AUTONOMOUS TRUCKING
DEFENSE
INDUSTRIAL
COMMERCIAL AEROSPACE

2023
PRODUCT
CATALOG

Performance without Compromise

OSS
ONE STOP SYSTEMS

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About Us

Mike Knowles
President and CEO
One Stop Systems

At One Stop Systems, Inc. (OSS) we design and manufacture the highest performance AI Transportable edge computing platforms to survive some of the harshest environments. This includes ruggedized servers, compute accelerators, expansion systems, flash storage arrays, SAN, NAS, and data recording software for AI workflows. These products are used for AI data set capture, training, and large-scale inference in the defense, oil and gas, mining, autonomous vehicles, and rugged entertainment applications.

OSS utilizes the power of the latest PCI Express, GPUs, and NVMe storage to bring state of the art AI datacenter performance to the AI Transportable edge. If it moves and needs AI and/or autonomous capabilities, OSS has the solution. We address the entire AI workflow, from high-speed data acquisition to deep learning, training, and inference. OSS products are available directly or through global distributors. For more information, go to onestopsystems.com.

One Stop Systems, Inc.
• Founded in 1998
• Headquarters in Escondido, CA (San Diego)
• NASDAQ public company (OSS)

Technology Leader in Hardware & Software
• Rugged AI Transportable platforms
• Edge Accelerated Computing Servers
• Edge NVMe Storage & Data Loggers
• Scale-out Expansion Accelerators

AI Transportables

Bringing high-performance computing technologies to the rugged edge.

AS9100
CERTIFIED

Our Unique Value

- PCIe design expertise
- SWaP optimization
- Advanced thermal management
- CFD & FEA simulation
- Certification/compliance verification

- Customer interface for unique requirements
- Software development of system management
- Transportable power design
- Industry partnerships – key roadmaps
- Product lifecycle management

AI Transportable devices enable organizations to deploy the latest HPC hardware into the field to provide maximum compute capacity for AI applications. Demanding environmental conditions and the need for real-time inferencing warrant the highest performing compute and storage solutions in rugged and reliable packages.

Agency Compliance

- UL, cUL
- DO-160
- MIL-STD-810G
- MIL-STD-461E
- MIL-STD-464A
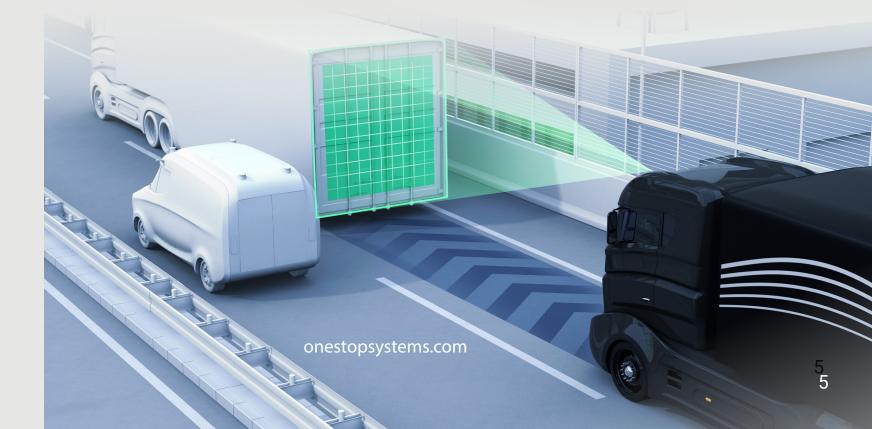- MIL-STD-704E

Environments

- Commercial Trucking
- Fixed Wing & Rotor Aircraft
- Drones
- Tactical Battlefield

Applications

- Large Scale AI Inferencing
- Data Collection and Sensor Aggregation
- Disaggregated Compute Architectures

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AI Transportables for Military Theater

Accelerating mission-critical AI defense and intelligence applications at the rugged edge.

- **Aircraft**
  Surveillance, Hunters, Troops

- **Mobile Command**
  Battlefield, Drills

- **Mobile Radar**
  Land, Sea, Air

- **Drones**
  Swarms, Wingman

- **Submersibles**
  Autonomous Submarines

- **Watercraft**
  Battlefield, Drills

We condense the capabilities of large-scale data centers into compact, transportable, rugged systems that can transform vast amounts of data to actionable intelligence.

