajor** and **charmajor,** shown in the configuration file example below.

–entry *entry_point*

This is the module entry point. This is passed by **modload** to **ld**(1) when the module is linked. The default module entry point name is '*xxx***init**'.

–exec *exec_file*

This is the name of a shell script or executable image file that will be executed if the module is successfully loaded. It is always passed the module id and module type as the first two arguments. For loadable drivers, the third and fourth arguments are the block major and character major numbers respectively. For a loadable system call, the third argument is the system call number.

–o *output_file*

This is the name of the output file that is produced by the linker. If this option is omitted, then the output file name is *filename* without the '**.o**'.

–nolink This option can be used if **modload** has already been issued once and the output file already exists. One must take care that neither the kernel nor the module have changed.

–sym This option indicates that **modload** should invoke the linker without the **-s** option. The linker will then produce a symbol table for the module. These symbols are useful for developers using a debugger to debug the module.

–A *vmunix_file*

This is the file that is passed to the linker to resolve module references to kernel symbols. The default is **/vmunix.** The symbol file must be for the currently running kernel or the module is likely to crash the system.

EXAMPLE

```
controller      fdc0 at atmem csr 0x001000 irq 6 priority 3
controller      fdc2 at atmem csr 0x002000 irq 5 priority 2
disk            fd0 at fdc0 drive 0
disk            fd0 at fdc0 drive 1
disk            fd0 at fdc0 drive 2
device          fd0 at fdc2 drive 0 csr 0x003000 irq 4 priority 2
disk            fd0 at fdc2 drive 1
blockmajor 51
charmajor 52
```

SEE ALSO

ld(1), **modunload**(8), **modstat**(8)

NAME

modstat – display status of Sun386i modules

SYNOPSIS

modstat [**–id** *module_id*]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

modstat displays the status of the loaded modules. A sample status from **modstat**:

Id	Type	Loadaddr	Size	B-major	C-major	Sysnum	Mod Name
0	Drv	fd000000	d000		58.		Tablet Driver
1	Sys	fd00d000	2000			180	Pageinfo

The Size displayed is a hexadecimal number in bytes of the sum of text + data + bss + symbol_table. The Size value includes the symbol_table only when the module was loaded with the **modload -sym** option.

OPTIONS

–id *module_id*

Display status of only this module.

SEE ALSO

modload(8), **modunload**(8)

NAME

mount, umount – mount and dismount filesystems

SYNOPSIS

/usr/etc/mount [**–p**]
/usr/etc/mount –a[fnv] [**–t** *type*]
/usr/etc/mount [**–fnrv**] [**–t** *type*] [**–o** *options*] *filesystem directory*
/usr/etc/mount [**–vfn**] [**–o** *options*] *filesystem* | *directory*

/usr/etc/umount [**–t** *type*] [**–h** *host*]
/usr/etc/umount –a[v]
/usr/etc/umount [**–v**] *filesystem* | *directory* ...

DESCRIPTION

mount attaches a named *filesystem* to the filesystem hierarchy at the pathname location *directory*, which must already exist. If *directory* has any contents prior to the **mount** operation, these remain hidden until the *filesystem* is once again unmounted. If *filesystem* is of the form *host:pathname,* it is assumed to be an NFS filesystem (type **nfs**).

umount unmounts a currently mounted filesystem, which can be specified either as a *directory* or a *filesystem.*

mount and **umount** maintain a table of mounted filesystems in **/etc/mtab**, described in **fstab**(5). If invoked without an argument, **mount** displays the contents of this table. If invoked with either a *filesystem* or *directory* only, mount searches the file **/etc/fstab** for a matching entry, and mounts the filesystem indicated in that entry on the indicated directory.

MOUNT OPTIONS

–p Print the list of mounted filesystems in a format suitable for use in **/etc/fstab**.

–a All. Attempt to mount all the filesystems described in **/etc/fstab**. If a *type* argument is specified with **–t**, mount all filesystems of that type. Filesystems are not necessarily mounted in the order shown in **/etc/fstab**.

–f Fake an **/etc/mtab** entry, but do not actually mount any filesystems.

–n Mount the filesystem without making an entry in **/etc/mtab**.

–v Verbose. Display a message indicating each filesystem being mounted.

–t *type* Specify a filesystem type. The accepted types are **4.2**, and **nfs**; see **fstab**(5) for a description of these types.

–r Mount the specified filesystem read-only, even if the entry in **/etc/fstab** specifies that it is to be mounted read-write.

