

**NAME**

**ses** - SCSI Environmental Services driver

**SYNOPSIS**

**device ses**

**DESCRIPTION**

The **ses** driver provides support for all SCSI devices of the environmental services class that are attached to the system through a supported SCSI Host Adapter, as well as emulated support for SAF-TE (SCSI Accessible Fault Tolerant Enclosures). The environmental services class generally are enclosure devices that provide environmental information such as number of power supplies (and state), temperature, device slots, and so on.

A SCSI Host adapter must also be separately configured into the system before a SCSI Environmental Services device can be configured.

**KERNEL CONFIGURATION**

It is only necessary to explicitly configure one **ses** device; data structures are dynamically allocated as devices are found on the SCSI bus.

A separate option, *SES\_ENABLE\_PASSTHROUGH*, may be specified to allow the **ses** driver to perform functions on devices of other classes that claim to also support **ses** functionality.

**IOCTLS**

The following ioctl(2) calls apply to **ses** devices. They are defined in the header file *<cam/scsi/scsi\_enc.h>* (q.v.).

**ENCIOC\_GETNELM** Used to find out how many **ses** elements are driven by this particular device instance.

**ENCIOC\_GETELMMAP** Read, from the kernel, an array of SES elements which contains the element identifier, which subenclosure it is in, and the **ses** type of the element.

**ENCIOC\_GETENCSTAT** Get the overall enclosure status.

**ENCIOC\_SETENCSTAT** Set the overall enclosure status.

**ENCIOC\_GETELMSTAT**  
Get the status of a particular element.

ENCIOC_SETELMSTAT	Set the status of a particular element.
ENCIOC_GETTEXT	Get the associated help text for an element (not yet implemented). <b>ses</b> devices often have descriptive text for an element which can tell you things like location (e.g., "left power supply").
ENCIOC_INIT	Initialize the enclosure.
ENCIOC_GETELMDESC	Get the element's descriptor string.
ENCIOC_GETELMDEVNAMES	Get the device names, if any, associated with this element.
ENCIOC_GETSTRING	Used to read the SES String In Diagnostic Page. The contents of this page are device-specific.
ENCIOC_SETSTRING	Used to set the SES String Out Diagnostic Page. The contents of this page are device-specific.
ENCIOC_GETENCNAME	Used to get the name of the enclosure.
ENCIOC_GETENCID	Used to get the Enclosure Logical Identifier.

## EXAMPLE USAGE

The files contained in `</usr/share/examples/ses>` show simple mechanisms for how to use these interfaces, as well as a very stupid simple monitoring daemon.

## FILES

`/dev/sesN` The *N*th **SES** device.

## DIAGNOSTICS

When the kernel is configured with **DEBUG** enabled, the first open to an **SES** device will spit out overall enclosure parameters to the console.

## SEE ALSO

`sesutil(8)`

## HISTORY

The `ses` driver was originally written for the CAM SCSI subsystem by Matthew Jacob and first released in FreeBSD 4.3. It was a functional equivalent of a similar driver available in Solaris, Release 7. It was largely rewritten by Alexander Motin, Justin Gibbs, and Will Andrews for FreeBSD 9.2.