Solution Brief

High Performance Computing (HPC) and Artificial Intelligence (AI)

AMAX Server System X-248TW Family

Featuring 3rd Generation Intel® Xeon® Scalable Processors

Density Optimized Solution Offering New Expanded Options and Performance for HPC and AI

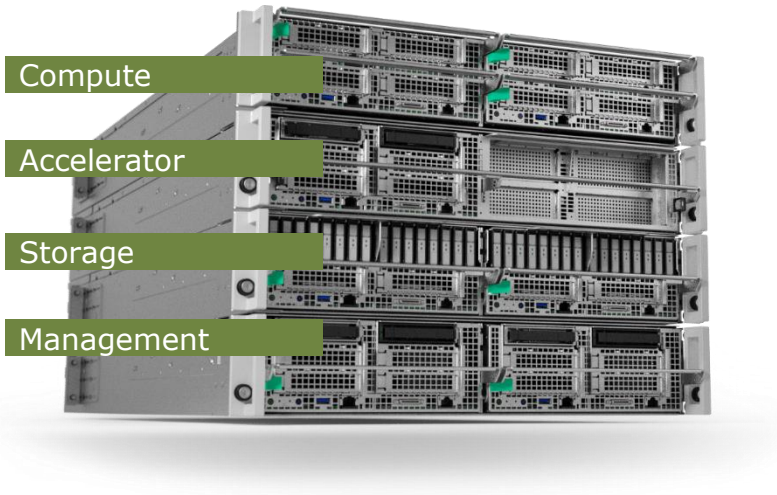
One Flexible and Powerful HPC Platform

The AMAX Server System ServMax® X-248TW Family offers density- optimized performance for HPC and AI applications while expanding the breadth of solutions possible. Four distinct module types are available, each providing unique features for compute, management, storage, and accelerator functionality.

Compute performance is delivered by 3rd Generation Intel® Xeon® Scalable processors—with 1.46x average performance improvement versus the previous generation.[1] The new accelerator module supports up to four full-height, full-length, double-wide PCIe accelerator cards, along with four low-profile PCIe cards. The new storage module provides high-speed storage with up to 1 PB capacity in a single 2U chassis. These features and more allow the AMAX ServMax® Server System X-248TW Family to deliver the highest performance and most comprehensive solution for HPC and AI needs offered by Intel. It sets a new standard in this segment and establishes a foundation for future platform growth.

Four Distinct Modules to Address Your Specific HPC and AI Needs

- **Compute module:** Compute modules are available as air-cooled or liquid-cooled, with two high-speed 3rd Generation Intel Xeon Scalable processors, two low-profile PCIe card slots, and two M.2 storage slots. The liquid-cooled option enables enhanced cooling efficiency versus previous liquid-cooled designs and can improve your data center's overall energy efficiency.
- **Accelerator module:** Accelerate HPC and AI workloads with two 3rd Generation Intel Xeon Scalable processors and support for four full-height, full-length, double-wide PCIe accelerator cards, in addition to four low-profile PCIe cards with M.2 and U.2 storage options.
- **Management module:** Manage your HPC rack with two powerful 3rd Generation Intel Xeon Scalable processors. Each module provides four low-profile PCIe cards with M.2 and U.2 storage options.



- **Storage module:** Enables high density storage scalability for data-centric workloads, with up to 16 NVMe E1.L SSDs for up to 500 terabytes of storage capacity per module, along with two 3rd Generation Intel Xeon Scalable processors and two low-profile PCIe cards.

Features Available in Every Module

- **High-performance compute:** 3rd Generation Intel Xeon Scalable processors deliver outstanding per-core performance, with up to 40 cores per processor and 1.46x average performance improvement versus the previous generation.[1]
- **Accelerate AI workloads:** Intel® Deep Learning Boost greatly accelerates AI inferencing, enabling you to run workloads on versatile, general-purpose processors without compromise.
- **Speed I/O between processors:** Three Intel® Ultra Path Interconnects (Intel® UPI) accelerate I/O between processors versus the previous generation.
- **High memory bandwidth:** Up to 3200 MT/s throughput, with up to 1 TB of DRAM capacity per processor.
- **Expand memory capacity:** Intel® Optane™ persistent memory 200 series support enables up to 3 TB of memory

capacity per processor and provides an average of 32% higher memory bandwidth versus the previous generation.[2]

- **Breakthrough storage capacity and performance with affordable capacity:** Up to 1 PB of high-performance NVMe storage per 2U chassis with dual storage modules.
- **High-speed networking and I/O:** Accelerate network throughput between cluster nodes with high-throughput Intel® Omni-Path and InfiniBand support. PCIe 4.0 support delivers extraordinary data throughput for storage and networking.
- **Hardware-enhanced security:** Help protect against malicious exploits and accelerate data encryption with built-in security features, while maintaining workload integrity and reduced performance overhead.

