

Accelerate Data Center Transformation with Software-Defined Infrastructure

Intel® Data Center Blocks for Cloud – Microsoft*

Windows Server 2016, Storage Spaces Direct, Software-Defined Storage



Intel® Data Center Blocks for Cloud

- **Certified Systems** save time and money, freeing up resources to focus on value-add and competitive differentiation
- **SDI Market Access** with systems including 3rd party software certifications
- **Unbranded systems** allow resellers to incorporate products into their branded portfolios
- **Intel Quality & Reliability** with world-class integration, validation, certification and support
- **Standard Intel 3-year warranty** with 5-year warranty options available to ensure customers satisfaction

Accelerating the Path to Private Cloud with Windows Server Software-Defined Offers from Intel

Business requirements are increasingly demanding IT infrastructures that are more scalable, reliable and secure, and research shows that 80% of workloads will run on a cloud architecture by 2024¹. As a result, IT departments are transforming their traditional data centers through the use of software-defined infrastructure (SDI) technologies and private cloud. To help customers 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 Windows Server 2016 to help customers accelerate the path to private cloud.

To increase reseller access to the SDI market and enable them to help customers modernize storage resources, Intel is delivering Intel® Data Center Blocks for Cloud – Microsoft*. These Cloud Blocks for Microsoft are fully-validated server systems that include Windows Server 2016 logo and Windows Server Software-Defined certifications. While certified to support the breadth of features in Windows Server 2016, Intel Cloud Blocks for Microsoft are configured to optimize the performance of the Storage Spaces Direct (S2D) feature of Windows Server 2016, making it easier to deliver software-defined storage (SDS) solutions to customers.

Windows Server 2016 + Intel Architecture – Better Together

To optimize the features and performance of Windows Server 2016, Microsoft and Intel collaborated across four areas of compute, storage, network and security to deliver server systems that can help accelerate the transition to SDI and private cloud.



Compute

New advanced virtual machine management features for improved performance and efficiency of compute and virtualization across the data center.



Storage

Simplified provisioning and management of storage resources with a scalable, flexible, and easy-to-configure solution. Storage Spaces Direct (S2D) pools local storage into highly scalable and available server clusters.



Network

Software-defined networking (SDN) capabilities to centrally manage virtual and physical network resources, isolated network infrastructures for multiple tenants.



Security

Security and auditing enhancements help thwart system attacks and meet compliance goals. The built-in layers of security limit damage from attacks and help detect suspicious activity.

Cost-Effective, Scalable Storage with Intel and Microsoft Storage Spaces Direct

Storage systems are critical to the performance of most business applications. But traditional storage is expensive, siloed and hard to scale, preventing organizations from realizing the benefits of a SDS. Addressing these challenges remains one of the key barriers customers face as they move to a cloud-based infrastructure. Microsoft provides a path to SDS through Windows Server 2016 S2D features, including Scale-Out File Server, Clustered Shared Volume File System (CSVFS), Storage Spaces and Failover Clustering³. The storage modernization features in Windows Server 2016 can help customers reduce costs, create affordable business continuity and better prioritize storage resources.

Reduce Complexity, Improve ROI & Speed Time-to-Market

Designing, testing and certifying SDS solutions is a costly and resource-intensive process. By starting with a higher-level of integration and certification, partners can reduce costs and speed time-to-market with unbranded server blocks designed for specific workloads. This approach gives partners more flexibility and choice about where to invest R&D resources to ensure they remain competitive and drive differentiation in the market. There is also increased acquisition value to the partner, since they source a validated bundle of products with a single order code, rather than acquiring each component individually.

Full System with Intel Quality and Performance via Single Order Code

Built for Maximum Performance

Cloud Blocks for Microsoft are powered by the latest Intel technology, and include Intel® Server Boards, Intel® Server Chassis, Intel® Xeon processors, Intel® SSDs Data Center Family, and third-party memory in configurations optimized and pre-certified for Windows Server 2016 and Windows Server Software-Defined Solutions.

Available in both All-Flash and Hybrid configurations, these server systems are optimized for outstanding storage performance. The Intel® Xeon processor E5 v4 product family accelerates virtualized storage with features such as Intel® AVX 2.0 and Intel® Virtualization Technology. Intel SSDs provide high throughput and low latency, which maximizes power while reducing cost and space requirements. All-Flash configurations deploy Intel's high endurance NVMe SSDs for the cache tier, delivering excellent performance, high IOPs and low latency.

Smart Boards Ensure System Stability and Increase 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.

Verify Authenticity with Intel® Transparent Supply Chain

To address security concerns and guard against counterfeiting and malware, Intel Data Center Blocks for Cloud feature the Intel® Transparent Supply Chain. This board feature enables the ability to verify the authenticity of board components and firmware through digitally signed statements on conformance and firmware load verification.

Enhanced Benefits

To further help partners succeed, Intel® Technology Providers have the opportunity to qualify for Intel® Technology Provider Cloud Specialist designation. Cloud Specialists have access to exclusive resources specifically designed to help streamline the delivery of cloud-optimized solutions. Specialist benefits include special 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, technical support and other tools to help build customer value.

Solutions Targeted at Individual Customer Needs

Cloud Blocks for Microsoft are available in multiple All-Flash (AF) or Hybrid (HY) configurations, and available in both 2U four node or 2U one node configurations. Configurations come pre-certified for Windows Server 2016 and Windows Server Software-Defined in either the standard or premium editions. This diverse portfolio allows partners to address a wide array of customer needs.

