

Intel® Server System D50TNP Family Featuring 3rd Generation Intel® Xeon® Scalable Processors

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

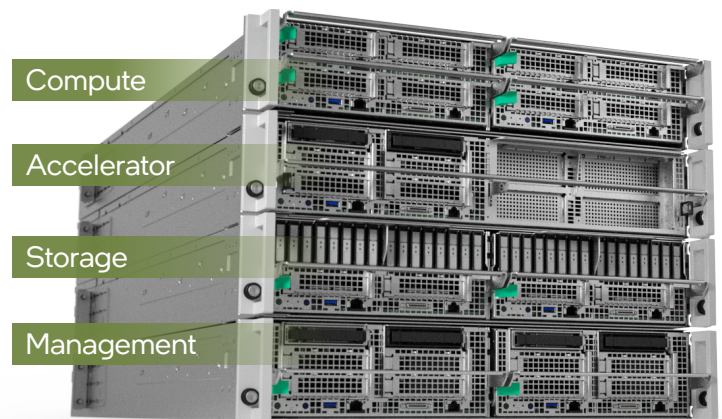
One Flexible and Powerful HPC Platform

The Intel® Server System D50TNP 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 Intel Server System D50TNP 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 Center Solutions

The Intel Server System D50TNP Family is a new, high-performance member of Intel® Data Center Blocks. These fully validated, unbranded server systems include Intel's

latest data center technology—already optimized to work better together—allowing partners 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. Intel Data Center Blocks, based on the Intel Server System D50TNP 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 Intel Server System D50TNP 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, Intel Server System D50TNP Modules, and the Intel® Server Chassis FC2000 Family. The Intel Server Chassis FC2000 Family allows flexible configuration of different functionality compute modules in a single chassis, further extending the benefits of the Intel Server System D50TNP Family.

Intel® Server System D50TNP 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

Intel® 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 Intel® 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.

Intel Server Systems can be configured to order to meet your specific needs. You can learn more about these systems in the portfolio by visiting www.intel.com/serverproducts.

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 Intel® 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.

Intel® Transparent Supply Chain helps partners and 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.

Intel® Server System D50TNP Modules and Chassis SKUs

Product Code	MM	Description
D50TNP1SB	99A2AT	Intel Server Board D50TNP
D50TNP1SBCR	99AA23	Intel Server Board D50TNP DDR4 Only
D50TNP1MHCPAC	99A2DZ	Intel Compute Module D50TNP 1U Half-Width Air-Cooled
D50TNP1MHCRAC	99A84D	Intel Compute Module D50TNP 1U Half-Width Air-Cooled DDR4 Only
D50TNP1MHEVAC	99AG2H	Intel Compute Module D50TNP 1U Half-Width EVAC Air-Cooled DDR4 Only
D50TNP1MHCRLC	99A84F	Intel Compute Module D50TNP 1U Half-Width Liquid-Cooled DDR4 Only
D50TNP2MHSVAC	99A2F1	Intel Management Module D50TNP 2U Half-Width Air-Cooled
D50TNP2MHSTAC	99A27J	Intel Storage Module D50TNP 2U Half-Width for Storage Air-Cooled
D50TNP2MFALAC	99A2F4	Intel Acceleration Module D50TNP 2U Full-Width Air-Cooled
FC2HLC21W3	999D3Z	Intel® Server Chassis FC2000 Half-Width Configuration Liquid-Cooled (2100W)
FC2HAC21W3	999MVK	Intel® Server Chassis FC2000 Half-Width Configuration Air-Cooled (2100W)
FC2HAC16W3	999D40	Intel® Server Chassis FC2000 Half-Width Configuration Air-Cooled (1600W)
FC2FAC16W3	99A0RR	Intel® Server Chassis FC2000 Full-Width Configuration Air-Cooled (1600W)

Intel® Server System D50TNP Accessories and Spares SKUs

Product Code	MM	Description
TNPACCLBZDC	99A2AR	D50TNP Accelerator Card Kit DC
TNPACCLBZV100	99A2HZ	D50TNP Accelerator Card Kit V100
TNPACCLBZA100	99AJJC	D50TNP Accelerator Card Kit A100
TNPLCVRTLS	99AAKL	D50TNP liquid-cooling VR TIMM application tools
TNPLCVRTNZ	99AF47	D50TNP liquid-cooling VR TIMM application nozzle
TNPLCVRCMPD	99AAKM	D50TNP liquid-cooling VR TIMM compound
TNPM2HSLC	99A5Z9	D50TNP M.2 heatsink liquid-cooled assembly
TNPIURISER	99A2GL	1U PCIe D50TNP riser card
TNP2URISER	99A2GM	2U PCIe D50TNP riser card

