



DATASHEET



CONNECTIVITY

# 10GbE Virtual Fabric Adapter II (CFFh) for IBM BladeCenter

IBM Part No. 90Y3550,<sup>1</sup> 90Y3566,<sup>2</sup> 49Y4265<sup>3</sup>

## Delivering new levels of performance, scalability and investment protection

### Overview

The Emulex Virtual Fabric Adapter II (CFFh) for IBM BladeCenter provides 10Gb/s Ethernet (10GbE) connectivity with the benefits and flexibility of both virtual NIC and I/O convergence with iSCSI or Fibre Channel over Ethernet (FCoE). The Virtual Fabric Adapter II has two physical Ethernet ports that support 1Gb/s and 10Gb/s traffic. Each physical 10Gb/s port can be divided into four virtual ports with bandwidth allocation in 100Mb/s increments to the maximum 10Gb/s per physical port. The Emulex Virtual Fabric Adapter (90Y3550) is a network interface card (NIC) and the Advanced Virtual Fabric Adapter (90Y3566) adds support for hardware offload of storage protocols. An upgrade option (49Y4265) can be used to add storage protocol support to the Virtual Fabric Adapter NIC, providing a future-proofed solution.

### One Adapter to Manage All Workloads: 1GbE, 10GbE, Virtual NIC, IO Convergence

The 10GbE Emulex Virtual Fabric Adapter II for IBM BladeCenter is based on the Emulex third-generation BladeEngine 3 controller and is part of the OneConnect™ Universal Converged Network Adapter (UCNA) platform that supports hardware offload and acceleration for network and storage protocols.<sup>4</sup> By using a common infrastructure for Ethernet and storage networks, data centers can reduce capital expense (CapEx) for adapters, switches and cables, and operating expense (OpEx) for power, cooling and IT administration.

Emulex Virtual Fabric Adapter virtual NIC (vNIC) functions include:

- Each vNIC appears as an individual adapter to the operating system.
- Each vNIC can allocate bandwidth at increments of 100Mb.
- The adapter can connect to either 1Gb or 10Gb data center infrastructure.

### Scalable Virtual Server Deployments

Data centers can scale virtual server deployments by combining eight vNIC functions from dual-port Emulex Virtual Fabric Adapters with two on-board Ethernet ports. Two Fibre Channel ports can also be added with the Emulex LightPulse® 8Gb/s Fibre Channel CIOv Expansion Card. The end result is an ideal blade solution for VMware environments that supports networked storage and complies with the best practice recommendation to use multiple NICs for different traffic types.

### End-to-End Virtualization with BNT Virtual Fabric Switch Modules

IT managers can combine IBM HS22 Blades, Emulex Virtual Fabric Adapters and the BNT Virtual Fabric 10Gb Switch Module for IBM BladeCenter to enable an end-to-end virtualization solution. The BNT Virtual Fabric Switch Module recognizes the Virtual Fabric Adaptor and assigns bandwidth in increments of 100MB with vNIC management done from the BNT Virtual Fabric Switch Module. Bandwidth allocations affect both inbound and outbound I/O and take effect immediately. The BNT Virtual Fabric Switch Module also supports Data Center Bridging (DCB) standards that enable network convergence with FCoE.

### Key Features

#### Flexible Ethernet connectivity

- Supports 1Gb/s, 10Gb/s, Virtual NIC, iSCSI and FCoE Hardware Offload
  - 1Gb and 10Gb auto-negotiation
  - Virtual port bandwidth allocation in 100Mb/s increments

- Supports up to eight virtual ports

#### One platform for network & storage connection

- Upgradeable to iSCSI or FCoE Hardware Offload

#### Superior performance

- TCP/IP stateless offloads
- TCP Offload Engine (TOE) support
- Line rate throughput

#### Energy efficient design

- Industry-leading performance per watt
- Complements data center “green” initiatives

#### Easy to deploy and manage

- One management console for network and storage
- Serial over LAN and cKVM support for enhanced BladeCenter management
- Integrated management with Emulex OneCommand™ Manager

### Key Benefits

#### Optimized for convergence

- Maximizes I/O consolidation with high performance 10GbE ports
- One network infrastructure reduces capital expenses (CapEx)
- One management console reduces operating expenses (OpEx)
- Leverages existing IT investments

#### Enterprise-ready

- Hardware parity, CRC, ECC and other advanced error checking
- Backed by field-proven Emulex and IBM reliability and support

<sup>1</sup> NIC Only   <sup>2</sup> Advanced VFA (iSCSI or FCoE support)   <sup>3</sup> Storage Protocol upgrade to 90Y3550

<sup>4</sup> Fibre Channel over Ethernet (FCoE) will be available via Hardware entitlement upgrade in the future.



# 10GbE Virtual Fabric Adapter II (CFFh) for IBM BladeCenter

Delivering new levels of performance, scalability and investment protection



## SPECIFICATIONS

### Switch Independent vNIC Support

The Emulex Virtual Fabric Adapter II also provides vNIC capabilities with any 10GbE switch that is supported for IBM BladeCenter servers. There are eight vNIC functions for the dual-port Emulex Virtual Fabric Adapter II and bandwidth allocation is done using management software that runs on the Virtual Fabric Adapter II at boot time. Bandwidth allocations affect I/O traffic that is outbound from the server.

