



## Emulex 10GbE Virtual Fabric Adapter II for IBM BladeCenter

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### 1. What are IBM and Emulex announcing?

IBM and Emulex are announcing:

- Next-generation 10Gb Ethernet (10GbE) Integrated Virtual Fabric Adapter II (VFA II) for IBM BladeCenter servers
- Future support for Switch Independent vNIC capabilities

VFA II adapters use the Emulex BladeEngine 3 (BE3) controller which features a 20 percent improvement in power efficiency over the previous version BE2 controller.

Emulex VFAs for IBM BladeCenter servers provide 10GbE connectivity with TCP protocol offloads and industry-leading performance. Hardware entitlement upgrades can enhance Emulex VFA II functionality with iSCSI or Fibre Channel over Ethernet (FCoE) protocol support enabling a future proof connectivity solution for IBM BladeCenter servers.

### 2. Why is this announcement significant?

Emulex 10GbE VFA II adapters for IBM BladeCenter offer the benefits and flexibility of an exclusive enhanced virtual NIC (vNIC) function with a single end-to-end solution in partnership with IBM's networking division including:

- Up to four vNICs per physical port
- Bidirectional bandwidth management
- Dynamic bandwidth allocation
- I/O convergence with a hardware entitlement upgrade that enables iSCSI or FCoE

Emulex VFAs for IBM BladeCenter deliver industry leading performance with a single-chip architecture that provides enhanced functionality and flexibility over conventional 10GbE network adapters, including:

- Near 10Gb/s Ethernet line rate performance.
- Emulex vEngine™ technology for full offload of network and storage protocols that removes the overhead of I/O processing from the CPU and enables more virtual machines for virtual server deployments
- Management of VFAs using Emulex OneCommand™ Manager that supports network and storage connectivity throughout the data center from a centralized management console.



### 3. What is the IBM Virtual Fabric Solution?

The IBM Virtual Fabric Solution is a single platform that delivers the choice of 1Gb Ethernet, 10Gb Ethernet with up to four Virtual Network Interface Cards (vNICs) per port and the option to support iSCSI or FCoE storage with hardware offload.

### 4. What is a Virtual Network Interface Card?

A Virtual Network Interface Card (vNIC) is the generic name for the capability of a network adapter to present itself to an operating system or hypervisor as multiple NICs.

### 5. What are the VFA II part numbers?

- VFA II for IBM Blade Center (NIC only) - Part Number 90Y3550
- Advanced VFA II for IBM Blade Center (NIC, iSCSI, FCoE) - Part Number 90Y3566

### 6. What are the differences between VFA and VFA II?

The first-generation VFA uses the BladeEngine (BE2) controller. VFA II uses the Blade Engine 3 controller (BE3).

VFA II adds the following new features:

- Switch Independent vNIC support
- 20% improvement in power efficiency
- Support for Single Root I/O Virtualization (SR-IOV)

SR-IOV allows PCIe devices to appear as multiple virtual devices that can optimize I/O performance by providing direct I/O for virtual machines (VMs).

### 7. What are the differences between VFA II and Advanced VFA II?

The Advanced VFA II includes hardware support for iSCSI or FCoE with protocol offload.

### 8. Does IBM support FCoE with Advanced VFAs?

Yes. IBM supports FCoE for Advanced VFA II (Part Number 90Y3566) and Advanced VFA (Part Number 49Y4275).

### 9. Can iSCSI and FCoE support be added to VFA II adapter?

Yes. Hardware iSCSI and FCoE support can be added with the purchase of a hardware entitlement upgrade. The IBM part number for the entitlement upgrade is 49Y4265.



### **10. Will first-generation VFAs still be available for IBM BladeCenter servers?**

Yes, first-generation VFAs will continue to be offered by IBM during a transition period to VFA II. Customers are encouraged to use VFA II to have the additional benefits offered by the new adapter.

### **11. How many ports do VFA and VFA II adapters have?**

VFA and VFA II adapters have two physical 10Gb Ethernet ports and can present up to eight vNICs to the server operating system (up to four vNICs per physical port). The bandwidth for each vNIC can be configured in increments of 100Mb up to the maximum bandwidth of the physical port. The vNICs on a given physical port share the 10Gb bandwidth of that port.

