

**NAME**

posixoptions - optional parts of the POSIX standard

**DESCRIPTION**

The POSIX standard (the information below is from POSIX.1-2001) describes a set of behaviors and interfaces for a compliant system. However, many interfaces are optional and there are feature test macros to test the availability of interfaces at compile time, and functions [sysconf\(3\)](#), [fpathconf\(3\)](#), [pathconf\(3\)](#), [confstr\(3\)](#) to do this at run time. From shell scripts one can use [getconf\(1\)](#). For more detail, see [sysconf\(3\)](#).

We give the name of the POSIX abbreviation, the option, the name of the [sysconf\(3\)](#) parameter used to inquire about the option, and possibly a very short description. Much more precise detail can be found in the POSIX standard itself, versions of which can nowadays be accessed freely on the web.

**ADV - \_POSIX\_ADVISORY\_INFO - \_SC\_ADVISORY\_INFO**

The following advisory functions are present:

```
    posix_fadvise(),
    posix_fallocate(),
    posix_memalign(),
    posix_madvise().
```

**AIO - \_POSIX\_ASYNCHRONOUS\_IO - \_SC\_ASYNCHRONOUS\_IO**

The header `< aio.h >` is present. The following functions are present:

```
    aio_cancel(),
    aio_error(),
    aio_fsync(),
    aio_read(),
    aio_return(),
    aio_suspend(),
    aio_write(),
    lio_listio().
```

**BAR - \_POSIX\_BARRIERS - \_SC\_BARRIERS**

This option implies the `_POSIX_THREADS` and `_POSIX_THREAD_SAFE_FUNCTIONS` options. The following functions are present:

```
    pthread_barrier_destroy(),
    pthread_barrier_init(),
    pthread_barrier_wait(),
    pthread_barrierattr_destroy(),
    pthread_barrierattr_init().
```

**--- - POSIX\_CHOWN\_RESTRICTED**

If this option is in effect (as it always is under POSIX.1-2001), then only root may change the owner of a file, and nonroot can set the group of a file only to one of the groups it belongs to. This affects the functions `chown()`, `fchown()`.

**CS - \_POSIX\_CLOCK\_SELECTION - \_SC\_CLOCK\_SELECTION**

This option implies the `_POSIX_TIMERS` option. The following functions are present:

```
    pthread_condattr_getclock(),
    pthread_condattr_setclock(),
    clock_nanosleep().
```

If `CLOCK_REALTIME` is changed by the function `clock_settime()`, then this affects all timers set for an absolute time.

**CPT - \_POSIX\_CPUTIME - \_SC\_CPUTIME**

The clockID `CLOCK_PROCESS_CPUTIME_ID` is supported. The initial value of this clock is 0 for each process. This option implies the `_POSIX_TIMERS` option. The function `clock_getcpuclockid()` is present.

**--- - \_POSIX\_FILE\_LOCKING - \_SC\_FILE\_LOCKING**

This option has been deleted. Not in final XPG6.

**FSC - \_POSIX\_FSYNC - \_SC\_FSYNC**

The function *fsync()* is present.

**IP6 - \_POSIX\_IPV6 - \_SC\_IPV6**

Internet Protocol Version 6 is supported.

**--- - \_POSIX\_JOB\_CONTROL - \_SC\_JOB\_CONTROL**

If this option is in effect (as it always is under POSIX.1-2001), then the system implements POSIX-style job control, and the following functions are present:

```
setpgid(),
tcdrain(),
tcflush(),
tcgetpgrp(),
tcsendbreak(),
tcsetattr(),
tcsetpgrp().
```

**MF - \_POSIX\_MAPPED\_FILES - \_SC\_MAPPED\_FILES**

Shared memory is supported. The include file *<sys/mman.h>* is present. The following functions are present: *mmap()*, *msync()*, *munmap()*.

**ML - \_POSIX\_MEMLOCK - \_SC\_MEMLOCK**

Shared memory can be locked into core. The functions *mlockall()*, *munlockall()* are present.

**MR/MLR - \_POSIX\_MEMLOCK\_RANGE - \_SC\_MEMLOCK\_RANGE**

More precisely, ranges can be locked into core. The functions *mlock()*, *munlock()* are present.

**MPR - \_POSIX\_MEMORY\_PROTECTION - \_SC\_MEMORY\_PROTECTION**

The function *mprotect()* is present.

