

NAME

`hpsa` – HP Smart Array SCSI driver

SYNOPSIS

```
modprobe hpsa [ hpsa_allow_any=1 ]
```

DESCRIPTION

hpsa is a SCSI driver for HP Smart Array RAID controllers.

Options

hpsa_allow_any=1: This option allows the driver to attempt to operate on any HP Smart Array hardware RAID controller, even if it is not explicitly known to the driver. This allows newer hardware to work with older drivers. Typically this is used to allow installation of operating systems from media that predates the RAID controller, though it may also be used to enable **hpsa** to drive older controllers that would normally be handled by the [cciss\(4\)](#) driver. These older boards have not been tested and are not supported with **hpsa**, and [cciss\(4\)](#) should still be used for these.

Supported hardware

The **hpsa** driver supports the following Smart Array boards:

- Smart Array P700M
- Smart Array P212
- Smart Array P410
- Smart Array P410i
- Smart Array P411
- Smart Array P812
- Smart Array P712m
- Smart Array P711m
- StorageWorks P1210m

Since Linux 4.14, the following Smart Array boards are also supported:

- Smart Array 5300
- Smart Array 5312
- Smart Array 532
- Smart Array 5i
- Smart Array 6400
- Smart Array 6400 EM
- Smart Array 641
- Smart Array 642
- Smart Array 6i
- Smart Array E200
- Smart Array E200i
- Smart Array E200i
- Smart Array E200i
- Smart Array E200i
- Smart Array E500
- Smart Array P400
- Smart Array P400i
- Smart Array P600
- Smart Array P700m
- Smart Array P800

Configuration details

To configure HP Smart Array controllers, use the HP Array Configuration Utility (either **hpacuxe(8)** or **hpacucli(8)**) or the Offline ROM-based Configuration Utility (ORCA) run from the Smart Array's option ROM at boot time.

FILES

Device nodes

Logical drives are accessed via the SCSI disk driver ([sd\(4\)](#)), tape drives via the SCSI tape driver ([st\(4\)](#)), and the RAID controller via the SCSI generic driver ([sg\(4\)](#)), with device nodes named `/dev/sd*`, `/dev/st*`, and `/dev/sg*`, respectively.

HPSA-specific host attribute files in `/sys`

`/sys/class/scsi_host/host*/rescan`

This is a write-only attribute. Writing to this attribute will cause the driver to scan for new, changed, or removed devices (e.g., hot-plugged tape drives, or newly configured or deleted logical drives, etc.) and notify the SCSI midlayer of any changes detected. Normally a rescan is triggered automatically by HP's Array Configuration Utility (either the GUI or the command-line variety); thus, for logical drive changes, the user should not normally have to use this attribute. This attribute may be useful when hot plugging devices like tape drives, or entire storage boxes containing preconfigured logical drives.

`/sys/class/scsi_host/host*/firmware_revision`

This attribute contains the firmware version of the Smart Array.

For example:

```
# cd /sys/class/scsi_host/host4
# cat firmware_revision
7.14
```

HPSA-specific disk attribute files in `/sys`

`/sys/class/scsi_disk/c:b:t:l/device/unique_id`

This attribute contains a 32 hex-digit unique ID for each logical drive.

For example:

```
# cd /sys/class/scsi_disk/4:0:0:0/device
# cat unique_id
600508B1001044395355323037570F77
```

`/sys/class/scsi_disk/c:b:t:l/device/raid_level`

This attribute contains the RAID level of each logical drive.

For example:

```
# cd /sys/class/scsi_disk/4:0:0:0/device
# cat raid_level
RAID 0
```

`/sys/class/scsi_disk/c:b:t:l/device/lunid`

This attribute contains the 16 hex-digit (8 byte) LUN ID by which a logical drive or physical device can be addressed. `c:b:t:l` are the controller, bus, target, and lun of the device.

For example:

```
# cd /sys/class/scsi_disk/4:0:0:0/device
# cat lunid
0x0000004000000000
```

Supported ioctl() operations

For compatibility with applications written for the [cciss\(4\)](#) driver, many, but not all of the ioctls supported by the [cciss\(4\)](#) driver are also supported by the [hpsa](#) driver. The data structures used by these ioctls are described in the Linux kernel source file `include/linux/cciss_ioctl.h`.

CCISS_DEREGDISK, CCISS_REGNEWDISK, CCISS_REGNEWD

These three ioctls all do exactly the same thing, which is to cause the driver to rescan for new devices. This does exactly the same thing as writing to the hpsa-specific host "rescan" attribute.

CCISS_GETPCIINFO

Returns PCI domain, bus, device and function and "board ID" (PCI subsystem ID).

CCISS_GETDRIVER

Returns driver version in three bytes encoded as:

```
(major_version << 16) | (minor_version << 8) |  
(subminor_version)
```

CCISS_PASSTHRU, CCISS_BIG_PASSTHRU

Allows "BMIC" and "CISS" commands to be passed through to the Smart Array. These are used extensively by the HP Array Configuration Utility, SNMP storage agents, and so on. See *cciss_vol_status* at [Unknown](#) for some examples.

SEE ALSO

[cciss\(4\)](#), [sd\(4\)](#), [st\(4\)](#), [cciss_vol_status\(8\)](#), [hpacucli\(8\)](#), [hpacuxe\(8\)](#),

[Unknown](#), and *Documentation/scsi/hpsa.txt* and *Documentation/ABI/testing/sysfs-bus-pci-devices-cciss* in the Linux kernel source tree

COLOPHON

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