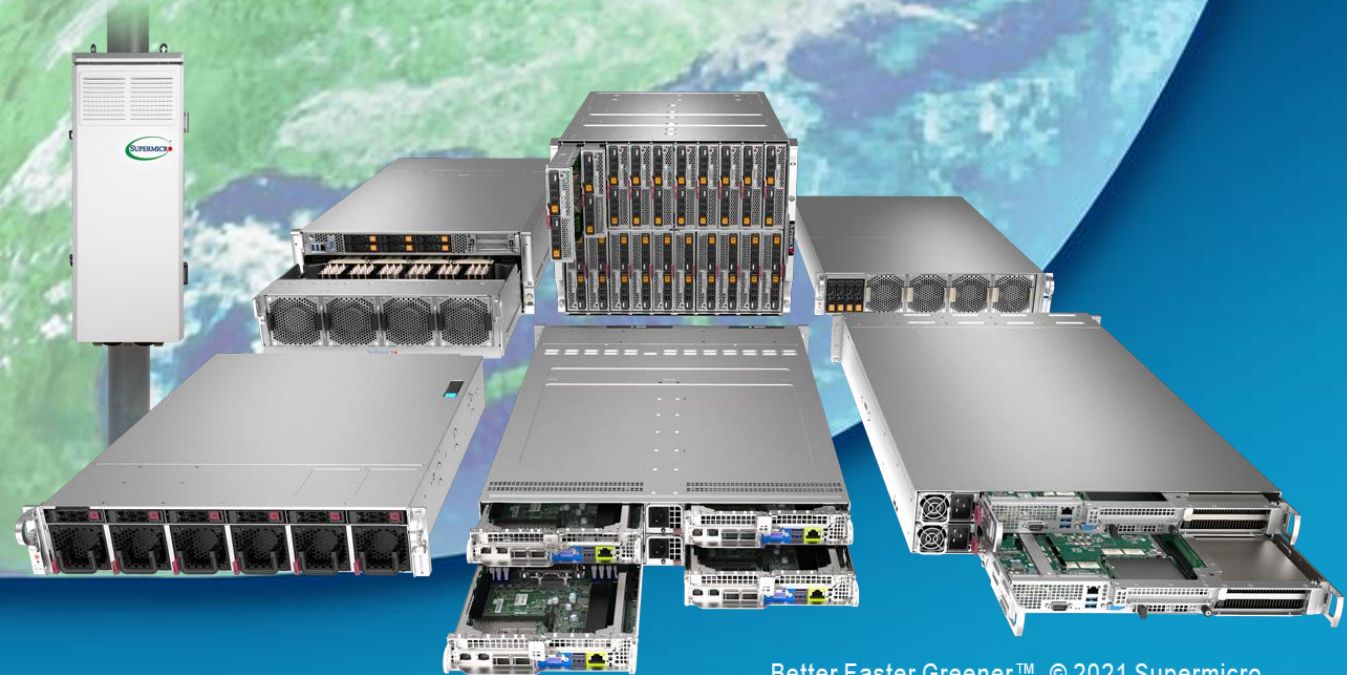




Supermicro CloudDC Servers

The Ultimate All-in-One Platform for Data Centers and Enterprise

Devin Wang



Agenda

1. Server Roadmap & Product Highlights
2. Motherboard Overview
3. System Overview & Success Story
4. Cable Routing Guide & AIOM
5. Key Take away and Q&A

Server Roadmap

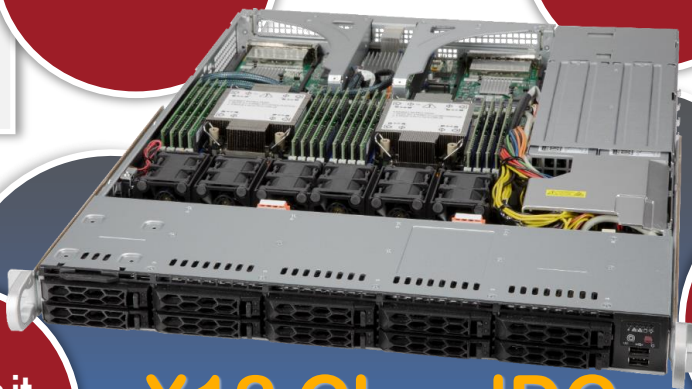


Roadmap

Q3 2020			Q4 2020			Q1 2021			Q2 2021		
JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN
X11 WIO			SYS-1029P-WT/WTR/WTRT SYS-6019P-WT8			SYS-6019P-WT/WTR SYS-6029P-WTR/WTRT					
X12 CloudDC			√ Lab Testing			√ Seeding			√ Beta Release		
						Pilot Run			GA		

Transition List

X11 WIO	SYS-1029P-WT/WTR	SYS-1029P-WTRT	SYS-6019P-WT/WTR SYS-6019P-WT8	SYS-6029P-WTR/WTRT
X12 CloudDC	SYS-120C-TR	SYS-120C-TN10R	SYS-610C-TR	SYS-620C-TN12R



X12 CloudDC Optimized Server

- Efficient**
 - **Tool-less** mechanical design for rapid deployment
 - Hot-swap storage and PWS for easy maintenance.
 - IPMI, serial port and service tag for easy management
- Compact**
 - Compact system design makes no waste of internal space
 - < 650mm chassis depth
 - Fully utilized system resource with 12 NVMe, 4 PCIe 4.0 x16 + 2 PCIe 4.0 x8 expansion
- Ultimate Flexibility**
 - All hybrid drive bays (**NVMe/SAS/SATA**) + Flexible internal storage options (**dual M.2 / SATADOM**)
 - Building block solution for different applications and environment
 - Up to **6** standard **PCIe 4.0** expansion slots
 - Up to **2 FHFL DW GPU** or **6 LP GPU**
- We Keep it Green**
 - Optimized thermal design
 - **High efficiency Platinum and Titanium level PWS (AC/DC)**
 - Reduced waste with bulk packaging and customizable accessories
- Application Ready**
 - Balanced architecture between CPUs and optimized for scalable compute, database, GPU, tiered storage and I/O intensive applications
 - Cost and performance optimized down to component level
 - Support open standards like OpenBMC and **OCP 3.0**
 - Designed to be NEBS Level 3 ready



CloudDC Value Prop – Target Market



Data Center

Finance and Banking
Retail
Hi-tech companies
Government
Media & Entertainment
Healthcare
Government
Insurance

\$71B by 2022
CAGR of 6.9%



SYS-120C-TN10R / SYS-620C-TN12R

<https://www.reuters.com/brandfeatures/venture-capital/article?id=12037>

Cloud

Global E-commerce
Financial Services
Video On Demand (VOD)
IoT moving content to the Edge
Transportation
Software as a Service (SaaS)

\$22B by 2022
CAGR of 12.3%



SYS-120C-TR / SYS-610C-TR

<https://www.marketsandmarkets.com/PressReleases/cdn.asp>

Virtualization

Health Care
Education
Manufacturing
IT & Telecommunication
Retail

\$8B by 2025
CAGR of 16.1%



SYS-120C-TN10R / SYS-620C-TN12R

<https://www.reuters.com/brandfeatures/venture-capital/article?id=110301>

5G

IT & Telecommunication
Automotive
Global E-Commerce
Government
IT & Telecommunication
Retail
Media & Entertainment

\$47B by 2027
CAGR of 67.1%



SYS-120C-TN10R / SYS-620C-TN12R

<https://www.marketsandmarkets.com/Market-Reports/5g-technology-market-202955795.html>

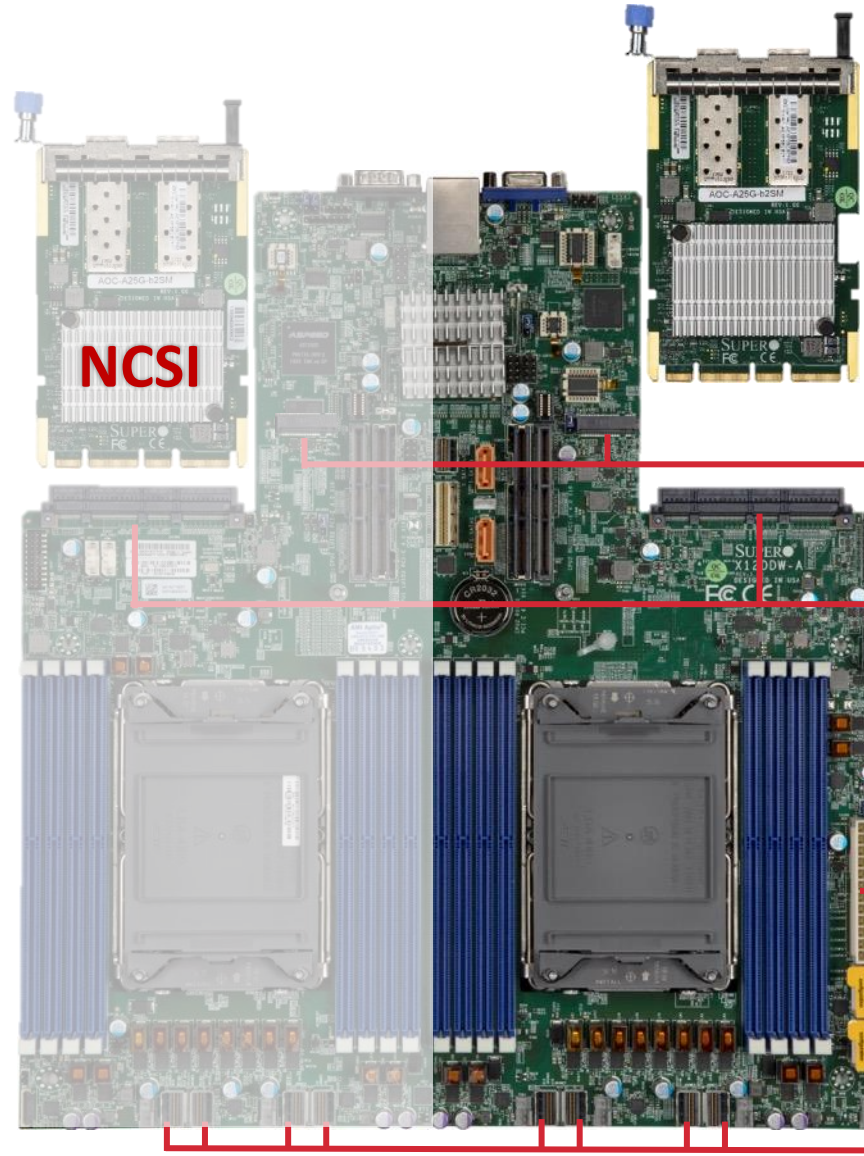
Motherboard X12DDW-A6

X12DDW-A6 Summary



- Dual socket with highest TDP support
- 16x DIMM, ECC DDR4 designed for up to 3200Mhz
- 14x SATA3 (SlimSAS x8 and x4 + 2 SuperDOM)
- 12x PCI-E 4.0 NVMe ports
- 4x USB (2x3.0 rear + 2x2.0 front headers)
- 2x NVMe M.2*
- 1x TPM 1.2/2.0
- Standard e-ATX form factor
- Silicone Root-of-Trust (ROT)
- Dual AIOM with NCSI (OCP 3.0 compatible) for Networking
- BMC AST2600 with dedicated LAN and VGA
- 1x VGA, 1x COM and 1x Dedicated IPMI port