**MSG - \_POSIX\_MESSAGE\_PASSING - \_SC\_MESSAGE\_PASSING**

The include file *<mqeueue.h>* is present. The following functions are present:

```
mq_close(),
mq_getattr(),
mq_notify(),
mq_open(),
mq_receive(),
mq_send(),
mq_setattr(),
mq_unlink().
```

**MON - \_POSIX\_MONOTONIC\_CLOCK - \_SC\_MONOTONIC\_CLOCK**

**CLOCK\_MONOTONIC** is supported. This option implies the **\_POSIX\_TIMERS** option. Affected functions are

```
aio_suspend(),
clock_getres(),
clock_gettime(),
clock_settime(),
timer_create().
```

**--- - \_POSIX\_MULTI\_PROCESS - \_SC\_MULTI\_PROCESS**

This option has been deleted. Not in final XPG6.

**--- - \_POSIX\_NO\_TRUNC**

If this option is in effect (as it always is under POSIX.1-2001) then pathname components longer than **NAME\_MAX** are not truncated, but give an error. This property may be dependent on the path prefix of the component.

**PIO - \_POSIX\_PRIORITIZED\_IO - \_SC\_PRIORITIZED\_IO**

This option says that one can specify priorities for asynchronous I/O. This affects the functions

```
aio_read(),
aio_write().
```

**PS - \_POSIX\_PRIORITY\_SCHEDULING - \_SC\_PRIORITY\_SCHEDULING**

The include file `<sc hed.h>` is present. The following functions are present:

```
sched_get_priority_max(),
sched_get_priority_min(),
sched_getparam(),
sched_getscheduler(),
sched_rr_get_interval(),
sched_setparam(),
sched_setscheduler(),
sched_yield().
```

If also **\_POSIX\_SPAWN** is in effect, then the following functions are present:

```
posix_spawnattr_getschedparam(),
posix_spawnattr_getschedpolicy(),
posix_spawnattr_setschedparam(),
posix_spawnattr_setschedpolicy().
```

**RS - \_POSIX\_RAW\_SOCKETS**

Raw sockets are supported. Affected functions are `getsockopt()`, `setsockopt()`.

**--- - \_POSIX\_READER\_WRITER\_LOCKS - \_SC\_READER\_WRITER\_LOCKS**

This option implies the **\_POSIX\_THREADS** option. Conversely, under POSIX.1-2001 the **\_POSIX\_THREADS** option implies this option.

The following functions are present:

```
pthread_rwlock_destroy(),
pthread_rwlock_init(),
pthread_rwlock_rdlock(),
pthread_rwlock_tryrdlock(),
pthread_rwlock_trywrlock(),
pthread_rwlock_unlock(),
pthread_rwlock_wrlock(),
pthread_rwlockattr_destroy(),
pthread_rwlockattr_init().
```

**RTS - \_POSIX\_REALTIME\_SIGNALS - \_SC\_REALTIME\_SIGNALS**

Realtime signals are supported. The following functions are present:

```
sigqueue(),
sigtimedwait(),
sigwaitinfo().
```

**--- - \_POSIX\_REGEX - \_SC\_REGEX**

If this option is in effect (as it always is under POSIX.1-2001) then POSIX regular expressions are supported and the following functions are present:

```
regcomp(),
regerror(),
regexexec(),
regfree().
```

**--- - \_POSIX\_SAVED\_IDS - \_SC\_SAVED\_IDS**

If this option is in effect (as it always is under POSIX.1-2001), then a process has a saved set-user-ID and a saved set-group-ID. Affected functions are

```

exec(),
kill(),
seteuid(),
setegid(),
setgid(),
setuid().

```

### SEM - \_POSIX\_SEMAPHORES - \_SC\_SEMAPHORES

The include file `<semaphore.h>` is present. The following functions are present:

```

sem_close(),
sem_destroy(),
sem_getvalue(),
sem_init(),
sem_open(),
sem_post(),
sem_trywait(),
sem_unlink(),
sem_wait().

```

### SHM - \_POSIX\_SHARED\_MEMORY\_OBJECTS - \_SC\_SHARED\_MEMORY\_OBJECTS

The following functions are present:

```

mmap(),
munmap(),
shm_open(),
shm_unlink().

```

### --- - \_POSIX\_SHELL - \_SC\_SHELL

If this option is in effect (as it always is under POSIX.1-2001), the function `system()` is present.

