



## ***Red Hat Enterprise Linux Release 9.2 Manual Pages on 'strerror\_r.3' command***

**\$ man strerror\_r.3**

STRERROR(3)           Linux Programmer's Manual           STRERROR(3)

### NAME

strerror, strerrorname\_np, strerrordesc\_np, strerror\_r, strerror\_l -  
return string describing error number

### SYNOPSIS

```
#include <string.h>

char *strerror(int errnum);

const char *strerrorname_np(int errnum);

const char *strerrordesc_np(int errnum);

int strerror_r(int errnum, char *buf, size_t buflen);

    /* XSI-compliant */

char *strerror_r(int errnum, char *buf, size_t buflen);

    /* GNU-specific */

char *strerror_l(int errnum, locale_t locale);
```

Feature Test Macro Requirements for glibc (see feature\_test\_macros(7)):

strerrorname\_np(), strerrordesc\_np():

  \_GNU\_SOURCE

strerror\_r():

  The XSI-compliant version is provided if:

  (\_POSIX\_C\_SOURCE >= 200112L) && ! \_GNU\_SOURCE

  Otherwise, the GNU-specific version is provided.

### DESCRIPTION

The strerror() function returns a pointer to a string that describes

the error code passed in the argument `errno`, possibly using the `LC_MESSAGES` part of the current locale to select the appropriate language. (For example, if `errno` is `EINVAL`, the returned description will be "Invalid argument".) This string must not be modified by the application, but may be modified by a subsequent call to `strerror()` or `strerror_l()`. No other library function, including `perror(3)`, will modify this string.

Like `strerror()`, the `strerrordesc_np()` function returns a pointer to a string that describes the error code passed in the argument `errno`, with the difference that the returned string is not translated according to the current locale.

The `strerrorname_np()` function returns a pointer to a string containing the name of the error code passed in the argument `errno`. For example, given `EPERM` as an argument, this function returns a pointer to the string "EPERM".

#### `strerror_r()`

The `strerror_r()` function is similar to `strerror()`, but is thread safe.

This function is available in two versions: an XSI-compliant version specified in POSIX.1-2001 (available since glibc 2.3.4, but not POSIX-compliant until glibc 2.13), and a GNU-specific version (available since glibc 2.0). The XSI-compliant version is provided with the feature test macros settings shown in the SYNOPSIS; otherwise the GNU-specific version is provided. If no feature test macros are explicitly defined, then (since glibc 2.4) `_POSIX_C_SOURCE` is defined by default with the value `200112L`, so that the XSI-compliant version of `strerror_r()` is provided by default.

The XSI-compliant `strerror_r()` is preferred for portable applications. It returns the error string in the user-supplied buffer `buf` of length `buflen`.

The GNU-specific `strerror_r()` returns a pointer to a string containing the error message. This may be either a pointer to a string that the function stores in `buf`, or a pointer to some (immutable) static string (in which case `buf` is unused). If the function stores a string in `buf`,

then at most `buflen` bytes are stored (the string may be truncated if `buflen` is too small and `errno` is unknown). The string always includes a terminating null byte (`'\0'`).

### `strerror_l()`

`strerror_l()` is like `strerror()`, but maps `errno` to a locale-dependent error message in the locale specified by `locale`. The behavior of `strerror_l()` is undefined if `locale` is the special locale object `LC_GLOBAL_LOCALE` or is not a valid locale object handle.

### RETURN VALUE

The `strerror()`, `strerror_l()`, and the GNU-specific `strerror_r()` functions return the appropriate error description string, or an "Unknown error `nnn`" message if the error number is unknown.

On success, `strerrorname_np()` and `strerrordesc_np()` return the appropriate error description string. If `errno` is an invalid error number, these functions return `NULL`.

The XSI-compliant `strerror_r()` function returns 0 on success. On error, a (positive) error number is returned (since glibc 2.13), or -1 is returned and `errno` is set to indicate the error (glibc versions before 2.13).

POSIX.1-2001 and POSIX.1-2008 require that a successful call to `strerror()` or `strerror_l()` shall leave `errno` unchanged, and note that, since no function return value is reserved to indicate an error, an application that wishes to check for errors should initialize `errno` to zero before the call, and then check `errno` after the call.

### ERRORS

**EINVAL** The value of `errno` is not a valid error number.

**ERANGE** Insufficient storage was supplied to contain the error description string.

### VERSIONS

The `strerror_l()` function first appeared in glibc 2.6.

### ATTRIBUTES

For an explanation of the terms used in this section, see `attributes(7)`.

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?Interface ? Attribute ? Value ?

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?strerror() ? Thread safety ? MT-Unsafe race:strerror ?

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?strerrorname\_np(), ? Thread safety ? MT-Safe ?

?strerrordesc\_np() ? ? ?

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?strerror\_r(), ? Thread safety ? MT-Safe ?

?strerror\_l() ? ? ?

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### CONFORMING TO

strerror() is specified by POSIX.1-2001, POSIX.1-2008, C89, and C99.

strerror\_r() is specified by POSIX.1-2001 and POSIX.1-2008.

strerror\_l() is specified in POSIX.1-2008.

The GNU-specific functions strerror\_r(), strerrorname\_np(), and strerrordesc\_np() are nonstandard extensions.

POSIX.1-2001 permits strerror() to set errno if the call encounters an error, but does not specify what value should be returned as the function result in the event of an error. On some systems, strerror() returns NULL if the error number is unknown. On other systems, strerror() returns a string something like "Error nnn occurred" and sets errno to EINVAL if the error number is unknown. C99 and POSIX.1-2008 require the return value to be non-NULL.

### NOTES

The GNU C Library uses a buffer of 1024 characters for strerror(). This buffer size therefore should be sufficient to avoid an ERANGE error when calling strerror\_r(). strerrorname\_np() and strerrordesc\_np() are thread-safe and async-signal-safe.

### SEE ALSO

err(3), errno(3), error(3), perror(3), strsignal(3), locale(7)

### COLOPHON

This page is part of release 5.10 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/>.

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