* Only supports 22x80 NVMe M.2 with M key, from PCH



Symmetric Layout
Balanced Architecture

Dual NVMe M.2

AIOM / OCP 3.0 Mezzanine Slots

24-pin ATX Power Connector

PCIe 4.0 NVMe ports

X12DDW-A6 PCIe Layout (Showing 2U)



Slot 3: FHHL

x16 from gold finger

Slot 2: FHFL*

Refer to Table Below

Slot 1: FHFL*

Refer to Table Below

* FHFL requires 1U SNK and GPU air shroud

Slot 3: FHHL

x16 from gold finger

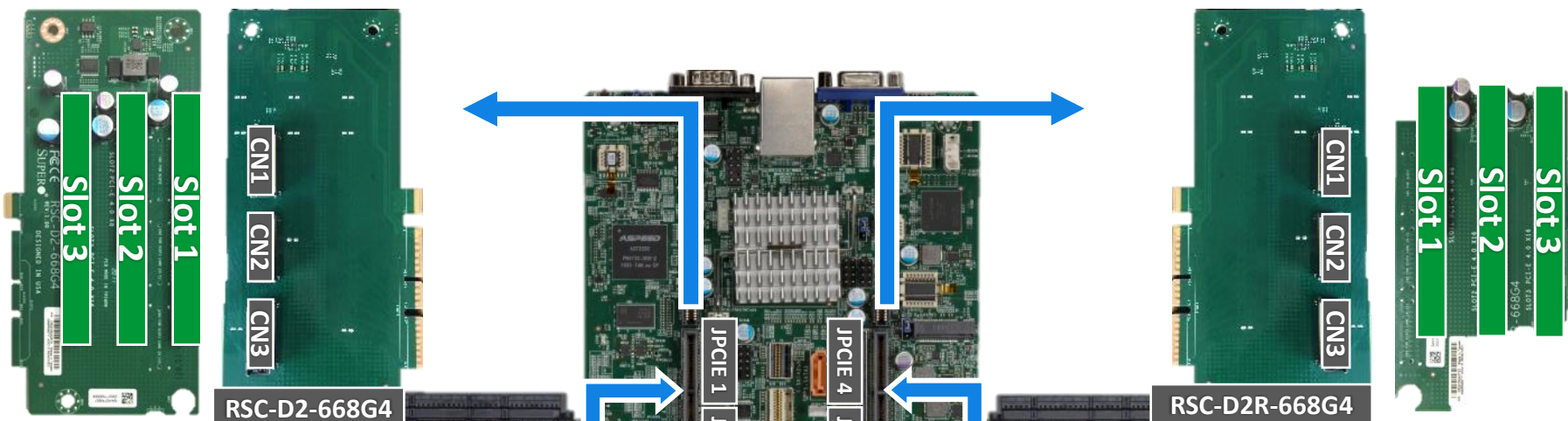
Slot 2: FHFL*

Refer to Table Below

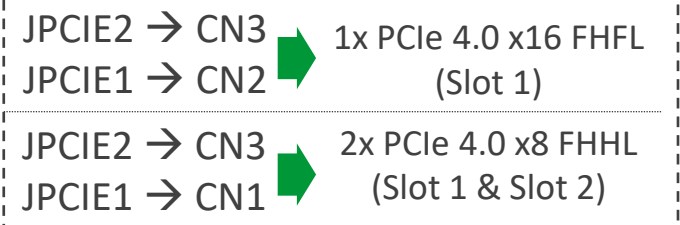
Slot 1: FHFL*

Refer to Table Below

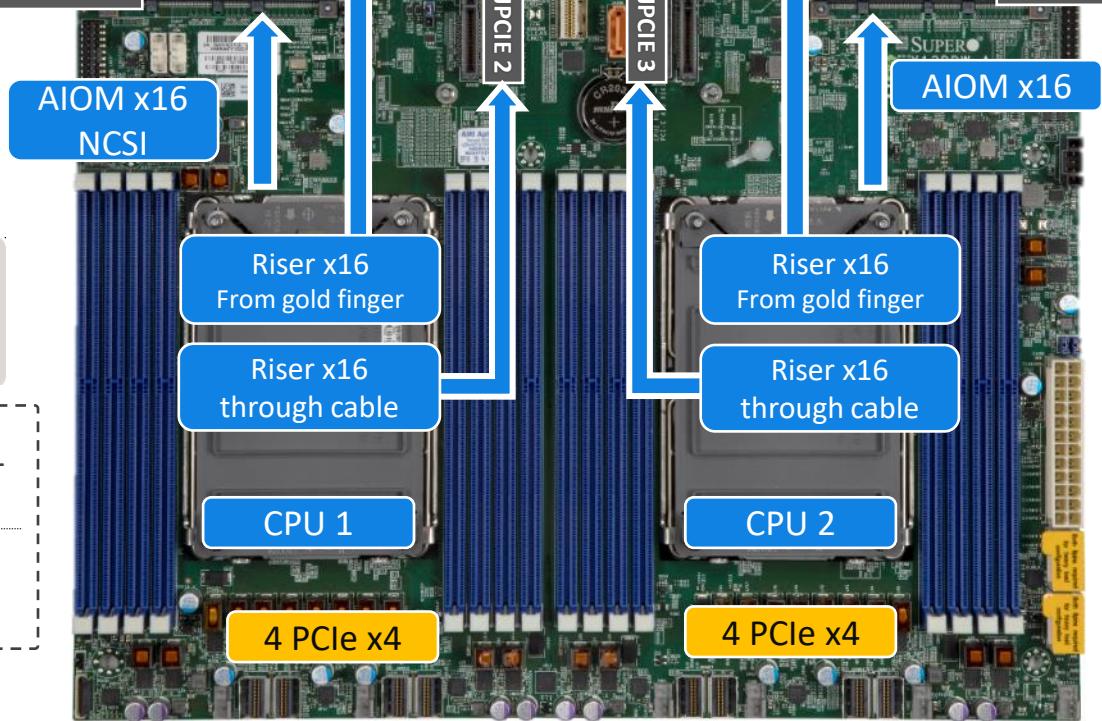
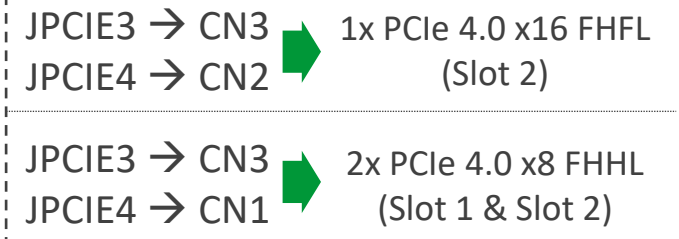
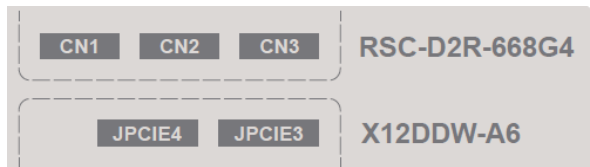
* FHFL requires 1U SNK and GPU air shroud



Left riser



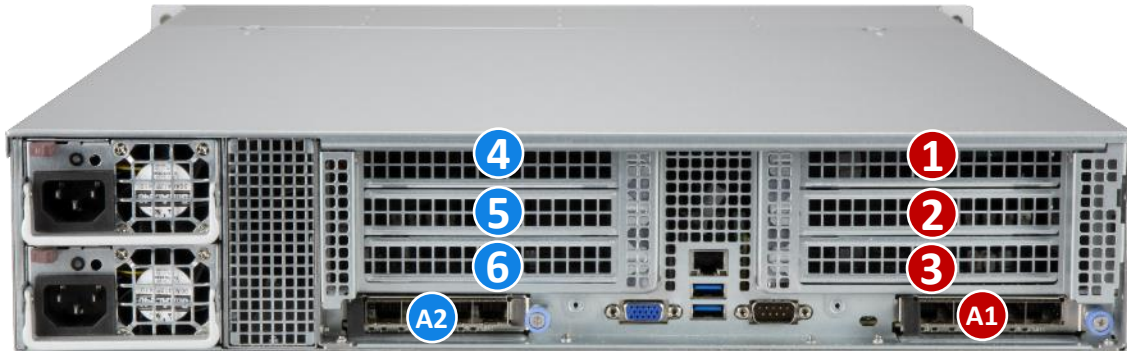
Right riser



X12 CloudDC 2U I/O Expansion

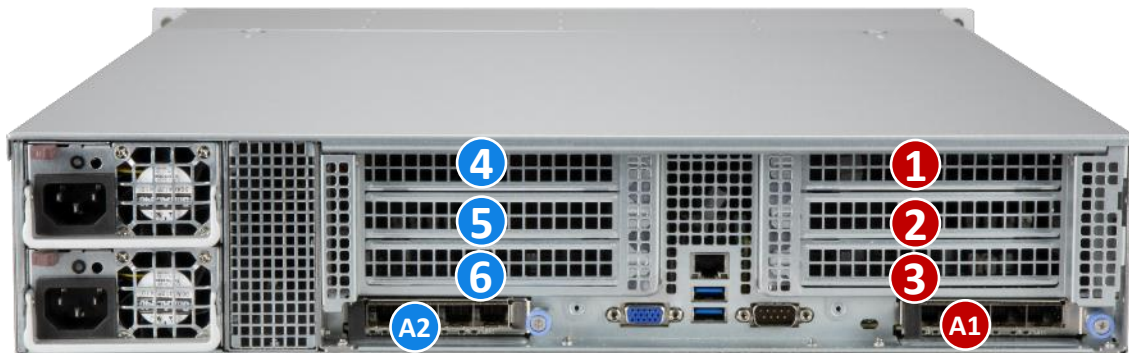


Default – 2x PCIe 4.0 x16 + 4x PCIe 4.0 x8



1	PCIe 4.0 x8 From CPU 1 riser cable
2	PCIe 4.0 x8 From CPU 1 riser cable
3	PCIe 4.0 x16 From CPU 1 gold finger
A1	AIOM from CPU1
4	PCIe 4.0 x8 From CPU 2 riser cable
5	PCIe 4.0 x8 From CPU 2 riser cable
6	PCIe 4.0 x16 From CPU 2 gold finger
A2	AIOM from CPU2

Customize – 4x PCIe 4.0 x16



1	PCIe 4.0 x16 From CPU 1 riser cable
2	N/A
3	PCIe 4.0 x16 From CPU 1 gold finger
A1	AIOM from CPU1
4	N/A
5	PCIe 4.0 x16 From CPU 2 riser cable
6	PCIe 4.0 x16 From CPU 2 gold finger
A2	AIOM from CPU2

