CFMutableData Reference

Core Foundation

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Apple Inc.
1 Infinite Loop
Cupertino, CA 95014
408-996-1010

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CFMutableData Reference

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Overview

CFMutableData manages dynamic binary data. The basic interface for managing binary data is provided by CFData. CFMutableData adds functions to modify the contents of a binary data object.

You create a mutable data object using either the `CFDataCreateMutable` (page 6) or `CFDataCreateMutableCopy` (page 7) function.

Bytes are added to a data object with the `CFDataAppendBytes` (page 5) function. Bytes are removed from a data object with the `CFDataDeleteBytes` (page 7) function.

CFMutableData is "toll-free bridged" with its Cocoa Foundation counterpart, NSMutableData. What this means is that the Core Foundation type is interchangeable in function or method calls with the bridged Foundation object. In other words, in a method where you see an `NSMutableData *` parameter, you can pass in a `CFMutableDataRef`, and in a function where you see a `CFMutableDataRef` parameter, you can pass in an NSMutableData instance. This also applies to concrete subclasses of NSMutableData. See Interchangeable Data Types for more information on toll-free bridging.

Functions

CFDataAppendBytes

Appends the bytes from a byte buffer to the contents of a CFData object.

```
void CFDataAppendBytes (
    CFMutableDataRef theData,
    const UInt8 *bytes,
    CFIndex length
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

bytes

A pointer to the buffer of bytes to be added to *theData*.

length

The number of bytes in the byte buffer *bytes*.

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

Related Sample Code
CarbonSketch
CFLocalServer
ImageClient

Declared In
CFData.h

CFDataCreateMutable

Creates an empty CFMutableData object.

```
CFMutableDataRef CFDataCreateMutable (
    CFAllocatorRef allocator,
    CFIndex capacity
);
```

Parameters

allocator

The CFAllocator object to be used to allocate memory for the new object. Pass `NULL` or `kCFAllocatorDefault` to use the current default allocator.

capacity

The maximum number of bytes that the CFData object can contain. If `0`, the object can grow to a size only limited by the constraints of available memory and address space.

Return Value
A CFMutableData object or `NULL` if there was a problem creating the object. Ownership follows the Create Rule.

Discussion
This function creates an empty (that is, content-less) CFMutableData object. You can add raw data to this object with the `CFDataAppendBytes` (page 5) function, and thereafter you can replace and delete characters with the appropriate CFMutableData functions. If the *capacity* parameter is greater than `0`, any attempt to add characters beyond this limit can result in undefined behavior.

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

Related Sample Code
CarbonSketch
CFLocalServer
ImageClient
SeeMyFriends
UnsharpMask

Declared In
`CFData.h`

CFDataCreateMutableCopy

Creates a CFMutableData object by copying another CFData object.

```
CFMutableDataRef CFDataCreateMutableCopy (
    CFAllocatorRef allocator,
    CFIndex capacity,
    CFDataRef theData
);
```

Parameters

allocator
The CFAllocator object to be used to allocate memory for the new object. Pass `NULL` or `kCFAllocatorDefault` to use the current default allocator.

capacity
The maximum number of bytes the object should contain. If 0, the object can grow to a size only limited by the constraints of available memory and address space. Note that initially the created CFData object still has the same length as the original object; this parameter simply specifies what the maximum size is. CFData might try to optimize its internal storage by paying attention to this value.

theData
The CFData object to be copied.

Return Value
A CFMutableData object that has the same contents as the original object. Returns `NULL` if there was a problem copying the object. Ownership follows the Create Rule.

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

Declared In
`CFData.h`

CFDataDeleteBytes

Deletes the bytes in a CFMutableData object within a specified range.

```
void CFDataDeleteBytes (
    CFMutableDataRef theData,
    CFRange range
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

range

The range of bytes (that is, the starting byte and the number of bytes from that point) to delete from *theData*'s byte buffer.

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

Related Sample Code
CFLocalServer

Declared In
CFData.h

CFDataGetMutableBytePtr

Returns a pointer to a mutable byte buffer of a CFMutableData object.

```
UInt8 *CFDataGetMutableBytePtr (
    CFMutableDataRef theData
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

Return Value
A pointer to the bytes associated with *theData*.

Discussion
If the length of *theData*'s data is not zero, this function is guaranteed to return a pointer to a CFMutableData object's internal bytes. If the length of *theData*'s data *is* zero, this function may or may not return NULL dependent upon many factors related to how the object was created (moreover, in this case the function result might change between different releases and on different platforms).

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

Declared In
CFData.h

CFDataIncreaseLength

Increases the length of a CFMutableData object's internal byte buffer, zero-filling the extension to the buffer.

```
void CFDataIncreaseLength (
    CFMutableDataRef theData,
    CFIndex extraLength
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

extraLength

The number of bytes by which to increase the byte buffer.

Discussion

This function increases the length of a CFMutableData object's underlying byte buffer to a new size, initializing the new bytes to `0`.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`CFData.h`

CFDataReplaceBytes

Replaces those bytes in a CFMutableData object that fall within a specified range with other bytes.

```
void CFDataReplaceBytes (
    CFMutableDataRef theData,
    CFRange range,
    const UInt8 *newBytes,
    CFIndex newLength
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

range

The range of bytes (that is, the starting byte and the number of bytes from that point) to delete from *theData*'s byte buffer.

newBytes

A pointer to the buffer containing the replacement bytes.

newLength

The number of bytes in the byte buffer *newBytes*.

Availability

Available in Mac OS X v10.0 and later.

Declared In

`CFData.h`

CFDataSetLength

Resets the length of a CFMutableData object's internal byte buffer.

```
void CFDataSetLength (
    CFMutableDataRef theData,
    CFIndex length
);
```

Parameters

theData

A CFMutableData object. If you pass an immutable CFData object, the behavior is not defined.

length

The new size of *theData*'s byte buffer.

Discussion

This function resets the length of a CFMutableData object's underlying byte buffer to a new size. If that size is less than the current size, it truncates the excess bytes. If that size is greater than the current size, it zero-fills the extension to the byte buffer.

Availability

Available in Mac OS X v10.0 and later.

Declared In

CFData.h

Data Types

CFMutableDataRef

A reference to a CFMutableData object.

```
typedef struct __CFData *CFMutableDataRef;
```

Availability

Available in Mac OS X v10.0 and later.

Declared In

CFData.h

Document Revision History

This table describes the changes to *CFMutableData Reference*.

Date	Notes
2007-03-07	Corrected definition of CFDataGetMutableBytePtr.
2005-12-06	Made minor changes to text to conform to reference consistency guidelines.
2005-08-11	Clarified pointer validity after mutation in CFDataGetMutableBytePtr.
2003-08-01	Added link to Carbon-Cocoa integration document.
2003-01-01	First version of this document.

Document Revision History

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