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 attri-
                  bute 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 de-
                  vice 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 de-
         scribed 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 de-
                  vices. 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_GETDRIVVER
> 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 ⟨http://cciss.sf.net⟩ for some examples.

SEE ALSO

cciss(4), **sd**(4), **st**(4), **cciss_vol_status**(8), **hpacucli**(8), **hpacuxe**(8)

⟨http://cciss.sf.net⟩, and *Documentation/scsi/hpsa.txt* and *Documentation/ABI/testing/sysfs−bus−pci−devices−cciss* in the Linux kernel source tree