



### P425G2SNx IAONIC SmartNIC Intel® Based PCI Express Appliance Accelerator Intel® Based

#### Product Description

Experience High Performance Networking with Silicom's P425G2SNx IAONIC SmartNIC Intel® Based

The Silicom P425G2SNx IAONIC is a smart NIC that combines two of the industry's most sought after features:

- A hardware-standard NIC (over PCIe v4) interface with 2 ports of 25G or 1 port of 100G
- Ability to offload a complete infrastructure workload from the main host, while still working in line rate.



Silicom P425G2SNx IAONIC is based on an Intel P5700 processor that contains 8/16 X86 cores, an integrated packet processor with 25G/100G interfaces, and an Ethernet MAC using Intel® E810.

Optimize Server Resources with Silicom P425G2SNx IAONIC SmartNIC Intel® Based

With Silicom P425G2SNx NIC, the workloads that usually run alongside the host's main business logic – including infrastructure workloads and workloads that serve the main server workload – can now be offloaded onto the NIC, rather than consuming CPU power from the main business logic.

#### Boosting Performance with Silicom's P425G2SNx NIC: The Benefits of Workload Offloading

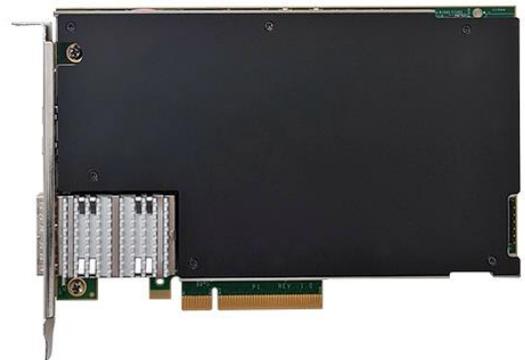
Examples of such workloads include:

- Network traffic load balancing (hash-based or 5 tuple based)
- Network mirroring and forwarding
- Complete TLS termination on NIC
- Complete IPSec termination on NIC

As a result, the Silicom P425G2SNx NIC supports and enhances use cases such as:

- Intrusion detection systems
- Telco subscriber billing and SLA monitoring
- SDWAN on a NIC
- Application delivery controller on a NIC
- DNS over HTTPS proxy service
- Layer 3 networking offload
- PSec bridge on a card

and many more.



## Revolutionize Your Server Infrastructure with Silicom P425G2SNx Smart NIC

Depending on the SKU, Silicom P425G2SNx cards employ 8 to 16 x86 CPU cores, the benefit of which is twofold:

- Enables immediate asset reuse, meaning that any x86-based software running on the main host can now be ported to the card with minimal effort.
- The physical separation of the CPU core from the main host brings the advantage of infrastructure isolation from the main workload.

These workloads and benefits can be available almost instantly by drop-in replacing any standard NIC with the Silicom P425G2SNx smart NIC.

### Key Features

- Form Factor:
  - 16C Variant: Full Height, Half Length PCIe CEM Card.
  - 8C Variant: Full Height, Half Length PCIe CEM Card
- Intel® Atom Snow Ridge-NX SoC Processor
- Ethernet Port Configurations:
  - 16C Variant: 1 x QSFP28 configured as 1x100G interface.
  - 8C Variant: 2 x SFP28 configured as 2x25G interfaces.
- Intel® E810 Ethernet Network Controller for Host PCIe Interface, and data path to Snow Ridge SoC:
  - 16C Variant: E810-CAM1 Controller for 100GbE Bidirectional Throughput.
  - 8C Variant: E810-XXVAM2 Controller for 50GbE Bidirectional Throughput.
- Each variant will support at least 2GB of DRAM per Core;
  - 16C Variant: Support for 32GB.
  - 8C Variant: Support for 16GB.
- One QSFP28 or two SFP+.
- One 1GbE port with RJ-45 connection.
- One Intel® E810 network controller for host PCIe connection and 100/25GbE path to Snow Ridge SoC.
- Other interfaces down on the board: 1x USB3, 1x M.2 slots, 1x UART
- TPM support for Secure Boot.
- Passive cooling in single slot boundaries.

### Technical Specifications

General Technical Specifications:	
<b>SoC</b>	Intel® Atom P5700 Series Processor, Snow Ridge-NX SoC Processor Cores: 8C – 16C TDP: 48W – 67W Max: 2.2GHz
<b>SoC BIOS</b>	H2O or Coreboot
<b>SoC BIOS&amp;FW Flash</b>	QSPI Flash Device
<b>Operating System</b>	Linux
<b>SoC Memory</b>	Two Channels, 4x DDR4 Memory Down, 1xECC Support, 2666 MT/s per channel, total 10 devices

