Computex

DP Server Deep Dive

Bill Chen

We Keep IT Green™

Supermicro 3.0

- Sustained high growth while growing profitability
- Significant investments in global production capacity, engineering, quality, global services, and systems and data center management software
- New facility will generate its own clean fuel-cell based electricity on-site savings over $30 million in energy costs over 10 years when fully deployed
- A one megawatt-hour Bloom Energy Server will provide the majority of the facility's energy load
  - High-Efficiency
  - Greenhouse Gas Emissions Reductions
  - Reduced Water Use

X11 DP Rackmont SuperServer

Mid-Level Compute & Storage Performance	High-Level Compute & Storage Performance	Max Compute & Storage Performance
		
DCO	WIO	Ultra
		
Mainstream	WIO	Ultra

1U

2U

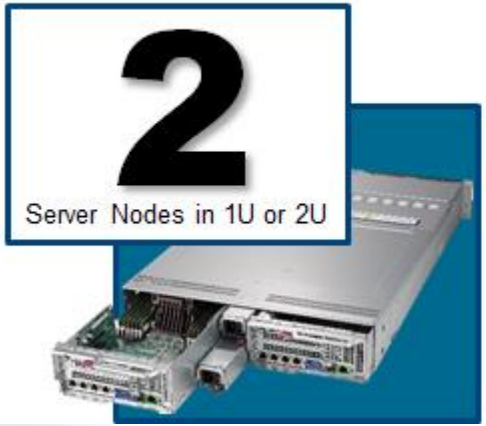
X11 DP Multi-node SuperServer

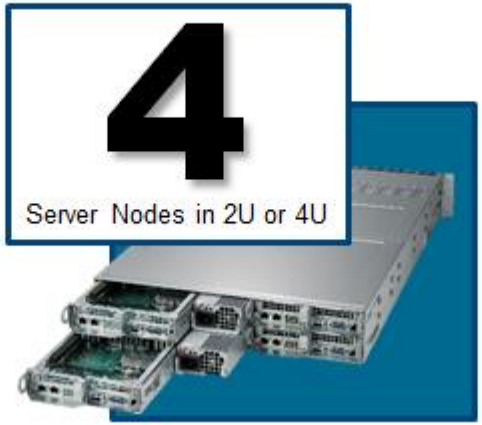
Twin²

TwinPro²

BigTwin²

FatTwin





X11 DP Application Optimized SuperServer

GPU

SuperStorage

JBOF

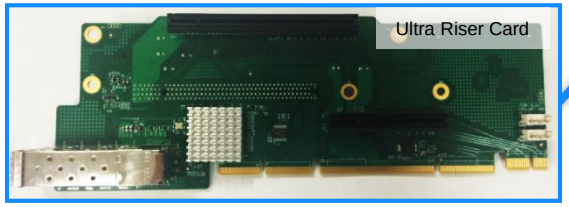
Max IO

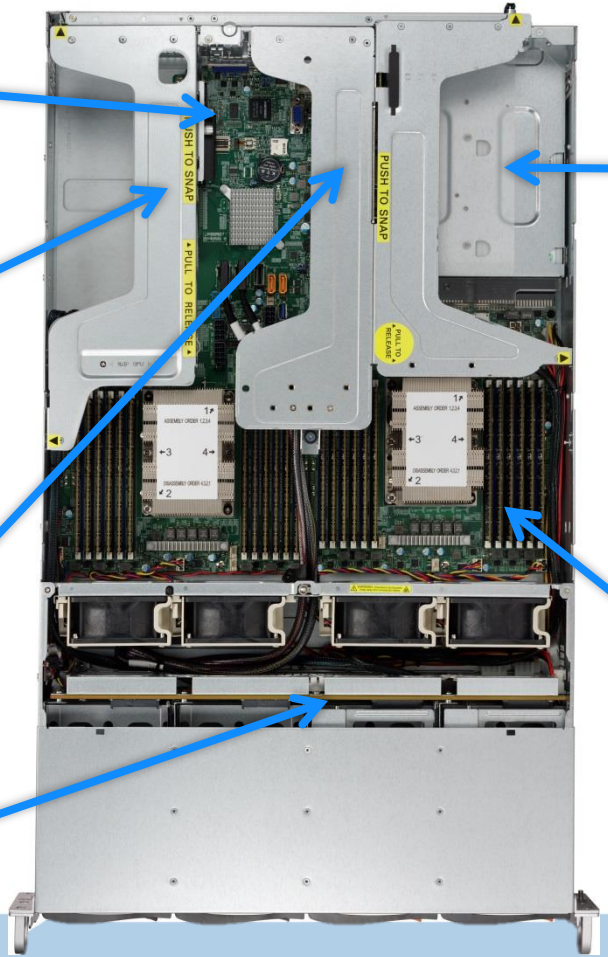
Hyper Speed

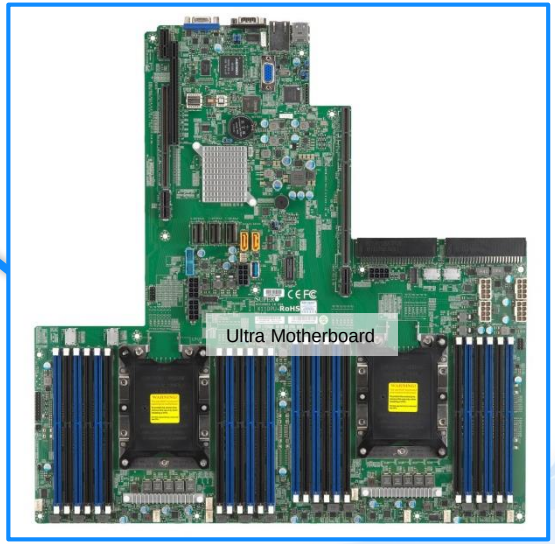
X11 Ultra Servers

High Performance and Flexibility for Enterprise Applications

Ultra System Modular Architecture







X11 Ultra DP SuperServer® 1U/2U Model Summary

1U

SYS-1029U

-TR4: 4 GbE
-TR4T: 4 10Gbase-T
-TRT: 2 10Gbase-T
-TRTP: 2 10G SFP+
-TR2TP: 2 GbE, 2 10G SFP+
-TR25M: 2 Mellanox 25GbE

Optional 2 NVMe

-TN10RT 2 10Gbase-T ports, 10 NVMe

SAS Expander Backplane:
-E1CR4: 4 GbE
-E1CR4T: 4 10Gbase-T
-E1CRT: 2 10Gbase-T
-E1CRTP: 2 10G SFP+
-E1CR2TP: 2 GbE, 2 10G SFP+
-E1CR25M: 2 Mellanox 25GbE

SYS-6019U

-TR4: 4 GbE
-TR4T: 4 10Gbase-T
-TRT: 2 10Gbase-T
-TRTP: 2 10G SFP+
-TR2TP: 2 GbE, 2 10G SFP+
-TR25M: 2 Mellanox 25GbE
-TN4RT: 2 10Gbase-T, 4 NVMe

2.5” Drive Bays

3.5” Drive Bays

SYS-2029U

-TR4: 4 GbE
-TR4T: 4 10Gbase-T
-TRT: 2 10Gbase-T
-TRTP: 2 10G SFP+
-TR25M: 2 Mellanox 25GbE
-TN24R4T: 4 10Gbase-T, 24 NVMe

SAS Expander Backplane:
-E1CR4: 4 GbE
-E1CR4T: 4 10Gbase-T
-E1CRT: 2 10Gbase-T
-E1CRTP: 2 10G SFP+
-E1CR25M: 2 Mellanox 25GbE

Optional 4 NVMe on all models

SYS-6029U

-TR4: 4 GbE
-TR4T: 4 10Gbase-T
-TRT: 2 10Gbase-T
-TRTP: 2 10G SFP+
-TR25M: 2 Mellanox 25GbE

SAS Expander Backplane:
-E1CR4: 4 GbE
-E1CR4T:+ 4 10Gbase-T
-E1CRT: 2 10Gbase-T
-E1CRTP: 2 10G SFP+
-E1CR25M: 2 Mellanox 25GbE

Optional 4 NVMe on all models

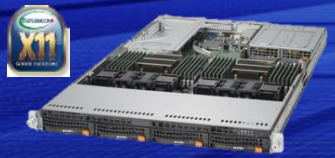
2U

Industry's Leading Hot-Swap NVMe Solutions

Increasing your Productivity and Throughput

Ultra 1U 20 NVMe
(SYS-1029UZ-TN20R25M)

Ultra 2U 20 NVMe
(SYS-2029UZ-TN20R25M)



Ultra 1U 4 NVMe
(SYS-6019U-TN4R4T)

Ultra 1U 10 NVMe
(SYS-1029U-TN10RT)

Ultra 2U 24 NVMe
(SYS-2029U-TN24R4T)