### **12. What is the form factor for VFA and VFA II adapters?**

VFAs and VFA II adapters are CFFh (Combination Form Factor horizontal) cards designed for IBM BladeCenter server blades. Individual server blades can support the Emulex 8Gb/s CIOv Fibre Channel Adapter and the VFA or VFA II 10GbE adapter at the same time.

### **13. Which IBM BladeCenter server platforms are supported?**

- HX5
- HS22V
- HS22

### **14. Which IBM BladeCenter chassis are supported?**

- BladeCenter H
- BladeCenter HT

### **15. Are cables required with VFA or VFA II adapters?**

No. VFA and VFA II adapters connect to switches using the BladeCenter backplane.

### **16. What capabilities are unique to Emulex VFAs and BNT Virtual Fabric Switch Modules?**

- vNIC management and bandwidth allocation using management software that runs on the BNT Virtual Fabric Switch Module
- Changes to bandwidth allocation take effect immediately with no requirement to reboot



- Bandwidth management is effective for both inbound and outbound I/O

### **17. What is the Switch Independent vNIC capability?**

The Switch Independent vNIC capability works with any 10GbE switch that is supported by IBM and presents up to eight vNICs to the server operating system (up to four vNICs per physical port). vNIC management is done at boot time with the IBM system's UEFI boot software. Bandwidth management is only effective for I/O that is outbound from the server.

### **18. Is the vNIC capability for BNT Virtual Fabric Switch Modules supported with VFA and VFA II adapters?**

Yes.

### **19. Is the Switch Independent vNIC capability supported with VFA and VFA II adapters?**

The Switch Independent vNIC capability requires VFA II.

### **20. What competitive cards support the vNIC capability for BNT Virtual Fabric Switch Modules?**

None. Emulex VFAs have exclusive support for the vNIC capability with BNT Virtual Fabric Switch Modules.

### **21. What are competitive advantages for Emulex VFA II adapters?**

- Hardware offload for storage protocols - Emulex VFAs include the option to support iSCSI and FCoE storage with high-performance protocol offload
- VFA options - Emulex VFA II adapters support both BNT Virtual Fabric Switch Module and Switch Independent vNIC capabilities.
- OneCommand Manager - Multi-protocol management throughout the data center from a single management console.

### **22. Can a VFA or VFA II be used when not a part of a Virtual Fabric solution?**

Yes. Emulex VFA and VFA II adapters can operate as a standard Ethernet card without Virtual Fabric enabled. The Virtual Fabric solution is required for vNIC functionality.

### **23. What operating system environments do VFA and VFA II adapters support?**

- Windows Server 2003 and 2008



- Red Hat Enterprise Linux (RHEL)
- SUSE Linux Enterprise Server
- VMware vSphere/ESX

### **24. What are business benefits from using Emulex VFA II adapters?**

- Higher server virtualization ratios –VFAs provide off-load and acceleration for networking and storage protocols which minimizes use of CPU and memory resources. Optimizing CPU and memory resource for virtualization can enable more virtual machines per server.
- Lower Capital Expenses (CapEx) – VFAs can save up to 30% on CapEx by reducing the number of adapter cards, switch ports and cables needed to support network and storage traffic.
- Lower Power and Cooling – Reducing the number of adapter cards and switches results in significant savings for power and cooling.
- Consolidation with the latest Intel Xeon CPUs – The VFA technology was designed to leverage the new features of Xeon processors beginning with Intel Xeon 5500 Series servers, including MSI-X, QPI, PCI-Express 2.0, and Hyper Threading Technology which all enable more I/O per CPU because of the VFA's HW protocol offload technology. This means you can fully optimize consolidation plans by reducing ongoing costs for power and cooling.
- Investment Protection with iSCSI or FCoE– Emulex VFA II adapters provide investment protection with support for IP and iSCSI or FCoE protocols on the same card. Storage protocol offloads are enabled with keys as needed so there's no payment for unused capabilities.
- Enables Real World Networks – IBM's virtual I/O enables dedicated virtual ports that support network traffic segmentation with high availability redundant connectivity. Due to the scalable number of vNICs/adapters, traditional NIC deployment models for IP LAN, VMotion LAN, management, NAS and backup can be used with multiple vNICs.
- Improved VM Mobility – Not only can VMs move across physical servers with vNIC connectivity, performance can be adjusted to deal with bandwidth bursts during VM moves. VFA makes it easy to deploy a dedicated VM LAN for mobility which is often cited as a best practice by hypervisor providers in active data centers.