AI Transportables for Industrial Applications

AI applications for oil and gas, mining, construction, agriculture, life sciences and healthcare.

- **Aviation**
  Safety, Networking, Entertainment

- **Autonomous Trucks**
  Long Haul Trucking

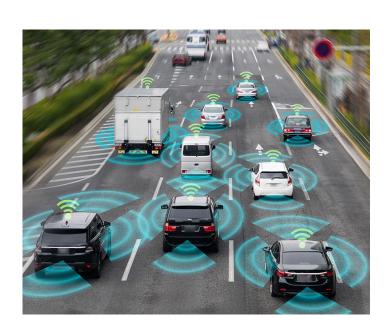- **Agriculture**
  Autonomous Machinery

- **Oil & Gas**
  Autonomous, Semi-Autonomous

- **Mining**
  Autonomous Machinery

- **Medical**
  Robotics, Laser

Our products for industrial applications add tremendous compute power and flash storage capacity for high-performance edge computing.

Datacenter in the Sky

- No compromise performance
- Air and liquid cooling options
- Modular power subsystems
- Specialized rugged form factors
- Edge optimized software stack
- Unified management and control

Flash Array Storage

Compute

Deployed in 737 (P-8 for Navy)

Driving the Industry

- Highest performance
- Minimized weight
- Compact size
- Advanced thermal management
- Wide range power inputs
- Optimized vibration response

Autonomous Trucking

Rugged and reliable high-performance computers for autonomous trucking applications.

OSS provides environmentally optimized high-performance compute and storage solutions to the autonomous trucking industry. Autonomous trucks require specialization of AI capable computer equipment in terms of form factor, cooling and ruggedization to meet unique harsh environmental conditions.

AI for the Future

Artificial intelligence is important for the future of the trucking industry, as it helps to:

- Reduce cost per mile
- Solve driver shortages
- Improve global supply chain
- Increase safety
- Boost truck reliabillity
- Lower emissions

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Defense

Defense products deliver no-compromise AI performance in extreme edge environments.

Artificial Intelligence is rapidly becoming a core element of defense systems across all mission environments on land, in the air and on the sea. These applications require the highest possible performance, deployable in the harshest conditions. AI will be critical in coping with the huge data flows being acquired from sophisticated sensor networks and converting this to actionable intelligence in real time.

Our products function in harsh vibration and thermal environments, meeting strict size, weight, and power constraints.

AI Solutions for Land, Sea and Air

Land Solutions
OSS brings the compute power of HPC to the unique environmental requirements of military AI applications.

Air Solutions
Datacenters in the sky require the performance of land-based datacenters, but must function in harsh vibration and thermal environments while meeting the strict size, weight, and power constraints of the aircraft.

Sea Solutions
AI capabilities are embedded in many shipboard defensive and offensive mission systems designed for rapid awareness and reaction to threats.

Industrial

Applications for oil and gas, mining, construction, agriculture, science, and healthcare.

As the need for AI data from edge sensors proliferates, large scale systems that access, sense, measure and control these data sources in bulk are required to keep up with the demand. PCIe expansion systems provide scalable speed and connectivity to thousands of instrumentation devices from a single data collection system.

Industrial AI Solutions

- **Oil and Gas Industry**
  Providing reduced model processing cycle times and sharper images of region-of-interest datasets.

- **Mining, Construction and Agriculture**
  Supplying the industry with transportable AI capabilities to make actionable decisions in the field.

- **Medical Industry**
  Bringing specialized, high-performance computing capabilities to the edge, to help deliver on the enormous potential of precision medicine.

Commercial Aerospace

Customized solutions in aerospace components and systems.

- **Telemetry and Flight Safety**
  OSS airborne edge solutions and cloud infrastructure are combined to create enduring OEM solutions that support aircraft operations.

- **Inflight Entertainment**
  OSS provides system and component level specification, design, certification, and manufacturing support to the major OEMs in the IFE marketplace.

- **Cabin Systems**
  Cabin lighting, paging, audio distribution and seat power bring enhanced passenger services to legacy aircraft with reduced operational cost.

AI Solutions for Commercial Aerospace

OSS brings two decades of experience in specification, development, manufacturing and repair of aerospace components and systems. Development practices patterned after DO-254 and DO-178-C are combined with an AS9100-D Quality System.

