Converged Network Adapter (CNA) is a Network Adapter that supports both the Ethernet and Fibre Channel standards. It provides 10/40 Gbps connectivity to Ethernet networks and also connects to Fibre Channel storage area networks (SANs) using Fibre Channel over Ethernet (FCoE) and Data Center Bridging (DCB). The adapter consolidates Ethernet data and FCoE storage traffic, reducing the number of cables and adapters needed for a server. The CNA provides 2 independent physical functions per port which can both be used at the same time for FC and Ethernet. Each port of the device provides separate NIC and HBA functions to the operating system or hypervisor. FC and network traffic are transmitted simultaneously over a common cable to a DCB-enabled FCoE switch which segregates Ethernet and Fibre Channel I/O to the appropriate network.

The Emulex OneConnect Universal CNA OCe14000 family of Ethernet Network Adapters is the FCoE and most advanced generation of Emulex Ethernet adapters. Powered by the XE100 controller, OCe14000 adapters offer enhanced support for virtualization, cloud and hyperscale cluster deployments. This paper highlights support for Emulex’s Virtual Network eXceleration initiative that delivers support for Single Root I/O Virtualization, Universal Multi-Channel™ NIC Partitioning and Stateless TCP/IP Offloads amongst its many capabilities.

As a member of the CNA 14000 family, the OCe14401 uses a 40Gbit/s DCB (Converged Enhanced Ethernet) infrastructure for networking and storage, reducing capital expense (CapEx) for adapters, switches and cables, and operational expense (OpEx) for power, cooling and IT administration. The OCe14401 adapter increases data center IT agility and scalability, as well as optimization of the server hardware utilization by scaling high density virtualization. The OCe14401 with 40GbE CNAs is designed for the high bandwidth and scalability demands of Tier-1 enterprise applications with storage protocol (FCoE and iSCSI) offloads, enhanced Single-Root I/O Virtualization (SR-IOV) and NIC port partitioning, and cloud optimization using Overlay Networking technology.

<table>
<thead>
<tr>
<th>Main Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior network scalability - 40GbE bandwidth on common software platform</td>
<td>Maximizes server hardware ROI with high virtual machine density</td>
</tr>
<tr>
<td>SR-IOV</td>
<td>Simplifies deployment of secure, scalable multitenant cloud infrastructure</td>
</tr>
<tr>
<td>Stateless TCP/IP offloads</td>
<td>Provides the bandwidth needed for slot constrained server platforms</td>
</tr>
<tr>
<td>1x 40Gb or 4x 10Gb Support with Break-out cable</td>
<td>Highest density of 10Gb Ethernet ports in a 1U rack server</td>
</tr>
</tbody>
</table>
Technical details

Controller Silicon  
Emulex Engine XE100

Controller type  
Converged Network Adapter

Connector type  
QSFP+

Operating system pre-installed  
Comprehensive OS Support
Information to released operating systems can be found in the server datasheets. Details can be found in the released drivers list on the support portal.

Released drivers list link  

Number of ports  
1

Data transfer rate(s)  
40 Gbit/s

Bus interface  
PCIe 3.0 x8

Bus transfer rate  
8GT/s

HW Virtualization  
SR-IOV support (up to 64 virtual functions per port for NIC)
Overlay Network Virtualization (NVGRE & VXLAN)
Universal Multi-Channel for Port Partitioning

Interrupt Levels  
MSI-X

WoL  
No

LEDs  
2 LED per port
Green: Blink = Activity Off = No activity
Amber: On = Link up Off = Link down

Teaming  
all teaming functions provided by the OS

Remote boot support  
PXE 2.1
iSCSI
FCoE

Remote boot support notes  
one boot function can be enabled at the same time

Offloading  
Stateless TCP
Storage protocols: iSCSI and FCoE
Virtual Network Fabrics (NVGRE & VXLAN)

Standards  
Ethernet:
- IEEE 802.3ba 40Gb/s Ethernet ports
- IEEE 802.1Q virtual LANs (VLAN)
- IEEE 802.3x Flow control with Pause frames
- IEEE 802.3AX Link Aggregation / LACP
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- IEEE 802.1Qbb Priority Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
Data Center Bridging Capability
- IEEE 802.1Qau Congestion Notification (QCN)

DCB/CEE Support:
- IEEE 802.1Qbb Priority Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
- IEEE 802.1Qau Congestion Notification (QCN)

Fibre Channel over Ethernet:
- FC-BB-5 by INCITS Technical Committee T11

Order code  
MC-OJE91
MC-OJE92
MCXOJCE91
S26361-F5539-E1
S26361-F5539-E201
S26361-F5539-E551
S26361-F5539-L501
S26361-F5539-L551