Intel® Server System D50TNP Accessories and Spares SKUs (continued)

Product Code	MM	Description
TNPIUCRRISER	99AF4H	1U PCIe D50TNP riser card for D50TNP1MHCRCAC and D50TNP1MHCRLC
TNPACCLRISER1	99A2GK	2U D50TNP Accelerator riser card 1
TNPACCLRISER2	99A2GN	2U D50TNP Accelerator riser card 2
TNPSTDCKBRD	99A2F7	D50TNP Storage Compute Module Docking Board
TNPACCLCNBRD	99A2F8	D50TNP Accelerator Compute Module Connector Board
TNPIUH5F	99A2F9	D50TNP 1U air-cooled heat sink front, Single
TNPIUH5B	99A2FA	D50TNP 1U air-cooled heat sink back, Single
TNP2UH5F	99A27K	D50TNP 2U air-cooled heat sink front, Single
TNP2UH5B	99A2F5	D50TNP 2U air-cooled heat sink back, Single
TNPLCLPCM	99A2GC	D50TNP compute module primary liquid-cooling loop
TNPM2HS	99A2GA	D50TNP M.2 heatsink air-cooled assembly
TNPDMMBLNK	99A5ZC	D50TNP DIMM Blank
TNPLRBLNK	99AF4C	D50TNP Ruler Blank
TNPDMLTHTL	99AF4D	D50TNP Liquid-cooling DIMM Latch Tool
TNPEVACHS	99AFFM	D50TNP EVAC heat sink for 1U compute module
TNPLCDMTM	99AFM7	D50TNP compute module liquid-cooling loop DIMM TIMM

Intel® Server System D50TNP Reused Accessories and Spares SKUs

Product Code	MM	Description
AXXCONNTDBG	999D47	Intel® Compute Module S9200WK Multi-connector debug dongle
AXXFCEMP	999D48	Intel® Server Chassis FC2000 EMP Module
AXXFCIUBLANK	999D49	Intel® Server Chassis FC2000 1U Compute Module Blank
FXXWKLCDMCLP	999D46	Intel® Compute Module S9200WK Liquid-Cooling Loop DIMM Clip
AXXI600TCRPS	99ADF2	Intel® Server Chassis FC2000 1600W PSU
FCXX2100CRPS	999D4L	Intel® Server Chassis FC2000 2100W PSU
FCXX60MMFAN	999D4A	Intel® Server Chassis FC2000 60mm Fan
FCXX80MMFAN	999D4C	Intel® Server Chassis FC2000 80mm Fan
FCXXLCMANFLD	999D4F	Intel® Server Chassis FC2000 liquid-cooling manifold
FCXXPDBASSMBL	999D4G	Intel® Server Chassis FC2000 PDB Assembly
FCXX1USPPRT	999D4H	Intel® Server Chassis FC2000 1U Internal Rail Kit
FCXXRAILKIT	999D4J	Intel® Server Chassis FC2000 External Rail Kit

Additional Resources:

Detailed SKU configurations can be found at: <http://ark.intel.com/ark/products/series/201583/Intel-Server-System-D50TNP-Family>

For more information on Intel® Server Products visit: www.intel.com/serverproducts

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Marketing Resources: Access a library of marketing assets by visiting the DSG Marketing Asset Library at: <https://servermarketinglibrary.intel.com>



1) See [125] at www.intel.com/3gen-xeon-config. Results may vary.

2) Based on testing by Intel as of April 27, 2020 (Baseline) and March 23, 2021 (New). Baseline configuration: 1-node, 1 x Intel Xeon Platinum 8280L processor (28 cores at 2.7 GHz) on Neon City with a single Intel Optane PMem module configuration (6 x 32 GB DRAM; 1 x {128 GB, 256 GB, 512 GB} Intel Optane PMem module), ucode rev: 04002F00 running Fedora 29 kernel 5.1.18-200.fc29.x86_64 and Intel Memory Latency Checker (Intel MLC) version 3.8 with App Direct Mode. New Configuration: 1-node, 1 x Intel Xeon pre-production ICX-XCC processor (38 cores at 2.0 GHz) on Wilson City with a single Intel Optane PMem module configuration (8 x 32 GB DRAM; 1 x {128 GB, 256 GB, 512 GB} Intel Optane PMem module), ucode rev: 8d000270 running RHEL 8.1 kernel 4.18.0-147.el8.x86_64 and Intel MLC version 3.9 with App Direct Mode.

Performance varies by use, configuration and other factors. Learn more at www.Intel.com/PerformanceIndex.

Performance results are based on testing as of dates shown in configurations and may not reflect all publicly available updates. See backup for configuration details. No product or component can be absolutely secure.

Your costs and results may vary.

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