



## **Rocky Enterprise Linux 9.2 Manual Pages on command 's390\_guarded\_storage.2'**

**C:\>man s390\_guarded\_storage.2**

S390\_GUARDED\_STORAGE(2)      System Calls Manual      S390\_GUARDED\_STORAGE(2)

### NAME

s390\_guarded\_storage - operations with z/Architecture guarded storage facility

### SYNOPSIS

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

```
int s390_guarded_storage(int command, struct gs_cb *gs_cb);
```

### DESCRIPTION

The s390\_guarded\_storage() system call enables the use of the Guarded Storage Facility (a z/Architecture-specific feature) for user-space processes.

The guarded storage facility is a hardware feature that allows marking up to 64 memory regions (as of z14) as guarded; reading a pointer with a newly introduced "Load Guarded" (LGG) or "Load Logical and Shift Guarded" (LLGFSG) instructions will cause a range check on the loaded value and invoke a (previously set up) user-space handler if one of the guarded regions is affected.

The command argument indicates which function to perform. The following commands are supported:

#### GS\_ENABLE

Enable the guarded storage facility for the calling task. The initial content of the guarded storage control block will be all zeros. After enablement, user-space code can use the "Load Guarded Storage Controls" (LGSC) instruction (or the load\_gs\_cb() function wrapper provided in the asm/guarded\_storage.h header) to load an arbitrary control block. While a

task is enabled, the kernel will save and restore the calling content of the guarded storage registers on context switch.

#### GS\_DISABLE

Disables the use of the guarded storage facility for the calling task. The kernel will cease to save and restore the content of the guarded storage registers, the task-specific content of these registers is lost.

#### GS\_SET\_BC\_CB

Set a broadcast guarded storage control block to the one provided in the `gs_cb` argument. This is called per thread and associates a specific guarded storage control block with the calling task. This control block will be used in the broadcast command `GS_BROADCAST`.

#### GS\_CLEAR\_BC\_CB

Clears the broadcast guarded storage control block. The guarded storage control block will no longer have the association established by the `GS_SET_BC_CB` command.

#### GS\_BROADCAST

Sends a broadcast to all thread siblings of the calling task. Every sibling that has established a broadcast guarded storage control block will load this control block and will be enabled for guarded storage. The broadcast guarded storage control block is consumed; a second broadcast without a refresh of the stored control block with `GS_SET_BC_CB` will not have any effect.

The `gs_cb` argument specifies the address of a guarded storage control block structure and is currently used only by the `GS_SET_BC_CB` command; all other aforementioned commands ignore this argument.

#### RETURN VALUE

On success, the return value of `s390_guarded_storage()` is 0.

On error, -1 is returned, and `errno` is set appropriately.

#### ERRORS

`EFAULT` command was `GS_SET_BC_CB` and the copying of the guarded storage control block structure pointed by the `gs_cb` argument has failed.

`EINVAL` The value provided in the command argument was not valid.

`ENOMEM` command was one of `GS_ENABLE` or `GS_SET_BC_CB`, and the allocation of a new

guarded storage control block has failed.

## EOPNOTSUPP

The guarded storage facility is not supported by the hardware.

## VERSIONS

This system call is available since Linux 4.12.

## CONFORMING TO

This Linux-specific system call is available only on the s390 architecture.

The guarded storage facility is available beginning with System z14.

## NOTES

Glibc does not provide a wrapper for this system call, use `syscall(2)` to call it.

The description of the guarded storage facility along with related instructions and Guarded Storage Control Block and Guarded Storage Event Parameter List structure layouts is available in "z/Architecture Principles of Operations" beginning from the twelfth edition.

The `gs_cb` structure has a field `gsepla` (Guarded Storage Event Parameter List Address), which is a user-space pointer to a Guarded Storage Event Parameter List structure (that contains the address of the aforementioned event handler in the `gseha` field), and its layout is available as a `gs_epl` structure type definition in the `asm/guarded_storage.h` header.

## SEE ALSO

`syscall(2)`

## COLOPHON

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