



## ***Rocky Enterprise Linux 9.2 Manual Pages on command 'arch\_prctl.2'***

**C:\>man arch\_prctl.2**

ARCH\_PRCTL(2)                      Linux Programmer's Manual                      ARCH\_PRCTL(2)

### NAME

arch\_prctl - set architecture-specific thread state

### SYNOPSIS

```
#include <asm/prctl.h>
```

```
#include <sys/prctl.h>
```

```
int arch_prctl(int code, unsigned long addr);
```

```
int arch_prctl(int code, unsigned long *addr);
```

### DESCRIPTION

arch\_prctl() sets architecture-specific process or thread state. code selects a subfunction and passes argument addr to it; addr is interpreted as either an unsigned long for the "set" operations, or as an unsigned long \*, for the "get" operations.

Subfunctions for x86-64 are:

#### ARCH\_SET\_FS

Set the 64-bit base for the FS register to addr.

#### ARCH\_GET\_FS

Return the 64-bit base value for the FS register of the current thread in the unsigned long pointed to by addr.

#### ARCH\_SET\_GS

Set the 64-bit base for the GS register to addr.

#### ARCH\_GET\_GS

Return the 64-bit base value for the GS register of the current thread in the unsigned long pointed to by `addr`.

## RETURN VALUE

On success, `arch_prctl()` returns 0; on error, -1 is returned, and `errno` is set to indicate the error.

## ERRORS

`EFAULT` `addr` points to an unmapped address or is outside the process address space.

`EINVAL` `code` is not a valid subcommand.

`EPERM` `addr` is outside the process address space.

## CONFORMING TO

`arch_prctl()` is a Linux/x86-64 extension and should not be used in programs intended to be portable.

## NOTES

`arch_prctl()` is supported only on Linux/x86-64 for 64-bit programs currently.

The 64-bit base changes when a new 32-bit segment selector is loaded.

`ARCH_SET_GS` is disabled in some kernels.

Context switches for 64-bit segment bases are rather expensive. As an optimization, if a 32-bit TLS base address is used, `arch_prctl()` may use a real TLS entry as if `set_thread_area(2)` had been called, instead of manipulating the segment base register directly. Memory in the first 2 GB of address space can be allocated by using `mmap(2)` with the `MAP_32BIT` flag.

Because of the aforementioned optimization, using `arch_prctl()` and `set_thread_area(2)` in the same thread is dangerous, as they may overwrite each other's TLS entries.

As of version 2.7, glibc provides no prototype for `arch_prctl()`. You have to declare it yourself for now. This may be fixed in future glibc versions.

`FS` may be already used by the threading library. Programs that use `ARCH_SET_FS` directly are very likely to crash.

## SEE ALSO

`mmap(2)`, `modify_ldt(2)`, `prctl(2)`, `set_thread_area(2)`

AMD X86-64 Programmer's manual

## COLOPHON

This page is part of release 5.05 of the Linux man-pages project. A description of

the project, information about reporting bugs, and the latest version of this page,  
can be found at <https://www.kernel.org/doc/man-pages/>.

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