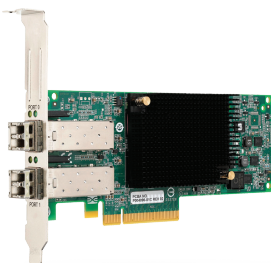# EMULEX®

## OneConnect™

# OCe10000

## Convergence of Networking and Storage Connectivity

**SIMPLIFIED**

**NETWORKING,**

**TRUSTED SAN**

**INTEROPERABILITY**

**AND INCREASED**

**BUSINESS**

**AGILITY**

### The Problem

Data centers have traditionally used specialized networks to meet individual I/O connectivity requirements for networking and storage. With increasing deployments of blades and virtualized servers, data centers are inherently facing network sprawl, primarily driven by deployments of multiple 1Gb Ethernet links and external storage. This network sprawl has resulted in:

- Increased capital costs for adapters, switch ports and cables

- Increased operational costs for power, cooling and IT management

### Emulex OneConnect Universal CNA Platform

The Emulex OneConnect™ Universal Converged Network Adapter (UCNA) is a single-chip, high-performance 10 Gigabit Ethernet (10GbE) platform that provides server connectivity for network and storage traffic with multi-function server adapters. The payoff is a rapid return on investment (ROI) based on:

- **Lower capital expense (CapEx)**—Single 10GbE adapter replaces Host Bus Adapter (HBA) and multiple 1GbE Network Interface Cards (NICs)

- **Lower operational expense (OpEx)**—One management console for network and storage

- **Higher virtualization ratios**—Protocol offloads save CPU cycles and optimize memory usage

Unlike 10GbE network adapters that only support TCPI/IP or CNAs that only support FCoE for storage, the Emulex OneConnect UCNA technology provides optimized performance for TCP/IP, TOE, TCP Chimney, FCoE and iSCSI protocols. Accelerators/offload engines for all supported protocols allow Emulex OneConnect UCNAs to deliver maximum performance, regardless of the mix of network traffic.

**OneConnect™**

**OneCommand™**

### Key Features

#### One platform for every network connection

- 10Gbps Ethernet, iSCSI and FCoE offloads
- Simplifies I/O hardware choices for IT managers

#### Superior performance

- Hardware accelerators for all protocols
- High performance with high CPU efficiency

#### Energy-efficient design

- Industry-leading performance per watt
- Complements data center "green" initiatives

#### Easy to deploy and manage with OneCommand™ Manager application

- One management console, many protocol services
- Integrated management of UCNAs and HBAs
- Over 7 million ports administered with Emulex management software

### Key Benefits

#### Optimized for convergence

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

#### Optimized for server virtualization with vEngine™ technology

- More virtual machines (VMs) per server with TCP offload engine (TOE), TCP Chimney, iSCSI and Fibre Channel over Ethernet (FCoE) offloads
- VM-specific performance, QoS and management

#### Enterprise-ready

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

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## One Connection for Network and Storage

### OneConnect product family

- OCe10102-N: 10Gb Network Adapter
- OCe10102-I: 10Gb iSCSI Adapter
- OCe10102-F: 10Gb FCoE Converged Network Adapter

### 10 Gigabit Ethernet
10GbE will be the standard backbone for enterprise-class networks. New multi-core server platforms, server virtualization and high-demand applications, such as database clusters, video on demand and voice over Internet protocol (VOIP) are all driving the need for high bandwidth. Emulex OneConnect UCNAs deliver optimized 10GbE performance that meets these requirements with support for stateless TCP/IP, TOE and TCP Chimney offloads.

### Enhanced Ethernet
Emulex OneConnect UCNAs enable Fibre Channel and Ethernet traffic to be carried over a converged lossless Enhanced Ethernet (EE) network, eliminating separate infrastructures for storage and networking, and delivering significant cost savings. Emulex UCNAs also support bandwidth allocation to optimize throughput.

### Fibre Channel over Ethernet
Emulex OneConnect UCNAs support FCoE, seamlessly converging Fibre Channel and Ethernet while leveraging mature Fibre Channel management tools and processes. By consolidating traffic, FCoE simplifies network management and significantly reduces total cost of ownership (TCO).

### iSCSI
Emulex OneConnect is an optimum solution for iSCSI storage deployments. Support for iSCSI offload provides performance that is superior to iSCSI solutions based on software initiators and standard NICs.

### Multiple boot options
OneConnect UCNAs support Fibre Channel, iSCSI and Preboot eXecution Environment (PXE) boot options for both x86 and Universal Extensible Firmware Interface (UEFI) platforms.

