



## Emulex OneConnect™ OCe10000 Universal CNAs

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### Frequently Asked Questions

#### Table of contents

Emulex OneConnect UCNA Platform .....	2
1. What is the Emulex OneConnect™ Universal CNA platform? .....	2
2. What OneConnect products are available through channel distribution? .....	2
3. Are there OEM-branded OneConnect Universal CNAs? .....	2
4. How many ports do OneConnect Universal CNAs have? .....	2
5. What are the differences from first generation Emulex CNAs? .....	2
6. What are the business benefits with Emulex OneConnect Universal CNAs? .....	2
7. What are key features with Emulex OneConnect Universal CNAs? .....	3
8. What are key features with the OCe10102-N Ethernet Network Adapter? .....	3
9. What are key features with the OCe10102-F FCoE CNA? .....	3
10. What are key features with the OCe10102-I iSCSI Adapter? .....	4
11. What are unique advantages with Emulex OneConnect Universal CNAs? .....	4
12. What are unique advantages with the OCe10102-N network adapter? .....	4
13. What are unique advantages of the OCe10102-F FCoE CNA? .....	4
14. What are unique advantages of the OCe10102-I iSCSI Adapter? .....	4
15. What is the Emulex OneCommand Manager application? .....	5
16. What protocols are supported by OneConnect adapters? .....	5
17. Can more than one protocol be run per adapter? .....	5
18. What determines the protocols that can be used with a OneConnect adapter? .....	5
19. Can protocol support be changed for a OneConnect adapter .....	5
20. How are firmware and boot code updates packaged? .....	5
21. What operating systems are supported with OneConnect adapters? .....	6
22. Is there a common driver architecture for all OneConnect models? .....	6
23. Are the same drivers used for OneConnect FCoE and Fibre Channel HBAs? .....	6
24. Do OneConnect adapters use PCI Express Gen 2? .....	6
25. Do OneConnect adapters support Link Aggregation Control Protocol? .....	6
26. Do OneConnect adapters support jumbo frames? .....	6
27. What are the cabling options for OneConnect adapters? .....	6
28. Are cables included with OneConnect adapters? .....	7
29. What cables should be used with OneConnect adapters? .....	7
Technology Overview .....	7
30. What is FCoE? .....	7
31. Does FCoE support FC capabilities such as zoning and LUN masking? .....	8
32. What is iSCSI? .....	8
33. What is NFS? .....	8
34. What is CIFS? .....	8
35. What is the difference between iSCSI and NFS/CIFS? .....	8
36. What is an SFP+ transceiver? .....	8
37. What is SFP+ Direct Attach Copper Cable? .....	9
38. How does SFP+ Direct Attach Copper compare with 10GBASE-T? .....	9



### Emulex OneConnect UCNA Platform

#### 1. What is the Emulex OneConnect™ Universal CNA platform?

The OneConnect Universal Converged Network Adapter (CNA) is a single-chip 10Gb/s Ethernet (10GbE) product platform that provides:

- High-performance offload for TCP/IP, TCP/IP Offload Engine (TOE), iSCSI and FCoE protocols over a common 10GbE network infrastructure.
- Compact form factor that meet space constraints for all server platforms, including LAN-On-Motherboard (LOM) and blade server adapters
- Low power usage and reduced costs for energy and cooling

#### 2. What OneConnect products are available through channel distribution?

- OCe10102-N: 10GbE Network Adapter
- OCe10102-F: 10GbE FCoE CNA
- OCe10102-I: 10GbE iSCSI Adapter

#### 3. Are there OEM-branded OneConnect Universal CNAs?

Yes. OEM-branded OneConnect Universal CNAs are currently available as PCIe, LOM and mezzanine blade adapters.

#### 4. How many ports do OneConnect Universal CNAs have?

Two.

#### 5. What are the differences from first generation Emulex CNAs?

The first-generation LP21000 is a multi-chip CNA that supports offloads for stateless TCP/IP and FCoE protocols over a 10GbE connection.