"Big Twin" 2U 4 Node 24 NVMe
(SYS-2029BT-HNR)

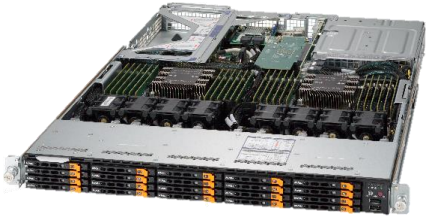
- Supermicro has the complete NVMe (PCI-e SSD) product offering
- Over 150+ NVMe ready SKUs (All Flash/Hybrid) solutions in 12 different server categories
- Breakthough performance and lower latency
- Ideal for caching, burst buffering, memory swap, faster storage and much more

Contact your Supermicro sales representative for more information, or visit our website

www.supermicro.com/NVMe

ULTRA-Z Summary

- **Performance**
  - Supports dual Skylake 205W (255W on FPGA models)
  - 24 DIMMs (up to 3TB) and NVDIMM support
  - 3 UPI
  - FPGA Support
- **Storage**
  - 20 direct attached NVMe
  - 1 M.2 NVMe/SATA
- **Networking**
  - Dual 25G Mellanox ConnectX 4



1U 20NVMe

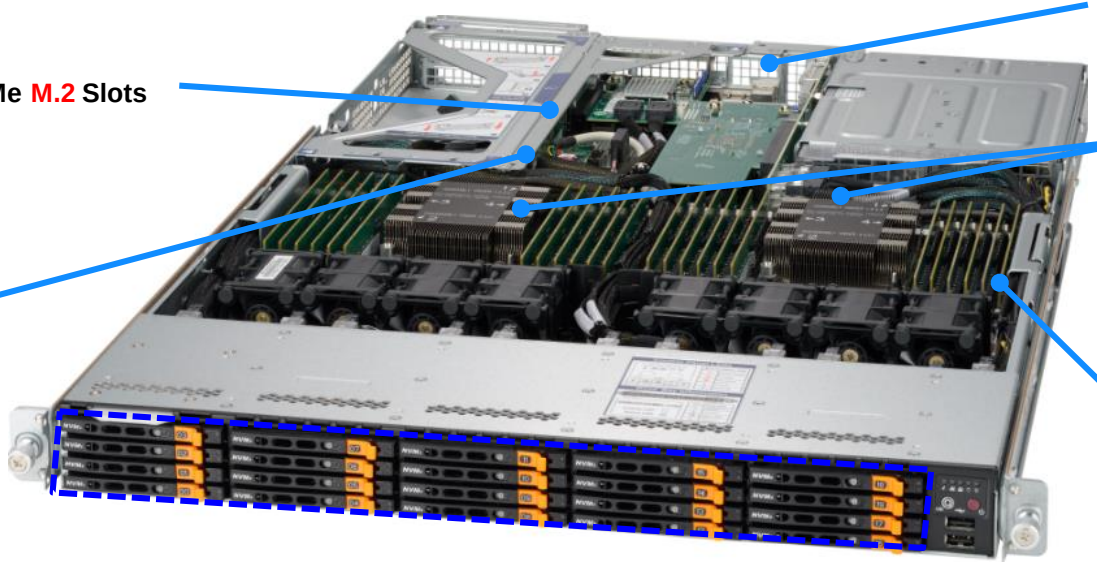
2U 20NVMe

*Conditionally Supported

SYS-1029UZ-TN20R25M Feature

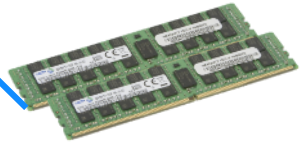
1 SATA/NVMe M.2 Slots

2 SuperDOM ports



2 ports Mellanox
25GBe SFP28 Networking

Up to 56 cores with
Dual Intel Xeon Scalable
Processors Up to 205W**

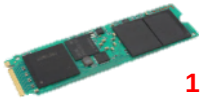


Up to 3TB DDR4-2666
In 24 DIMM Slots

20 Hot-Swap 2.5” 7mm NVMe
2 Hot-Swap 2.5” SAS, SATA Storage Options

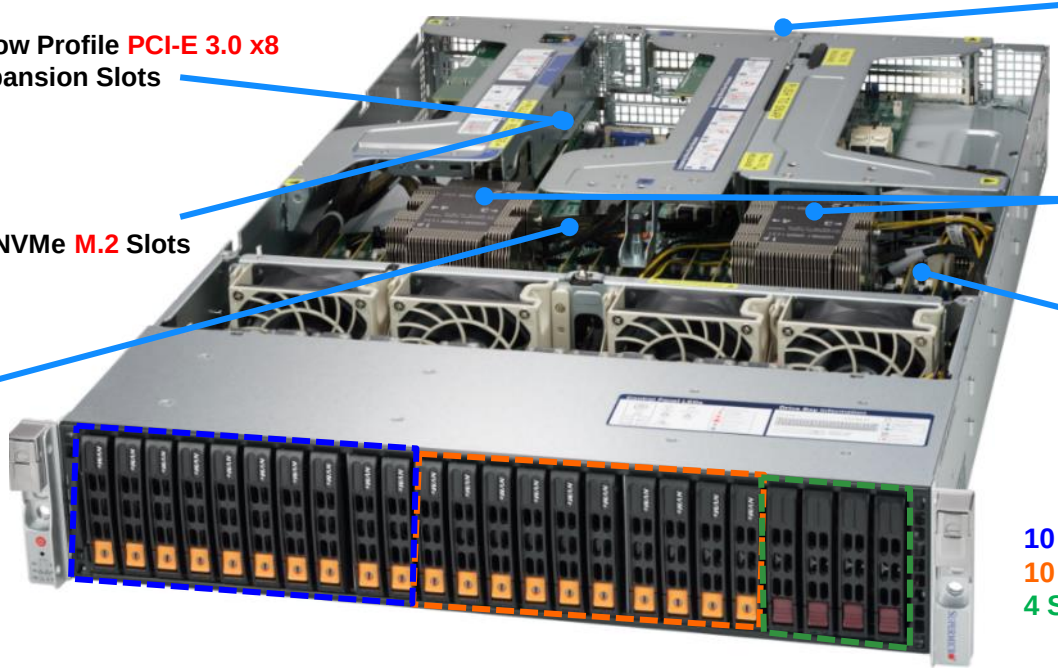
Ultra SYS-2029UZ-TN20R25M Features

1 Low Profile PCI-E 3.0 x8
Expansion Slots



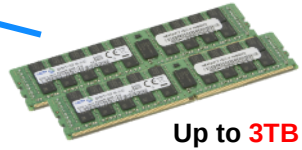
1 SATA/NVMe M.2 Slots

2 SuperDOM ports



2 ports Mellanox
25GBe SFP28 Networking

Up to 56 cores with
Dual Intel Xeon Scalable
Processors Up to 205W

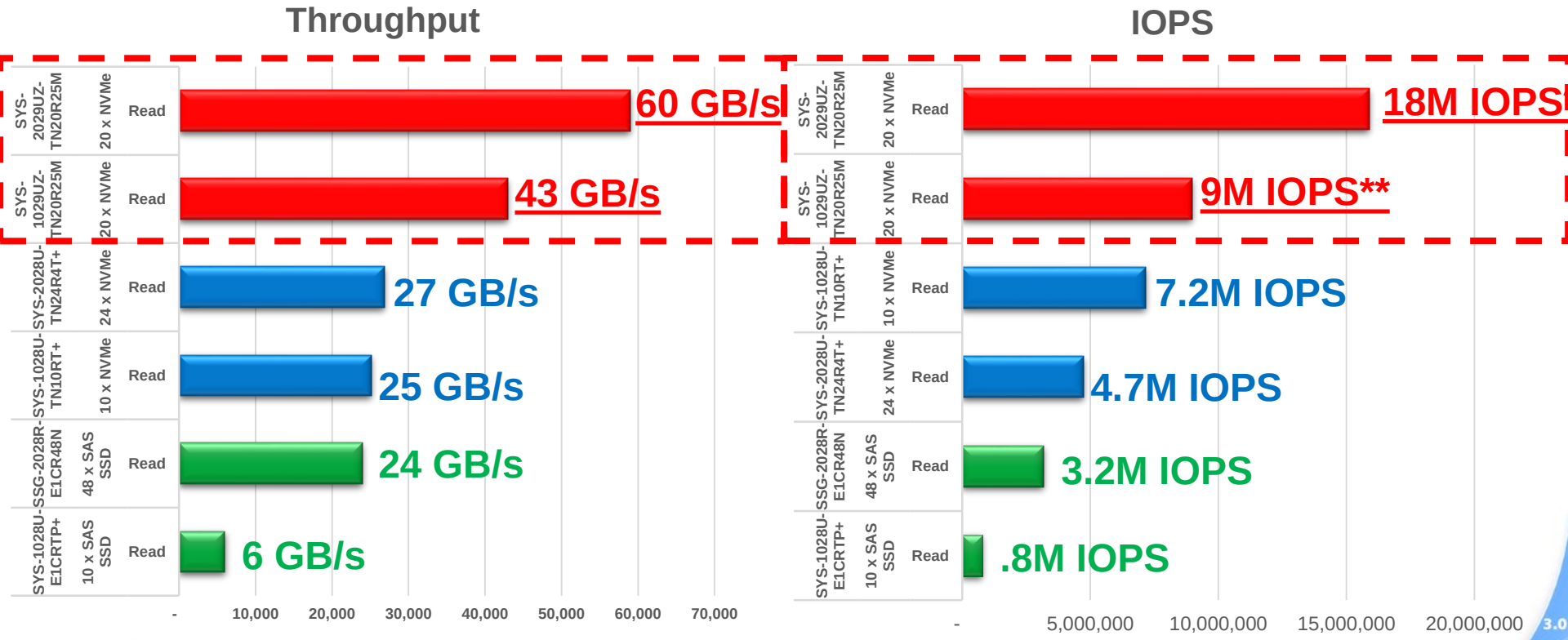


Up to 3TB DDR4-2666
In 24 DIMM Slots

10 NVMe ports (NVMe from CPU1)
10 NVMe ports (NVMe from CPU2)
4 SAS/SATA ports

20 Hot-Swap 2.5” NVMe
4 Hot-Swap 2.5” SAS, SATA Storage Options

All Flash NVMe Performance



Test result is based on the configuration

X11 WIO SuperServers

The Industry's Widest Variety of I/O Optimized Servers

WIO X11 Server Model Summary

1U

SYS-6019P-WT *

SYS-6019P-WT	1U SC815TQC-600WB
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
4 HSWP SATA	600W Power Supply

SYS-6019P-WTR

SYS-6019P-WTR	1U SC815TQ-R706WB
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
4 HSWP SATA	700W Redun. Pwr

SYS-1029P-WT *

SYS-1029P-WT	1U SC113AC2-600WB
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
