unitronix

THE EMBEDDED EDGE


# Rugged Servers

**Empowering Innovations, Ensuring Excellence**

**Trenton Systems provide secure, TAA-compliant computing solutions to the defence, aerospace and commercial markets. Their core competencies include designing, manufacturing, assembling, testing and supporting ruggedised HPC solutions in Atlanta, GA, USA. Trenton's engineers can customise down to the chip/BIOS level across a product line of CMOSS-aligned SFF mission computers and rugged rack servers. With a tight grip on the supply chain, they can engineer around parts and components issues successfully while providing multi-layer cybersecurity across the hardware, firmware, software and network stack.**

## Core Pillars

**Made in the USA**
Trenton design, manufacture, assemble, test, and support their high-performance computers in Lawrenceville, Georgia, United States of America. The facility is secure and adherent to all applicable quality management standards.

**Cybersecurity**
They are at the forefront of today's cybersecurity landscape, offering our customers ruggedised compute solutions equipped with the latest hardware, firmware, software and network security technologies.

**Secure Supply Chain**
Trenton monitor for, document and remove suspicious and counterfeit electronic parts and components in their supply chain to help protect our systems from security breaches and hardware failures.

**Customisation Capabilities**
They customise their solutions at the board and system level to support our customers' application and service requirements. Enjoy support throughout the product's lifecycle with the industry's leading five-year warranty.

**Certified Rugged**
They test products in-house and in partnership with local testing laboratories. They offer certifications for MIL-STD-810, MIL-STD-461, DO-160, IP67 and other military and industrial standards upon request.



**Trenton Systems owns its board manufacturing capabilities that meet current and future Executive Order 14005 directives of at least 75% U.S.sourced content. Free from processor board vulnerabilities sourced from hostile nations.**

**WHAT IT MEANS**
As design authority of their processor boards, Trenton quickly "engineer in" alternate parts/ circuits to keep customers' program deliveries on track using only parts sourced via their secure supply chain processes and partners. They enable Intel® and partner companies' cyber protection features and provide additional custom BIOS/ firmware protection at no additional cost. These capabilities reduce customers' cost and schedules. They partner with distributors customers to develop solutions that meet specific requirements in a timely and cost-effective manner. Their team locks down product configurations for years and provides support indefinitely or until parts become obsolete. Their HPC solutions are tested to stringent military standards and validated by third-party labs. Test reports are available to our customers and support their fielded product life cycle of over 11 years, illustrating the low TCO customers see today.

## Rack Servers

1U-5U Rugged
Rack Mount Servers
COTS | MOTS | Custom TAA-compliant servers for defence and enterprise deployments and applications.

**19” Rack Server Families:**

**BAM Servers**
Configurable, high-density, 2U and 3U rugged rack servers with the latest in high-performance computing technologies to optimise performance, security and scalability alongside ever-evolving workloads.

**Workload Acceleration**
Perform multiple critical tasks while adapting to increasingly demanding environments with high core count CPUs, virtual machines and containers.

**High-performance meets rugged design**
Equipped with the latest in high-performance computing technologies, BAM servers securely deliver actionable intelligence in seconds to increase situational awareness, reduce response times and enhance decision-making.

**Enhanced AI/ML/DL**
Enhance inferencing, parallel processing and visualisation to deliver actionable insights in real-time with single or double wide multi-instance GPUs.

**Maximum Storage**
Quickly store and retrieve massive amounts of critical data while thwarting advanced cyberattacks with high-capacity, secure SSDs

**2U Rack Servers**
Customised per your most complex technical, performance and environmental specifications for a variety of edge, field, cloud, network and data centre deployments.

**3U Rack Servers**
Next-gen processing, AI/ML/DL, networking, security and storage technologies inside a compact enclosure to maximise flexibility and scalability for critical applications and services.