Height of bracket  
Low Profile (LP)
Full Height (FH)
Full Height / Low Profile
Full Height (FH)
Low Profile (LP)
Full Height / Low Profile
Full Height / Low Profile
Full Height / Low Profile

Number of ports  
1
1
1
1
1
1
1
1

Related product  
PRIMEQUEST Server
PRIMEQUEST Server
PRIMEQUEST Server
PRIMERGY Server
PRIMERGY Server
PRIMERGY Server
PRIMERGY Server
PRIMERGY Server
### Supported Interface Modules / Cables

<table>
<thead>
<tr>
<th>Order code</th>
<th>Application</th>
<th>Type / mode</th>
<th>Connector / cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC-O(CEA1</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>MTO / up to 150m</td>
</tr>
<tr>
<td>MCX0(CEA1</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>MTO / up to 150m</td>
</tr>
<tr>
<td>S26361-F5539-E140</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>MTO / up to 150m</td>
</tr>
<tr>
<td>S26361-F5539-L140</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>MTO / up to 150m</td>
</tr>
<tr>
<td>S26361-F3986-E400</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / passive</td>
<td>QSFP+ / 2m or 5m</td>
</tr>
<tr>
<td>S26361-F3986-L402</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / passive</td>
<td>QSFP+ / 2m</td>
</tr>
<tr>
<td>S26361-F3986-L405</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / passive</td>
<td>QSFP+ / 5m</td>
</tr>
<tr>
<td>S26361-F3986-L410</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 10m</td>
</tr>
<tr>
<td>S26361-F5317-E40</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / customized</td>
</tr>
<tr>
<td>S26361-F5317-L41</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 1m</td>
</tr>
<tr>
<td>S26361-F5317-L43</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 3m</td>
</tr>
<tr>
<td>S26361-F5317-L45</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 5m</td>
</tr>
<tr>
<td>D:QSFP-QSFP-AOC10L</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>QSFP+ / 10m</td>
</tr>
<tr>
<td>D:QSFP-QSFP-AOC10L</td>
<td>Ethernet 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>QSFP+ / 10m</td>
</tr>
<tr>
<td>S26361-F5317-L401</td>
<td>Ethernet 4x10 / 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 1m</td>
</tr>
<tr>
<td>S26361-F5317-L403</td>
<td>Ethernet 4x10 / 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 3m</td>
</tr>
<tr>
<td>S26361-F5317-L405</td>
<td>Ethernet 4x10 / 40 Gbit/s</td>
<td>QSFP+ Twinax Cable / active</td>
<td>QSFP+ / 5m</td>
</tr>
<tr>
<td>D:QSFP-4SFP-AOC10L</td>
<td>Ethernet 4x10 / 40 Gbit/s</td>
<td>QSFP+ / MMF (SWL)</td>
<td>QSFP+ / 10m</td>
</tr>
</tbody>
</table>

**Interface Module notes**

- Only Fujitsu certified modules and cables are supported.
- Order codes starting with "S26361-F5317" and "D:QSFP" are Brocade branded cables, required for connections to Brocade switches.
- Description optional cable: 40Gbit/s transceiver module for MMF (S26361-F5539-E140 / -L140 and MC-O(CEA1 / MCX0(CEA1) supports:
  - OM3 (Multi Mode Fiber 50.0/125μm, 2000 MHz*km) up to 100m
  - OM4 (Multi Mode Fiber 50.0/125μm, 4700 MHz*km) up to 150m

### Environment

- **Power consumption**
  - Optical 40Gb: 9.9W (typical), 13.0W (max)
  - DAC cable 40Gb: 8.6W (typical), 11.6W (max)
- **Temperature (operating)**: 0 - 55 °C
- **Storage temperature**: -40 - 70 °C

### Compliance

- **Compliance notes**: According to the corresponding system
- **Compliance link**: https://sp.ts.fujitsu.com/sites/certificates
More information

Fujitsu products, solutions & services
In addition to Fujitsu with Converged Network Adapter (CNA) Emulex OCE14401, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Fujitsu Portfolio
Build on industry standards, Fujitsu offers a full portfolio of IT hardware and software products, services, solutions and cloud offering, ranging from clients to datacenter solutions and includes the broad stack of Business Solutions, as well as the full stack of Cloud offering. This allows customers to leverage from alternative sourcing and delivery models to increase their business agility and to improve their IT operation’s reliability.

Computing Products
www.fujitsu.com/global/products/computing/

Software
www.fujitsu.com/software/

More information
Learn more about FUJITSU Server Converged Network Adapter (CNA) Emulex OCE14401, please contact your Fujitsu sales representative or Fujitsu Business partner, or visit our website.
http://www.fujitsu.com/primergy

Fujitsu green policy innovation
Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to contribute to the creation of a sustainable environment for future generations through IT. Please find further information at http://www.fujitsu.com/global/about/environment

Contact
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