

## SharpSwitch™ PCIE-9205

### Hybrid PCI Express Intelligent Network Interface Card

#### Data Sheet

*The PCIE-9205 is a hybrid intelligent network interface card designed for maximum throughput with the lowest impact inside Artesyn MaxCore™ platforms*

- 2x QSFP28 for up to 200Gbps I/O bandwidth
- Intel® Xeon® processor D series
- L2/3 switching
- Load balancing
- Virtual switch
- OpenFlow via Open vSwitch and OVSDB
- OpenStack software on LBaaS agent and DPDK

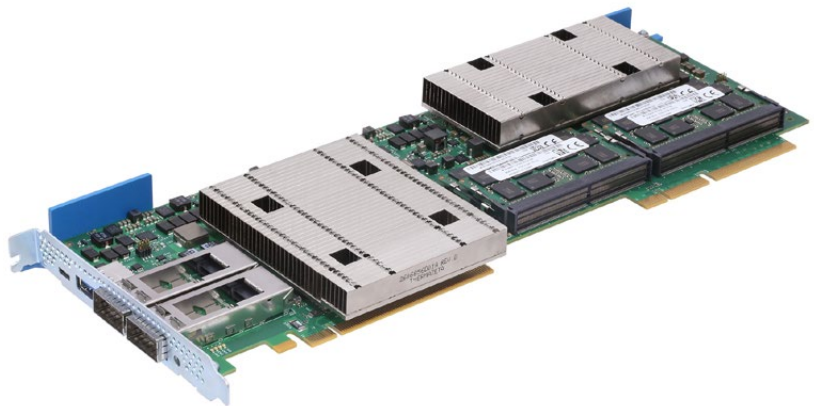
The Artesyn SharpSwitch™ PCIE-9205 is an intelligent Network Interface Card in PCI Express card form factor for use in the Artesyn MaxCore™ platform. It acts as Ethernet I/O for one or many microserver cards with stateless flow balancing to multiple virtual machines (VM) as well as flow pre- & post-processing. Because the SharpSwitch card also features an Intel® Xeon® D series processor, it can also assume the role the MaxCore system manager.

The dual 100G adapter on the SharpSwitch PCIE-9205 card is based on the Intel® Ethernet Multi-host Controller FM10840 (Code name Red Rock Canyon), a combination of an Ethernet switch and a network adapter. Due to the switch-internals of this silicon, many pre-filtering and distribution tasks such as load balancing needed for such a system can be offloaded to the switch silicon before the packet even gets distributed into the low latency PCI Express infrastructure.

PCI I/O virtualization functions allow for each virtual function (VF) on each of the installed microserver cards to have direct and sole access to one or multiple virtual Ethernet network interface controllers. The integrated switch and Ethernet controller allows for hardware based virtual switching between all VMs inside the MaxCore platform.

Some of the benefits of the SharpSwitch PCIE-9205 card include:

- On-board high-speed switch allows for load balancing on the network interface card, alleviating the need for expensive external load balancers
- Open vSwitch offload ensures the maximum number of cores is available for payload processing in NFV applications
- On-board Intel Xeon D processor enables SharpSwitch card to be used as a MaxCore system manager, freeing other slots for payload
- I/O based on QSFP28s enables interface flexibility and allowing it to be tailored for the individual deployment environment

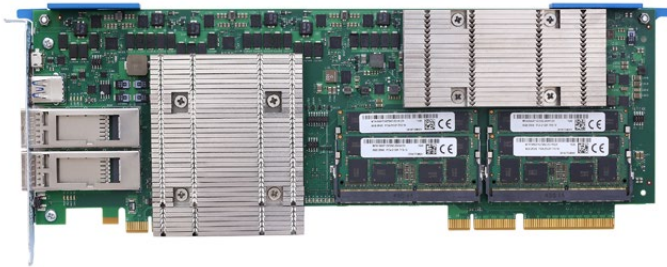


## Virtual Switch to Augment Hardware Solution

In virtualized environments with dynamic workloads, virtual switches are required to forward packets internally and connect virtual machines to the outside world. In many cases, these virtual switches implemented with Open vSwitch, emulating the function provided by physical switches. But virtualized switching comes at a cost. In certain configurations, Open vSwitch has been shown to require as much as half of the available processor cores for switching the traffic to and from the VMs running on a given server.

By focusing on the minimal requirements for typical applications, and building on top of Intel® Data Plane Development Kit (DPDK), Artesyn has designed a massively accelerated virtual switch to address these weaknesses. By utilizing the SharpSwitch™ PCIE-9205 as an Open vSwitch accelerator, the vast majority of the available processor cycles in the system can be used for payload VMs.

By combining the high performance hardware of the FM10840 with a PCI Express platform directly forwarding packets to each microserver and a high performance low impact virtual switch running on the specific microserver, Artesyn has created an optimal platform solution for demanding networking applications.



## Load Balancing Software

- The Intel® Ethernet Multi-host Controller FM10840 enables several hashing methods to load balance across ports and virtual functions
- “Lightweight” stateful load balancing is available through Equal-Cost Multi-Path routing
- OpenStack LBaaS functionality is implemented
- Implemented using Intel’s DPDK library in Virtual Switch software

## SharpSwitch PCIE-9205 Features

- PCI Express card form factor, single slot
- Intel® FM10840 Red Rock Canyon “system on chip” (SOC)
  - ~100GE aggregated internal platform bandwidth (PCIe x16 PCIe Gen3)
- Built-in switch for:
  - Cut-through traffic (traffic entering and directly leaving the card)
  - Traffic to/from microserver cards
- 2x QSFP28 connectors capable supporting up to 2x100G, 8x25G, 2x 40G, or 8x10G
- Intel® Xeon® D 8-core processor system host capability
  - Up to 64GB DDR4
  - PCI Express Gen3 x8 connection to RRC switch
  - 2x SATA connection to local mass storage
  - 1x USB
  - 1x Reset
  - COM port access (serial console) with USB connection for simplified debugging
- Software includes Linux KVM, Intel® DPDK support, multi-host PCI Express I/O virtualization support

## Switching Software

Switching software runs on the Intel® Xeon® D processor of the SharpSwitch™ PCIE-9205 and provides support to manage the Intel® Ethernet Multi-host Controller FM10840.

Artesyn’s System Services Framework software is a management interface for the MaxCore™ platform and its components. Interfaces include command line, XML and a graphical user interface. Features supporting the SharpSwitch card include:

- VLAN Switching
- Static MAC and Static ARP configuration
- VLAN Stacking
- Static Channels (trunk)
- Static Routing
- Intervlan Routing
- Server Load Balancing
- MatchList
- Mirroring
- Error Threshold

Due to the integrated Ethernet switch, the Artesyn SharpSwitch PCIE-9205 can – in certain configurations – replace external Ethernet switch modules, lowering the total cost incurred when creating a system solution.

### Ordering Information

<i>Part Number</i>	<i>Description</i>
PCIE-9205	SharpSwitch card, 1x Intel® FM10840, 1x 8-core Intel® Xeon® D-1541 32GB ECC DDR4

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