8 HSWP SATA	600W Power Supply

SYS-1029P-WTRT

SYS-1029P-WTRT 1U	SC116AC2-R706WB
X11DDW-NT	Dual Xeon
12 DDR4	3 x16 | 1 x8 | 1 M.2
SATA3/NVMe	2 10G/1G-bit LAN
10 HSWP SATA	700W Redun. Pwr

SYS-6019P-WT8

SYS-6019P-WT8	1U SC801STS-656DP
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
10 Fixed SATA	650W Power Supply

SYS-1029P-WTR *

SYS-1029P-WTR	1U SC113AC2-R706WB
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
10 HSWP SATA	700W Redun. Pwr

2U

SYS-6029P-WTR

SYS-6029P-WTR	2U 825TS-R1K03WBP-2
X11DDW-L	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3	2 G-bit LAN
8 HSWP SATA	800W Redun. Pwr

SYS-6029P-WTRT

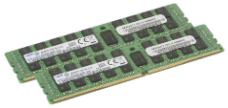
SYS-6029P-WTRT	2U 826BAC4-R1K23WBP
X11DDW-NT	Dual Xeon
12 DDR4	2 x16 | 1 x8 | 1 M.2
SATA3/NVMe	2 10G/1G-bit LAN
12 HSWP SATA	920W Redun. Pwr

WIO 1U Server

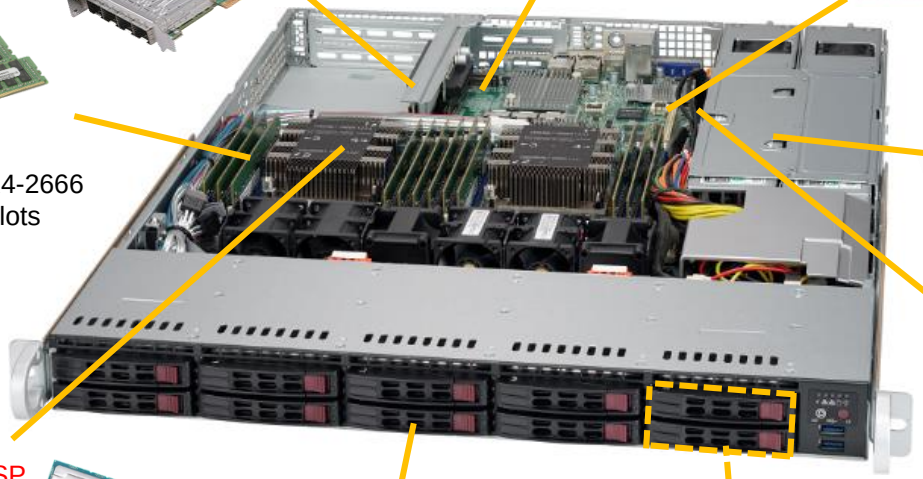
3 Expansion Slots (2 FHHL + 1LP)

1 PCIe M.2 Slot

1 SAS3 HW RAID AOM Slot



Up to 1.5TB DDR4-2666
In 12 DIMM Slots



Single/Redundant PWS

2 SuperDOM ports

Dual Intel Skylake-SP Processors
Up to 56 Cores

4/8/10 2.5”/3.5” SAS/SATA
w/ 2 Optional NVMe Support

2 Hybrid NVMe Ports

1U 3.5″

Single PWS

SYS-6019P-WT
SYS-6019P-WT8

Redundant PWS

SYS-6019P-WTR

1U 2.5″

Single PWS

SYS-1029P-WT

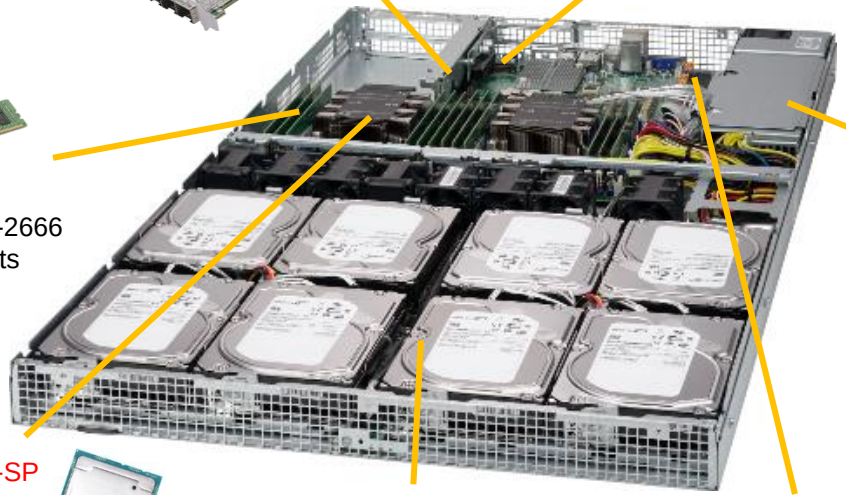
Redundant PWS

SYS-1029P-WTR
SYS-1029P-WTRT

WIO 1U Server

3 Expansion Slots
(2 FHHL + 1LP)

1 PCIe M.2 Slot



Up to 1.5TB DDR4-2666
In 12 DIMM Slots

Single PWS

1U Fixed 3.5″

SYS-6019P-WT8

Dual Intel Skylake-SP
Processors
Up to 56 Cores

8 3.5” + 2 2.5” Fixed SATA

2 SuperDOM ports

Common Applications

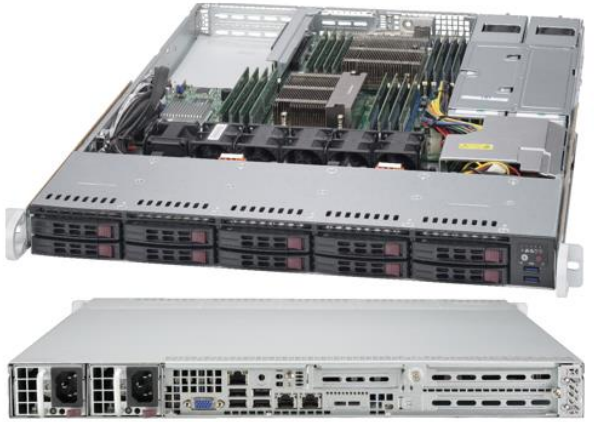
WIO General Purpose Server

- **Domain Name Server**
- **Web Server**
- **Gateway**
- **Head Node**
  - OpenStack Control Node
  - Cluster Head Node
  - Ceph Monitor Node
- **Fire Wall**

Real Case – Domain Name Provider

300+ Shipped since Dec 2016 and more on the way

A network company providing global domain registration, DNS services chose to use our WIO servers (along with other SMC servers) for their service. They were only using servers from Dell and HP in the past, but we proved our WIO server handled this application better and won their trust. They are now considering moving to our WIO Skylake platform.



