NAME
sginfo − access mode page information for a SCSI (or ATAPI) device

SYNOPSIS
sginfo [*OPTIONS*] [*DEVICE*] [*REPLACEMENT_PARAMETERS*]

DESCRIPTION
sginfo is a port of the Linux **scsiinfo** program by Eric Youngdale. It uses SCSI generic (sg) devices; however in some cases the high level device name (i.e. sd, sr, st, osst, or hd) can also be used. The primary role of this program is to access mode page information. If permitted, mode page information can be altered. In addition information from the INQUIRY and READ DEFECTS commands are also available.

This utility is in legacy mode, only obvious bugs will be fixed. Options like −l (to list devices) are broken in recent versions of Linux (e.g. 2.6 series and later); the lsscsi(8) utility can be used instead. Also mode pages are not being updated as http://www.t10.org adds and modifies mode page fields. Those interested in SCSI mode pages may find the **sdparm** utility more up to date and easier use, especially for changing parameters.

Four sets of values are maintained by a SCSI device for each mode page: current (active), default (manufacturer's supplied values), saved (values that are retained if the SCSI device is powered down), and changeable (mask indicating those values that can be changed). By default when a mode page is displayed the current values are shown. This can be overridden by "−M" (defaults), "−S" (saved) or "−m" (modifiable (i.e. changeable)).

Many mode pages are decoded: for disks (see SBC−2), for CD/DVDs (see MMC−2/3/4/5), for tapes (see SSC−2) and for enclosures (see SES−2). Some mode pages common to all SCSI peripheral device types are defined in SPC−4 (primary commands). A decoded mode page has its field names in the first column and the corresponding value in the second column. A "hex" mode page (and subpage) has its byte position in the first column (in hex and starting at 0x2) and the corresponding hex value in the second column. Decoded pages can be viewed with the '−t' option or with a specific option (e.g. 'c' for the caching mode page). Naturally decoded pages must be supplied by the *DEVICE* and recognised by this program. If supported by the device, decoded pages may be modified. All mode pages (and subpages) that the device supports can be viewed in hex (and potentially modified) via the "−u" option

If no options are given that will cause mode page(s) or INQUIRY data to be printed out, then a brief INQUIRY response is output. This includes the vendor, product and revision level of the device.

OPTIONS
−6   Perform 6 byte MODE SENSE and MODE SELECT commands; by default the 10 byte variants are used.

−a   Display some INQUIRY data and the unit serial number followed by all mode pages reported by the device. It is similar to the '−t 0x3f' option. If the mode page is known then it is output in decoded form otherwise it is output in hexadecimal.

−A   Display some INQUIRY data and the unit serial number followed by all mode pages and all mode subpages reported by the device. It is similar to the '−t 0x3f,0xff' option. If a mode (sub)page is known then it is output in decoded form otherwise it is output in hexadecimal.

−c   Access information in the Caching mode page.

−C   Access information in the Control mode Page.

−d   Display defect lists (default format: index).

−D   Access information in the Disconnect−Reconnect mode page.

−e   Access information in the Error Recovery mode page.

−E   Access information in the Control Extension mode page.

−f   Access information in the Format Device mode page.

−Farg Format of the defect lists:
           −Flogical − logical block addresses (32 bit)

            −Flba64   − logical block addresses (64 bit)
            −Fphysical − physical blocks
            −Findex   − defect bytes from index
            −Fhead   − sort by head
       Used in conjunction with "−d" or "−G". If a format is not given "index" is assumed.

−g   Access information in the Rigid Disk Drive Geometry mode page.

−G   Display grown defect list (default format: index).

−i   Display the response to a standard INQUIRY command.

−I   Access the Informational Exceptions mode page.

−l   Deprecated. Only use in old versions of Linux (e.g. 2.4 and earlier). Please use lsscsi(8) in the Linux 2.6 series and later. List known SCSI devices on the system.

−n   Access information in the Notch and Partition mode page.

−N   Negate (i.e. stop) mode page changes being placed in the "saved" page (by default changes go to the current and the saved page). Only active when used together with '−R'.

−P   Access information in the Power Condition mode page.

−r   Display all raw (or primary) SCSI device names visible in the /dev directory. Examples are /dev/sda, /dev/st1 and /dev/scd2. Does not list sg device names so devices such as a SCSI enclosure which only have an sg device name are not listed.

−s   Display information in the unit serial number page which is a INQUIRY command variant.

−t *PN*[,*SPN*]
       Display information from mode page number *PN* (and optionally sub page number *SPN*) in decoded format (if known, otherwise in hex form). *PN* is a mode page number in a decimal number from 0 to 63 inclusive. *SPN* is the mode subpage number and is assumed to be 0 if not given. *SPN* is a decimal number from 1 to 255 inclusive. A page number of 63 returns all pages supported by the device in ascending order except for page 0 which, if present, is last. Page 0 is vendor specific and not necessarily in mode page format. Alternatively hex values can be given for both *PN* and *SPN* (both prefixed by '0x').

−T   Trace commands to obtain more verbose output (for debugging). When used once SCSI commands are shown (in hex) and any errors from these SCSI commands are spelt out (i.e. with a decoded and raw sense buffer). When used twice, the additional data sent with mode select and the response from mode sense are shown (in hex).

