Solution Brief

Enterprise, Cloud and Analytics, Small Business and Edge Computing

Intel® Server System M50CYP Family

Featuring 3rd Gen Intel® Xeon® Scalable Processors

The Mainstream Server with Better-than-Mainstream Innovation

A Powerful Combination of Performance, Security and Flexibility

The Intel® Server System M50CYP Family is designed to be your primary workhorse server for all your mainstream needs, including collaboration, storage, database, web server, ecommerce, analytics, and more.

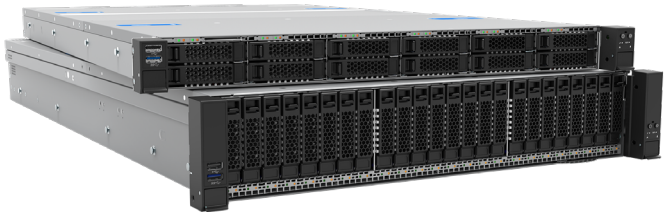
As a dual-socket platform, it features support for 3rd Gen Intel® Xeon® Scalable processors—with 1.46x average performance gain versus the previous generation[1]—to increase responsiveness and improve user experiences for customers and partners. Performance is further improved by more and faster memory channels (8 channels per processor at 3,200 MT/s, compared to 6 channels per processor at 2,666 MT/s in the previous generation products), which deliver up to 1.6x memory bandwidth compared to the previous generation.[2]

The Intel® Server System M50CYP Family also supports Intel's latest breakthrough memory innovation, Intel® Optane™ persistent memory 200 series, which can extend memory capacity up to 12 TB per server, for memory-intensive workloads. This new memory also delivers an average of 32% higher memory bandwidth versus the first generation[3] to further accelerate those workloads.

The increased memory capacity enables cloud providers and virtualized enterprise infrastructures to consolidate more workloads per server—whether the workloads are compute bound or memory bound. Combined with greater performance per watt, these features make the Intel® Server System M50CYP Family an extremely TCO-friendly platform—which is especially valuable for mainstream servers that comprise a high proportion of your data center infrastructure.

Next-Generation Innovation for Today's Modern Workloads

Today's applications are more data-centric, which expands where potential performance bottlenecks can occur. This requires a balanced system design with accelerated performance and capacity across the platform, including memory, storage, networking, and I/O.



The Intel® Server System M50CYP Family delivers accelerating performance and increasing scalability to fuel its processors with data faster and reduce performance bottlenecks.

Here are just a few of the platform-wide innovations that deliver differentiating performance, scalability, security, and reliability to drive competitive advantage for your business.

- **Boost your compute performance:** Up to 40 high-speed cores per processor, and up to 80 cores per server, deliver outstanding dual-socket core count density and performance.
- **Breakthrough memory capacity:** Up to 12 TB of system memory capacity per server when combining DRAM and Intel® Optane™ persistent memory 200 series, to maximize workload consolidation and enable larger datasets for in-memory databases.
- **Accelerate AI inferencing:** Intel® Deep Learning Boost greatly accelerates AI inferencing, enabling you to run those workloads on versatile, general-purpose processors without compromise.
- **Speed I/O between processors:** Up to 3 Intel® Ultra Path Interconnects (Intel® UPI) accelerate I/O between processors.
- **Increase memory bandwidth, speed, and capacity:** Move data faster with 8 memory channels per processor running at up to 3200MHz, and extend capacity with 16 DIMMs per processor for up to 8 TB of RDIMM memory capacity.

- **Extend system memory capacity:** Intel® Optane™ persistent memory 200 series extends system memory capacity versus DRAM-only servers, enabling up to 12 TB of memory per server, and delivers an average of 32% higher memory bandwidth compared to the first generation.[3]
- **Breakthrough storage performance with affordable capacity:** Intel® Optane™ SSDs deliver breakthrough performance for your high-speed storage tier, while Intel® 3D NAND SSDs provide high-density practicality for your capacity tier.
- **High-speed networking:** Accelerate network throughput with 100 Gb Ethernet support.
- **More I/O throughput:** Speed I/O with PCIe 4.0, with up to 64 lanes (per socket) at 16 GT/s vs. previous generation.
- **Hardware-enhanced security:** Adding even more value, hardware-enhanced security innovation with Intel® Security Guard Extensions (Intel® SGX) and new hardware-level cryptographic algorithm implementations better protect sensitive apps, data, and firmware, to help keep data safe without the typical performance penalty.[4]

Purpose-Built to Handle a Variety of Enterprise and Cloud Requirements

With revolutionary scalability, TCO, and 2-socket performance advantages, the Intel® Server System M50CYP Family is an ideal choice for compute-intensive and data-intensive workloads for enterprise and cloud requirements.

