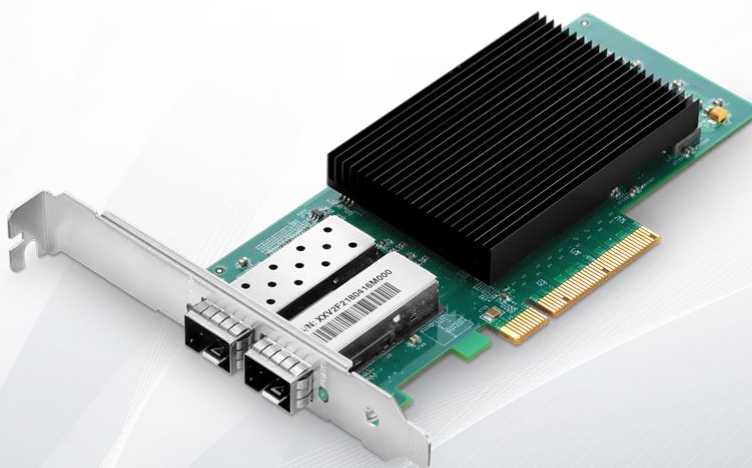


# Network Adapters

IDEAL FOR DATACENTER, ENTERPRISE & ISP NETWORK SOLUTIONS

FS Network adapter are designed for data center, and provides flexible and scalable I/O solutions.



## 10G/25G/40G Ethernet Adapters

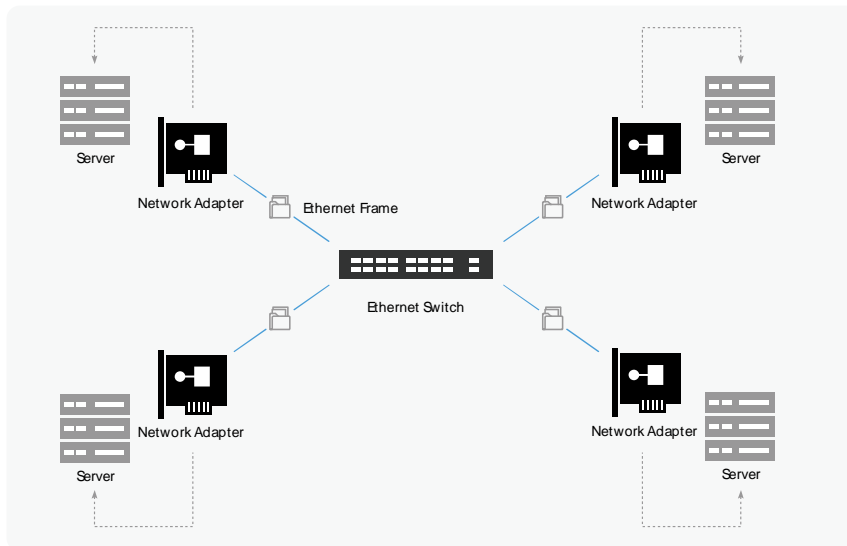
FS.COM 10G/25G/40G Ethernet Adapters with SFP+ /SFP28/QSFP+ connectivity are the most flexible and scalable for today's demanding data center environments. Data center networks are being pushed to their limits. The escalating deployments of servers with multi-core processors and demanding applications such as High Performance Computing (HPC), database clusters, and video-on-demand are driving the need for 10/25/40 Gigabit connections. The adapters provide flexible and scalable I/O solutions to meet the diverse requirements of running mission-critical applications in virtualized and unified storage environments. With a reliable performance in a flexible LAN and SAN networks, the server adapters can meet the demand of next-generation data centers by providing unmatched features for both server and network virtualization.

### BENEFITS

- Load balancing on multiple CPUs
- iSCSI remote boot support
- Fibre Channel over Ethernet (FCoE) Support
- Support for most network operating systems with (VMDq) and SR-IOV
- Support VLAN, QOS policy, flow control
- Tx TCP segmentation offload (IPv4, IPv6)

# Application

Extremely high throughput and excellent signal quality for server networks and Internet



## Advanced Features



### SUPPORT FOR FIBER CHANNEL OVER ETHERNET (FCoE)

FCoE encapsulates Fiber Channel frames over standard Ethernet networks, enabling Fiber Channel to take advantage of 10/25/40GbE networks while preserving its native protocol.



### SUPPORT FOR ISCSI

The adapters provide complete support for proven native OS and VMM iSCSI initiators as well as iSCSI boot. The Ethernet adapter truly delivering on the promise of unified networking. The adapters do it all: 10/25/40G LAN, FCoE, and iSCSI.



