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Red Hat Enterprise Linux Release 9.2 Manual Pages on 'sg_opcodes.8' command

$ man sg_opcodes.8

SG_OPCODES(8) SG3_UTILS SG_OPCODES(8)

NAME

sg_opcodes - report supported SCSI commands or task management func?

tions

SYNOPSIS

sg_opcodes [--alpha] [--compact] [--enumerate] [--help] [--hex]

[--mask] [--mlu] [--no-inquiry] [--opcode=OP[,SA]] [--pdt=DT] [--raw]

[--rctd] [--repd] [--sa=SA] [--tmf] [--unsorted] [--verbose] [--ver?

sion] DEVICE

sg_opcodes [-a] [-c] [-e] [-H] [-m] [-M] [-n] [-o=OP] [-p=DT] [-q] [-R]

[-s=SA] [-t] [-u] [-v] [-V] [-?] DEVICE

DESCRIPTION

This utility sends a SCSI REPORT SUPPORTED OPERATION CODES or a REPORT

SUPPORTED TASK MANAGEMENT FUNCTIONS command to the DEVICE and then out?

puts the response. The default action is to report supported operation

codes. In this mode it will either list all supported commands or give

detailed information on a specific command identified by the --op?

code=OP option (perhaps with additional information from the --sa=SA

option).

The name of a SCSI command depends on its peripheral device type (e.g.

a disk). The REPORT SUPPORTED OPERATION CODES and REPORT SUPPORTED TASK

MANAGEMENT FUNCTIONS commands are not supported in the MMC command set

for CD and DVD devices. This utility does an INQUIRY to obtain the pe?

ripheral device type and prints out the vendor, product and revision strings.

A similar facility to query supported operation codes previously was available via the CmdDt bit in the SCSI INQUIRY command (see sg_inq(8)). However that facility was made obsolete and replaced by the REPORT SUPPORTED OPERATION CODES command in SPC-3 (revision 4) during February 2002.

This utility supports two command line syntaxes, the preferred one is shown first in the synopsis and explained in this section. A later sec? tion on the old command line syntax outlines the second group of op? tions.

OPTIONS

Arguments to long options are mandatory for short options as well.

-a, --alpha

when all supported commands are being listed there is no re? quirement for the device server (i.e. the DEVICE) to sort the list of commands. When this option is given the list of sup? ported commands is sorted by name (alphabetically). When this option and the --unsorted option are both _not_ given then the list of supported commands is sorted numerically (first by oper? ation code and then by service action).

-c, --compact

some command names, especially those associated with some ser? vice actions, are getting longer. This may cause line wrap in the one line per command mode on some terminals. When this op? tion is given the opcode and service action fields are combined into a single field with the service action, prefixed by a comma shown directly after the opcode. If there is no service action associated with the command, then the comma and the service ac? tion are not shown after the opcode. The CDB size field is not shown when this option is given.

-e, --enumerate

this option prints the name of the SCSI command based on the

given opcode, peripheral device type and optionally the service action. If given, DEVICE is ignored. The opcode, peripheral de? vice type and service action default to zero if not given. Thus if this option is the only option given then "Test Unit ready" is output since its opcode is 0, it has no service action and it is common to all peripheral device types since it is defined in the SCSI Primary Commands (SPC) standard(s).

-h, --help

outputs the usage message summarizing command line options then exits. Ignores DEVICE if given.

-H, --hex

outputs the response in ASCII hexadecimal to stdout.

-m, --mask

additionally prints out the cdb mask in hex. So a 12 byte cdb will have a 12 byte hexadecimal mask. If the hexadecimal is ex? panded (mentally) to binary then a "1" means the corresponding position in the cdb may be set. And "0" means the corresponding position in the cdb must not be set. For "0" mask positions that a user tries to set in a cdb, the device may either ignore it or report an error, typically with a sense key of "illegal re? quest".

-M, --mlu

additionally prints out an indication (0 or 1) whether the com? mand effects all logical units in the containing target. MLU (Multiple Logical Units) is a bit in the REPORT SUPPORTED OPERA? TION CODES response introduced by proposal 18-045r1 (and possi? bly in spc5r20). Without the option, the default output format which lists all opcodes, does not include a MLU indication.

-n, --no-inquiry

Prior to calling a SCSI REPORT SUPPORTED OPERATION CODES or a REPORT SUPPORTED TASK MANAGEMENT FUNCTIONS command, a SCSI IN? QUIRY command is performed. The reason is to determine the pe? ripheral device type (pdt) of the DEVICE as this is helpful in

translating operation codes to the command names. By default this utility prints a summary of INQUIRY command response on stdout. If this option (or the --raw option) is given then that summary is not printed on stdout.

-O, --old

Switch to older style options. Please use as first option.

-o, --opcode=OP[,SA]

the DEVICE will be queried for the given operation code (i.e. the OP value) which is the first byte of a SCSI command. Option? ally, if a SA value is given, it will be used as that SCSI com? mand's service action. Note that OP and OP,0 are not the same thing, as SCSI does allow the service action to be 0 (but it is not comman). OP and SA are decimal unless prefixed by "0x" or they have a trailing "h". OP should be in the range 0 to 255 (0xff) inclusive. SA should be in the range 0 to 65535 (0xffff) inclusive. When this option is not given then all available SCSI commands supported by the DEVICE are listed.

-p, --pdt=DT

where DT is the peripheral device type. This is used together with the --enumerate to differentiate when a command opcode (and perhaps service action) is shared by multiple device types.

