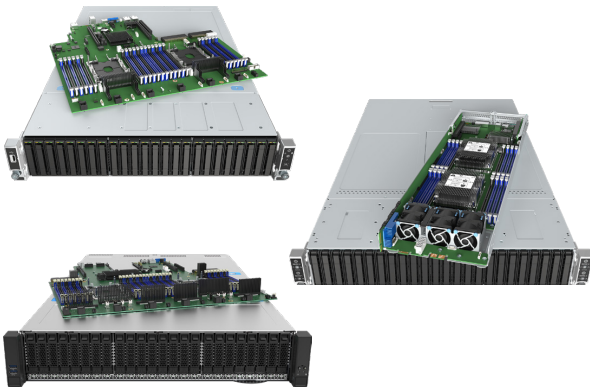


Intel® Data Center Blocks (Intel® DCB) for Cloud – Microsoft Azure Stack Hyper-Converged Infrastructure (HCI), Designed with Microsoft Azure Stack HCI, Optimized for Storage Spaces Direct (S2D), Software-Defined Storage (SDS)

Accelerate Data Center Transformation with Microsoft Azure Stack HCI

Accelerating the Path to the Cloud with Intel® Data Center Blocks (Intel® DCBs)



Intel® Data Center Blocks for Microsoft Azure Stack HCI

Certified Intel DCBs save time and money, freeing up resources to focus on value-add and competitive differentiation.

Simplify SDI market access with systems designed for Storage Spaces Direct.

Unbranded systems allow resellers to incorporate products into their branded portfolios.

Intel quality and reliability with world-class integration, validation, certification and support.

Includes standard Intel 3-year warranty with 5-year warranty options available to ensure customer satisfaction.

Intel® Select Solutions-ready designs are workload-optimized and verified reference architectures, and provide resellers a simplified path to marketing program participation.



Modern enterprises require more scalable, reliable, and secure data and cloud infrastructures. Today's cloud infrastructures are often critical for the improved performance of business applications, but can prove expensive, siloed, and challenging to scale. If you're planning to refresh aging hardware, consolidate virtualized workloads, and connect to Microsoft Azure for Hybrid cloud services, then Microsoft Azure Stack Hyper-Converged Infrastructure (HCI) is the right choice for you.

Microsoft Azure Stack HCI is a hybrid cloud solution built on Intel partner hardware that includes virtualization (Hyper-V), software-defined storage (Storage Spaces Direct), and software-defined networking. It also has the flexibility of optional OS-integrated Azure services, such as offsite backup, site recovery, cloud-based monitoring, and more. Because it's a Microsoft-validated solution, you can get up and running without lengthy design and build times.

To help you with this transformation, Intel and Microsoft have collaborated across the areas of compute, storage, networking, and security to deliver server system configurations that optimize the features and performance of Microsoft Azure Stack HCI and help you accelerate the path to multi/hybrid-cloud.

Optimized, Integrated and Validated Systems Speed Transition to Cloud

Overcome barriers to software-defined storage (SDS) with optimized, integrated and validated systems that speed the transition to multi/hybrid cloud deployments for more rapid time-to-market. Working closely together, Microsoft and Intel optimized the features and performance of Microsoft Azure Stack HCI (including Windows Server) including taking advantage of the latest 3rd Generation Intel® Xeon® Scalable processors, featured in the Intel® Server System M50CYP Family. These optimizations help you get the most out of Windows Server 2019 features, such as Storage Spaces Direct (S2D), Hyper-V, Software Defined Networking (SDN), and Windows Admin Center (WAC).

The Intel DCBs for Cloud — Microsoft Azure Stack HCI is tailored for high-performance computing, hyper-converged architecture, and storage scenarios requiring outstanding performance. Available in All-Flash (SSD – both SATA and NVMe SSDs available) and Hybrid (combined SSD and HDD) storage configurations, these systems offer partners the flexibility to build innovative, cost-effective solutions more quickly and efficiently.