Flight safety and certification according to DO-160G and related Boeing and Airbus requirements are offered according to customer need. MIL-aero standards also apply. Manufacturing is conducted under a formal AS9100-D system that can be adapted to specific customer needs. Lifecycle support for aerospace products, including refurbishment and repair are also offered.

System Level Products

Revolutionizing the capabilities and flexibility of scaleout AI systems.

Integrated Systems

High performance compute & storage platforms for the rugged edge.

Gen 4 3U SDS

Rigel

FSAn-4R

Ion Accelerator

2U EOS

GAS-R

PCIe Application Accelerators

Scale-out compute & storage with GPUs, FPGAs & NVMe.

Gen 5 4U Pro

Centauri

Gen 4 4U Pro

Front I/O 4U Pro

EB4400

4UV

Gen 4 3U SDS

OSS-SDS-3U-4A
OSS-SDS-3U-4A2
OSS-SDS-3U-4I2

Rigel Edge Supercomputer

OSS-ERX-R100

Product Features

• Single or dual Intel Xeon or AMD Epyc processor(s)

• 20" maximum depth

• 8 or 16 SATA/NVMe SSDs

• OSS expansion compatibility

• System monitoring and control

• AC or DC input power supplies

• Resource expanded optimized BIOS

Product Features

• NVIDIA HGX A100 4-GPU SXM 320GB

• 4x PCIe 4.0 x16 expansion slots

• Lightweight, compact aluminum frame design

• 2.4TB/s total GPU aggregate bandwidth

• AMD EPYC 7003 processor

Mechanical Design

• Lightweight aluminum enclosure

• Retention bar for GPUs and other add-in cards

• Frame-in-frame design to mitigate low frequency harmonic responses

• Each hot-swap bulk removeable canister with 128TB of NVMe storage

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FSAn-4R

OSS-FSAn-4R

Product Features

• 4U MIL-STD ruggedized system

• Supports high-density PCIe NVMe flash, up to 256 TB raw (200 TB usable)

• Four lightweight removable data canisters with capacities up to 50TB

• Each data canister weighs less than 6.5lbs

• Supports up to 5 million IOPS

• Provides up to 30 GB/second throughput

• Supports iSCSI, FC and SRP protocols

Accelerating mission-critical high-performance databases

Ion Accelerator

OSS-FSAn-2D

Product Features

• 2U rackmount design

• 24 2.5" hot-swap NVMe drive bays

• 1600W redundant power supplies

• System health monitoring

• Zero downtime, zero migration cost option

• HA option with mirrored array

• Ultra-low latency 5.1.0 software

Game-changing storage performance and fault tolerance

2U EOS

OSS-EOS-2U-4A

Product Features

• AMD EPYC™ 7003 Series Processor

• Options for 7x add-in cards or 24x U.3 drives

• Up to six PCIe 4.0 x16 HH slots

• Dual 1+1 redundant universal input power supplies

• Resource expanded BIOS for large expansion capability

• Guaranteed to operate with all OSS' expansion products

Widest BIOS compatibility for large scale systems

GAS-R

OSS-GAS-R

Product Features

• 8x NVIDIA® A100 SXM4 GPUs with 4.8TB/s aggregate NVIDIA® NVLink™ bandwidth

• Over 200TB PCIe Gen4 NVMe™ storage

• Four 200Gb/s NICs and MIL-STD 810G tested

• System monitoring and control through BMC

• AC (50-400Hz) and DC power options

• 8U x 23" depth enclosure and up to 4TB system memory

• Up to 64 core AMD Epyc™ 7003 or dual Intel® scalable processors
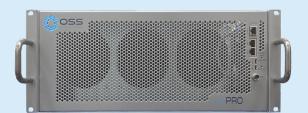
Mission-ready rugged compute power

Gen 5 4U Pro

OSS-PCIe5-4UP

The ideal acceleration platform for edge AI training & storage

Centauri

OSS-EXS-C48-00

OSS-EXS-C48-01

Rapidly transportable high-capacity storage for rugged applications

Product Features

- PCIe Gen 5 architecture
- Rugged frame design
- OSS developed U-BMC
- Dynamic fan speed control
- Configurable slot and host uplinks
- Integrated IPMI based system monitoring

Product Features

- Bulk removable 8-bay storage canister
- Up to 256TB of NVME storage per canister
- Same drive pack as found on 3U SDS servers
- Unique half-rack, short-depth form factor
- PCIe 4.0 x16 SFF-8644 host uplink

Rugged Design

The appliance supports up to 8 NVIDIA H100 PCIe GPUs, which deliver 2.5x FP64 performance compared to the NVIDIA H100, and four PCIe Gen 5 x16 HIB/NIC slots for up to 256GB/s of sustained data throughput. Alternatively, the 4U Pro can be configured to provide 16 single-width PCIe Gen 5 x8 slots for FPGA data ingest or the latest storage add-in cards.