This option may also be used with the --no-inquiry option to suppress this utility doing an INQUIRY command since the main reason for doing that is to find the peripheral device type of the DEVICE.

-r, --raw

output the response in binary to stdout. Error messages and warnings, if any, are sent to stderr.

-R, --rctd

set report command timeout descriptor (RCTD) bit in the cdb. The response may or may not contain command timeout descriptors. If available they are output. If supported there are two values: a nominal command timeout and a recommended command timeout. Both

have units of seconds. A value of zero means that no timeout is indicated and this is shown in the corresponding decoded output as "-".

-q, --repd

set read extended parameter data (REPD) bit in the report task management functions cdb. 16 bytes rather than the default 4 bytes expected in the response. This was added in SPC-4 (revi? sion 26).

-s, --sa=SA

the DEVICE will be queried for a command with the given service action (i.e. the SA value). Used in conjunction with the --op? code=OP option. If this option is not given, --opcode=OP is given and the command in question does have a service action then a value of 0 will be assumed. SA is decimal and expected to be in the range 0 to 65535 (0xffff) inclusive.

-t, --tmf

list supported task management functions. This is done with the SCSI REPORT SUPPORTED TASK MANAGEMENT FUNCTIONS command. When this option is chosen the --alpha, --opcode=OP, --rctd, --sa=SA and --unsorted options are ignored.

-u, --unsorted

when all supported commands are being listed there is no re? quirement for the device server (i.e. the DEVICE) to sort the list of commands. When this option is given the list of sup? ported commands is in the order given by the DEVICE. When this option is not given the supported commands are sorted numeri? cally (first by operation code and then by service action).

-v, --verbose

increase level of verbosity. Can be used multiple times.

-V, --version

print out version string then exit.

NOTES

As of SPC-5 revision 8 the recognized task management functions are:

abort set, abort task set, clear ACA, clear task set, logical unit re?
set, query task, query asynchronous event, query task set, and I_T
nexus reset. In SPC-4 revision 26 target reset and wakeup task manage?
ment functions were made obsolete.

In the 2.4 series of Linux kernels the DEVICE must be a SCSI generic (sg) device. In the 2.6 series block devices (e.g. SCSI disks and DVD drives) can also be specified. For example "sg_opcodes /dev/sda" will work in the 2.6 series kernels.

EXIT STATUS

The exit status of sg_opcodes is 0 when it is successful. Otherwise see the sg3_utils(8) man page.

OLDER COMMAND LINE OPTIONS

The options in this section were the only ones available prior to sg3_utils version 1.23 . Since then this utility defaults to the newer command line options which can be overridden by using --old (or -O) as the first option. See the ENVIRONMENT VARIABLES section for another way to force the use of these older command line options.

-a sort command alphabetically. Equivalent to --alpha in main de?
scription.

-c see the --compact option above.

-e see the --enumerate option above.

-H see the --hex option above.

-m see the --mask option above.

-n don't print a summary of the SCSI INQUIRY response on stdout.

-N, --new
Switch to the newer style options.

-o=OP the DEVICE will be queried for the given operation code (i.e. OP) which is the first byte of a SCSI command. OP is hexadecimal and expected to be in the range 0 to ff inclusive. When this option is not given then all available SCSI commands supported by the DEVICE are listed.

-p=DT see the --pdt=DT option above.

-q set the read extended parameter data (REPD) bit in report TMF

cdb. Equivalent to --repd in main description.

-R set the report command timeout descriptor (RCTD) bit in cdb. Equivalent to --rctd in main description.

-s=SA the DEVICE will be queried for a command with the given service action (i.e. SA). Used in conjunction with the -o=OP option. If this option is not given, -o=OP is given and the command in question does have a service action then a value of 0 will be assumed. SA is hexadecimal and expected to be in the range 0 to ffff inclusive.

-t list supported task management functions. Equivalent to --tmf in the main description.

-u output all supported commands in the order given by DEVICE. Equivalent to --unsorted in main description.

-v increase level of verbosity. Can be used multiple times.

-V print out version string then exit.

-? output usage message. Ignore all other parameters.

EXAMPLES

The examples in this page use Linux device names. For suitable device names in other supported Operating Systems see the sg3_utils(8) man page.

To see the information about a specific command give its operation code to the '--op=' option. A command line invocation is shown first fol? lowed by a typical response:

```
 # sg_opcodes --op=93h /dev/sdb
Opcode=0x93
Command_name: Write same(16)
Command supported [conforming to SCSI standard]
Usage data: 93 e2 00 00 00 00 ff ff ff ff 00 00 ff ff 00 00
```

The next example shows the supported task management functions:

```
 # sg_opcodes --tmf -n /dev/sdb
```

Task Management Functions supported by device:

```
  Abort task
  Abort task set
```

Clear ACA

Clear task set

Logical unit reset

Query task

Enumerate can be used to look up a SCSI command name in the absence of a device that supports that command. The opcode and service action (if required) should be supplied:

```
# sg_opcodes --enumerate --op=0x9b,0xa
SCSI command:
  Read buffer(16), read data from echo buffer
```

ENVIRONMENT VARIABLES

Since sg3_utils version 1.23 the environment variable SG3_UTILS_OLD_OPTS can be given. When it is present this utility will expect the older command line options. So the presence of this environ? ment variable is equivalent to using --old (or -O) as the first command line option.

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REPORTING BUGS

Report bugs to <dgilbert at interlog dot com>.

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SEE ALSO

sg_inq(sg3_utils)