NAME

   sis - SiS 900, SiS 7016 and NS DP83815/DP83816 Fast Ethernet device driver

SYNOPSIS

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

   device miibus
   device sis

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

   if_sis_load="YES"

DESCRIPTION

   The **sis** driver provides support for PCI Ethernet adapters and embedded controllers based on the Silicon Integrated Systems SiS 900 and SiS 7016 Fast Ethernet controller chips.

   This driver also supports adapters based on the National Semiconductor DP83815 (MacPhyter) and DP83816 PCI Ethernet controller chip.

   The SiS 900 is a 100Mbps Ethernet MAC and MII-compliant transceiver in a single package. It uses a bus master DMA and a scatter/gather descriptor scheme. The SiS 7016 is similar to the SiS 900 except that it has no internal PHY, requiring instead an external transceiver to be attached to its MII interface. The SiS 900 and SiS 7016 both have a 128-bit multicast hash filter and a single perfect filter entry for the station address.

   The NS DP83815 is also a 100Mbps Ethernet MAC with integrated PHY. The NatSemi chip and the SiS 900 share many of the same features and a fairly similar programming interface, hence both chips are supported by the same driver.

   The **sis** 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 rc.conf(5).

   10baseT/UTP   Set 10Mbps operation. The ifconfig(8) **mediaopt** option can also be used to select either 'full-duplex' or 'half-duplex' modes.

   100baseTX   Set 100Mbps (Fast Ethernet) operation. The ifconfig(8) **mediaopt** option can also be used to select either 'full-duplex' or 'half-duplex' modes.

The **sis** 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 **sis** driver supports Silicon Integrated Systems SiS 900 and SiS 7016 based Fast Ethernet adapters and embedded controllers, as well as Fast Ethernet adapters based on the National Semiconductor DP83815 (MacPhyter) and DP83816 chips. Supported adapters include:

- @Nifty FNECHARD IFC USUP-TX
- MELCO LGY-PCI-TXC
- Netgear FA311-TX (DP83815)
- Netgear FA312-TX (DP83815)
- SiS 630, 635, and 735 motherboard chipsets
- Soekris Engineering net45xx, net48xx, lan1621, and lan1641

SYSCTL VARIABLES

The following variable is available as both sysctl(8) variable and loader(8) tunable:

dev.sis.%unit.manual_pad
            This variable controls how to pad short frames for DP83815/DP83816 controllers on the specified device. DP83815/DP83816 controllers are known to pad 0xFF for short frames which is violation of RFC 1042. Set this variable to a non-zero value to let driver manually pad each short frame with zeros at the cost of extra CPU cycles. The default value is 0 to let hardware perform automatic padding.

DIAGNOSTICS

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

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

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

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

sis%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.

sis%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 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)

SiS 900 and SiS 7016 datasheets, https://www.sis.com.tw.

NatSemi DP83815 datasheet.

HISTORY
The **sis** device driver first appeared in FreeBSD 3.0.

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