Physically write-protected and magnetic-tape filesystems must be mounted read-only. Otherwise errors occur when the system attempts to update access times, even if no write operation is attempted.

–o *options*

Specify filesystem *options* —list of comma-separated words from the list below. Some options are valid for all filesystem types, while others apply to a specific type only.

options valid on *all* filesystems:

rw | **ro**	Read/write or read-only.
suid | **nosuid**	Setuid execution allowed or disallowed.
grpid	Create files with BSD semantics for the propagation of the group ID. Under this option, files inherit the GID of the directory in which they are created, regardless of the directory's set-GID bit.

noauto Do not mount this filesystem that is currently mounted read-only. If the filesystem is not currently mounted, an error results.

remount If the file system is currently mounted, and if the entry in **/etc/fstab** specifies that it is to be mounted read-write or **rw** was specified along with **remount**, remount the file system making it read-write. If the entry in **/etc/fstab** specifies that it is to be mounted read-only and **rw** was not specified, the file system is not remounted. If the file system is not currently mounted, an error results.

The default is '**rw,suid**'.

options specific to **4.2** filesystems:

quota | noquota Usage limits are enforced, or are not enforced. The default is **noquota**.

options specific to **nfs** (NFS)filesystems:

bg | fg If the first attempt fails, retry in the background, or, in the foreground.

retry=*n* The number of times to retry the mount operation.

rsize=*n* Set the read buffer size to *n* bytes.

wsize=*n* Set the write buffer size to *n* bytes.

timeo=*n* Set the NFS timeout to *n* tenths of a second.

retrans=*n* The number of NFS retransmissions.

port=*n* The server IP port number.

soft | hard Return an error if the server does not respond, or continue the retry request until the server responds.

intr Allow keyboard interrupts on hard mounts.

secure Use a more secure protocol for NFS transactions.

acregmin=*n* Hold cached attributes for at least *n* seconds after file modification.

acregmax=*n* Hold cached attributes for no more than *n* seconds after file modification.

acdirmin=*n* Hold cached attributes for at least *n* seconds after directory update.

acdirmax=*n* Hold cached attributes for no more than *n* seconds after directory update.

actimeo=*n* Set *min* and *max* times for regular files and directories to *n* seconds.

Regular defaults are:

fg,retry=10000,timeo=7,retrans=3,port=NFS_PORT,hard,
acregmin=3,acregmax=60,acdirmin=30,acdirmax=60

Defaults for **rsize** and **wsize** are set internally by the system kernel.

UMOUNT OPTIONS

-h *host* Unmount all filesystems listed in **/etc/mtab** that are remote-mounted from *host*.

-t *type* Unmount all filesystems listed in **/etc/mtab** that are of a given *type*.

-a Unmount all filesystems currently mounted (as listed in **/etc/mtab**).

-v Verbose. Display a message indicating each filesystem being unmounted.

NFS FILESYSTEMS

Background vs. Foreground

Filesystems mounted with the **bg** option indicate that **mount** is to retry in the background if the server's mount daemon (**mountd**(8c)) does not respond. **mount** retries the request up to the count specified in the **retry=***n* option. Once the filesystem is mounted, each NFS request made in the kernel waits **timeo=***n* tenths of a second for a response. If no response arrives, the time-out is multiplied by **2** and the request is retransmitted. When the number of retransmissions has reached the number specified in the **retrans=***n* option, a filesystem mounted with the **soft** option returns an error on the request; one

mounted with the **hard** option prints a warning message and continues to retry the request.

Read-Write vs. Read-Only

Filesystems that are mounted **rw** (read-write) should use the **hard** option.

Interrupting Processes With Pending NFS Requests

The **intr** option allows keyboard interrupts to kill a process that is hung while waiting for a response on a hard-mounted filesystem.

Secure Filesystems

The **secure** option must be given if the server requires secure mounting for the filesystem.

File Attributes

The attribute cache retains file attributes on the client. Attributes for a file are assigned a time to be flushed. If the file is modified before the flush time, then the flush time is extended by the time since the last modification (under the assumption that files that changed recently are likely to change soon). There is a minimum and maximum flush time extension for regular files and for directories. Setting **actimeo=***n* extends flush time by *n* seconds for both regular files and directories.