With Microsoft's Windows Server 2019 Datacenter license, you get a complete, virtualized software-defined hybrid cloud data center. Microsoft Azure services are OS-integrated and part of a validated Azure Stack HCI solution, where you can move to the cloud seamlessly and quickly take advantage of Azure Backup, Azure Site Recovery, cloud witness, Azure Monitor, Azure Arc, and Update Management at any time.

Microsoft also has validated Azure Stack HCI with the most popular workloads. Whether you're running a production workload, branch office and edge, VDI, SQL Server, enterprise virtualization, or scale-out storage environment, you can be confident that your Azure Stack HCI solution's configuration has been optimized, validated and certified with Intel and Microsoft.

Simplified Management with Windows Admin Center

Intel DCB for Cloud – Microsoft Azure Stack HCI embraces Windows Admin Center (WAC), available in Windows Server 2019. Windows Admin Center is a free browser-based app that allows you to manage and monitor all your Windows Server environments, HCI and Hybrid cloud from a single GUI console. You can use it anywhere: on-premises, in Azure or in the cloud. Windows Admin Center streamlines management and provides extensive visibility for VMs, Storage Spaces Direct volumes, SDN, Azure services, and more. Also, it offers the flexibility to manage hyper-converged infrastructure scenarios.

Higher Storage Density with Intel® Optane™ Persistent Memory

Based on Intel® 3D XPoint™ memory media, Intel® Optane™ Persistent Memory (PMEM)-enabled solutions offer higher storage density than DRAM, combined with greater speed than legacy NAND-based solutions. When used in App Direct Mode for cache storage, Intel Optane PMEM places data closer to the processor, reducing latency as compared to traditional, slower storage. When used in Memory Mode, Intel Optane PMEM can offer an affordable alternative to DRAM and can increase both capacity and VM density.

Reduce Complexity, Improve ROI and Accelerate Time-to-Market

Designing, testing and certifying SDS solutions are costly and resource-intensive processes. By starting with a higher level of integration and certification, partners can reduce costs and accelerate time-to-market tailored for specific workloads. This approach gives you more flexibility and choice about where to invest R&D resources and ensure they remain competitive and drive differentiation in the market.



A System with Intel Quality and Performance via Single Order Code

Smart Boards Ensure System Stability and Increased Uptime

Intel Server Boards have more than 100 sensors built in that monitor all critical functions and use management capabilities to automatically flag problems before they impact business operations. Event logs and light-guided diagnostics also assist in rapid identification and issue remediation.

Breakthrough Performance

Intel DCBs for Cloud — Microsoft Azure Stack HCI offer a comprehensive, validated, and supported system, which accelerates cloud and software-defined storage deployments. The latest Cloud Blocks featuring Microsoft Windows Server 2019 enable an optimized solution incorporating enhanced security, networking, and memory technologies including Intel Optane PMEM.

Intel DCBs for Cloud server solutions are optimized for high-performance computing, hyper-converged infrastructure, and outstanding storage performance. 2nd Gen Intel® Xeon Scalable processors accelerate virtualized storage with features such as Intel® Advanced Vector Extensions and Intel® Virtualization Technology, while the latest 3rd Gen Intel® Xeon Scalable processors deliver 1.46x average performance gain vs. prior gen¹. The integrated Random Direct Memory Access (RDMA) support further enhances S2D performance with up to 45% lower latency for application I/O, up to 50% more IOPs for application I/O and up to 40% fewer CPU cycles per I/O2.

Supplementing the Intel Xeon Scalable processors, Intel Optane PMEM in App Direct Mode offers world-class, low-latency storage performance. Combined under one hood, these new Intel technologies, plus Microsoft Azure Stack HCI with the advanced feature set of Windows Server 2019, the Intel DCB for Cloud is now available as a single SKU. Leverage either the MCB2208WFAF10R (2nd Gen) or M50CYP (3rd Gen) designs, configured with a PMEM-based storage cache tier and high performance NVMe capacity tier, to exceed your most demanding customers' business needs and help them create a competitive advantage.

