# CALayoutManager Protocol Reference

**Graphics & Imaging > Quartz**

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# CALayoutManager Protocol Reference

| | |
|---|---|
| **Framework** | /System/Library/Frameworks/QuartzCore.framework |
| **Declared in** | CALayer.h |
| **Companion guides** | Core Animation Programming Guide<br>Core Animation Cookbook |

## Overview

`CALayoutManager` is an informal protocol implemented by Core Animation layout managers. If a layer's sublayers require custom layout you create a class that implements this protocol and set it as the layer's layout manager using the `CALayer` method `setLayoutManager:`. Your custom layout manager is then used when the layer invokes `setNeedsLayout` or `layoutSublayers`.

## Tasks

### Layout Layers

`- invalidateLayoutOfLayer:` (page 5)
Invalidates the layout of the specified layer.

`- layoutSublayersOfLayer:` (page 6)
Layout each of the sublayers in the specified layer.

### Calculate Layer Size

`- preferredSizeOfLayer:` (page 6)
Returns the preferred size of the specified layer in its coordinate system.

## Instance Methods

### invalidateLayoutOfLayer:

Invalidates the layout of the specified layer.


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```
- (void)invalidateLayoutOfLayer:(CALayer *)layer
```

**Parameters**

*layer*

The layer that requires layout.

**Discussion**

This method is called when the preferred size of the specified layer may have changed. The receiver should invalidate any cached state.

**Availability**

Available in Mac OS X v10.5 and later.

**Declared In**

CALayer.h

## layoutSublayersOfLayer:

Layout each of the sublayers in the specified layer.

```
- (void)layoutSublayersOfLayer:(CALayer *)layer
```

**Parameters**

*layer*

The layer that requires layout of its sublayers.

**Discussion**

This method is called when the sublayers of the *layer* may need rearranging, and is typically called when a sublayer has changed its size. The receiver is responsible for changing the frame of each sublayer that requires layout.

**Availability**

Available in Mac OS X v10.5 and later.

**Declared In**

CALayer.h

## preferredSizeOfLayer:

Returns the preferred size of the specified layer in its coordinate system.

```
- (CGSize)preferredSizeOfLayer:(CALayer *)layer
```

**Parameters**

*layer*

The layer that requires layout.

**Return Value**

The preferred size of the layer in the coordinate space of *layer*.

**Discussion**

This method is called when the preferred size of the specified layer may have changed. The receiver is responsible for recomputing the preferred size and returning it. If this method is not implemented the preferred size is assumed to be the size of the bounds of *layer*.


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**Availability**
Available in Mac OS X v10.5 and later.

**Declared In**
`CALayer.h`


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# Document Revision History

This table describes the changes to *CALayoutManager Protocol Reference*.

| Date | Notes |
| --- | --- |
| 2007-07-24 | New document that describes the informal protocol used by Core Animation to visually layout sublayers. |



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Document Revision History



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`invalidateLayoutOfLayer:` <NSObject> instance method 5

## L

`layoutSublayersOfLayer:` <NSObject> instance method 6

## P

`preferredSizeOfLayer:` <NSObject> instance method 6




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