



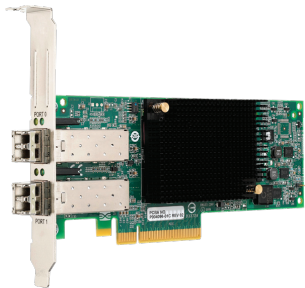
## Emulex OneConnect™ OCe10000 UCNA vs. Brocade 1010/1020 CNAs

Emulex OneConnect is the first Universal Converged Network Adapter (UCNA) with multiple networking and storage protocol offloads

### At a Glance

#### Emulex advantages

- Unified 10 Gigabit Ethernet (10GbE) architecture and strategy
- Field-proven Fibre Channel over Ethernet (FCoE) driver stack
- iSCSI offload
- TCP Chimney Offload/TCP Offload Engine (TOE)
- OneCommand™ Manager application
- Field-enabled storage protocol upgrades



OneConnect is a high-performance 10Gbps Ethernet product that provides server connectivity for network and storage traffic with single-chip, multi-function server adapters. The payoff is a rapid return on investment (ROI) based on:

- Lower capital expense (CapEx) for adapters and cables
- Lower operational expense (OpEx) for power and cooling
- Higher virtualization ratios with multiple protocol offloads

### Emulex OneConnect Advantages

Emulex OneConnect UCNAs support 10GbE networking and high-performance CPU offloads for multiple storage protocols. OneConnect adapters have a single-chip, multi-function design that supports protocol offload for:

- FCoE
- iSCSI
- TOE
- Stateless TCP/IP

The Brocade 1010 and 1020 are 10GbE CNAs that only support protocol offload for FCoE and stateless TCP/IP.

The key benefits of OneConnect expanded offload technologies include:

- Optimized CPU efficiency
- Higher server virtualization ratios
- “Greener” data centers that use less power and cooling

### Unified 10GbE architecture and strategy

OneConnect is a family of products that are all based on a common architecture. This enables a single framework for all 10GbE connectivity with simplified version management and testing based on:

- Common network interface card (NIC) drivers
- Common firmware and boot code
- Consistent NIC teaming
- Consistent TCP offload support

With OneConnect, you can choose a specific product that has the appropriate support for networking and storage. That decision is then future-proofed with the option to reconfigure the

same physical adapter to support a different set of protocols if requirements change. With the OneConnect pay-as-you-go approach, there is no need to pay a network “tax” for unused functionality. Storage offloads can be used when and where needed.

### Field-proven FCoE drivers

Emulex was a pioneer in the development of Fibre Channel. As a result, OneConnect supports FCoE using a software stack that has matured through 10 generations of Emulex Host Bus Adapters (HBAs) and over 7 million installed ports.

In contrast, Brocade entered the HBA market with a 4Gb product line and software stack that was not developed by Brocade. That was replaced with a Brocade-developed 8Gb HBA that uses a new and relatively untested software stack with a sparse track record for data center deployments. The same software stack is used by Brocade to support FCoE. As evidence of its Fibre Channel immaturity, Brocade has issued a lengthy errata list for their Fibre Channel drivers, including problems that can have a significant impact on proper operation of a Fibre Channel Storage Area Network (SAN).

### TOE/TCP Chimney Offload

TOE is a proven technology that is supported by Windows Server 2003 and Windows Server 2008 as TCP Chimney Offload. TCP Chimney Offload is particularly well-suited for long-lived connections and large packet payloads, which is closely aligned with applications like streaming media that are driving demand for 10GbE bandwidth.



OneConnect™ OneCommand™

# Emulex OneConnect™ OCe10000 UCNA vs. Brocade 1010/1020 CNAs

OneConnect supports TCP Chimney Offload across the OneConnect family, delivering network efficiency beyond basic TCP/IP stateless offloads and optimizing performance for network traffic. Brocade CNAs do not support TCP Chimney Offload.

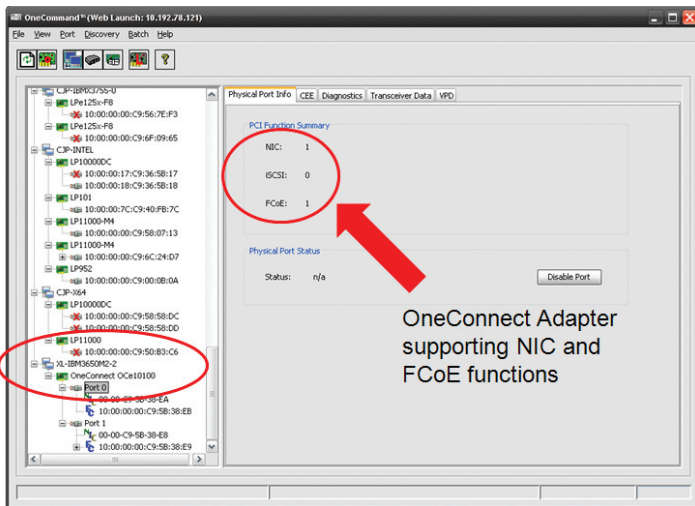
### iSCSI Offload

Brocade’s CNA FAQ states, iSCSI is “appropriate for the Small to Medium Business (SMB) market, which has less strenuous storage networking requirements.” That statement is consistent with Brocade’s iSCSI support, which is limited to software initiators that use CPU resources for I/O processing. The end result has limited value for an enterprise data center.

In contrast, OneConnect offers a robust iSCSI and TOE offload solution that enables iSCSI as a viable data center option, particularly with a 10GbE infrastructure. OneConnect protocol offloads optimize server performance for compute-intensive applications and drive higher server virtualization ratios with associated costs savings.

### OneCommand Manager

OneCommand Manager (formerly HBAnyware®) provides management of Emulex One Connect UCNAs and LightPulse® HBAs and CNAs throughout the data center from a centralized console. Using OneCommand Manager, administrators can manage networking and storage connections with a single view of the entire network.



OneConnect Adapter supporting NIC and FCoE functions

OneCommand Manger fully enables support for additional protocol offloads that are not available with Brocade CNAs.

### Brocade Claims

Brocade claims consolidation of networking and storage with their CNAs. However, the value of that claim is compromised when protocol offload is limited to stateless TCP/IP and FCoE. OneConnect supports multiple networking and storage protocols for optimum performance and value.

### Conclusion

As shown in the following table, OneConnect supports multiple protocol offloads for networking and storage. However, there’s no requirement to pay for unused storage connectivity. The OneConnect pay-as-you-go option allows iSCSI and FCoE offloads to be licensed when and were needed. In contrast, Brocade CNAs have limited offload capabilities with no announced plans to support additional protocols.

Protocol Offload	Emulex OCe10000 UCNA	Brocade 10x0 CNA
Stateless TCP/IP	✓	✓
TCP Chimney/TOE	✓	
FCoE	✓	✓
iSCSI	✓	

Table 1 Comparison of protocol offload capabilities.

The combination of OneConnect and OneCommand Manager optimize a converged 10GbE infrastructure with multiple choices for high-performance network and storage connectivity.

### OneConnect 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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