Toshiba HDD Active Protection Sensor

Kernel driver: toshiba_haps

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1. Description

This driver provides support for the accelerometer found in various Toshiba laptops, being called "Toshiba HDD Protection - Shock Sensor" officially, and detects laptops automatically with this device. On Windows, Toshiba provided software monitors this device and provides automatic HDD protection (head unload) on sudden moves or harsh vibrations, however, this driver only provides a notification via a sysfs file to let userspace tools or daemons act accordingly, as well as providing a sysfs file to set the desired protection level or sensor sensibility.

2. Interface

This device comes with 3 methods:

_STA	Checks existence of the device, returning Zero if the device does not exists or is not supported.
PTLV	Sets the desired protection level.
RSSS	Shuts down the HDD protection interface for a few seconds, then restores normal operation.

Note:

The presence of Solid State Drives (SSD) can make this driver to fail loading, given the fact that such drives have no movable parts, and thus, not requiring any "protection" as well as failing during the evaluation of the _STA method found under this device.

3. Accelerometer axes

This device does not report any axes, however, to query the sensor position a couple HCI (Hardware Configuration Interface) calls (0x6D and 0xA6) are provided to query such information, handled by the kernel module toshiba_acpi since kernel version 3.15.

4. Supported devices

This driver binds itself to the ACPI device TOS620A, and any Toshiba laptop with this device is supported, given the fact that they have the presence of conventional HDD and not only SSD, or a combination of both HDD and SSD.

5. Usage

The sysfs files under /sys/devices/LNXSYSTM:00/LNXSYBUS:00/TOS620A:00/ are:

protection_level	The protection_level is readable and writeable, and provides a way to let userspace query the current protection level, as well as set the desired protection level, the available protection levels are:
	`============ ======= ========== ========`
	`0 - Disabled 1 - Low 2 - Medium 3 - High`
	`============ ======= ========== ========`

reset_protection	The reset_protection entry is writeable only, being "1" the only parameter it accepts, it is used to trigger a reset of the protection interface.