Rocky Enterprise Linux 9.2 Manual Pages on command 'sg_vpd.8'

$ man sg_vpd.8

SG_VPD(8)   SG3_UTILS   SG_VPD(8)

NAME

   sg_vpd - fetch SCSI VPD page and/or decode its response

SYNOPSIS

   sg_vpd [--all] [--enumerate] [--examine] [--force] [--help] [--hex] [--ident] [--inhex=FN]

   [--long] [--maxlen=LEN] [--page=PG] [--quiet] [--raw] [--vendor=VP] [--verbose] [--ver?

   sion] [DEVICE]

DESCRIPTION

   This utility, when DEVICE is given, fetches a Vital Product Data (VPD) page and decodes it

   or outputs it in ASCII hexadecimal or binary. VPD pages are fetched with a SCSI INQUIRY

   command.

   Alternatively the --inhex=FN option can be given. In this case FN is assumed to be a file

   name ('-' for stdin) containing ASCII hexadecimal representing a VPD page response. If the

   --raw option is also given then binary input is assumed (rather than ASCII hexadecimal).

   Probably the most important page is the Device Identification VPD page (page number:

   0x83). Since SPC-3, support for this page has been flagged as mandatory. This page can be

   fetched by using the --ident option.

   The reference document used for interpreting VPD pages (and the INQUIRY standard response)

   is T10/BSR INCITS 502 Revision 22 which is draft SPC-5 revision 19, 22 April 2019. It can

   be found at http://www.t10.org .

   When no options are given, other than a DEVICE, then the "Supported VPD pages" (0x0) VPD

   page is fetched and decoded.

OPTIONS

Arguments to long options are mandatory for short options as well. The options are ar?
ranged in alphabetical order based on the long option name.

-a, --all

decode all VPD pages. When used with DEVICE the pages to be decoded are found in
the "Supported VPD pages" VPD page. Pages that cannot be decoded are displayed in
hex; add the --long option to have ASCII displayed to the right of each line of
hex.

If this option is used with the --inhex=FN option then the file FN is assumed to
contain 1 or more VPD pages (in ASCII hex or binary). Decoding continues until the
file is exhausted (or an error occurs). Sanity checks are applied on each VPD
page's length and the ascending order of VPD page numbers (required by SPC-4) so
bad data may be detected.

If the --page=PG option is also given then no VPD page whose page number is greater
than PG (or its numeric equivalent) is decoded.

-e, --enumerate

list the names of the known VPD pages, first the standard pages (i.e. those de?
fined by T10), then the vendor specific pages. Each group is sorted in abbreviation
order. The DEVICE and most other options are ignored and this utility exits after
listing the VPD page names. May be used together with --page=PG where PG is nu?
meric. If so, it searches for the summary lines of all VPD pages whose number
matches PG. May be used with --vendor=VP to restrict output to known vendor spe?
cific pages for vendor/product VP.

-E, --examine

scan part of all of the VPD space (from 0x0 to 0xff) and output any pages found.
This option ignores the contents of VPD page 0x0 which should contain a list of all
supported VPD pages. However some vendors either forget to list some standard pages
or perhaps purposely don't list vendor specific pages which are in the range 0xc0
to 0xff.

If the --page=PG option is not given and this option is given once then the scan is
from VPD page number 0x80 to 0xff inclusive. If the --page=PG option is given then
the scan is from 0x80 to PG inclusive. If this option is given twice then the scan
starts at VPD page 0x0.

The sdparm utility which lists mode and VPD pages also has a --examine option will

similar functionility.

-f, --force

As a sanity check, the normal action when fetching VPD pages other than page 0x0

(the "Supported VPD pages" VPD page), is to first fetch page 0x0 and only if the

requested page is one of the supported pages, to go ahead and fetch the requested

page.

When this option is given, skip checking of VPD page 0x0 before accessing the re?

quested VPD page. The prior check of VPD page 0x0 is known to crash certain USB de?

vices, so use with care.

-h, --help

outputs the usage message summarizing command line options then exits. Ignores DE?

VICE if given.

-H, --hex

outputs the requested VPD page in ASCII hexadecimal. Can be used multiple times,

see section on the ATA information vpd page.

To generate output suitable for placing in a file that can be used by a later invo?

cation with the --inhex=FN option, use the '-HHHH' option (e.g. 'sg_vpd -p di -HHHH

/dev/sg3 > dev_id.hex'). The reason '-HHHH' is used is to flag that unadorned hexa?

decimal (without other text or address offsets) is sent to stdout.