X11 Short-Depth DCO SuperServers

The Industry's Widest Variety of I/O Optimized Servers

DCO 1U Server

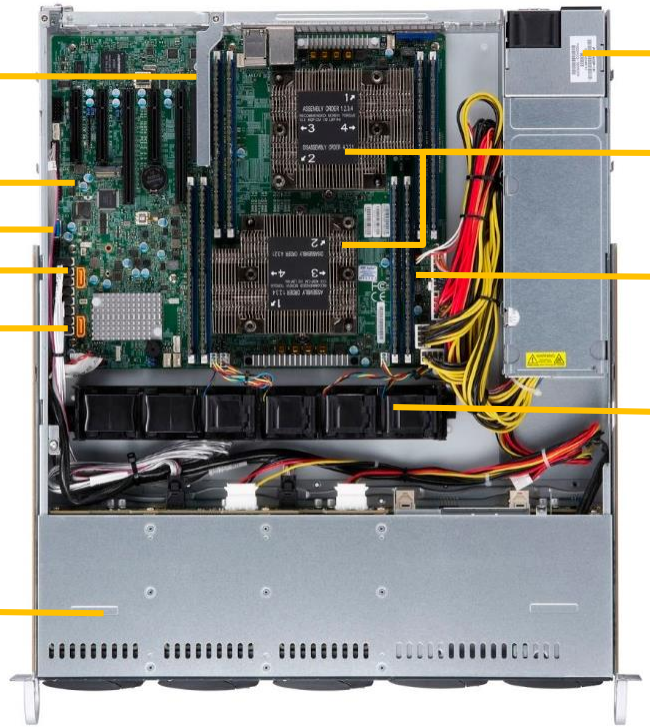
1 PCI-E 3.0 x8 (FHHL)

1 PCIE M.2 Drive Port

USB Port

2 SuperDOM Ports

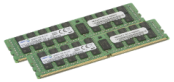
8 * 2.5”/ 4 * 3.5” Hot-swap SATA3 Drive Bays



Single / Redundant PSU

Dual CPU Intel® Xeon Skylake-SP up to 140W

8 DIMM Slots DDR4



4 Internal Fans

X11 DCO Server Summary

Model	Key Feature
SYS-1029P-MT	8* 2.5” HDD with Single PSU
SYS-1029P-MTR	8* 2.5” HDD with Redundant PSU
SYS-6019P-MT	4* 3.5” HDD with Single PSU
SYS-6019P-MTR	4* 3.5 HDD with Redundant PSU

Data Center Optimized Product Features

- **Short depth chassis (<20”)**
- Cost effective design for mass deployment
- Optimized thermal performance allows system running @ 35 degree C.
- 80 Plus Platinum certificated Power Supply reduce your electric bill every month.
- Quick access rail

X11 BigTwin™

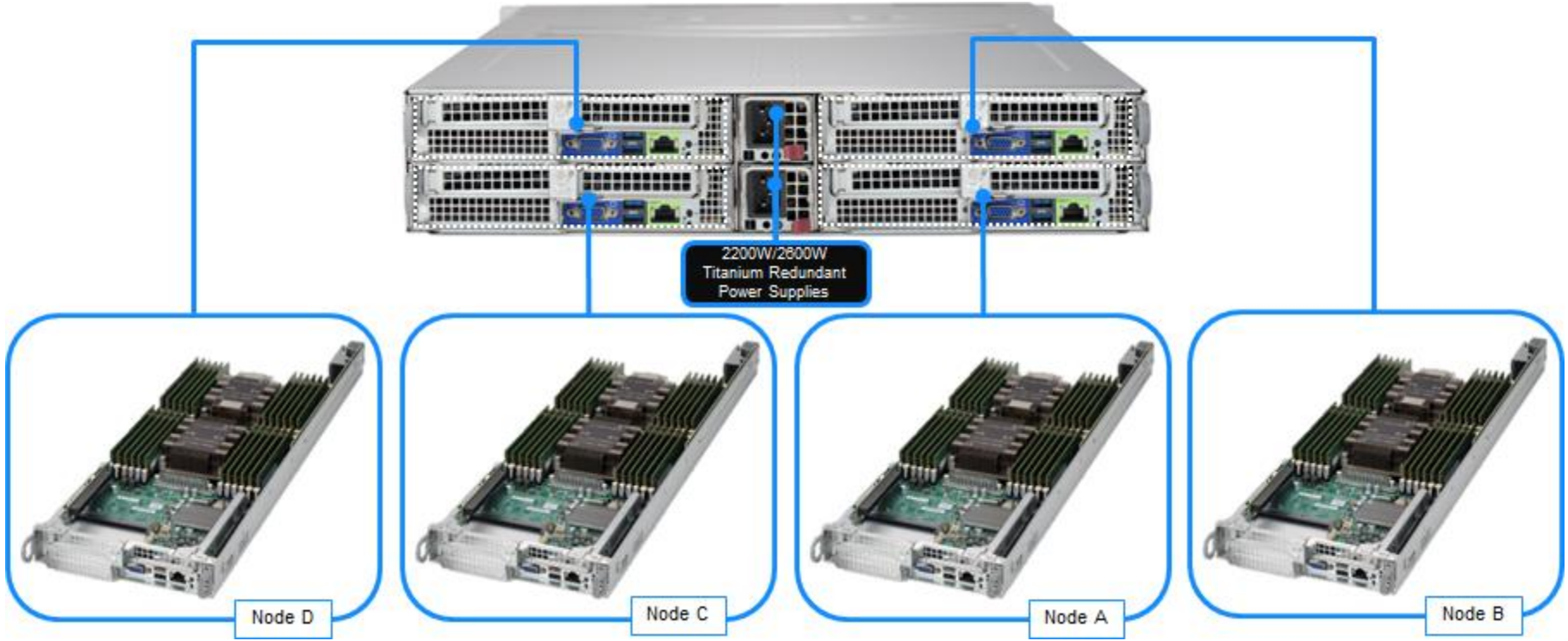
The Industry's Highest Performing Twin Multi-Node System

BigTwin™

1.8"x1.6"x18"

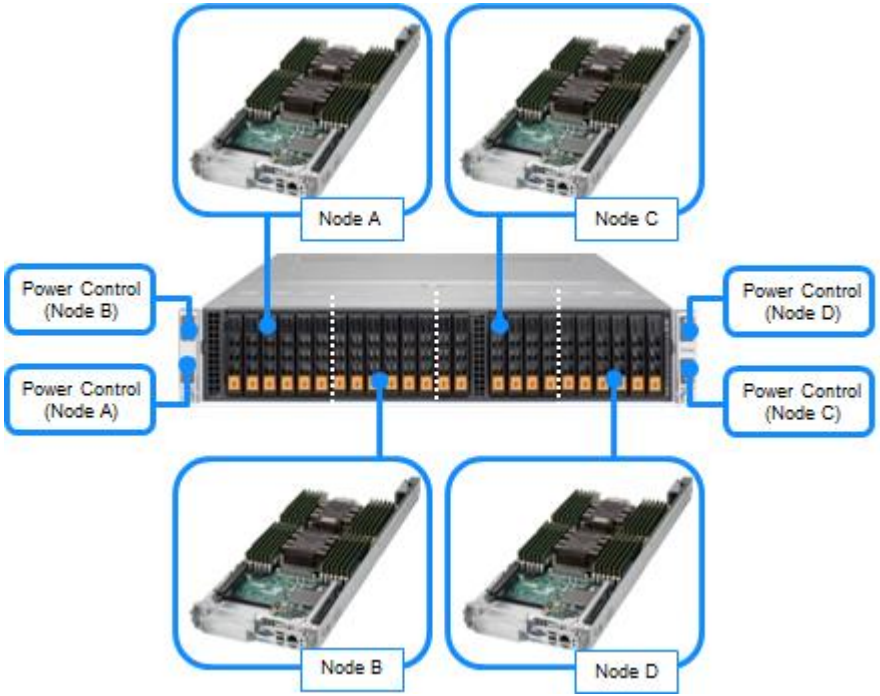
- No-Compromise **2U high density system with up to 4 hot-swappable DP nodes**
- Each node supports dual Intel Scalable processors totaling up to **56 cores** and **3TB memory in 24 DIMMs**
- **All-flash NVMe** or Hybrid NVMe/SAS3/SATA drive bays for application flexibility. 2x M.2 per node support
- Up to **3 PCI-E 3.0** expansion slots including **1 SIOM** slot for flexible networking selection supporting up to 100G
- Unique redundant Titanium **power stick** design improve thermal efficiency

BigTwin²™ 2U/4-Node Multi-Node Design (1/2)