The OneConnect Universal CNA platform is based on a single-chip architecture that supports offload for stateless TCP/IP, TOE, FCoE and iSCSI protocols.

#### 6. What are the business benefits with Emulex OneConnect Universal CNAs?

- Simplified network infrastructure lowers total cost of ownership. Cable and cable installation costs can be reduced by up to 85%.



## Frequently Asked Questions (FAQs)

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- Drastically reduces the number of total network connections. For virtualized servers, Universal CNAs will reduce the number of Ethernet connections from five or more to two.
- Optimized I/O performance enables more virtual machines per server.
- Protects investments in existing storage infrastructure.
- Enables seamless extension of Fibre Channel SANs.
- Supported with the Emulex OneCommand™ Manager application that provides management throughout the data center from a single console for OneConnect Universal CNAs and Fibre Channel LightPulse® HBAs and CNAs.

### 7. What are key features with Emulex OneConnect Universal CNAs?

- Single-chip design with support for multiple protocols
- TCP/IP protocol offload supports networking and NFS and CIFS protocols that are used for Network Attached Storage (NAS) and file servers
- Block storage offload for iSCSI and FCoE
- Dynamic bandwidth allocation for different traffic classes
- Enterprise-proven software stack (Fibre Channel, iSCSI, NIC drivers)
- Optimized performance for server virtualization environments
- Enterprise-class OneCommand Manager application for networking and storage

### 8. What are key features with the OCe10102-N Ethernet Network Adapter?

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- Optimized performance for server virtualization environments
- Enterprise-class OneCommand Manager application for networking and storage

### 9. What are key features with the OCe10102-F FCoE CNA?

- Fibre Channel over Ethernet (FCoE) block storage offload
- Common driver for OneConnect FCoE CNAs and Emulex LightPulse HBAs and CNAs
- OneCommand Manager application for networking and storage



## Frequently Asked Questions (FAQs)

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### 10. What are key features with the OCe10102-I iSCSI Adapter?

- iSCSI block storage offload
- OneCommand Manager application for networking and storage

### 11. What are unique advantages with Emulex OneConnect Universal CNAs?

- One network infrastructure reduces capital expenses (CapEx)
- One management console reduces operational expenses (OpEx)
- Single framework for all 10GbE connectivity with simplified version management and testing based on common NIC drivers, common firmware and boot code, consistent NIC teaming and consistent TCP offload support.
- Multiple protocol offloads enable optimum server performance for compute-intensive applications and drive higher server virtualization ratios with associated costs savings
- End-to-end data protection with hardware parity, CRC, ECC and other advanced error checking and correcting
- Enterprise-proven Emulex reliability and operating system support

### 12. What are unique advantages with the OCe10102-N network adapter?

- Stateless TCP/IP offloads and TOE or Windows Chimney Offload enable optimum server performance
- Support for Preboot eXecution Environment (PXE) makes the OCe10102-N an ideal solution for blade servers and other diskless deployments

### 13. What are unique advantages of the OCe10102-F FCoE CNA?

- OneConnect supports FCoE using a software stack that has matured through 7 generations of Emulex HBAs and over 7 million installed ports
- Common Fibre Channel drivers for LightPulse HBAs, CNAs and OneConnect Universal CNAs provide high level of scalability and process automation
- OneCommand Manager application supports OneConnect Universal CNAs and LightPulse HBAs and CNAs throughout the data center from a single console

### 14. What are unique advantages of the OCe10102-I iSCSI Adapter?

- iSCSI offload provides performance that is superior to iSCSI solutions based on software initiators and standard NICs



- OneCommand Manager application provides management for network and storage connectivity throughout the data center from a single console

### 15. What is the Emulex OneCommand Manager application?

The Emulex OneCommand Manager application provides management for NIC, iSCSI and FCoE functions for OneConnect Universal CNAs, plus Fibre Channel support for LightPulse HBAs and CNAs. The OneCommand Manager application is built on the field-proven HBAnyware software stack and can support adapters on servers throughout the data center from a single console.

