BRESSNER
A ONE STOP SYSTEMS COMPANY

DEFENSE COMPUTING GUIDE

RUGGED HARDWARE
FOR MISSION-CRITICAL OPERATIONS

Complete hardware and custom solutions for extreme applications

www.bressner.de

ISO 9001 CERTIFIED
ISO 14001 CERTIFIED

SYSTEM INTEGRATION & VALUE ADDED DISTRIBUTION FOR OVER 30 YEARS

As a system integrator and value-added distributor, BRESSNER Technology has built an extensive portfolio of products and services in the field of industrial hardware solutions over the past 30 years. With our highly specialized hardware systems and components, we serve industries where standard hardware reaches its limits. Thanks to our continuously growing partner network and a strong sense for technological advancement, we are able to provide state-of-the-art hardware solutions for nearly any application.

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Mission

Our goal is to act as a driving force for innovation in the field of industrial hardware and to leverage our 30+ years of experience for the benefit of our customers. To achieve this, we combine our portfolio of customizable, cutting-edge hardware solutions with comprehensive services and a deep understanding of our customers' needs to create real added value.

This supports the sustainable growth of our customers and fosters innovation and shared success in the industrial sector. Helping our customers reach their goals is always our top priority.

Vision

As an established player in the industrial hardware market, our vision is to continuously push the boundaries of what's possible in order to enhance the efficiency, safety, and intelligence of our customers' business processes.

We draw on our extensive experience and deep technical expertise to deliver high-quality, innovative solutions—providing our customers with top-tier service and forward-thinking expertise in future technologies.

Flexibility
Innovation Drive
Trust
Customer Focus

Services & Consulting

„Helping our customers achieve their goals is our top priority."

To fulfill this promise, we draw on our extensive experience and combine our wide portfolio of customizable hardware solutions with a broad range of value-added services—covering pre- and post-sales support, testing and certification, as well as customization. This ensures the success of your project, whether it's a large-scale rollout or a small production run.

- Free consultation
- Highly-specialized product portfolio
- Many years of expertise

VALUE ADDED SERVICES FOR YOUR SUCCESS

Consulting service

Guaranteed free consultation for your project

- Individual consultation and solution finding
- State-of-the-art solutions
- Product presentation and lending service
- Industry and technology experts
- Via phone, video call, or on-site

Built-to-order systems

Designing, developing, and manufacturing customized systems

- Hardware and software development
- Prototyping and validation
- Quality control and testing
- Documentation and certification
- Production and supply chain management
- Service and maintenance

OEM & ODM design

Development and design of custom-made products for your application

- Large-scale projects and small batches
- Prototyping and sample testing
- System assembly
- Mass production

Testing & certification

Comprehensive validation and certification services

- 12 to 48 hours stress tests
- Generation of test reports
- Providing certification documents
- Support for certifications and regulatory challenges

Lifecycle management

Professional lifecycle management service for reliable system and component availability

- Product Change Management
- Ensured availabilities (beyond market
- availability)
- End-of-Life Monitoring

RMA services

Return, repair, and replacement of malfunctioning hardware under warranty inspection

- Fault analysis and diagnosis
- Repair and replacement
- Warranty inspection and processing
- Firmware and software updates
- Data backup and recovery
- Logistics and return management

Repair & replacement

Comprehensive inventory management to streamline return processes, minimize downtime, and ensure the success of your business

- Spare parts service
- System repair service
- Hot-swap program for systems

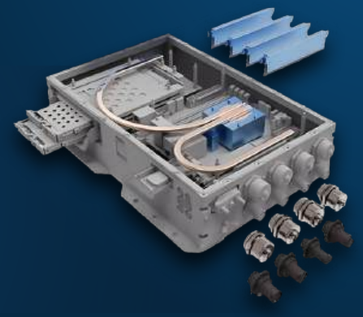
Global service network

Our global expert network enables us to provide worldwide support

- Network of IT experts, manufacturers, and
- suppliers
- Service teams
- On-site – Anywhere in the world