Enterprise Workloads
- Hyperconverged Infrastructure (HCI)
- Database
- Business Intelligence
- Storage
- Collaboration
- Web server

Cloud and Analytics Workloads
- IaaS/Paas (VM host)
- Ecommerce
- Data Analytics
- AI

Small Business and Edge Computing
- Email
- Remote Desktop
- Web Server
- Basic Infrastructure

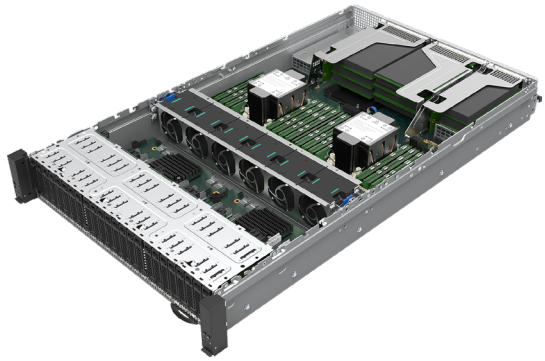
Scalable Performance across the Platform

- 3rd Gen Intel® Xeon® Scalable processors
  - Up to 40 cores per processor
  - 2 Sockets, for up to 80 cores per server
- Up to 3 Intel® UPI links at 11.2 GT/s
- Intel® Optane™ persistent memory 200 series support
- Up to 12 TB system memory
  - 8 memory channels per processor
  - 16 DIMMs per processor
  - Up to 3,200 MT/s of bandwidth
- 100Gb Ethernet support with OCP 3.0 module or add-in NICs
- 2U chassis: up to 24 front-mounted, hot-swap 2.5" SAS/SATA/NVMe SSD drives, or up to 12 front-mounted, hot-swap 3.5" HDD / 2.5" SSD drives – (12 SAS/SATA HDDs/SSDs or 4x NVMe SSDs + 8x SAS/SATA HDDs/SSDs)
- 1U chassis: up to 4 or up to 12 front-mounted, hot-swap 2.5" SAS/SATA/NVMe SSD drives
- Flexible ethernet with support for OCPv3 Type 1 slot and up to 6 full height and 2 half height PCIe 4.0 cards supported via riser card options.
- Enhanced Security Support
  - Intel® Platform Firmware Resilience (Intel® PFR) technology
  - Intel® Software Guard Extensions (Intel® SGX)[4]
  - Intel® Trusted Execution Technology (Intel® TXT)
  - Trusted Platform Module 2.0
  - Intel® Total Memory Encryption (Intel® TME)

Further Accelerate Time to Market and to Value with Software Vendor Certified Data Center Solutions

The Intel® Server System M50CYP Family has been validated and certified with leading cloud enterprise software—such as Nutanix Enterprise Cloud, VMware vSAN and Microsoft Azure Stack HCI—and made available as Intel® Data Center Blocks.

Intel® Data Center Blocks greatly simplify and accelerate private and hybrid cloud infrastructure deployment and time to value, while reducing effort and risk.



A Key Member of the Intel® Server System Family Portfolio

Intel 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 help with your specific needs. You can learn more about these systems in the portfolio by visiting: www.intel.com/servers.

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, and 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 world-class services and support package[5], delivering unique 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. Select Intel® Server Systems, including the Intel® Server System M50CYP Family, are available as partially- or fully-integrated configure-to-order systems, allowing specific configuration of the CPU, memory, storage, and I/O devices to be included in the system.

