

# 10GigEthr-02 (iexgbe) B.11.31.1205 Ethernet Driver Release Notes HP-UX 11i v3

## **Abstract**

This document contains specific information that is intended for users of this HP product.

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# 1 10GigEthr-02 overview

The 10GigEthr-02 bundle contains the PCIe 10 Gigabit Ethernet `ixgbe` driver. This driver supports the following 10 Gigabit Ethernet products and LOMs:

PCIe 10 Gigabit Stand-up Ethernet cards	PCIe 10 Gigabit Mezzanine Ethernet Cards	HP Integrity Server LOM
AM225A 10GbE-SR (fibre) adapter AM232A 10GbE-LR (fibre) adapter AM233A 10GbE-CR (copper) adapter	NC532m (part number 467799-B21)	BL860c i2 BL870c i2 BL890c i2 Integrity Superdome 2

**NOTE:** The HP-UX `ioscan` utility shows AM225A, AM232A and AM233A cards all as “AM225A”. This is because the only difference between the cards is the type of SFP module that is used. Since the cards are functionally equivalent at the operating system level, `ioscan` does not distinguish between them.

For more information about installing the supported PCIe 10 Gigabit Ethernet and mezzanine cards, see the following documents:

- *HP-UX and Windows OS Installation Guide for HP NC532m Dual Port Flex-10 10Gb Ethernet Multifunction BL-c Adapter*
- *HP PCIe 2 port 10Gb Ethernet-SR, LR, and CR Adapter Installation Guide*

These documents can be found at the following website:

<http://www.hp.com/go/10-gigabit-ethernet-docs>

For more information about HP Integrity Server LOM installation, see the respective server installation documentation at the following locations:

[www.hp.com/go/blades-docs](http://www.hp.com/go/blades-docs)

[www.hp.com/go/integrity\\_servers-docs](http://www.hp.com/go/integrity_servers-docs)

## 1.1 Features

The `ixgbe` driver is a PCIe 10 Gigabit Ethernet driver that can support the stand-up, mezzanine, and LAN on motherboard (LOM) technologies for a variety of platforms. It is the first 10 Gigabit Ethernet driver to support the HP Virtual Connect Flex-10 interface on server blade platforms. Before HP Virtual Connect was introduced, only two interconnect choices were available for connecting server blades to a network — pass-through devices and switches. Pass-through devices are simple but require too many cumbersome cables and create complexity. Blade switches reduce the number of cables but add more management responsibilities for LAN and SAN administrators. In both cases, multiple people are needed to perform very simple server tasks. Only HP offers the third choice — HP Virtual Connect — which reduces cables without adding switches to manage and provides many other advantages. For more information about HP Virtual Connect, see the following website:

<http://h18004.www1.hp.com/products/blades/virtualconnect/index.html>

Other notable features provided by the `ixgbe` driver include:

- Transmit CKO and TSO for IPv4
- Receive CKO for IPv4
- Flex-10 bandwidth allocation
- Multiple receive queues

- Receive Side Scaling (RSS) with TCP
- TCP segment reassembly in driver
- Jumbo MTUs
- Multicast and Promiscuous mode
- IPv6
- IEEE 802.1Q VLAN tagging and stripping in hardware
- Interrupt migration
- Interrupt coalescing
- Link handling (when SmartLink is enabled)
- DLKM
- APA aggregate mode
- APA failover mode (LAN Monitor)
- HP Serviceguard
- PCI OLRAD
- PCI Error handling and recovery
- HP Integrity Virtual Machines (HPVM)
- vPars V6
- DIO (direct I/O)
- HP-UX LAN provider
- MIB and driver statistics
- Configurable using SMH or `nwmgr`
- `nettl` tracing/logging

## 1.2 Downloading the adapter firmware and EFI driver

- ① **IMPORTANT:** To ensure full functionality, you must install the latest adapter firmware and Extensible Firmware Interface (EFI) driver for your adapter.

To download the adapter firmware and EFI driver, follow these steps:

1. Go to the HP Business Support Center website:  
<http://www.hp.com/go/bizsupport>
2. Under **Tasks**, click **Download drivers and software**.
3. Search for the part number of your adapter, or for your server model; for example, **NC532m**.
4. In the product search results, click the link for your adapter; for example, **HP NC532m Dual Port 10GbE Multifunction BL-c Adapter**.
5. On the **Download drivers and software** page, click **Cross operating system (BIOS, Firmware, Diagnostics, etc.)**.
6. In the **EFI (extensible firmware interface)** section, click the Download link for EFI and Firmware for HP Integrity servers (or similar).
7. To install the EFI driver and firmware, follow the installation procedure that is provided in the zip file.

## 2 New and changed features in this release

### 2.1 New features

There are no new features in this version of 10GigEthr-02.

### 2.2 Changed features

The `ixgbe` driver has been enhanced with performance and stability improvements.