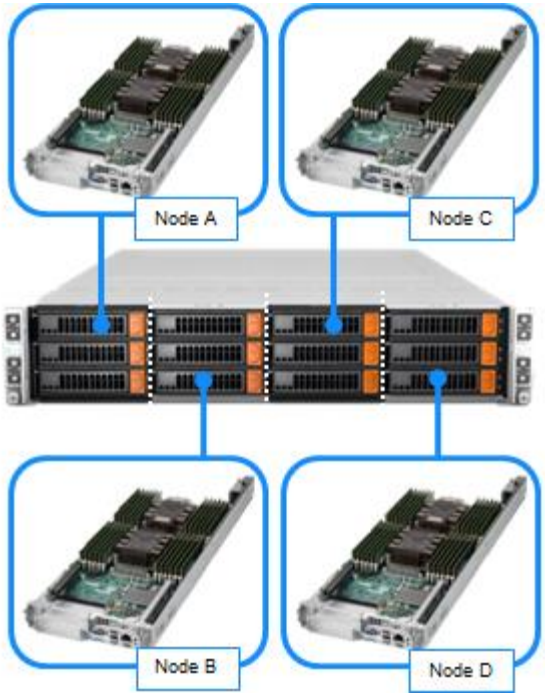


4 Independent Hot-Swappable Nodes

BigTwin²™ 2U/4-Node Multi-Node Design (2/2)



6 Hot-Swap 2.5” Drive Bays per Node



3 Hot-Swap 3.5” Drive Bays per Node

X11 BigTwin™ Model Summary

BigTwin² 2U/4-Node

SYS-2029BT-H Series

-HNR: 6 NVMe
-HNC0R: 4 NVMe/SAS + 2 SAS
-HTR: 6 SATA
-HNC1R: 4 NVMe/SAS(RAID) + 2 SAS(RAID)
-HNTR: 4 NVMe/SATA + 2 SATA

SYS-2029BZ-H Series

(3UPI, Independent Cooling)

-HNR: 6 NVMe

SYS-6029BT-H Series

-HNC0R: 3 NVMe/SAS

2.5” Drive Bays

Density Optimized Solutions

3.5” Drive Bays

Storage Optimized Solutions

SYS-2029BT-D Series

-DNR: 12 NVMe
-DNC0R: 4 NVMe/SAS + 8 SAS

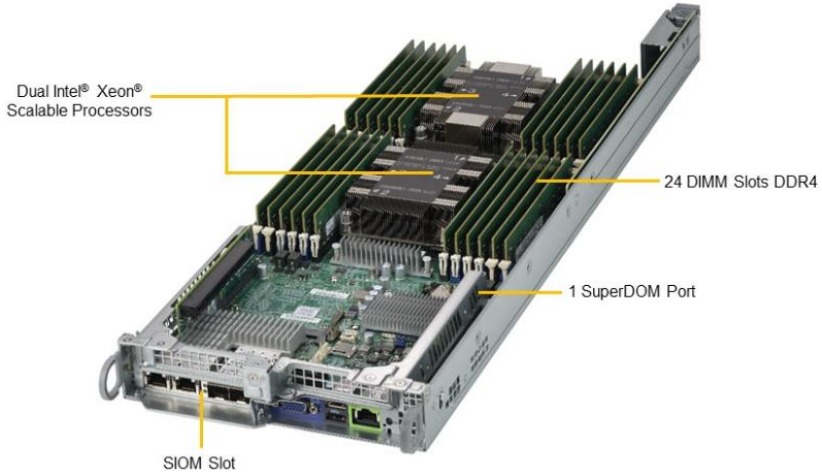
SYS-6029BT-D Series

-DNC0R: 3 NVMe/SAS + 3 SAS

BigTwin 2U/2-Node

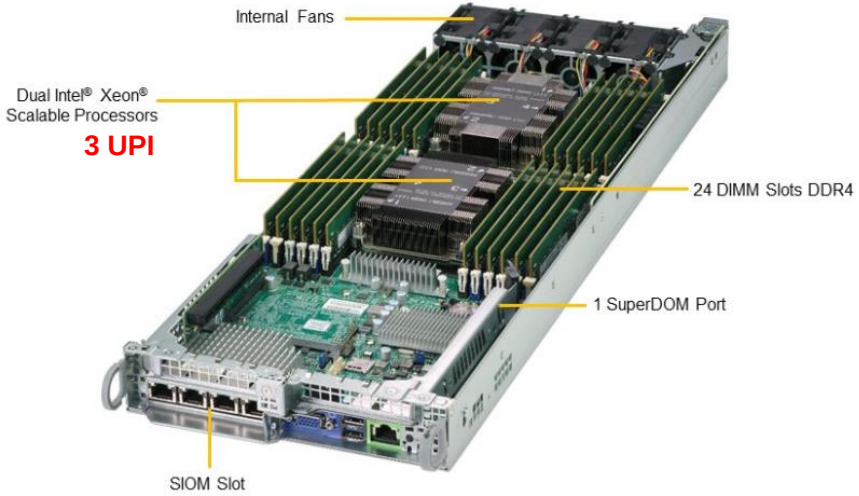
BigTwin²™ Node View Difference

SYS-2029BT-HNR



- Enclosures include 4 heavy duty 8cm PWM fans

SYS-2029BZ-HNR



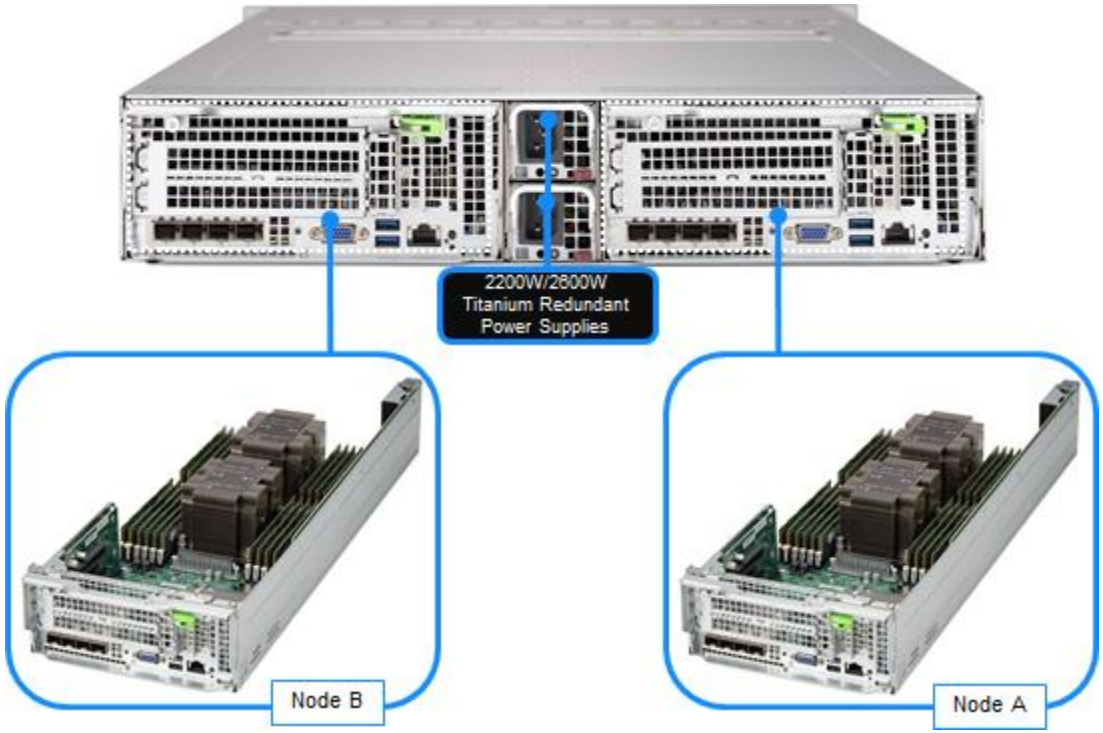
- Internal 40x56mm fans are included at the node level to increase reliability.
- N+1 cooling redundancy with 4 fans

SIOM Networking Adapter List

Model	AOC-MGP-i2 AOC-MGP-i2M	AOC-MGP-i4 AOC-MGP-i4M	AOC-MTG-i2T AOC-MTG-i2TM	AOC-MTG-i4T AOC-MTG-i4TM	AOC-MTG-b2T AOC-MTG-b2TM	AOC-MTG-i4T AOC-MTG-i4TM	AOC-MTG-b2T AOC-MTG-b2TM	AOC-ML-4S AOC-ML-4SM
Description	Dual-Port GbE	Quad-Port GbE	Dual-Port 10GbE	Quad-Port 10GbE	Dual-Port 10GbE	Quad-Port 10GbE	Dual-Port 10GbE	Quad-Port 10GbE
Port	2x RJ45	4x RJ45	2x RJ45	4x RJ45	2x RJ45	4x RJ45	2x RJ45	4x SFP+
Speed	1Gbps	1Gbps	10Gbps	10Gbps	10Gbps	10Gbps	10Gbps	10Gbps
Controller	Intel® i350-AM2	Intel® i350-AM4	Intel® X550-AT2	Intel® X550-AT2	Broadcom® BCM57416	Intel® X550-AT2	Broadcom® BCM57416	N/A (C62x on MB)