Accelerating Time to Market with Innovative Data CenterSolutions

The AMAX ServMax® Server System X-248TW Family is a new, high- performance member of AMAX Data Center Blocks. These fully validated server systems include AMAX's latest data center technology—already optimized to work better together—allowing customers to accelerate time to market with reliable data center solutions. The process of configuring and validating the components of solutions that are tuned to meet specific customer requirements is a complex and resource-intensive process. AMAX Data Center Blocks, based on the AMAX ServMax® Server System X-248TW Family, reduce this complexity, making it easier to build innovative server solutions that can support the demands of today's data center workloads.

Highly Integrated, High Density Compute Solution

The AMAX ServMax® Server System X-248TW Family Data Center Block can be configured to support a wide range of memory, storage, and I/O options. Solutions are configured using 3rd Generation Intel Xeon Scalable processors, AMAX ServMax® Server System X-248TW Modules, and the AMAX Server Chassis FC2000 Family. The AMAX Server Chassis FC2000 Family allows flexible configuration of different functionality compute modules in a single chassis, further extending the benefits of the AMAX Server System X-248TWFamily.

AMAX ServMax® Server System X-248TW Family Modules

Component	1U half-width compute module	2U half-width management module	2U half-width storage module	2U full-width accelerator module
CPU	2S 3rd Gen Intel Xeon Scalable processors up to 270W TDP	2S 3rd Gen Intel Xeon Scalable processors up to 270W TDP	2S 3rd Gen Intel Xeon Scalable processors up to 205W TDP	2S 3rd Gen Intel Xeon Scalable processors up to 270W TDP
Memory	DDR4 3200 MT/s 16x DIMMS, 8x Intel Optane persistent memory per module; supports 8 GB to 128 GB DIMM options; number and capacity configurable			
Storage	2x M.2 SATA/NVMe SSDs 80 or 110 mm	2x M.2 SATA/NVMe SSDs 80 or 110 mm and 2x U.2 NVMe hot-swap SSDs	2x M.2 SATA/NVMe SSDs 80 or 110 mm and 16x E1.L NVMe hot-swap SSDs	2x M.2 SATA/NVMe SSDs 80 or 110 mm and 2x U.2 NVMe hot-swap SSDs
DCB Configuration	2U/4N air cooled or liquid cooled	2U/2N air cooled	2U/2N air cooled	2U/1N air cooled
I/O	Integrated 10Gbase-T RJ45 and 2 x16 PCIe 4.0 low-profile slots	Integrated 10Gbase-T RJ45 and 3 x16 PCIe 4.0 low-profile slots and 1 x8 PCIe 4.0 low-profile slots	Integrated 10Gbase-T RJ45 and 2 x16 PCIe 4.0 low-profile slots	Integrated 10Gbase-T RJ45 and 3 x16 PCIe 4.0 low-profile slots and 1 x8 PCIe 4.0 low-profile slots and 4 x14 FHFL DW PCIe 4.0 slots
Debug Support	Dedicated port for VGA, serial, and 2 USB 2.0 port connectivity			
Cooling	High-flow air cooling or direct-to-chip liquid cooling for CPUs, VRs, DIMMs, memory VRs, PCIe cards, M.2 storage	High-flow air cooling	High-flow air cooling	High-flow air cooling

AMAX Server Chassis FC2000 Family Options		
Component	**2U front I/O standard-width air-cooled chassis with included rail kit**	**2U front I/O standard-width liquid-cooled chassis with included rail kit**
Supported Configurations	4x 1U half-width compute modules; 2x 2U half-width management or storage modules; 1x 2U accelerator module	4x 1U half-width compute modules
Cooling	3x 60mm fans and 2x 80mm fans	3x 60mm fans and integrated liquid-cooling manifold (SCG06 external connectors, CGD03 internal connectors)
Power Supplies	3x hot-swap CRPS 1600W (Titanium) or 2100W (Platinum) PSUs	3x hot-swap CRPS 2100W (Platinum) PSUs
Options	Optional shared 1Gbase-T RJ45 management port chassis card	

A Key Member of the AMAX Server System Family Portfolio

The Intel Data Center Solutions Group has created a portfolio of Intel Server Systems to handle all your data center and workload requirements. Combined, these servers can run everything from entry-level tasks to your most compute-intensive and data-centric workloads.

