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# NSGarbageCollector Class Reference





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# NSGarbageCollector Class Reference

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<b>Inherits from</b>	NSObject
<b>Conforms to</b>	NSObject (NSObject)
<b>Framework</b>	/System/Library/Frameworks/Foundation.framework
<b>Availability</b>	Available in Mac OS X v10.5 and later.
<b>Companion guide</b>	Garbage Collection Programming Guide
<b>Declared in</b>	NSGarbageCollector.h

## Overview

`NSGarbageCollector` provides a convenient interface to the garbage collection system.

Cocoa's garbage collector is a conservative generational garbage collector. It uses "write-barriers" to detect cross generational stores of pointers so that "young" objects can be collected quickly.

You enable garbage collection (GC) by using the `-fobjc-gc` compiler option. This switch causes the generation of the write-barrier assignment primitives. You must use this option on your main application file *and all others used by the application*, including frameworks and bundles. Bundles are ignored if they are not GC-capable.

The collector determines what is garbage by recursively examining all nodes starting with globals, possible nodes referenced from the thread stacks, and all nodes marked as having "external" references. Nodes not reached by this search are deemed garbage. Weak references to garbage nodes are then cleared.

Garbage nodes that are objects are sent (in an arbitrary order) a `finalize` message, and after all `finalize` messages have been sent their memory is recovered. It is a runtime error (referred to as "resurrection") to store a object being finalized into one that is not. For more details, see *Implementing a finalize Method in Garbage Collection Programming Guide*.

You can request collection from any thread (see [collectIfNeeded](#) (page 7) and [collectExhaustively](#) (page 7)).

## Tasks

### Shared Instance

- + [defaultCollector](#) (page 7)  
Returns the default garbage collector.

### Collection State

- [disable](#) (page 8)  
Temporarily disables collections.
- [enable](#) (page 9)  
Enables collection after collection has been disabled.
- [isEnabled](#) (page 10)  
Returns a Boolean value that indicates whether garbage collection is currently enabled for the current process.
- [isCollecting](#) (page 11) **Deprecated in Mac OS X v10.6**  
Returns a Boolean value that indicates whether a collection is currently in progress.

### Triggering Collection

- [collectExhaustively](#) (page 7)  
Tells the receiver to collect iteratively.
- [collectIfNeeded](#) (page 7)  
Tells the receiver to collect if memory consumption thresholds have been exceeded.

### Manipulating External References

- [disableCollectorForPointer:](#) (page 8)  
Specifies that a given pointer will not be collected.
- [enableCollectorForPointer:](#) (page 9)  
Specifies that a given pointer may be collected.

### Accessing an Unscanned Memory Zone

- [zone](#) (page 10)  
Returns a zone of unscanned memory.

## Class Methods

### **defaultCollector**

Returns the default garbage collector.

```
+ (id)defaultCollector
```

#### **Return Value**

The default garbage collector for the current process. Returns `nil` if the current process is not running with garbage collection.

#### **Discussion**

There is at most one garbage collector for Cocoa within a single process.

#### **Availability**

Available in Mac OS X v10.5 and later.

#### **Declared In**

NSGarbageCollector.h

## Instance Methods

### **collectExhaustively**

Tells the receiver to collect iteratively.

```
- (void)collectExhaustively
```

#### **Discussion**

You use this method to indicate to the collector that it should perform an exhaustive collection. Collection is subject to interruption on user input.

#### **Availability**

Available in Mac OS X v10.5 and later.

#### **Declared In**

NSGarbageCollector.h

### **collectIfNeeded**

Tells the receiver to collect if memory consumption thresholds have been exceeded.

```
- (void)collectIfNeeded
```

#### **Discussion**

You use this method to indicate to the collector that there is an opportunity to perform a collection. Collection is subject to interruption on user input.

**Availability**

Available in Mac OS X v10.5 and later.

**Declared In**

NSGarbageCollector.h

**disable**

Temporarily disables collections.

- (void)disable

**Discussion**

Invocations of this method can be nested. To reenable collection, you must send the collector an [enable](#) (page 9) message once for each invocation of this method.

**Availability**

Available in Mac OS X v10.5 and later.

**See Also**

- [enable](#) (page 9)

**Declared In**

NSGarbageCollector.h

**disableCollectorForPointer:**

Specifies that a given pointer will not be collected.