### SPN - \_POSIX\_SPAWN - \_SC\_SPAWN

This option describes support for process creation in a context where it is difficult or impossible to use `fork()`, for example, because no MMU is present. If `_POSIX_SPAWN` is in effect, then the include file `<spawn.h>` and the following functions are present:

```

posix_spawn(),
posix_spawn_file_actions_addclose(),
posix_spawn_file_actions_adddup2(),
posix_spawn_file_actions_addopen(),
posix_spawn_file_actions_destroy(),
posix_spawn_file_actions_init(),
posix_spawnattr_destroy(),
posix_spawnattr_getsigdefault(),
posix_spawnattr_getflags(),
posix_spawnattr_getpgroup(),
posix_spawnattr_getsigmask(),
posix_spawnattr_init(),
posix_spawnattr_setsigdefault(),
posix_spawnattr_setflags(),
posix_spawnattr_setpgroup(),
posix_spawnattr_setsigmask(),
posix_spawnnp().

```

If also `_POSIX_PRIORITY_SCHEDULING` is in effect, then the following functions are present:

```

posix_spawnattr_getschedparam(),
posix_spawnattr_getschedpolicy(),
posix_spawnattr_setschedparam(),
posix_spawnattr_setschedpolicy().

```

**SPI - \_POSIX\_SPIN\_LOCKS - \_SC\_SPIN\_LOCKS**

This option implies the **\_POSIX\_THREADS** and **\_POSIX\_THREAD\_SAFE\_FUNCTIONS** options. The following functions are present:

```
pthread_spin_destroy(),
pthread_spin_init(),
pthread_spin_lock(),
pthread_spin_trylock(),
pthread_spin_unlock().
```

**SS - \_POSIX\_SPORADIC\_SERVER - \_SC\_SPORADIC\_SERVER**

The scheduling policy **SCHED\_SPORADIC** is supported. This option implies the **\_POSIX\_PRIORITY\_SCHEDULING** option. Affected functions are

```
sched_setparam(),
sched_setscheduler().
```

**SIO - \_POSIX\_SYNCHRONIZED\_IO - \_SC\_SYNCHRONIZED\_IO**

Affected functions are *open()*, *msync()*, *fsync()*, *fdatasync()*.

**TSA - \_POSIX\_THREAD\_ATTR\_STACKADDR - \_SC\_THREAD\_ATTR\_STACKADDR**

Affected functions are

```
pthread_attr_getstack(),
pthread_attr_getstackaddr(),
pthread_attr_setstack(),
pthread_attr_setstackaddr().
```

**TSS - \_POSIX\_THREAD\_ATTR\_STACKSIZE - \_SC\_THREAD\_ATTR\_STACKSIZE**

Affected functions are

```
pthread_attr_getstack(),
pthread_attr_getstacksize(),
pthread_attr_setstack(),
pthread_attr_setstacksize().
```

**TCT - \_POSIX\_THREAD\_CPUTIME - \_SC\_THREAD\_CPUTIME**

The clockID **CLOCK\_THREAD\_CPUTIME\_ID** is supported. This option implies the **\_POSIX\_TIMERS** option. Affected functions are

```
pthread_getcpuclockid(),
clock_getres(),
clock_gettime(),
clock_settime(),
timer_create().
```

**TPI - \_POSIX\_THREAD\_PRIO\_INHERIT - \_SC\_THREAD\_PRIO\_INHERIT**

Affected functions are

```
pthread_mutexattr_getprotocol(),
pthread_mutexattr_setprotocol().
```

**TPP - \_POSIX\_THREAD\_PRIO\_PROTECT - \_SC\_THREAD\_PRIO\_PROTECT**

Affected functions are

```
pthread_mutex_getprioceiling(),
pthread_mutex_setprioceiling(),
pthread_mutexattr_getprioceiling(),
pthread_mutexattr_getprotocol(),
pthread_mutexattr_setprioceiling(),
pthread_mutexattr_setprotocol().
```

**TPS - \_POSIX\_THREAD\_PRIORITY\_SCHEDULING - \_SC\_THREAD\_PRIORITY\_SCHEDULING**

If this option is in effect, the different threads inside a process can run with different priorities and/or different schedulers. Affected functions are

```
pthread_attr_getinheritsched(),
pthread_attr_getschedpolicy(),
pthread_attr_getscope(),
pthread_attr_setinheritsched(),
pthread_attr_setschedpolicy(),
pthread_attr_setscope(),
pthread_getschedparam(),
pthread_setschedparam(),
pthread_setschedprio().
```