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Gen 4 4U Pro

OSS-PCIe4-4UP

Product Features

• PCIe Gen 4 architecture

• Configurable slot and host uplinks to optimize throughput

• Rugged frame design

• Dynamic fan speed control

• Integrated IPMI based system monitoring

• AC and DC power inlet options

*Accelerating high-performance
mission-critical applications*

Front I/O 4U Pro

OSS-PCIe4-4UPF

Product Features

• Front I/O for space constrained rackmount applications

• Configurable slot and host uplinks to optimize throughput

• Dynamic fan speed control with front to rear air flow

• PCIe Gen 4 architecture

• Rugged frame design

• Integrated IPMI based system monitoring

*Front accessible scale-out
I/O & AI acceleration*

EB4400

OSS-EB4400

Product Features

• PCIe Gen 4 architecture

• Small, rugged frame design

• Dynamic fan speed control

• Configurable slot and host uplinks

• Integrated IPMI based system monitoring

• AC and DC power inlet options

*Rugged, compact AI
application acceleration*

4UV

OSS-PCIe-4UV

Product Features

• PCIe Gen 4 or Gen 3 architecture

• 4U rackmount design

• Various slot configurations

• Various host connections

• 1m, 2m, 3m cable

• Fixed or variable speed fan options

• Two 2000W load-sharing power supplies

• AUX power connectors for high power AICs

*Value focused AI
acceleration platform*

Component Level Products

Revolutionizing the capabilities and flexibility of scale-out AI systems.
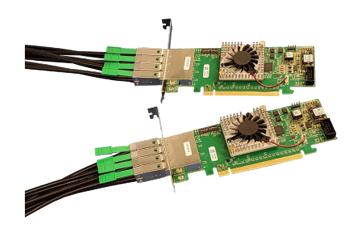
Cable Adapters

Versatile boards with the fastest possible data transfer speeds.

Link Kits

Create a fast, local PCIe connection from a host computer.

Backplanes

Add up to twenty slots to a system with our PCIe backplanes.

PCIe Cables

Reliable, high performance in demanding environments.

GEN 5

PCIe x16 Gen 5 QSFP-DD
OSS-PCIe5-HIB732-x16-H
OSS-PCIe5-HIB732x16-T

- Operates at PCIe Gen 5 speeds up to 32 GT/sec per lane
- Delivers 128 GB/sec (full duplex) bandwidth with x16 lanes
- Supports QSFP-DD Gen 5 cables up to 2m
- No driver required

PCIe x16 Gen 5 CDFP Active
OSS-PCIe5-HIB732-CDFP32-H
OSS-PCIe5-HIB732-CDFP32-T

- Operates at PCIe Gen 5 speeds up to 32 GT/sec per lane
- Delivers 128 GB/sec (full duplex) bandwidth with x16 lanes
- Supports CDFP Gen 5 cables up to 2m
- No driver required

PCIe x16 Gen 5 CDFP Passive
OSS-PCIe5-HIB732-CDFPASS-x16-T

- Operates at PCIe Gen 5 speeds up to 32 GT/sec per lane
- Delivers 128 GB/sec (full duplex) bandwidth with x16 lanes
- Supports CDFP Gen 5 cables up to 2m when used with Active Host HIB
- No driver required

GEN 4

PCIe x16 Gen 4
OSS-PCIE-HIB616-X16

- Dual PCIe 4.0 NVMe M.2 slots
- Hot-swap removable drive carriers
- Operates at up to 64GB/s at PCIe 4.0 speeds

PCIe x16 Gen 4 CDFP Passive
OSS-PCIe4-HIB716-CDFPASS-x16-H
OSS-PCIe4-HIB716-CDFPASS-x16-T