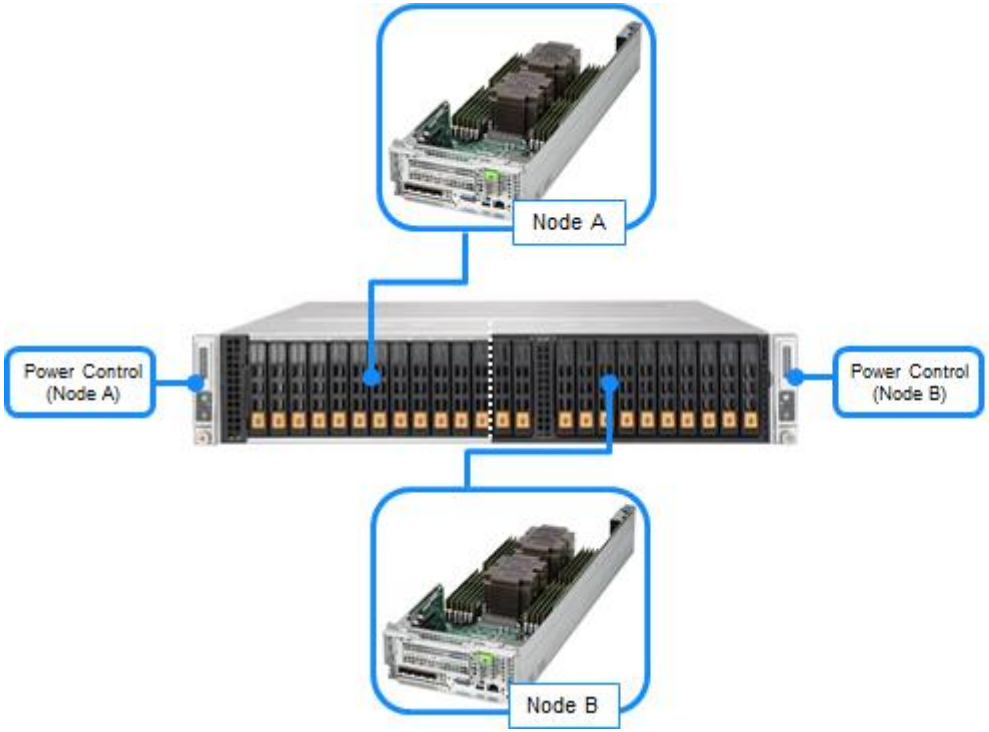
Model	AOC-MH25G-m2S2T AOC-MH25G-m2S2TM	AOC-MH25G-b2S2G AOC-MH25G-b2S2GM	AOC-M25G-m4S AOC-M25G-m4SM	AOC-M25G-i2S AOC-M25G-i2SM	AOC-MHIBF-m2Q2G AOC-MHIBF-m2Q2GM	AOC-MHIBF-m1Q2G AOC-MHIBF-m1Q2GM	AOC-MHIBE-m1CG AOC-MHIBE-m1CGM	AOC-MHFI-i1C AOC-MHFI-I1CM
Description	Dual-Port 25GbE & Dual-Port 10GbE	Dual-Port 25GbE & Dual-Port GbE	Quad-Port 25GbE	Dual-Port 25GbE	Dual-Port IB FDR & Dual-Port GbE	Single-Port IB FDR & Dual-Port GbE	Single-Port IB EDR & Single-Port GbE	Single-Port Omni-Path
Port	2x SFP28 2x RJ45	2x SFP28 2x RJ45	4x SFP28	2x SFP28	2x QSFP 2x RJ45	1x QSFP 2x RJ45	1x QSFP28 1x RJ45	1x QSFP28
Speed	25Gbps / 10Gbps	25Gbps / 1Gbps	25Gbps	25Gbps	56Gbps / 1Gbps	56Gbps / 1Gbps	100Gbps / 1Gbps	100Gbps
Controller	Mellanox® CX-4 Lx EN Intel® X550	Broadcom®BCM57414 Intel® i350	Mellanox® CX-4 Lx EN	Intel® XXV710	Mellanox® CX-3 Pro Intel® i350	Mellanox® CX-3 Pro Intel® i350	Mellanox® CX-4 VPI	Intel® OP HFI

BigTwin™ 2U/2-Node Multi-Node Design (1/2)

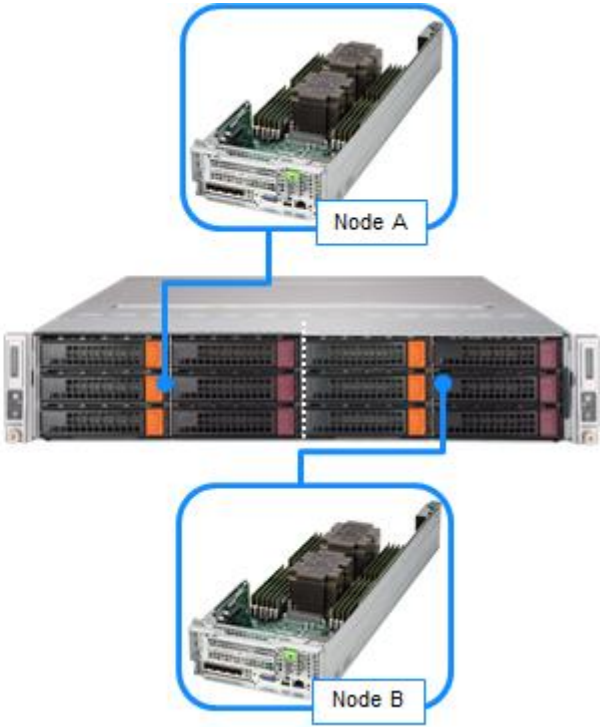


Two Independent Hot-Swappable Nodes

BigTwin™ 2U/2-Node Multi-Node Design (2/2)



