



Intel® Data Center Blocks for Cloud optimized for Microsoft Windows Server* 2016/2019

System Deployment and Configuration Guide

This document provides guidance for operating system installation and identification of available system options for Intel® server systems supporting 2nd Generation of Intel® Xeon® Scalable processors.

Rev 2.01

May 2019

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Document Revision History

Date	Revision	Changes
November 2017	1.0	Initial public release.
March 2018	1.1	Corrected HDD model name on page 8. Changed template, added header, style corrections
May 2018	1.2	Corrected errors in configuration information (section 3). Modified section 1.1.1 and 1.1.2.
October 2018	1.3	Implemented changes (MM#s, SSD models) to reflect transition to the new SSD devices driven by EOL process: S4500 -> S4510, S4600 -> S4610, P4500 -> P4510, P4600 -> P4610, P3100 -> P4101. Reflected addition of the SAS expander RES3TV360 to MCB2208WFHY2 model to meet Microsoft requirement for SCSI Enclosure Services (SES) support. Added statement about the HDD requirement to have Microsoft SDDC and Intel HCL
December 2018	1.4	Updated MM#s for MCB2208WFHY2, MCB2208WFAF4, MCB2208WFAF5 and MCB2208WFAF6 to reflect replacement of S3520 M.2 drive with S4510 M.2 drive as the boot device according to the PCN 116645.
March 2019	1.9	First version of the document for the “Refresh” product line supporting 2nd Generation of Intel Xeon Scalable processors optimized for Windows 2019
April 2019	1.91	Updated EAN and UPC codes. Added comment about boot device identification in Chapter 2.
April 2019	1.92	Added instructions for configuring Intel® Optane™ DC persistent memory modules into APP Direct mode to Chapter 3
April 2019	1.93	BOM corrections applied
May 2019	1.94	Added guidance for Intel software stack update in paragraph 1.1.1
May 2019	1.95	Corrected DCPMM mode in MCB2208WFAF8R and MCB2208WFAF10R models described in chapter 3.
May 2019	2.00	Promoted to the public release as version 2.00
May 2019	2.01	Corrected MM#s for BNP based models, corrected picture for MCB2208WFAF10R

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Table of Contents

1. Introduction	7
1.1 Microsoft Windows Server* Certification and the Intel® DCB for Cloud Server System	8
1.1.1 Maintaining Microsoft Windows Server* Certification	8
1.1.2 Hybrid System Configurations	9
2. Microsoft Windows Server* Installation Requirements	10
3. Intel® Optane™ DC Persistent Memory Module Configuration	11
3.1 Configuring Intel® Optane™ DC Persistent Memory Modules in BIOS	11
3.2 Configuring Intel® Optane™ DC Persistent Memory Modules in the Operating System	16
4. System Configuration Options	18
4.1 Rail Kit Options	28
5. Drive Extraction and Installation	29
5.1 Drive Carrier Extraction	29
5.2 Drive Carrier Insertion/Installation	29
5.3 2.5" HDD/SSD Drive Carrier Assembly	30
Appendix A. Glossary	32

List of Figures

Figure 1. Intel® Server multi-node systems MCB2224BPHY1R and MCB2224BPAF3R.....	7
Figure 2. Intel® Server single-node systems MCB2208WFAF4R, MCB2208WFAF5R, MCB2208WFAF6R, MCB2208WFAF7R, MCB2208WFAF8R and MCB2208WFAF10R	7
Figure 3. Intel® Server single-node system MCB2208WFAF9R.....	7
Figure 4. Intel® Server single-node system MCB2312WFHY2R.....	7
Figure 5. Select M.2 drives for operating system installation	10
Figure 6. Total amount of RAM visible to system.....	11
Figure 7. Intel® Optane™ DC persistent memory module capacity allocation	12
Figure 8. Intel® Optane™ DC persistent memory location	12
Figure 9. Create goal config option	13
Figure 10. Goal configuration page	13
Figure 11. Confirm goal creation	14
Figure 12. RAM equal to DDR4 memory.....	14
Figure 13. DCPMM capacity allocated to App Direct mode	15
Figure 14. App Direct regions created.....	15
Figure 15. Create persistent memory drives.....	16
Figure 16. Initialize persistent memory drives.....	17
Figure 17. Persistent memory drives in File Explorer	17
Figure 18. Drive carrier extraction from chassis.....	29
Figure 19. Drive carrier insertion into chassis.....	29
Figure 20. 2.5" drive carrier assembly – drive/drive blank removal	30
Figure 21. 2.5" drive carrier assembly – drive installation into carrier	30
Figure 22. 2.5" Drive carrier assembly – alignment features	31

List of Tables

Table 1. Certified hard drives for hybrid configurations	9
Table 2. Specified boot drives for operating system installation – certification requirement	10
Table 3. Intel® DCB for Cloud Server System MCB2224BPHY1R	18
Table 4. Intel® DCB for Cloud Server System MCB2312WFHY2R	19
Table 5. Intel® DCB for Cloud Server System MCB2224BPAF3R.....	20
Table 6. Intel® DCB for Cloud Server System MCB2208WFAF4R.....	21
Table 7. Intel® DCB for Cloud Server System MCB2208WFAF5R.....	22
Table 8. Intel® DCB for Cloud Server System MCB2208WFAF6R.....	23
Table 9. Intel® DCB for Cloud Server System MCB2208WFAF7R.....	24
Table 10. Intel® DCB for Cloud Server System MCB2208WFAF8R.....	25
Table 11. Intel® DCB for Cloud Server System MCB2208WFAF9R.....	26
Table 12. Intel® DCB for Cloud Server System MCB2208WFAF10R	27
Table 13. Intel® Rail Kit accessory options for MCB2312WFHY2R and MCB2208WFXXR models.....	28

1. Introduction

Intel® Data Center Blocks (Intel® DCB) configurations are purpose-built with all-Intel® technology, optimized to address the needs of specific market segments. These fully-validated blocks deliver performance, reliability, and quality for solutions customer want and can trust to handle their demanding cloud workloads.

The Intel® Data Center Blocks for Cloud (Intel® DCB for Cloud) optimized for Microsoft Windows Server* are unbranded server* systems that optimize the features and performance of Windows Server* to help accelerate the path to software-defined storage and private cloud. They includes both single node and multi-node server systems.

The following are examples of Intel hardware used in single- and multi-node systems.



Figure 1. Intel® Server multi-node systems MCB2224BPHY1R and MCB2224BPAF3R



Figure 2. Intel® Server single-node systems MCB2208WFAF4R, MCB2208WFAF5R, MCB2208WFAF6R, MCB2208WFAF7R, MCB2208WFAF8R and MCB2208WFAF10R



Figure 3. Intel® Server single-node system MCB2208WFAF9R



Figure 4. Intel® Server single-node system MCB2312WFHY2R

1.1 Microsoft Windows Server* Certification and the Intel® DCB for Cloud Server System

Server systems within this product family were specifically created to meet the Microsoft Windows Server* certification requirements. Intel has extensively tested these systems to ensure best operation and reliability within the Microsoft Windows Server 2016 and Microsoft Windows Server 2019 operating environments.

Support for Intel® Optane™ DC persistent memory modules is introduced the first time in Microsoft Windows Server 2019 operating system. Therefore Intel DCB models with Intel Optane DC persistent memory modules (MCB2208WFAF8R and MCB2208WFAF10R) are certified only for Microsoft Windows Server 2019.

Intel DCB model MCB2224BPHY1R is certified for Microsoft Windows Server 2016 with SATA hard disk drives (HDDs) only. The same Intel DCB model running Microsoft Windows Server 2019 operating system can use either SAS or SATA HDDs without breaking certification.

All other Intel DCB models are certified for both Microsoft Windows Server 2016 and Microsoft Windows Server 2019 operating environments.

1.1.1 Maintaining Microsoft Windows Server* Certification

To maintain Microsoft Windows Server certification, be cautious with the changes to the predefined system configuration. Changing the system configuration may invalidate the Microsoft Windows Server certification performed by Microsoft and Intel.

Changes to the pre-defined server system configuration that may impact Microsoft certification include:

- Updating the factory-installed system software stack with revisions that are not Microsoft-certified. The system software stack includes: system BIOS, BMC and Intel® Management Engine (Intel® ME) firmware.¹
- Changing processor model and quantity.
- Changing the system memory with non-matching (different manufacturer and/or model number) DIMMs.²
- Adding or changing I/O devices such as add-in PCIe* cards or modules.
- Adding or changing to non-matching (different manufacturer and/or model number) solid state drives (SSDs) compared to those shipped in the original system configuration.²
- Adding HDDs not certified for Microsoft Software-Defined Data Center Premium.

Notes:

1. Intel releases updates to the system software stack for server boards and systems via the System Update Packages (SUP), which are available from the Intel® Download Center. However, since the Intel DCB for Cloud server system is Microsoft-certified, refrain from changing the pre-installed system software stack unless updating it to another system software stack which has passed Microsoft certification for that specific system configuration. At the time of the initial launch in May 2019, all models have been certified with SUP 02.01.0008. Please check if new certified SUP versions are available at <https://www.intel.com/content/www/us/en/support/articles/000021862/server-products.html> under Intel® Data Center Blocks for Cloud -> Cloud Blocks for Microsoft Windows* Server 2019.
 2. Adding or swapping like storage devices and DIMMs (same manufacturer and part number) as shipped in the original system configuration is permitted and does not invalidate the Microsoft certification.
-

1.1.2 Hybrid System Configurations

Hybrid systems have both HDDs and SSDs. Intel preinstalls certified boot and cache tier SSD drives. HDDs for hybrid configurations are not included and must be purchased separately.

To maintain Microsoft certification, HDDs for use with hybrid Intel DCB models must be certified for Windows Server Software-Defined Data Center Premium. In addition, for the **MCB2224BPHY1R** hybrid systems running Microsoft Windows Server 2016, only SATA HDDs can be used. Check the Microsoft Windows Server Catalog (<https://www.windowsservercatalog.com>) to verify that the drive is certified for Software-Defined Data Center Premium on the corresponding version of Windows Server.

In addition, all HDDs installed into a hybrid Intel DCB model should be validated by Intel on Intel® Server Systems. Visit <https://www.intel.com/content/www/us/en/support/articles/000024153/server-products/server-boards.html?wapkw=server+hardware+compatibility+list> to find if the HDD model for use with a hybrid system is in the Hardware Compatibility List. Start with the “Intel Server Board S2600WF, HNS2600BP and S2600ST Families”. To find compatible drives for MCB2312WFHY2R model, select R2312WF0NPR from the “System/Chassis” category and HDD-SATA from “Compatible Options” category. Similarly, to find compatible drives for MCB2224BPHY1 model, select the H2224XXLR3 system.

The following table identifies locations of the HDDs in hybrid systems. See Section 4 for drive installation instructions.

