

**NAME**

`pthread_cleanup_push_defer_np`, `pthread_cleanup_pop_restore_np` - push and pop thread cancellation clean-up handlers while saving cancelability type

**SYNOPSIS**

```
#include <pthread.h>
```

```
void pthread_cleanup_push_defer_np(void (*routine)(void *),
void *arg);
void pthread_cleanup_pop_restore_np(int execute);
```

Compile and link with `-pthread`.

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

```
pthread_cleanup_push_defer_np(), pthread_cleanup_pop_defer_np():
    _GNU_SOURCE
```

**DESCRIPTION**

These functions are the same as [pthread\\_cleanup\\_push\(3\)](#) and [pthread\\_cleanup\\_pop\(3\)](#), except for the differences noted on this page.

Like [pthread\\_cleanup\\_push\(3\)](#), `pthread_cleanup_push_defer_np()` pushes *routine* onto the thread's stack of cancellation clean-up handlers. In addition, it also saves the thread's current cancelability type, and sets the cancelability type to "deferred" (see [pthread\\_setcanceltype\(3\)](#)); this ensures that cancellation clean-up will occur even if the thread's cancelability type was "asynchronous" before the call.

Like [pthread\\_cleanup\\_pop\(3\)](#), `pthread_cleanup_pop_restore_np()` pops the top-most clean-up handler from the thread's stack of cancellation clean-up handlers. In addition, it restores the thread's cancelability type to its value at the time of the matching `pthread_cleanup_push_defer_np()`.

The caller must ensure that calls to these functions are paired within the same function, and at the same lexical nesting level. Other restrictions apply, as described in [pthread\\_cleanup\\_push\(3\)](#).

This sequence of calls:

```
pthread_cleanup_push_defer_np(routine, arg);
pthread_cleanup_pop_restore_np(execute);
```

is equivalent to (but shorter and more efficient than):

```
int oldtype;

pthread_cleanup_push(routine, arg);
pthread_setcanceltype(PTHREAD_CANCEL_DEFERRED, &oldtype);
...
pthread_setcanceltype(oldtype, NULL);
pthread_cleanup_pop(execute);
```

**CONFORMING TO**

These functions are nonstandard GNU extensions; hence the suffix "\_np" (nonportable) in the names.

**SEE ALSO**

[pthread\\_cancel\(3\)](#), [pthread\\_cleanup\\_push\(3\)](#), [pthread\\_setcancelstate\(3\)](#), [pthread\\_testcancel\(3\)](#), [pthreads\(7\)](#)

**COLOPHON**

This page is part of release 4.10 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/>.