**3rd or 4th Gen Intel® Xeon® SP CPUs for enhanced compute and connectivity speeds.**

**Half-height or FHFL PCIe 4.0 and 5.0 slots for reduced latency and support for multiple options cards.**

**2U or 3U form factor at 20-24” depth to maximise compute density while adhering to space constraints.**

**NVMe or SATA FIPS 140-2/3 SSDs to securely read/write lots of data-at-rest, in-transit and in-use.**



**Rugged Blade Servers**
Configurability, compute and connectivity inside secure, compact enclosures with fixed or removable blades to maximise performance and adaptability on premises or at the edge

**Maximise Compute Density**
Greatly reduce footprint and hardware costs with multiple single or dual-CPU blades in one chassis. Each processor runs a separate workload.

**Configured Your Way**
Choose from a fixed, front/rear modular, blade server architecture to get multiple systems in one! Each blade has dedicated and isolated resources.

**Future-Proof and Scalable**
Enable quick upgrades, reduced MMTR and rapid deployment for evolving applications with easy cable management and hot-swapability.

**The perfect solution for diverse data environments**
Each blade, whether fixed or removable, acts as a half-rack server with its own CPU, memory and networking to meet the demands of ever-changing workloads, allowing you easily scale your system per your application or program need.

Intel® CPUs Xeon® SP, Xeon® E, Core® for enhanced compute and connectivity speeds.

FHFL PCIe slots Gen 3.0, 4.0, 5.0 for reduced latency and to support various option cards.

1U or 2U form factor at 19-25.75” depth for increased cost-efficiency, compute density and versatility.

COTS | MOTS | Custom Options Available per your technical, performance and environmental specifications.

**COTS Servers**
Configurable, secure, 1U-5U rugged rack servers with lots of I/O options supporting any standard or non-standard motherboard form factor to maximise performance, interoperability and scalability.

**Board Flexibility**
Configure a system with any compatible COTS motherboard to meet your most demanding technical, performance and environmental specifications.

**Future-Proof Design**
Upgrade and scale your server by simply removing and replacing the board without modifying the rest of the system, reducing costs while increasing flexibility.

**Undeniably Rugged**
Certified to the most stringent military and industrial standards to maximise performance and limit equipment failure within the harshest of environments.

**High-performance computing powerhouses**
These COTS servers support the latest processing, AI/ML/DL, networking, security and storage technologies to enhance operational efficiency for a wide variety of application, networks and services within the defence and enterprise sectors.

**Vendor agnostic**
Easily integrate components from vendors of your choosing into a standard, modified or custom MOSA-aligned system.

**Readily deployable**
All hardware and software is integrated, installed and set up before it ever reaches a customer and/or end user.
Intel® or AMD® CPUs Xeon® SP, Core®, Epyc® for enhanced compute and connectivity speeds.
Half-height or FHFL PCIe 4.0 and 5.0 slots for reduced latency and support for multiple options cards.
1U-5U form factor at 18-24” depth to maximise compute density while adhering to space constraints.
NVMe or SATA FIPS 140-2/3 SSDs to securely read/write lots of data-at-rest, in-transit and in-use.



**Customisation Capabilities**
The engineering and product teams work with Unitronix in a consultative relationship to craft a system or solution per our customers most complex specifications.

## Just tell us what you need...

**Partnership Ecosystem**
Designed with a global network of tech partners to provide end users with the latest HPC technologies.
**End-to-End (E2E)**
Only stop shop for full hardware and software integration, installation, setup and support.
**Turnkey Solutions**
Readily deployable hardware for an enhanced out-of-box experience, greatly reducing load/run times.
.

**Components**
Their mechanical, electrical and hardware engineers craft processor boards, PCIe backplanes, and chassis for a variety of rugged system configurations
**Boards**
Trenton controls the entire design of their boards down to the chip level, working with the BIOS source code to create firmware enhancements and security.
**Systems**
COTS, MOTS and custom systems. They can use a standard system, modify an existing one, or create an entirely new one for your application or program need.
**Integrations**
They can incorporate parts from a wide variety of vendors to ensure the system or solution meets your technical, performance and environmental requirements.
**Solutions**
Utilise one or more systems with various hardware and software components fully integrated for edge, field, cloud, network and data centre deployments.