System Overview

CloudDC Server Portfolio



SYS-620C-TN12R

High Density Cloud Storage



SYS-120C-TN10R

Compact Cloud Compute



SYS-120C-TR

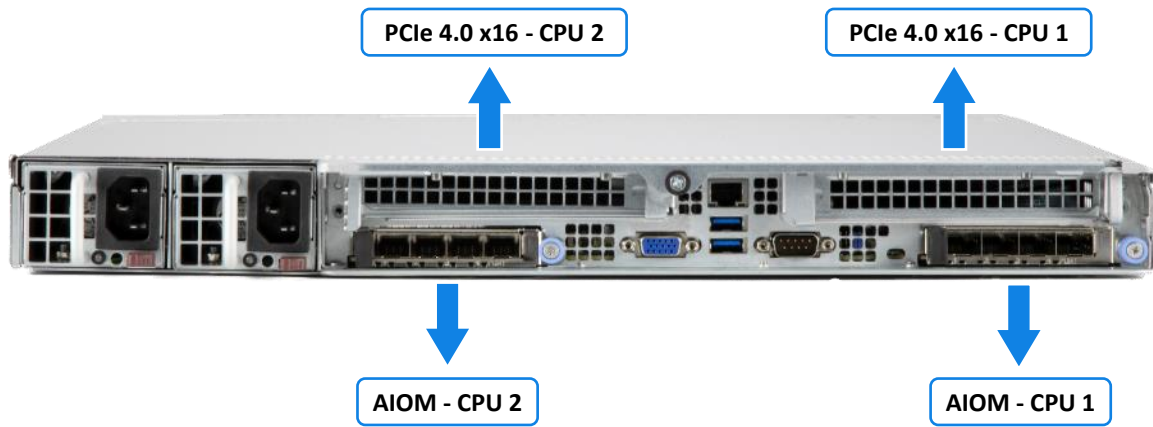
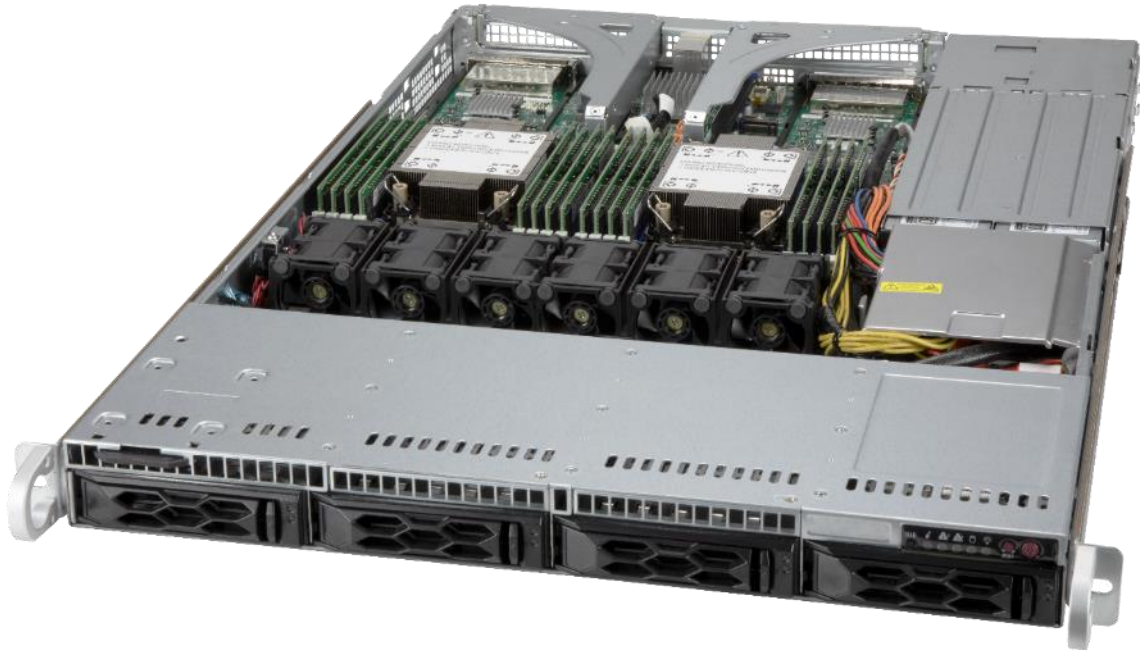
General Purpose Balanced



SYS-610C-TR

Compact Storage Optimized

CloudDC 1U Compact Storage Optimized Server



SYS-610C-TR

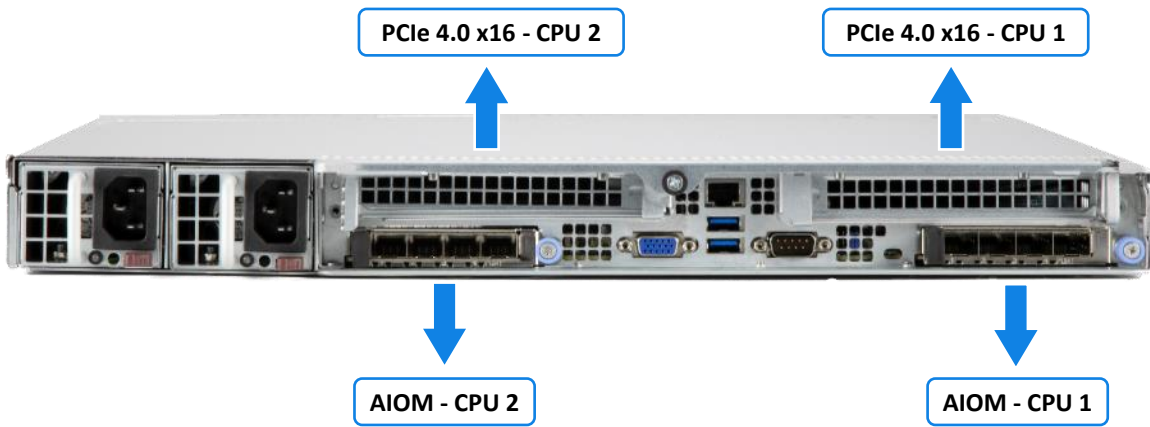
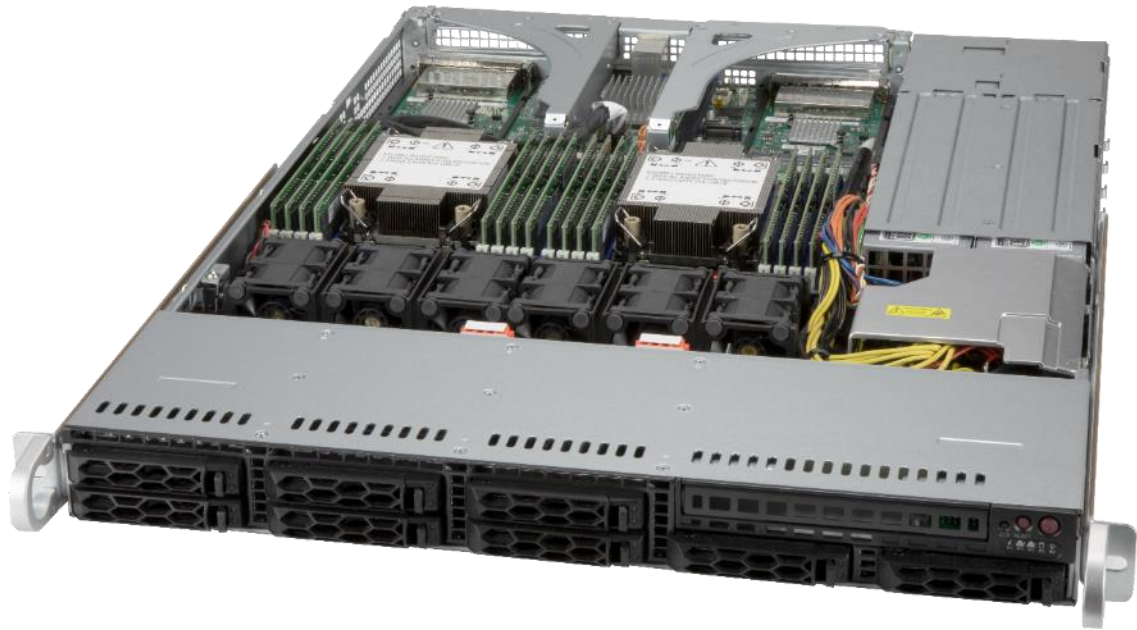
SYS-610C-TR is designed to be a low cost 1U compact storage server, with 4x hot-swap 3.5" and 2x internal 2.5" drive bays, up to 80TB data can be safely stored in this compact chassis.

Supermicro also offers great service and media retention program which helps our valued customer to have a peace of mind on their data.

PRODUCT FEATURES

System	Memory	Power	Management
<ul style="list-style-type: none"> 1U Rackmount Chassis Depth 25.5" Tool-less Design 	<ul style="list-style-type: none"> 16 DIMM slots DDR4-3200 RDIMM / LRDIMM 	<ul style="list-style-type: none"> Redundant 860W Platinum Level (94%) AC/DC Power Supplies 	<ul style="list-style-type: none"> Open Industry Standard IPMI, Redfish APIs, Rack Scale Management
Processors	Drives	I/O	Security
<ul style="list-style-type: none"> Dual Socket Up to 270W TDP 	<ul style="list-style-type: none"> 4x 3.5-inch Drive Bays (SAS / SATA) 2x NVMe M.2 2x SATADOM 	<ul style="list-style-type: none"> 2x PCIe 4.0 x16 FHHL 2x AIOM (OCP 3.0 NIC) 1x Dedicated IPMI 1x VGA 1x Serial 4x USB (2x Rear, 2x Header) 	<ul style="list-style-type: none"> TPM 1.2/2.0 Signed firmware Silicon Root of Trust Secure Boot System Erase

