

NAME

`msgget` – get a System V message queue identifier

SYNOPSIS

```
#include <sys/types.h>
#include <sys/ipc.h>
#include <sys/msg.h>

int msgget(key_t key, int msgflg);
```

DESCRIPTION

The `msgget()` system call returns the System V message queue identifier associated with the value of the *key* argument. It may be used either to obtain the identifier of a previously created message queue (when *msgflg* is zero and *key* does not have the value **IPC_PRIVATE**), or to create a new set.

A new message queue is created if *key* has the value **IPC_PRIVATE** or *key* isn't **IPC_PRIVATE**, no message queue with the given *key* exists, and **IPC_CREAT** is specified in *msgflg*.

If *msgflg* specifies both **IPC_CREAT** and **IPC_EXCL** and a message queue already exists for *key*, then `msgget()` fails with *errno* set to **EEXIST**. (This is analogous to the effect of the combination **O_CREAT** | **O_EXCL** for `open(2)`.)

Upon creation, the least significant bits of the argument *msgflg* define the permissions of the message queue. These permission bits have the same format and semantics as the permissions specified for the *mode* argument of `open(2)`. (The execute permissions are not used.)

If a new message queue is created, then its associated data structure *msqid_ds* (see `msgctl(2)`) is initialized as follows:

msg_perm.cuid and *msg_perm.uid* are set to the effective user ID of the calling process.

msg_perm.cgid and *msg_perm.gid* are set to the effective group ID of the calling process.

The least significant 9 bits of *msg_perm.mode* are set to the least significant 9 bits of *msgflg*.

msg_qnum, *msg_lspid*, *msg_lrpid*, *msg_stime*, and *msg_rtime* are set to 0.

msg_ctime is set to the current time.

msg_qbytes is set to the system limit **MSGMNB**.

If the message queue already exists the permissions are verified, and a check is made to see if it is marked for destruction.

RETURN VALUE

If successful, the return value will be the message queue identifier (a nonnegative integer), otherwise `-1` with *errno* indicating the error.

ERRORS

On failure, *errno* is set to one of the following values:

EACCES

A message queue exists for *key*, but the calling process does not have permission to access the queue, and does not have the **CAP_IPC_OWNER** capability in the user namespace that governs its IPC namespace.

EEXIST

IPC_CREAT and **IPC_EXCL** were specified in *msgflg*, but a message queue already exists for *key*.

ENOENT

No message queue exists for *key* and *msgflg* did not specify **IPC_CREAT**.

ENOMEM

A message queue has to be created but the system does not have enough memory for the new data structure.

ENOSPC

A message queue has to be created but the system limit for the maximum number of message queues (**MSGMNI**) would be exceeded.

CONFORMING TO

POSIX.1-2001, POSIX.1-2008, SVr4.

NOTES

The inclusion of `<sys/types.h>` and `<sys/ipc.h>` isn't required on Linux or by any version of POSIX. However, some old implementations required the inclusion of these header files, and the SVID also documented their inclusion. Applications intended to be portable to such old systems may need to include these header files.

IPC_PRIVATE isn't a flag field but a *key_t* type. If this special value is used for *key*, the system call ignores everything but the least significant 9 bits of *msgflg* and creates a new message queue (on success).

The following is a system limit on message queue resources affecting a **msgget()** call:

MSGMNI

System-wide limit on the number of message queues. Before Linux 3.19, the default value for this limit was calculated using a formula based on available system memory. Since Linux 3.19, the default value is 32,000. On Linux, this limit can be read and modified via `/proc/sys/kernel/msgmni`.

Linux notes

Until version 2.3.20, Linux would return **EIDRM** for a **msgget()** on a message queue scheduled for deletion.

BUGS

The name choice **IPC_PRIVATE** was perhaps unfortunate, **IPC_NEW** would more clearly show its function.

SEE ALSO

msgctl(2), **msgrcv(2)**, **msgsnd(2)**, **ftok(3)**, **capabilities(7)**, **mq_overview(7)**, **sysvipc(7)**

COLOPHON

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