## PICMG 1.3 Servers

Secure, readily-deployable, rugged rack servers in various form factors that can be configured and scaled in response to the demands of complex, ever-evolving workloads.

**Flexibility and Scalability**
Easily configure/reconfigure your system to serve the needs of critical applications, networks and services while eliminating compatibility issues.
**Interoperability Assured**
Simplify system architecture and reduce costs with a single CPU processor board compatible with multiple chassis and backplane configurations.
**Configured Your Way**
Craft a completely custom system with your choice of chassis, backplane, storage and I/O interface to meet your most complex requirements.

**Extended lifecycle and availability at your fingertips**
PICMG 1.3 servers prolong a system's operational efficiency while reducing downtime and minimising disruption to existing infrastructure. (Support for Windows 11 available).
**Made in USA**
Designed, manufactured, assembled, tested and supported in Atlanta, GA.
**Maximum security**
Full protection of data-at-rest, in-transit and in-use across hardware, firmware, software and network stack.

Single Intel® CPUs Core® and Xeon® E for enhanced compute and connectivity speeds.

4x DDR4 memory slots to keep critical information readily available to be accessed by the CPU.

2U, 4U and 5U form factor at 16.5-26" depth to fit multiple option cards while adhering to space constraints.

NVMe or SATA FIPS 140-2/3 SSDs to securely read/write lots of data-at-rest, in-transit and in-use.



## HDEC Servers

Secure, readily-deployable, rugged rack servers in various form factors that can be configured and scaled in response to the demands of complex, ever-evolving workloads.

**Flexibility and Scalability**
Easily configure/reconfigure your system to serve the needs of critical applications, networks, and services while eliminating compatibility issues.
**Interoperability Assured**
Simplify system architecture and reduce costs with a single-CPU processor board compatible with multiple chassis and backplane configurations.
**Configured Your Way**
Craft a completely custom system with your choice of chassis, backplane, storage and I/O interface to meet your most complex requirements.

**Extended lifecycle and availability at your fingertips**
HDEC servers prolong a system's operational efficiency while reducing downtime and minimising disruption to existing infrastructure.
**Maximum security**
Full protection of data-at-rest, in-transit and in-use across hardware, firmware, software and network stack.

Dual Intel® CPUs 2nd Gen Core® for enhanced compute and connectivity speeds.
8x DDR4 memory slots to keep critical information readily available to be accessed by the CPU.
2U, 4U and 5U form factor at 16.5-26" depth to fit multiple option cards while adhering to space constraints.
NVMe or SATA FIPS 140-2/3 SSDs to securely read/write lots of data-at-rest, in-transit and in-use.

# Rugged Small Form Factor Computers

Fanless, sealed and ultra-rugged mission computers or as a Mini PC workstation - the ultimate SWaP-C choice for austere environments and enterprise deployments.

TACTICAL ADVANCED COMPUTER

**TAC Fanless Computers**

A family of ultra-rugged, secure, SWaP-C optimised small form factor mission computers designed in a fanless, sealed enclosure to enhance performance at the tactical edge within the harshest of environments.

**A Comprehensive Solution to Your SWaP-C Requirements**

Just under 6 pounds and under 9.5", the TAC's compact design, passive cooling, and low-power requirements enable maximum operational efficiency within the smallest of spaces while reducing hardware costs.

**Dual military-grade connectors**

Two MIL-38999 connectors consolidate, enhance and scale I/O while guarding against electromagnetic interference to protecting existing infrastructure and prevent equipment failure.

**Customised Your Way**

System dimensions can be changed per your most complex specs.

**Ruggedised for extremes**

Certified to the most stringent military and industrial standards, including IP67 and MIL-STD-461, to protect against the elements and ensure peak performance in extreme environments ranging from -40°C to +70°C.

