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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'sendmsg.3p' command

$ man sendmsg.3p

SENDMSG(3P) POSIX Programmer's Manual SENDMSG(3P)

PROLOG

This manual page is part of the POSIX Programmer's Manual. The Linux implementation of this interface may differ (consult the corresponding Linux manual page for details of Linux behavior), or the interface may not be implemented on Linux.

NAME

sendmsg ? send a message on a socket using a message structure

SYNOPSIS

#include <sys/socket.h>

ssize_t sendmsg(int socket, const struct msghdr *message, int flags);

DESCRIPTION

The sendmsg() function shall send a message through a connection-mode or connectionless-mode socket. If the socket is a connectionless-mode socket, the message shall be sent to the address specified by msghdr if no pre-specified peer address has been set. If a peer address has been pre-specified, either the message shall be sent to the address speci? fied in msghdr (overriding the pre-specified peer address), or the function shall return -1 and set errno to [EISCONN]. If the socket is connection-mode, the destination address in msghdr shall be ignored.

The sendmsg() function takes the following arguments:

socket Specifies the socket file descriptor.

message Points to a msghdr structure, containing both the destina?

tion address and the buffers for the outgoing message. The length and format of the address depend on the address family of the socket. The msg_flags member is ignored.

flags Specifies the type of message transmission. The application may specify 0 or the following flag:

MSG_EOR Terminates a record (if supported by the protocol).

MSG_OOB Sends out-of-band data on sockets that support out-of-bound data. The significance and semantics of out-of-band data are protocol-specific.

MSG_NOSIGNAL Requests not to send the SIGPIPE signal if an attempt to send is made on a stream-oriented socket that is no longer connected. The [EPIPE] error shall still be returned.

The msg_iov and msg_iovlen fields of message specify zero or more buffers containing the data to be sent. msg_iov points to an array of iovec structures; msg_iovlen shall be set to the dimension of this array. In each iovec structure, the iov_base field specifies a storage area and the iov_len field gives its size in bytes. Some of these sizes can be zero. The data from each storage area indicated by msg_iov is sent in turn.

Successful completion of a call to sendmsg() does not guarantee delivery of the message. A return value of -1 indicates only locally-detected errors.

If space is not available at the sending socket to hold the message to be transmitted and the socket file descriptor does not have O_NONBLOCK set, the sendmsg() function shall block until space is available. If space is not available at the sending socket to hold the message to be transmitted and the socket file descriptor does have O_NONBLOCK set, the sendmsg() function shall fail.

If the socket protocol supports broadcast and the specified address is a broadcast address for the socket protocol, sendmsg() shall fail if

the SO_BROADCAST option is not set for the socket.

The socket in use may require the process to have appropriate privi?

leges to use the sendmsg() function.

RETURN VALUE

Upon successful completion, sendmsg() shall return the number of bytes

sent. Otherwise, -1 shall be returned and errno set to indicate the er?

ror.

ERRORS

The sendmsg() function shall fail if:

EAGAIN or EWOULDBLOCK

The socket's file descriptor is marked O_NONBLOCK and the re?

quested operation would block.

EAFNOSUPPORT

Addresses in the specified address family cannot be used with

this socket.

EBADF The socket argument is not a valid file descriptor.

ECONNRESET

A connection was forcibly closed by a peer.

EINTR A signal interrupted sendmsg() before any data was transmitted.

EINVAL The sum of the iov_len values overflows an ssize_t.

EMSGSIZE

The message is too large to be sent all at once (as the socket

requires), or the msg_iovlen member of the msghdr structure

pointed to by message is less than or equal to 0 or is greater

than {IOV_MAX}.

ENOTCONN

The socket is connection-mode but is not connected.

ENOTSOCK

The socket argument does not refer to a socket.

EOPNOTSUPP

The socket argument is associated with a socket that does not

support one or more of the values set in flags.

EPIPE The socket is shut down for writing, or the socket is connec?

tion-mode and is no longer connected. In the latter case, and if the socket is of type SOCK_STREAM or SOCK_SEQPACKET and the MSG_NOSIGNAL flag is not set, the SIGPIPE signal is generated to the calling thread.

If the address family of the socket is AF_UNIX, then sendmsg() shall fail if:

EIO An I/O error occurred while reading from or writing to the file system.

ELOOP A loop exists in symbolic links encountered during resolution of the pathname in the socket address.

ENAMETOOLONG

The length of a component of a pathname is longer than {NAME_MAX}.

ENOENT A component of the pathname does not name an existing file or the path name is an empty string.

ENOTDIR

A component of the path prefix of the pathname in the socket ad? dress names an existing file that is neither a directory nor a symbolic link to a directory, or the pathname in the socket ad? dress contains at least one non-<slash> character and ends with one or more trailing <slash> characters and the last pathname component names an existing file that is neither a directory nor a symbolic link to a directory.

The sendmsg() function may fail if:

EACCES Search permission is denied for a component of the path prefix; or write access to the named socket is denied.

EDESTADDRREQ

The socket is not connection-mode and does not have its peer ad? dress set, and no destination address was specified.

EHOSTUNREACH

The destination host cannot be reached (probably because the host is down or a remote router cannot reach it).

EIO An I/O error occurred while reading from or writing to the file

system.

EISCONN

A destination address was specified and the socket is already connected.

ENETDOWN

The local network interface used to reach the destination is down.

ENETUNREACH

No route to the network is present.

ENOBUFS

Insufficient resources were available in the system to perform the operation.

ENOMEM Insufficient memory was available to fulfill the request.

If the address family of the socket is AF_UNIX, then sendmsg() may fail if:

ELOOP More than {SYMLOOP_MAX} symbolic links were encountered during resolution of the pathname in the socket address.

ENAMETOOLONG

The length of a pathname exceeds {PATH_MAX}, or pathname resolu? tion of a symbolic link produced an intermediate result with a length that exceeds {PATH_MAX}.

The following sections are informative.

EXAMPLES

Done.

APPLICATION USAGE

The select() and poll() functions can be used to determine when it is possible to send more data.

RATIONALE

None.

FUTURE DIRECTIONS

None.

SEE ALSO

getsockopt(), poll(), pselect(), recv(), recvfrom(), recvmsg(), send(),

sendto(), setsockopt(), shutdown(), socket()

The Base Definitions volume of POSIX.1?2017, <sys_socket.h>

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