## Simplified Management

### OneCommand Manager application
The OneCommand™ Manager application enables management of Emulex One Connect UCNAs and LightPulse® HBAs and CNAs throughout the data center from a centralized management console. The OneCommand Manager application provides a graphical user interface (GUI) and a scriptable command line user interface (CLI), which drives administration efficiency and business agility.

Centralized discovery, monitoring, reporting and management of both local and remote adapters can be done from a secure remote client. In-depth management capabilities include remote firmware and boot code upgrades, beaconing, statistics and advanced diagnostics.

### Quality of service
Using the OneCommand Manager application, administrators can allocate portions of the 10GbE bandwidth to network or storage traffic. Using OneConnect support for virtual ports, storage-based QoS can be individually managed for VMs.

### Streamlined installation
A single installation of drivers and applications for Windows servers eliminates multiple reboots and ensures that each component is installed correctly and OneConnect UCNAs are ready to use.

## Highest Peformance and Reliability

### Enterprise-ready
Leveraging ten generations of advanced, field-proven Fibre Channel HBA technology, the Emulex OneConnect family meets the robust interoperability and reliability requirements of corporate data centers. The design leverages proven Emulex enterprise-class drivers, firmware and hardware architectures, while delivering sophisticated capabilities required to manage multiple types of data flow concurrently with optimized performance.

### More virtual machines per server with vEngine technology
Higher CPU efficiency and the highest virtual port count per VM enables the Emulex OneConnect UCNA to offload processing from the hypervisor and support more VMs per server. Dynamic QoS bandwidth allocation based on individual VMs gives data centers the flexibility and performance they need to maximize server consolidation.

### Greener data centers
The Emulex OneConnect UCNA platform 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.

## Pay-As-You-Go Options

All OneConnect adapters are based on a single hardware platform, which means support for storage connectivity can be managed with keys that license the use of protocol offloads. With this flexibility, a baseline OneConnect network adapter can be enabled to support FCoE or iSCSI offload without replacing the board. With the OneConnect pay-as-you-go architecture, storage protocols are only used when and where they are needed. There's no "tax" to pay for unused capabilities, but there is a future-proof option to easily enable new capabilities.

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## SPECIFICATIONS

### Standards

· ANSI INCITS T11 FC-BB-5 2.0, FC-PI-2,
  FC-GS-4, FC-TAPE and FCP-3
· PCI Express base spec 2.0
  PCI Bus Power Management Interface, rev. 1.2,
  Advanced Error Reporting (AER)
· 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 802.1Qbb (Priority-based Flow Control)
· IEEE 802.1ab (Link Layer Discovery Protocol)
· PHP hot plug-hot swap

### Architecture

· Dual-channel, 10Gb/s Ethernet Link speed
· PCIe Express 2.0 (x8, 5GT/s), MSI-X support
· 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
· Preboot eXecution Environment (PXE) 2.0
  network boot and installation support
· 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

### Fibre Channel over Ethernet (FCoE) Features

· Common driver for UCNAs and HBAs
· N_Port ID Virtualization (NPIV)
· Support for FIP and FCoE Ether Types
· Fabric Provided MAC Addressing (FPMA) support
· 1024 concurrent port logins (RPIs) per adapter
· 2048 active exchanges (XRIs) per port

### iSCSI Features

· Target discovery methods
· Authentication modes
· INT 13 Boot

### Comprehensive OS Support

· Windows Server
· VMware ESX
· Red Hat Enterprise Linux Server
· Novell SUSE® Linux Enterprise Server
· Oracle Solaris

### Hardware Environments

· x86, x64 servers
· Sun SPARC servers

### Interconnect

· Copper
  - SFP+ Direct Attached Twin-Ax Copper interface
  - Standards compliant passive and active copper
    cables supported up to 5m
· Optical
  - Optics: 10GBASE-SR short wave lasers with
    LC type connector

### Physical Dimensions

· Low profile with standard bracket
  (low profile bracket available)

### Power and Environmental Requirements

· Volts: +3.3, +12
· 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

· Class 1 Laser Product per DHHS 21CFR (J)
  and EN60825-1
· UL recognized to UL 60950-1 2nd edition
· CUR recognized to CSA22.2, No. 60950-1-07
· Bauart-certified to EN60950-1 2nd edition
· 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

| Interconnect | NIC | NIC + iSCSI | NIC + FCoE |
|---|---|---|---|
| Optical | OCe10102-NM | OCe10102-IM | OCe10102-FM |
| Copper | OCe10102-NX | OCe10102-IX | OCe10102-FX |

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