



## **Red Hat Enterprise Linux Release 9.2 Manual Pages on '`__memalign_hook.3`' command**

**\$ man `__memalign_hook.3`**

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### NAME

`__malloc_hook`, `__malloc_initialize_hook`, `__memalign_hook`, `__free_hook`,  
`__realloc_hook`, `__after_morecore_hook` - malloc debugging variables

### SYNOPSIS

```
#include <malloc.h>

void *(*__malloc_hook)(size_t size, const void *caller);

void *(*__realloc_hook)(void *ptr, size_t size, const void *caller);

void *(*__memalign_hook)(size_t alignment, size_t size,
                        const void *caller);

void (*__free_hook)(void *ptr, const void *caller);

void (*__malloc_initialize_hook)(void);

void (*__after_morecore_hook)(void);
```

### DESCRIPTION

The GNU C library lets you modify the behavior of `malloc(3)`, `realloc(3)`, and `free(3)` by specifying appropriate hook functions. You can use these hooks to help you debug programs that use dynamic memory allocation, for example.

The variable `__malloc_initialize_hook` points at a function that is called once when the malloc implementation is initialized. This is a weak variable, so it can be overridden in the application with a definition like the following:

```
void (*__malloc_initialize_hook)(void) = my_init_hook;
```

Now the function `my_init_hook()` can do the initialization of all hooks.

The four functions pointed to by `__malloc_hook`, `__realloc_hook`, `__memalign_hook`, `__free_hook` have a prototype like the functions `malloc(3)`, `realloc(3)`, `memalign(3)`, `free(3)`, respectively, except that they have a final argument `caller` that gives the address of the caller of `malloc(3)`, etc.

The variable `__after_morecore_hook` points at a function that is called each time after `sbrk(2)` was asked for more memory.

## CONFORMING TO

These functions are GNU extensions.

## NOTES

The use of these hook functions is not safe in multithreaded programs, and they are now deprecated. From glibc 2.24 onwards, the `__malloc_initialize_hook` variable has been removed from the API. Programmers should instead preempt calls to the relevant functions by defining and exporting functions such as "malloc" and "free".

## EXAMPLES

Here is a short example of how to use these variables.

```
#include <stdio.h>

#include <malloc.h>

/* Prototypes for our hooks. */
static void my_init_hook(void);
static void *my_malloc_hook(size_t, const void *);

/* Variables to save original hooks. */
static void *(*old_malloc_hook)(size_t, const void *);

/* Override initializing hook from the C library. */
void (*__malloc_initialize_hook)(void) = my_init_hook;

static void
my_init_hook(void)
{
    old_malloc_hook = __malloc_hook;
    __malloc_hook = my_malloc_hook;
}
```

```

static void *
my_malloc_hook(size_t size, const void *caller)
{
    void *result;

    /* Restore all old hooks */
    __malloc_hook = old_malloc_hook;

    /* Call recursively */
    result = malloc(size);

    /* Save underlying hooks */
    old_malloc_hook = __malloc_hook;

    /* printf() might call malloc(), so protect it too. */
    printf("malloc(%zu) called from %p returns %p\n",
           size, caller, result);

    /* Restore our own hooks */
    __malloc_hook = my_malloc_hook;

    return result;
}

```

#### SEE ALSO

mallinfo(3), malloc(3), mcheck(3), mtrace(3)

#### COLOPHON

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