### Protocol Offload for Network Storage

Network storage is supported with the Emulex Advanced Virtual Fabric Adapter II (90Y3566) or an upgrade option (49Y4265) for the Emulex Virtual Fabric Adapter II (90Y3550). iSCSI is supported with hardware acceleration that offloads iSCSI protocol processing to the adapter and saves server CPU resources for applications workloads. Emulex Lab tests showed iSCSI protocol offload can support I/O for 50% more VMs than a NIC and software initiator. FCoE is also supported with full protocol offload.

### Greener Data Centers

The Emulex Virtual Fabric Adapter II for IBM Blade Center delivers industry-leading performance and scalability per watt, reducing requirements for power and cooling. Protocol offload enables efficient use of computing resources, supports more VMs per CPU, and reduces the number of servers required to support data center demands.

### Advanced Error Checking

End-to-end data protection with hardware parity, CRC, ECC and other advanced error checking and correcting ensure that data is safe from corruption.

### Controller

- BladeEngine 3

### Standards

- PCI Express base spec 2.0
- PCI Bus Power Management Interface, rev. 1.2
- IBM Blade Server Base Specification for I/O cards
- IEEE 802.3ae (10GBASE Ethernet Ports)
- IEEE 802.1q (Virtual LANs)
- IEEE 802.3ad (Link Aggregation)
- IEEE 802.3x (Flow Control)
- IEEE 802.1p (Quality/Class of Service)
- IEEE 802.1Qaz (Enhanced Transmission Selection)
- IEEE 802.1Qaz (Data Center Bridging Capabilities Exchange)
- IEEE 802.1Qau (Congestion Notification)
- IEEE 802.1Qbb (Priority-based Flow Control)
- IEEE 802.1ab (Link Layer Discovery Protocol)

### Architecture

- Dual-channel, 10Gb/s Ethernet Link speed
- PCIe Express 2.0 (x8, 5GT/s), MSI-X support
- IBM BladeCenter CFFh Form Factor
- Integrated data buffer and code space memory

### Ethernet Features

- IPv4/IPv6 TCP, UDP checksum offload
  - Large Send Offload (LSO)
  - Large Receive Offload
  - Receive Side Scaling (RSS)
  - IPv4 TCP Chimney Offload
- VLAN insertion and extraction
- Jumbo frames up to 9000 Bytes
- Interrupt coalescing
- Load balancing and failover support including adapter fault tolerance (AFT), switch fault tolerance (SFT), adaptive load balancing (ALB), teaming support and IEEE 802.3ad

### iSCSI Features

- Target discovery methods
- Authentication modes
- INT 13 Boot

### FCoE Features

- Common driver for VFAs and HBAs
- 64 N\_Port ID Virtualization (NPIV) interfaces (total for adapter)
- Support for FIP and FCoE Ether Types
- Fabric Provided MAC Addressing (FPMA) support
- 1024 concurrent port logins (RPIs) per port
- 1024 active exchanges (XRIs) per port

### Comprehensive OS Support

- Windows® Server 2008, Windows Server 2003
- Red Hat Enterprise Linux Server
- Novell SUSE® Linux Enterprise Server
- VMware® vSphere™ ESX™ ESXi™

### Hardware Environments

- IBM HS22, HS22v and HX5 Blade Servers
- x86, x64 processor family

### Environmental Requirements

- Operating temperature: 0° to 55° C (32° to 131° F)
- Storage temperature: -40° to 70° C (-40° to 158° F)
- Relative humidity: 5% to 95% non-condensing

### Agency Approvals

The following approvals will be obtained prior to production shipment

- UL recognized to UL 60950-1
- CUR recognized to CSA22.2, No. 60950-1-03
- Baurt-certified to EN60950-1
- FCC Rules, Part 15, Class A
- ICES-003, Class A
- EMC Directive 2004/108/EEC (CE Mark)
  - EN55022, Class A
  - EN55024
- Australian EMC Framework (C-Tick Mark)
  - AS/NZS CISPR22, Class A
- VCCI (Japan), Class A
- KCC (Korea), Class A
- BSMI (Taiwan), Class A
- EU RoHS Compliant (Directive 2002/95/EC)
- China RoHS Compliant

### Ordering Information

- 10GbE VFA: 90Y3550
- Advanced 10GbE VFA (iSCSI or FCoE support): 90Y3566
- VFA Storage Protocol Upgrade: 49Y4265

Visit [www.ibm.com/bladecenter](http://www.ibm.com/bladecenter)



[www.emulex.com](http://www.emulex.com)

**World Headquarters** 3333 Susan Street, Costa Mesa, CA 92626 +1 714 662 5600  
**Wokingham, UK** +44 (0) 118 977 2929 | **Munich, Germany** +49 (0) 89 97007 177  
**Paris, France** +33 (0) 158 580 022 | **Beijing, China** +86 10 68499547  
**Tokyo, Japan** +81 3 5325 3261 | **Bangalore, India** +91 80 40156789

### Connect with Emulex

[twitter.com/emulex](https://twitter.com/emulex) [friendfeed.com/emulex](https://www.facebook.com/emulex) [bit.ly/emulexlinks](http://bit.ly/emulexlinks) [bit.ly/emulexfb](https://www.linkedin.com/company/emulex)

©2012 Emulex, Inc. All rights reserved. This document refers to various companies and products by their trade names. In most, if not all cases, their respective companies claim these designations as trademarks or registered trademarks. This information is provided for reference only. Although this information is believed to be accurate and reliable at the time of publication, Emulex assumes no responsibility for errors or omissions. Emulex reserves the right to make changes or corrections without notice. This report is the property of Emulex and may not be duplicated without permission from the Company.