NAME

ste - Sundance Technologies ST201 Fast Ethernet device driver

SYNOPSIS

To compile this driver into the kernel, place the following lines in your kernel configuration file:

```
device miibus
device ste
```

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

```
if_ste_load="YES"
```

DESCRIPTION

The **ste** driver provides support for PCI Ethernet adapters and embedded controllers based on the Sundance Technologies ST201 PCI Fast Ethernet controller chip.

The Sundance ST201 uses bus master DMA and is designed to be a 3Com Etherlink XL workalike. It uses the same DMA descriptor structure and is very similar in operation, however its register layout is different. The ST201 has a 64-bit multicast hash filter and a single perfect filter entry for the station address. It supports both 10 and 100Mbps speeds in either full or half duplex using an MII transceiver.

The **ste** driver supports the following media types:

autoselect
Enable autoselection of the media type and options. The user can manually override the autoselected mode by adding media options to the */etc/rc.conf* file.

10baseT/UTP
Set 10Mbps operation. The *mediaopt* option can also be used to select either *full-duplex* or *half-duplex* modes.

100baseTX
Set 100Mbps (Fast Ethernet) operation. The *mediaopt* option can also be used to select either *full-duplex* or *half-duplex* modes.

The **ste** driver supports the following media options:

full-duplex
Force full duplex operation.

half-duplex
Force half duplex operation.

For more information on configuring this device, see ifconfig(8).

HARDWARE

The **ste** driver supports Sundance Technologies ST201 based Fast Ethernet adapters and embedded controllers including:

- D-Link DFE-530TXS
- D-Link DFE-550TX
- D-Link DFE-580TX

SYSCTL VARIABLES

The following variables are available as both sysctl(8) variables and loader(8) tunables:

dev.ste.%d.int_rx_mod

Maximum number of time to delay RX interrupts. The valid range is 0 to 209712 in units of 1us, the default is 150 (150us). The value 0 effectively disables the RX interrupt moderation. The resolution of timer is about 3.2us so finer tuning than 3.2us wouldn't be available. The interface does not need to be brought down and up again before a change takes effect.

DIAGNOSTICS

ste%d: couldn't map ports/memory A fatal initialization error has occurred.

ste%d: couldn't map interrupt A fatal initialization error has occurred.

ste%d: watchdog timeout The device has stopped responding to the network, or there is a problem with the network connection (cable).

ste%d: no memory for rx list The driver failed to allocate an mbuf for the receiver ring.

ste%d: no memory for tx list The driver failed to allocate an mbuf for the transmitter ring when allocating a pad buffer or collapsing an mbuf chain into a cluster.

ste%d: chip is in D3 power state -- setting to D0 This message applies only to adapters which support power management. Some operating systems place the controller in low power mode when shutting down, and some PCI BIOSes fail to bring the chip out of this state before configuring it. The controller loses all of its PCI configuration in the D3 state, so if the BIOS does not set it back to full power mode in time, it will not be able to configure it correctly. The driver tries to detect this condition and bring the adapter back to the D0 (full power) state, but this may not be enough to return the driver to a fully operational condition. If you see this message at boot time and the driver fails to attach the device as a network interface, you will have to perform a second warm boot to have the device properly configured.

Note that this condition only occurs when warm booting from another operating system. If you power down your system prior to booting FreeBSD, the card should be configured correctly.

SEE ALSO

altq(4), arp(4), miibus(4), netintro(4), ng_ether(4), polling(4), vlan(4), ifconfig(8)

Sundance ST201 data sheet.

HISTORY

The **ste** device driver first appeared in FreeBSD 3.0.

AUTHORS

The **ste** driver was written by Bill Paul <*wpaul@ee.columbia.edu*>.