Cloud Data Center Specialist designation

To further help partners succeed, Intel® Technology Providers have an opportunity to qualify for Intel Technology Provider Cloud Data Center Specialist designation. Cloud Specialists have access to exclusive resources specifically designed to help streamline the delivery of cloud-optimized solutions. Specialist benefits include access to the Intel experts and engineering resources to assist Cloud Specialists as they identify exact customer requirements. Other benefits include access to valuable solutions guides and marketing content to help build customer value.

Pre-Configured or Configure-to-Order

While Intel DCBs offer feature-validated and pre-defined configurations, each customer has unique workload needs, which is why resellers have the option to order a customized Intel DCB through Intel's Configure-To-Order (CTO) program. CTO offers the flexibility for resellers to create Intel DCB solutions that map to their specifications, drawing from a list of Intel-validated components.

Intel Warranty Delivers Value and Confidence

Intel Data Center Blocks for Cloud are backed by Intel's standard 3-year warranty from the date of purchase, with optional 5-year warranty plans available for select components.

Intel® Data Center Blocks are also eligible for Advanced Warranty Replacement whereby Intel will send a replacement part before the defective part is returned, reducing downtime and accelerate time to resolution.

Warranty details are available online at: https://www.intel.com/content/dam/support/us/en/documents/services/DCB_Warranty_Brief.pdf

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.

Engage with Intel Today

Intel continuously delivers leading-edge technologies to help resellers innovate and differentiate themselves in the market. Intel Data Center Blocks for Cloud are designed to help partners realize a more accessible path to reliable SDI solutions. Contact your Intel sales representative or Intel authorized distributor for any inquiries.

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.

Additional Resources:

Detailed SKU configurations can be found at:

www.intel.com/content/www/us/en/products/details/servers/data-center-blocks/dcb-cloud.html

For more information on Intel® Server Products visit:

intel.com/serverproducts

For more information on Intel® Data Center Blocks visit:

intel.com/dcb

For more information on Intel® Select Solutions visit:

<https://www.intel.com/content/www/us/en/architecture-and-technology/intel-select-solutions-overview.html>

Access a library of marketing assets by visiting the DSG Marketing Asset Library:

<https://servermarketinglibrary.intel.com/>



Intel® Data Center Blocks for Cloud - Microsoft

Available on 3rd Generation Intel® Xeon® Scalable processor-based platform. Optimized for Storage Spaces Direct (S2D), designed with certified Windows Server ingredients and validated by Intel.