SYSTEM V COMPATIBILITY

System V File-Creation Semantics

Ordinarily, when a file is created its GID is set to the effective GID of the calling process. This behavior may be overridden on a per-directory basis, by setting the set-GID bit of the parent directory; in this case, the GID is set to the GID of the parent directory (see **open**(2V) and **mkdir**(2)). Files created on filesystems that are mounted with the **grpid** option will obey BSD semantics; that is, the GID is unconditionally inherited from that of the parent directory.

EXAMPLES

To mount a local disk:	**mount /dev/xy0g /usr**
To fake an entry for **nd** root:	**mount -ft 4.2 /dev/nd0 /**
To mount all 4.2 filesystems:	**mount -at 4.2**
To mount a remote filesystem:	**mount -t nfs serv:/usr/src /usr/src**
To mount a remote filesystem:	**mount serv:/usr/src /usr/src**
To hard mount a remote filesystem:	
	mount -o hard serv:/usr/src /usr/src
To save current mount state:	**mount -p > /etc/fstab**

FILES

/etc/mtab	table of mounted filesystems
/etc/fstab	table of filesystems mounted at boot

SEE ALSO

mkdir(2), **mount**(2), **unmount**(2), **open**(2V), **fstab**(5), **mtab**(5), **mountd**(8C), **nfsd**(8)

BUGS

Mounting filesystems full of garbage crashes the system.

If the directory on which a filesystem is to be mounted is a symbolic link, the filesystem is mounted on *the directory to which the symbolic link refers,* rather than being mounted on top of the symbolic link itself.

NAME

rarpd – DARPA Reverse Address Resolution Protocol service

SYNOPSIS

/usr/etc/rarpd *if hostname*

Sun386i SYNOPSIS

/usr/etc/rarpd *if* [*hostname*]

AVAILABILITY

This program is available on all Sun386i systems. On other Sun systems, it is available with the *Networking Tools and Programs* software installation option. Refer to *Installing the SunOS* for information on how to install optional software.

DESCRIPTION

rarpd starts a daemon that responds to Reverse Address Resolution Protocol (Reverse ARP) requests. The daemon forks a copy of itself, and requires root privileges.

The Reverse ARP protocol is used by machines at boot time to discover their (32 bit) IP address given their (48 bit) Ethernet address. In order for the request to be answered, a machine's name-to-IP-address entry must exist in the **/etc/hosts** file and its name-to-Ethernet-address entry must exist in the **/etc/ethers** file. Furthermore, the server that runs the **rarpd** daemon must have entries in both files. Note that if the server machine is using the Yellow Pages service, the server's files are ignored, and the appropriate Yellow Pages maps queried.

The first argument, *if*, is one of the interface parameter strings (listed in **boot**(8S)), in the form of "name unit", for example **ie0**. The second argument, **hostname**, is the interface's corresponding host name. The *if*, *hostname* pair should be the same as the arguments passed to the **ifconfig (8)** command. As with **ifconfig, rarpd** must be invoked for each interface that the server wishes to support. Therefore a gateway machine may invoke the **rarpd** multiple times, for example:

/usr/etc/rarpd ie0 host
/usr/etc/rarpd ie1 host-backbone

Sun386i DESCRIPTION

On the Sun386i, **rarpd** is responsible for dynamic IP address allocation using Dynamic RARP. If the *pnp* policy is not set to *restricted* in the YP *policies* map, then Dynamic RARP requests may cause **rarpd** to request allocation of a temporarily unused IP address from the **ipalloc** daemon. This happens only when the system is not listed in the *hosts* and *ethers* YP maps as being on the particular network segment.

If the *pnp* policy is set to *restricted* then Dynamic RARP requests that can not be satisfied will receive an error response indicating that Automatic System Installation is not enabled on the network segment. In such a case, systems trying to install themselves on the network will report that manual installation by the network administrator is required.

Only Yellow Pages servers provide Dynamic RARP service. If any system incorrectly tries to provide Dynamic RARP service on the network, this will be detected and dynamic IP address allocation will be disabled. This is required, since otherwise two different authorities could be assigning IP addresses on the network and would probably allocate addresses that should not be allocated. Only one Address Authority may exist for a network segment; it must have the authoritative list of all Dynamic RARP clients.

IP address allocation using the RARP protocol, as well as the Dynamic RARP protocol, may be enabled by setting the *ip_address_allocation* policy (in the YP *policies* map) to the value *rarp_and_drarp* . If this is done, then **all** RARP clients must be listed in the YP databases used by *rarpd*. If this is not done, some clients may be returned incorrect addresses when one is dynamically assigned. The Dynamic RARP protocol may be completely disabled by setting this policy value to *none* . This is strongly discouraged.