Rugged Computing

Fanless enclosure designs



- Silent operation
- Lower failure rate due to the absence of moving parts
- Efficient passive cooling – designed for extreme environments
- Low maintenance and suitable for continuous operation

Lockable connectors

- Secure connection even under heavy vibrations and shocks
- Prevents accidental disconnection of cables
- Ideal for mobile platforms such as vehicles or aircraft
- Supports industrial and military-grade connector standards

Long-term available hardware

- Planning and investment security
- Minimized effort for requalification and recertification
- Ideal for long-term projects with retrofit requirements

Rugged embedded PCs

Rugged embedded PCs with IP rating for tough deployments in extreme environments

- Full IP rating (IP69K) against water, dust, and dirt
- Extremely resistant to temperature fluctuations and vibrations
- Fanless design for maintenance-free continuous operation
- MIL-STD-810G/H & MIL-STD-461 certifications
- Ideal for military applications, edge computing, machine control, and data processing

Supports state-of-the-art NVIDIA® RTX GPUs

RHINO SR800

IP69K
MAXIMUM WATER AND DUST PROTECTION

Rugged AI Servers

High performance compute and storage systems for environments outside of the datacenter

- Optimized for AI inferencing and machine learning
- Integration and scalability of multiple GPUs
- Support for various GPU types and models
- MIL-STD-810G/H & MIL-STD-461 certifications
- Expandable with GPUs, memory, or network cards
- System customization to meet your specific requirements

Rugged datacenter performance on land, at sea, and in the air

SHARK Rugged 1U - Server

Rugged AI Computers

Advanced high-speed expansions for networking servers and PCIe devices

- Expand existing servers with up to 16 GPUs
- Fully configurable solutions for PCIe systems
- MIL-STD-810G/H & MIL-STD-461 certifications
- Boost computing power with additional GPUs
- Operating system independent (no drivers required)

Flexible performance upgrade for existing server environments

GORILLA AV710-X4

Rugged Mobile Computers

SCORPION
RUGGED TABLET & HANDHELD SOLUTIONS

ADVANTAGE IN THE FIELD.
SUCCESS FOR THE MISSION.

Long battery life

- Optimized power management systems for maximum runtime
- Fast charging features for minimal downtime
- Operates in extreme temperatures without performance loss
- Ideal for long-term deployments without a fixed power supply

MIL-grade certifications

- Compliant with MIL-STD-810G/H for shock, vibration, and drop testing
- Protection against extreme temperatures, humidity, and dust
- Resistant to altitude and temperature fluctuations
- Proven durability for military and industrial environments

Portable and ultra-rugged

- Compact, shock-resistant housing with IP protection rating
- Resistant to water, sand, and mechanical stress
- Specifically designed for harsh outdoor environments and mobile use
- Easily integrable into deployment vehicles and mobile command units

SCORPION MIL series (Windows / Android)

Military-grade rugged tablets for extreme field operations

- Display sizes from 6.0″ to 12.2″
- Resolutions up to 1,920 x 1,080
- Processor: Intel® Core™ / Celeron® or MTK CPUs
- Touchscreen: 10-point PCAP multi-touch
- IP rating + certification: Full IP65 + MIL-STD-810G
- Operating temperature: -20°C to 60°C

High brightness (up to 1,000 nits) for optimal readability in direct sunlight

SCORPION 10X PRO (Windows)

- Display size: 10.1″ (25.65 cm)
- Resolution: 1,920 x 1,200
- Processor: Intel® Core™ i5-1235U Deca-Core CPUs
- Touchscreen: 10-point PCAP multi-touch
- IP rating + certification: Full IP65 + MIL-STD-810G
- Operating temperature: -20°C to 60°C

Accessories for tablets and handhelds

Office docking charging stations

Spare batteries

RAM mount support arm

Vehicle mounts for cars and forklifts

Touch pens

Dockable keyboards

Power supplies and cables

Rugged Display Solutions

Custom configuration

- Additional / modified I/Os
- Customizable housing
- Extended temperature range

State-of-the-art technologies

- Next Gen CPUs
- Windows 11 Ready
- Cutting-edge chassis for various applications