Table 1. Certified hard drives for hybrid configurations

DCB Model	HDD Type	Description	Requirement	Quantity	Install Location
MCB2224BPHY1R	SATA for Windows* 2016 SAS or SATA for Windows 2019	2.5" HDD, 2TB	Certified for Microsoft Software-Defined Data Center Premium and present in Intel Hardware Compatibility List	16	Slots: 2, 3, 4, 5, 8, 9, 10, 11, 14, 15, 16, 17, 20, 21, 22, 23
MCB2312WFHY2R	SAS or SATA			4	Slots: 0, 1, 2, 3

2. Microsoft Windows Server* Installation Requirements

For an Intel® DCB for Cloud Server System to function, a Microsoft Windows Server* 2016 or Microsoft Windows Server 2019 operating system must be installed by the customer. To maintain Microsoft certification for any Intel DCB for Cloud Server System, the Microsoft Windows Server operating system must be installed to a specific storage device within the specific Intel DCB for Cloud Server System configuration.

The following table identifies the dedicated boot device to install Microsoft Windows Server for each Intel DCB for Cloud Server System configuration listed.

Table 2. Specified boot drives for operating system installation – certification requirement

System Model	Storage Device Vendor	Storage Device Model Number	Device Location in the Server System
MCB2224BPHY1R MCB2224BPAF3R	Intel	Intel® SSD DC P4101 (256GB, M.2, 80mm)	Installed on the M.2 slot of riser card 2 AHW1UM2RISER2
MCB2312WFHY2R MCB2208WFAF4R MCB2208WFAF5R MCB2208WFAF6R MCB2208WFAF7R MCB2208WFAF8R MCB2208WFAF9R MCB2208WFAF10R	Intel	Intel® SSD D3 S4510 Series (480GB, M.2, 80mm)	Installed in the M.2 port 1 on the motherboard

During installation process, the Windows setup utility asks to select the target device for the operating system location. The M.2 SSD is the drive with lowest capacity in the list of all drives presented. Select this drive as the target for operating system installation.

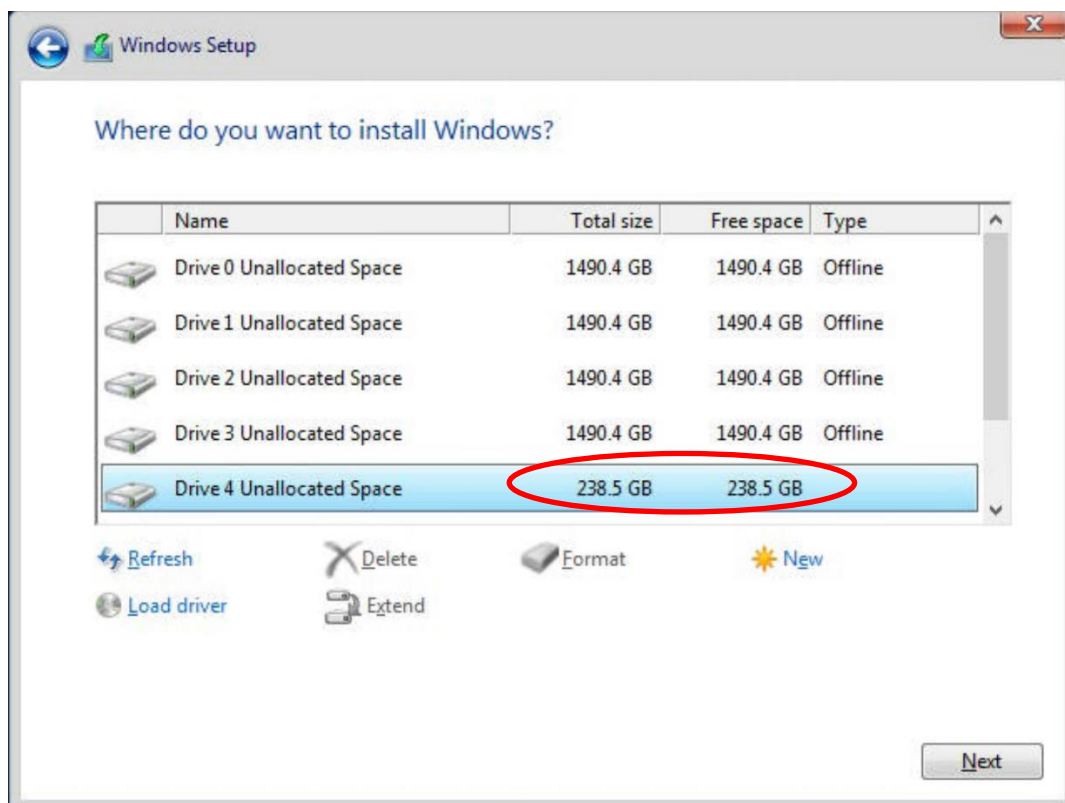


Figure 5. Select M.2 drives for operating system installation

3. Intel® Optane™ DC Persistent Memory Module Configuration

Intel® Optane™ DC persistent memory represents a groundbreaking technology innovation. Delivered with 2nd Generation Intel® Xeon® Scalable processors, this workload optimized technology helps businesses extract more actionable insights from data – from cloud and databases, to in-memory analytics, and content delivery networks.

Intel Optane DC persistent memory is an innovative memory technology that delivers a unique combination of affordable large capacity and support for data persistence. These features supported by programming Intel Optane DC persistent memory module into one of two distinctive modes: Memory Mode or Application Direct. By default all Intel Optane DC persistent memory modules are factory programmed into the Memory Mode. When they are installed into a server system following the rules, they are seen by an operating system as high capacity RAM. To unleash the persistent feature of Intel Optane DC persistent memory, it should be configured into Application Direct mode.

Intel DCB for Cloud MCB2208WFAF8R and MCB2208WFAF10R models include Intel Optane DC persistent memory modules. The MCB2208WFAF8R model designed to use Intel Optane DC persistent memory in the Memory Mode and no additional configuration is needed. The MCB2208WFAF10R is designed to use Intel Optane DC persistent memory in the Application Direct mode and requires some configuration steps in the BIOS and in operating system. This chapter provides step-by-step procedure to achieve this goal.

3.1 Configuring Intel® Optane™ DC Persistent Memory Modules in BIOS

First, ensure that all Intel Optane DC persistent memory modules installed at the factory are visible by BIOS and are operational. Boot the system into the BIOS setup utility by pressing the <F2> key after POST completes. The total amount of detected RAM is shown in the top right corner of the summary screen. This number should be equal to the total Intel Optane DC persistent memory module capacity.

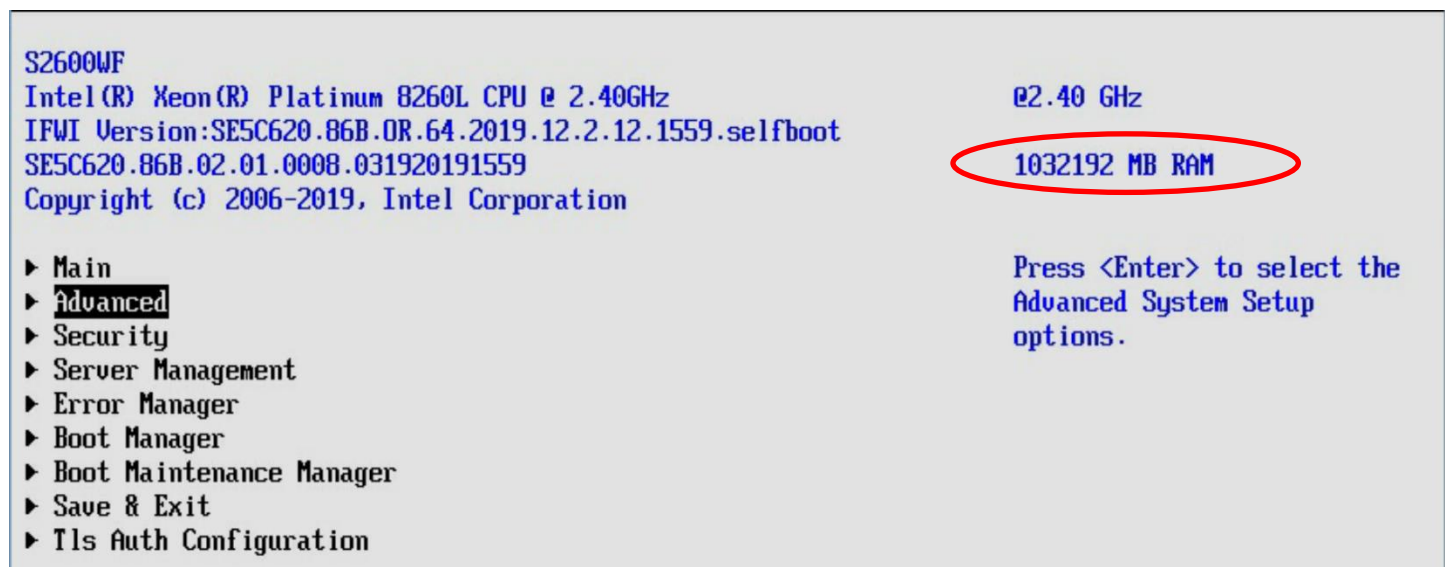


Figure 6. Total amount of RAM visible to system

The “DCPMM” line in the Memory Configuration section of the Main page shows how the Intel Optane DC persistent memory module is configured. The example in Figure 7 shows that the total Intel Optane DC persistent memory module capacity of 1008GB is configured for Memory Mode (the second number in line) and zero is allocated for Application Direct mode (the third number).

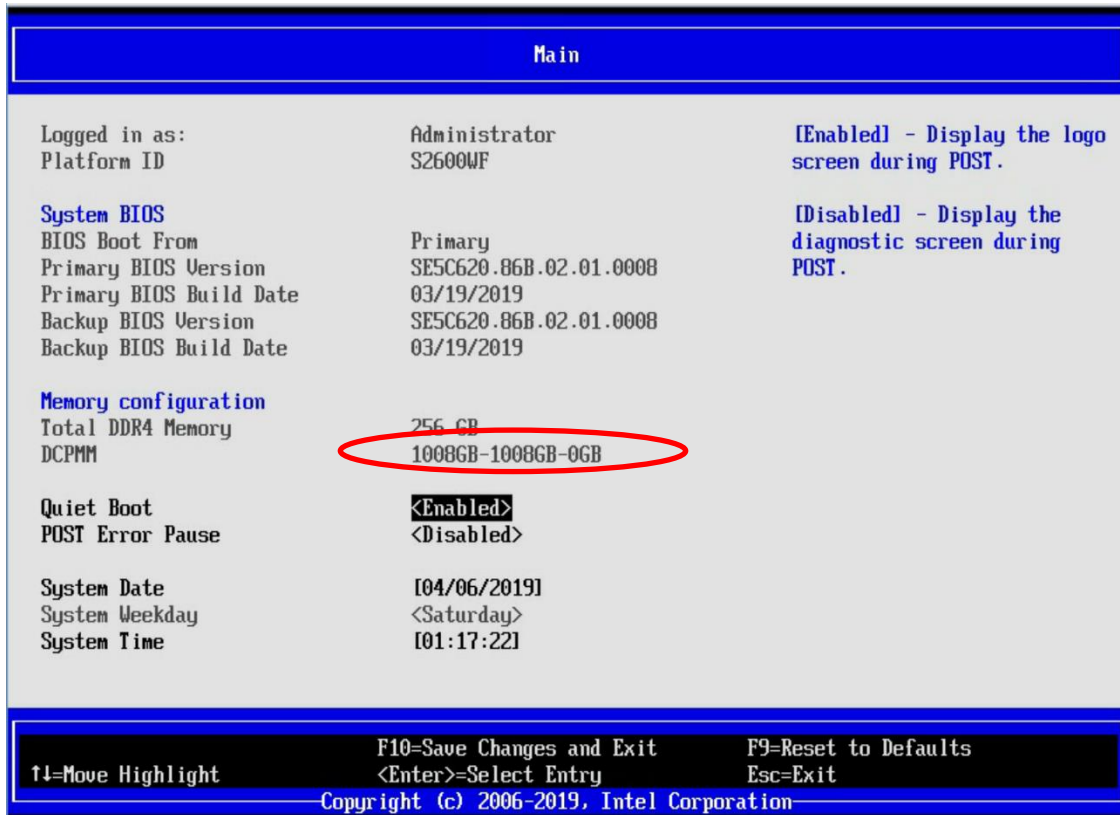


Figure 7. Intel® Optane™ DC persistent memory module capacity allocation

To check individual Intel Optane DC persistent memory module status, go to Advanced > Memory Configuration. This page shows the location of the Intel Optane DC persistent memory modules and their capacities split between Memory and Application Direct modes similar to how it presented on the Main page:



Figure 8. Intel® Optane™ DC persistent memory location

To configure the Intel Optane DC persistent memory module for Application Direct mode, navigate to Advanced > PCI Configuration > UEFI Option ROM Control > Intel Optane DC Persistent Memory Configuration > Regions > Create goal config.

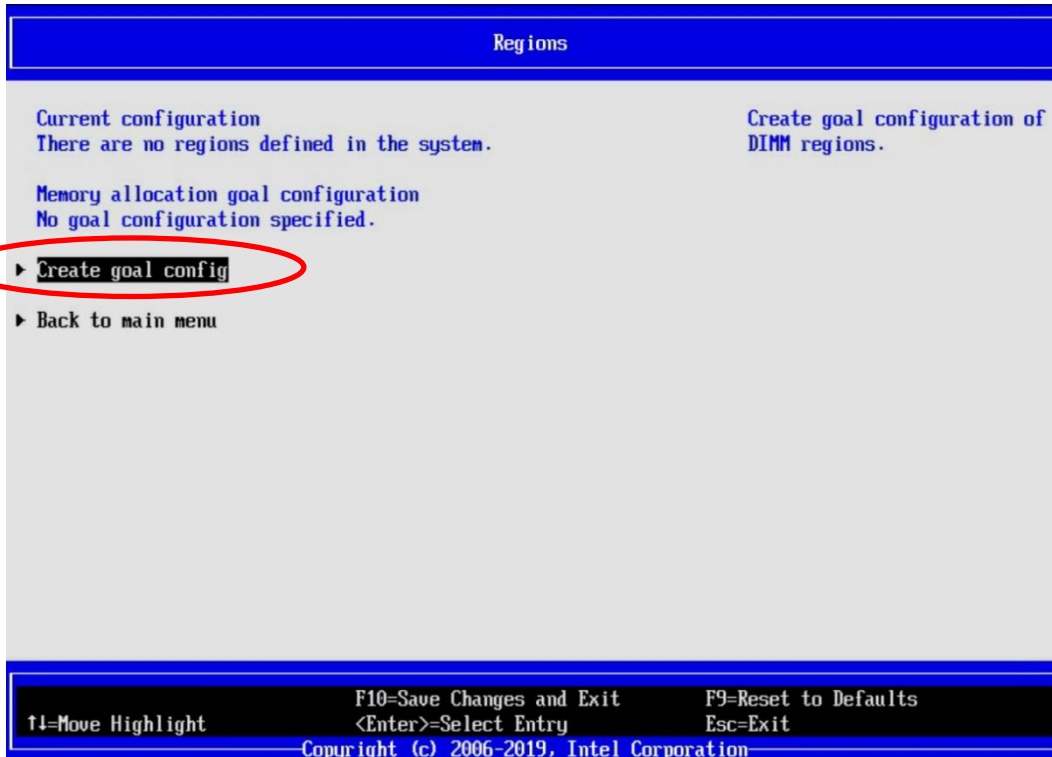


Figure 9. Create goal config option

By default, the new configuration (“Goal”) for the Application Direct mode is set for the whole platform and App Direct is preselected for the Persistent memory type field. This page allows allocation of some Intel Optane DC persistent memory module capacity to Memory Mode. The rest is allocated to App Direct mode.



Figure 10. Goal configuration page

Confirm configuration by selecting the **Create goal config** action line at the bottom. The new screen shows memory allocation goals for individual Intel Optane DC persistent memory modules.

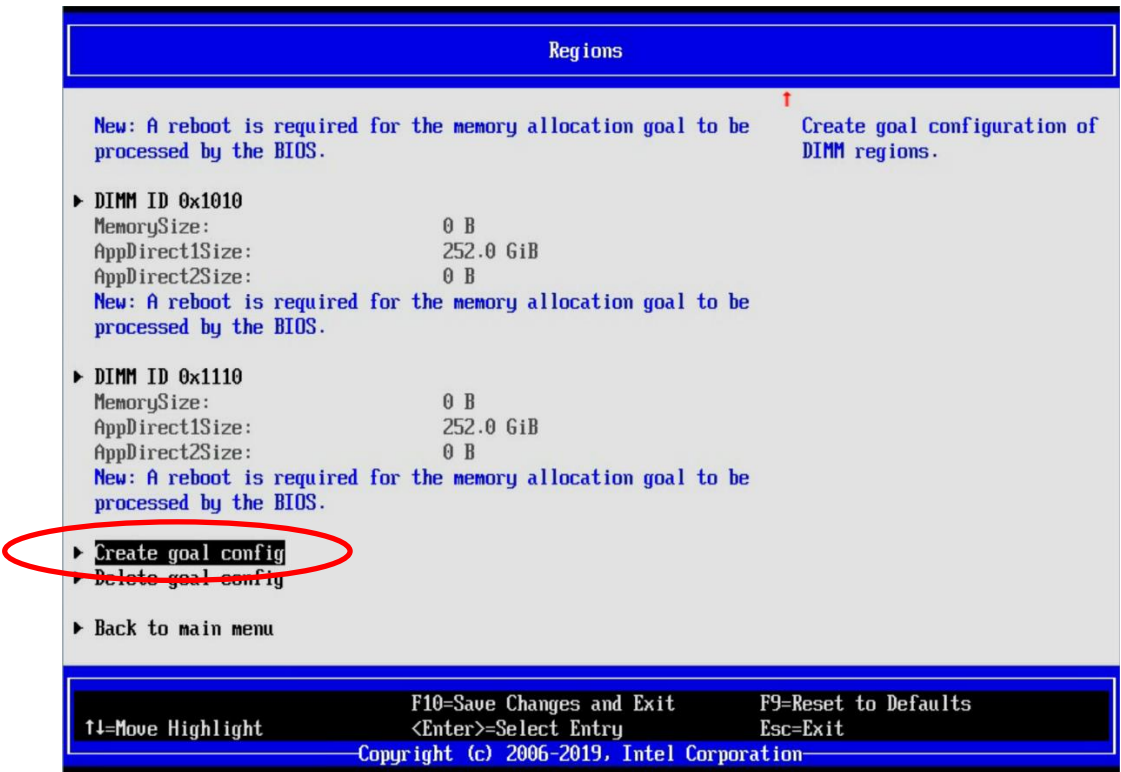


Figure 11. Confirm goal creation

Confirm the configuration by selecting **Create goal config** again and restart the server system for the new Intel Optane DC persistent memory module configuration to be applied. Bring the system into BIOS setup by pressing the **<F2>** key after POST completes. The amount of RAM on the summary page now shows only DDR4 memory.

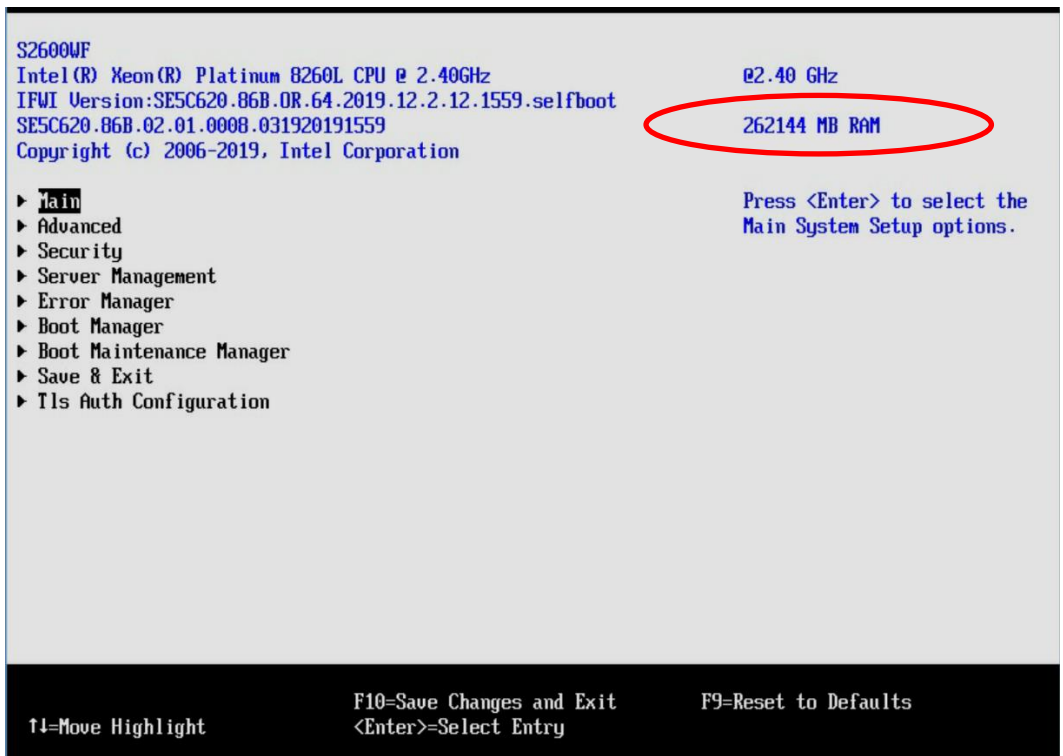


Figure 12. RAM equal to DDR4 memory

The Main page shows the new Intel Optane DC persistent memory module allocation. In the example shown in Figure 13, the whole Intel Optane DC persistent memory module capacity is allocated to Application Direct mode.