FILES

/etc/ethers
/etc/hosts

SEE ALSO

boot(8S), **ifconfig**(8C) **ipallocd**(8C), **ethers**(5), **hosts**(5), **ipallocd**(8C), **netconfig**(8C), **pnpboot**(8), **policies**(5)

Finlayson, Ross, Timothy Mann, Jeffrey Mogul, and Marvin Theimer, *A Reverse Address Resolution Protocol*, RFC 903, Network Information Center, SRI International, Menlo Park, Calif., June 1984.

NAME

rwhod – system status server

SYNOPSIS

/usr/etc/in.rwhod

AVAILABILITY

Due to its potential impact on network performance, this service is commented out of the **/etc/rc.local** system initialization script. It is provided only for 4.3 BSD compatibility.

This program is available with the *Networking Tools and Programs* software installation option. Refer to *Installing the Sun Operating System* for information on how to install optional software.

DESCRIPTION

rwhod is the server which maintains the database used by the **rwho**(1C) and **ruptime**(1C) programs. Its operation is predicated on the ability to *broadcast* messages on a network.

rwhod operates as both a producer and consumer of status information. As a producer of information it periodically queries the state of the system and constructs status messages which are broadcast on a network. As a consumer of information, it listens for other **rwhod** servers' status messages, validating them, then recording them in a collection of files located in the directory **/var/spool/rwho**.

The **rwho** server transmits and receives messages at the port indicated in the "rwho" service specification, see **services**(5). The messages sent and received, are of the form:

```
struct  outmp {
        char    out_line[8];    /* tty name */
        char    out_name[8];    /* user id */
        long    out_time;       /* time on */
};

struct  whod {
        char    wd_vers;
        char    wd_type;
        char    wd_fill[2];
        int     wd_sendtime;
        int     wd_recvtime;
        char    wd_hostname[32];
        int     wd_loadav[3];
        int     wd_boottime;
                struct  whoent {
                struct  outmp we_utmp;
                int     we_idle;
        } wd_we[1024 / sizeof (struct whoent)];
};
```

All fields are converted to network byte order prior to transmission. The load averages are as calculated by the w(1) program, and represent load averages over the 5, 10, and 15 minute intervals prior to a server's transmission. The host name included is that returned by the **gethostname**(2) system call. The array at the end of the message contains information about the users logged in to the sending machine. This information includes the contents of the **utmp**(5) entry for each non-idle terminal line and a value indicating the time since a character was last received on the terminal line.

Messages received by the **rwho** server are discarded unless they originated at a **rwho** server's port. In addition, if the host's name, as specified in the message, contains any unprintable ASCII characters, the message is discarded. Valid messages received by **rwhod** are placed in files named **whod.***hostname* in the directory **/var/spool/rwho**. These files contain only the most recent message, in the format described above.

Status messages are generated approximately once every 60 seconds. **rwhod** performs an **nlist**(3) on **/vmunix** every 10 minutes to guard against the possibility that this file is not the system image currently operating.

FILES

/var/spool/rwho

DIAGNOSTICS

Status and diagnostic messages are logged to the appropriate system log using the **syslogd**(8) facility.

SEE ALSO

rwho(1C), **ruptime**(1C), w(1), **gethostname**(2), **nlist**(3), **utmp**(5), **syslogd**(8)

BUGS

This service takes up progressively more network bandwidth as the number of hosts on the local net increases. For large networks, the cost becomes prohibitive. RPC-based services such as **rup**(1C) and **rusers**(1C) provide a similar function with greater efficiency.

rwhod should relay status information between networks. People often interpret the server dying as a machine going down.

NAME

start_applic – generic application startup procedures

SYNOPSIS

/usr/etc/start_applic

AVAILABILITY

Sun386i systems only.

DESCRIPTION

start_applic is a short generic shell script that can be copied or symbolically linked into either **/vol/local/bin/***application* or **/usr/local/bin/***application.* When invoked as *application,* an application installed as described below will be correctly invoked on systems of any supported processor architecture. Installing **start_applic** (or a customized version of it) in one of these locations ensures that no user's or system's environment needs to be modified just to run the application. Applications are stored in a single tree, not shared with any other applications. This tree may be available on different systems in different places; if the application needs to reference its distribution tree, this should be determined from the *$application_ROOT* environment variable.