Premium service packages

- Extended warranty
- Qualified phone support
- Priority queue for faster processing

Military panel PCs

For VESA, panel, or rackmount installation

- Available in display sizes from 7 to 24 inches
- MIL-STD-810G for shock and vibration resistance
  MIL-STD-461F for electromagnetic interference protection
- Full IP65 protection against dust and water spray
- Lockable D38999 connectors (RS-232/422/485, USB 2.0, or GbE ports)

HAWK-LRK-19RK
rackmount display

Ships and maritime platforms

Portable data centers

Command posts & mobile control stations

Deployment vehicles

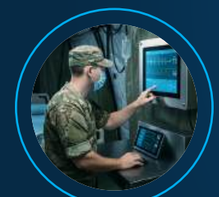
Stainless steel panel PCs up to IP69K

Maximum water and dust protected systems

- 15.6- to 65-inch displays operable even with latex gloves
- Food-grade stainless steel housing: SUS 304 standard (optional SUS 316)
- Optional up to IP69K (withstands cleaning with high-pressure or steam jet equipment)
- Protected M12 connectors on the rear of the device

ORCA PRO series

Mobile field kitchens & logistics hubs



Military field hospitals & medical containers

Shipyards and naval environments

CBRN zones & decontamination

Rugged HPC Solutions

Our rugged HPC systems deliver powerful computing capabilities for AI, data analytics, and sensor-based applications—right at the point of action. Whether AI servers, GPU servers, or expansion modules: all solutions are designed for harsh environments, resistant to vibration, and built to withstand extreme temperatures.
With multi-GPU support, lockable connectors, and long-term hardware availability, these systems are ideally suited for military platforms, mobile command centers, or unmanned systems.
Maximum performance where it's needed most—rugged, scalable, and mission-ready.

NVIDIA PREFERRED SOLUTION PROVIDER

PCIe Gen 5.0
3U-SDS (short depth server)

Rugged AI Servers

Ultra-rugged 19-inch GPU servers for deployable AI applications

- Rugged 19-inch GPU servers for mobile deployments
- Shock- and vibration-resistant for extreme environments
- Extended temperature range for outdoor use
- Real-time data processing with AI hardware
- Ideal for autonomous systems, military platforms, and outdoor applications

Flexibly configurable and expandable to meet individual requirements

Available as 3U or 2U version

Liquid and immersion cooling

- Direct to chip cooling
- Single phase immersion
- Two phase immersion
- Hybrid solution available

MIL grade certifications

- Tested to MIL-STD-810 and MIL-STD-461
- Certified protection against vibration, shock, dust, humidity, and temperature
- Designed for military air, land, and sea operations

Rugged GPU Servers

High performance compute and storage systems for environments outside of datacenters

- Optimized for AI inferencing and machine learning
- Integration and scalability of multiple GPUs
- Support for various GPU types and models
- Proven rugged design
- Expandable with GPUs, memory, or network cards
- Customizable to meet your specific requirements

Rugged datacenter performance at sea, on land, and in the air

PCIe Gen 5.0
2U-SDS (short depth server)

GPU Expansions

Advanced high-speed expansions for networking servers and PCIe devices

- Expand existing servers with up to 16 GPUs
- Fully customizable solutions for PCIe-based systems
- Increased computing power with additional GPUs
- Operating system independent (no drivers required)

Flexible performance upgrade for existing server environments

6U Gen 5 PCIe Expansion
(up to 16 double-width GPUs)

