

AUGUST 2024

# Advanced Rugged Computer Systems for Defense Applications



Serving World-Leading Clients and Institutions



**BLUE LINE**  
IT for Demanding Environments

# How can Blue Line support you?



LEARN MORE ABOUT BLUE LINE

Design state-of-the-art Rugged Computer Systems, retrofit or renew current system installations, and achieve higher performance and user satisfaction with our extensive experience and knowledge gained from numerous advanced computer system designs. Blue Line delivers complete customer-specified systems to world-leading clients.

## WE UNDERSTAND YOUR ENVIRONMENT

Blue Line has been a global supplier of ruggedized and highly reliable IT solutions for demanding environments for more than 35 years. Our DNA is customer focus in all phases of the co-operation. In surveys, the majority of our costumers emphasised Blue Line's ability to listen and to create solutions in close co-operation with our dedicated team.

## HIGHER PERFORMANCE AND LOWER COST

Benefit from a wide range of carefully selected standardized COTS products designed to meet state-of-the-art performance and MIL environmental specifications, targeted for a wide range of demanding defense applications.

## QUALITY AND RELIABILITY

All our systems and products are designed for 24/7 uptime, with the lowest possible power consumption, passive cooling, and without moving parts for maximum operational reliability. Our company adheres to strict quality standards, holding ISO 9001:2015 certification and an AAA credit rating. In line with our focus on the environment and safety, Blue Line is also engaged in a wide range of associations serving our vertical industries, including VITA and PICMG, among others.

## CYBERSECURITY

At Blue Line, we prioritize cybersecurity across all layers, including hardware, firmware, operating systems, and networks. Let's discuss the level of security you aim to achieve on your platform. How stringent are your security requirements, and what specific measures are you looking to implement to safeguard your platform?



A partnership with Blue Line equals



Customer Focus



Competent Dialogue



Quality Products

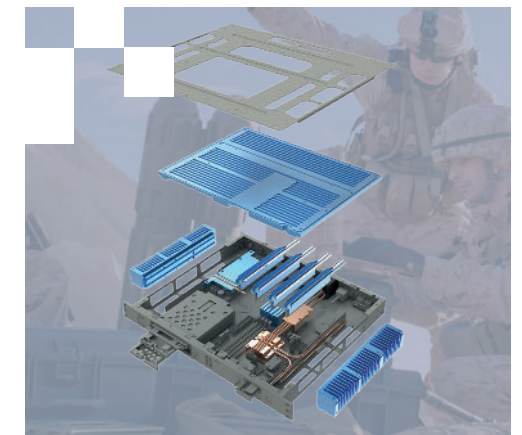
## Reliable System Solutions for Demanding Defense Applications

Are you looking for MIL specified HW to help you break the current limits?

Our MXM-GPU Rack-Mount Server offers the highest performance of various NVIDIA QUADRO MXM GPUs paired with the latest Intel Core and Xeon CPUs in a 2U fanless rugged chassis. With patented design in conduction cooled technology, our servers can survive in the harshest environments(MIL-STD-810,

vibration up to 5 GRMS and shock up to 40g). MXM GPU Edge Computer systems allow extraordinary amounts of data to be collected and processed right on the battlefield in real time.

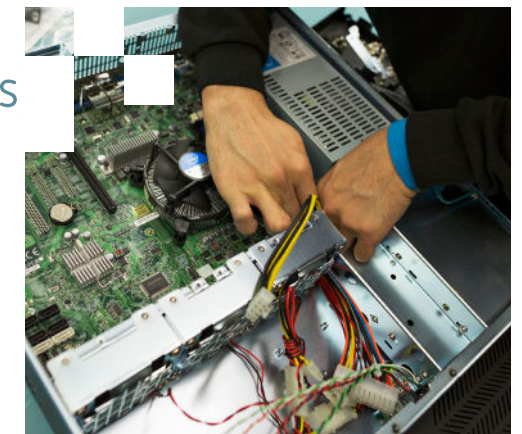
Our Xeon DE VMware Workstations cover multi-core processors for use in complex digital infrastructure, enabling modern cloud, app, networking, security, and digital workspace.



## Customized Solutions (Modular Design – Built to your needs)

Blue Line's military computers and systems are based on modern industry standard Commercial Off-The-Shelf (COTS) open, scalable, and modular architecture-technologies that enable our clients to deploy quickly while meeting size, weight, power and cost (SWaP-C) budgets.

We can tailor our systems to an exact fit and interface to existing HW infrastructure. Additionally, we can provide VPX/OpenVPX systems including custom-specific I/O and choice of connectors (MIL-DTL-38999) tested and certified according to MIL-STD 810 and MIL-STD 461.

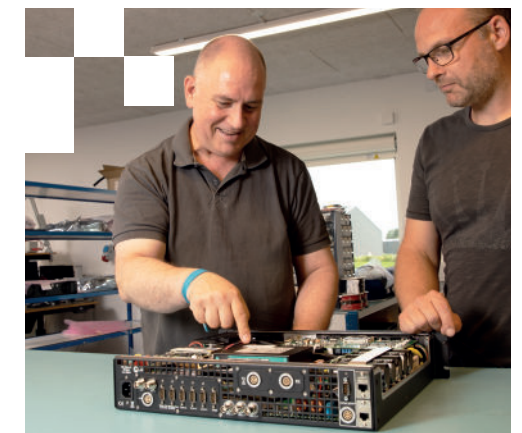


Our skilled staff have many years of experience within proven standard platforms such as VPX, VMEbus, CompactPCI, and MicroTCA.