The application startup script arranges that the *$PATH* and *$application_ROOT* environment variables are set correctly while the application is running. If the application's distribution tree (placed into **/vol/***application* or **/usr/local/***application*) doesn't have an executable binary with the name of the application (e.g. **/vol/***application*/**bin.***arch*/*application*) then *start_applic* can not be used, and a customized application startup script must be used instead. Such scripts must also allow users to invoke the application from systems of any architecture, without requiring them to customize their own environments.

Heterogeneous Networked Installations

Applications available on the network are available through **/vol/***application* and exported either to all systems or just to selected ones, as licensing restrictions allow. The export point is **/export/vol/***application*, which is a symbolic link to the actual installation point, typically the **/files/vol/***application* directory. All subdirectories not explicitly tagged with a processor architecture are shared among all processor architectures; thus while the *.../bin.sun386* and *.../lib.sun386* subdirectories contain respectively binaries and libraries executable only on systems of the *sun386* architecture, the *.../bin* directory contains executables that run on any architecture (typically using an interpreter such as /bin/sh), and the *.../etc* directory only contains sharable configuration files.

Homogeneous Single Machine Installations

Applications available only on a specific machine and its boot clients of the same architecture are installed into **/usr/local/***application.* This directory supports only a single architecture; this means that **/usr/local/***application*/**bin** contains binaries executable only on the local architecture, and **/usr/local/***application*/**lib** contains libraries executable only on the local architecture. Any sharable files may be grouped in **/usr/local/***application*/**share**.

If an application is to be installed onto a boot server with the intent of serving it to boot clients with architectures other than the server's native one, it will appear on all of those systems in **/usr/local/***application* as described above. However, the installation point (on the server) for application binaries of architecture *arch* is **/export/local/***arch*/*application.* (When the architecture is the server architecture, this case is identical with the one above.)

Other Installations

Note that these are two contrasting models of software installation. The heterogeneous model assumes general availability of the software, and solves the "which binaries to use" problem with no administrative overhead. The homogeneous model assumes very limited availability of software, requires administrative procedures to ensure that /usr/local only contains binaries of the local architecture, and doesn't really account for networked installations. It is easier to add support for additional architectures using a heterogeneous network model of software installation from the beginning.

Smaller applications (of only one or two files) may be installed into the appropriate **/vol/local/bin.***arch* directory, or possibly into **/export/local/***arch***/bin**. These directories are in user's default paths, so the application does not need to be registered using **start_applic .**

FILES

/files<n>/vol/*application*
/export/vol/*application*
/vol/*application*
/vol/*application***/bin.***arch***/application**
/usr/local/*application*
/export/local/*arch/application*

SEE ALSO

automount(8), **auto.vol**(5), **exportfs**(8), **exports**(5)

NAME

unconfigure – reset the network configuration for a Sun386i system

SYNOPSIS

/usr/etc/unconfigure [**–y**]

AVAILABILITY

Sun386i systems only.

DESCRIPTION

unconfigure restores most of the system configuration and status files to the state they were in when delivered by Sun Microsystems, Inc. It also deletes all user accounts (including home directories), Yellow Pages information, and any diskless client configurations that were set up.

After running **unconfigure,** a system halts. Rebooting it to multi-user mode at this point will start automatic system installation.

unconfigure is intended for use in the following situations:

- As one of the final steps in Software Manufacturing.
- In systems being set up with temporary configurations, holding no user accounts or diskless clients. These will occur during demonstrations and evaluation trials.
- To allow systems that had been used as standalones to be upgraded to join a network in a role other than as a master server. (See instructions later.)

unconfigure is potentially a dangerous utility; it does not work unless invoked by the super-user. As a warning, unless the **–y** option is passed, it will require confirmation that all user files and system software configuration information is to be deleted.

This utility is *not* recommended for routine use of any sort.

Resetting Temporary Configurations

If users need to set up and tear down configurations, **unconfigure** can be used to restore the system to an essentially as-manufactured state. The main concern here is that user accounts will be deleted, so this should not be done casually.

To reset a temporary configuration, just become the super-user and invoke **unconfigure.**

Upgrading Standalones to Network Clients

Systems that are going to be networked should be networked from the very first, if at all possible. This eliminates whole classes of compatibility problems, such as pathnames and (in particular) user account ID (UID) clashes.

Automatic system installation directly supports upgrading a single standalone system to a YP master, and joining any number of unused systems (or systems upon which **unconfigure** has been run) into a network.

