

NIC-PCIE-2SFP28-PLU

25G Dual-port Ethernet Server Adapter

Overview

NIC-PCIE-2SFP28-PLU is a PCIe x8 3.0 25Gbps Dual Port SFP28 Ethernet Fiber Server Adapter based on Intel XXV710 chipset, and compatible with x4, x16 slot. The server adapter meets the demands of the next-generation data centers by providing unmatched features for both server and network virtualization, provides reliable performance in a flexible LAN and SAN networks.



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The server adapter NIC-PCIE-2SFP28-PLU delivers excellent performance for 25GbE connectivity that is backwards compatible to 1/10GbE, making migration to higher speeds easier.

The server adapter NIC-PCIE-2SFP28-PLU is the foundation for server connectivity, providing broad interoperability, critical performance optimization, and increased agility for Telecommunications, Cloud, and Enterprise IT network solutions.

- **Interoperability** - Multiple speeds and media types for broad compatibility backed by extensive testing and validation.
- **Optimization** - Intelligent offloads and accelerators to unlock network performance in servers with Intel® Xeon® processors.
- **Agility** - Both Kernel and Data Plane Development Kit (DPDK) drivers for scalable packet processing.

The server adapter NIC-PCIE-2SFP28-PLU delivers networking performance across a wide range of network port speeds through intelligent offloads, sophisticated packet processing, and quality open source drivers.

Key Features

- PCI Express* (PCIe) v3.0, x8
- IEEE 802.3by and 25G Ethernet.org specification compliance
- Network Virtualization offloads including VXLAN, GENEVE, NVGRE, MPLS, and VXLAN-GPE with Network Service Headers (NSH)

- Intel® Ethernet Flow Director for hardware based application traffic steering
- Data Plane Development Kit (DPDK) optimized for efficient packet processing
- Excellent small packet performance for network appliances and Network Functions Virtualization (NFV)
- Intelligent offloads to enable high performance on servers with Intel® Xeon® Processors
- I/O virtualization innovations for maximum performance in a virtualized server
- Adaptive link establishment enables increased interoperability with other 25GbE capable switches and host controllers

Flexible and Scalable I/O for Virtualized Infrastructures

Intel® Virtualization Technology (Intel® VT), delivers outstanding I/O performance in virtualized server environments. 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. Host-based features supported include:

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 no administrative overhead by the IT staff.

SR-IOV for Direct Assignment: Adapter-based isolation and switching for various virtual station instances enables optimal CPU usage in virtualized environments.

- With up to 128 Virtual Functions (VF)s, each VF can support a unique and separate data path for I/O- related functions within the PCI Express* hierarchy.
- Use of SR-IOV with a networking device, for example, allows the bandwidth of a single port (function) to be partitioned into smaller slices that can be allocated to specific VMs or guests, via a standard interface.

Enhanced Network Virtualization Overlays (NVO)

Network virtualization has changed the way networking is done in the data center, delivering acceleration across a wide range of tunneling methods.

VXLAN, GENEVE, NVGRE, MPLS, and VXLAN-GPE with NSH Offloads: These stateless offloads preserve application performance for overlay networks, and the network traffic can be distributed across CPU cores, increasing network throughput.

Greater Intelligence and Performance for NFV

A combination of hardware and software acceleration features, such as Application Device Queues (ADq) and Dynamic Device Personalization (DDP), enable customizable packet filtering. The acceleration features, along with enhanced Data Plane Development Kit (DPDK), support advanced packet forwarding and high efficient packet processing for both

Cloud and Network Functions Virtualization (NFV) workloads.

- ADq is a fast queuing and signaling technique for high-speed I/O that improves performance and limits performance jitter.
- DDP enables a method to change the packet processing pipeline by applying a profile package to the Intel® Ethernet 700 Series Network Adapter at runtime—resulting in improvements in throughput, latency and reduced CPU loads.
- DPDK provides a programming framework for Intel® processors and enables faster development of high-speed data packet networking applications.

Flexible Port Partitioning (FPP)

FPP leverages the PCI-SIG SR-IOV specification. Virtual controllers can be used by the Linux* host directly and/or assigned to virtual machines.

- Assign up to 63 Linux host processes or virtual machines per port to virtual functions.
- Control the partitioning of 10GbE bandwidth across multiple dedicated network resources, ensuring balanced QoS by giving each assigned virtual controller equal access to 10Gbs of bandwidth.

Network administrators can also rate limit each of these services to control how much of the 10GbE pipe is available to each process.

Advanced Traffic Steering

Intel® Ethernet Flow Director (Intel® Ethernet FD) is an advanced traffic steering capability built into the adapter. It consists of a large number of flow affinity filters that direct receive packets by their flows to queues for classification, load balancing, and matching between flows and CPU cores.

Steering traffic into specific queues can eliminate context switching required within the CPU. As a result, Intel® Ethernet FD significantly increases the number of transactions per second and reduces latency for cloud applications like memcached.