- Operates at PCIe Gen 5 speeds up to 32 GT/sec per lane
- Delivers 128 GB/sec (full duplex bandwidth with x16 lanes
- Supports CDFP Gen 5 cables up to 2m when used with Active Host HIB
- No driver required

PCIe 4.0 Dual/Quad M.2 Carrier
OSS-PCIE4-ADPT-X16-M.2-2
OSS-PCIe4-ADPT-x16-M.2-4

- Dual/Quad PCIe 4.0 NVMe M.2 slots
- Hot-swap removable drive carriers
- Operates up to 64GB/s at PCIe 4.0 speeds

GEN 3

PCIe x16 Gen3
OSS-PCIE-HIB68-X16

- Operates at up to 32GB/s at PCIe Gen 3 speeds
- Copper and Fiber cable options up to 100m
- No driver required

PCIe x16 Gen3 iPass
OSS-PCIE-HIB38-X16

- Operates at up to 32GB/s at PCIe Gen 3 speeds
- Requires no additional software
- Operates in host or target mode

PCIe x8 Gen3 Quad Port
OSS-PCIE-HIB38-X8-QUAD

- Operates at up to 16GB/s at PCIe Gen 3 speeds
- Requires no additional software
- Operates in host or target mode

PCIe x8 Gen3 Dual Port
OSS-PCIE-HIB38-X8-DUAL

- Operates at up to 64Gb/s at PCIe Gen 3 speeds
- I/O expansion requires no additional software
- Supports: host mode, target mode, dual host mode

PCIe x8 Gen3 SFF-8644 Embedded
OSS-PCIE-HIB38-X16

- Operates at up to 64Gb/s at PCIe Gen 3 speeds
- Versatile board installs in small space
- Supports any PCIe x1, x4, x8, x16 add-in card

Switch-based, PCIe x4 Gen3 Host
OSS-PCIE-HIB38-X4

- Small form factor fits in any host system
- PCIe x4 Gen 3 cable adapter with PCIe switch
- Supports SSC Isolation for maximum compatibility

Link Kits

PCIe x16 Gen 4 Host to Target Kit (61611)
OSS-KIT-EXP-61611-XM

- Operates at 64GB/s
- PCIe x16 host cable adapter with x16 switch-based target cable adapter and Gen 4, x4 SFF-8644 PCIe cables
- No backplane included

GEN 5

8 PCIe x8 5.0 slots (581)

OSS-BP-581

• Eight downstream PCIe 5.0
  x8 expansion slots
• One PCIe 5.0 x16 target slot
• 3x 8 pin +12v power input

5 PCIe x16 5.0 slots (580)

OSS-BP-580

• Five downstream PCIe 5.0
  x16 expansion slots
• PCIe 5.0 x16 target slot
• 3x 8 pin +12v power input

OSS offers a wide variety of backplanes with various slot bandwidths, perfect for embedding into systems to add PCIe slots.

GEN 4

5 PCIe x16 slots (538)

OSS-BP-538

• Five downstream PCIe 4.0
  x16 expansion slots
• One PCIe 4.0 x16 target slot
• ATX power input

8 PCIe x8 slots (521)

OSS-BP-521

• Eight PCIe 4.0 x8 expansion slots
• One OSS PCIe 4.0 x16 target slot
• ATX power input

5 PCIe x16 slots (522)

OSS-BP-522

• Five downstream PCIe 4.0 x16
  expansion slots
• One PCIe 4.0 x16 target slot
• ATX power input

GEN 3

8 PCIe x8 slots (452)

OSS-BP-452

• One OSS PCIe 3.0 x16 target slot
• Eight PCIe 3.0 x8 expansion slots
• ATX power input

8 PCIe x4 slots (416)

OSS-BP-416

• One OSS PCIe 3.0 x16 target slot
• Eight PCIe 3.0 x4 expansion slots
• ATX power input

5 PCIe x16 slots (457)

OSS-BP-457

• One OSS PCIe 3.0 x16 target slot
• Five PCIe 3.0 x16 expansion slots
• ATX power input

2 PCIe x8 slots (436)

OSS-BP-436

• One PCIe 3.0 x16 expansion slots
• Two PCIe 3.0 x4 and One PCIe
  3.0 x8 expansion slots
• 12 VDC Input