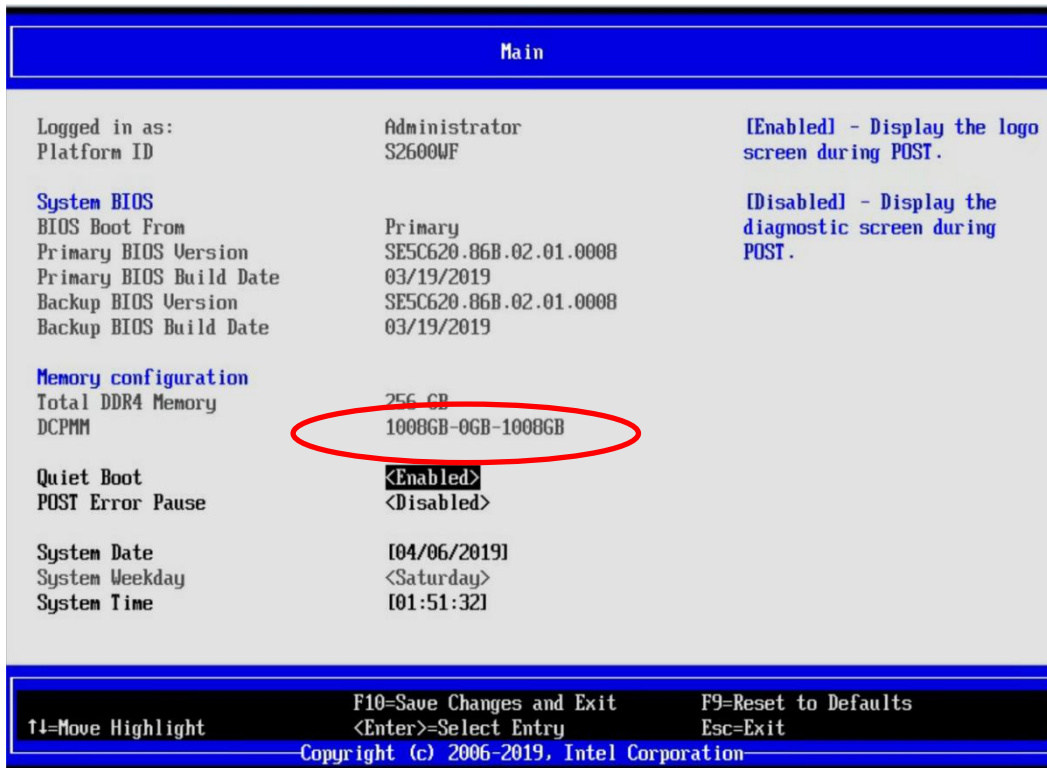


Figure 13. DCPMM capacity allocated to App Direct mode

Navigate to Advanced > PCI Configuration > UEFI Option ROM Control > Intel Optane DC Persistent Memory Configuration > Regions to see that two new App Direct regions have been created.



Figure 14. App Direct regions created

3.2 Configuring Intel® Optane™ DC Persistent Memory Modules in the Operating System

Support for Intel Optane DC persistent memory modules was introduced the first time in Microsoft Windows Server 2019 operating system. Therefore Microsoft Windows Server 2019 must be installed on the server system. After installation, configure Intel Optane DC persistent memory modules in the operating system. Start Power Shell as Administrator and execute the cmdlets shown in Figure 15.

```
PS C:\Users\Administrator> Get-PmemPhysicalDevice
```

DeviceId	DeviceType	HealthStatus	OperationalStatus	PhysicalLocation	FirmwareRevision	Persistent memory size
10	Intel INVDIMM device	Healthy	{Ok}	CPU1_DIMM_B1	102005346	252 GB
1010	Intel INVDIMM device	Healthy	{Ok}	CPU2_DIMM_B1	102005346	252 GB
110	Intel INVDIMM device	Healthy	{Ok}	CPU1_DIMM_E1	102005346	252 GB
1110	Intel INVDIMM device	Healthy	{Ok}	CPU2_DIMM_E1	102005346	252 GB

```
PS C:\Users\Administrator> Get-PmemUnusedRegion
```

RegionId	TotalSizeInBytes	DeviceId
1	541165879296	{10, 110}
3	541165879296	{1010, 1110}

```
PS C:\Users\Administrator> Get-PmemUnusedRegion | New-PmemDisk
Creating new persistent memory disk. This may take a few moments.
Creating new persistent memory disk. This may take a few moments.
PS C:\Users\Administrator> Get-PmemDisk
```

DiskNumber	Size	HealthStatus	AtomicityType	CanBeRemoved	PhysicalDeviceIds	UnsafeShutdownCount
26	504 GB	Healthy	None	True	{10, 110}	2
27	504 GB	Healthy	None	True	{1010, 1110}	2

```
PS C:\Users\Administrator>
```

Figure 15. Create persistent memory drives

The first two cmdlets show characteristics of the Intel Optane DC persistent memory modules and the regions that have been created through previous BIOS configuration steps. The last two cmdlets create two new persistent memory disks and show their characteristics. From this point they look and behave like other disk drives. Create partitions, format, and assign drive letters like in the example shown in Figure 16.


```

PS C:\Users\Administrator> Initialize-Disk -Number 26 -PartitionStyle GPT
PS C:\Users\Administrator> New-Partition -DiskNumber 26 -DriveLetter R -UseMaximumSize

DiskPath: \\?\scmlid#ven_8980&dev_097a&subsys_89804151&rev_0017#3&1b1819f6&0&0&03018089ff45b746ddcdbc4fa11ea2c5a6637e9d#{53f56307-b6bf-11d0-94f2-00a0c91efb8b}

PartitionNumber  DriveLetter  Offset                Size Type
-----
2                R            16777216              503.98 GB Basic

PS C:\Users\Administrator> Format-Volume -DriveLetter R -FileSystem NTFS

DriveLetter  FriendlyName  FileSystemType  DriveType  HealthStatus  OperationalStatus  SizeRemaining  Size
-----
R            NTFS         Fixed          Healthy    OK            503.85 GB         503.98 GB

PS C:\Users\Administrator>
    
```

Figure 16. Initialize persistent memory drives

The drives are now visible in the File Explorer and are ready to be used.

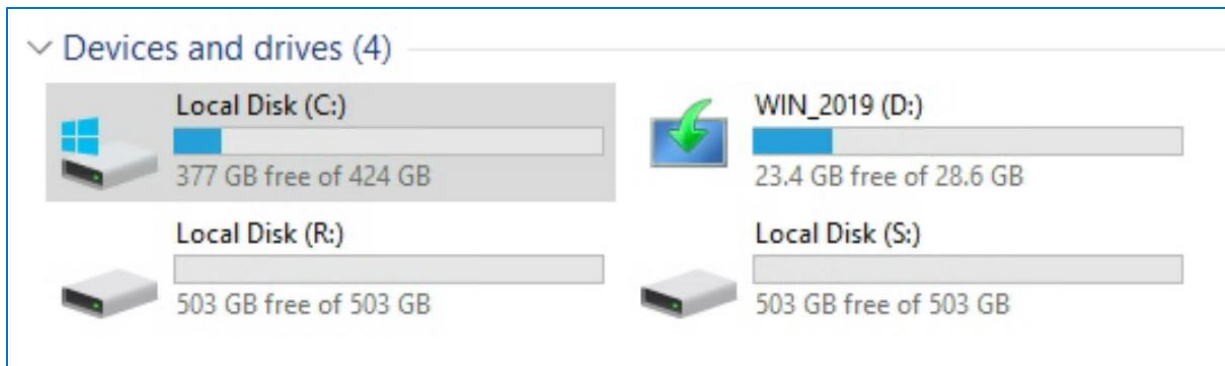


Figure 17. Persistent memory drives in File Explorer

Refer to Microsoft documentation for additional details on operating Intel Optane DC persistent memory modules in the Windows Server environment:

<https://docs.microsoft.com/en-us/windows-server/storage/storage-spaces/deploy-pmem>

4. System Configuration Options

Table 3. Intel® DCB for Cloud Server System MCB2224BPHY1R


Intel® DCB for Cloud Server System MCB2224BPHY1R Fully integrated 2U, 4-node system including processors, memory, and SATA SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2224BPHY1R</td> </tr> <tr> <td>MM#</td> <td>999LDP</td> </tr> <tr> <td>UPC</td> <td>00735858421034</td> </tr> <tr> <td>EAN</td> <td>5032037163583</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>733 x 438 x 86.9 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2224BPHY1R	MM#	999LDP	UPC	00735858421034	EAN	5032037163583	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	733 x 438 x 86.9 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
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Chassis dimensions	733 x 438 x 86.9 mm (L x W x H)																
Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2224BPHY1R includes the following:</p> <ul style="list-style-type: none"> (1) – 2U chassis H2224XXLR3 (24x2.5"). Includes: <ul style="list-style-type: none"> (1) – Front panel – iPC FH2000FPANEL2 (1) – Power distribution board – iPC FXXCRPSPDB2 (1) – Power interposer board – iPC FXXCRPSPIB (2) – 2130W 80 PLUS* Platinum power supply units (PSU) – iPC FXX2130PCRPS (1) – 24 x 2.5" hot-swap drive bay. Includes: <ul style="list-style-type: none"> (24) – Tool-less drive carriers – iPC FXX25HSCAR3 (1) – Backplane – iPC HW24X25HS12G (4) – Blank compute module slot fillers (1) – Basic rack rail kit – iPC AXXELVRAIL <p>NOTE: The rail kit only supports the specific rack type with 3/8" square and 7.1mm round holes.</p> (4) – Intel® Compute Module HNS2600BPS24R (w/TPM 2.0, 2x10GbE SFP+ & 1GbE, RDMA). Includes: <ul style="list-style-type: none"> (1) – 1U node tray (1) – Intel® Server Board S2600BPSR (1) – Power docking board – iPC FHWBPNPB24 (3) – 40 x 56 mm dual rotor managed fans – iPC FXX4056DRFAN2 (1) – 1U passive heat sink – CPU1 – CuAL – iPC FXXHP78X108HS (1) – 1U passive heat sink – CPU2 – CuAL – iPC FXX2678X108HS (2) – Standard carrier clips (1) – Air duct (1) – External VGA port bracket (1) – Slot 2 riser card with 80 mm M.2 SSD slot – iPC AHW1UM2RISER2 (8) – Intel® Xeon® Silver 4215 processor (8 Cores, 2.5Ghz, 85W) – iPC CD8069504212701 (4) – Bridge board (12G, IT mode-only) – iPC AHWBPBGB24 (4) – Intel® Remote Management Module Lite 2 accessory key – iPC AXXRMM4LITE2 (4) – Intel® Solid State Drive (SSD) DC P4101 256GB (M.2, 80mm) – iPC SSDPEKKA256G801 (8) – Intel® Solid State Drive (SSD) D3 S4610 960GB (2.5" U.2 SATA) – iPC SSDSC2KG960G801 (16) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (4 DIMMs per node/16 DIMMs per system) <p>The HDD ingredients are customer-supplied and do not ship with the Intel® DCB for Cloud server system:</p> <ul style="list-style-type: none"> (16) – 2TB 2.5" HDD Certified for Microsoft Software-Defined Data Center (SDDC) Premium and in Intel Hardware Compatibility List. See restrictions in Section 1.1.2. 																	

