NAME

ocs_fc - Device driver for Emulex Fibre Channel Host Adapters

SYNOPSIS

To compile this driver into the kernel, add this line to the kernel configuration file:

device ocs_fc

To load the driver as a module at boot, add this line to loader.conf(5):

ocs_fc_load="YES"

DESCRIPTION

The **ocs_fc** driver provides access to Fibre Channel SCSI devices.

The **ocs_fc** driver supports initiator and target modes. Support is available for Arbitrated loops, Point-to-Point, and Fabric connections. FC-Tape is highly recommended for connections to tape drives that support it. FC-Tape includes four elements from the T-10 FCP-4 specification:

- Precise Delivery of Commands

- Confirmed Completion of FCP I/O Operations

- Retransmission of Unsuccessfully Transmitted IUs

- Task Retry Identification

Together these features allow for link level error recovery with tape devices. Without link level error recovery, an initiator cannot, for instance, tell whether a tape write command that has timed out resulted in all, part, or none of the data going to the tape drive. FC-Tape is automatically enabled when both the controller and target support it.

HARDWARE

The **ocs_fc** driver supports these Fibre Channel adapters:

Emulex 16/8G FC GEN 5 HBAS

LPe15004 FC Host Bus Adapters
LPe160XX FC Host Bus Adapters

Emulex 32/16G FC GEN 6 HBAS

LPe3100X FC Host Bus Adapters
LPe3200X FC Host Bus Adapters

Emulex 64/32G FC GEN 7 HBAS

LPe3500X FC Host Bus Adapters

UPDATING FIRMWARE

Adapter firmware updates are persistent.

Firmware can be updated by following these steps:

1. Copy this code to a *Makefile*:

        KMOD=ocsflash
        FIRMWS=imagename.grp:ocsflash
        .include <bsd.kmod.mk>

2. Replace *imagename* with the name of the GRP file.

3. Copy the *Makefile* and GRP file to a local directory

4. Execute **make** and copy the generated *ocsflash.ko* file to */lib/modules*

5. **sysctl dev.ocs_fc.<N>.fw_upgrade=ocsflash**

6. Check kernel messages regarding status of the operation

7. Reboot the machine

BOOT OPTIONS

Options are controlled by setting values in */boot/device.hints*.

They are:

hint.ocs_fc.N.initiator
        Enable initiator functionality. Default 1 (enabled), 0 to disable.

hint.ocs_fc.N.target
    Enable target functionality. Default 1 (enabled), 0 to disable.

hint.ocs_fc.N.topology
    Topology: 0 for Auto, 1 for NPort only, 2 for Loop only.

hint.ocs_fc.N.speed
    Link speed in megabits per second. Possible values include: 0 Auto-speed negotiation (default),
    4000 (4GFC), 8000 (8GFC), 16000 (16GFC).

SYSCTL OPTIONS

dev.ocs_fc.N.port_state
    Port state (read/write). Valid values are online and offline.

dev.ocs_fc.N.wwpn
    World Wide Port Name (read/write).

dev.ocs_fc.N.wwnn
    World Wide Node Name (read/write).

dev.ocs_fc.N.fwrev
    Firmware revision (read-only).

dev.ocs_fc.N.sn
    Adapter serial number (read-only).

dev.ocs_fc.N.configured_speed
    Configured Port Speed (read/write). Valid values are: 0 Auto-speed negotiation (default), 4000
    (4GFC), 8000 (8GFC), 16000 (16GFC).

dev.ocs_fc.N.configured_topology
    Configured Port Topology (read/write). Valid values are: 0-Auto; 1-NPort; 2-Loop.

dev.ocs_fc.N.current_speed
    Current Port Speed (read-only).

dev.ocs_fc.N.current_topology
    Current Port Topology (read-only).

SUPPORT

For general information and support, go to the Broadcom website at: *http://www.broadcom.com/* or E-Mail at *ocs-driver-team.pdl@broadcom.com*.

SEE ALSO

ifconfig(8)

AUTHORS

The **ocs_fc** driver was written by Broadcom.