1 PCIe x16 slots (427)

OSS-BP-427

• One PCIe 3.0 x16 target slot
• One PCIe 3.0 x16 expansion slot
• 12 VDC Input

1 PCIe x16 slots (412)

OSS-BP-412

• One PCIe 3.0 x16 target slot
• One PCIe 3.0 x16 expansion slot
• 12 VDC Input

2 PCIe x8 slots (419)

OSS-BP-419

• One PCIe 3.0 x16 target slot
• Two PCIe 3.0 x8 expansion slots
• 12 VDC Input

GEN 5

Gen 5 Dual x8 Cables
OSS-QSFPDD5-CBL-C-XM

• 128GB/sec (full duplex) bandwidth with x16 lanes
• Copper cables, up to 3m length
• Enables disaggregated architectures

GEN 4

Mini SAS x4 Cable
OSS-MSAS-CBL-X4-C-XM

• Available in up to 3m lengths
• Mates to HIB6 family host interface boards
• Supports up to 16GB/s transfer rates

Gen 4 Mini-SAS x 4 Active Optic Cable
OSS-mSAS4-ACT-CBL-x4-2M

• Standard 2m length
• OM3 active optical cable
• Mates to PCIe x16 Gen 3/4 host interface board
• Supports up to 16GB/s transfer rates

GEN 3

PCIe x8 Cable
OSS-PCIE-CBL-X8-XM

• PCIe x8 cable
• PCI-SIG PCI Express Cable Specification Compliant
• Supports up to 16GB/s transfer rates

PCIe x4 Cable
OSS-PCIE-CBL-X4

• PCIe x4 cable
• PCI-SIG PCI Express Cable Specification Compliant
• Supports 10 Gbps full-duplex transfer rates

PCIe x16 Cable
OSS-PCIE-CBL-X16-XM
OSS-PCIE-CBL-X16-A-XM

• PCIe x16 cable
• Available in .5m, 1m, 2m, 3m, 5m, and 7m lengths

PCIe x4 to x8 Cable
OSS-PCIE-CBL-X4-X8-XM

• PCIe external cabling 1.0 and 2.0 compliant
• Supports PCIe Gen1 (2.5GT/s) and Gen2 (5.0GT/s)

Mini-SAS x4 Active Optical Cable
OSS-MSAS-ACT-CBL-X4-XM

• Available in 5m up to 100m lengths
• Mates to HIB68-x16 host interface board

PCIe 3.0 x4 mSAS HD to MTP/MPO Active Optical Cable
OSS-MSAS-ACT-CBL-X4-MTP-XM

• OM3 active optical cable
• Compliant to SFF-8644 MSA standard
• Mates to HIB68-x16 host interface board

Custom OEM Design

Our range of OEM services include system engineering, specification, detailed design and regulatory compliance (commercial, medical, aerospace, and military)

One Stop Systems' production services are:

• Optimized for expedited build of short-run, high-spec, difficult to test items, and prototypes
• Integration with client supply-chain strategies (supplier-managed inventory, hot-spares, etc.)
• Competitively-priced with extraordinary quality (ISO 9001 / AS9100-D process)

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What We Do

Performance
No Compromise

Integration of the highest end data center class CPUs, GPUs, FPGAs, NVMe SSDs, and networking in rugged edge platforms for demanding AI workloads.

Rugged
Shock and Vibration

Designs for stringent vehicle specifications to operate in harsh environments leveraging expertise in structural analysis & simulation for low SWaP.

Power
Land, Sea, Air Compatible

Flexible power subsystem designs accommodating a wide range of transportable edge system inputs from 48VDC to 3Ø (Phase), 400Hz AC inputs for 6000W GPU systems. demanding AI workloads.

Switched Fabrics
Signal Integrity

Expert PCIe & NVLink designs delivering next generation designs up to 32GTs including scale-out PCIe Gen 5 designs of 200+ endpoint devices at the system or rack level.

Cooling
Liquid and Air

Expertise in extreme temperature ranges for systems with challenging heat generating components using advanced thermal design for air & liquid solutions.

Software
System Management & RDMA Data Flows

Flexible system management, scale-out BIOS and SAN/NAS storage software using NVMeoF and GPU Direct capability through intuitive user interfaces.

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Support

OSS' Support Team and Field Application Engineers have been internationally recognized by receiving HDI's top Pinnacle of Excellence Award.

Submit a Support Request:
onestopsystems.com/pages/support-form