

Product Brief

High-Density Optical Networking for AI Data Centers

September 2026



iPronics ONE

Programmable Optical Switching for AI Infrastructure

As AI clusters grow, GPU domains span more racks and network complexity increases. Traditional copper architectures become harder to scale efficiently, driving the shift toward optical connectivity.

iPronics ONE is a rack-mounted optical circuit switching (OCS) platform built on silicon photonics. It provides programmable optical connectivity within and across racks, helping AI infrastructure scale with greater bandwidth, lower latency, reduced power consumption, and simpler infrastructure.

AI Compute at Scale Starts with the Network



CONGESTION HOTSPOTS
EXTEND JOB RUNTIMES



WORST-CASE DESIGN FORCES
YOU TO OVERBUILD

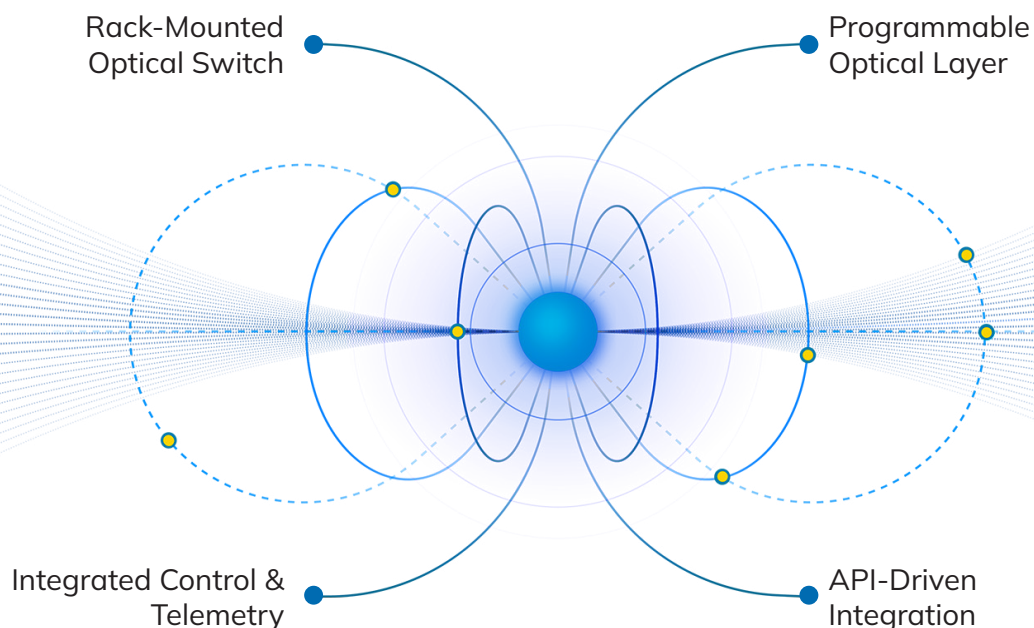


TRAFFIC VARIABILITY
MAKES COST PER TOKEN
UNPREDICTABLE



TOPOLOGY CHANGES REQUIRE
PAINFUL REDESIGNS

Inside iPronics ONE



Scale-Up Demands a New Class of OCS

As scale-up architectures grow, more optical connectivity must fit within increasingly constrained rack space.

iPronics ONE uses silicon photonics to deliver a compact, high-density OCS platform designed for this scale-up challenge.



OCS ADOPTION IS ACCELERATING

Optical switching is expanding across AI data-center connectivity applications.



SCALE-UP INCREASES CONNECTIVITY DEMAND

Larger GPU domains require significantly more optical connectivity.



RACK SPACE BECOMES THE CONSTRAINT

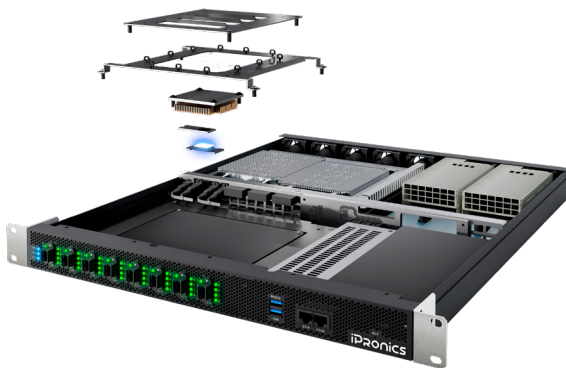
More optical switching must fit within limited rack space.



SILICON PHOTONICS ENABLES A COMPACT FORM FACTOR

Miniaturized photonic switching enables high port density within constrained rack space.