However, in the situation where standalone systems that have been used extensively are to be joined to a network, **unconfigure** can be used in conjunction with automatic system installation by a knowledgeable super-user to change a system's configuration from standalone to network client. This particular procedure is not recommended for use by inexperienced administrators. Inexperienced administrators should use the directions found in the *Sun386i SNAP Administration* book instead.

The following procedure is needed only when user accounts or other data need to be preserved; it is intended to ensure that every UID and GID is changed so as not to clash with those in use on the network. It must be applied to each system that is being upgraded from a standalone to a network client.

The procedure is as follows:

1. Identify all accounts and files that you'll want to save. If there are none, just run **unconfigure** and install the system on the network. Do not follow the remaining steps.
2. Copy **/etc/yppasswd** to **/etc/yppasswd.bak**.

3. Rename all the files (including home directories) so that they aren't deleted. (See FILES below.) These should only be found in **/files/home** and perhaps in **/files/vol/local**.
4. Run **unconfigure** and install the system on the network.
5. For each account listed in **/etc/yppasswd.bak** that you want to save, follow this procedure:
   a. Create a new account on the network; if the UID and GID are the same as in **/etc/yppasswd.bak** on the standalone, then skip the next step. However, be sure that you do not make two different accounts with the same UID. (Instructions for manually creating user accounts may be found in the *Sun386i Advanced Administration* book.)
   b. Use the '**chown –R**' command to change the ownership of the home directories.
   c. You may need to rename the files you just chowned above, for example to ensure that they are the user's home directory. This may involve updating the **auto.home**(5) and **auto.vol**(5) YP maps, as well.
   d. For the files that are to be exported, put symbolic links pointing to them from the */export* tree, and include the pathnames of these symbolic links (e.g. **/export/home/groupname/username**) into **/etc/exports**
6. Delete **/etc/yppasswd.bak**.

FILES

unconfigure deletes the following files, if they are present, replacing some of them with the distribution version if one is supposed to exist:

lfB lfB lfB lfB /etc/.rootkey /etc/ethers /etc/localtime /etc/publickey

/etc/auto.home	/etc/exports	/etc/net.conf	/etc/sendmail.cf
/etc/auto.vol	/etc/fstab	/etc/netmasks	/etc/syslog.conf
/etc/bootparams	/etc/ypgroup	/etc/networks	/etc/systems
/etc/bootservers	/etc/hosts	/etc/yppasswd	/single/ifconfig
/var/sysex/*	/etc/passwd	/etc/group	/etc/printcap /etc/ttytab

and all files in **/var/yp** except those distributed with the operating system.

unconfigure truncates all files in **/var/adm**. All user home directories symbolically linked to in **/export/home** are deleted, except those for the default user account **users**, which is shipped with the operating system. All diskless client configuration information symbolically linked to in **/export/root**, **/export/swap**, and **/export/dump** is deleted.

SEE ALSO

find(1), **passwd**(5), **group**(5), **adduser**(8), **chgrp**(1), **chown**(8)

BUGS

More of the system configuration files should be reset.

NAME

ypsync – collect most up-to-date YP maps

SYNOPSIS

/usr/etc/yp/ypsync [**-r**] [**-u**]

AVAILABILITY

Sun386*i* systems only.

DESCRIPTION

The ypsync command is used to gather current Yellow Pages (YP) maps to the local YP server. When invoked with no arguments, it will poll all the YP servers listed in the *ypservers* YP map for the maps they serve, and the order of those maps. If there are any new maps that the local server does not have, or if there are maps that are more current than the local server's copy, it invokes ypxfr to transfer those maps to the local server.

The ypsync command eliminates the need for cron jobs to ensure that YP map updates are eventually transmitted to all YP servers, and supports different YP maps having different masters. It is invoked periodically by *ypserv(8)*.

When invoked with the *-r* flag, ypsync will recreate the local */var/yp* directory and databases if needed. This facility is used when upgrading servers, since they can automatically retrieve YP maps without needing manual intervention. The YP master of the *ypservers* map can also designate new servers, which would automatically pick up their new maps on reboot.

When invoked with the *-u* flag, ypsync will update the list of YP servers on the master of the *ypservers* YP map to include the local system if it doesn't already, and then get copies of all the YP databases. A user invoking *ypsync -u* may not be root, and must have the *networks* privilege in the YP *group* map.

FILES

/var/yp/*YP.domainname*

SEE ALSO

ypupdate(3c), **ypserv**(8), **ypxfr**(8)