Features	
Controller	Intel® XXV710
Transmission Medium	fiber
Bracket	Low Profile Bracket and Full-height Bracket
Power dissipation	Single Port 25G 8.9W
	Dual Port 25G 14W
Operating system support	Windows Server 2016 R2
	Windows Server 2012 R2
	Windows Server 2012
	Windows Server 2008 R2
	Windows 10
	Windows 8.1
	Windows 8

	Windows 7 X64
	Linux Stable Kernel version 2.6,3.x,4.x
	Red Hat Enterprise Linux 6.8, 7.3
	FreeBSD 10.3,11
	Linux SLES 12 SP2
	Vmware ESXi 6.0\6.5
	WinPE 3.0(2008 R2 PE),4.0(2012 R2 PE) (2012 R2 PE),6.0(2016 PE)
Connector	2 x SFP28
Interface Standard	PCI Express v3.0 (8.0GT/s) x8, x4,x16
Data Rate Per Port	1GbE/10GbE/25GbE
PCI Express Voltage	+12V±8%, +3.3V±8%
Technical Features	
Ethernet Power Management	Yes
Rates	1/10/25GbE
IEEE Standard / Network topology	IEEE P802.3by 25 Gb/s IEEE 802.11ae 10GBase-SR, 10GBase-LR, 10GBase-ER, 10GBase-ZR IEEE 802.3aq 10GBase-LRM IEEE 802.3z 1000BASE-SX, 1000BASE-LX IEEE 802.1Qbg Virtual Bridging IEEE 802.1Qbb Priority Flow Control IEEE 802.1az Enhanced Transmission Selection
PXE	Yes
Iscsi	Yes
FCoE	Yes
Power Management	Yes
SR-IOV	Yes
IPv4, IPv6	Yes
RSS	Yes
Jumbo frame	Yes
DPDK	Yes
NFV	Yes
auto-negotiation	Yes (25G<->25G,25G<->10G,10G<->10G,1G<->1G)
Virtual Machine Device Queues (VMDq)	VXLAN, MACinUDP, NVGRE, IPinGRE
Environment Features	
Operating Temperature	0°C to 55°C (32°F to 131 °F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Operating Relative Humidity	35% to 90%, non-condensing
Certificate	FCC Class A
LED Indicators	Link Green,25Gb/s: Green blinking, 10Gb/s: Yellow blinking,1Gb/s: Not bright
Driving correlation	
Driver Download	https://downloadcenter.intel.com/zh-cn/download/22283/-?product=95259

Windows Driver Display	Intel(R) Ethernet Network Adapter XXV710				
Linux Driver Display	Intel Corporation Device 158b (rev 02)				
Firmware Update	https://downloadcenter.intel.com/zh-cn/download/24769/Ethernet--NVM-XL710-X710-?product=97304				
Testing Report					
Server / End User Configuration	CPU: INTEL Xeon E3-1230 V2 @3.30GHz				
	Motherboard: INTEL S1200BTL				
	Memory: SAMSUNG DDR4 2133MHz				
	Operate System: Centos 7.3				
TCP Bandwidth / Throughput Testing	Test topology: S-C				
	Server: iperf -s				
	Client: iperf -c 192.168.1.200 -P 5 -i 5 -t 60*(Teaming -P 10)				
	Single Port	[ID]	Interval	Transfer	Bandwidth
		[6]	0.0-30.0 sec	21.3 GBytes	6.10 Gbits/sec
		[ID]	Interval	Transfer	Bandwidth
		[7]	29.0-30.0 sec	561 MBytes	4.71 Gbits/sec
		[ID]	Interval	Transfer	Bandwidth
		[7]	0.0-30.0 sec	12.6 GBytes	3.60 Gbits/sec
		[ID]	Interval	Transfer	Bandwidth
		[3]	29.0-30.0 sec	281 MBytes	2.35 Gbits/sec
	[SUM]	29.0-30.0 sec	2.74 GBytes	23.5 Gbits/sec	
	[ID]	Interval	Transfer	Bandwidth	
	[3]	0.0-30.0 sec	10.9 GBytes	3.11 Gbits/sec	
[ID]	Interval	Transfer	Bandwidth		
[8]	0.0-30.0 sec	10.9 GBytes	3.12 Gbits/sec		
[SUM]	0.0-30.0 sec	82.2 GBytes	23.5 Gbits/sec		
Dual port Teaming	[ID]	Interval	Transfer	Bandwidth	
	[8]	0.0-30.0 sec	21.8 GBytes	6.25 Gbits/sec	
	[ID]	Interval	Transfer	Bandwidth	
	[5]	0.0-30.0 sec	21.2 GBytes	6.08 Gbits/sec	
	[ID]	Interval	Transfer	Bandwidth	
	[6]	29.0-30.0 sec	462 MBytes	3.87 Gbits/sec	
	[ID]	Interval	Transfer	Bandwidth	
	[6]	0.0-30.1 sec	21.9 GBytes	6.24 Gbits/sec	
	[ID]	Interval	Transfer	Bandwidth	
	[7]	29.0-30.0 sec	663 MBytes	5.57 Gbits/sec	
[SUM]	29.0-30.0 sec	4.34 GBytes	37.2 Gbits/sec		
[ID]	Interval	Transfer	Bandwidth		
[7]	0.0-30.1 sec	20.3 GBytes	5.80 Gbits/sec		
[SUM]	0.0-30.1 sec	127 GBytes	36.1 Gbits/sec		
Measured Latency	Data packet length (byte)	TCP Latency	UDP Latency		
	32	19.3us	18.5us		
Physical Features					
PCB Dimension(mm)	159.50*68.76*1.6				
Weight (g)	155				

More Products Information:
<http://www.PlusOptic.com>

Ordering Information

Model	Description	Noted
NIC-PCIE-2SFP28-PLU	PCIe x8 25Gbps Dual Port SFP28 Fiber Server Adapter	Based on Intel® XXV710, 3U/2U bracket