CloudDC 1U General Purpose Balanced Server











SYS-120C-TR

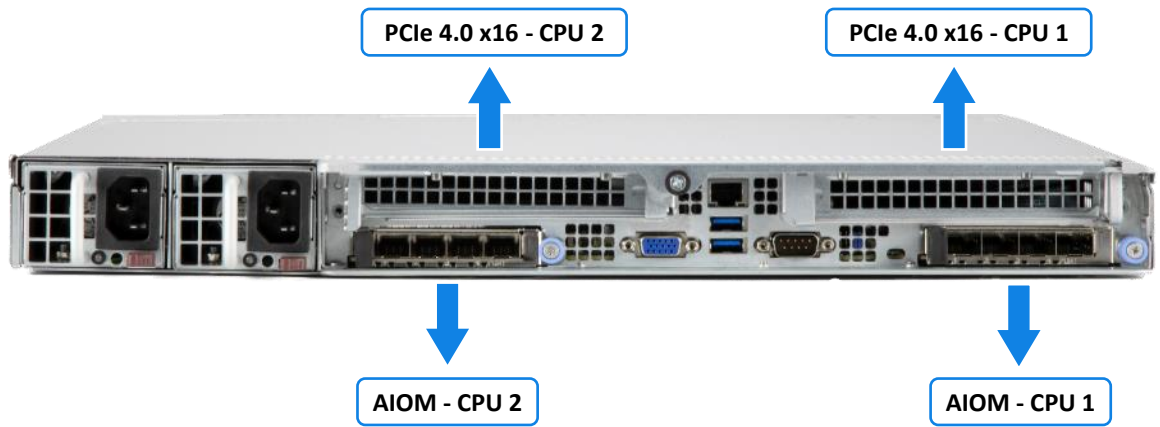
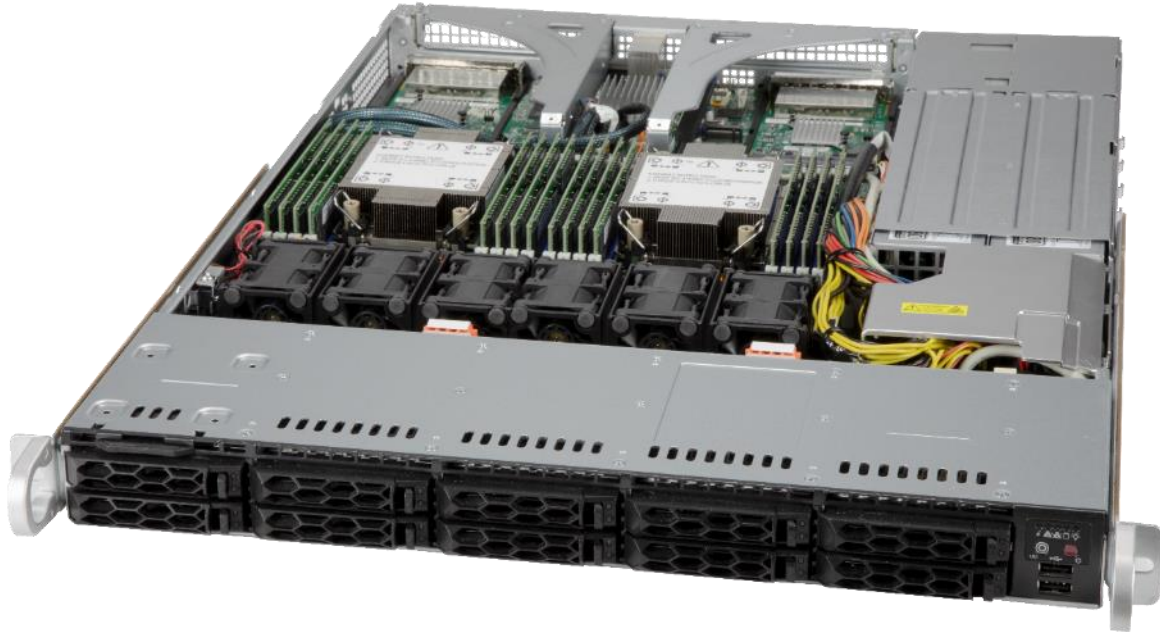
This optimized all purpose server is designed to be compatible with most off-the-shelf components including DVD-ROM. OCP compatible networking frees up the two full height AOC slots for expansions like storage, GPU or even more NICs.

With optimized component selection and 8x 2.5" tool-less hot-swap drive bays, SYS-120C-TR ensures a balance between cost and performance.

PRODUCT FEATURES

 <p>System</p>	 <p>Memory</p>	 <p>Power</p>	 <p>Management</p>
<ul style="list-style-type: none"> • 1U Rackmount • Chassis Depth 23.5" • Tool-less Design 	<ul style="list-style-type: none"> • 16 DIMM slots • DDR4-3200 RDIMM / LRDIMM 	<ul style="list-style-type: none"> • Redundant 860W Platinum Level (94%) AC/DC Power Supplies 	<p>Open Industry Standard IPMI, Redfish APIs, Rack Scale Management</p>
 <p>Processors</p>	 <p>Drives</p>	 <p>I/O</p>	 <p>Security</p>
<ul style="list-style-type: none"> • Dual Socket • Up to 270W TDP 	<ul style="list-style-type: none"> • 8x 2.5-inch Drive Bays (SAS / SATA) • 2x NVMe M.2 • 2x SATADOM 	<ul style="list-style-type: none"> • 2x PCIe 4.0 x16 FHHL • 2x AIOM (OCP 3.0 NIC) • 1x Dedicated IPMI • 1x VGA • 1x Serial • 4x USB (2x Rear, 2x Header) • 1x Optional DVD 	<ul style="list-style-type: none"> • TPM 1.2/2.0 • Signed firmware • Silicon Root of Trust • Secure Boot • System Erase

CloudDC 1U Compact Cloud Compute Server



SYS-120C-TN10R

This server offers great scalability and flexibility, dual AIOM slots plus 10 full hybrid drive bays ensures a solution to most applications. OCP compatible networking adds on extra flexibility on hardware configuration and also helps bring down the TCO.

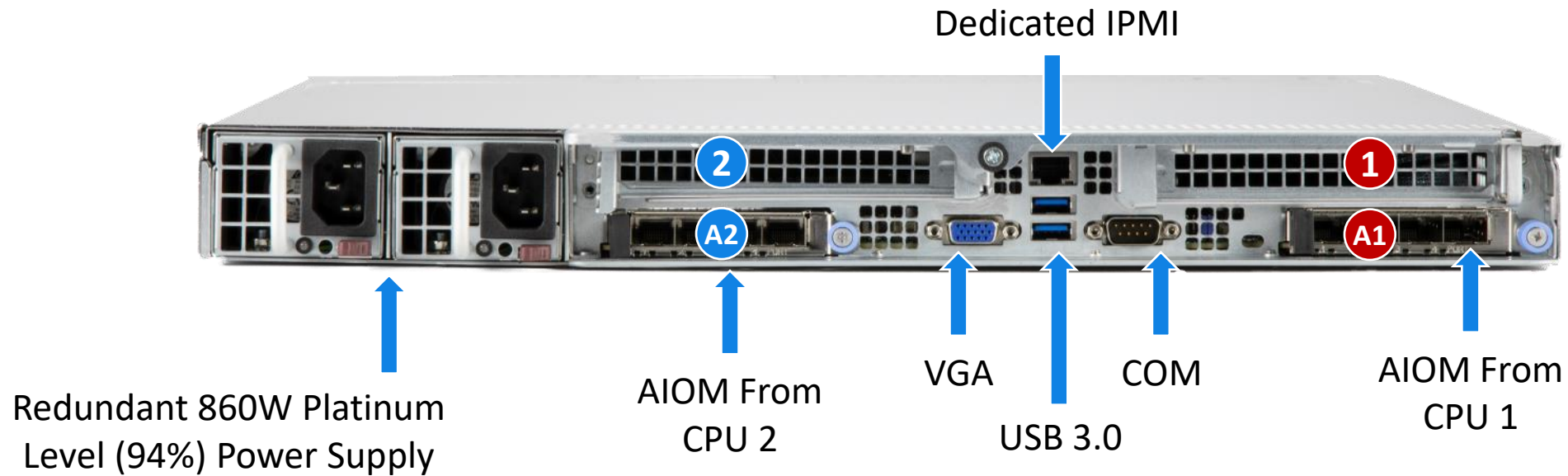
Designed to have great serviceability with tool-less brackets and trays, redundant power supplies and hot-swap drives also help make maintenance easier and quicker.

M.2 and SATADOM option can host OS installation with optional RAID feature.

PRODUCT FEATURES

System	Memory	Power	Management
<ul style="list-style-type: none"> 1U Rackmount Chassis Depth 23.5" Tool-less Design 	<ul style="list-style-type: none"> 16 DIMM slots DDR4-3200 RDIMM / LRDIMM 	<ul style="list-style-type: none"> Redundant 860W Platinum Level (94%) AC/DC Power Supplies 	<ul style="list-style-type: none"> Open Industry Standard IPMI, Redfish APIs, Rack Scale Management
Processors	Drives	I/O	Security
<ul style="list-style-type: none"> Dual Socket Up to 270W TDP 	<ul style="list-style-type: none"> 10x 2.5-inch Hybrid Drive Bays (NVMe / SAS / SATA) 2x NVMe M.2 2x SATADOM 	<ul style="list-style-type: none"> 2x PCIe 4.0 x16 FHHL 2x AIOM (OCP 3.0 NIC) 1x Dedicated IPMI 1x VGA 1x Serial 4x USB (2x Rear, 2x Header) 	<ul style="list-style-type: none"> TPM 1.2/2.0 Signed firmware Silicon Root of Trust Secure Boot System Erase

X12 CloudDC 1U I/O Expansion



1	PCIe 4.0 x16 FHHL From CPU 1
A1	AIOM from CPU 1
2	PCIe 4.0 x16 FHHL From CPU 2
A2	AIOM from CPU 2

CloudDC 1U now can support popular AOCs



Acceleration /
HPC



Tesla T4 LP GPU

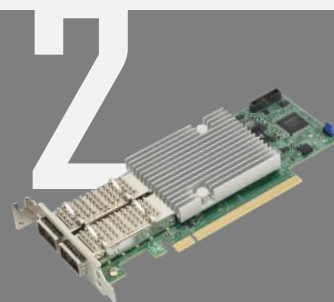


OCP 3.0 NIC (AIOM)
100G/25G/10G/1G



Gen 4 NVMe drives

NVoF/PMoF
Target/Initiator



200G AOC (100G/port)