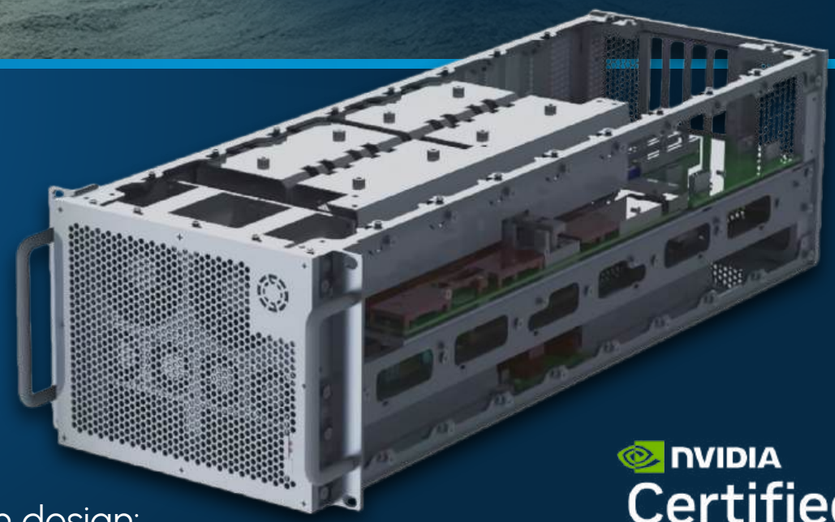
Individual Solutions

AS INDIVIDUAL AS EVERY MISSION

- Custom enclosure designs
- Custom solutions from board level to system level
- Various cooling options: Fan, liquid, or immersion
- Operating system tailored to customer requirements
- Support for the latest GPU models
- Individually configurable connectivity options
- Remote management for system monitoring
- Latest PCIe technologies
- 24/7 testing prior to delivery
- Prototyping & system integration
- Ready-to-use software installation
- Application-specific design, e.g., for UAVs

CUSTOMIZED EDGE SUPERCOMPUTERS:

AVAILABLE WITH AIR, LIQUID, OR IMMERSION COOLING OPTIONS



NVIDIA Certified

Custom design: Rigel Edge Supercomputer

Maximum available performance in a compact form factor for extreme military deployments

For specialized applications, we develop tailor-made systems—such as the Rigel Edge Supercomputer, which was designed in close collaboration with a customer to meet their exact individual requirements.

This compact high-performance system was specifically engineered for use at the edge of military operations, combining maximum computing power in the smallest possible footprint. Rigel leverages four high-performance GPUs based on the NVIDIA® datacenter platform and delivers uncompromising performance under extreme conditions thanks to cutting-edge technologies like PCIe Gen 5 switching, NVLink, and remote management.

With its compact design, the Rigel Edge Supercomputer fits into UAVs, mobile command units, vehicles, ships, or other aircraft, while meeting the highest standards for shock resistance, temperature tolerance, and reliability.

This custom development showcases our ability to translate specific customer requirements into rugged, high-performance edge solutions. Whether for a mobile command center, autonomous platform, or tactical datacenter—we deliver solutions precisely aligned with your mission needs.

Mobile Datacenters & Energy Storage Solutions

We deliver scalable computing power in high-density, modular containers. Deployable anywhere—from on-premise to harsh environments or renewable energy parks—they reduce latency effectively. Our proprietary AI/HPC virtualization stack enables operation as a private or public cloud. In addition, our energy storage solutions feature key advantages such as modularity for easy scalability, advanced safety mechanisms like multi-level cell protection and early warning systems, high efficiency through liquid cooling for improved thermal management, and flexible integration compatible with various power systems (PCS, UPS, MPPT, and PV). They also come with certifications ensuring compliance with global standards for safety, transport, and performance. Both solutions are also available with liquid cooling.

Transportable 20ft container

- Standardized 20ft ISO dimensions for global transport
- Rugged construction for extreme climates and outdoor deployment
- Rapidly deployable for mobile operations and temporary infrastructure

High end performance via clusters

- Massive performance with up to 14 AI racks and up to 132 servers
- Scalable solutions—from single containers to full clusters
- Energy storage solutions with various power systems (PCS, UPS, MPPT, and PV) delivering up to 4MW per container

Liquid-cooled footprint

- Liquid cooling for maximum computing power in minimal space
- Lower energy costs through highly efficient cooling technology
- Significantly reduced heat output for deployments in hot regions

Multi-layered security concept

- Integrated early fire detection and rapid aerosol extinguishing system
- Protection against physical attacks, intrusion, and environmental factors
- Complete solutions including access control, alarm, and fire suppression systems

Drone Solutions

In modern defense scenarios, drones must operate reliably and efficiently—even under challenging conditions. The Neousys FLYC-300 platform, equipped with an NVIDIA® Jetson Edge AI module, delivers up to 100 TOPS of computing power while weighing just 298 grams, making it ideal for deployment on tactical drones with limited payload capacity.

