

# Rockport Scale Fabrics



Fully distributed and resilient architecture for the next generation of performance-intensive computing.

Architected to achieve consistently fast and predictable workloads, Rockport scale fabrics are highly resilient, efficient and built in an entirely standards-based form factor and interface. By distributing the switching function to each device endpoint, Rockport eliminates the inherent performance bottlenecks of centralized network architectures – while reducing heat, power, rack space, and management complexity.

#### Key Benefits:

- Predictable latency under load
- Zero congestive loss
- Self-discovering, self-configuring and self-healing
- Linear scalability
- Simplified management
- Single network for high-bandwidth and low-latency applications
- Inherently redundant, resilient and secure
- Less space, weight and power
- Reduced cost (up to 60% savings)

# Inside a Rockport Scale Fabric

Based on industry standard Ethernet technology, Rockport scale fabrics replace standard NICs within servers and storage enclosures along with the layers of centralized switches that form traditional network fabrics.

In a typical deployment, each server contains a network card connected to a passive optical

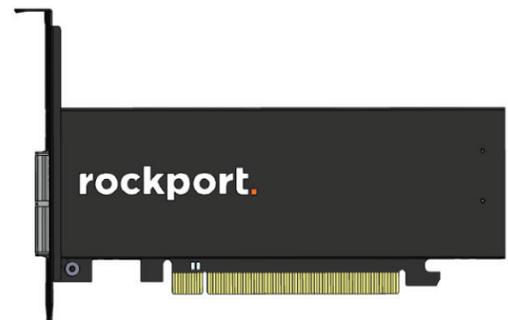
interconnect device using a fiber optic cable. This allows for the direct interconnection of the network cards, or nodes. Administrators can monitor the network using the Rockport Autonomous Network Manager. Deployed in hours, not days or weeks, Rockport fabrics are intelligent, adaptable, self-healing, and simple to operate.

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**Rockport Network Operating System (rNOS) software** is at the core of a Rockport scale fabric and runs on the network card, not the server. The rNOS enables the network to self-discover, self-configure and self-heal. It selects and continually optimizes the best path through the network to minimize congestion and latency, while breaking down packets into smaller pieces (FLITs) to ensure high-priority messages are not blocked by large messages or bulk data transfers, along with other advanced congestion control features to reduce data center workload completion time.

## Rockport NC1225 Network Card

Distributed networking is implemented on an embedded FPGA on a network card that is installed in a standard, low-profile HHHH PCIe slot.\* The card aggregates the bandwidth of multiple parallel network paths, drawing from 300 Gbps of available network capacity.



## Rockport SHFL

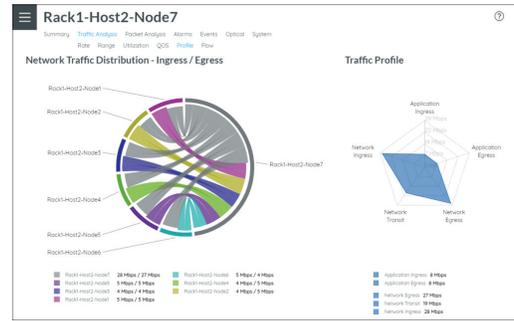
The SHFL (pronounced "shuffle") provides direct interconnectivity between the network cards in the fabric. This passive, non-electrical, pre-wired patch panel eliminates complexity from typical cabling requirements, which removes user error and facilitates operational simplicity. Multiple SHFL variants are available to support different configurations and deployment options.



\*The NC1225 is a commercial PCIe solution and is also available as an embedded solution.

## Rockport Autonomous Network Manager (ANM)

Network administrators can configure, manage, and troubleshoot their Rockport fabric using an intuitive user interface and single dashboard approach to provide real-time health and performance monitoring. RESTful APIs can be used to retrieve reporting, monitoring, and management data for easy integration with existing monitoring tools.



### Simple to Deploy. Simple to Operate.

Unlike traditional network approaches, even large-scale Rockport fabrics can be installed in minutes, not days, with no specialized resources required. Simply install the NC1225 card into any compute or storage server, connect the cable to the SHFL, then monitor and manage with the Autonomous Network Manager. Using a standard Ethernet host interface, Rockport fabrics seamlessly integrate with data center infrastructure, providing interoperability with existing operating systems and trusted, native drivers.

CATEGORY	SPECIFICATION	DETAILS
<b>Rockport Network Card</b> Two NC1225 variants:	Form Factor	Half-Height, Half-Width (low-profile) (single-width)
<b>NC1225-PPM</b> Passively cooled, with double density Quad Small Form-Factor Pluggable (QSFP-DD) optics.	Dimensions	68.90 mm height x 167.6 mm length
<b>NC1225-FBM</b> Actively cooled, with a board-mount optical assembly that terminates with a 24-fiber multifiber push-on (MPO) and multifiber termination push-on (MTP) connector.	PCIe Bus	Gen 3.0 x16 (Gen 4.0 compatible)
		<b>NC1225-PPM</b> <b>NC1225-FBM</b>
	Weight	270g      347g
	Network Connector	QSFP-DD      MTP/MPO-24
	Power Consumption	40W      36W

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CATEGORY	SPECIFICATION	DETAILS
<b>Rockport SHFL</b>	Dimensions	Height: 1.75 in x Width: 19 in x Depth: 8 in (44.45 mm high x 482.6 mm x 203.2 mm)
	Weight	2.2 kg
	Connector	MTP/MPO-24 and MTP/MPO-32
<b>Host Software</b>	Host Driver	OFED 5.4 -1.0.3.0
	Operating System	CentOS/RedHat 7.7+
	Virtualization	VMware ESXi 7.x
<b>Network Management</b>	Operating System	CentOS/RedHat 7.7+
	Virtualization	Autonomous Network Manager supported in a VM running ESXi 7.x
	Client Browser	Google Chrome (version 86 and later)

### Autonomous Network Manager (ANM) System Requirements

Storage requirements are based on the number of managed nodes and the retention period of metrics saved to disk.

NUMBER OF NODES	LOGICAL CORES	SYSTEM MEMORY	METRIC DATABASE DRIVE SPACE
Up to 24 nodes	12 CPU cores, minimum 2.0 Ghz	64 GB	100 GB /opt/rp (or other dedicated installation location) 500 GB / var/lib/docker
Up to 72 nodes	24 CPU cores, minimum 2.2 Ghz	96 GB	100 GB /opt/rp 900 GB /var/lib/docker B
Up to 288 nodes	32 CPU cores, minimum 2.6 Ghz	256 GB	100 GB /opt/rp 2 TB /var/lib/docker (SSD)
Up to 648 nodes	32 CPU cores, minimum 2.6 Ghz	256 GB	100 GB /opt/rp 4.2 TB /var/lib/docker (SSD)
Up to 1536 nodes	64 CPU cores, minimum 2.9 Ghz	256 GB	100 GB /opt/rp 9.5 TB /var/lib/docker (SSD)

## ABOUT CERIO

Cerio, creating new scale economics for the AI and Cloud era, delivers an open systems platform for a more sustainable data center. Built on the foundation of a supercomputing underlay fabric, the Cerio platform provides standards-based, low-code composability services for the cost-effective and efficient management of AI/ML infrastructure.

Cerio, a trade name of Rockport Networks Inc. (DBA Cerio) is headquartered in Ottawa, Canada, with offices and projects spanning international markets, and Centers of Excellence in Europe and North America.