12 Hot-Swap 2.5” Drive Bays per Node

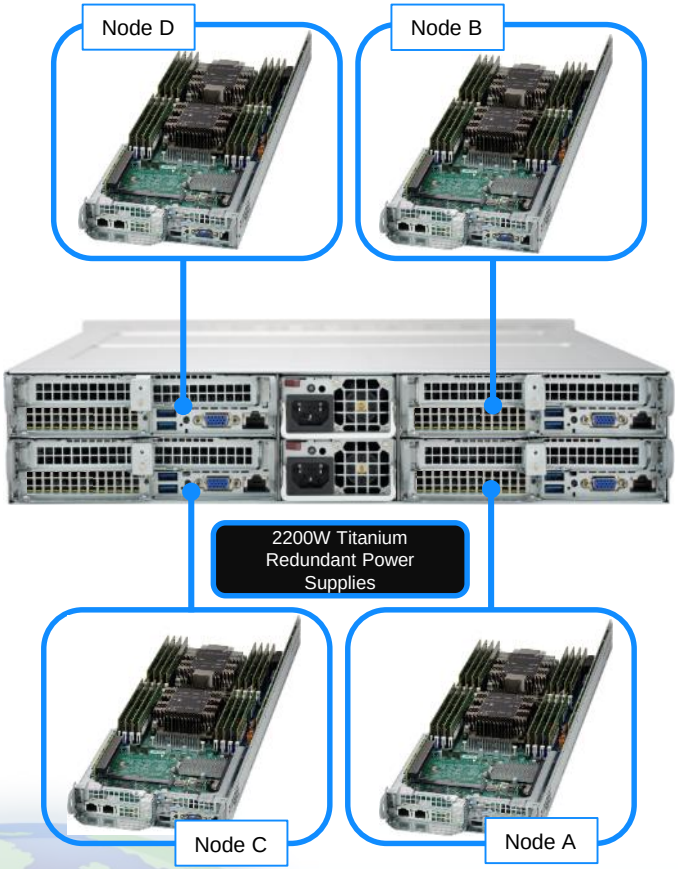


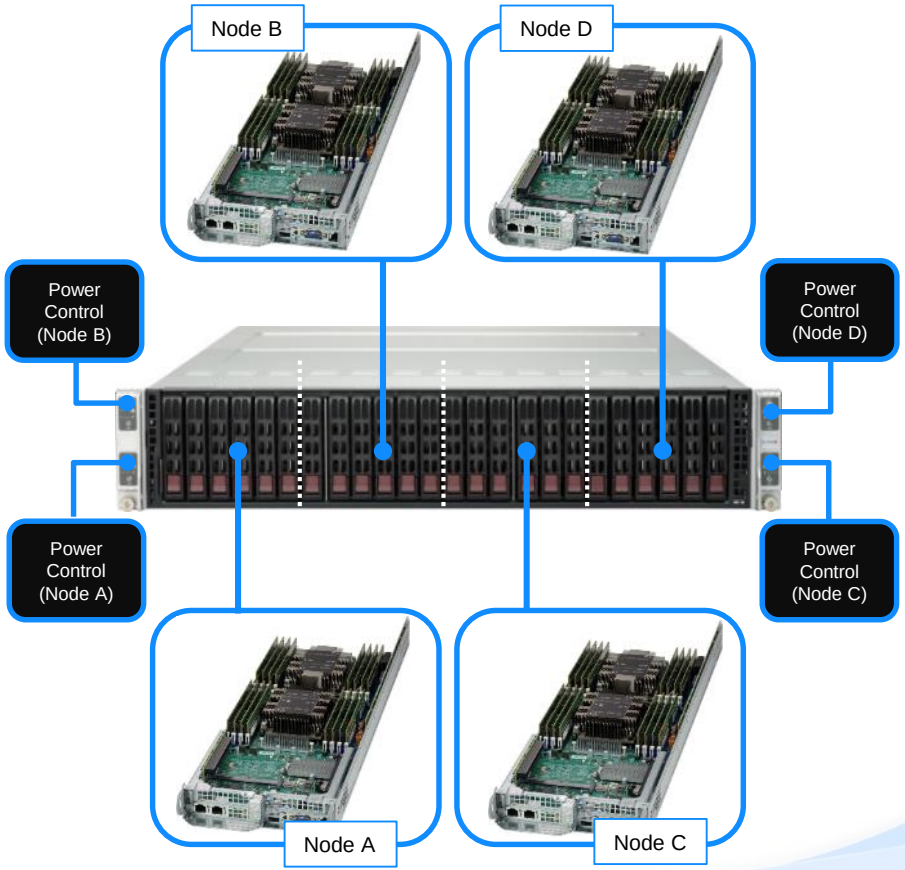
6 Hot-Swap 3.5” Drive Bays per Node

X11 TwinPro²®

X11 TwinPro Model Summary

2U TwinPro²™ Multi-Node Design





X11 2U TwinPro²™ Model Summary

TwinPro² 2U/4-Node

SYS-2029TP-H Series

-HC1R: 6 SAS (HW RAID)
-HC0R: 6 SAS
-HTR: 6 SATA

2.5” Drive Bays

SYS-6029TP-H Series

-HC1R: 3 SAS (HW RAID)
-HC0R: 3 SAS
-HTR: 3 SATA

3.5” Drive Bays

	SKU
2.5" 2U 4 nodes (SAS3 3108) *	SYS-2029TP-HC1R
2.5" 2U 4 nodes (SAS3 3008)	SYS-2029TP-HC0R
2.5" 2U 4 nodes (SATA)	SYS-2029TP-HTR
3.5" 2U 4 nodes (SAS3 3108) *	SYS-6029TP-HC1R
3.5" 2U 4 nodes (SAS3 3008)	SYS-6029TP-HC0R
3.5" 2U 4 nodes (SATA)	SYS-6029TP-HTR

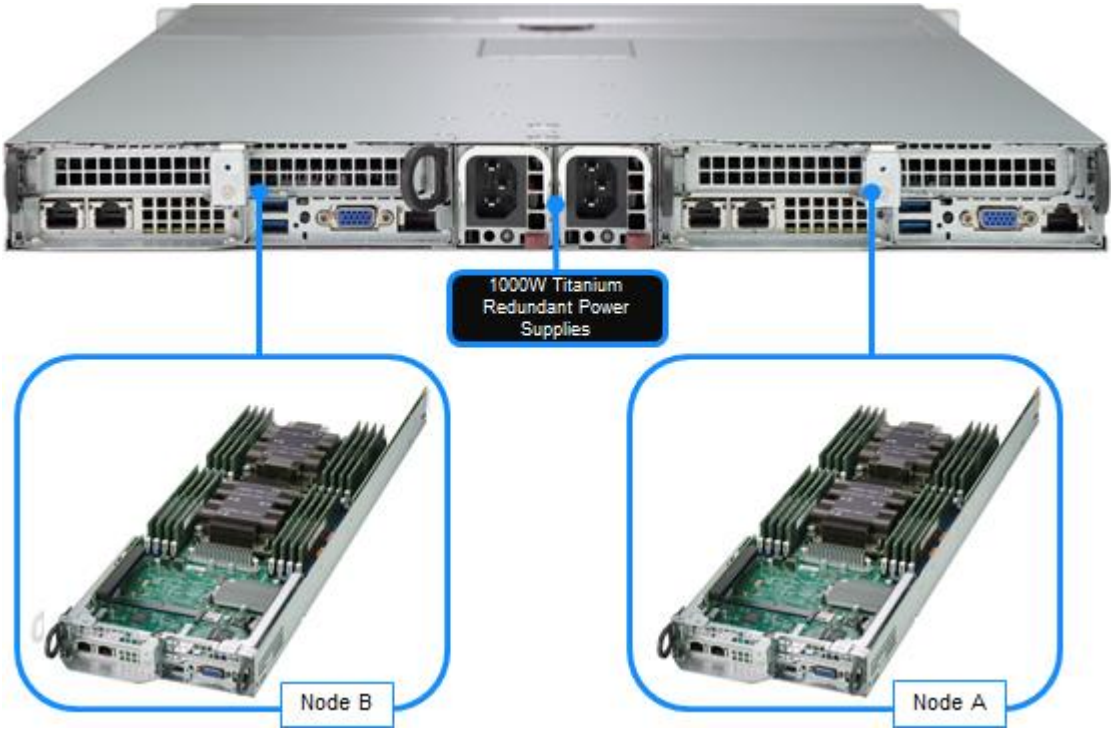
*** 3108 SKU cannot support M.2**

Note:
1. **M.2 Random Read Support (2 SATA / NVMe) with option part: AOC-SMG3-2H8M2**
2. **M.2 and SATADOM cannot coexist**

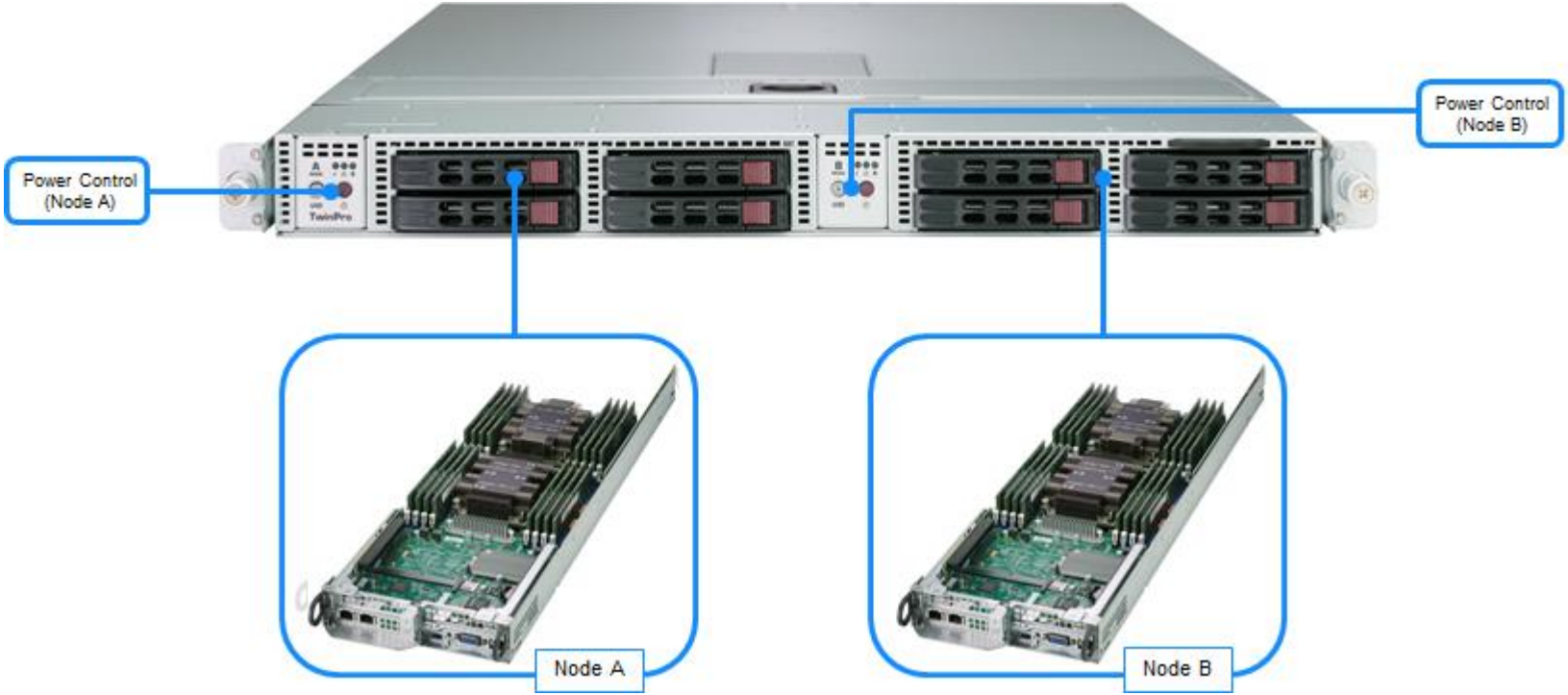
X11 1U TwinPro™

X11 1U TwinPro Model Summary

1U/2N TwinPro Multi-Node Design (1/2)



