

NAME

vmsplice – splice user pages to/from a pipe

SYNOPSIS

```
#define _GNU_SOURCE    /* See feature_test_macros(7) */
#include <fcntl.h>
#include <sys/uio.h>

ssize_t vmsplice(int fd, const struct iovec *iov,
                 unsigned long nr_segs, unsigned int flags);
```

DESCRIPTION

If *fd* is opened for writing, the **vmsplice()** system call maps *nr_segs* ranges of user memory described by *iov* into a pipe. If *fd* is opened for reading, the **vmsplice()** system call fills *nr_segs* ranges of user memory described by *iov* from a pipe. The file descriptor *fd* must refer to a pipe.

The pointer *iov* points to an array of *iovec* structures as defined in `<sys/uio.h>`:

```
struct iovec {
    void *iov_base;          /* Starting address */
    size_t iov_len;         /* Number of bytes */
};
```

The *flags* argument is a bit mask that is composed by ORing together zero or more of the following values:

SPLICE_F_MOVE

Unused for **vmsplice()**; see **splice(2)**.

SPLICE_F_NONBLOCK

Do not block on I/O; see **splice(2)** for further details.

SPLICE_F_MORE

Currently has no effect for **vmsplice()**, but may be implemented in the future; see **splice(2)**.

SPLICE_F_GIFT

The user pages are a gift to the kernel. The application may not modify this memory ever, otherwise the page cache and on-disk data may differ. Gifting pages to the kernel means that a subsequent **splice(2)** **SPLICE_F_MOVE** can successfully move the pages; if this flag is not specified, then a subsequent **splice(2)** **SPLICE_F_MOVE** must copy the pages. Data must also be properly page aligned, both in memory and length.

RETURN VALUE

Upon successful completion, **vmsplice()** returns the number of bytes transferred to the pipe. On error, **vmsplice()** returns `-1` and *errno* is set to indicate the error.

ERRORS**EAGAIN**

SPLICE_F_NONBLOCK was specified in *flags*, and the operation would block.

EBADF

fd either not valid, or doesn't refer to a pipe.

EINVAL

nr_segs is greater than **IOV_MAX**; or memory not aligned if **SPLICE_F_GIFT** set.

ENOMEM

Out of memory.

VERSIONS

The **vmsplice()** system call first appeared in Linux 2.6.17; library support was added to glibc in version 2.5.

CONFORMING TO

This system call is Linux-specific.

NOTES

vmsplice() follows the other vectorized read/write type functions when it comes to limitations on the number of segments being passed in. This limit is **IOV_MAX** as defined in *<limits.h>*. Currently, this limit is 1024.

vmsplice() really supports true splicing only from user memory to a pipe. In the opposite direction, it actually just copies the data to userspace. But this makes the interface nice and symmetric and enables people to build on **vmsplice()** with room for future improvement in performance.

SEE ALSO

splice(2), **tee(2)**, **pipe(7)**

COLOPHON

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