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 Board M50CYP Family

Board Specifications	Details
Feature	Intel® Server Board M50CYP2SBSTD (2U chassis) and Intel® Server Board M50CYP2SB1U (1U chassis)
Processor Support	• Dual Socket-P4 LGA4189 • Supported 3rd Gen Intel® Xeon® Scalable processors - Intel® Xeon® Platinum 8300 processor - Intel® Xeon® Gold 6300 processor - Intel® Xeon® Gold 5300 processor - Intel® Xeon® Silver 4300 processor - Does not support processors with SKUs ending in “H” or “L” • UPI links: three @ 11.2 GT/s (Platinum and Gold shelves) or two @ 10.4 GT/s (Silver shelf)
Chipset	Intel® C621A Series Chipset
Memory Support	• 32 DIMM slots - 16 DIMM slots per processor, eight memory channels per processor - Two DIMMs per channel - All DDR4 DIMMs must support ECC • Registered DDR4 (RDIMM), three-dimensional stacking (3DS)-RDIMM, Load Reduced DDR4 (LRDIMM), 3DS-LRDIMM • Intel® Optane™ persistent memory 200 series • Memory capacity: up to 6 TB per processor • Memory data transfer rates: up to 3200 MT/s at one or two DIMMs per channel • DDR4 standard voltage of 1.2V
Open Compute Project (OCP) Module Support (Onboard Network Support Options)	See Tested Hardware List (THOL) for current list of validated OCP modules.
PCIe NVMe Support	• Support for up to 10 PCIe NVMe Interconnects - Eight onboard SlimSAS connectors, four per processor - Two M.2 NVMe/SATA connectors • Additional NVMe support through select Riser Card options (see Riser Card Support) • Intel® Volume Management Device (Intel® VMD) 2.0 support - Intel® Virtual RAID on CPU 7.5 (Intel® VROC 7.5) supported using the Intel® VROC 7.5 key (available as an Intel accessory option)
Onboard SATA Support	• 10 x SATA III ports (6 Gb/s, 3 Gb/s and 1.5 Gb/s transfer rates supported) - Two M.2 connectors – SATA / PCIe - Two 4-port mini-SAS HD (SFF-8643) connectors
USB Support	• Three external USB 3.0 connectors at rear of chassis. • Internal 26-pin connector for optional one USB 3.0 port and one USB 2.0 port front panel support (configured in both 1U and 2U chassis) • One USB 2.0 internal Type-A header
Serial Support	• One external RJ-45 serial-A port connector at rear of chassis • One internal DH-10 serial-B port header for optional front or rear serial port support. The port follows the DTK pinout specifications.

Board Specifications	Details
Server Management	• Integrated Baseboard Management Controller (BMC) • Intelligent Platform Management Interface (IPMI) 2.0 compliant • Support for Intel® Data Center Manager (Intel® DCM) • Support for Intel® Server Debug and Provisioning Tool (SDP Tool) • Redfish compliant • Support for Intel® Server Management Software • Dedicated onboard RJ45 1 GbE management port • Light Guided Diagnostics • System configuration and recovery jumpers
Security Support	• Intel® Platform Firmware Resilience (Intel® PFR) technology with an I2C interface • Intel® Software Guard Extensions (Intel® SGX) • Intel® Trusted Execution Technology (Intel® TXT) • Trusted Platform Module 2.0 • Intel® Total Memory Encryption (Intel® TME)
BIOS	Unified Extensible Firmware Interface (UEFI)-based BIOS (legacy boot not supported)

Intel® Server System M50CYP1UR Family

System Specifications	Details	
Chassis Type	1U rack mount chassis	2U rack mount chassis
System Fans	• Eight managed 40 mm hot-swap capable system fans • Integrated fans included with each installed power supply module	• Six managed 60 mm hot-swap capable system fans • Integrated fans included with each installed power supply module
Power Supply Options*	• AC 1300 W Titanium • AC 1600 W Titanium	• AC 1300 W Titanium • AC 1600 W Titanium • AC 2100 W Platinum
Riser Support*	Concurrent support for up to four riser cards, including PCIe interposer riser card, with support for up to three PCIe Add-in Cards	Concurrent support for up to three riser cards with support for up to eight PCIe Add-in Cards
Front Drive Bay Options*	• 4 x2.5" SAS/SATA/NVMe hot-swap drive bays • 12 x2.5" SAS/SATA/NVMe hot-swap drive bays	• 8 x2.5" SAS/SATA/NVMe hot-swap drive bays • 16 x2.5" SAS/SATA/NVMe hot-swap drive bays • 24 x2.5" SAS/SATA/NVMe hot-swap drive bays • 12 x3.5" SAS/SATA hot-swap drive bays (supports up to 4 NVMe drives)
*For more information on specific configurations, see the Intel® Server System M50CYP Configuration Guide or visit ARK.intel.com.		
Supported Rack Mount Kit Accessory Options	• CYPHALFEXTRAIL –Value Rack Mount Rail Kit • CYPFULLEXTRAIL – Premium Rail Kit with cable management arm (CMA) support • AXXCMA2 – Cable Management Arm (supports CYPFULLEXTRAIL only)	

Additional Resources:

Detailed SKU configurations can be found at:
https://cdrdv2.intel.com/v1/dl/getContent/638427.

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

For more information on the Intel® Server System M50CYP Family visit: www.intel.com/server-system-M50CYP

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) Comparing 3rd Gen Intel® Xeon® Scalable processor with 8ch 3200 MT/s (2 DPC) vs. 2nd Gen Intel® Xeon® Scalable processor with 6ch 2666 MT/S (2 DPC).

3) Source: 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.

4) This technology is not supported when using Intel Optane persistent memory.

5) World class support is rated by an average Net Promoter Score (NPS) of 81 since 2020.

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.

Intel technologies may require enabled hardware, software or service activation.

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