Customer Use Cases

- Business-Critical Applications
- Virtual Desktop Infrastructure
- Disaster Recovery
- Test and Development Scenarios
- Enterprise Production Workloads

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. If any DCB component which is covered by this standard warranty fails during the warranty period for reasons covered in warranty, Intel will exercise the following options:

- **REFUND** the then current value of the product at the time a claim for warranty service is made to Intel under limited warranty: credit the first 30 days (DOA)
- **REPAIR** the product by means of hardware and/or software; OR
- **REPLACE** the failed component within the DCB, rather than the whole DCB. This is referred to as a field replaceable unit (FRU) and includes a circuit board, part or assembly that can be quickly and easily removed and replaced by without having to send the entire product or system to a repair facility.

Engage with Intel Today

Intel continuously delivers leading-edge technologies to help resellers innovate and differentiate themselves in the market. This is true with Intel Data Center Blocks for Cloud, designed to help partners realize an easier path to reliable SDI solutions. Contact your Intel sales representative or Intel authorized distributor for any inquiries.

More information can be found at <http://www.intel.com/content/www/us/en/data-center-blocks/cloud/cloud-blocks.html>

Detailed SKU configurations can be found in the deployment guide at <http://www.intel.com/content/www/us/en/support/services/000021862.html>

Windows Server Software-Defined: Standard vs Premium			
	Standard		Premium
Security			Bitlocker, Shielded VM's
		Defender, Credential Guard, Device Guard	
Networking			SDN (Network Controller, Load Balancer, Gateway)
		SET, vSwitch, SMB Direct	
Compute		Hyper-V	
Storage		Storage Space Direct - Software Defined Storage	
Hybrid Configurations (Hard drives for capacity, SATA SSDs for cache) – Capacity Optimized			
Order Codes	Windows Server Software-Defined	Intel® Server Systems	Features per Node
MCB2224THY1 ²	Standard Balanced	2U 4 node Intel® Server Chassis H2224XXKR2 and Intel® Server Board S2600TPR	- Up to 16 VMs ⁴ per node with high-availability 3-copy mirror (Cluster total = 64 VMs). - 8 TB raw storage capacity (Cluster total = 32 TB) - Intel® Xeon® E5-2620 v4 (8C/16T) - 128 GB memory
MCB2312WHY2 ²	Premium Capacity Optimized	2U 1 node Intel® Server System R2312WTXXX with Intel® Server Board S2600WT2R	- Up to 28 VMs ⁴ per node with high-availability 3-copy mirror (Cluster total = 112 VMs). - 32 TB raw storage capacity (Cluster total = 128 TB) - Intel® Xeon® E5-2660 v4 (14C/28T) - 256 GB memory

All-Flash Configurations (SATA SSDs for capacity, NVMe SSDs for cache) - Performance Cache			
Order Codes	Windows Server Software-Defined	Intel® Server Systems	Features per Node
MCB2224TAF3 ³	Premium Performance Balanced	2U 4 node Intel Server Chassis H2224XXKR2 and Intel Server Board S2600TPR	- Up to 24 VMs ⁴ per node with high-availability 3-copy mirror (Cluster total = 96 VMs). - 6.4 TB raw all-flash storage capacity per node (Cluster total = 25.6 TB) - Intel® Xeon® E5-2650 v4 (12C/24T) - 256 GB memory
MCB2208WAF4 ³	Premium Performance optimized	2U 1 node Intel® Server System R2208WT2YSR with Intel® Server Board S2600WT2R	- Up to 28 VMs ⁴ per node with high-availability 3-copy mirror (Cluster total = 112 VMs). - 14.4 TB raw storage capacity per node (Cluster total = 57.6 TB) - Intel® Xeon® E5-2680 v4 (14C/28T) - 256 GB memory
All NVMe All-Flash Configurations (NVMe SSDs for capacity and cache) – Performance Cache and Storage			
Order Codes	Windows Server Software-Defined	Intel® Server Systems	Features per Node
MCB2208WAF5 ³	Premium Ultra Performance	2U 1 node Intel® Server System R2208WT2YSR with Intel® Server Board S2600WT2R	- Up to 36 VMs ⁴ per node with high-availability 3-copy mirror (Cluster total = 144 VMs). - 12 TB raw storage capacity per node (Cluster total = 48 TB) - Intel® Xeon® E5-2680 v4 (14C/28T) - 384 GB memory

1. Intel & Bain Analysis 2016
2. 3rd party SW stack and HDD NOT included.
3. 3rd party SW stack NOT included.
4. Virtual Machine count modeled after Microsoft Azure A2 Basic compute instance with Hyper-threading, no oversubscription of any components (CPU, memory and storage).
5. Source: https://technet.microsoft.com/en-us/windows-server-docs/storage/storage-spaces/storage-spaces-direct-windows-server-2016#BKMK_S2DOverview

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. **No computer system can be absolutely secure.** Check with your system manufacturer or retailer or learn more at intel.com.

Software and workloads used in performance tests may have been optimized for performance only on Intel® microprocessors. Performance tests, such as SYSmark and MobileMark, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products. For more complete information visit <http://www.intel.com/performance>.



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