## Processes & Quality Management

At Blue Line, we make use of a modern and digitally based quality management system and tools for all of our development and delivery processes. The use of PLM (Product Lifecycle Management) ensures 100% tracking of document versions, as well as a complete system delivery history.

Our development and delivery processes are open for validation by our clients, and on request, we can submit the latest external audit for your validation.





# Systems, Solutions & COTS – “Commercial Off The Shelf”

The defense industry has adopted VPX and OpenVPX MOSA profiled architecture, delivering high-speed and modularity for a range of high-density data acquisition, computing, and storage applications. A wide range of fanless and conduction cooled chassis is available. By combining available VPX Modules, individual and intelligent, customized systems can be designed affordably.

Our 1U and 2U Servers are designed to meet MIL-STD 810, capable of withstanding vibration (Method 514.5) and shock (Method 516.5) through rigorous testing to ensure reliability under strong external stress and structural weaknesses.

**RUGGEDIZED MIL SPEC. SYSTEMS AND COMPONENTS:**

- SWaP systems & mission computers
- Rugged ½-19" and ½-ATR computers
- VPX systems (3U/6U shock resistant)
- CompactPCI & VME systems (3U/6U)
- Servers & workstations (19" and ½-19")
- Displays & display-computers
- Ethernet switches & routers, incl. TSN-IP cores
- NAS, recorders, ARINC, 1553
- PMC, XMC, FMC I/O and MIL-STD 461 PSU's
- FPGA ultrascale system boards

## Choose from Blue Line's standardized Defense architectures and technologies for your next MIL Spec. System

SWaP Mission Computers



NAS & Recorders



Servers & Workstations



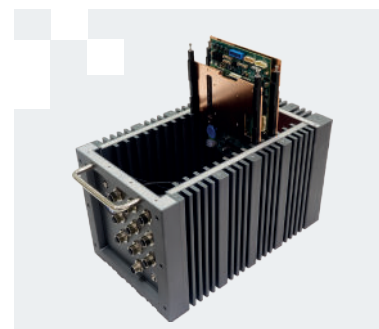
Displays & Computers



Ethernet Switches & Routers



VPX, VME, & cPCI Systems



# Example Applications

Blue Line's MIL specified computing building blocks are intelligent choices for users in the defense industry, ideal for high-speed, high-density data acquisition and control applications. Blue Line offers embedded computer systems based on CPUs, GPUs, and FPGA technologies, as well as interoperable I/O building blocks and network interfacing for these applications.

The demand for AI inference is increasing, focusing on analysis and prediction in various advanced applications. Blue Line's GPGPU AI Inference Optimized Platforms support NVIDIA MXM-GPU modules and differ from normal GPUs by their ability to perform computations typically conducted by a Central Processing Unit (CPU).

Our partnership with NVIDIA ensures access to the most powerful technology

Radar & Sonar Systems



Land, Maritime & Vehicle Computing



Mission Computers & CSISR



Recording, Simulation & Communication







## Open Standards we use

To secure interoperability and second-sourcing, Blue Line are supporting the idea of working primarily with defined, controlled and active Open Standards:

 <p><b>MICROTCA</b> MicroTCA defines a compact backplane-based computer system that is built on AdvancedMC (AMC) modules. These systems find applications in various industries such as research, medical technology, transportation, defense, telecommunications, and networking. MicroTCA systems are employed when there is a need to process a large amount of real-time data, such as analog or digital data, for instance, by FPGAs.</p>	 <p><b>PXI Express</b> PXIe stands for "PCI Express eXtension for Instrumentation" and represents a modular computer system specifically designed for measurement and automation technology. It is built on the PCI Express bus, providing high bandwidth and fast data transfer rates. PXIe serves as a flexible and powerful platform for developing and integrating test and measurement systems.</p>	 <p><b>COM EXPRESS</b> COM Express is a specification of the PICMG for x86-based Computer-on-Modules. These modules integrate the core functionality of a bootable PC such as: CPU, graphics processor, main memory and standard interfaces on one board, which is connected via tw connectors to a specific carrier board.</p>	 <p><b>CPCI / CPCI-S</b> CompactPCI is an American industrial bus system with single or double-Europe card format and is normally used with passive backplanes. CompactPCI Serial is the further development of the CompactPCI standard. In contrast to CPCI, CPCI-S uses serial point-to-point connections and supports the PCIebus.</p>
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## Why Open Standards?

Protect your investment, reduce development time, and mitigate risk by leveraging Open Standards, which offer standardized components accessible from multiple sources, providing a second source option.

 <p><b>HPC</b> High Performance Computing describes high performance systems, which represent what is technically possible. Usually these are equipped with PCIe slots and allow the use of the newest GPUs and CPUs. The preferred use of these systems are image and AI applications.</p>	 <p><b>VMEBUS</b> The VMEbus is a multiprocessor bus system. This means that several CPU Boards can be connected to each other or with several I/O boards. VMEbus systems have up to 20 slots. VME64 systems have 64-bit bus width for data and addresses. All common processor types can be used on VMEbus cards. Today VMEbus systems can be found at countless applications in industry, research, medical technology, aerospace and defense.</p>	 <p><b>VPX (VITA 46)</b> The VPX standard (Virtual Path Cross-Connect) consists of a range of norms that define a bus system with computer boards in 3U and 6U sizes. The communication takes place via serial highspeed connections on passive or switched-fabric backplanes. VPX is mainly used for rugged highperformance applications, like mission computers in defense applications.</p>	 <p><b>OPENVPX (VITA 65)</b> Based on VPX, OpenVPX standardize more stringent system architectures in 3U or 6U format. OpenVPX enables the compatibility of products from different manufacturers. Especially it defines the architecture of the highspeed interfaces between payload, switches, backplanes and chassis.</p>
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