

**NAME**

**nge** - National Semiconductor PCI Gigabit Ethernet adapter driver

**SYNOPSIS**

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

```
device miibus  
device nge
```

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

```
if_nge_load="YES"
```

**DESCRIPTION**

The **nge** driver provides support for various NICs based on the National Semiconductor DP83820 and DP83821 Gigabit Ethernet controller chips.

The DP83820 supports TBI (ten bit interface) and GMII transceivers, which means it can be used with either copper or 1000baseX fiber applications. The DP83820 supports TCP/IP checksum offload and VLAN tagging/insertion as well as a 2048-bit multicast hash filter and up to 4 pattern match buffers.

Most cards also use the DP83861 10/100/1000 copper gigabit transceiver chip, which supports autonegotiation of 10, 100 and 1000Mbps modes in full or half duplex.

The DP83820 and DP83821 also support jumbo frames, which can be configured via the interface MTU setting. Selecting an MTU larger than 1500 bytes with the ifconfig(8) utility configures the adapter to receive and transmit jumbo frames. Using jumbo frames can greatly improve performance for certain tasks, such as file transfers and data streaming.

The **nge** 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.

**1000baseTX** Set 1000baseTX operation over twisted pair. **full-duplex** and **half-duplex** modes are supported.

**1000baseSX** Set 1000Mbps (Gigabit Ethernet) operation. Both **full-duplex** and **half-duplex** modes are supported.

The **nge** 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 **nge** driver supports National Semiconductor DP83820 and DP83821 based Gigabit Ethernet adapters including:

- ⊕ Addtron AEG320T
- ⊕ Ark PC SOHO-GA2500T (32-bit PCI) and SOHO-GA2000T (64-bit PCI)
- ⊕ Asante FriendlyNet GigaNIX 1000TA and 1000TPC
- ⊕ D-Link DGE-500T
- ⊕ Linksys EG1032, revision 1
- ⊕ Netgear GA621
- ⊕ Netgear GA622T
- ⊕ SMC EZ Card 1000 (SMC9462TX)
- ⊕ Surecom Technology EP-320G-TX
- ⊕ Trendware TEG-PCITX (32-bit PCI) and TEG-PCITX2 (64-bit PCI)

## SYSCTL VARIABLES

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

*dev.nge.%d.int\_holdoff*

Maximum amount of time to delay interrupt processing in units of 100us. The accepted range is 0 to 255, the default is 1(100us). Value 0 completely disables the interrupt moderation. The interface has to be brought down and up again before a change takes effect.

## DIAGNOSTICS

**nge%d: couldn't map memory** A fatal initialization error has occurred.

**nge%d: couldn't map ports** A fatal initialization error has occurred.

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

**nge%d: no memory for softc struct!** The driver failed to allocate memory for per-device instance information during initialization.

**nge%d: failed to enable memory mapping!** The driver failed to initialize PCI shared memory mapping. This might happen if the card is not in a bus-master slot.

**nge%d: no memory for jumbo buffers!** The driver failed to allocate memory for jumbo frames during initialization.

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

## SEE ALSO

altq(4), arp(4), miibus(4), netintro(4), ng\_ether(4), polling(4), vlan(4), ifconfig(8)

*National Semiconductor DP83820 datasheet.*

*National Semiconductor DP83861 datasheet.*

## HISTORY

The **nge** device driver first appeared in FreeBSD 4.4.

## AUTHORS

The **nge** driver was written by Bill Paul <wpaul@bsd.com>.