NAME

sd – driver for SCSI disk and CD-ROM devices

SYNOPSIS

sd@*target***,***lun***:***partition*

DESCRIPTION

This driver handles embedded SCSI-2 and CCS-compatible SCSI disk drives, CD-ROM drives, and the Emulex MD21 disk controller for ESDI drives.

The type of disk drive is determined using the SCSI inquiry command and reading the volume label stored on block 0 of the drive. The volume label describes the disk geometry and partitioning; it must be present or the disk cannot be mounted by the system.

The block-files access the disk using the system's normal buffering mechanism and are read and written without regard to physical disk records. There is also a "raw" interface that provides for direct transmission between the disk and the user's read or write buffer. A single read or write call usually results in one I/O operation; raw I/O is therefore considerably more efficient when many bytes are transmitted. The names of the block files are found in **/dev/dsk**; the names of the raw files are found in **/dev/rdsk**.

I/O requests (such as **lseek**(2)) to the SCSI disk must have an offset that is a multiple of 512 bytes (DEV_BSIZE), or the driver returns an EINVAL error. If the transfer length is not a multiple of 512 bytes, the transfer count is rounded up by the driver.

Partition **0** is normally used for the root file system on a disk, partition **1** as a paging area (for example, **swap**), and partition **2** for backing up the entire disk. Partition **2** normally maps the entire disk and may also be used as the mount point for secondary disks in the system. The rest of the disk is normally partition **6**. For the primary disk, the user file system is located here.

CD-ROM Drive Support

A CD-ROM disk is singled sided containing approximately 540 mega-bytes of data or 74 minutes of audio.

When the device is first opened, the CD-ROM drive's eject button will be disabled, preventing the manual removal of the disk until the last **close**(2) is called.

There is no volume label stored on the CD-ROM. The disk geometry and partitioning information is always the same. If the CD-ROM is in ISO 9660 or **High Sierra Disk** format, it can be mounted as a file system.

IOCTLS

Refer to **dkio**(7I) and **cdio**(7I).

ERRORS

EACCES Permission denied.

EBUSY The partition was opened exclusively by another thread.

EFAULT The argument was a bad address.

EINVAL Invalid argument.

EIO An I/O error occurred.

ENOTTY This indicates that the device does not support the requested ioctl function.

ENXIO During opening, the device did not exist.

EROFS The device is a read-only device.

CONFIGURATION

Driver Configuration

The **sd** driver can be configured by defining properties in **sd.conf** file. Following are the supported properties:

qfull-retries The supplied value is passed as the **qfull-retries** capability value of the HBA driver. See **scsi_ifsetcap**(9F) for details.

qfull-retry-interval The supplied value is passed as the **qfull-retry-interval** capability value of the HBA driver. See **scsi_ifsetcap**(9F) for details.

FILES

sd.conf driver configuration file
/dev/dsk/c*n***t***n***d***n***s***n* block files
/dev/rdsk/c*n***t***n***d***n***s***n* raw files

where:

c*n* controller *n*
t*n* SCSI target id *n* (0-6)
d*n* SCSI LUN *n* (0-7)
s*n* partition *n* (0-7)

SEE ALSO

format(1M), **close**(2), **ioctl**(2), **lseek**(2), **read**(2), **write**(2), **driver.conf**(4), **cdio**(7I), **dkio**(7I), **esp**(7D), **isp**(7D), **scsi_ifsetcap**(9F)

ANSI Small Computer System Interface-2 (SCSI-2)

Emulex MD21 Disk Controller Programmer Reference Manual

DIAGNOSTICS

Error for command '<command name>' Error Level: Fatal
Requested Block <n>, Error Block: <m>
Sense Key: <sense key name>
Vendor '<vendor name>': ASC = 0x<a> (<ASC name>), ASCQ = 0x<b>, FRU = 0x<c>

The command indicated by <command name> failed. The Requested Block is the block where the transfer started and the Error Block is the block that caused the error. Sense Key, ASC, and ASCQ information is returned by the target in response to a request sense command.

Caddy not inserted in drive

The drive is not ready because no caddy has been inserted.

Check Condition on REQUEST SENSE

A REQUEST SENSE cmd completed with a check condition. The original command will be retried a number of times.

Label says <m> blocks Drive says <n> blocks

There is a discrepancy between the label and what the drive returned on the READ CAPACITY command.

Not enough sense information
The request sense data was less than expected.

Request Sense couldn't get sense data
The REQUEST SENSE cmd did not transfer any data.

Reservation Conflict
The drive was reserved by another initiator.

SCSI transport failed: reason 'xxxx' : {retrying | giving up}
The host adapter has failed to transport a command to the target for the reason stated. The driver will either retry the command or, ultimately, give up.

Unhandled Sense Key <n>
The REQUEST SENSE data included an invalid sense key.

Unit not Ready. Additional sense code 0x<n>
The drive is not ready.

can't do switch back to mode 1
A failure to switch back to read mode 1.

corrupt label - bad geometry
The disk label is corrupted.

corrupt label - label checksum failed
The disk label is corrupted.

corrupt label - wrong magic number
The disk label is corrupted.

device busy too long
The drive returned busy during a number of retries.

disk not responding to selection
The drive was probably powered down or died.

failed to handle UA
A retry on a Unit Attention condition failed.

i/o to invalid geometry
The geometry of the drive could not be established.

incomplete read/write - retrying/giving up
There was a residue after the command completed normally.

logical block size <n> not supported
Illegal blocksize.

logical unit not ready
The drive is not ready.

no bp for disk label
A bp with consistent memory could not be allocated.

no mem for property
Free memory pool exhausted.

no memory for disk label
Free memory pool exhausted.

no resources for dumping
A packet could not be allocated during dumping.

offline Drive went offline; probably powered down.

requeue of command fails <n>
Driver attempted to retry a command and experienced a transport error.

sdrestart transport failed (<n>)
Driver attempted to retry a command and experienced a transport error.

transfer length not modulo <n>
Illegal request size.

transport of request sense fails (<n>)
Driver attempted to submit a request sense command and failed.

transport rejected (<n>)
Host adapter driver was unable to accept a command.

unable to read label
Failure to read disk label.

unit does not respond to selection
Drive went offline; probably powered down.