−u *PN*[,*SPN*]
       Display information from mode page number *PN* (and optionally *SPN*) in hex form. *PN* is a mode page number in a decimal number from 0 to 63 inclusive. *SPN* is the mode subpage number and is assumed to be 0 if not given. *SPN* is a decimal number from 1 to 255 inclusive. A page number of 63 returns all pages supported by the device in ascending order except for page 0 which, if present, is last. Page 0 is vendor specific and not necessarily in mode page format. Alternatively hex values can be given for both *PN* and *SPN* (both prefixed by '0x'). For example 63 and 0x3f are equivalent.

−v   Display version string then exit. [N.B. This option increases verbosity for most other utilities in this package as outlined in 'man 8 sg3_utils'. This odd usage is for backward compatibility with the scsiinfo utility.]

−V   Access information in the Verify Error Recovery mode page. [N.B. This option prints the version string then exits in most other utilities in this package as outlined in 'man 8 sg3_utils'. This odd usage is for backward compatibility with the scsiinfo utility.]

−z   do a single fetch for mode pages (over−estimating the expected length of the returned response). The default action is to do a double fetch, the first fetch is to find the response length that could be returned. Devices that closely adhere to SCSI standards should not require this option, some real

world devices do require it.

ADVANCED OPTIONS

Only one of the following three options can be specified. None of these three implies the current values are returned.

−m   Display modifiable fields instead of current values

−M   Display manufacturer's defaults instead of current values

−S   Display saved defaults instead of current values

The following are advanced options, not generally suited for most users:

−X   Display output values in a list. Make them suitable for editing and being given back to the '−R' (replace command).

−R   Replace parameters − best used with −X (expert use only)

CHANGING MODE PAGE PARAMETERS

Firstly you should know what you are doing before changing existing parameters. Taking the control page as an example, first list it out normally (e.g. "sginfo −C /dev/sda") and decide which parameter is to be changed (note its position relative to the other lines output). Then execute the same sginfo command with the "−X" option added; this will output the parameter values in a single row in the same relative positions as the previous command. Now execute "sginfo −CXR /dev/sda ..." with the "..." replaced by the single row of values output by the previous command, with the relevant parameter changed. Here is a simplified example:

```
$ sginfo −C /dev/sda
Control mode page (0xa)
−−−−−−−−−−−−−−−−−−−−−−−
TST                0
D_SENSE              0
GLTSD              1
RLEC               0
```

[Actually the Control page has more parameters that shown above.] Next output those parameters in single line form:

```
$ sginfo −CX /dev/sda
0 0 1 0
```

Let us assume that the GLTSD bit is to be cleared. The command that will clear it is:

```
$ sginfo −CXR /dev/sda 0 0 0 0
```

The same number of parameters output by the "−CX" command needs to be placed at the end of the "−CXR" command line (after the device name). Now check that the change took effect:

```
$ sginfo −C /dev/sda
Control mode page (0xa)
−−−−−−−−−−−−−−−−−−−−−−−
TST                0
D_SENSE              0
GLTSD               0
RLEC               0
```

When a mode page is "replaced" the default action is to change both the current page and the saved page. [For some reason versions of sginfo and scsiinfo prior to 2.0 did not change the "saved" page.] To change only the current mode page but not the corresponding saved page use the "−N" option.

GENERATING SCRIPT FILES AND HEX PAGES

The "−aX" or "−AX" option generates output suitable for a script file. Mode pages are output in list format (after the INQUIRY and serial number) one page per line. To facilitate running the output as (part of) a script file to assert chosen mode page values, each line is prefixed by "sginfo −t *PN*[,*SPN*] −XR ". When

such a script file is run, it will have the effect of re−asserting the mode page values to what they were when the "−aX" generated the output.

All mode pages (and subpages) supported by the device can be accessed via the −t and −u options. To see all mode pages supported by the device use "−u 63". [To see all mode pages and all subpages use "−u 63,255".] To list the control mode page in hex (mode page index in the first column and the corresponding byte value in the second column) use "−u 0xa". Mode pages (subpage code == 0) start at index position 2 while subpages start at index position 4. If the "−Xu ..." option is used then a list a hex values each value prefixed by "@" is output. Mode (sub)page values can then be modified with the "−RXu ..." option.

RESTRICTIONS

The SCSI MODE SENSE command yields block descriptors as well as a mode page(s). This utility ignores block descriptors and does not display them. The "disable block descriptor" switch (DBD) in the MODE SENSE command is not set since some devices yield errors when it is set. When mode page values are being changed (the "−R" option), the same block descriptor obtained by reading the mode page (i.e. via a MODE SENSE command) is sent back when the mode page is written (i.e. via a MODE SELECT command).

REFERENCES

SCSI (draft) standards can be found at http://www.t10.org . The relevant documents are SPC−4 (mode pages common to all device types), SBC−2 (direct access devices [e.g. disks]), MMC−4 (CDs and DVDs) and SSC−2 (tapes).

AUTHORS

Written by Eric Youngdale, Michael Weller, Douglas Gilbert, Kurt Garloff, Thomas Steudten

HISTORY

scsiinfo version 1.0 was released by Eric Youngdale on 1st November 1993. The most recent version of scsiinfo is version 1.7 with the last patches by Michael Weller. sginfo is derived from scsiinfo and uses the sg interface to get around the 4 KB buffer limit in scsiinfo that cramped the display of defect lists especially. sginfo was written by Douglas Gilbert with patches from Kurt Garloff. This manpage corresponds with version 2.25 of sginfo.

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SEE ALSO

lsscsi(lsscsi), scsiinfo(internet); sg_modes, sg_inq, sg_vpd (sg3_utils), sdparm(sdparm)