-i, --ident

decode the device identification (0x83) VPD page. When used once this option has

the same effect as '--page=di'. When use twice then the short form of the device

identification VPD page's logical unit designator is decoded. In the latter case

this option has the same effect as '--quiet --page=di_lu'.

-I, --inhex=FN

FN is expected to be a file name (or '-' for stdin) which contains ASCII hexadeci?

mal or binary representing a VPD page (or a standard INQUIRY) response. This util?

ity will then decode that response. It is preferable to also supply the --page=PG

option, if not this utility will attempt to guess which VPD page (or standard IN?

QUIRY) the response is associated with. The hexadecimal should be arranged as 1 or

2 digits representing a byte each of which is whitespace or comma separated. Any?

thing from and including a hash mark to the end of line is ignored. If the --raw

option is also given then FN is treated as binary.

-l, --long

> when decoding some VPD pages, give a little more output. For example the ATA Infor?
>
> mation VPD page only shows the signature (in hex) and the IDENTIFY (PACKET) DEVICE
>
> (in hex) when this option is given.

-m, --maxlen=LEN

> where LEN is the (maximum) response length in bytes. It is placed in the cdb's "al?
>
> location length" field. If not given (or LEN is zero) then 252 is used (apart from
>
> the ATA Information VPD page which defaults to 572) and, if the response indicates
>
> this value is insufficient, another INQUIRY command is sent with a larger value in
>
> the cdb's "allocation length" field. If this option is given and LEN is greater
>
> than 0 then only one INQUIRY command is sent. Since many simple devices implement
>
> the INQUIRY command badly (and do not support VPD pages) then the safest value to
>
> use for LEN is 36. See the sg_inq man page for the more information.

-p, --page=PG

> where PG is the VPD page to be decoded or output. The PG argument can either be an
>
> abbreviation, a number or a pair or numbers/abbreviations separated by a comma. The
>
> VPD page abbreviations can be seen by using the --enumerate option. If a number is
>
> given it is assumed to be decimal unless it has a hexadecimal indicator which is
>
> either a leading '0x' or a trailing 'h'. If one number is given then it is assumed
>
> to be a VPD page number. If two numbers (or abbreviations) are given then the sec?
>
> ond one is the same as VP (see the --vendor=VP option). If this option is not given
>
> (nor '-i', '-l' nor '-V') then the "Supported VPD pages" (0x0) VPD page is fetched
>
> and decoded. If PG is '-1' or 'sinq' then the standard INQUIRY response is output.
>
> This option may also be used with the --enumerate (see its description).
>
> If PG is not found in the 'Supported VPD pages' VPD page (0x0) then EDOM is re?
>
> turned. To bypass this check use the --force option.

-q, --quiet

> suppress the amount of decoding output.

-r, --raw

> if not used with --inhex=FN then output requested VPD page in binary.   The output
>
> should be piped to a file or another utility when this option is used. The binary
>
> is sent to stdout, and errors are sent to stderr.
>
> if used with --inhex=FN then the contents of FN is treated as binary.

-M, --vendor=VP

 where VP is a vendor (e.g. "sea" for Seagate) or vendor/product acronym (e.g.

 "hp3par" for the 3PAR array from HP). Many vendors have re-used the numbers at the

 beginning of the vendor specific VPD page range (e.g. page 0xc0) and this option

 is a way of selecting only those which are of interest. Using a VP of "xxx" will

 list the available acronyms.

 If this option is used with --page=PG and PG is an acronym then this option is ig?

 nored. If PG is a number (e.g. 0xc0) then VP is used to choose the which vendor

 specific page (e.g. sharing page number 0xc0) to decode.

-v, --verbose

 increases the level or verbosity.

-V, --version

 print out version string then exit.

ATA INFORMATION VPD PAGE

 This VPD page (0x89 or 'ai') is defined by the SCSI to ATA Translation standard. It con?

 tains information about the SAT layer, the "signature" of the ATA device and the response

 to the ATA IDENTIFY (PACKET) DEVICE command. The latter part has 512 bytes of identity,

 capability and settings data which the hdparm utility is capable of decoding (so this

 utility doesn't decode it).

 To unclutter the output for this page, the signature and the IDENTIFY (PACKET) DEVICE re?

 sponse are not output unless the --long option (or --hex or --raw) are given. When the

 --long option is given the IDENTIFY (PACKET) DEVICE response is output as 256 (16 bit)

 words as is the fashion for ATA devices. To see that response as a string of bytes use the

 '-HH' option. To format the output suitable for hdparm to decode use either the '-HHH' or

 '-rr' option. For example if 'dev/sdb' is a SATA disk behind a SAT layer then this com?

 mand: 'sg_vpd -p ai -HHH /dev/sdb | hdparm --Istdin' should decode the ATA IDENTIFY

 (PACKET) DEVICE response.

