NSMachPort Class Reference

Cocoa > Interapplication Communication

2007-04-30

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Inherits from	NSPort : NSObject
Conforms to	NSCoding (NSPort) NSCopying (NSPort) NSObject (NSObject)
Framework	/System/Library/Frameworks/Foundation.framework
Availability	Available in Mac OS X v10.0 and later.
Companion guide	Distributed Objects Programming Topics
Declared in	NSPort.h

Overview

NSMachPort is a subclass of NSPort that can be used as an endpoint for distributed object connections (or raw messaging). NSMachPort is an object wrapper for a Mach port, the fundamental communication port in Mac OS X. NSMachPort allows for local (on the same machine) communication only. A companion class, NSSocketPort, allows for both local and remote distributed object communication, but may be more expensive than NSMachPort for the local case.

To use NSMachPort effectively, you should be familiar with Mach ports, port access rights, and Mach messages. See the Mach OS documentation for more information.

Note: NSMachPort conforms to the NSCoding protocol, but only supports coding by an NSPortCoder. NSPort and its subclasses do not support archiving.

Tasks

Creating and Initializing

+ portWithMachPort: (page 6)

Creates and returns a port object configured with the given Mach port.

+ portWithMachPort:options: (page 7)

Creates and returns a port object configured with the specified options and the given Mach port.

- `initWithMachPort:` (page 7)
  Initializes a newly allocated `NSMachPort` object with a given Mach port.
- `initWithMachPort:options:` (page 8)
  Initializes a newly allocated `NSMachPort` object with a given Mach port and the specified options.

Getting the Mach Port

- `machPort` (page 8)
  Returns as an `int` the Mach port used by the receiver.

Scheduling the Port on a Run Loop

- `removeFromRunLoop:forMode:` (page 8)
  Removes the receiver from the run loop mode *`mode`* of *`runLoop`*.
- `scheduleInRunLoop:forMode:` (page 9)
  Schedules the receiver into the run loop mode *`mode`* of *`runLoop`*.

Handling Mach Messages

- `handleMachMessage:` (page 9) *delegate method*
  Process an incoming Mach message.

Class Methods

portWithMachPort:

Creates and returns a port object configured with the given Mach port.

```
+ (NSPort *)portWithMachPort:(uint32_t)machPort
```

Parameters

`machPort`
  The Mach port for the new port. This parameter should originally be of type `mach_port_t`.

Return Value
An `NSMachPort` object that uses *`machPort`* to send or receive messages.

Discussion
Creates the port object if necessary. Depending on the access rights associated with *`machPort`*, the new port object may be usable only for sending messages.

Availability
Available in Mac OS X v10.0 and later.

Declared In
`NSPort.h`

portWithMachPort:options:

Creates and returns a port object configured with the specified options and the given Mach port.

```
+ (NSPort *)portWithMachPort:(uint32_t)machPort options:(NSUInteger)options
```

Parameters

machPort

The Mach port for the new port. This parameter should originally be of type `mach_port_t`.

options

Specifies options for what to do with the underlying port rights when the `NSMachPort` object is invalidated or destroyed. For a list of constants, see "Mach Port Rights" (page 10).

Return Value

An `NSMachPort` object that uses *machPort* to send or receive messages.

Discussion

Creates the port object if necessary. Depending on the access rights associated with *machPort*, the new port object may be usable only for sending messages.

Availability

Available in Mac OS X v10.5 and later.

Declared In

`NSPort.h`

Instance Methods

initWithMachPort:

Initializes a newly allocated `NSMachPort` object with a given Mach port.

```
- (id)initWithMachPort:(uint32_t)machPort
```

Parameters

machPort

The Mach port for the new port. This parameter should originally be of type `mach_port_t`.

Return Value

Returns an initialized `NSMachPort` object that uses *machPort* to send or receive messages. The returned object might be different than the original receiver

Discussion

Depending on the access rights for *machPort*, the new port may be able to only send messages. If a port with *machPort* already exists, this method deallocates the receiver, then retains and returns the existing port.