In addition, Tx and Rx flow control are now enabled by default. This flow control feature (which is optional) has certain limitations documented in [Section 4 \(page 8\)](#).

[Table 1 \(page 6\)](#) lists the Rx and Tx flow control settings and defaults, as determined by the MTU setting.

**Table 1 10GigEthr-02 flow control and Jumbo Frames support matrix**

MTU	Rx flow control	Tx flow control
1500 (non-Flex-10 ports)	ON/OFF Default setting during driver initialization before startup config parameters are applied will be: ON	ON/OFF Default setting during driver initialization before startup configuration parameters are applied will be: ON
9000 (non-Flex-10 ports)	OFF only. <b>NOTE:</b> 1. If previous value is ON, setting MTU to 9000 automatically sets Rx flow control to OFF. 2. If the MTU value is changed back to 1500, the original Rx flow control setting ( <code>rx_fctrl</code> ) prior to changing to 9000 MTU is restored.	ON/OFF Default setting during driver initialization before startup configuration parameters are applied will be: ON
1500 (Flex-10 ports)	Only OFF	Only ON
9000 (Flex-10 ports)	Only OFF	Only ON

For non-Flex-10 interfaces, Tx and Rx flow control will be enabled by default. Setting Jumbo Frames MTU disables Rx flow control; Rx flow control cannot be enabled if the interface has a Jumbo Frames MTU.

For Flex-10 interfaces, Tx flow control is always enabled and Rx flow control is always disabled.

Table 2 (page 6) lists new configuration parameters for non-Flex-10 interfaces. These parameters are added to the configuration file `/etc/rc.config.d/hpiexgbeconf` at installation if the file has not been previously modified by the customer. If the file has been previously modified, the configuration file is not automatically modified with the new parameters, and the configuration file must be updated manually. The new version will be available in file `usr/newconfig/etc/rc.config.d/hpiexgbeconf`.

**Table 2 Configuration parameters for non-Flex-10 interfaces<sup>1</sup>**

Command	Function	Valid values	Default
<code>HP_IEXGBE_TX_FLOW_CONTROL</code>	Enable or Disable the card's Tx-side flow control	ON/OFF	ON
<code>HP_IEXGBE_RX_FLOW_CONTROL</code>	Enable or Disable the card's Rx-side flow control	ON/OFF	ON

<sup>1</sup> For Flex-10 interfaces, the configuration parameters described in this table will fail if changed from the default settings listed in column 4. The defaults are permanent settings.

The following warning messages have been added to the `nwmgr` command:

- Setting MTU size greater than 1500 (enabling Jumbo Frames) for a non-Flex-10 interface brings up the warning message shown in the following example:

```
server2#nwmgr -s -A mtu=9000 -c lan3
WARNING: For non-flex10 interface, setting Jumbo MTU will automatically turn OFF Rx flowcontrol

lan3 current values:
  New MTU = 9000
```

- Attempting to turn off Tx flow control for a Flex-10 interface brings up the warning message shown in the following example:

```
server2#nwmgr -s -A tx_fctrl=off -c lan3
WARNING: For flex10 interface, the Tx flow control will be always on and the Rx flow control will be always off
```

```
lan3 current values:
New Transmit Flow Control = Off
```

- Attempting to turn on Rx flow control for a Flex-10 interface on which the MTU size is greater than 1500 (enabling Jumbo Frames) brings up the warning message shown in the following example. The Rx flow control cannot be turned on in this instance, so the specified value (on) is invalid; Rx flow control remains turned off.

```
server2#nwmgr -s -A rx_fctrl=on -c lan3
WARNING: For flex10 interface, the Rx flow control is always on
For non-flex10 interface, if Jumbo MTU is set, the rx flow control cannot be turned on

lan3 current values:
New Receive Flow Control = ERROR: Invalid value
```

### 3 Problems fixed in this version

**Table 3 HP-UX 11i v3 May 2012 Fixes — 10GigEthr-02 B.11.31.1205**

SR number	Description
QXCR1001209171	AVIO: High outbound discards on HPVM guest with <code>ixgbe</code> interface. TCP connections (such as <code>rlogin</code> and <code>telnet</code> ) from a remote system to the guest do not work and the guest hangs intermittently.
QXCR1001182096	When packets with an invalid LLC, IP or TCP header length are sent through the HPVM guest <code>igssn</code> interface, the <code>ixgbe</code> driver will drop such packets. But the guest is not aware of such drops and it continues to expect send completion for those packets. This situation results in a gradual reduction of the number of usable descriptors for <code>igssn</code> , which causes performance to degrade and, eventually, the <code>igssn</code> interface to hang.
QXCR1001192266	For non-Flex-10 (non-VC) interfaces, when using customized <code>ixgbe</code> configuration file settings that enable Jumbo Frames (MTU size greater than 1500), problems occur at startup. This problem surfaced after Tx and Rx flow control support was introduced to the <code>ixgbe</code> driver (QXCR1001093086). The workaround in the preceding release was to disable flow control by default. The B.11.31.1205 release sets Tx and Rx flow control to ON by default. Any request to turn on Jumbo Frames will override the Rx flow control settings and automatically set Rx flow control to OFF.