**TSH - \_POSIX\_THREAD\_PROCESS\_SHARED - \_SC\_THREAD\_PROCESS\_SHARED**

Affected functions are

```
pthread_barrierattr_getpshared(),
pthread_barrierattr_setpshared(),
pthread_condattr_getpshared(),
pthread_condattr_setpshared(),
pthread_mutexattr_getpshared(),
pthread_mutexattr_setpshared(),
pthread_rwlockattr_getpshared(),
pthread_rwlockattr_setpshared().
```

**TSF - \_POSIX\_THREAD\_SAFE\_FUNCTIONS - \_SC\_THREAD\_SAFE\_FUNCTIONS**

Affected functions are

```
readdir_r(),
getgrgid_r(),
getgrnam_r(),
getpwnam_r(),
getpwuid_r(),
flockfile(),
ftrylockfile(),
funlockfile(),
getc_unlocked(),
getchar_unlocked(),
putc_unlocked(),
putchar_unlocked(),
rand_r(),
strerror_r(),
strtok_r(),
asctime_r(),
ctime_r(),
gmtime_r(),
localtime_r().
```

**TSP - \_POSIX\_THREAD\_SPORADIC\_SERVER - \_SC\_THREAD\_SPORADIC\_SERVER**

This option implies the **\_POSIX\_THREAD\_PRIORITY\_SCHEDULING** option. Affected functions are

```
sched_getparam(),
sched_setparam(),
sched_setscheduler().
```

**THR - \_POSIX\_THREADS - \_SC\_THREADS**

Basic support for POSIX threads is available. The following functions are present:

*pthread\_atfork()*,  
*pthread\_attr\_destroy()*,  
*pthread\_attr\_getdetachstate()*,  
*pthread\_attr\_getschedparam()*,  
*pthread\_attr\_init()*,  
*pthread\_attr\_setdetachstate()*,  
*pthread\_attr\_setschedparam()*,  
*pthread\_cancel()*,  
*pthread\_cleanup\_push()*,  
*pthread\_cleanup\_pop()*,  
*pthread\_cond\_broadcast()*,  
*pthread\_cond\_destroy()*,  
*pthread\_cond\_init()*,  
*pthread\_cond\_signal()*,  
*pthread\_cond\_timedwait()*,  
*pthread\_cond\_wait()*,  
*pthread\_condattr\_destroy()*,  
*pthread\_condattr\_init()*,  
*pthread\_create()*,  
*pthread\_detach()*,  
*pthread\_equal()*,  
*pthread\_exit()*,  
*pthread\_getspecific()*,  
*pthread\_join()*,  
*pthread\_key\_create()*,  
*pthread\_key\_delete()*,  
*pthread\_mutex\_destroy()*,  
*pthread\_mutex\_init()*,  
*pthread\_mutex\_lock()*,  
*pthread\_mutex\_trylock()*,  
*pthread\_mutex\_unlock()*,  
*pthread\_mutexattr\_destroy()*,  
*pthread\_mutexattr\_init()*,  
*pthread\_once()*,  
*pthread\_rwlock\_destroy()*,  
*pthread\_rwlock\_init()*,  
*pthread\_rwlock\_rdlock()*,  
*pthread\_rwlock\_tryrdlock()*,  
*pthread\_rwlock\_trywrlock()*,  
*pthread\_rwlock\_unlock()*,  
*pthread\_rwlock\_wrlock()*,  
*pthread\_rwlockattr\_destroy()*,  
*pthread\_rwlockattr\_init()*,  
*pthread\_self()*,  
*pthread\_setcancelstate()*,  
*pthread\_setcanceltype()*,  
*pthread\_setspecific()*,  
*pthread\_testcancel()*.

#### **TMO - \_POSIX\_TIMEOUTS - \_SC\_TIMEOUTS**

The following functions are present:

*mq\_timedreceive()*,  
*mq\_timedsend()*,  
*pthread\_mutex\_timedlock()*,  
*pthread\_rwlock\_timedrdlock()*,

*pthread\_rwlock\_timedwrlock(),*  
*sem\_timedwait(),*  
*posix\_trace\_timedgetnext\_event().*

#### **TMR - \_POSIX\_TIMERS - \_SC\_TIMERS**

The following functions are present:

*clock\_getres(),*  
*clock\_gettime(),*  
*clock\_settime(),*  
*nanosleep(),*  
*timer\_create(),*  
*timer\_delete(),*  
*timer\_gettime(),*  
*timer\_getoverrun(),*  
*timer\_settime().*

