

NAME

bcm – DEGXA Gigabit Ethernet interface

SYNOPSIS

```
config_driver    bcm
```

DESCRIPTION

The `bcm` interface provides access to Gigabit Ethernet (1000Mbps) through the DEGXA device. The interface supports full-duplex operation in a switched or point-to-point configuration, and provides the following features:

- The interface has Link Autonegotiation enabled by default. Some switches do not support Link Autonegotiation. To turn Link Autonegotiation off, use the following command:

```
# lan_config -ibcm0 -a0
```

Note that you may add this command to the `/etc/inet.local` file to preserve the setting of Link Autonegotiation across system restarts.

- JUMBO packets are disabled by default. JUMBO packets provide a non-standard larger packet size. This enables the interface to carry more data with less CPU overhead. To enable JUMBO packets, use the following command:

```
# ifconfig bcm0 ipmtu 9000
```

Note that there are several interoperability issues with using JUMBO packets (for example, if your switch goes from 1000Mbps to a 100Mbps client, JUMBO packets will not work on a 100Mbps LAN). In order to use JUMBO frames, you will need a switch that supports JUMBO frames or a point-to-point configuration with a partner that supports JUMBO frames.

- Receive flow control is enabled. There is currently no way to turn this off.

For the DEGXA-SX, we recommend that you use the auto-negotiation protocol. This protocol has been thoroughly tested, and works reliably with many different switch vendors over Gigabit Ethernet. If you disable auto-negotiation, the switch port setting and the DEGXA-SX setting must match perfectly, otherwise you might encounter interoperability problems. The DEGXA-SX (fiber optic version) runs at 1000Mbps only.

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For the DEGXA-TX (the copper version of the Gigabit Ethernet NIC), you must enable auto-negotiation. This is a mandatory requirement of the IEEE 802.3ab auto-negotiation protocol. The DEGXA-TX can run at 1000, 100, or 10 Mbps.

Gigabit Ethernet performance with TCP/IP depends on several factors. Some of the influencing factors are as follows:

CPU speed/utilization

The speed at which data can be delivered to the interface influences throughput. If your CPU(s) are busy doing several tasks, the task using Gigabit Ethernet may not get enough run time to deliver packets. In general, faster CPUs will deliver better throughput.

PCI Bus speed/arbitration

Fast access to the PCI bus is critical for high throughput. Using a 64-bit PCI slot will give you better performance and use less PCI resources than a 32-bit PCI slot. Putting the interface on the same PCI bus as other peripherals will degrade throughput. Each system type may also have different PCI-to-host speed considerations (the speed at which the PCI-to-host hardware allows the device to operate).

Application/Transport factors

The standard TCP/IP applications (for example, ftp and rcp) are not designed to run at Gigabit speeds. TCP applications that expect performance should use a message size of 65000 bytes and a window size of 128000 bytes. Even when an application is modified to use these settings, high throughput may not be attainable. This is particularly true when an application is waiting for data to send (data from a disk, for example).

ERRORS

The following diagnostic and error messages contain relevant information provided by the bcm interface, and are displayed to the console. Each message begins with the adapter identification, including the number of the adapter.

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No dense or linear space available on this system

The bcm interface could not find adequate I/O addressing on this system to operate. This is a fatal error, and the DEGXA-SA will not operate on this system.

Link up via auto-negotiation (1000 Mbps, full duplex)

Indicates that the Gigabit Ethernet link is up, and the autonegotiation protocol was used to set the speed and duplex mode. Note, this will only appear if autonegotiation is enabled.

Link up via manual configuration (1000 Mbps, full duplex)

Indicates that the Gigabit Ethernet link is up, and was manually configured.

Link down

Indicates that the link is no longer established. No communication will occur over the link while it is down.

SEE ALSO

Commands: `ifconfig(8)`, `lan_config(8)`

Files: `inet.local(4)`

Network information: `arp(7)`, `inet(7)`, `netintro(7)`