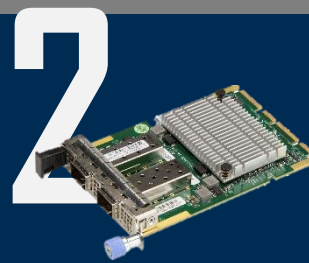


OCP 3.0 NIC (AIOM)
100G/25G/10G/1G

Storage /
Headnode

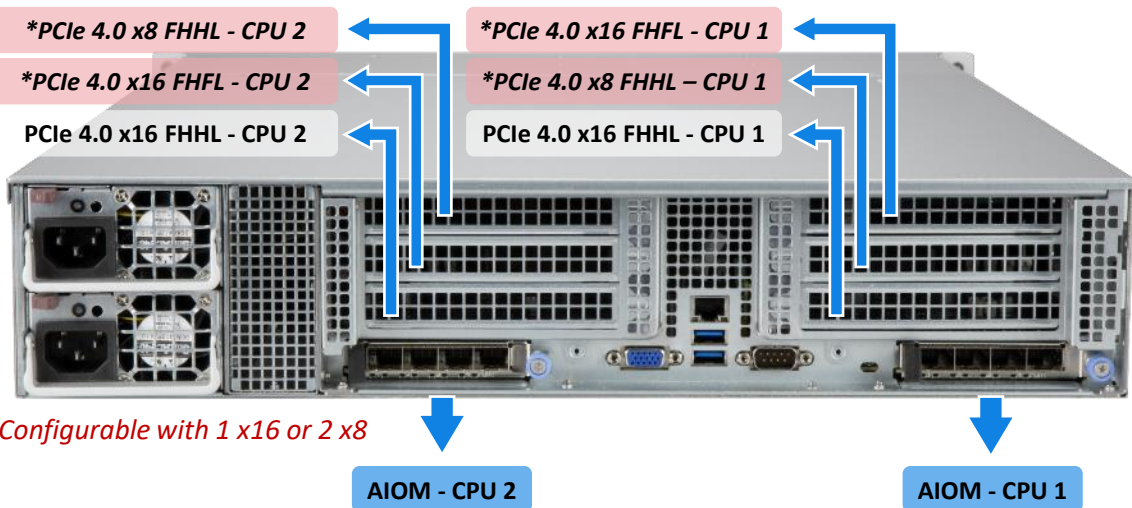


Storage Controller



OCP 3.0 NIC (AIOM)
100G/25G/10G/1G

CloudDC 2U High Density Cloud Storage Server



SYS-620C-TN12R

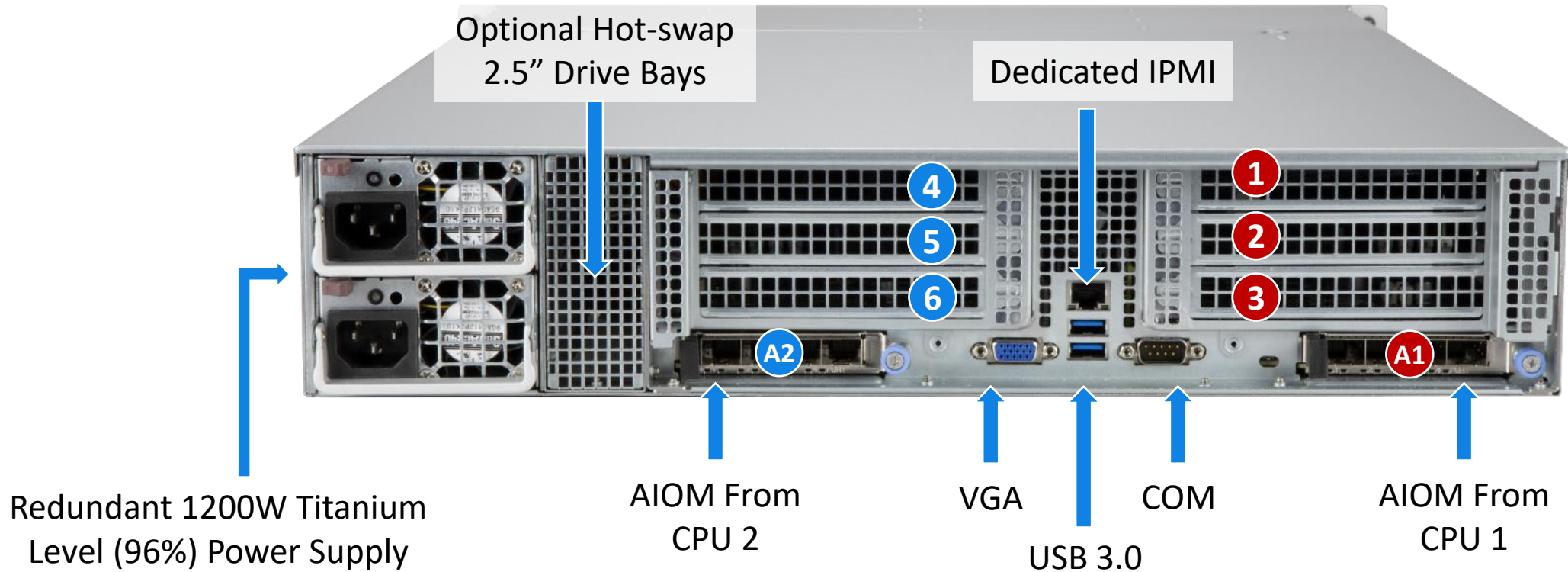
The CloudDC 2U optimized server offers ultimate flexibility on I/O and storage. Go beyond the limit with 4x PCIe 4.0 x16, 2x PCIe 4.0 x8 FH slots for add on features like NIC, storage controller and GPU.

12x fully hybrid front drive bays with PCIe 4.0 NVMe support makes SYS-620C-TN12R suitable for high density, high performance applications.

PRODUCT FEATURES

System	Memory	Power	Management
<ul style="list-style-type: none"> 2U Rackmount Chassis Depth 25.5" Tool-less Design 	<ul style="list-style-type: none"> 16 DIMM slots DDR4-3200 RDIMM / LRDIMM 	<ul style="list-style-type: none"> Redundant 1200W Titanium Level (96%) AC/DC Power Supplies 	<ul style="list-style-type: none"> Open Industry Standard IPMI, Redfish APIs, Rack Scale Management
Processors	Drives	I/O	Security
<ul style="list-style-type: none"> Dual Socket Up to 270W TDP 	<ul style="list-style-type: none"> 12x 3.5-inch Front Drive Bays (NVMe/SAS/SATA) 2x 2.5-inch Rear Drive Bays 2x NVMe M.2 2x SATADOM 	<ul style="list-style-type: none"> 4x PCIe 4.0 x16 FHHL 2x PCIe 4.0 x8 FHHL (optional) 2x AIOM (OCP 3.0 NIC) 1x Dedicated IPMI 1x VGA, 1x Serial 4x USB (2x Rear, 2x Header) 	<ul style="list-style-type: none"> TPM 1.2/2.0 Signed firmware Silicon Root of Trust Secure Boot System Erase

X12 CloudDC 2U I/O - The most Flexible Expansion Design



1/2	Configurable to 1x PCIe 4.0 x16 FHFL (Slot 1) or 2x PCIe 4.0 x8 FHHL From CPU 1
3	PCIe 4.0 x16 FHHL From CPU 1
A1	AIOM from CPU 1
4 / 5	Configurable to 1x PCIe 4.0 x16 FHFL (Slot 5) or 2x PCIe 4.0 x8 FHHL From CPU 2
6	PCIe 4.0 x16 FHHL From CPU 2
A2	AIOM from CPU 2

CloudDC 2U now can support popular AOCs



Acceleration /
HPC /
Deep Learning Training



Tesla V100 DW GPU

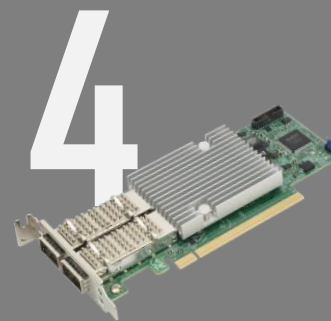


Storage Controller



OCP 3.0 NIC (AIOM)
100G/25G/10G/1G

Maximum
Network
Bandwidth

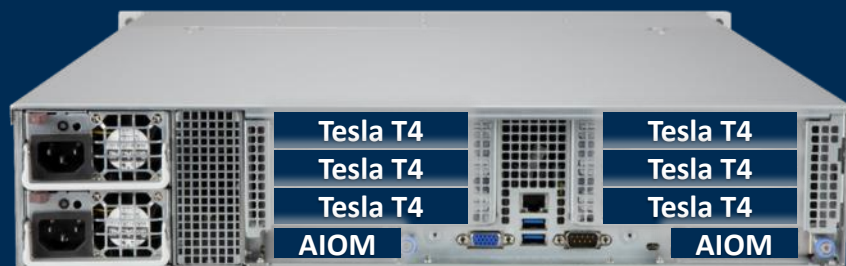


200G AOC (100G/port)



OCP 3.0 NIC (AIOM)
100G/25G/10G/1G

Acceleration /
Inferencing



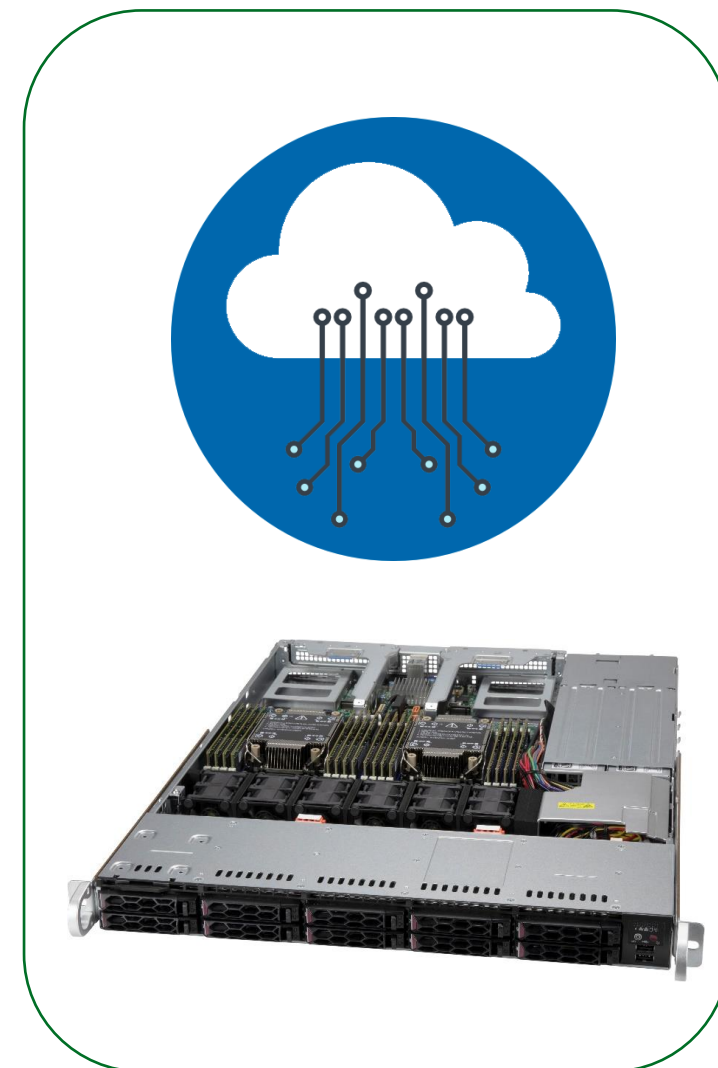
Tesla T4 LP GPU



OCP 3.0 NIC (AIOM)
100G/25G/10G/1G

Success Story

- What Customer Need
 - 10x direct-attach NVMe, 6x to CPU1 and 4x to CPU2
 - Single platform with great expandability
 - Mellanox CX-6 100G NIC or CX-4 25G NIC
 - OCP 3.0 NIC
 - Optimize for cloud computing
- What Customer Like
 - Flexibility on NICs and storage
 - Great performance with high core count high TDP CPUs
- What We Won
 - SYS-120C-TN10R
 - Initial 300 units with 100/month after



- What Customer Need
 - Maximum aggregated network bandwidth
 - Balanced loading across both CPUs
- What Customer Like
 - Balanced architecture system design
 - 6x 200G NICs in a single 2U rackmount server
- What We Won
 - SYS-620C-TN12R
 - 1000/quarter potential



