

Pensando DSC-25 Distributed Services Card

OVERVIEW

The Pensando Distributed Services Card (**DSC**) delivers a broad suite of software-defined services at the compute edge. The DSC installs easily in standard servers, delivering high-performance networking, security and storage functions, eliminating an assortment of discrete appliances throughout the data center.

Just as enterprises have adopted a “scale out” approach for compute and storage systems, so too the networking and security elements should be implemented as a *Scale-out Services Architecture*. The ideal place to instantiate these services is the server edge (the border between the server and the network) where services such as east-west firewall, micro-segmentation and encryption termination can be delivered in a scalable manner. In fact, each server edge is tightly coupled to a single server and needs to be aware only of the policies related to that server and its users. It naturally scales, as more DSC services capabilities come with each new server that is added.

UNIFIED MANAGEMENT

The **DSC** incorporates gRPC and RESTful APIs for the management and monitoring of all device capabilities. Pensando's Policy and Services Manager (**PSM**) enables seamless distribution of ACL and firewall security policies, network configuration, encryption policies, etc. to active DSCs. In addition, it provides full lifecycle management of the platform and all associated security, load-balancing, encryption and network services with pervasive visibility.

NETWORKING, SECURITY and STORAGE SERVICES

Available Pensando software subscription packages deliver a rich array of services, including:

Advanced Networking – Switching/Routing, L3/L4 Load Balancing, overlay networking, VXLAN, NAT, SPAN, rich packet telemetry and streaming NetFlow

Advanced Security – Stateful L4 firewall with connection tracking, Zero Trust Security Model with Micro-Segmentation and whitelist policy, VPN termination (IPsec), TLS/DTLS encryption, TLS Proxy, Application Layer Gateway features (ALG)

Enhanced Storage – NVMe virtualization, NVMe-oF with RDMA or TCP transport, data-at-rest encryption, lossless compression, deduplication acceleration



Pensando DSC-25 PCIe Card

HIGHLIGHTS

FEATURES

- Integrated security, networking and storage functions in a single device
- Incorporates both data plane and control plane, eliminating host agents
- Simplified configuration and management for large scale deployments
- The Pensando Policy & Services Manager securely manages policy and provides network visibility and troubleshooting

BENEFITS

- Improved security posture through distributed network protection and east-west security
- Achieve deep visibility into network behavior with 'Always-On' telemetry
- Save server CPU resources by offloading networking and security functions at wire speed
- Eliminate complexity and latency associated with “tromboning” through multiple appliances
- Scales to 100k firewall rules and >1M routes
- Solution works seamlessly with virtualized, bare metal and containerized workloads

PRIVATE & HYBRID CLOUD (VPC) ENABLEMENT

- Multi-tenancy
- VXLAN, MPLS
- EVPN
- Routing protocols

- Stateful security groups
- NAT
- Rate control
- Workload traffic/resource isolation

USE CASES

- Distributed stateful firewall at the server edge
- Routing, Segment Routing, MPLS, BGP
- SDN and Virtual Networking with various encapsulations (VXLAN, etc.)
- East-West encryption within the data center
- Comprehensive network / security visibility and telemetry
- Flow capture/mirroring (bidirectional ERSPAN)
- Network load balancing, with TCP/TLS termination
- Storage virtualization, including NVMe-oF

PERFORMANCE & SCALE

Delivers 25G wire-speed services on each of its SFP-28 ports, including chained services such as L4 stateful firewall + IPsec encryption + Load Balancing.

Performance	Pensando DSC-25
Stateful Firewall throughput	50Gb/s full-duplex
Load Balancer throughput	50Gb/s full-duplex
Encryption throughput	50Gb/s full duplex (AES-GCM-256, 256B packets)
Packet rate	24 Mpps unidirectional

Scale Metric	Pensando DSC-25
Routes (LPM)	1M IPv4 AND 1M IPv6 – 2M total routes
Overlay Mappings	128k Local Mappings
	1M Remote Mappings
	1M IP address to TEPMappings
Stateless ACL Entries	1M IPv4 AND 1M IPv6
Flow Table Entries	>1M depending on flow key size
IPsec Tunnels	100k simultaneous at 50Gb/s full-duplex
NAT mapping tables	512k
Policers	4K

INDUSTRY-LEADING HARDWARE PLATFORM

Pensando's **Capri P4** Programmable Processor powers the **DSC**, enabling wire-speed performance and enhanced security through policy enforcement. The data plane and control planes are fully software-defined and supported with optimized hardware accelerators. Up to 4 GBytes of on-board memory provides the performance and flow-table capacity for true cloud-scale deployments.

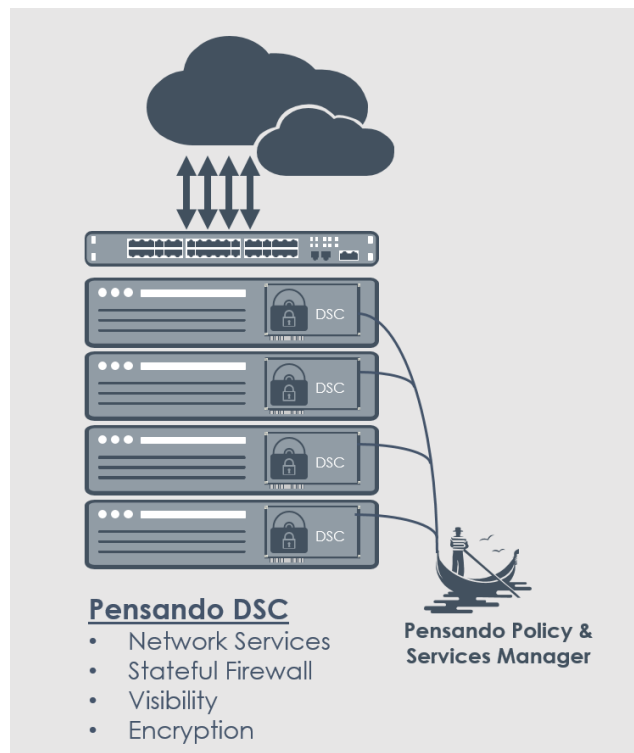
HARDWARE SPECIFICATIONS

Form Factor	Half-height, Half-length PCIe
PCIe Interface	8-lane PCIe Gen3
Network Ports	2 ports SFP28
Port Configurations	2x 10G/25G
Management Port	1x RJ45 100M/1G Ethernet
Indicators	Port activity and link
Power	20W Typical
Cooling	Passive heatsink
Airflow	300 lfm airflow with DAC interface

DEPLOYMENT CONFIGURATION

DSC cards are installed into standard servers to provide advanced services as well as high speed network I/O ports. The Policy and Services Manager (PSM) manages the nodes over the network, in-band or out-of-band.

Distributed Services Cards Deployed in Servers



ABOUT PENSANDO SYSTEMS

Founded in 2017, Pensando Systems is pioneering distributed computing designed for the New Edge, powering software-defined cloud, compute, networking, storage and security services to transform existing architectures into the secure, ultra-fast environments demanded by next generation applications. For more information, please visit www.pensando.io