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## *Red Hat Enterprise Linux Release 9.2 Manual Pages on 'ledctl.8' command*

***$ man ledctl.8***

ledctl(8) Intel(R) Enclosure LED Control Application ledctl(8)

NAME

ledctl - Intel(R) LED control application for a storage enclosures.

SYNOPSIS

ledctl [OPTIONS] pattern_name=list_of_devices ...

DESCRIPTION

The ledctl is an user space application designed to control LEDs associated with each slot in an enclosure or a drive bay. The LEDs of devices listed in list_of_devices are set to the given pattern pattern_name and all other LEDs are turned off. User must have root privileges to use this application.

There are two types of systems: 2-LEDs systems (Activity LED, Status LED) and 3-LEDs systems (Activity LED, Locate LED, Fail LED).

The ledctl application supports LED management of the SAS/SATA and PCIe storages.

Supported protocols/methods for LED management are:

? SES-2 and SMP for SAS devices,

? LED messages over SGPIO for SATA,

? VMD and NPEM for PCIe.

SAF-TE protocol is not supported.

For SAS/SATA storages supporting controllers may transmit LED management information to the backplane controllers via the SGPIO interface. The SGPIO bus carries bit patterns, which translate into LED

blink patterns in accordance with the International Blinking Pattern Interpretation (IBPI) of SFF-8489 specification for SGPIO. Please note some enclosures do not stick close to the SFF-8489 specification. It might happen that the enclosure processor will accept the IBPI pattern but it will blink LEDs not according to SFF-8489 specification or it has a limited number of patterns supported.

The ledctl application has been verified to work with Intel(R) storage controllers (i.e. Intel(R) AHCI controller and Intel(R) SAS controller). The application might work with storage controllers of other vendors (especially SCSI/SAS controllers). However, storage controllers of other vendors have not been tested.

The ledmon application has the highest priority when accessing LEDs. It means that some patterns set by ledctl may have no effect if ledmon is running (except Locate pattern).

The ledctl application is a part of Intel(R) Enclosure LED Utilities.

The ledctl utilizes the following documents as references:

? SGPIO (Serial GPIO) - SFF-8485

? IBPI (International Blinking Pattern Interpretation) - SFF-8489

? LED Enclosure management messages - AHCI specification rev 1.3, section 12.2.1.

? SAS (Serial Attached SCSI) - T10/1760-D

? SES-2 (SCSI Enclosure Services-2) - T10/1559-D

? SMP (Serial Management Protocol) - T10/1760-D

? NPEM (Native PCIe Enclosure Management) - PCIe base specification rev 4.0

? VMD (Intel(R) Volume Management Device) - Intel(R) VROC (VMD NVMe RAID) Quick Configuration Guide rev 1.2

Pattern Names

The ledctl application accepts the following names for pattern_name argument according to SFF-8489 specification.

locate Turns Locate LED associated with the given device(s) on.

locate_off

Turns only Locate LED off.

normal  Turns Status LED, Failure LED and Locate LED off.

off  Turns only Status LED and Failure LED off.

ica or degraded

Visualizes "In a Critical Array" pattern.

rebuild Visualizes "Rebuild" pattern.

ifa or failed_array

Visualizes "In a Failed Array" pattern.

hotspare

Visualizes "Hotspare" pattern.

pfa  Visualizes "Predicted Failure Analysis" pattern.

failure or disk_failed

Visualizes "Failure" pattern.

ses_abort

SES-2 R/R ABORD

ses_rebuild

SES-2 REBUILD/REMAP

ses_ifa SES-2 IN FAILED ARRAY

ses_ica SES-2 IN CRIT ARRAY

ses_cons_check

SES-2 CONS CHECK

ses_hotspare

SES-2 HOT SPARE

ses_rsvd_dev

SES-2 RSVD DEVICE

ses_ok  SES-2 OK

ses_ident

SES-2 IDENT

ses_rm  SES-2 REMOVE

ses_insert

SES-2 INSERT

ses_missing

SES-2 MISSING

ses_dnr SES-2 DO NOT REMOVE

ses_active

SES-2 ACTIVE

ses_enable_bb

SES-2 ENABLE BYP B

ses_enable_ba

SES-2 ENABLE BYP A

ses_devoff

SES-2 DEVICE OFF

ses_fault

SES-2 FAULT

ses_prdfail

SES-2 PRDFAIL

Patterns Translation

When non SES-2 pattern is send to device in enclosure automatic

translation is being done.

locate  locate is translated to ses_ident

locate_off

locate_off is translated to ~ses_ident

normal or off

normal or off is translated to ses_ok

ica or degraded

ica or degraded is translated to ses_ica

rebuild rebuild is translated to ses_rebuild

ifa or failed_array

ifa or failed_array is translated to ses_ifa

hotspare

hotspare is translated to ses_hotspare

pfa  pfa is translated to ses_prdfail

failure or disk_failed

failure or disk_failed is translated to ses_fault

List of Devices

The application accepts a list of devices in two formats. The first

format is a list with comma separated elements. The second format is a list in curly braces and elements are separated by space. See examples section below for details.

A device is a path to file in /dev directory or in /sys/block directory.

The LEDs of devices listed in list_of_devices are set to the given pattern pattern_name and all other LEDs, on all devices, are turned off (unless --listed-only option is given).

OPTIONS

-l or --log=path

Sets a path to local log file. If this option is specified the global log file /var/log/ledctl.log is not used.

-h or --help

Prints this text out and exits.

-v or --version

Displays version of ledctl and information about the license and exits.

-L or --list-controllers

Prints information (system path and type) of all controllers detected by ledmon and exits.

-x or --listed-only

With this option ledctl will change state only on devices listed in CLI. The rest of devices will not be touched.

--quiet or --error or --warning or --info or --debug or --all

Verbose level - 'quiet' means no logging at all and 'all' means to log everything. The levels are given in order. If user specifies more then one verbose option the last option comes into effect. The default level is 'warning'. Verbose level also can be set by --log-level=level.

FILES

/var/log/ledctl.log

Global log file, used by all instances of ledctl application.

To force logging to user defined file use -l option switch.

## EXAMPLES

The following example illustrates how to set locate on a single block device. Note that all remaining LEDs, on all devices, will be turned off.

```
ledctl locate=/dev/sda
```

The following example illustrates how to set locate_off on a single block device.

```
ledctl --listed-only locate_off=/dev/sda
```

The following example illustrates how to set off on the given devices. It uses second format of device list.

```
ledctl --listed-only off={ /dev/sda /dev/sdb }
```

The following example illustrates how to set locate and rebuild on different devices at the same time. It uses the second format of device list.

```
ledctl --listed-only locate={ /dev/sdb } rebuild={ /sys/block/sdc }
```

The following example illustrates how to locate on three block devices. It uses the first format of device list.

```
ledctl --listed-only locate=/dev/sda,/dev/sdb,/dev/sdc
```

The following example illustrates how to set locate and rebuild on different devices at the same time. It uses the first format of device list.

```
ledctl --listed-only locate=/dev/sdb rebuild=/sys/block/sdc
```

The following example illustrates how to set locate and rebuild on different devices at the same time. It uses the both formats of device list.

```
ledctl --listed-only locate={ /dev/sdb } rebuild=/sys/block/sdc
```

## LICENSE



## SEE ALSO

ledmon(8), ledmon.conf(5)

## AUTHOR

This manual page was written by Artur Wojcik <artur.wojcik@intel.com>.

It may be used by others.