- What Customer Need
 - Unified platform for various AI/5G application
 - Support of multiple customer self-designed accelerator cards
- What Customer Like
 - Ability to accommodate all next gen applications on a single platform
 - Native GPU support and flexible networking with AIOM
- Result
 - SYS-620C-TN12R
 - 8000/year



Cable Routing Guide

SYS-120C-TN10R

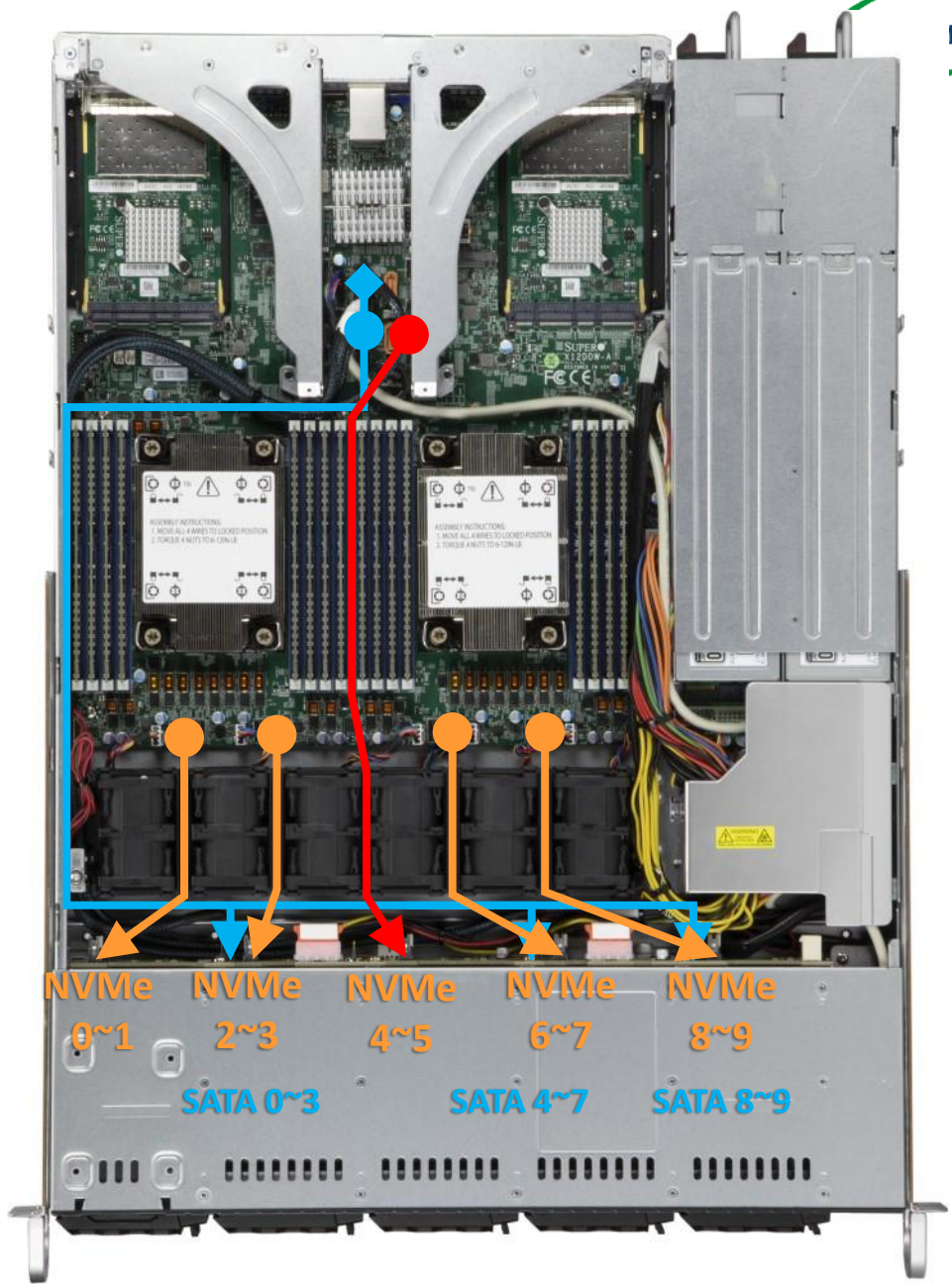
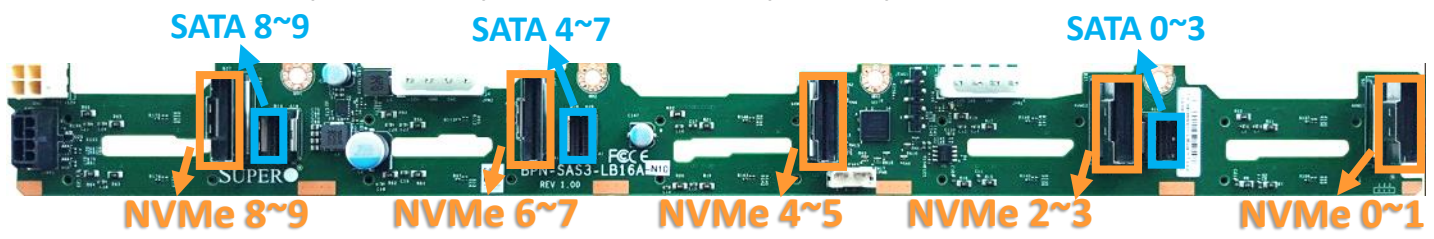
2x SlimSASLP x4 (Straight) → CBL-SAST-1219LP-85 NVMe 19cm → SlimSAS x8 (Straight)

SlimSASLP x8 (Straight) → CBL-SAST-1234FLP-85 NVMe 34cm → SlimSAS x8 (Straight)

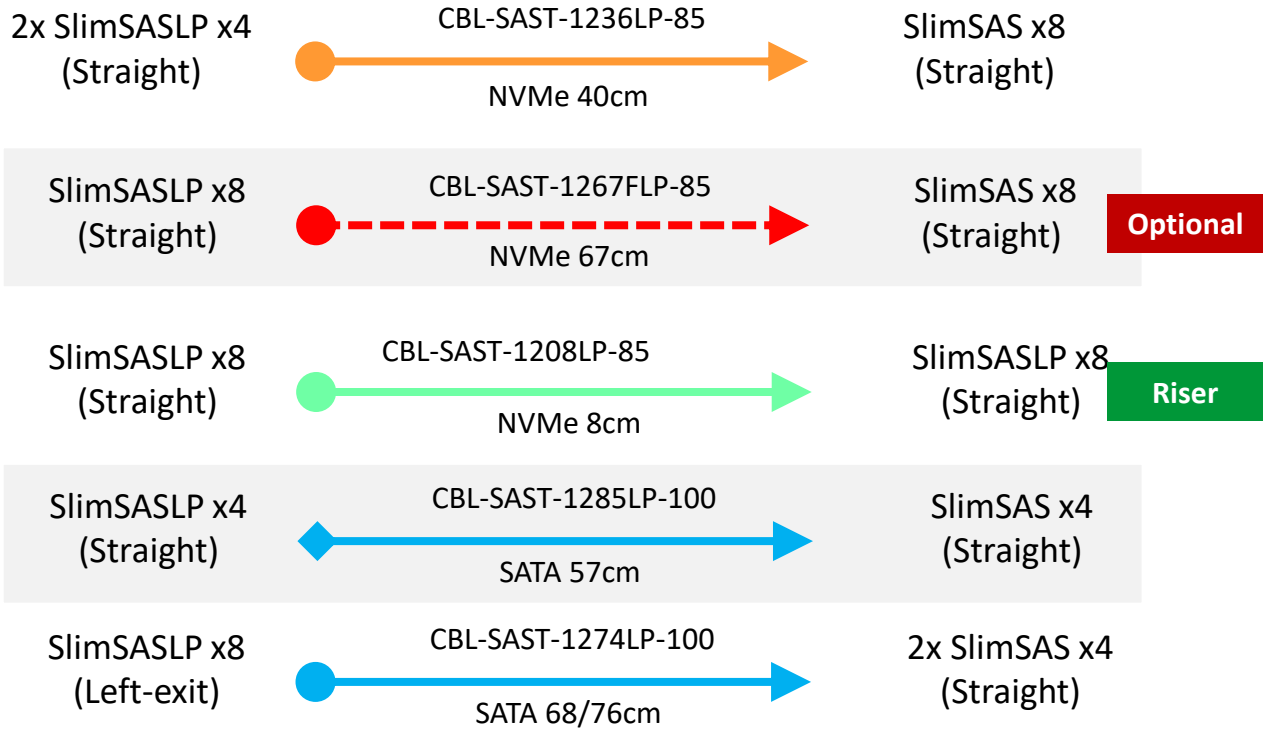
SlimSASLP x8 (Left-exit) → CBL-SAST-1274LP-100 SATA 68/76cm → 2x SlimSAS x4 (Straight)

SlimSASLP x4 (Straight) → CBL-SAST-1285LP-100 SATA 57cm → SlimSAS x4 (Straight)