Table 4. Intel® DCB for Cloud Server System MCB2312WFHY2R


Intel® DCB for Cloud Server System MCB2312WFHY2R																	
Fully integrated 2U, single-node system including processors, memory, and SATA and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2312WFHY2R</td> </tr> <tr> <td>MM#</td> <td>999JKT</td> </tr> <tr> <td>UPC</td> <td>00735858421027</td> </tr> <tr> <td>EAN</td> <td>5032037163576</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2312WFHY2R	MM#	999JKT	UPC	00735858421027	EAN	5032037163576	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
iPC	MCB2312WFHY2R																
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Chassis dimensions	712 x 439 x 89 mm (L x W x H)																
Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2312WFHY2R includes the following:</p> <p>(1) – Intel® Server System R2312WF0NPR (2U1N, 8x2.5"). Includes:</p> <ul style="list-style-type: none"> (1) – 2U chassis with Quick Reference Label affixed to top cover (1) – Intel® Server Board S2600WFOR (no onboard LAN) (2) – PCIe* riser card brackets. Includes: <ul style="list-style-type: none"> (2) – 3-slot PCIe* riser cards – iPC A2UL8RISER2 (1) – 2-slot low profile PCIe* riser card – iPC A2UX8X4RISER (12) – 3.5" hot-swap drive bays with drive carriers and blanks. Includes: <ul style="list-style-type: none"> (1) – SAS/NVMe combo backplane – iPC F2U12X35S3PH (12) – 3.5" hot-swap drive tool less carriers – iPC FXX35HSCAR3 (1) – Storage rack handle assembly – iPC A2UHANDLKIT <ul style="list-style-type: none"> o 1 set storage rack handles o Mini front panel (board only) – iPC G28538-xxx o 410 mm front panel cable – iPC H26893-xxx o 640 mm front panel USB 2.0 cable – iPC H20005-xxx (1) – 175 mm Backplane I2C cable – iPC H91172-xxx (1) – 800 mm mini SAS HD cable – iPC AXXCBL800HDHD (1) – 875 mm mini SAS HD cable – iPC AXXCBL875HDHD (1) – 950 mm mini SAS HD cable – iPC AXXCBL950HDHD (1) – 525/675 mm backplane power cable – iPC H82097-xxx (1) – Standard 2U air duct – iPC H90554-xxx (6) – Hot-swap system fans – iPC FR2UFAN60HSW (16) – DIMM slot blanks – iPC G75158-00x (1) – Power supply bay blank insert (2) – AC power cord retention strap assembly – iPC H23961-00x (2) – CPU heat sinks – iPC FXXCA78X108HS (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC J16115-XXX (2) – Standard CPU carrier – iPC H72851-xxx (2) – Chassis handle (1 set) installed – iPC H18229-xxx (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC H18238-00x (1) – 250 mm fixed mount SSD power cable – iPC J29245-xxx <p>Spares for each screw type included</p> <p>(2) – Intel® Xeon® Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301</p> <p>(1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC SSDSCKKB480G801</p> <p>(2) – Intel® Solid State Drive (SSD) D3 S4510 1.92TB (2.5" U.2 SATA) – iPC SSDSC2KB019T801</p> <p>(2) – Intel® Solid State Drive (SSD) DC P4610 1.6TB (2.5" U.2 NVMe) – iPC SSDPE2KE016T801</p> <p>(1) – Intel® Remote Management Module Lite 2 – iPC AXXRMM4LITE2</p> <p>(1) – Intel® RAID Controller RS3UC080J (IT Mode) – iPC RS3UC080J</p> <p>(1) – Intel® RAID Expander RES3FV288 – iPC RES3FV288</p> <p>(1) – OCuLink Cable – 600mm – iPC AXXCBL600CVCR</p> <p>(1) – OCuLink Cable – 620mm – iPC AXXCBL620CRCR</p> <p>(2) – 1300W AC Common Redundant Power Supply – iPC AXX1300TCRPS</p> <p>(1) – Ethernet OCP* Dual SFP+ – iPC X527DA20CPG1P5</p> <p>(4) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz</p> <p>(1) – Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC8</p> <p>The HDD ingredients are customer-supplied and do not ship with the Intel® DCB for Cloud server system:</p> <p>(4) – 2TB 2.5" HDD Certified for Microsoft Software-Defined Data Center (SDDC) Premium and in Intel Hardware Compatibility List. See restrictions in Section 1.1.2.</p>																	

Table 5. Intel® DCB for Cloud Server System MCB2224BPAF3R


Intel® DCB for Cloud Server System MCB2224BPAF3R Fully integrated 2U, 4-node system including processors, memory, and SATA SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2224BPAF3R</td> </tr> <tr> <td>MM#</td> <td>999LDM</td> </tr> <tr> <td>UPC</td> <td>00735858421010</td> </tr> <tr> <td>EAN</td> <td>5032037163569</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>733 x 438 x 86.9 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 266 mm (L x W x H)</td> </tr> </table>	iPC	MCB2224BPAF3R	MM#	999LDM	UPC	00735858421010	EAN	5032037163569	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	733 x 438 x 86.9 mm (L x W x H)	Package dimensions	983 x 577 x 266 mm (L x W x H)
iPC	MCB2224BPAF3R																
MM#	999LDM																
UPC	00735858421010																
EAN	5032037163569																
Product type	Fully integrated server system																
Chassis form factor	2U rack mount																
Chassis dimensions	733 x 438 x 86.9 mm (L x W x H)																
Package dimensions	983 x 577 x 266 mm (L x W x H)																
<p>Intel product code MCB2224BPAF3R includes the following:</p> <p>(1) – 2U chassis H2224XXLR3 (24x2.5"). Includes:</p> <ul style="list-style-type: none"> (1) – Front panel – iPC FH2000FPANEL2 (1) – Power distribution board – iPC FXXCRPSPDB2 (1) – Power interposer board – iPC FXXCRPSPIB (2) – 2130W 80 PLUS* Platinum power supply units (PSU) – iPC FXX2130PCRPS (1) – 24 x 2.5" hot-swap drive bay. Includes: <ul style="list-style-type: none"> (24) – Tool-less drive carriers – iPC FXX25HSCAR3 (1) – Backplane – iPC HW24X25HS12G (4) – Blank compute module slot fillers (1) – Basic rack rail kit – iPC AXXELVRAIL <p>NOTE: The rail kit only supports the specific rack type with 3/8" square and 7.1mm round holes.</p> <p>(4) – Intel® Compute Module HNS2600BPS24R (w/TPM 2.0, 2x10GbE SFP+ and 1GbE, RDMA). Includes:</p> <ul style="list-style-type: none"> (1) – 1U node tray (1) – Intel® Server Board S2600BPSR (1) – Power docking board – iPC FHWBPNPB24 (3) – 40 x 56 mm dual rotor managed fans – iPC FXX4056DRFAN2 (1) – 1U passive heat sink – CPU1 – CuAL – iPC FXXHP78X108HS (1) – 1U passive heat sink – CPU2 – CuAL – iPC FXX2678X108HS (2) – Standard carrier clips (1) – Air duct (1) – External VGA port bracket (1) – Slot 2 riser card with 80 mm M.2 SSD slot – iPC AHW1UM2RISER2 <p>(8) – Intel® Xeon Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301</p> <p>(4) – Intel® Solid State Drive (SSD) DC P4101 256GB (M.2, 80mm NVMe) – iPC SSDPEKKA256G801</p> <p>(24) – Intel® Solid State Drive (SSD) D3 S4510 1.92TB (2.5" U.2 SATA) – iPC SSDSC2KB019T801</p> <p>(4) – Bridge board (12G, IT mode only) – iPC AHWBPBGB24</p> <p>(4) – Intel® Remote Management Module Lite 2 accessory key – iPC AXXRMM4LITE2</p> <p>(32) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (8 DIMMs per node/32 DIMMs per system)</p>																	

Table 6. Intel® DCB for Cloud Server System MCB2208WFAF4R


Intel® DCB for Cloud Server System MCB2208WFAF4R																	
Fully integrated 2U, single-node system including processors, memory, and SATA and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF4R</td> </tr> <tr> <td>MM#</td> <td>999GKZ</td> </tr> <tr> <td>UPC</td> <td>00735858421003</td> </tr> <tr> <td>EAN</td> <td>5032037163552</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF4R	MM#	999GKZ	UPC	00735858421003	EAN	5032037163552	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
iPC	MCB2208WFAF4R																
MM#	999GKZ																
UPC	00735858421003																
EAN	5032037163552																
Product type	Fully integrated server system																
Chassis form factor	2U rack mount																
Chassis dimensions	712 x 439 x 89 mm (L x W x H)																
Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2208WFAF4R includes the following:</p> <ul style="list-style-type: none"> (1) – Intel Server System R2208WFOZSR (2U1N, 8x2.5"). Includes: <ul style="list-style-type: none"> (1) – 2U chassis with Quick Reference Label affixed to top cover (1) – Intel® Server Board S2600WFOR (no onboard LAN) (2) – PCIe* riser card brackets. Includes: <ul style="list-style-type: none"> (2) – 3-slot PCIe* riser cards – iPC A2UL8RISER2 (1) – 2-slot low profile PCIe* riser card – iPC A2UX8X4RISER (8) – 2.5" hot-swap drive bays with drive carriers and blanks. Includes: <ul style="list-style-type: none"> (1) – SAS/NVMe* combo backplane – iPC F2U8X25S3PHS (8) – 2.5" hot-swap drive tool less carriers – iPC FXX25HSCAR3 (1) – Standard control panel assembly (board only – iPC FXXFPANEL2) <ul style="list-style-type: none"> o 300 mm front panel cable – iPC H34381-xxx (1) – Front I/O panel assembly (1 x VGA and 2 x USB) <ul style="list-style-type: none"> o 620 mm USB 3.0 cable – iPC H76899-xxx o 400 mm video cable – iPC H62114-xxx (1) – 250 mm backplane I2C cable – iPC H91166-xxx (2) – 730 mm mini SAS HD cable – iPC AXXCBL730HDHD (1) – 675 mm backplane power cable – iPC H82108-XXX (1) – SATA optical drive power cable 300 mm – iPC H23901-001 (1) – SATA optical drive bay mounting kit – iPC H19168-xxx (1) – Standard 2U air duct – iPC H90554-xxx (6) – Hot-swap system fans – iPC FR2UFAN60HSW (8) – DIMM slot blanks – iPC G75158-00x (1) – 1300W AC power supply module – iPC AXX1300TCRPS (1) – Power supply bay blank insert (2) – AC power cord retention strap assembly – iPC H23961-00x (2) – CPU heat sinks – iPC FXXCA78X108HS (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC J16115-XXX (2) – Standard CPU carrier – iPC H72851-xxx (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC H18238-00x (1) – 250 mm fixed mount SSD power cable – iPC J29245-xxx <p>Spares for each screw type included</p> <ul style="list-style-type: none"> (2) – Intel® Xeon® Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301 (1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC SSDSCKKB480G801 (2) – Intel® Solid State Drive (SSD) DC P4610 1.6TB (2.5" U.2 NVMe*) – iPC SSDPE2KE016T801 (6) – Intel® Solid State Drive (SSD) D3 S4510 1.92TB, (2.5" U.2 SATA) – iPC SSDSC2KB019T801 (1) – Intel® Remote Management Module Lite 2 – iPC AXXRMM4LITE2 (1) – Intel® RAID Controller RS3UC080J (IT Mode) – iPC RS3UC080J (1) – OCuLink Cable – 530mm – iPC AXXCBL530CVCR (1) – OCuLink Cable - 470mm – iPC AXXCBL470CVCR (1) – 1300W AC Common Redundant Power Supply – iPC AXX1300TCRPS (1) – Ethernet OCP* Dual SFP+ – iPC X527DA2OCPG1P5 (12) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (1) – Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC8 																	