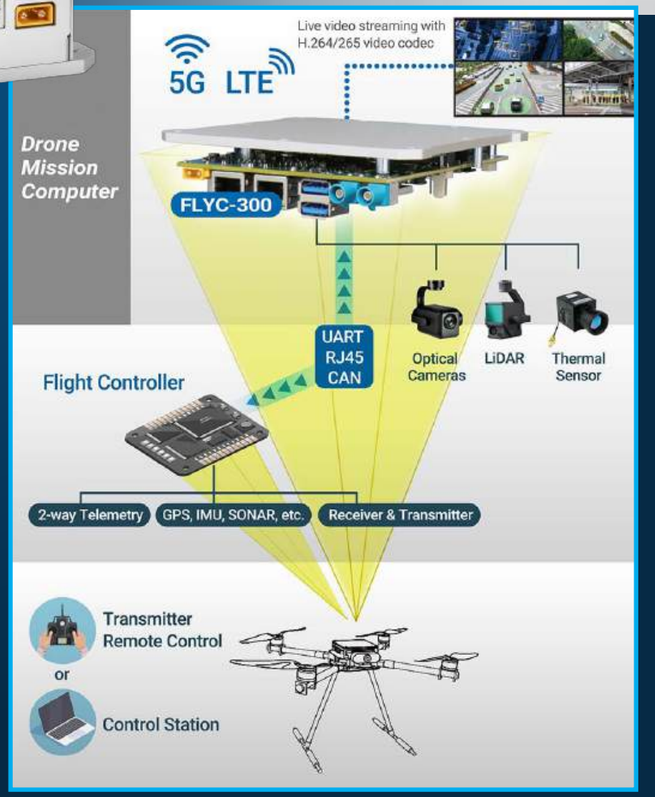
With integrated AI-powered navigation, 3D mapping, and real-time data processing, the FLYC-300 enables autonomous flight path planning—even in the event of GPS failure. The drone can detect and avoid obstacles, reach defined target zones more quickly, and conserve valuable energy—giving it a clear advantage for extended missions in reconnaissance, surveillance, or infrastructure inspection.

The FLYC-300's wide range of interfaces—including Ethernet, USB 3.2, GMSL2, and support for 5G/4G communication—allows seamless integration of various sensors such as LiDAR, infrared, or RGB cameras. Its rugged design and broad voltage input make it especially resilient in extreme environmental conditions.

2023 Military+Aerospace Electronics Innovators Awards
PLATINUM HONOREE

FLYC-300

- Small size, weight, and power (SWaP) with only 297 g
- Up to 100 TOPS GPU performance powered by NVIDIA® Jetson Orin™ NX
- Supports a wide range of camera and sensor interfaces
- Built-in UART and CAN for interaction with the flight controller
- 1x M.2 2230 for storage and 4G/5G support
- Supports 4S–14S drone battery packs



Modular Rugged 3U / 2U Short Depth Servers

AI-enabled rugged PCIe Gen 5 short depth servers (3U-SDS) for maximum performance in a compact form factor

Available as 3U or 2U version

STORAGE SOLUTION WITH HOT SWAP STORAGE CANISTERS

LIQUID COOLING OPTION

- Direct-to-chip cooling
- Single-phase immersion
- Two-phase immersion
- Hybrid solutions available

The Challenge: An extremely compact form factor, vibration resistance, quiet operation, and reliability under maximum computational load.