**Enhanced Processing, Storage and Security**

**Intel® Xeon® D CPUs**

High or low core count CPUs equipped with the latest high-performance computing technologies to meet your performance, cost, space and power requirements.

**Removable SATA SSDs**

High-capacity, self-encrypting drives that securely store and retrieve large amounts of critical intelligence in seconds to increase awareness and enhance decision-making.

**Zero Trust Architected**

Technologies such as Intel® PFR, SGX and TME guard data-at-rest, in-transit and in-use across the hardware, firmware, software and network stack.

**System Versatility**

The TAC is readily deployable across tactical air, sea, land, space and cyber environments for various applications including telemetry, EW, testing and simulation and ISR.

**TAA-Compliant**

Designed, manufactured, assembled, tested and supported at our headquarters in Atlanta, GA, USA in consultation with their sales, product, and engineering teams.



**ION Mini PC**

A TAA-compliant, zero trust architected, small form factor rugged mini PC designed in a SWaP-C optimised enclosure to enhance performance across the defence and enterprise sectors.

**A Mini PC With Lots of Capabilities**

With increased memory, self-encrypting drives and Intel® CPUs, the ION Mini PC equips the modern warfighter with enhanced compute, storage and flexibility needed to run evolving applications with ease.

**Enhanced memory and storage capacity**

SATA SSD drives and 32GB of DDR4 memory allow you to quickly store and retrieve large amounts of critical intelligence needed to stay vigilant of enemy threats with minimal risk of hacker intrusion.

**Supports Intel® Core i3, i5, and i7 CPUs**

High core count processors with Intel® Virtualisation Technology allow you to run multiple accelerated virtual workloads on the Mini PC, maximising compute density and reducing total cost of ownership.

## Intel® Inside

**Optane Memory**

Reduce lag time with personalised, responsive and accelerated computing that keeps often-used applications and documents ready for quick access.

**Turbo Boost**

Alternate between low and high CPU clock speeds based on workload requirements, maximising adaptability while staying within temperature and power limits.

**vPro**

Enhanced performance, cybersecurity, remote management and much more to minimise disruption, reduce costs and thwart sophisticated cyberattacks.

**Server-class features**

Server-class operations such as IPMI allow you to maximise operational efficiency while reducing compute footprint.

**Customised to your specs**

Designed in consultation with their engineering teams and Unitronix to meet your most complex technical, performance and environmental specifications.

## Storage Arrays

**NVMe JBOD Storage Arrays**
High-capacity, self-encrypting drives inside a secure, rugged storage enclosure that satisfies the advanced storage demands of complex, evolving workloads.
**Maximum Storage Capacity at Your Fingertips**
JBOD Storage Arrays hold up to 24 high-speed, front-removable NVMe self-encrypting drives with full redundancy for maximum protection of critical data-at-rest, in-transit and in-use.
**Lightning Fast Read-Write Speeds**
Each drive runs independently with a read/write speed of 27.2 GB/s, storing and retrieving massive amounts of actionable intelligence in seconds for critical applications, networks and services.
**Also available in 5U height**
Store up to 48 SATA SSDs alongside 18 PCIe Gen 3 slots for expanded I/O
**Easily Configurable**
Available in either three magazine (eight drives per magazine) or individual drive architecture, both of which are quickly and easily removable to reduce mean time to replace.

### Unmatched Performance and Adaptability

**Native End-To-End PCIe**
Two PCIe Gen 3 cables allow direct connection between the CPU on the host system(s) and each drive to reduce latency and each drive has a dedicated PCIe Gen 3 link.
**Processor Board Agnostic**
Use up to two processor boards of your choice to enhance your system's flexibility in response to ever-changing application or program needs.
**Fully System Control**
A GbE management port allows you to connect straight to the BMC for complete system monitoring and control.
**Supply chain risk management**
Trenton systems utilise components obtained only from an approved vendor list (AVL). They implement a counterfeit parts protection program to detect, identify, document, remove and destroy components that can compromise a system's integrity.