Table 7. Intel® DCB for Cloud Server System MCB2208WFAF5R


Intel® DCB for Cloud Server System MCB2208WFAF5R																	
Fully integrated 2U, single-node system including processors, memory, and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF5R</td> </tr> <tr> <td>MM#</td> <td>999GKX</td> </tr> <tr> <td>UPC</td> <td>00735858420990</td> </tr> <tr> <td>EAN</td> <td>5032037163545</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF5R	MM#	999GKX	UPC	00735858420990	EAN	5032037163545	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
iPC	MCB2208WFAF5R																
MM#	999GKX																
UPC	00735858420990																
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Product type	Fully integrated server system																
Chassis form factor	2U rack mount																
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Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2208WFAF5R includes the following:</p> <ul style="list-style-type: none"> (1) – Intel Server System R2208WFOZSR (2U1N, 8x2.5"). Includes: <ul style="list-style-type: none"> (1) – 2U chassis with Quick Reference Label affixed to top cover (1) – Intel® Server Board S2600WFOR (no onboard LAN) (2) – PCIe* riser card brackets. Includes: <ul style="list-style-type: none"> (2) – 3-slot PCIe* riser cards – iPC A2UL8RISER2 (1) – 2-slot low profile PCIe* riser card – iPC A2UX8X4RISER (8) – 2.5" hot-swap drive bays with drive carriers and blanks. Includes: <ul style="list-style-type: none"> (1) – SAS/NVMe* combo backplane – iPC F2U8X25S3PHS (8) – 2.5" hot-swap drive tool less carriers – iPC FXX25HSCAR3 (1) – Standard control panel assembly (board only – iPC FXXFPANEL2) <ul style="list-style-type: none"> o 300 mm front panel cable – iPC H34381-xxx (1) – Front I/O panel assembly (1 x VGA and 2 x USB) <ul style="list-style-type: none"> o 620 mm USB 3.0 cable – iPC H76899-xxx o 400 mm video cable – iPC H62114-xxx (1) – 250 mm backplane I2C cable – iPC H91166-xxx (2) – 730 mm mini SAS HD cable – iPC AXXCBL730HDHD (1) – 675 mm backplane power cable – iPC H82108-XXX (1) – SATA optical drive power cable 300 mm – iPC H23901-001 (1) – SATA optical drive bay mounting kit – iPC H19168-xxx (1) – Standard 2U air duct – iPC H90554-xxx (6) – Hot-swap system fans – iPC FR2UFAN60HSW (8) – DIMM slot blanks – iPC G75158-00x (1) – 1300W AC power supply module – iPC AXX1300TCRPS (1) – Power supply bay blank insert (2) – AC power cord retention strap assembly – iPC H23961-00x (2) – CPU heat sinks – iPC FXXCA78X108HS (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC J16115-XXX (2) – Standard CPU carrier – iPC H72851-xxx (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC H18238-00x (1) – 250 mm fixed mount SSD power cable – iPC J29245-xxx <p>Spares for each screw type included</p> <ul style="list-style-type: none"> (2) – Intel® Xeon® Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301 (1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC SSDSCKKB480G801 (2) – Intel® Solid State Drive (SSD) DC P4610 1.6TB (2.5" U.2 NVMe*) – iPC SSDPE2KE016T801 (4) – Intel® Solid State Drive (SSD) DC P4320 7.6TB (2.5" U.2 NVMe) – iPC SSDPE2NV076T801 (1) – Intel® Remote Management Module Lite 2 – iPC AXXRMM4LITE2 (1) – Intel® PCIe* Switch AIC (8 ports) – iPC AXXP3SWX08080 (1) – OCuLink Cable – 725mm cable kit – iPC A2U8PSWCXCXK1 (1) – OCuLink Cable – 530mm – iPC AXXCBL530CVCR (1) – OCuLink Cable - 470mm – iPC AXXCBL470CVCR (1) – 1300W AC Common Redundant Power Supply – iPC AXX1300TCRPS (1) – Ethernet OCP* Dual SFP+ – iPC X527DA2OCPG1P5 (12) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (1) – Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC8 																	

Table 8. Intel® DCB for Cloud Server System MCB2208WFAF6R


Intel® DCB for Cloud Server System MCB2208WFAF6R																	
Fully integrated 2U, single-node system including processors, memory, and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF6R</td> </tr> <tr> <td>MM#</td> <td>999GKW</td> </tr> <tr> <td>UPC</td> <td>00735858420983</td> </tr> <tr> <td>EAN</td> <td>5032037163538</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF6R	MM#	999GKW	UPC	00735858420983	EAN	5032037163538	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
iPC	MCB2208WFAF6R																
MM#	999GKW																
UPC	00735858420983																
EAN	5032037163538																
Product type	Fully integrated server system																
Chassis form factor	2U rack mount																
Chassis dimensions	712 x 439 x 89 mm (L x W x H)																
Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2208WFAF6R includes the following:</p> <ul style="list-style-type: none"> (1) – Intel Server System R2208WFOZSR (2U1N, 8x2.5"). Includes: <ul style="list-style-type: none"> (1) – 2U chassis with Quick Reference Label affixed to top cover (1) – Intel® Server Board S2600WFOR (no onboard LAN) (2) – PCIe* riser card brackets. Includes: <ul style="list-style-type: none"> (2) – 3-slot PCIe* riser cards – iPC A2UL8RISER2 (1) – 2-slot low profile PCIe* riser card – iPC A2UX8X4RISER (8) – 2.5" hot-swap drive bays with drive carriers and blanks. Includes: <ul style="list-style-type: none"> (1) – SAS/NVMe* combo backplane – iPC F2U8X25S3PHS (8) – 2.5" hot-swap drive tool less carriers – iPC FXX25HSCAR3 (1) – Standard control panel assembly (board only – iPC FXXFPANEL2) <ul style="list-style-type: none"> o 300 mm front panel cable – iPC H34381-xxx (1) – Front I/O panel assembly (1 x VGA and 2 x USB) <ul style="list-style-type: none"> o 620 mm USB 3.0 cable – iPC H76899-xxx o 400 mm video cable – iPC H62114-xxx (1) – 250 mm backplane I2C cable – iPC H91166-xxx (2) – 730 mm mini SAS HD cable – iPC AXXCBL730HDHD (1) – 675 mm backplane power cable – iPC H82108-XXX (1) – SATA optical drive power cable 300 mm – iPC H23901-001 (1) – SATA optical drive bay mounting kit – iPC H19168-xxx (1) – Standard 2U air duct – iPC H90554-xxx (6) – Hot-swap system fans – iPC FR2UFAN60HSW (8) – DIMM slot blanks – iPC G75158-00x (1) – 1300W AC power supply module – iPC AXX1300TCRPS (1) – Power supply bay blank insert (2) – AC power cord retention strap assembly – iPC H23961-00x (2) – CPU heat sinks – iPC FXXCA78X108HS (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC J16115-XXX (2) – Standard CPU carrier – iPC H72851-xxx (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC H18238-00x (1) – 250 mm fixed mount SSD power cable – iPC J29245-xxx <p>Spares for each screw type included</p> <ul style="list-style-type: none"> (2) – Intel® Xeon® Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301 (1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC SSDSCKKB480G801 (8) – Intel® Solid State Drive (SSD) DC P4510 2.0TB (2.5" U.2 NVMe*) – iPC SSDPE2KX020T801 (1) – Intel® PCIe* Switch AIC (8 ports) – iPC AXXP3SWX08080 (1) – OCuLink Cable – 725mm cable kit – iPC A2U8PSWCXCXK1 (1) – Intel® Remote Management Module Lite 2 – iPC AXXRMM4LITE2 (1) – 1300W AC Common Redundant Power Supply – iPC AXX1300TCRPS (1) – Ethernet OCP* Dual SFP+ – iPC X527DA2OCPG1P5 (12) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (1) – Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC8 																	

Table 9. Intel® DCB for Cloud Server System MCB2208WFAF7R


Intel® DCB for Cloud Server System MCB2208WFAF7R																	
Fully integrated 2U, single-node system including processors, memory, and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF7R</td> </tr> <tr> <td>MM#</td> <td>999GKV</td> </tr> <tr> <td>UPC</td> <td>00735858420976</td> </tr> <tr> <td>EAN</td> <td>5032037163521</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF7R	MM#	999GKV	UPC	00735858420976	EAN	5032037163521	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
iPC	MCB2208WFAF7R																
MM#	999GKV																
UPC	00735858420976																
EAN	5032037163521																
Product type	Fully integrated server system																
Chassis form factor	2U rack mount																
Chassis dimensions	712 x 439 x 89 mm (L x W x H)																
Package dimensions	983 x 577 x 260 mm (L x W x H)																
<p>Intel product code MCB2208WFAF7R includes the following:</p> <ul style="list-style-type: none"> (1) – Intel Server System R2208WFOZSR (2U1N, 8x2.5"). Includes: <ul style="list-style-type: none"> (1) – 2U chassis with Quick Reference Label affixed to top cover (1) – Intel® Server Board S2600WFOR (no onboard LAN) (2) – PCIe* riser card brackets. Includes: <ul style="list-style-type: none"> (2) – 3-slot PCIe* riser cards – iPC A2UL8RISER2 (1) – 2-slot low profile PCIe* riser card – iPC A2UX8X4RISER (8) – 2.5" hot-swap drive bays with drive carriers and blanks. Includes: <ul style="list-style-type: none"> (1) – SAS/NVMe* combo backplane – iPC F2U8X25S3PHS (8) – 2.5" hot-swap drive tool less carriers – iPC FXX25HSCAR3 (1) – Standard control panel assembly (board only – iPC FXXFPANEL2) <ul style="list-style-type: none"> o 300 mm front panel cable – iPC H34381-xxx (1) – Front I/O panel assembly (1 x VGA and 2 x USB) <ul style="list-style-type: none"> o 620 mm USB 3.0 cable – iPC H76899-xxx o 400 mm video cable – iPC H62114-xxx (1) – 250 mm backplane I2C cable – iPC H91166-xxx (2) – 730 mm mini SAS HD cable – iPC AXXCBL730HDHD (1) – 675 mm backplane power cable – iPC H82108-XXX (1) – SATA optical drive power cable 300 mm – iPC H23901-001 (1) – SATA optical drive bay mounting kit – iPC H19168-xxx (1) – Standard 2U air duct – iPC H90554-xxx (6) – Hot-swap system fans – iPC FR2UFAN60HSW (8) – DIMM slot blanks – iPC G75158-00x (1) – 1300W AC power supply module – iPC AXX1300TCRPS (1) – Power supply bay blank insert (2) – AC power cord retention strap assembly – iPC H23961-00x (2) – CPU heat sinks – iPC FXXCA78X108HS (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC J16115-XXX (2) – Standard CPU carrier – iPC H72851-xxx (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC H18238-00x (1) – 250 mm fixed mount SSD power cable – iPC J29245-xxx <p>Spares for each screw type included</p> <ul style="list-style-type: none"> (2) – Intel® Xeon® Gold 5218 processor (16 Cores, 2.3Ghz, 125W) – iPC CD8069504193301 (1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC SSDSCKKB480G801 (2) – Intel® Solid State Drive (SSD) DC P4610 1.6TB (2.5" U.2 NVMe*) – iPC SSDPE2KE016T801 (6) – Intel® Solid State Drive (SSD) DC P4510 2.0TB (2.5" U.2 NVMe) – iPC SSDPE2KX020T801 (1) – Intel® PCIe* Switch AIC (8 ports) – iPC AXXP3SWX08080 (1) – OCuLink Cable – 725mm cable kit – iPC A2U8PSWCXCXK1 (1) – OCuLink Cable – 530mm – iPC AXXCBL530CVCR (1) – OCuLink Cable - 470mm – iPC AXXCBL470CVCR (1) – Intel® Remote Management Module Lite 2 – iPC AXXRMM4LITE2 (1) – 1300W AC Common Redundant Power Supply – iPC AXX1300TCRPS (1) – Ethernet OCP* Dual SFP+ – iPC X527DA2OCPG1P5 (12) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz (1) – Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC8 																	