The Answer: The OSS 3U-SDS platform with direct liquid cooling—engineered to meet the demands of military edge deployments. This solution integrates two Intel-based SDS servers with a total of 16 NVMe drives and up to 960 TB of storage capacity. Thanks to its liquid cooling system, traditional components like fans or heat pipes are eliminated, making the system not only more compact but also nearly silent—crucial for underwater operations. The platform is fully ruggedized and has been successfully tested in high-vibration environments.

Key requirements

- Fanless liquid cooling
- Support for 4x NVIDIA® datacenter GPUs
- Customizable software for remote management
- Additional I/O card brackets for enhanced stability
- Meets certifications for maritime vibration compliance
- Hot-swappable, encrypted NVMe drive packs
- Ideal for signal recording, AI/ML workloads, and analytics

3U / 2U-SDS at a glance

Rugged server design

- Size- and weight-optimized aluminum chassis with a depth of 47 cm
- Durable frame-in-frame design
- Certified to MIL-STD-810G

High performance GPUs

- Integration of up to four 350W GPUs
- Latest server-grade GPU models
- Comprehensive NVIDIA® solutions and SDKs for AI applications

Hot swap storage media

- Removable hot-swap storage canisters
- Up to 16 SATA / SAS / NVMe drives
- Up to 1 petabyte of NVMe storage with 64 GB/s throughput (16x 64 TB NVMe)

Remote management (U-BMC)

- Configuration, user management, updates, logging, remote access, and automation
- Resource monitoring, alerts, and performance data capture

PCIe Gen 5 standard

- Up to 7x PCIe x16 slots
- Up to 4x dual-slot GPUs
- Up to 320 GB/s GPU computing performance

Customizations

- Configurable front and rear panel
- Enhanced power supply up to 400Hz AC
- Immersion, liquid, or air cooling options available
- Custom-made solutions possible

AI Applications

- **Air Force**
- **Ground Force**
- **Naval Force**

AI-ACCELERATED PERFORMANCE FOR DEPLOYMENTS AT SEA, ON LAND, OR IN THE AIR

Natural Language Processing of Large Language Models (NLP/LLM)

Our advanced solutions enable seamless processing of large volumes of unstructured text data, unlocking valuable insights from situation reports, open-source information, and intercepted communications in various languages. By efficiently analyzing these linguistic contents, military analysts gain actionable intelligence, detect threats early, and can predict enemy activities with previously unattainable precision.

Electronic Warfare (EW)

Our cutting-edge HPC systems push the boundaries of electronic superiority, enabling exceptional capabilities in electronic warfare, deception, and countermeasures. By supporting advanced signal processing and machine learning algorithms, our systems analyze vast amounts of electronic signals in a short time, identifying enemy radars, communication systems, and other electronic threats.

Autonomous land, sea, and air vehicles

Powered by the exceptional performance of our rugged HPC servers and storage expansions, these advanced systems form the backbone of AI-based technologies in autonomous vehicles. They enable the processing of massive amounts of data from specialized sensors such as video, radar, and LIDAR. Whether unmanned surface vessels crossing thousands of miles without a crew or autonomous underwater vehicles (UUVs) in mine-clearing operations, our HPC solutions are crucial for smooth operations and the success of critical missions.

Command, Control, Computers, Communications, Cyber, Intelligence, Suveillance, and Reconnaisance (C5ISR)

Our GPU-accelerated systems act as powerful force multipliers, enabling military personnel to process massive amounts of data at unprecedented speeds. This facilitates the extraction of critical insights and supports real-time decision-making. Whether accelerating complex simulations for mission planning or quickly analyzing reconnaissance data from diverse sources, these systems provide essential support for rapid, informed decisions.

Signal Intelligence Processing (SIGINT)

Our high-end solutions set new standards in reconnaissance and analysis by enabling military organizations to efficiently intercept, collect, and evaluate large volumes of complex signal data. With extremely fast processing, our HPC systems enable real-time detection, identification, and decryption of communication streams, providing crucial insights into enemy activities. By integrating advanced algorithms and machine learning technologies, the precision and speed of SIGINT analysis are further enhanced, uncovering hidden patterns and detecting potential threats at an early stage.

