

# 10GbE Network and Converged Network Adapters for Lenovo ThinkServer

Unleash the full potential of your network with the next generation of Ethernet and Converged Network Adapters for Lenovo ThinkServers

The new OneConnect® OCe14000 family of 10Gb Ethernet (10GbE) adapter (NICs), Converged Network Adapters (CNAs) (including AnyFabric™ mezzanine cards) and 40GbE CNAs for Lenovo ThinkServers provides the best-of-breed, next generation 10GbE and 40GbE connectivity solutions from the leader in enterprise-proven storage and data networking. The OCe14000 family accelerates applications, increases virtual machine (VM) densities and includes Emulex Virtual Network Exceleration™ (VNeX) offload technology, the industry's first hardware offload for new Network Virtualization using Generic Routing Encapsulation (NVGRE) and Virtual Extensible Local Area Network (VXLAN) overlay networks.

When it comes to mezzanine cards, the Lenovo AnyFabric technology allows you to maximize I/O and utilize up to eight 10GbE ports or even configure four 10GbE ports with two 16Gb Fibre Channel (16GFC) ports at the same time without using any PCI Express (PCIe) slots!<sup>1</sup>

Managing AnyFabric adapters is streamlined with integration into Lenovo ThinkServer Deployment Manager and ThinkServer Diagnostics Software for easy deployment and monitoring.

Whether you're using tower or rack in SMB or enterprise deployments, when it comes to your Lenovo ThinkServer connectivity solution, refresh your thinking: **Think Enterprise, Think Flexible, Think Ahead – Think Emulex.**



**BetterTogether**

## Key features and benefits

- Enterprise-proven TCP/IP, iSCSI, Fibre Channel over Ethernet (FCoE) and RDMA over Converged Ethernet (RoCE) hardware offload delivers greater CPU efficiency and better application performance
- Integrated Emulex, an Avago Technologies Company driver and firmware deployment within Lenovo ThinkServer Deployment Manager saves time and money<sup>2</sup>
- Thermal monitoring and integrated adapter diagnostics within Lenovo ThinkServer Diagnostics Software enables easy single pane of glass monitoring<sup>2</sup>
- AnyFabric support (mezz cards only) frees up PCIe slots
- VNeX hardware offload technology accelerates NVGRE (used by Microsoft) and VXLAN (used by VMware) performance
- Emulex Universal Multi-Channel (UMC) port partitioning for customized bandwidth allocation and sharing

10GbE family	Description	Lenovo part #
10GbE NIC	ThinkServer OCe14102-NX-L 10GbE PCIe 3.0 dual-port Adapter by Emulex	4XC0F28724
10GbE CNA	ThinkServer OCe14102-UM-L 10GbE PCIe 3.0 dual-port CNA by Emulex	4XC0F28722
	ThinkServer OCe14102-UX-L 10GbE PCIe 3.0 dual-port CNA by Emulex	4XC0F28723
		4XC0F28736
40GbE CNA	ThinkServer OCe14401-UX-L 40Gb PCIe 3.0 Single-port QSFP+ CNA by Emulex	4XC0F28738
Optics Kits	ThinkServer 10GbE Optical Module by Emulex	4XC0F28737
	ThinkServer 40GbE Optical Module by Emulex	4XC0F28739

10GbE AnyFabric family	Description	Lenovo part #
10GbE AnyFabric NIC	ThinkServer OCm14102-NX-L AnyFabric 10GbE 2-Port SFP+ Ethernet Adapter by Emulex	4XC0G88830
10GbE AnyFabric CNA	ThinkServer OCm14102-UX-L AnyFabric 10GbE Mezz Dual-port SFP+ CNA by Emulex	4XC0F28743
	ThinkServer OCm14104-UX-L AnyFabric 10GbE Mezz Quad-port SFP+ CNA by Emulex	4XC0F28744

<sup>1</sup> On select server models. See [www.lenovoquickpick.com](http://www.lenovoquickpick.com) for more details on server features and compatibility.

<sup>2</sup> Supported only on Lenovo AnyFabric adapters.