### Problems fixed in recent versions

**Table 4 HP-UX 11i v3 March 2012 Fixes — 10GigEthr-02 B.11.31.1203.01**

SR number	Description
QXCR1001192266	Disables flow control by default. This removes the possibility of bringing up issues introduced with the B.11.31.1201 release (QXCR1001093086). For more information about the issues, see <a href="#">Section 4 (page 8)</a> .

**Table 5 HP-UX 11i v3 September 2011 Fixes — 10GigEthr-02 B.11.31.1109**

SR number	Description
QXCR1001017249	When a port of the device is reset while there is traffic on any of the ports, the reset operation might result in a failure to run down the adapter that can only be recovered by rebooting the system.

**Table 6 HP-UX 11i v3 March 2011 Fixes — 10GigEthr-02 B.11.31.1103**

SR number	Description
QXCR1001091276	"ERROR: Could not process request" when changing driver default settings.

## 4 Known problems and limitations

The following problems and limitations are known to exist in version B.11.31.1205:

- **Rx flow control must be disabled when Jumbo Frames are used.**

Due to limitations of the hardware supported by the `ixgbe` driver, Rx flow control must be disabled when Jumbo Frames (MTU value greater than 1500) are enabled. This limitation is enforced by the `ixgbe` driver. Therefore, if the current configuration has Rx flow control enabled while Jumbo Frames are used, the `ixgbe` driver will not honor changes made to flow control settings. Setting Jumbo Frames will override and disable the Rx flow control settings.

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**NOTE:** For the Flex-10 interface, Rx flow control is always set to OFF.

For the non-Flex-10 interface, you can change the flow control and MTU size as needed. However, when Jumbo Frames are enabled, if Rx flow control is already set to ON, the driver automatically resets RX flow control to OFF. Rx flow control and Jumbo Frames cannot both be in operation at the same time.

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- **Rx flow control is disabled in Flex-10 mode**

In Flex-10 mode (Virtual Connect), Rx Flow control is disabled by default. Attempts to enable Rx flow control are not honored by the driver, because the driver and hardware cannot determine whether Jumbo Frames are disabled across all FlexNICs.

- **Using `ncweb` to change number of receive queues causes an error message.**

**Severity: Medium**

When you use the `ncweb` or SMH interface to change the number of receive queues, an error message appears.

**Workaround:** Use `nwmgr` instead of `ncweb` to change number of the queues. The command syntax is:

```
nwmgr -s -A drv_mq=<new#> -c lan<instance>
```

where

<new#>           The number of queues that you want to enable.

<instance>       Instance number of the LAN interface; for example, `lan1`.

## 5 Compatibility and installation requirements

This section describes the compatibility information and installation requirements for this release.

- For specific installation instructions, see the installation procedure or overview document for your card.
- For detailed information on supported server platforms, operating systems, and firmware level requirements, see the Ethernet Support Matrix.

These documents are available at:

<http://www.hp.com/go/10-gigabit-ethernet-docs>

### 5.1 Operating system and version compatibility

This release is specific for HP-UX 11i v3 (B.11.31).

### 5.2 Hardware requirements

This version of 10GigEthr-02 runs on HP Integrity servers with the HP-UX 11i v3 (B.11.31) operating system. This configuration has specific version requirements for many system components:



**Table 7 System component minimum version requirements**

System component	Minimum version required
HP Integrity BL860c hardware revision	B
HP Integrity BL860c system firmware	4.21
HP Integrity BL870c system firmware	4.21
HP Integrity BL8x0c i2 system firmware	Use the latest system firmware. For information on how to obtain and install system firmware, see the server documentation.
HP Integrity Superdome 2 system firmware	
HP Onboard Administrator firmware	3.0
NC532m, AM225A, AM232A, AM233A EFI driver	5.2.27
HP Virtual Connect firmware	Use the latest version available. For information on how to obtain and install interconnect module firmware, see the product's documentation.
Interconnect module firmware	

## 6 Related information

The latest documentation for Ethernet cards is available in English at:

<http://www.hp.com/go/10-gigabit-ethernet-docs>

- Installation guides are listed alphabetically in the “Setup and install — general” section.
- Release notes are listed alphabetically in the “Getting started” section.
- Support guides are listed alphabetically in the “User guide” section.
- Support Matrix documents are listed alphabetically in the “General reference” section.

## 7 Software availability in native languages

The 10GigEthr-02 product is available only in the English language.

## 8 Documentation feedback

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