### I/O FOR VIRTUALIZED

I/O bottlenecks are reduced through intelligent offloads such as Virtual Machine Device Queues (VMDq) and Flexible Port Partitioning, using SR-IOV for networking traffic per Virtual Machine (VM), enabling near-native performance and VM scalability.



### VMDQ FOR EMULATED PATH

VMDq, enables a hypervisor to represent a single network port as multiple network ports that can be assigned to the individual VMs. Traffic handling is offloaded to the network controller, delivering the benefits of port partitioning with little to administrative overhead by the IT staff.



### SR-IOV FOR DIRECT ASSIGNMENT

Adapter-based isolation and switching for various virtual station instances enable optimal CPU usage in virtualized environments. With Virtual Functions each VF can support a unique and separate data path for I/O related function within the PCI Express\* hierarchy. Using SR-IOV with a networking device, allows to be partitioned into smaller slices that can be allocated to specific VMs or guests.



### PCI-SIG IMPLEMENTATION

PCI-SIG provides an implementation of the PCI-SIG standard for I/O Virtualization. The physical configuration of each port is divided into multiple virtual ports. Each virtual port is assigned to an individual VM dir, integrated with Intel® VT for Directed I/O (Intel® VT-d) to provide data protection between VMs by assigning separate physical addresses in the memory to each VM.

# Technical Specification

10G/25G/40G series Ethernet adapters are the most flexible and scalable for the diverse applications in data center environments. Here's a look at the details...

	JL82599EN-F1	X710BM2-F2	ELX540BT2-T2	FTXL710BM1-F4	XXV710AM2-F2	FTXL710BM2-QF2
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## Performance

<b>Controller</b>	Intel® 82599EN	Intel® X710-BM2	Intel® X540-BT2	Intel® XL710-BM1	Intel® XXV710	Intel® XL710-BM2
<b>Data Rate</b>	10GbE	10GbE	1/10GbE	1/10GbE	1/10/25GbE	40GbE
<b>Interface</b>	PCIe v2.0	PCIe v3.0	PCIe v2.1	PCIe v3.0	PCIe v3.0	PCIe v3.0
<b>Ports</b>	Single	Dual	Dual	Quad	Dual	Dual
<b>Speed</b>	5.0GT/s	8.0GT/s	5.0GT/s	8.0GT/s	8.0GT/s	8.0GT/s
<b>Slot Width</b>	8 lanes	8 lanes	8 lanes	8 lanes	8 lanes	8 lanes
<b>Cable</b>	10G SFP+ SR/LR/DAC	10G SFP+ SR/LR/DAC	RJ-45	10G SFP+ SR/LR/DAC	25G SFP28 SR/LR/DAC	40G QSFP+ SR/LR/DAC

## FEATURES

Functionality	Description
<b>General</b>	<p>SFP+/ SFP28/ QSFP Connectivity</p>
	<p>Increases performance on multi-processor systems by efficiently balancing network loads across CPU cores when used with Receive-Side Scaling (RSS) from Microsoft or Scalable I/O on Linux</p>
	<p>Provides centralized storage area network (SAN) management at a lower cost than other iSCSI solutions</p>
	<p>Support for most network operating systems (NOS)</p> <p>Provides point-and-click management of individual adapters, advanced adapter features, connection teaming, and virtual local area network (VLAN) configuration</p>
<b>Manageability Features</b>	<p>Enables system boot up via the LAN.</p>
	<p>Flash interface for PXE image.</p>
	<p>Easy system monitoring with industry-standard consoles.</p>
	<p>Enables system boot up via iSCSI.</p>
	<p>Provides additional network management capability.</p> <p>Gives an indication to the manageability firmware or external devices that the chip or the driver is not functioning.</p>
<b>I/O Features for Multi-core Processor</b>	<p>Enables the adapter to pre-fetch the data from memory, avoiding cache misses and improving application response time.</p>
	<p>Based on the sensitivity of the incoming data, the adapter can bypass the automatic moderation of time intervals between the interrupts</p>
	<p>Tx/Rx IP, SCTP, TCP, and UDP checksum offloading (IPv4, IPv6) capabilities</p> <p>Tx TCP segmentation offload (IPv4, IPv6)</p>
	<p>Receive and Transmit Side Scaling for Windows en_x0002_vironment and Scalable I/O for Linux environments (IPv4, IPv6, TCP/UDP)</p>