### 16. What protocols are supported by OneConnect adapters?

- Networking protocols including stateless TCP/IP and TOE or Windows TCP Chimney
- FCoE
- iSCSI

### 17. Can more than one protocol be run per adapter?

Yes. OneConnect supports concurrent networking plus one block-mode storage protocol per port. Examples would be TCP/IP plus FCoE and TCP/IP plus iSCSI. Only one block-mode storage protocol is supported per adapter at a time.

### 18. What determines the protocols that can be used with a OneConnect adapter?

Supported protocols (or personality) for OneConnect adapters are controlled by settings stored in the adapter's flash memory that are loaded at the time of manufacturing.

### 19. Can protocol support be changed for a OneConnect adapter

Emulex-branded OCe10102-N and OCe10102-I adapters can be enabled to support FCoE or iSCSI with a license upgrade. OCe10102-F adapters can support FCoE or iSCSI protocols. OneCommand Manager 5.0 (and later) can be used to select FCoE or iSCSI support. Protocol enablement for OEM-branded OneConnect adapters varies and is managed by each OEM.

### 20. How are firmware and boot code updates packaged?

Firmware and boot code updates are distributed as a single file that contains all firmware and boot code for the OneConnect family. A reboot is required for firmware updates.



### 21. What operating systems are supported with OneConnect adapters?

- Windows Server 2003 and 2008
- VMware ESX/ESXi 3.5, 4.0, 4.1 and 5.0 (and later)
- Red Hat Enterprise Linux 5.4 (and later)
- SUSE Enterprise Linux 10 and 11 (and later)
- Solaris 10

### 22. Is there a common driver architecture for all OneConnect models?

Yes. OneConnect leverages the Emulex SLI driver architecture using SLI-4. While there is a common architectural model, there are unique NIC, iSCSI and Fibre Channel drivers

### 23. Are the same drivers used for OneConnect FCoE and Fibre Channel HBAs?

Yes. The Linux and VMware drivers for OneConnect FCoE and LightPulse FC HBAs are common for both product families. The FCoE and FC drivers for Windows are code-identical but have different names to comply with Microsoft logo requirements.

### 24. Do OneConnect adapters use PCI Express Gen 2?

Yes. Emulex OneConnect Universal CNAs support PCI Express Gen 2x8, with full 10 Gb/s performance for two ports.

### 25. Do OneConnect adapters support Link Aggregation Control Protocol?

Yes. OneConnect supports Link Aggregation Control Protocol (LACP) or NIC teaming. Link aggregation is an IEEE standard to combine multiple network ports to increase the link speed beyond the limits of a single port and provide redundancy for high availability.

### 26. Do OneConnect adapters support jumbo frames?

Yes. OneConnect supports jumbo frames up to 9000 bytes for TCP/IP and iSCSI protocols. The maximum jumbo frame size for TCP/IP is limited to 8000 bytes when used with FCoE.

### 27. What are the cabling options for OneConnect adapters?

OneConnect PCIe adapters are manufactured with Short Reach (SR) optics or support for SFP+ Direct Attached Twin-Ax Copper cables. Adapters for blade servers support backplane Ethernet.



## Frequently Asked Questions (FAQs)

### 28. Are cables included with OneConnect adapters?

No.

### 29. What cables should be used with OneConnect adapters?

The choice for cables should be based on specifications for the switch that will be used. OneConnect should work with any cables that have been qualified by the manufacturer.

As an example, the following table shows the Emulex OneConnect model number and appropriate SFP and cable type for Cisco Nexus 5000 switches.