#### **TRC - \_POSIX\_TRACE - \_SC\_TRACE**

POSIX tracing is available. The following functions are present:

*posix\_trace\_attr\_destroy(),*  
*posix\_trace\_attr\_getclockres(),*  
*posix\_trace\_attr\_getcreatetime(),*  
*posix\_trace\_attr\_getgenversion(),*  
*posix\_trace\_attr\_getmaxdatasize(),*  
*posix\_trace\_attr\_getmaxsystemeventsizesize(),*  
*posix\_trace\_attr\_getmaxusereventsizesize(),*  
*posix\_trace\_attr\_getname(),*  
*posix\_trace\_attr\_getstreamfullpolicy(),*  
*posix\_trace\_attr\_getstreamsizesize(),*  
*posix\_trace\_attr\_init(),*  
*posix\_trace\_attr\_setmaxdatasize(),*  
*posix\_trace\_attr\_setname(),*  
*posix\_trace\_attr\_setstreamsizesize(),*  
*posix\_trace\_attr\_setstreamfullpolicy(),*  
*posix\_trace\_clear(),*  
*posix\_trace\_create(),*  
*posix\_trace\_event(),*  
*posix\_trace\_eventid\_equal(),*  
*posix\_trace\_eventid\_get\_name(),*  
*posix\_trace\_eventid\_open(),*  
*posix\_trace\_eventtypelist\_getnext\_id(),*  
*posix\_trace\_eventtypelist\_rewind(),*  
*posix\_trace\_flush(),*  
*posix\_trace\_get\_attr(),*  
*posix\_trace\_get\_status(),*  
*posix\_trace\_getnext\_event(),*  
*posix\_trace\_shutdown(),*  
*posix\_trace\_start(),*  
*posix\_trace\_stop(),*  
*posix\_trace\_trygetnext\_event().*

#### **TEF - \_POSIX\_TRACE\_EVENT\_FILTER - \_SC\_TRACE\_EVENT\_FILTER**

This option implies the **\_POSIX\_TRACE** option. The following functions are present:

*posix\_trace\_eventset\_add(),*  
*posix\_trace\_eventset\_del(),*  
*posix\_trace\_eventset\_empty(),*



*posix\_trace\_eventset\_fill()*,  
*posix\_trace\_eventset\_ismember()*,  
*posix\_trace\_get\_filter()*,  
*posix\_trace\_set\_filter()*,  
*posix\_trace\_trid\_eventid\_open()*.

#### **TRI - \_POSIX\_TRACE\_INHERIT - \_SC\_TRACE\_INHERIT**

Tracing children of the traced process is supported. This option implies the **\_POSIX\_TRACE** option. The following functions are present:

*posix\_trace\_attr\_getinherited()*,  
*posix\_trace\_attr\_setinherited()*.

#### **TRL - \_POSIX\_TRACE\_LOG - \_SC\_TRACE\_LOG**

This option implies the **\_POSIX\_TRACE** option. The following functions are present:

*posix\_trace\_attr\_getlogfullpolicy()*,  
*posix\_trace\_attr\_getlogsize()*,  
*posix\_trace\_attr\_setlogfullpolicy()*,  
*posix\_trace\_attr\_setlogsize()*,  
*posix\_trace\_close()*,  
*posix\_trace\_create\_withlog()*,  
*posix\_trace\_open()*,  
*posix\_trace\_rewind()*.

#### **TYM - \_POSIX\_TYPED\_MEMORY\_OBJECTS - \_SC\_TYPED\_MEMORY\_OBJECT**

The following functions are present:

*posix\_mem\_offset()*,  
*posix\_typed\_mem\_get\_info()*,  
*posix\_typed\_mem\_open()*.

#### **--- - \_POSIX\_VDISABLE**

Always present (probably 0). Value to set a changeable special control character to indicate that it is disabled.

#### **XOPEN EXTENSIONS**

**\_XOPEN\_CRYPT**, **\_XOPEN\_LEGACY**, **\_XOPEN\_REALTIME**, **\_XOPEN\_REALTIME\_THREADS**, **\_XOPEN\_UNIX**.

#### **SEE ALSO**

[sysconf\(3\)](#), [standards\(7\)](#)

#### **COLOPHON**

This page is part of release 4.10 of the Linux *man-pages* project. A description of the project, information about reporting bugs, and the latest version of this page, can be found at <https://www.kernel.org/doc/man-pages/>.