- (void)disableCollectorForPointer:(void \*)ptr

**Parameters**

*ptr*

A pointer to the memory that should not be collected.

**Discussion**

You use this method to ensure that memory at a given address will not be collected. You can use this, for example, to create new root objects:

```
NSMutableDictionary *globalDictionary;
globalDictionary = [NSMutableDictionary dictionary];
[[NSGarbageCollector defaultCollector]
    disableCollectorForPointer:globalDictionary];
```

The new dictionary will not be collectable and will persist for the lifetime of the application unless it is subsequently passed as the argument to [enableCollectorForPointer:](#) (page 9). For more about root objects and scanned memory, see *Garbage Collection Programming Guide*.

**Availability**

Available in Mac OS X v10.5 and later.

**See Also**

- [enableCollectorForPointer:](#) (page 9)

**Declared In**

NSGarbageCollector.h

**enable**

Enables collection after collection has been disabled.

- (void)enable

**Discussion**

This method balances a single invocation of [disable](#) (page 8). To reenable collection, this method must be invoked as many times as was [disable](#) (page 8).

**Availability**

Available in Mac OS X v10.5 and later.

**See Also**

- [disable](#) (page 8)
- [isEnabled](#) (page 10)

**Declared In**

NSGarbageCollector.h

**enableCollectorForPointer:**

Specifies that a given pointer may be collected.

- (void)enableCollectorForPointer:(void \*)ptr

**Parameters**

*ptr*

A pointer to the memory that may be collected.

**Discussion**

You use this method to make memory that was previously marked as uncollectable. For example, given the address of the global dictionary created in [disableCollectorForPointer:](#) (page 8), you could make the dictionary collectable as follows:

```
[[NSGarbageCollector defaultCollector]
 enableCollectorForPointer:globalDictionary];
```

For more about root objects and scanned memory, see *Garbage Collection Programming Guide*.

**Availability**

Available in Mac OS X v10.5 and later.

**See Also**

- [disableCollectorForPointer:](#) (page 8)

**Declared In**

NSGarbageCollector.h

## isEnabled

Returns a Boolean value that indicates whether garbage collection is currently enabled for the current process.

- (BOOL)isEnabled

### Return Value

YES if garbage collection is enabled for the current process, otherwise NO.

### Discussion

This method returns NO if garbage collection is on, but has been temporarily suspended (using [disable](#) (page 8)).

To check whether the current process is using garbage collection check the result of `[NSGarbageCollector defaultCollector]`. If `defaultCollector` (page 7) is `nil`, then garbage collection is permanently off. If `defaultCollector` (page 7) is not `nil`, then the current process is using garbage collection—you can then use `isEnabled` to determine whether or not the collector is actually allowed to run right now.

### Availability

Available in Mac OS X v10.5 and later.

### See Also

- [disable](#) (page 8)
- [enable](#) (page 9)

### Declared In

NSGarbageCollector.h

## zone

Returns a zone of unscanned memory.

- (NSZone \*)zone

### Return Value

A memory zone of memory that is not scanned.

### Discussion

The collector provides a `NSZoneMalloc`-style allocation interface, primarily for compatibility with existing code that maintains zone affinity. Such memory is unscanned and you must free it using `NSZoneFree`. This is exactly equivalent to calling `NSAllocateCollectable` with the option `NSCollectorDisabledOption` (page ?).

You should typically allocate garbage-collected memory using `NSAllocateCollectable`.

### Availability

Available in Mac OS X v10.5 and later.

### Declared In

NSGarbageCollector.h

# Deprecated NSGarbageCollector Methods

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A method identified as deprecated has been superseded and may become unsupported in the future.

## Deprecated in Mac OS X v10.6

### **isCollecting**

Returns a Boolean value that indicates whether a collection is currently in progress. (Deprecated in Mac OS X v10.6.)

- (BOOL)isCollecting

#### **Return Value**

YES if a collection is currently in progress, otherwise NO.

#### **Availability**

Available in Mac OS X v10.5 and later.

Deprecated in Mac OS X v10.6.

#### **Declared In**

NSGarbageCollector.h



# Document Revision History

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

Date	Notes
2008-10-15	Clarified use of -isEnabled.
2008-06-09	Updated discussion of disableCollectorForPointer:.
2006-12-19	New document that describes the Cocoa class used to interact with the garbage collection system.

**REVISION HISTORY**

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