Table 10. Intel® DCB for Cloud Server System MCB2208WFAF8R


Intel® DCB for Cloud Server System MCB2208WFAF8R																	
Fully integrated 2U, single-node system including processors, memory, and Intel® Optane™ and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF8R</td> </tr> <tr> <td>MM#</td> <td>999GKT</td> </tr> <tr> <td>UPC</td> <td>00735858420969</td> </tr> <tr> <td>EAN</td> <td>5032037163514</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF8R	MM#	999GKT	UPC	00735858420969	EAN	5032037163514	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
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Table 11. Intel® DCB for Cloud Server System MCB2208WFAF9R


Intel® DCB for Cloud Server System MCB2208WFAF9R																	
Fully integrated 2U, single-node system including processors, memory, and Intel® Optane™ and NVMe* SSDs																	
	<table> <tr> <td>iPC</td> <td>MCB2208WFAF9R</td> </tr> <tr> <td>MM#</td> <td>999GKR</td> </tr> <tr> <td>UPC</td> <td>00735858420952</td> </tr> <tr> <td>EAN</td> <td>5032037163507</td> </tr> <tr> <td>Product type</td> <td>Fully integrated server system</td> </tr> <tr> <td>Chassis form factor</td> <td>2U rack mount</td> </tr> <tr> <td>Chassis dimensions</td> <td>712 x 439 x 89 mm (L x W x H)</td> </tr> <tr> <td>Package dimensions</td> <td>983 x 577 x 260 mm (L x W x H)</td> </tr> </table>	iPC	MCB2208WFAF9R	MM#	999GKR	UPC	00735858420952	EAN	5032037163507	Product type	Fully integrated server system	Chassis form factor	2U rack mount	Chassis dimensions	712 x 439 x 89 mm (L x W x H)	Package dimensions	983 x 577 x 260 mm (L x W x H)
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Table 12. Intel® DCB for Cloud Server System MCB2208WFAF10R**Intel® DCB for Cloud Server System MCB2208WFAF10R**

Fully integrated 2U, single-node system including processors, memory, Intel® Optane™ DC persistent memory modules, and NVMe* SSDs



iPC	MCB2208WFAF10R
MM#	999GKP
UPC	00735858420945
EAN	5032037163491
Product type	Fully integrated server system
Chassis form factor	2U rack mount
Chassis dimensions	712 x 439 x 89 mm (L x W x H)
Package dimensions	983 x 577 x 260 mm (L x W x H)

Intel product code **MCB2208WFAF10R** includes the following:

- (1) – Intel Server System **R2208WFOZSR** (2U1N, 8x2.5"). Includes:
 - (1) – 2U chassis with Quick Reference Label affixed to top cover
 - (1) – Intel® Server Board **S2600WFOR** (no onboard LAN)
 - (2) – PCIe* riser card brackets. Includes:
 - (2) – 3-slot PCIe* riser cards – iPC **A2UL8RISER2**
 - (1) – 2-slot low profile PCIe* riser card – iPC **A2UX8X4RISER**
 - (8) – 2.5" hot-swap drive bays with drive carriers and blanks. Includes:
 - (1) – SAS/NVMe* combo backplane – iPC **F2U8X25S3PHS**
 - (8) – 2.5" hot-swap drive tool less carriers – iPC **FXX25HSCAR3**
 - (1) – Standard control panel assembly (board only – iPC **FXFPANEL2**)
 - o 300 mm front panel cable – iPC **H34381-xxx**
 - (1) – Front I/O panel assembly (1 x VGA and 2 x USB)
 - o 620 mm USB 3.0 cable – iPC **H76899-xxx**
 - o 400 mm video cable – iPC **H62114-xxx**
 - (1) – 250 mm backplane I2C cable – iPC **H91166-xxx**
 - (2) – 730 mm mini SAS HD cable – iPC **AXXCBL730HDHD**
 - (1) – 675 mm backplane power cable – iPC **H82108-XXX**
 - (1) – SATA optical drive power cable 300 mm – iPC **H23901-001**
 - (1) – SATA optical drive bay mounting kit – iPC **H19168-xxx**
 - (1) – Standard 2U air duct – iPC **H90554-xxx**
 - (6) – Hot-swap system fans – iPC **FR2UFAN60HSW**
 - (8) – DIMM slot blanks – iPC **G75158-00x**
 - (1) – 1300W AC power supply module – iPC **AXX1300TCRPS**
 - (1) – Power supply bay blank insert
 - (2) – AC power cord retention strap assembly – iPC **H23961-00x**
 - (2) – CPU heat sinks – iPC **FXXCA78X108HS**
 - (2) – CPU heat sink "NO CPU" Mylar* spacer insert – iPC **J16115-XXX**
 - (2) – Standard CPU carrier – iPC **H72851-xxx**
 - (1) – 3x Intel® RAID Maintenance Free Backup unit mounting bracket – iPC **H18238-00x**
 - (1) – 250 mm fixed mount SSD power cable – iPC **J29245-xxx**
- Spares for each screw type included
- (2) – Intel® Xeon® Gold 6230 processor (20 Cores, 2.1Ghz, 125W) – iPC **CD8069504193701**
- (1) – Intel® Solid State Drive (SSD) D3 S4510 480GB (M.2, 80mm) – iPC **SSDSCKKB480G801**
- (8) – Intel® Solid State Drive (SSD) DC P4510 4.0TB (2.5" U.2 NVMe*) – iPC **SSDPE2KX040T801**
- (1) – Intel® PCIe* Switch AIC (8 ports) – iPC **AXXP3SWX08080**
- (1) – OCuLink Cable – 725mm cable kit – iPC **A2U8PSWCXCXK1**
- (1) – Intel® Remote Management Module Lite 2 – iPC **AXXRMM4LITE2**
- (1) – 1300W AC Common Redundant Power Supply – iPC **AXX1300TCRPS**
- (1) – Ethernet OCP* Quad SFP+ – iPC **X527DA4OCPG1P5**
- (16) – 32GB Micron* DDR4 RDIMM, 288-pin, 2666MHz
- (1) – Intel® Optane™ DC 256GB Persistent Memory Module (1.0) 4 Pack – iPC **NMA1XXD256GPSU4**
- (1) – Trusted Platform Module (TPM) 2.0 – iPC **AXXTPMENC8**




4.1 Rail Kit Options

To install a rack mount server system into a rack, use a rail mounting kit.

Intel® DCB for Cloud Server System models **MCB2224BPHY1R** and **MCB2224BPAF3R** include Intel® Enhanced Value Rail Kit **AXXELVRAIL**. The premium feature rail kit (**AXXFULLRAIL**) can be ordered separately. No Cable Management Arm (CMA) support is available for models **MCB2224BPHY1R** and **MCB2224BPAF3R**.

All other Intel DCB for Cloud server system models do not include rail kits in the shipping product. Rail kits for these systems must be ordered separately. All rail kits supported on **MCB2312WFHY2R** and **MCB2208WFXXR** models are listed in the following table.

Table 13. Intel® Rail Kit accessory options for MCB2312WFHY2R and MCB2208WFXXR models

Product Image	Details	Description
	Enhanced Value Rail AXXELVRAIL iPC AXXELVRAIL MM# 920970 UPC 735858244367 EAN 5032037038980 MOQ 1	<ul style="list-style-type: none"> Works for all 438mm-wide Intel® Rack Chassis 1U, 2U, 4U Bracket adjustment within 609.6mm~765mm 424.2mm maximum travel length 2/3 extension from rack 59 kg max support weight Tool-less chassis attach Tools required to attach rails to rack No Cable Management Arm support
	2U Premium Feature Rail AXXSHRTRAIL (no CMA support) iPC AXXSHRTRAIL MM# 939210 UPC 00735858291996 EAN 5032037070553 MOQ 1	<ul style="list-style-type: none"> Travel distance 788mm Bracket adjustment from 594.8mm to 813mm Tool-less installation Supports up to 45Kg Full extension from rack Kit includes: Rails, screws, installation manual
	2U+ Premium Feature Rail AXXFULLRAIL (with CMA support) iPC AXXFULLRAIL MM# 939209 UPC 00735858291989 EAN 5032037070546 MOQ 1	<ul style="list-style-type: none"> Travel distance 800mm Bracket adjustment within 594.8mm~813mm Tool-less installation Full extension from rack Kit includes: Rails, screws, installation manual Compatible with Cable Management Arm AXXCMA2
	Cable Management Arm AXXCMA2 iPC AXXCMA2 MM# 939211 UPC 00735858292009 EAN 5032037070560 MOQ 1	Compatible with AXXFULLRAIL only.

Systems shipped to the US and Canada include two North American power cords.

For a complete list of available FRU parts, refer to:

- Intel® Server Board S2600WF Product Family Configuration Guide at <https://www.intel.com/content/www/us/en/support/articles/000024083/server-products/server-boards.html>
- Intel® Server Board S2600BP Product Family Configuration Guide at <https://www.intel.com/content/www/us/en/support/articles/000024316/server-products.html>

5. Drive Extraction and Installation

Note: To maintain proper system cooling, all externally accessible drive bays must be populated with a drive carrier. Each drive carrier must have a hard disk drive (HDD), solid state device (SSD), or a supplied drive blank installed.