## FEATURES

Functionality	Description
<b>Virtualization Features</b>	Offloads the data-sorting functionality from the Hypervisor to the network silicon, improving data throughput and CPU usage
	Provides QoS feature on the Tx data by providing round-robin servicing and preventing head-of-line blocking
<b>Virtualization Features</b>	Sorting based on MAC addresses and VLAN tags
	Virtual Machines Load Balancing (VMLB) provides traffic load balancing (Tx and Rx) across Virtual Machines bound to the team interface, as well as fault tolerance in the event of switch, port, cable, or adapter failure.
<b>Virtualization Features</b>	VLAN support with VLAN tag insertion, stripping and packet filtering for up to 4096 VLAN tags.
	Lower processor usage.  Promiscuous (unicast and multicast) transfer mode support.
<b>Advanced Software Features</b>	Adapter fault tolerance (AFT)
	Switch fault tolerance (SFT)
	Adaptive load balancing (ALB)
	IEEE 802.3 (link aggregation control protocol)
	IEEE 802.1Q* VLANs
<b>Advanced Software Features</b>	Tx/Rx IP, TCP, & UDP checksum offloading (IPv4, IPv6) capabilities (Transmission control protocol (TCP), user datagram protocol (UDP), Internet protocol (IP))
	TCP segmentation/large send offload.
	MSI-X supports Multiple Independent Queues
	Interrupt moderation
	IPv6 offloading — Checksum and segmentation capability extended to new standard packet type

## Network Operating Systems (NOS) Software Support

Functionality	Description	
<b>10G SFP+ Single Port</b>	Windows Vista SP1	
	Windows Server 2003 SP2	
	Windows Unified Storage Solution 2003	
	Windows Server 2008/2016	
	Linux Stable Kernel Version 2.6	
	Linux RHEL4/RHEL5/SLES9/SLES10	
	FreeBSD 7.0	
	UEFI 1.1	
	VMware ESX 3.x	
	<b>10G SFP+ Dual Ports</b>	Windows 7/8/8.1/10/Vista
Windows Server 2008 R2/2008 R2 Core/2012 R2/2012/2012 R2 Core/2012Core/2016		
Linux RHEL 6.5/RHEL7.0/SLES 11 SP3/SLES 12		
Linux Stable Kernel version 2.6.32/3x		
FreeBSD9 and FreeBSD10		
EFI 2.1		
UEFI 2.3		
VMware ESXi 5.1/5.5		
<b>10GBase-T Dual Copper Ports</b>		Windows 7/8/8.1/10/Vista
		Windows Server 2008/2008 R2/2008 Core/2008 R2 Core/2016
	Linux SLES 11 Sp1	
	SUSE-SLES 10 or later, Professional 9.2 or later	
	Red Hat Enterprise 4 or later	
	DOS NDIS 2/ODI	
	EFI 1.1	
	FreeBSD 5.x or later support	
	VMware ESX 4.0/4.1, ESXi 5.0	

## Network Operating Systems (NOS) Software Support

Functionality	Description
<b>10G SFP+ Quad Ports</b>	Windows 7/8/8.1/10/Vista
	Windows Server 2008 R2/2008 R2 Core/2012 R2/2012/2012 R2 Core/2012 Core/2016
	Linux RHEL 6.5/RHEL7.0/SLES 11 SP3/SLES 12
	Linux Stable Kernel version 2.6.32/3x
	FreeBSD9 and FreeBSD10
	EFI 2.1 UEFI 2.3 VMware ESXi 5.1/5.5
<b>25G SFP28 Dual Ports</b>	Windows 7/8/8.1/10
	Windows Server 2016 R2/2012 R2/2012/2008 R2/2016
	Linux Stable Kernel version 2.6.32/3.x/4.x or newer
	Red Hat Enterprise Linux 6.8/7.3
	FreeBSD 10.3/11
	Linux SLES 12 SP2 VMware ESX/ESXi 5.5/6.x or newer WinPE 3.0 (2008 R2 PE)/4.0 (2012 R2 PE) (2012 R2 PE)/6.0 (2016 PE)
<b>40G QSFP+ Dual Ports</b>	Windows 7/8/8.1/10/Vista
	Windows Server 2008 R2/2008 R2 Core/2012 R2/2012/2012 R2 Core/2012 Core/2016
	Linux RHEL 6.5/RHEL7.0/SLES 11 SP3/SLES 12
	Linux Stable Kernel version 2.6.32/3x
	FreeBSD9 and FreeBSD10
	EFI 2.1 UEFI 2.3 VMware ESXi 5.1/5.5



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