Optical Performance & Scale



- High-Density Optical Circuit Switching
- 32+ Port Scalable Architecture
- Non-Blocking Architecture
- Low Optical Latency
- Sub-Millisecond Optical Reconfiguration

Silicon Photonics at the Core

Proprietary Switch Fabric

Designed for high-density optical connectivity with low loss and crosstalk.

Solid-State Reliability

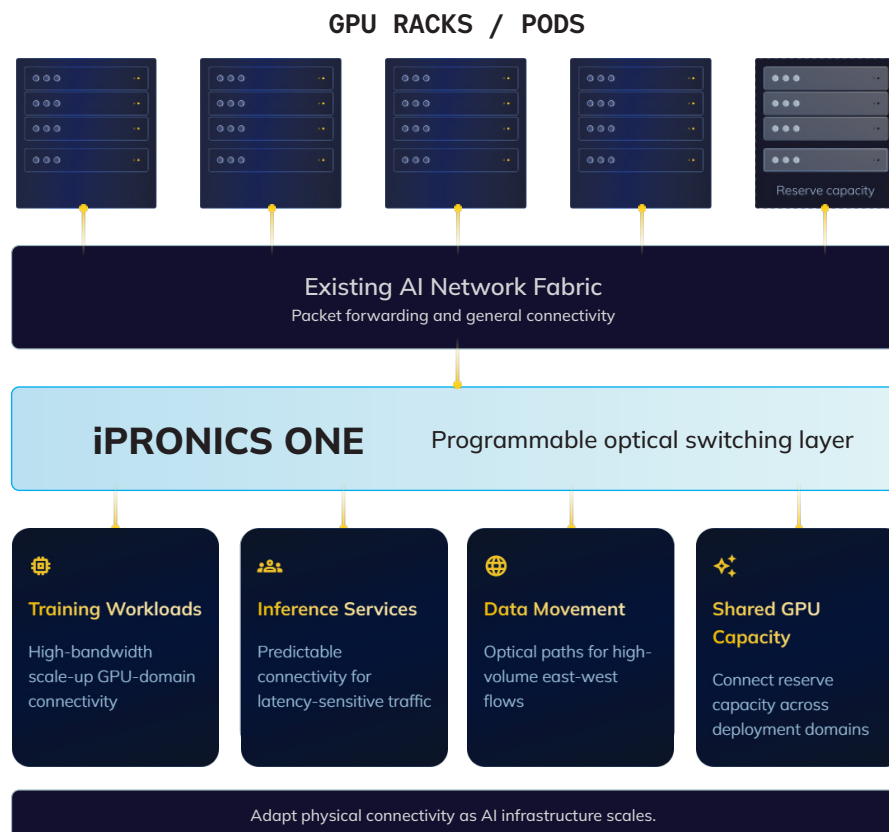
No moving mechanical switching elements.

Active Optical Performance Control

Integrated gain control and optical power monitoring help maintain optical performance across configured paths.

Where iPronics ONE Fits

iPronics ONE adds a programmable optical switching layer to existing AI network architectures, replacing fixed physical connections with configurable optical paths within and across racks.



01. Replace Static Connectivity

Replace fixed paths with software-configurable optical circuits.

02. Scale Within & Across Racks

Extend optical connectivity as GPU domains grow.

03. Connect Available GPU Capacity

Connect available GPU resources as capacity needs shift.

Software-Defined Control & Telemetry

Path Provisioning

Create simplex, duplex, and bulk optical connections through software.

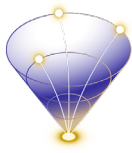
Open Control Interfaces

Configure and automate optical connectivity through gNMI/YANG and Python APIs.

Streaming Telemetry

Monitor optical power and system state in real time.

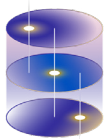
Scaling in Every Direction



Scale-Up

Scale GPU Domains with Optical Connectivity

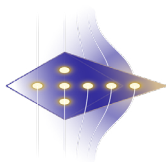
Adapt connectivity as accelerator domains grow within and across racks.



Scale-Out

Expand AI Cluster Fabrics

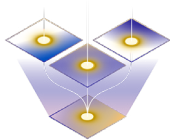
Add configurable optical paths as cluster endpoints and traffic grow.



Scale-Across

Connect Distributed AI Infrastructure

Adapt connectivity across clusters, sites, and data centers.



GPU Failover

Connect Available GPU Capacity

Reconfigure connectivity to available GPU resources when accelerator capacity becomes unavailable.

Map iPronics ONE to Your AI Architecture

Explore where programmable optical switching can support your scale-up, scale-out, scale-across, and GPU failover requirements.

Book an Architecture Briefing

AI Infrastructure Architects • Network Architects • Platform Engineers • AI Cluster Operators

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