#### **NAME**

pthread\_attr\_getaffinity\_np, pthread\_attr\_setaffinity\_np - manage CPU affinity in thread attribute
objects

#### **LIBRARY**

POSIX Threads Library (libpthread, -lpthread)

### **SYNOPSIS**

```
#include <pthread_np.h>

int
pthread_attr_getaffinity_np(const pthread_attr_t *pattr, size_t cpusetsize, cpuset_t *cpusetp);

int
pthread_attr_setaffinity_np(pthread_attr_t *pattr, size_t cpusetsize, const cpuset_t *cpusetp);
```

### DESCRIPTION

The **pthread\_attr\_getaffinity\_np()** and **pthread\_attr\_setaffinity\_np()** functions allow the manipulation of sets of CPUs available to the specified thread attribute object.

Masks of type <code>cpuset\_t</code> are composed using the CPU\_SET macros. If the user-supplied mask is not large enough to fit all of the matching CPUs, <code>pthread\_attr\_getaffinity\_np()</code> fails with ERANGE. Calls to <code>pthread\_attr\_setaffinity\_np()</code> tolerate masks of any size with no restrictions. <code>pthread\_attr\_setaffinity\_np()</code> uses the meaningful part of the mask, where the upper bound is the maximum CPU id present in the system. If bits for non-existing CPUs are set, calls to <code>pthread\_attr\_setaffinity\_np()</code> fail with EINVAL.

The supplied mask should have a size of *cpusetsize* bytes. This size is usually provided by calling sizeof(cpuset\_t) which is ultimately determined by the value of CPU\_SETSIZE as defined in <*sys/cpuset.h>*.

**pthread\_attr\_getaffinity\_np**() retrieves the mask from the thread attribute object specified by *pattr*, and stores it in the space provided by *cpusetp*.

**pthread\_attr\_setaffinity\_np()** sets the mask for the thread attribute object specified by *pattr* to the value in *cpusetp*.

### **RETURN VALUES**

If successful, the **pthread\_attr\_getaffinity\_np()** and **pthread\_attr\_setaffinity\_np()** functions will return zero. Otherwise an error number will be returned to indicate the error.

### **ERRORS**

The pthread\_attr\_getaffinity\_np() functions will fail if:

[EINVAL] The *pattr* or the attribute specified by it is NULL.

[ERANGE] The *cpusetsize* is too small.

The **pthread attr setaffinity np**() function will fail if:

[EINVAL] The *pattr* or the attribute specified by it is NULL.

[EINVAL] The *cpusetp* specified a CPU that was outside the set supported by the kernel.

[ENOMEM] Insufficient memory exists to store the cpuset mask.

## **SEE ALSO**

```
cpuset(1), cpuset(2), cpuset_getid(2), cpuset_setid(2), pthread_getaffinity_np(3), pthread_np(3), pthread_setaffinity_np(3)
```

## **STANDARDS**

The **pthread\_attr\_getaffinity\_np** and **pthread\_attr\_setaffinity\_np** functions are non-standard FreeBSD extensions and may be not available on other operating systems.

## **HISTORY**

The **pthread\_attr\_getaffinity\_np** and **pthread\_attr\_setaffinity\_np** functions first appeared in FreeBSD 7.2.

# **AUTHORS**

The **pthread\_attr\_getaffinity\_np** and **pthread\_attr\_setaffinity\_np** functions were written by David Xu <davidxu@FreeBSD.org>, and this manpage was written by Xin LI <delphij@FreeBSD.org>.