Intel Product Code	Form Factor	2nd Gen Intel® Xeon® Scalable processor	Memory (per node)	Cache (per node)	Capacity (per node)	LAN (per node)
2U, 1 Node – Intel® Server System M50CYP2URXXX						
MCBCYP2UAF7	2U1N All-Flash ² (Intel® Optane™ + NVMe + PMM)	Intel® Xeon® Gold 5318Y (24c, 2.1G, 165W)	2TB PMM 2TB (16x 128GB) + DRAM 512GB (16x 32GB)	2x P4800X 750GB (1.5TB)	6x P4510 8TB (48TB)	2x 100/50/25/10GbE QSFP28 (iWARP/RoCE)
MCBCYP2UAF6	2U1N All-Flash ² (Intel Optane + SATA + PMM)	Intel Xeon Gold 5318Y (24c, 2.2G, 165W)	2TB PMM 2TB (16x 128GB) + DRAM 512GB (16x 32GB)	2x P4800X 750GB (1.5TB)	6x S4510 7.68TB (46.08TB)	2x 100/50/25/10GbE QSFP28 (iWARP/RoCE)
MCBCYP2UAF5	2U1N All-Flash ² (Intel Optane + NVMe)	Intel Xeon Gold 5317 (12c, 3.0G, 150W)	512GB (16x 32GB)	2x P4800X 375GB (750GB)	6x P4510 4TB (24TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UAF4	2U1N All-Flash ² (Intel Optane + NVMe)	Intel Xeon Gold 5317 (12c, 3.0G, 150W)	512GB (16x 32GB)	2x P4800X 375GB (750GB)	6x P4510 2TB (12TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UAF3	2U1N All-Flash ² (Intel Optane + QLC NVMe)	Intel® Xeon® Silver 4310 (12c, 2.1G, 120W)	512GB (16x 32GB)	2x P4800X 375GB (750GB)	4x P4326 15.36TB (61.44)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UAF2	2U1N All-Flash ² (Intel Optane + QLC NVMe)	Intel Xeon Silver 4310 (12c, 2.1G, 120W)	256GB (8x 32GB)	(N/A)	8x P4510 2TB (16TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UAF1	2U1N All-Flash ² (NVMe + SATA)	Intel Xeon Silver 4310 (12c, 2.1G, 120W)	256GB (8x 32GB)	2x P4610 1.6TB (3.2TB)	6x S4510 1.92TB (11.52TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UHY2	2U1N Hybrid ¹ (NVMe + SAS)	Intel Xeon Silver 4309Y (8c, 2.8G, 105W)	128GB (4x 32GB)	2x P4610 1.6TB (3.2TB)	4x SAS HDD 4TB (16TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP2UHY1	2U1N Hybrid ¹ (SATA + SAS)	Intel Xeon Silver 4309Y (8c, 2.8G, 105W)	128GB (4x 32GB)	2x P4610 960GB (1.9TB)	4x SAS HDD 2TB (8TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
1U, 1 Node – Intel® Server System M50CYP1UR212						
MCBCYP1UAF3	1U1N All-Flash ² (Intel Optane + QLC NVMe)	Intel Xeon Silver 4309Y (8c, 2.8G, 105W)	256GB (8x 32GB)	2x P4800X 375GB (750GB)	2x P4326 15.36TB (30.7TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP1UAF2	1U1N All-Flash ² (Flat NVMe)	Intel Xeon Silver 4309Y (8c, 2.8G, 105W)	128GB (4x 32GB)	(N/A)	4x P4510 2TB (8TB)	2x 25/10GbE SFP28 (iWARP/RoCE)
MCBCYP1UAF1	1U1N All-Flash ² (SATA + SATA)	Intel Xeon Silver 4309Y (8c, 2.8G, 105W)	28GB (4x 32GB)	2x S4610 960GB (1.9TB)	4x S4510 960GB (3.84TB)	2x 25/10GbE SFP28 (iWARP/RoCE)

1: Third-party software stack and hard drive NOT included. 2: Third-party software stack NOT included.



Intel® Data Center Blocks for Cloud - Microsoft

Available on 2nd Generation Intel® Xeon® Scalable processor-based platform. Optimized for Storage Spaces Direct (S2D), designed with certified Windows Server ingredients and validated by Intel.