### **25. What are some of the key features of Emulex VFAs?**

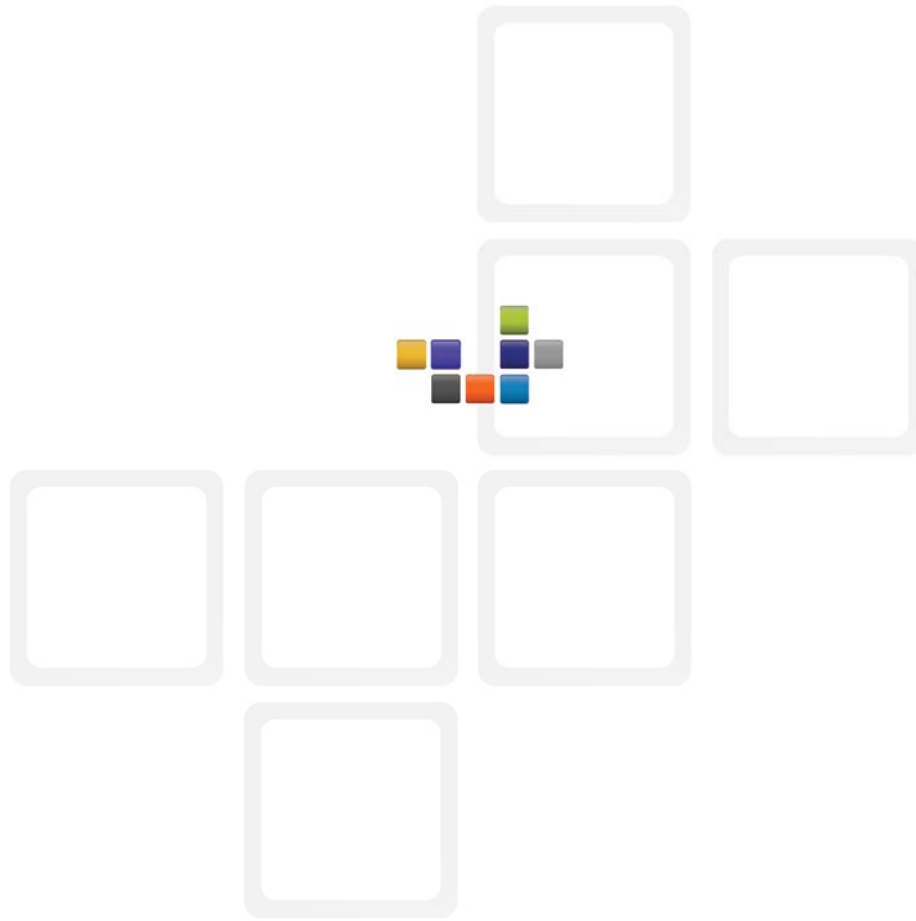
- Superior Performance
  - ✓ TCP/IP stateless offloads



- ✓ TCP Chimney Offload support
- One Platform for Network and Storage Connection
  - ✓ Simplifies I/O hardware choices for IT managers
  - ✓ Based on OneConnect™ technology that includes iSCSI or FCoE support with the Advanced VFA II or as a software license upgrade
- Flexible Ethernet Connectivity
  - ✓ Virtual port bandwidth allocation for up to eight vNICs in 100Mb/s increments
  - ✓ Supports 1Gb/s and 10Gb/s with auto-negotiation for BladeCenter servers
- 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
  - ✓ Integrated management with Emulex OneCommand Manager

### **26. What are unique advantages of Emulex VFA II adapters?**

- Choice of BNT Virtual Fabric Switch Module or Switch Independent vNIC capability.
  - ✓ Exclusive vNIC support with BNT Virtual Fabric Switch Module
- Option to support iSCSI or FCoE with full protocol offloads
  - ✓ Common Fibre Channel drivers for LightPulse HBAs and Advanced VFAs provide a high level of scalability and process automation
- OneCommand Manager application supports LightPulse HBAs and Advanced VFAs throughout the data center from a single console
- 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



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