1U/2N TwinPro Multi-Node Design (1/2)



Four Hot-Swap 2.5” Drive Bays per Node

X11 CE Twin & Twin^{2}™

X11 CE TwinPro 2U/4-Node/2U2-Node Specifications

2U Twin/Twin^2

2U Twin^2 SYS-6029TR-HTR (2U - 4 node)

2U Twin SYS-6029TR-DTR (2U - 2 node)

Cost Optimized 2U multi-node server

X11DPT-L

Key Features:

- Dual Skylake-SP (Socket P up to 140W TDP), 2 UPI designed for up to 10.4GT/s
- Intel C621 Chipset
- 8 DIMM, 1TB RDIMM/LR DIMM DDR4 designed for up to 2933 MHz, Supports NV(M)DIMM
- 1 PCI-E 3.0 x16 slots
- 1 PCI-E 3.0 x4 for SMC storage slot
- Dual 1G LAN (PCH)
- 4x SATA3 (6 Gb/s) for ADP and 2x SATA3 Ports RAID (0,1, 5, 10) + 2x SATADOM
- 2x USB 3.0 (2 rear), TPM 2.0
- BMC with dedicated LAN, VGA
- 6.8" x 16.64“ Proprietary Twin Form Factor

Available Chassis:

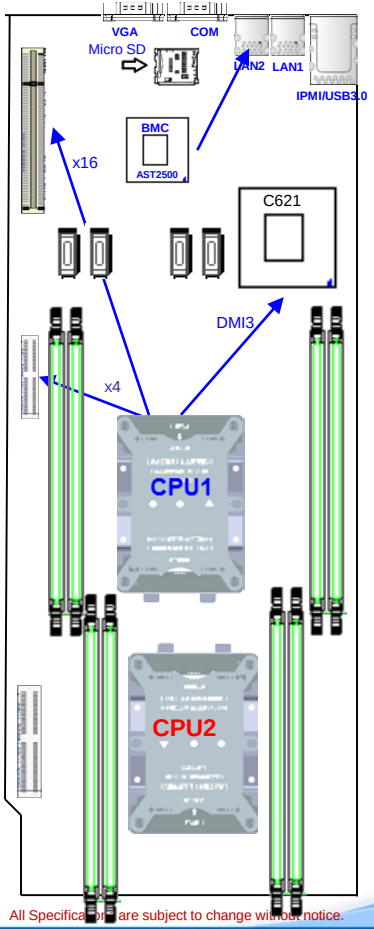
- SC217HQ/HD, SC827HQ/HD

Status:

- Under design

Applications:

- High Performance Computing
- Cloud Computing



X11 FatTwin Rear IO

- 4 Node per 4U System
- 8x 3.5” HotSwap HDDs per Node
- Dual CPU sockets & 12 DIMMS per node
- M.2 Support, SIOM
- NVMe, SAS HBA, SAS RAID
- Hyperconverged, WebHosting, Cloud, Hadoop and others

- 8 Node per 4U system
- 6x 2.5” HotSwap HDDs per node
- Dual CPU sockets & 12 DIMMs per node
- M.2 support, SIOM
- NVMe, SAS HBA, SAS RAID
- Hyperscale, Cloud, Webhosting, HPC and others

X11 FatTwin Front IO

- 4 Node per 4U System
- 12x 3.5” HDDs per Node
- Dual CPU sockets & 12 DIMMs per node
- 2x M.2 Support, SIOM & LP
- NVMe, SATA, SAS optional
- Front cabling and node servicing
- Hadoop and large capacity storage

- 8 Node per 4U system
- 4x storage devices per node
- Dual CPU sockets and 12 DIMMs per node
- 2x M.2 support, SIOM & LP
- NVMe, SATA, SAS Optional
- Front cabling and node servicing
- Hyperscale, Cloud, Webhosting, HPC and others

SYS-F619P2/3-FT

12x DIMM with 3 AOC

80 PLUS TITANIUM

1	**Processor Support** DP Xeon SP up to 165W
2	**Memory Capacity** 12 DIMM, 1.5TB DDR4 Reg. ECC. Up to 2666MHz
3	**Expansion Slots** 1 PCI-E Gen 3.0 x16 LP 1 PCI-E Gen 3.0 x8 LP 1 PCI-E Gen 3.0 x16 SIOM
4	**I/O ports** 1 Built-in video 2 USB 3.0 ports 1 IPMI
5	**System management** Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port
6	**Drive Bays** P2 up to 4 x2.5” internal drive bays P3 up to 2 x3.5” internal drive bays 2x M.2 (NVMe or SATA) Up to 110mm.
7	**System Cooling** 8 heavy duty hot swap External fans
8	**Power Supply** 2200W high-efficiency **(Titanium level)** power supply

Key Features:

- **Support up to 6 storage devices: M.2 and drives**
- **3x PCIe expansion: LP and SIOM**
- **Titanium level high efficiency digital power supply**
- **Hot plug nodes and fans**

Target release: 8/2018

Key Applications:

- **HPC**
- **Web appliance**

SYS-F619H6-FT

12x 3.5” HDD per U

80 PLUS TITANIUM

1	**Processor Support** DP Xeon SP up to 165W
2	**Memory Capacity** 12 DIMM, 1.5TB DDR4 Reg. ECC. Up to 2666MHz
3	**Expansion Slots** 1 PCI-E Gen 3.0 x16 LP 1 PCI-E Gen 3.0 x8 LP 1 PCI-E Gen 3.0 x16 SIOM
4	**I/O ports** 1 Built-in video 2 USB 3.0 ports 1 IPMI
5	**System management** Built-in Server management tool (IPMI 2.0, KVM/media over LAN) with dedicated LAN port
6	**Drive Bays** 12 x 3.5” or 2.5” internal drive bays 2x M.2 (NVMe or SATA) Up to 110mm.
7	**System Cooling** 8 heavy duty hot swap External fans
8	**Power Supply** 2200W high-efficiency **(Titanium level)** power supply

Key Features:

- 12 x 3.5” HDD per U (Tool-less)
- 3 PCI Express 3.0 (LP and SIOM)
- Front access tray for better serviceability
- Tool free node cover and drive trays
- Titanium level high efficiency digital power supply

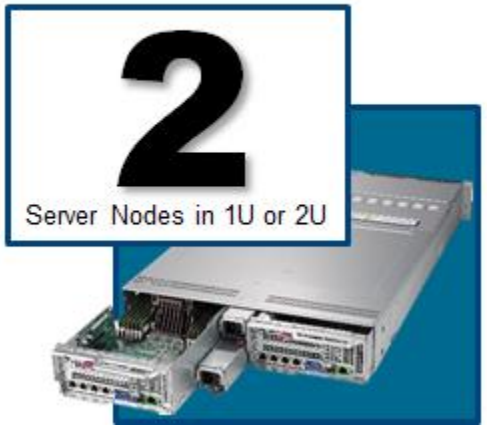
Key Applications:

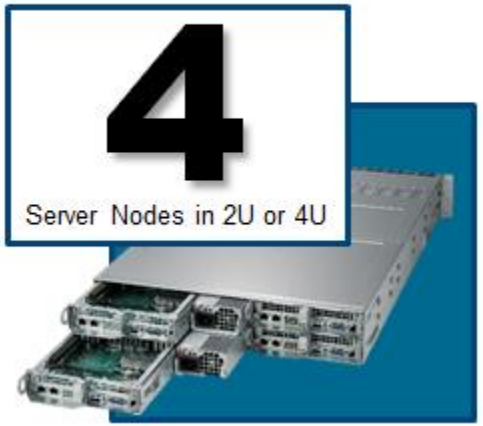
- Hadoop
- Longterm Data Storage

Target release: 8/2018

What is Twin Architecture

A single enclosure containing a number of independent server nodes





Advantages Choosing Any Twin System Over Standard 1U Rackmount Servers

Efficiency

Reduce Power Consumption with Shared or Optimized Cooling Designs

Cables

Less Cables Required as a Result of Shared Power Design

Serviceability

Convenience of Hot-Swappable Node Trays for Servicing

Thank You

https://www.supermicro.com/products/nfo/BigTwin.cfm

For more information, visit www.supermicro.com or contact marketing@supermicro.com

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