

**NAME**

**mxge** - Myricom Myri10GE 10 Gigabit Ethernet adapter driver

**SYNOPSIS**

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

```
device firmware  
device mxge
```

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

```
if_mxge_load="YES"  
mxge_ethp_z8e_load="YES"  
mxge_eth_z8e_load="YES"  
mxge_rss_ethp_z8e_load="YES"  
mxge_rss_eth_z8e_load="YES"
```

**DESCRIPTION**

The **mxge** driver provides support for PCI Express 10 Gigabit Ethernet adapters based on the Myricom LANai Z8E chip. The driver supports Transmit/Receive checksum offload, Jumbo Frames, TCP segmentation offload (TSO) as well as Large Receive Offload (LRO). For further hardware information, see <http://www.myri.com/>.

For questions related to hardware requirements, refer to the documentation supplied with your Myri10GE adapter. All hardware requirements listed apply to use with FreeBSD.

Support for Jumbo Frames is provided 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. The maximum MTU size for Jumbo Frames is 9000.

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

**HARDWARE**

The **mxge** driver supports 10 Gigabit Ethernet adapters based on the Myricom LANai Z8E chips:

- Myricom 10GBase-CX4 (10G-PCIE-8A-C, 10G-PCIE-8AL-C)
- Myricom 10GBase-R (10G-PCIE-8A-R, 10G-PCIE-8AL-R)
- Myricom 10G XAUI over ribbon fiber (10G-PCIE-8A-Q, 10G-PCIE-8AL-Q)

**LOADER TUNABLES**

Tunables can be set at the loader(8) prompt before booting the kernel or stored in loader.conf(5).

*hw.mxge.flow\_control\_enabled*

Whether or not hardware flow control is enabled on the adapter. The default value is 1.

*hw.mxge.intr\_coal\_delay*

This value delays the generation of all interrupts in units of 1 microsecond. The default value is 30.

*hw.mxge.skip\_pio\_read*

This value determines whether or not the driver may omit doing a PIO read in the interrupt handler which ensures that the interrupt line has been deasserted when using xPIC interrupts. A non-zero value may result in lower CPU overhead, however it may also result in spurious interrupts. The default value is 0. This tunable has no effect when the device is using MSI or MSI-X interrupts.

*hw.mxge.max\_slices*

This value determines the maximum number of slices the driver will attempt to use. The default value is 1. A slice is comprised of a set of receive queues and an associated interrupt thread. When using multiple slices, the NIC hashes traffic to different slices based on the value of *hw.mxge.rss\_hashtype*. Using multiple slices requires that your motherboard and Myri10GE NIC both be capable of MSI-X. Older Myri10GE NICs can be field upgraded to add MSI-X using the "10G NIC Tool Kit" for FreeBSD which is available from <http://www.myri.com/scs/download-10g-tools.html>.

*hw.mxge.rss\_hashtype*

This value determines how incoming traffic is steered to different slices. This tunable is ignored when using just a single slice. The legal values for this tunable are:

- 1 Hash on the source and destination IPv4 addresses.
- 2 Hash on source and destination IPv4 addresses and if the packet is TCP, then also hash on the TCP source and destination ports.
- 4 Hash on the TCP or UDP source ports. This is the default value.

## DIAGNOSTICS

**mxge%d: Unable to allocate bus resource: memory** A fatal initialization error has occurred.

**mxge%d: Unable to allocate bus resource: interrupt** A fatal initialization error has occurred.

**mxge%d: Could not find firmware image %s** The appropriate firmware kld module was not installed. This is a non-fatal initialization error, but will result in running in a reduced performance mode.

## SUPPORT

For general information and support, go to the Myricom support website at: <http://www.myri.com/scs/>.

If an issue is identified with the released source code on the supported kernel with a supported adapter, email the specific information related to the issue to [<help@myri.com>](mailto:help@myri.com).

## SEE ALSO

[altq\(4\)](#), [arp\(4\)](#), [netintro\(4\)](#), [ng\\_ether\(4\)](#), [ifconfig\(8\)](#)

## HISTORY

The **mxge** device driver first appeared in FreeBSD 6.3.

## AUTHORS

The **mxge** driver was written by Andrew Gallatin [<gallatin@FreeBSD.org>](mailto:gallatin@FreeBSD.org).