



Linux Ubuntu 26.04 Manual Pages on command 'msync.2'

\$ man msync.2

msync(2) System Calls Manual msync(2)

NAME

msync - synchronize a file with a memory map

LIBRARY

Standard C library (libc, -lc)

SYNOPSIS

```
#include <sys/mman.h>

int msync(size_t length;
          void addr[length], size_t length, int flags);
```

DESCRIPTION

msync() flushes changes made to the in-core copy of a file that was mapped into memory using mmap(2) back to the filesystem. Without use of this call, there is no guarantee that changes are written back before munmap(2) is called. To be more precise, the part of the file that corresponds to the memory area starting at addr and having length length is up-to-date.

The flags argument should specify exactly one of MS_ASYNC and MS_SYNC, and may additionally include the MS_INVALIDATE bit. These bits have the following meanings:

MS_ASYNC

Specifies that an update be scheduled, but the call returns immediately.

MS_SYNC

Requests an update and waits for it to complete.

MS_INVALIDATE

Asks to invalidate other mappings of the same file (so that they can be updated with

the fresh values just written).

RETURN VALUE

On success, zero is returned. On error, -1 is returned, and `errno` is set to indicate the error.

ERRORS

`EBUSY` `MS_INVALIDATE` was specified in flags, and a memory lock exists for the specified address range.

`EINVAL` `addr` is not a multiple of `PAGESIZE`; or any bit other than `MS_ASYNC` | `MS_INVALIDATE` | `MS_SYNC` is set in flags; or both `MS_SYNC` and `MS_ASYNC` are set in flags.

`ENOMEM` The indicated memory (or part of it) was not mapped.

VERSIONS

According to POSIX, either `MS_SYNC` or `MS_ASYNC` must be specified in flags, and indeed failure to include one of these flags will cause `msync()` to fail on some systems. However, Linux permits a call to `msync()` that specifies neither of these flags, with semantics that are (currently) equivalent to specifying `MS_ASYNC`. (Since Linux 2.6.19, `MS_ASYNC` is in fact a no-op, since the kernel properly tracks dirty pages and flushes them to storage as necessary.) Notwithstanding the Linux behavior, portable, future-proof applications should ensure that they specify either `MS_SYNC` or `MS_ASYNC` in flags.

STANDARDS

POSIX.1-2024.

HISTORY

SUSv1, POSIX.1-1996.

This call was introduced in Linux 1.3.21, and then used `EFAULT` instead of `ENOMEM`. In Linux 2.4.19, this was changed to the POSIX value `ENOMEM`.

On POSIX systems on which `msync()` is available, both `_POSIX_MAPPED_FILES` and `_POSIX_SYNCHRONIZED_IO` are defined in `<unistd.h>` to a value greater than 0. (See also `sysconf(3)`.)

SEE ALSO

`mmap(2)`

B.O. Gallmeister, POSIX.4, O'Reilly, pp. 128-129 and 389-391.