Simulation

Our supercomputers are revolutionizing military training and mission preparedness by enabling realistic and immersive simulations of complex scenarios. With immense computing power and high-speed data processing, our rugged HPC systems can model large-scale simulations involving multiple units—such as ground forces, aircraft, and naval fleets—with unprecedented precision. These simulations enhance tactical training, mission planning, and decision-making exercises, thereby strengthening soldiers' skills and improving the overall readiness of the entire force.

Application Fields

Air Force

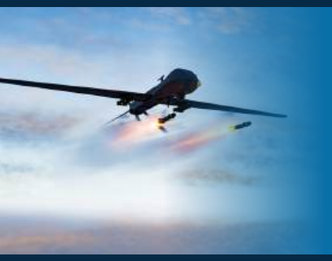
- A primary contractor in the aerospace industry is developing an AI-based system for threat detection aboard U.S. Navy aircraft
- Civilian „connected aircraft" use AI onboard and SATCOM or 5G radio connections to collect and process data on aircraft operational performance in real-time

Navy

- AI-powered maritime surveillance and analysis systems aboard ships for automatic detection of faulty systems for maintenance purposes
- Embedded AI capabilities in defensive and offensive mission systems on ships for rapid threat detection and response

Army

- Automated targeting systems with advanced sensors, ML algorithms, and touchscreen displays help tank crews quickly detect and respond to incoming threats
- Mobile radar systems provide ISR (Intelligence, Surveillance, and Reconnaissance) capabilities



Cybersecurity and Drone Control

- AI cybersecurity applications monitor real-time access to industrial facilities at manufacturers and utility companies, track authorized access, and detect patterns indicating cyberattacks
- Cooperative behavior between air or land drones (military or civilian)

AI „in the Field"

- Portable command centers, located close to the battlefield, to quickly process tactical information into a comprehensive and understandable picture of the battlefield
- Specialized edge computing devices, integrated with video, radar, and LIDAR sensors, as well as low-latency storage subsystems, for rapid decision-making

360° Situational Awareness

The Cernis solution in a small form factor (SFF) with NVIDIA® Jetson Orin™ and integrated PCI Express 4.0 switch fabric forms the core of a scalable edge-AI mission computer system for demanding AI applications such as sensor fusion, natural language processing, autonomous systems, situational awareness, and signal intelligence—all in a SWaP-optimized package.

Combined with up to 24 Donati NVIDIA® Jetson Orin™ AGX mission computers, connected via an OSS PCIe fabric, Cernis reaches its full potential. This combination results in a low-latency, high-performance mission computer system, specifically designed for AI applications under extreme operational conditions. With AI inferencing performance of up to 6.6 PetaOPS, data rates exceeding 150 GB/s, and advanced PCIe switching technology, the scalable Cernis/Donati AI-SFF computer system brings datacenter-level computing power to the tactical edge.

360° situational awareness (360SA) applications

SWaP optimized design

- Scalable Small Form Factor (SFF) system in machined aluminum enclosure with flange mounting (MIL-STD-810G)
- Operating temp.: -40 \~ 85°C at up to 10,000 feet operational altitude
- Shock resistance: ±10 g, 11 ms, half-sine pulse, 3 shocks per axis
- Vibration resistance: 4.5 Grms, frequency range 10–2000 Hz

High performance, low power

- NVIDIA® AGX Orin™ compute node with AI processor for embedded autonomy and AI
- Low-power switch with embedded ARM/GPU Orin™ Nano management processor

Multicast

- Data is written to the main memory, which all endpoints can access simultaneously via the PCIe switch
- Significantly reduced latency compared to multiple unicast write operations
- OSS with Orin™ as the root complex and endpoints for Cernis/Donati architecture

Real-time capability

- Handles a variety of AI processing tasks such as 360° situational awareness (1x Cernis and up to 8x Donatis)
- Used for providing fused video and sensor data in real-time for ground troops

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