**Customised to your specs**
Designed in consultation with their engineering teams and Unitronix to meet your most complex technical, performance and environmental specifications.



## Coming Soon

### INFRASTRUCTURE PROCESSING SYSTEM

**1U IPS**
High-speed compute and enhanced network visibility on a single piece of hardware integrated with flexible, programmable software for packet processing, filtering and routing.
**Software-Defined. Hardware-Accelerated.**
A secure, configurable network infrastructure acceleration, monitoring and management tool utilising the Intel® IPU E2000 ASIC that supports general compute and highly intelligent applications/services across data centres or at the network edge.
**Monitor and analyse network traffic with sub10 nanosecond precision**
Detect anomalies in network traffic with IPSec and PTP 2.0 to authenticate, encrypt and timestamp data packets for secure, reliable communication between devices.
**Configured Your Way**
Two separate IPU systems in one or half-rack form factor available.
**Network infrastructure management at 200Gbps line rate speeds**
System-level control, security and isolation enable multiple workloads to run simultaneously without interference or resource contention within diverse data environments.

### Revolutionary Compute and Networking Capabilities

**NEXT-GEN HPC TECHNOLOGIES**
Peak Performance
ARM Neoverse R1 Cores, LP-DDR RAM, 1/25GbE ports and Intel® Optane SSDs allow for rapid processing, analysis, storage, retrieval and transfer of data packets.

**PROGRAMMING PROTOCOL INDEPENDENT PACKET PROCESSORS P4**
High-level programming language used for customising and configuring network switches and routers to enable flexible and efficient packet processing.

**DATA PLANE DEVELOPMENT KIT DPDK**
Software libraries and drivers that enable fast packet processing and networking, enhancing the performance of network applications and virtualised environments.

**Quality of service guaranteed**
The 1U IPS can act as a network tap or network packet broker for a variety of use cases across the critical infrastructure, commercial and public sectors, enhancing security and efficiency for demanding workloads from AI to 5G wireless networks.

**Comprehensive cybersecurity**
Equipped with the latest hardware and software-based security technologies to protect data-at-rest, in-transit and in-use across the hardware, firmware, software and network layer stack.

## Fixed and Modular Blade Servers

High-density, secure and configurable modular and non-modular blade servers that deliver enhanced computing and networking alongside evolving workloads for defence and enterprise deployments.

**Compute Density. Redefined.**
Minimise footprint and hardware costs by running multiple single or dual-CPU blades within a single chassis. Each CPU runs a separate workload, enhancing operational efficiency within diverse data environments.

**High-performance meets flexible design**
Available as fixed blade or front modular servers. Each blade has dedicated and isolated resources--including up to two Intel® 3rd Gen Xeon® SP CPUs and a fixed, customisable I/O board--giving you multiple systems in a single chassis.

**Configured Your Way**
Also available in a 2U form factor supporting up to four dual-CPU blades

**Future-proof and hot-swappable architecture**
Make upgrades in seconds without having to remove cables, so you can easily scale your server to meet the demands of evolving workloads, reduce mean time to repair, and enable rapid deployment.

**New Server Variations**

1: MAXIMUM CONFIGURABILITY
1U **MBS.FM**
Front-modular blade server with two 1U dual-CPU blades

2: ENHANCED PROCESSING AND STORAGE
1U **MBS.FM Lite**
Two 1U single-CPU blades supporting up to two high-capacity SSDs

3: WORKLOAD ACCELERATION
1U **FBS**
Fixed blade server with two 1U dual-CPU blades

**Versatility across industries**
Trenton's fixed and modular blade servers enhance performance for a variety of applications across the defence, commercial, industrial and critical infrastructure sectors, such as SIGINT, telecom/5G, fintech and energy/utilities.