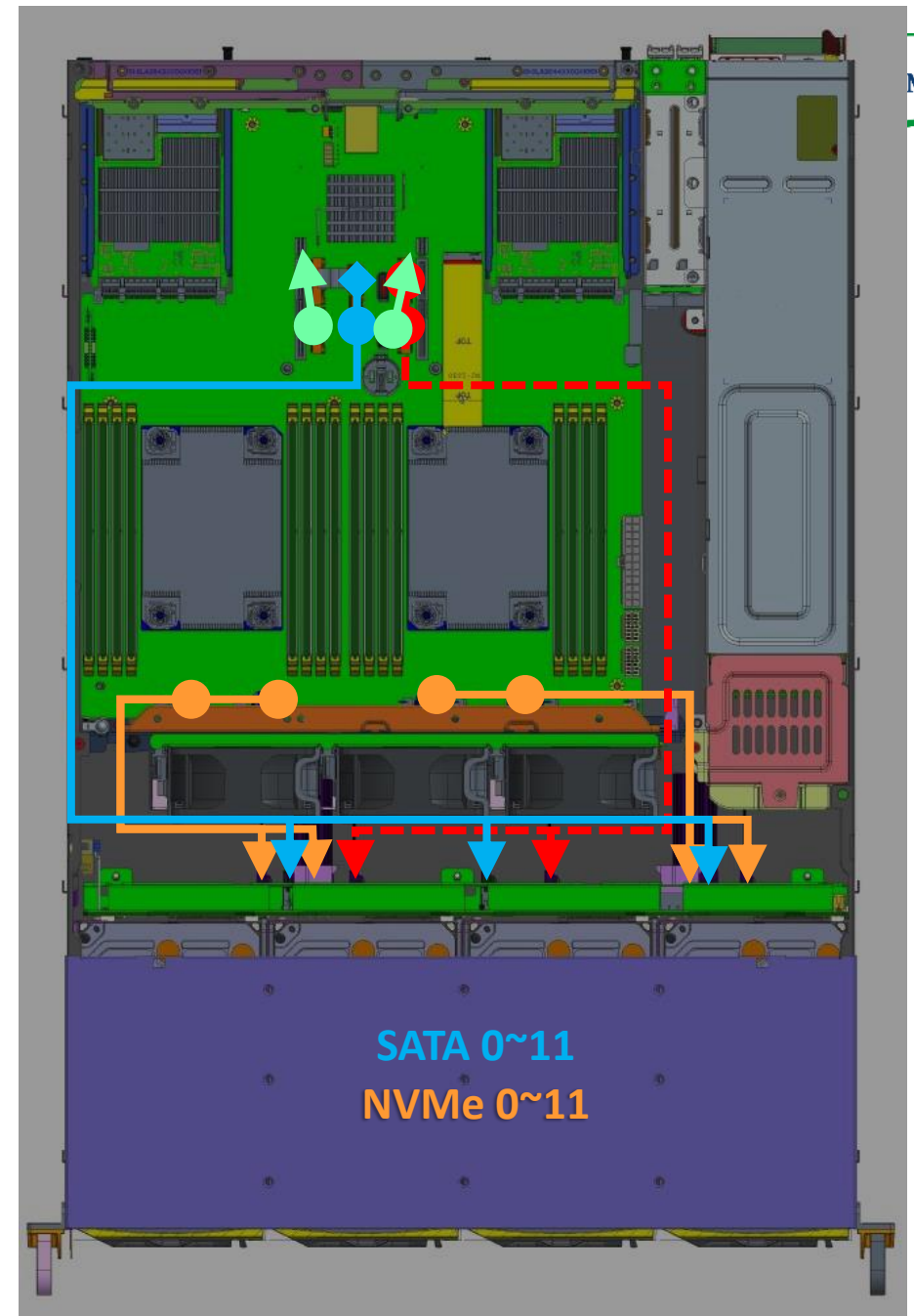
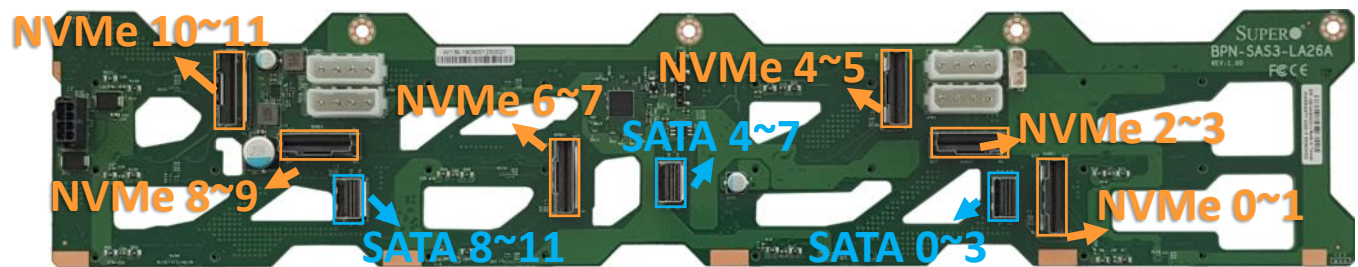
BPN-SAS3-LB16A-N10
 10x Hybrid SATA/SAS/NVMe ports
 3 SlimSAS x4 (SATA/SAS) + 5 SlimSAS x8 (NVMe)



SYS-620C-TN12R

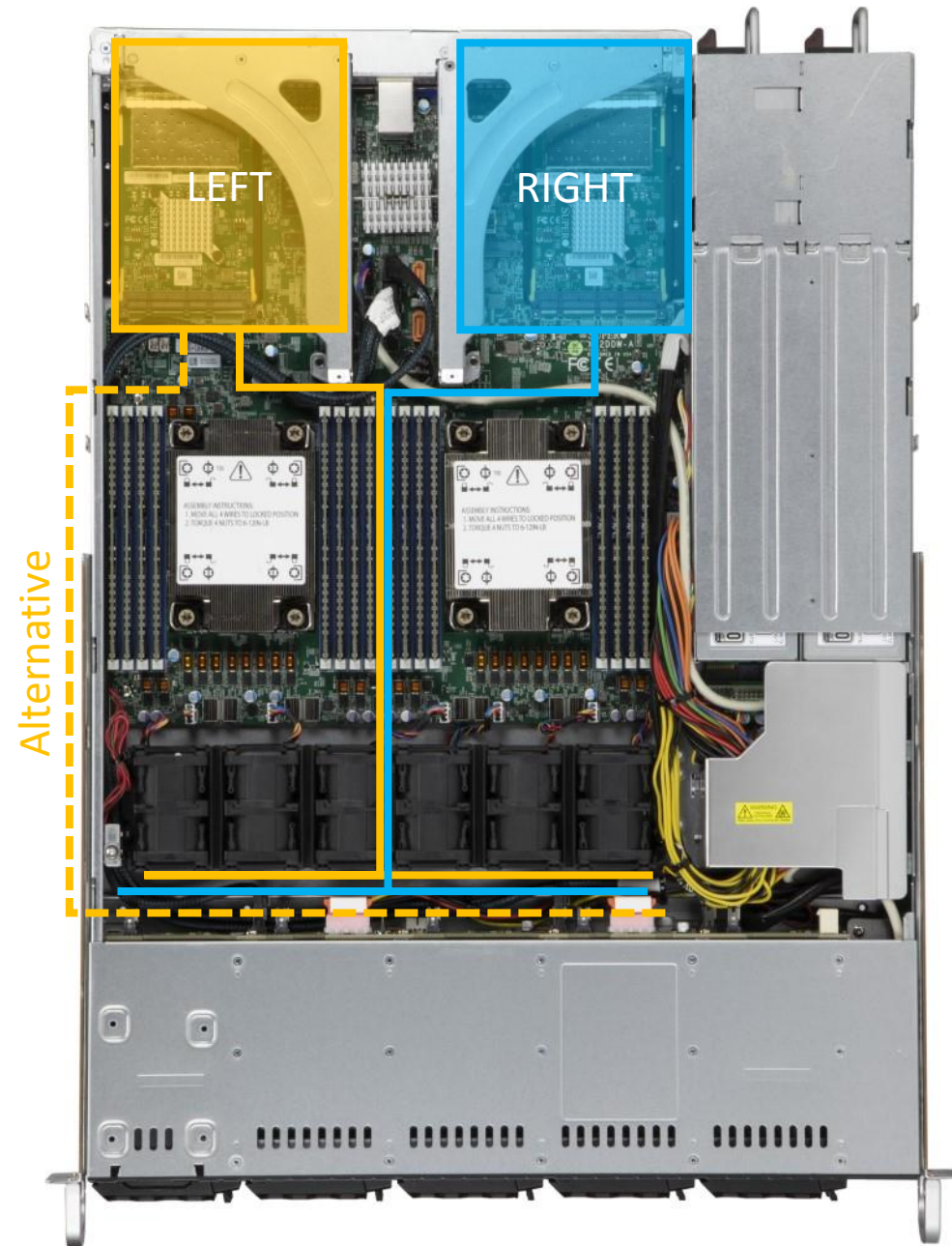


BPN-SAS3-LA26A-N12
 12x Hybrid SATA/SAS/NVMe ports, 3 SlimSAS x4 (SATA/SAS) + 6 SlimSAS x8 (NVMe)



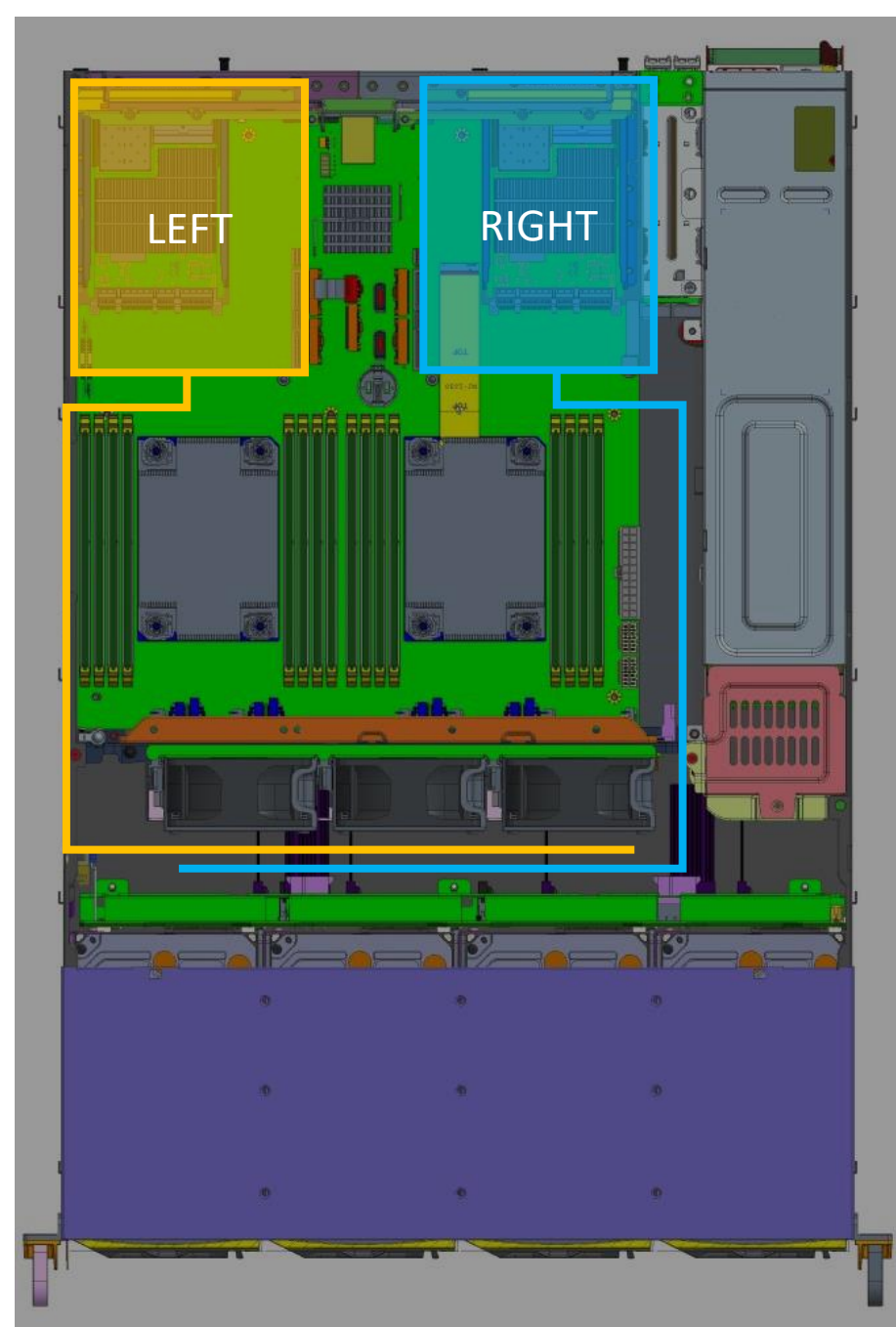
1U CloudDC Storage AOC Cable Routing

- SYS-120C-TN10R
 - 3108, 3008
 - LEFT – 1x CBL-SAST-1260-100
 - RIGHT – 2x CBL-SAST-1285-100
 - 3908, 3808,
 - LEFT – 1x CBL-SAST-1276F-100
 - RIGHT – 1x CBL-SAST-1264F-100
 - 3916, 3816
 - 1x CBL-SAST-1265F-100
- SYS-120C-TR
 - 3108, 3008
 - BOTH - CBL-SAST-0593
 - 3908, 3808
 - BOTH - CBL-SAST-1264-100
- SYS-610C-TR
 - 3108, 3008
 - BOTH - CBL-SAST-0948
 - 3908, 3808
 - BOTH - CBL-SAST-1275A-100