<b>SoC Storage</b>	eMMC on board device
<b>TPM</b>	TPM 2.0, SLB9670VQ2.0FW7.40
<b>PCI Express Voltage</b>	+12V $\pm$ 8% from PCIe Edge Connector. +3.3V AUX $\pm$ 9%
<b>PCIe SoC Interface</b>	PCIe x1 Gen2 i210
<b>SoC Mgmt and Debug Port</b>	On board Ethernet Controller i210 and RJ45 MagJack+LED
<b>Debug Serial Console</b>	On board Headers RS232 for SoC and BMC device
<b>USB 2.0/3.0 Ports</b>	1x USB 3.0/2.0 Connector Type C on Board for debug 1x USB 2.0 Internal connection between SoC and BMC
<b>BMC</b>	MCU, P/N: EFM32GG11B420F2048GL112-B
<b>BMC Image</b>	Silicom image to support board level management and secure boot loader
<b>I2C EEPROM</b>	FRU BMC
<b>Buttons</b>	<ul style="list-style-type: none"> <li>• Reset Button for SoC</li> <li>• Power Button for SoC</li> </ul>
<b>LEDs on Board</b>	<ul style="list-style-type: none"> <li>• 1x Yellow Color active on any case of trip alarm</li> <li>• 1x Green Color, active when all power on board are Good</li> <li>• 1x Red Color, Reset Status indication</li> <li>• 1x Yellow Color from GPIO BMC, activate by software</li> <li>• 1x Green Color for SFP28/QSFP28 ports for activity link indication.</li> </ul> <p>The LEDs will be located on top edge of the board, except for the activity link leds that will be located on the front panel.</p>
<b>Other Hardware Devices and Interfaces</b>	<ul style="list-style-type: none"> <li>• SuperCap for RTC and clear CMOS jumper</li> <li>• Programmable FAN controller</li> <li>• NOR Flash 512Mb, Parallel x16</li> <li>• Power sequencer device</li> <li>• I2C Current sense Device</li> </ul>
<b>Debug Connectors</b>	<ul style="list-style-type: none"> <li>• USB3/2 Type C connector (DCI)</li> <li>• Header Programming and UART debug interface for BMC</li> </ul>
<b>Form Factor</b>	FHPCle, 167 mm x 111.15 mm (6.6" x 4.37")
<b>Holder</b>	Full Hight Metal Bracket to support 2xSFP28 cages or QSFP Cage, and RJ45 connector

<b>Power Source</b>	Power delivered through an 8-pin PCIe Aux Power Connector (+12VDC) for both the 16C and 8C Variant, as well as through the PCIe Edge Connector
<b>Sensors/Monitors</b>	<ul style="list-style-type: none"> <li>• Thermal shutdown protection (hardware solution)</li> <li>• Critical error detection from SoC</li> <li>• Voltage and Thermal monitors</li> <li>• Current input protection</li> </ul>
<b>Operating Temperature</b>	0°C – 50°C (32°F – 122°F) ambient temperature, CFM per SKU
<b>Cooling</b>	Passive HeatSink
<b>Storage Temperature</b>	-40°C–65°C (-40°F–149°F)
<b>Regulation</b>	<p>EC Class A  FCC Class A  Compliance with European directives for EMC, Low Voltage, RoHS and WEEE  EMC-Compliance and test report for ETSI ES 201 468 Level2, EN55022, EN55024, EN 300 386  Safety: compliance and test report for EN 60950-1</p>
<b>SKU1 – P425G2SN1-XR – 8C, 2x25G SFP28</b>	
<b>Network Ports:</b>	2x25G, SFP28
<b>SoC</b>	Snow-Ridge, P5721/8C/TDP48W/2.2Ghz
<b>Memory</b>	Micron 16GB DDR4 1Gx16 FBGA-96 Mfr. PN MT40A1G16KD-062E:E
<b>SoC Storage</b>	eMMC on board device, 128GB
<b>PCIe Gold Finger Interface</b>	PCIe x8, Gen4
<b>PCI Express Card Type:</b>	8 lanes
<b>Network Host Controller</b>	E810-XXVAM2 Controller
<b>Power Consumption:</b>	Maximum: 88W
<b>Operating Temperature</b>	0°C – 50°C (32°F – 122°F), CFM 9.0
<b>SKU2 – P4CG1SN2-XR – 16C, 1x100G QSFP28</b>	
<b>Network Ports:</b>	1x100G, QSFP28
<b>SoC:</b>	Snow-Ridge, P/N: P5742/16C/TDP67W/2.2GHz
<b>Memory</b>	Micron 32GB DDR4 128Mx16x16 FBGA-96 (TwinDie). Mfr. PN MT40A2G16SKL-062E:B
<b>SoC Storage</b>	eMMC on board device, 256GB
<b>PCIe Gold Finger Interface</b>	PCIe x16, Gen4
<b>PCI Express Card Type:</b>	16 lanes
<b>Network Host Controller</b>	E810-CAM1 Controller
<b>Power Consumption:</b>	Maximum: 109W
<b>Operating Temperature</b>	0°C – 50°C (32°F – 122°F)

## Order Information

P/N	Description
P425G2SN1-XR	2x25G, 8C
P4CG1SN2-XR	1x100G, 16C