NOTES

 Since some VPD pages (e.g. the Extended INQUIRY page) depend on settings in the standard

 INQUIRY response, then the standard INQUIRY response is output as a pseudo VPD page when

 PG is set to '-1' or 'sinq'. Also the decoding of some fields (e.g. the Extended INQUIRY

 page's SPT field) is expanded when the '--long' option is given using the standard INQUIRY

 response information (e.g. the PDT and the PROTECT fields).

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. disks and ATAPI DVDs) can also be specified. For example

"sg_inq /dev/sda" will work in the 2.6 series kernels. From lk 2.6.6 other SCSI "char" de?

vice names may be used as well (e.g. "/dev/st0m").

The DEVICE is opened with a read-only flag (e.g. in Unix with the O_RDONLY flag).

EXIT STATUS

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

page.

EXAMPLES

The examples in this page use Linux device names. For suitable device names in other sup?

ported Operating Systems see the sg3_utils(8) man page.

To see the VPD pages that a device supports, use with no options. The command line invoca?

tion is shown first followed by a typical response:

  # sg_vpd /dev/sdb

Supported VPD pages VPD page:

  Supported VPD pages [sv]

  Unit serial number [sn]

  Device identification [di]

  Extended inquiry data [ei]

  Block limits (SBC) [bl]

To see the VPD page numbers associated with each supported page then add the '--long' op?

tion to the above command line. To view a VPD page either its number or abbreviation can

be given to the '--page=' option. The page name abbreviations are shown within square

brackets above. In the next example the Extended inquiry data VPD page is listed:

  # sg_vpd --page=ei /dev/sdb

extended INQUIRY data VPD page:

  ACTIVATE_MICROCODE=0 SPT=0 GRD_CHK=0 APP_CHK=0 REF_CHK=0

  UASK_SUP=0 GROUP_SUP=0 PRIOR_SUP=0 HEADSUP=1 ORDSUP=1 SIMPSUP=1

  WU_SUP=0 CRD_SUP=0 NV_SUP=0 V_SUP=0

  P_I_I_SUP=0 LUICLR=0 R_SUP=0 CBCS=0

  Multi I_T nexus microcode download=0

  Extended self-test completion minutes=0

  POA_SUP=0 HRA_SUP=0 VSA_SUP=0

To check if any protection types are supported by a disk use the '--long' option on the Extended inquiry data VPD page:

```
# sg_vpd --page=ei --long /dev/sdb

extended INQUIRY data VPD page:

  ACTIVATE_MICROCODE=0

  SPT=1 [protection types 1 and 2 supported]

  GRD_CHK=1

  ....
```

Search for the name (and acronym) of all pages that share VPD page number 0xb0 .

```
# sg_vpd --page=0xb0 --enumerate

Matching standard VPD pages:

  bl      0xb0     Block limits (SBC)

  oi      0xb0     OSD information

  sad      0xb0      Sequential access device capabilities (SSC)
```

Some examples follow using the "--all" option. Send an ASCII hexadecimal representation of all VPD pages to a file:

```
# sg_vpd --all -HHHH /dev/sg3 > all_vpds.hex
```

At some later time that file could be decoded with:

```
# sg_vpd --all --inhex=all_vpds.hex
```

To do the equivalent as the previous example but use a file containing binary:

```
# sg_vpd --all --raw /dev/sg3 > all_vpds.bin

# sg_vpd --all --raw --inhex=all_vpds.bin
```

Notice that "--raw" must be given with the second (--inhex) invocation to alert the util‐ity that all_vpds.bin contains binary as it assumes ASCII hexadecimal by default. Next we only decode T10 specified VPD pages excluding vendor specific VPD pages that start at page number 0xc0:

```
# sg_vpd --all --page=0xbf --raw --inhex=all_vpds.bin
```

Further examples can be found on the http://sg.danny.cz/sg/sg3_utils.html web page.

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REPORTING BUGS

Report bugs to <dgilbert at interlog dot com>.

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SEE ALSO

sg_inq(sg3_utils), sg3_utils(sg3_utils), sdparm(sdparm), hdparm(hdparm)

sg3_utils-1.46   March 2021   SG_VPD(8)