Enterprise-Class Server Management

Intel Server Systems provide consistent, enterprise-grade server management across all platforms to simplify deployment, monitoring, updating and debugging.

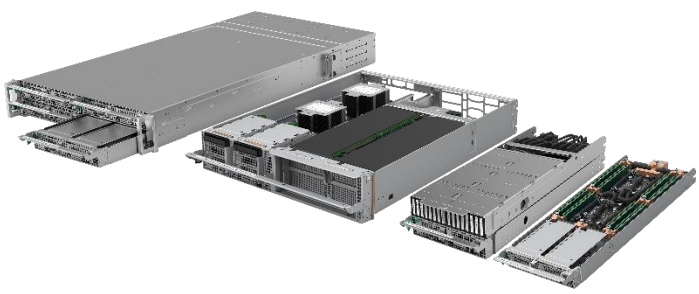
The consistent interface, tools and utilities simplify and accelerate all stages of the server lifecycle—from build and customize to deployment, to multi-server management, to single server debug and maintenance.

Deploy with Confidence with Intel Quality, Reliability, Service and Support

Intel servers aren't just packed with innovation—they all come with Intel's highly rated, comprehensive services and support package, delivering differentiating value to every stage of the server lifecycle—from pre-purchase and deployment to operations, management and support.

You can take advantage of Intel's proven support and service, including a 3-year warranty (optional 5-year) and global technical support.

Intel Server Systems are also easy to deploy and operate, with comprehensive documentation for integration, configuration and management. All Intel Server Systems are fully integrated systems with options of configure-to-order CPU, memory, storage, and more.



Reduce Risk of Counterfeit Parts with AMAX Transparent Supply Chain

Counterfeit electronic parts are a growing security concern across all organizations. These concerns have grown as supply chains have become increasingly complex, multi-layered and global.

Current supply chain practices start with trusting the source, but processes are limited for screening out counterfeit components, particularly for products containing many subsystems.

AMAX Transparent Supply Chain helps customers verify the authenticity and firmware version of servers and their components through a set of tools, policies, and procedures. These verification steps, implemented on the factory floor at server manufacturers, enable enterprises to verify the authenticity and firmware version of systems and their components when systems arrive at their site.

This industry-leading approach helps:

- Provide component-level traceability and visibility
- Detect tampering of components and configuration state between stops
- Deliver fleet-level insights across suppliers

These and other safeguards combine to increase assurance and trust that the Intel servers you're purchasing and deploying are free of counterfeit components that could compromise your business or customers.

AMAX ServMax® Server System X-248TW Modules and Chassis SKUs

Product Code	Description
X-248TW1SB	AMAX Server Board X-248TW
X-248TW1SBCR	AMAX Server Board X-248TW DDR4 Only
X-248TW1MHCPAC	AMAX Compute Module X-248TW 1U Half-Width Air-Cooled
X-248TW1MHCRAC	AMAX Compute Module X-248TW 1U Half-Width Air-Cooled DDR4 Only
X-248TW1MHEVAC	AMAX Compute Module X-248TW 1U Half-Width EVAC Air-Cooled DDR4 Only
X-248TW1MHCRLC	AMAX Compute Module X-248TW 1U Half-Width Liquid-Cooled DDR4 Only
X-248TW2MHSVAC	AMAX Management Module X-248TW 2U Half-Width Air-Cooled
X-248TW2MHSTAC	AMAX Storage Module X-248TW 2U Half-Width for Storage Air-Cooled
X-248TW 2MFALAC	AMAX Acceleration Module X-248TW 2U Full-Width Air-Cooled
FC2HLC21W3	AMAX Server Chassis FC2000 Half-Width Configuration Liquid-Cooled (2100W)
FC2HAC21W3	AMAX Server Chassis FC2000 Half-Width Configuration Air-Cooled (2100W)
FC2HAC16W3	AMAX Server Chassis FC2000 Half-Width Configuration Air-Cooled (1600W)
FC2FAC16W3	AMAX Server Chassis FC2000 Full-Width Configuration Air-Cooled (1600W)