**Table 1.** SFP and cable type for Cisco Nexus 5000 switches

Emulex Model	Cisco SFP+	Cable Type	Core Size (microns)	Cable Distance
OCe10102-IM OCe10102-NM OCe10102-FM	SFP-10G-SR	MMF	•• 62.5 •• 62.5 •• 50.0 •• 50.0 •• 50.0	•• 26m •• 33m •• 66m •• 82m •• 300m (*)
OCe10102-IX OCe10102-NX OCe10102-FX	SFP-H10GB-CU1M	Twinax cable, 30AWG cable assembly		1m
	SFP-H10GB-CU3M	Twinax cable, 30AWG cable assembly		3m
	CSFP-H10GB- CU5M	Twinax cable, 24AWG cable assembly		5m

(\*) Note: OCe10102-FM is limited to 40m with jumbo frames above 4000 bytes

## Technology Overview

### 30. What is FCoE?

Fibre Channel over Ethernet (FCoE) is the encapsulation of the Fibre Channel protocol into Ethernet as defined by the INCITS T11 standards organization. This allows Fibre Channel traffic to coexist with TCP/IP traffic using a common adapter and network infrastructure.



## Frequently Asked Questions (FAQs)

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### 31. Does FCoE support FC capabilities such as zoning and LUN masking?

Yes. FCoE supports traditional FC capabilities such as zoning and LUN masking using a conventional World Wide Port Name (WWPN) identity.

### 32. What is iSCSI?

Internet Small Computer Systems Interface (iSCSI) is the storage networking standard developed by the Internet Engineering Task Force (IETF) for linking data storage over an IP-based network.

### 33. What is NFS?

Network File System (NFS) is a distributed file system that allows a system to share directories and files with other systems over a network.

### 34. What is CIFS?

Common Internet File System (CIFS) is a remote file system access protocol that works over IP networks to enable groups of users to work together and share documents across Local Area Networks (LANs) or Wide Area Networks (WANs). CIFS is an open, cross-platform technology based on the native file-sharing protocols built into the Microsoft Windows operating systems, and is also supported on other platforms.

### 35. What is the difference between iSCSI and NFS/CIFS?

NFS/CIFS and iSCSI allow storage access over IP networking infrastructure. NFS/CIFS provide file-level access to storage; iSCSI provides block-level access to storage.

### 36. What is an SFP+ transceiver?

A small form-factor pluggable (SFP) is a compact hot pluggable transceiver used in data communications. SFP+ transceivers include minimal silicon in the module and are typically 30% smaller, use less power and are less expensive than the XFP form factor.

Several electronics functions, such as the clock and data recovery (CDR), SerDes/PHY functions and electronic dispersion compensation (EDC), reside inside the larger form-factor. The smaller size of the SFP+ forces some or all of these electronic functions to be on the host adapter, thereby reducing both cost and power consumption of the optical module.



**37. What is SFP+ Direct Attach Copper Cable?**

SFP+ Direct Attach Copper Cable (DAC) is a twinax cable that can connect a OneConnect (-X) adapter to a switch. The SFF Committee defined the electrical parameters for a pluggable interface supporting 10 Gb/s data rates. The SFF-8431 specification standardizes the requirements for Direct Attach SFP+ Cable.

**38. How does SFP+ Direct Attach Copper compare with 10GBASE-T?**

10GBASE-T will work with Cat 6 and Cat 7 cables that are commonly used for 1Gb network connections and also support much longer distances than SFP+ Direct Attach Copper. 10GBASE-T is currently not supported for OneConnect adapters due to power requirements and high latency of 10GBASE-T PHY chips. 10GBASE-T PHY technology continues to evolve and could be suitable for adapter products by the end of 2010.

**Table 2.** SFP+ Direct Attach Copper vs. 10GBASE-T

	10GBASE-T			SFP+ Direct Attach Copper
	Cat 6	Cat 6a / 7	Cat 6a/7	Twinax
Cable	Cat 6	Cat 6a / 7	Cat 6a/7	Twinax
Distance	55m	100m	30m	10m
Power consumed (each end)	8W	8W	4W	0.1W
Transceiver Latency	2.5µs	2.5µs	1.5µs	0.1µs