This method is the designated initializer for the `NSMachPort` class.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`NSPort.h`

initWithMachPort:options:

Initializes a newly allocated `NSMachPort` object with a given Mach port and the specified options.

```
- (id)initWithMachPort:(uint32_t)machPort options:(NSUInteger)options
```

Parameters

machPort

The Mach port for the new port. This parameter should originally be of type `mach_port_t`.

options

Specifies options for what to do with the underlying port rights when the `NSMachPort` object is invalidated or destroyed. For a list of constants, see "Mach Port Rights" (page 10).

Return Value

Returns an initialized `NSMachPort` object that uses *machPort* to send or receive messages. The returned object might be different than the original receiver

Discussion

Depending on the access rights for *machPort*, the new port may be able to only send messages. If a port with *machPort* already exists, this method deallocates the receiver, then retains and returns the existing port.

Availability

Available in Mac OS X v10.5 and later.

Declared In

`NSPort.h`

machPort

Returns as an `int` the Mach port used by the receiver.

```
- (uint32_t)machPort
```

Return Value

The Mach port used by the receiver. Cast this value to a `mach_port_t` when using it with Mach system calls.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`NSPort.h`

removeFromRunLoop:forMode:

Removes the receiver from the run loop mode *mode* of *runLoop*.

```
- (void)removeFromRunLoop:(NSRunLoop *)runLoop forMode:(NSString *)mode
```

Parameters

runLoop

The run loop from which to remove the receiver.

mode

The run loop mode from which to remove the receiver.

Discussion

When the receiver is removed, the run loop stops monitoring the Mach port for incoming messages.

Availability

Available in Mac OS X v10.0 and later.

See Also

`– scheduleInRunLoop:forMode:` (page 9)

Declared In

`NSPort.h`

scheduleInRunLoop:forMode:

Schedules the receiver into the run loop mode *mode* of *runLoop*.

```
- (void)scheduleInRunLoop:(NSRunLoop *)runLoop forMode:(NSString *)mode
```

Parameters

runLoop

The run loop to which to add the receiver.

mode

The run loop mode in which to add the receiver.

Discussion

When the receiver is scheduled, the run loop monitors the mach port for incoming messages and, when a message arrives, invokes the delegate method `handleMachMessage:` (page 9).

Availability

Available in Mac OS X v10.0 and later.

See Also

`– removeFromRunLoop:forMode:` (page 8)

Declared In

`NSPort.h`

Delegate Methods

handleMachMessage:

Process an incoming Mach message.

```
- (void)handleMachMessage:(void *)machMessage
```

Parameters

machMessage

A pointer to a Mach message, cast as a pointer to `void`.

Discussion

The delegate should interpret this data as a pointer to a Mach message beginning with a `msg_header_t` structure and should handle the message appropriately.

The delegate should implement only one of `handleMachMessage:` and `handlePortMessage:`.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`NSPort.h`

Constants

Mach Port Rights

Used to remove access rights to a mach port when the `NSMachPort` object is invalidated or destroyed.

```
enum {
    NSMachPortDeallocateNone = 0,
    NSMachPortDeallocateSendRight = (1 << 0),
    NSMachPortDeallocateReceiveRight = (1 << 1)
};
```

Constants

`NSMachPortDeallocateNone`

Do not remove any send or receive rights.

Available in Mac OS X v10.5 and later.

Declared in `NSPort.h`.

`NSMachPortDeallocateSendRight`

Deallocate a send right when the `NSMachPort` object is invalidated or destroyed.

Available in Mac OS X v10.5 and later.

Declared in `NSPort.h`.

`NSMachPortDeallocateReceiveRight`

Remove a receive right when the `NSMachPort` object is invalidated or destroyed.

Available in Mac OS X v10.5 and later.

Declared in `NSPort.h`.

Declared In

`NSPort.h`

Document Revision History

This table describes the changes to *NSMachPort Class Reference*.

Date	Notes
2007-04-30	Updated for Mac OS X v10.5.
2006-05-23	First publication of this content as a separate document.

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