Intel Product Code	Form Factor	2nd Gen Intel® Xeon® Scalable processor	Memory (per node)	Cache (per node)	Capacity (per node)	LAN (per node)
2U, 1 Node – Intel® Server System R2208WF0ZS						
MCB2208WFAF10R	2U1N All-Flash ² (Intel® Optane™ PMM + NVMe)	Intel® Xeon® Gold 5218R (20c, 2.1G, 125W)	512GB (16x 32GB)	4x Intel Optane PMM 256GB (1TB)	8x P4510 4TB (32TB)	4 x 10GbE SFP+ (Intel/RDMA)
MCB2208WFAF9R	2U1N All-Flash ² (Intel® Optane™ + NVMe)	Intel Xeon Gold 5218R (20c, 2.1G, 125W)	768GB (24x 32GB)	4x P4800X 375GB (1.5TB)	12x P4510 2TB (24TB)	4 x 10GbE SFP+ (iWARP)
MCB2208WFAF8R	2U1N All-Flash ² (Intel Optane + NVMe)	Intel Xeon Gold 5218R (20c, 2.1G, 125W)	512GB (4x 128GB PMM + 12x 16GB DRAM)	2x P4800X 375GB (750GB)	4x P4510 4TB (16TB)	4 x 10GbE SFP+ (iWARP)
MCB2208WFAF7R	2U1N All-Flash ² (All NVMe)	Intel Xeon Gold 5218R (20c, 2.1G, 125W)	384GB (12x 32GB)	2x P4610 1.6TB (3.2TB)	6x P4510 2TB (12TB)	4 x 10GbE SFP+ (iWARP)
MCB2208WFAF6R	2U1N All-Flash ² (Flat NVMe)	Intel® Xeon® Silver4216 (16c, 2.1G, 100W)	384GB (12x 32GB)	(N/A)	8x P4510 2TB (16TB)	4 x 10GbE SFP+ (iWARP)
MCB2208WFAF5R	2U1N All-Flash ² (NVMe + QLC NVMe)	Intel Xeon Silver4216 (16c, 2.1G, 100W)	384GB (12x 32GB)	2x P4610 1.6TB (3.2TB)	4x P4326 15.34TB (61.36TB)	2 x 10GbE SFP+ (iWARP)
MCB2208WFAF4R	2U1N All-Flash ² (NVMe + SATA)	Intel Xeon Silver4216 (16c, 2.1G, 100W)	384GB (12x 32GB)	2x P4610 1.6TB (3.2TB)	6x S4510 1.92TB (11.5TB)	2 x 10GbE SFP+ (iWARP)
MCB2208WFAF2R	2U1N Hybrid ¹ (NVMe/SATA + SAS HDD)	Intel Xeon Silver4210R (10c, 2.4G, 100W)	128GB (4x 32GB)	2x P4610 1.6TB (3.2TB) + 2x X4610 960GB (1.92TB)	4x SAS HDD 2TB (8TB)	2 x 10GbE SFP+ (iWARP)
2U, 4 Nodes – Intel® Server Board S2600BPS with Intel® Server Chassis H2224XXLR3						
MCB2224BPAF3R	2U4N All-Flash ² (Flat SATA)	Intel Xeon Gold 5218R (20c, 2.1G, 125W)	256GB (8x 32GB)	(N/A)	6x S4510 1.92TB (11.5TB)	2 x 10GbE SFP+ (iWARP)
MCB2224BPHY1R	2U4N Hybrid ¹ (SATA + SAS HDD)	Intel Xeon Silver4210R (10c, 2.4G, 100W)	128GB (4x 32GB)	2x S4610 960GB (1.9TB)	4x SAS HDD 2TB (8TB)	2 x 10GbE SFP+ (iWARP)

1: Third-party software stack and hard drive NOT included. 2: Third-party software stack NOT included.



Notices and Disclaimers:

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

2. Integrated Intel® Ethernet with iWARP RDMA networking efficiency source Intel/Microsoft. Improved efficiency, latency, IOPS, Windows Server 2016 Datacenter edition 14393.693, 4 server nodes, each using Intel® Server System S2600WFD, Integrated Intel® Ethernet x722 Dual port 10Gbps Ethernet*, 2x Intel® Xeon® E5 6148v5 @2.4GHz, 20 cores, 384 GB DDR4-2133 DRAM, caching drives-2x Intel® SSD DC P3700 Series (1.6 TB), data drives-6x Intel® SSD DC P3500 Series (2 TB). Each node configured with 3.5TB data store, 20x A3 like VMs each containing 60GB OS virtual store and 60GB data virtual store, running 4x Disk speed 2.0.17 in each VM using 1 thread and 32 queues. Testing configurations include 4kB Random Reads, and 8kB Random 70/30 Read/Write workloads, each with RDMA enabled and RDMA disabled, each at Max Performance, and IOPS fixed per VM. This is a snapshot of network performance with current driver, firmware and silicon stepping. Intel continues to work on tuning the performance of integrated Intel Ethernet X722.

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.

© Intel Corporation. Intel, the Intel logo, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Other names and brands may be claimed as the property of others.

07072021/KK/ACG