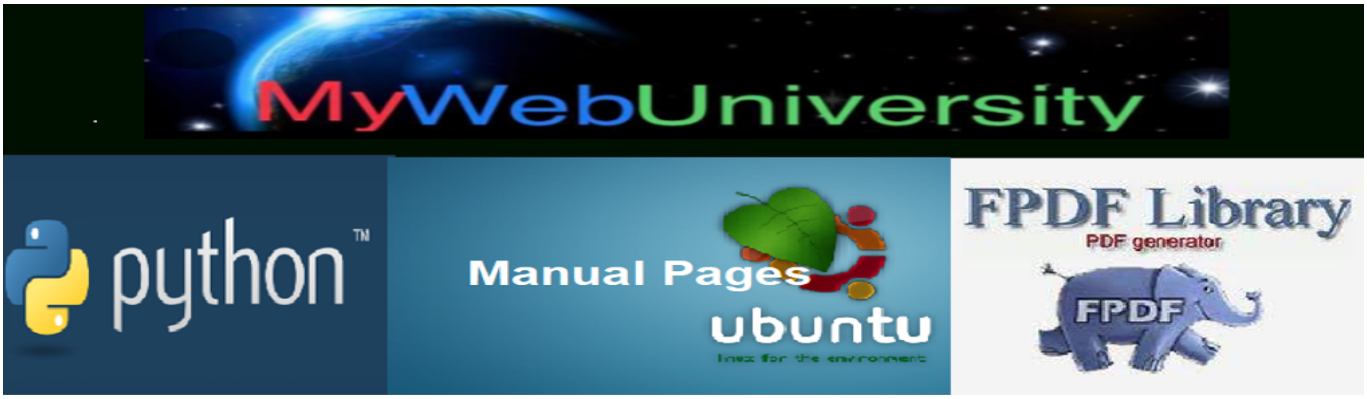

Rocky Enterprise Linux 9.2 Manual Pages on command 's390_guarded_storage.2'

$ 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 re? gions (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 sup? ported:

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 re? store 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 ar? gument. This is called per thread and associates a specific guarded storage con? trol 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 con? trol 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 ig? nore 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 edi? tion.

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 lay? out 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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