5.1 Drive Carrier Extraction

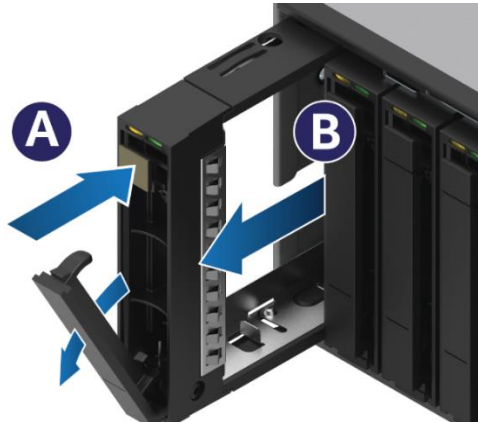
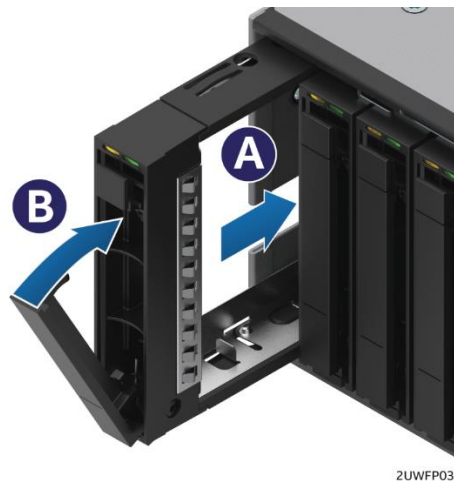


Figure 18. Drive carrier extraction from chassis

Before a new drive can be installed, the current driver carrier must be extracted from the chassis.

1. Remove the drive carrier from the chassis by first pressing the button on the carrier face plate to release the lever (see letter “A”).
2. Using the lever, pull the carrier from the drive bay (see letter “B”).

5.2 Drive Carrier Insertion/Installation



2UWFP037

Figure 19. Drive carrier insertion into chassis

1. Align the drive assembly with the open drive bay.
2. With the lever in the open position, insert the drive assembly into the drive bay (see letter “A”) and push forward until the drive makes contact with the backplane.
3. Complete the drive installation by closing the drive assembly lever until it locks into place (see letter “B”).

5.3 2.5" HDD/SSD Drive Carrier Assembly

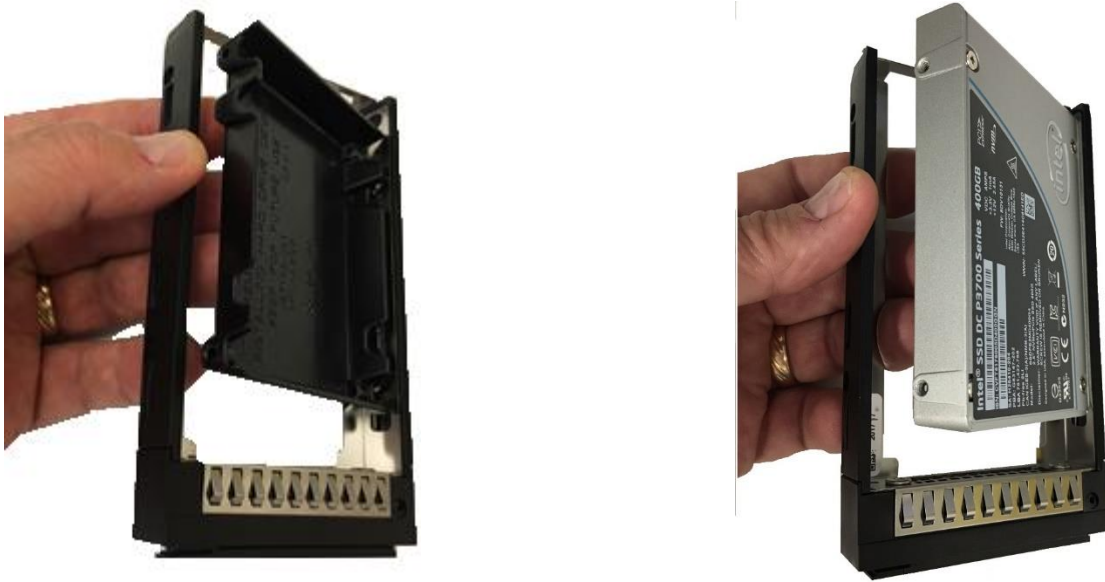


Figure 20. 2.5" drive carrier assembly – drive/drive blank removal

1. Remove the drive or drive blank from the carrier by gently rotating the top edge of a carrier rail outwards while at the same time pushing the drive or drive blank up from the bottom (as shown in Figure 20).

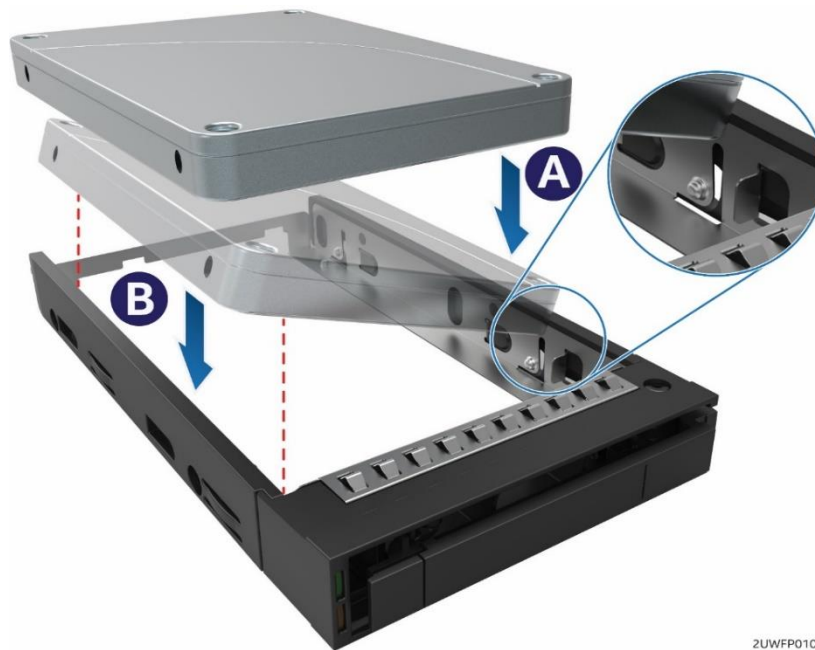


Figure 21. 2.5" drive carrier assembly – drive installation into carrier

2. With the rear drive connector positioned towards the back of the drive carrier, align and position the mounting holes on one side of the drive over the mounting tabs located on the drive carrier side rail (see letter "A").
3. Lower the other side of the drive into the carrier (see letter "B") and press down on the drive until all mounting tabs are locked in place.

Note: The 2.5" drive blank and drive carrier each have an alignment feature (shown in Figure 22) to ensure proper assembly. When re-installing a drive blank in to the drive carrier, ensure the features are aligned prior to installation. Failure to properly install a drive blank may result in the carrier assembly not fitting properly into the chassis drive bay.

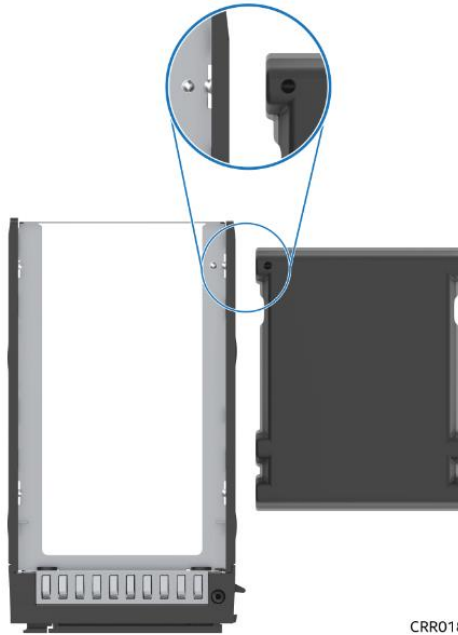


Figure 22. 2.5" Drive carrier assembly – alignment features

Appendix A. Glossary

Term	Definition
AP	Application Processor
BMC	Baseboard Management Controller
BIOS	Basic Input/Output System
CLI	Command Line Interface
CMA	Cable Management Arm
CPU	Central Processing Unit
CRPS	Common Redundant Power Supply
Intel® DCB	Intel® Data Center Blocks for Cloud
DDR	Double-Data Rate
DDR4	Double-Data Rate 4
DIMM	Dual In-line Memory Module (a plug-in memory module with signal and power pins on the front and back of the internal printed circuit board.)
DOS	Disk Operating System
EI	Enhanced Intel
EMI	Electromagnetic Interference
FP	Front Panel
FRU	Field Replaceable Unit
GB	Gigabyte
GBE	Gigabyte Ethernet
GBPS	Gigabytes Per Second
GT/s	GigaTransfers per second
GUI	Graphical User Interface
HDD	Hard Disk Drive
HTTPS	Hyper Text Transfer Protocol Service
IP	Internet Protocol
iPC	Intel Product Code
iPN	Intel Part Number
ISTA	International Safe Transit Association
KB	Kilobyte
LAN	Local Area Network
LED	Light-Emitting Diode
LLA	Local Link Address (i.e. IPv6 Link)
MB	Megabyte
MM#	Master Material Order Number/Material Management Number
MOQ	Minimum Order Quantity
NDA	Non-Disclosure Agreement
NM	Node Manager
OS	Operating System
PCI	Peripheral Component Interconnect (or PCI Local Bus Standard – also called “Conventional PCI”)
PCIe*	Peripheral Component Interconnect Express* (an updated form of PCI offering better throughput and error management)
POST	Power-on Self-Test (BIOS activity from the time on Power On until Operating System boot begins.)
PSM	Power Supply Module

PSU	Power Supply Unit
RAM	Random Access Memory
RDIMM	Registered DIMM (also called buffered). (Memory modules have an address buffer register between the SDRAM modules and the system's memory controller.)
ROM	Read-Only Memory
RT	Runtime. Component of Intel® Platform Innovation Framework for EFI architecture.
SAS	Serial Attached SCSI (High-speed serial data version of SCSI)
SATA	Serial ATA (High-speed serial data version of the disk ATA interface)
SCA	Single Connector Attachment
SDRAM	Synchronous Dynamic Random Access Memory
SEL	System Event Log
SFF	Small Form Factor
SFF NVMe*	NVMe* SSD in a 2.5" form factor
SFP	Small Form Factor Pluggable
SFP+	The enhanced small form-factor pluggable (SFP+) is an enhanced version of the SFP that supports data rates up to 16 GBit/s.
SSD	Solid State Device
SUP	System Update Package
TPM	Trusted Platform Module
TPS	Technical Product Specification
USB	Universal Serial Bus (standard serial expansion bus meant for connecting peripherals)
VGA	Video Graphics Array