**Controller**

- Emulex Engine, XE100 family

**Ethernet standards**

- IEEE 802.3-2008 10GBASE Ethernet ports
- IEEE 802.1Q virtual LANs (VLAN)
- IEEE 802.3x Flow control with Pause frames
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS);
- Data Center Bridging Capability Exchange (DCBX)
- IEEE 802.1Qbb Priority Flow Control (PFC)
- IEEE 802.3ad Link Aggregation/LACP
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)

**Ethernet Network Interface (Layer 2) and TCP/IP**

- NDIS 5.2, 6.0, 6.2, and 6.3-compliant Ethernet functionality
- IPv4/IPv6 TCP, UDP checksum offload
- IPv4/IPv6 Receive Side Scaling (RSS)
- IPv4/IPv6 Large Receive Offload (LRO)
- IPv4/IPv6 Large Send Offload (LSO)
- Dynamic VMQ (Windows Server 2012 Hyper-V) and NetQueue (VMware vSphere)
- Programmable MAC and VLAN addresses
- 128 MAC/VLAN addresses per port
- Support for hash-based filters
- VLAN Offloads (insertion and extraction)
- Jumbo packet support up to 9200 Bytes

**I/O virtualization**

- Stateless L2, L3, and L4 offloads for frame in frame encapsulation (VXLAN, NVGRE)
- PCI-SIG Address Translation Service (ATS) v1.0
- Support for up to 512 hardware queues
- Virtual Switch Port Mirroring for diagnostic purposes
- Virtual Ethernet Bridging (VEB)
- OneConnect Universal Multi-Channel™ (UMC), support for 4 NIC partitions or functions per physical port
  - For CNAs 1 function can be a storage function (iSCSI or FCoE)
- NIC SR-IOV
  - For 2x10G: up to 31 VFs per port
- SR-IOV supports up to 63 Virtual Functions (VFs) per port for NIC
- Quality of Service (QoS) for controlling and monitoring bandwidth assigned to and used by virtual entities
- Configurable control of network bandwidth by physical port, queue, or protocol
- Traffic Shaping and QoS across each VF and PF
- Message signal interrupts (MSI-X)
- NetQueue/VMQ (VMware)
- Microsoft VMQ and dynamic VMQ in Hyper-V

**FCoE offload**

- Hardware offload for FCoE Protocol
- ANSI T11 FC-BB-5 Support
- Support for FIP and FCoE Ether Types
- Concurrent Logins (RPI): up to 8K per adapter (FCoE adapter-only mode)
- Open Exchanges (XRI): up to 8K per adapter (FCoE adapter-only mode)

**RoCE**

- RDMA\*
- Direct data placement in application buffers without CPU intervention
- Supports RoCE specifications
- Linux OpenFabrics Enterprise Distribution (OFED) support
- Low latency queues for small packet sends and receives
- TCP/IP stack bypass

**Internet Small Computer System Interface (iSCSI) offload**

- Hardware offload for iSCSI protocol
- Header and data digest support
- Up to 4K outstanding commands (iSCSI adapter-only mode)
- Up to 512 offloaded iSCSI connections (iSCSI adapter-only mode)
- Support for multipath I/O
- Operating System-agnostic INT13 based iSCSI boot and iSCSI crash dump support
- RFC 4171 Internet Storage Name Service (iSNS)
- Support for both IPv4 and IPv6 connections

**Converged Enhanced Ethernet (CEE) and DCB**

- IEEE 802.1Qbb Priority Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
- IEEE 802.1Qaz Data Center Bridging Exchange (DCBX)
- Absolute per-priority rate control option/ configuration

**PCI Express (PCIe) interface**

- PCIe 3.0 x8 (8, 5.0, and 2.5 GT/s per lane) compliant interface:
  - Up to 64 Gb/s full duplex bandwidth
- Supports up to 4 PCIe Physical Functions (PFs) per port
- Single Root I/O Virtualization (SR-IOV):
  - Supports up to 63 PCIe Virtual Functions (VFs) per port
- Message Signal Interrupts (MSI-X)

**Comprehensive OS support**

- Windows Server
- Red Hat Enterprise Linux
- Novell SUSE Linux Enterprise Server
- VMware ESX
- Citrix XenServer

**Management, boot support**

- UEFI HII
- UEFI Firmware Management
- UEFI Configuration Access
- Support for Emulex OneCommand Manager (OCM) management application for configuration and control
- VMware vCenter management plugin support
- Role-based management, integrated with Active Directory and LDAP
- Multi-channel configuration and bandwidth control
- UEFI and x86 remote boot support including PXE v2.1, UEFI 2.3.1, iSCSI and FCoE
- Offline and online firmware updates
- Integrated Thermal Sensor works with management utilities

This data sheet represents the underlying functionality of the Emulex I/O Controller. It does not guarantee feature enablement through firmware and drivers. Please contact your Lenovo sales representative for details on your particular feature requirements.