**COTS, MOTS, or Custom**
Crafted per your requirements they can modify an existing system/solution or create an entirely new one down to the board and chip level to fit your most demanding application or program needs.



## New Product

1U **PT.1**
A high-density, cybersecure, TAA-compliant, rugged COTS server with the latest high-performance computing technologies to maximise performance and adaptability alongside evolving workloads.

**An All-in-One Configurable Solution**
Designed with advanced processing, AI/ML/DL, networking, security and storage, the 1U PT.1 delivers unprecedented flexibility and scalability for a wide variety of defence and enterprise applications on premise or at the edge.

**Enhanced processing, throughput, and transfer**
Single Intel® 12th/13th Gen Core® or 4th Gen Xeon® SP CPU and 1GbE/10GbE ports allow you to quickly adapt to the demands of ever-changing data environments, improving operational efficiency while reducing congestion and latency.

**Customised Your Way**
Available in 2U and 3U form factor for multiple option cards and GPUs.
Actionable intelligence at your fingertips
Front-removable, self-encrypting SATA SSDs, a PCIe 5.0 slot for FHFL option cards (including high-end GPUs), and DDR5 DIMM slots securely analyse, store and retrieve large amounts of critical data in seconds, delivering real-time insights to improve decision-making and reduce response times.

**A Comprehensive HPC Powerhouse**

**Ruggedness Guaranteed**
Designed to meet MIL-STD-461 and MIL-STD-810 with a tested/passed operating temperature of 50°C* to ensure the quality and reliability of these systems and solutions.
*For higher temp or extended temp ranges, contact unitronix.

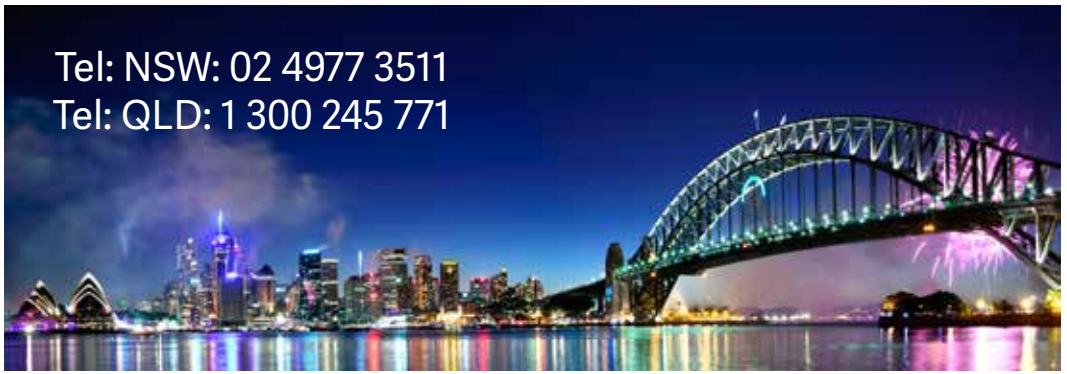
**SWaP-C Optimisation**
Compact, lightweight, low-power architecture ensures effective operation within the smallest of spaces, reducing footprint and hardware costs.

**Zero Trust Security**
Technologies such as Intel® PFR/SGX/TME as well as TPM 2.0 guard data-at-rest, in-transit and in-use across the hardware, firmware, software and network stack.

**System Versatility**
The 1U PT.1's configurability enables you to meet the requirements of use cases such as C6ISR, radar/sonar, JADC2, telecom, fintech, transportation and energy/utilities.

**COTS, MOTS or Custom**
Crafted per your requirements in consultation with our distributor Unitronix. Trenton can modify an existing system/solution or create an entirely new one down to board and chip level to fit your most demanding application or program needs.

**UNITRONIX PTY LTD**
9/37 Currans Road,
Cooranbong
NSW 2265
Australia




unisales@unitronix.com.au
www.unitronix.com.au

**UNITRONIX LTD**
130 Aztec West,
Bristol
BS32 4UB
UK

Tel: 01454 629679