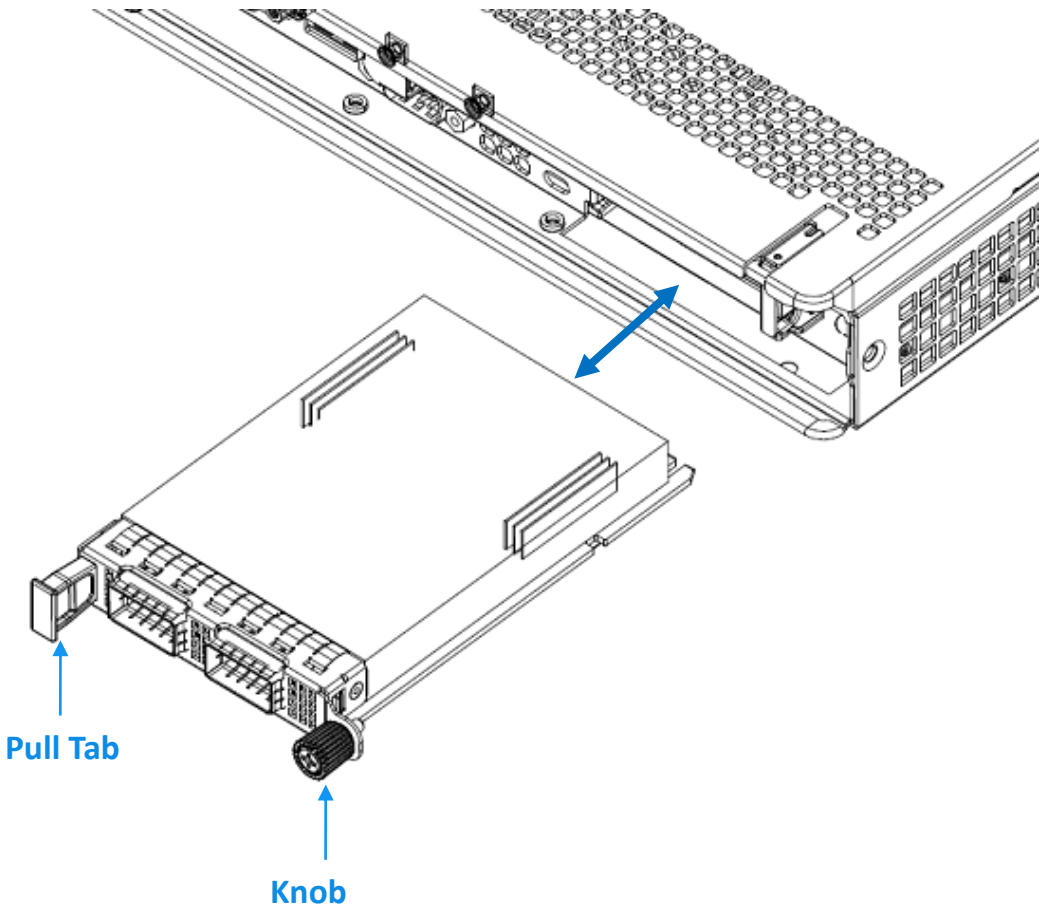
2U CloudDC Storage AOC Cable Routing

- SYS-620C-TN12R
 - 3108, 3008
 - LEFT – 1x CBL-SAST-1260-100
 - RIGHT – 2x CBL-SAST-1285-100
 - 3908, 3808
 - LEFT – 1x CBL-SAST-1276F-100
 - RIGHT – 1x CBL-SAST-1264F-100
 - 3916, 3816
 - Less than 4 drives: 1x CBL-SAST-1265F-100
 - 4-8 drives: 1x CBL-SAST-1264F-100
 - Over 8 drives: 1x CBL-SAST-1264F-100 + 1x CBL-SAST-1265F-100



AIOM

AIOM Installation



AIOM Networking AOC List



Model	AOC-AG-i8	AOC-AG-i4S AOC-AG-i4SM	AOC-AG-i2 AOC-AG-i2M	AOC-AG-i4 AOC-AG-i4M	AOC-ATG-i2T AOC-ATG-i2TM AOC-ATG-i2TB	AOC-ATG-i2S AOC-ATG-i2SM	AOC-ATG-i4S AOC-ATG-i4SM	AOC-ATG-i2T2SM	AOC-ATGC-i2TM	AOC-A25G-b2S AOC-A25G-b2SM AOC-A25G-b2SB	AOC-AH25G-m2S2TM	AOC-A25G-m2SM	AOC-A100G-b2CM	AOC-A100G-m2CM
Description	Eight-Port GbE	Quad-Port GbE	Dual-Port GbE	Quad-Port GbE	Dual-Port 10GbE	Dual-Port 10GbE	Quad-Port 10GbE	Quad-Port 10GbE	Dual-Port 10GbE	Dual-Port 25GbE	2-Port 25GbE & 2-Port 10GbE	Dual-Port 25GbE	Dual-Port 100GbE	Dual-Port 100GbE
Port	8x RJ45	4x SFP	2x RJ45	4x RJ45	2x RJ45	2x SFP+	4x SFP+	2x RJ45 2x SFP+	2x RJ45	2x SFP28	2x SFP28 2x RJ45	2x SFP28	2x QSFP28	2x QSFP28
Speed	1Gbps	1Gbps	1Gbps	1Gbps	10Gbps	10Gbps	10Gbps	10Gbps	10Gbps	25Gbps	25Gbps / 10Gbps	25Gbps	100Gbps	100Gbps
Controller	2x Intel® i350-AM4	Intel® i350-AM4	Intel® i350-AM2	Intel® i350-AM4	Intel® X550-AT2	Intel® X710-BM2	Intel® XL710-BM1	Intel® X710-TM4	Intel® X710-AT2	Broadcom® BCM57414	Mellanox® CX-4 Lx EN Intel® X550-AT2	Mellanox® CX-6 LX	Broadcom® BCM57508	Mellanox® CX-6 DX
PCIe	PCIe 2.1 x4 PCIe 2.1 x4	PCIe 2.1 x4	PCIe 2.1 x4	PCIe 2.1 x4	PCIe 3.0 x4	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8 PCIe 3.0 x4	PCIe 4.0/3.0 x8	PCIe 4.0 x16	PCIe 4.0 x16
Power	8.8W	4.4W	3.7W	4.4W	13W	6.2W	7W	10W	9.5W	7.7W	25W	15W	20W	20W
Standby Power	1.6W	1.2W	0.9W	1.3W	4W	1.62W	1.62W	3.7W	3.42W	4.4W	3.4W	8.5W	15W	7.5W
Status	Released	Released	Released	Released	Released	Q2 2021	Q2 2021	Released	Q2 2021	Released	Released	Q2 2021	Released	Q2 2021

- M SKU/PN came with an 0.5U height bracket
- Non-M SKU/PN came with 1U height bracket for Edge systems only.
- B SKU comes with a 0.5U height bracket for Blade systems only.

Key Take Away



- **Next generation: CloudDC**

- X11 WIO Transition to X12 CloudDC
- Balanced Architecture across both CPUs
- PCIe gen4 and OCP 3.0 compatible
- Flexible I/O support on NICs and storage
- GPU support
- Cost-effective system for All purpose

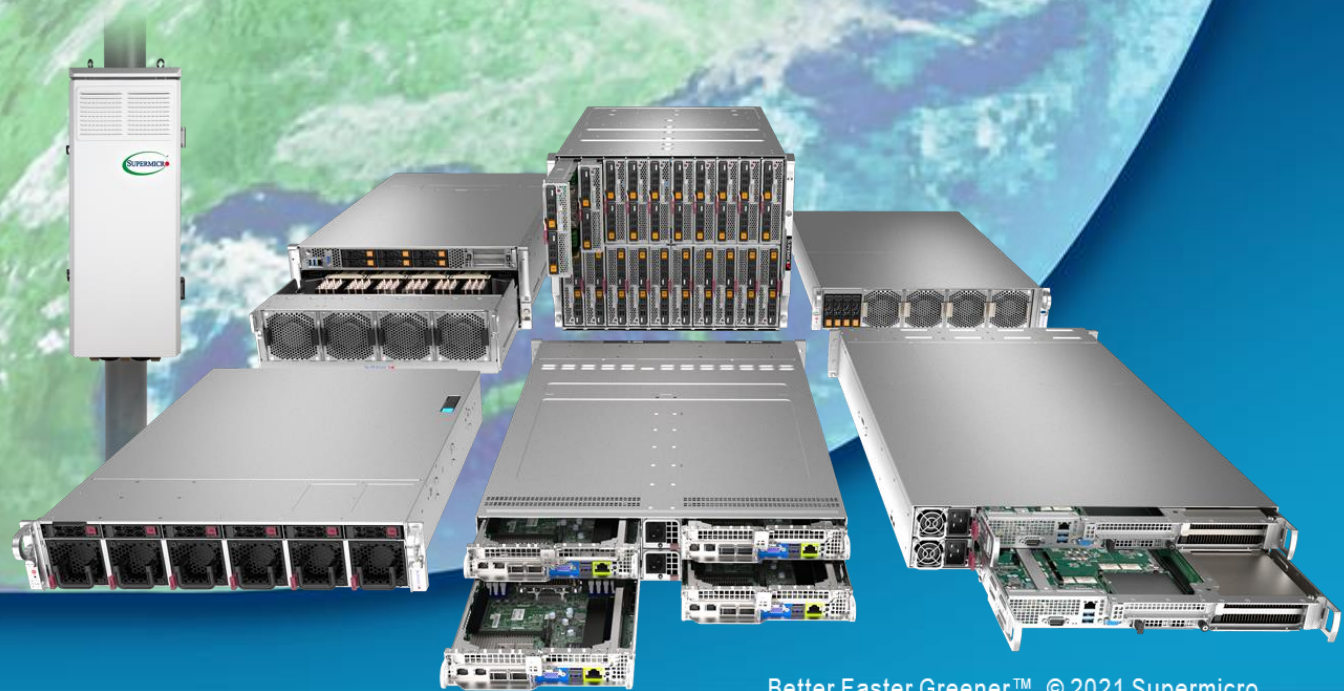
- **Future support**

- _NL_System@supermicro.com





Questions?



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