



# Open. Together.

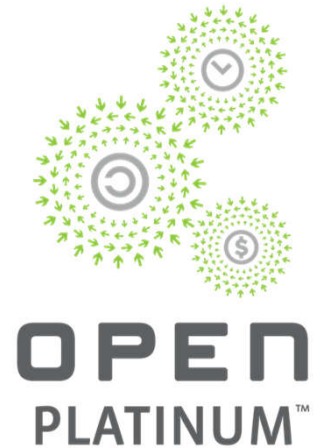


**OCP**  
REGIONAL  
SUMMIT

OpenEDGE Product plans  
from ASUS

# ASUS 3U5N OpenEdge

Nelson Wang,  
General Manager of Enterprise Solutions,  
Asus Computer International





# About Asus ESB Team



TELCO

## Facts About ASUS

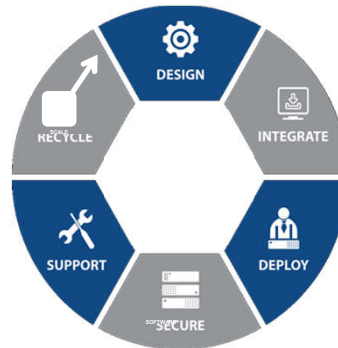
- Established in 1989
- US\$ 15B in revenue
- 17,000 employees worldwide
- No.1 Motherboard manufacturer in the world

## ASUS Server Business Unit

- Started delivering server solutions in 1995
- Server HW innovations
- Channel and ODM /OEM worldwide
- Enterprise & Solution with ESB Team



GLOBAL  
PROFESSIONAL  
SERVICES



APPLICATION  
ORIENTED  
END to END  
SOLUTIONS



INNOVATIVE HW DESIGN  
ON DEMAND  
RACK LEVEL HW  
COMPOSABLE INFRASTRUCTURE

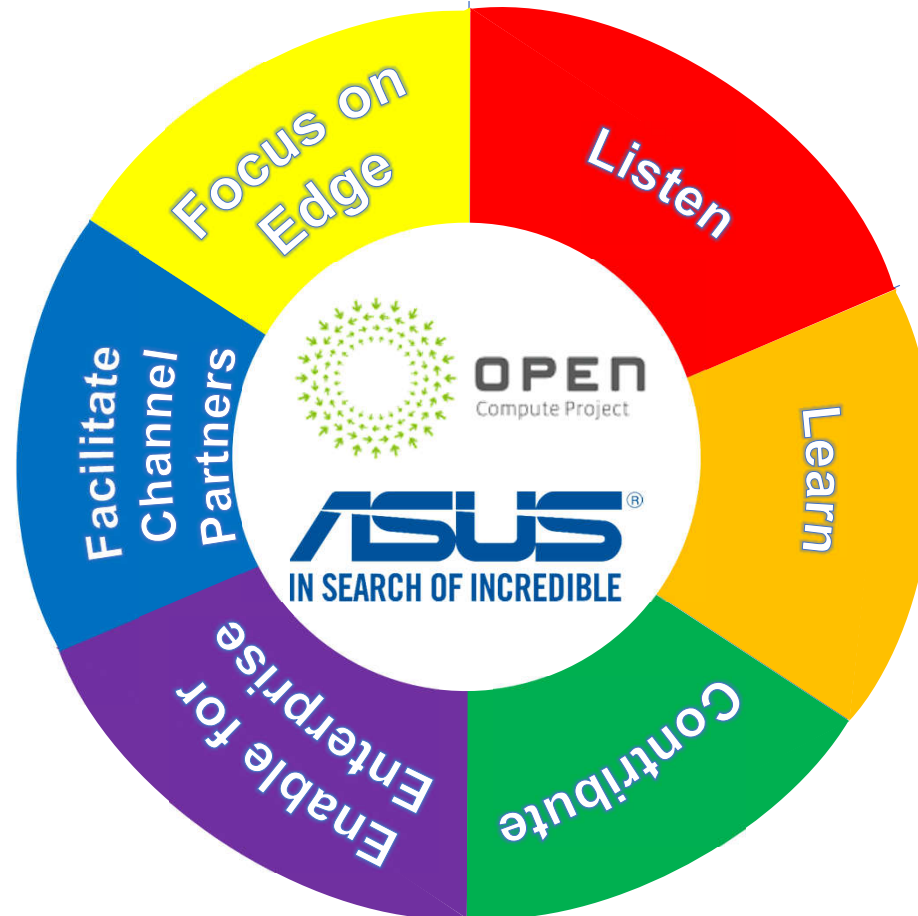


Specifications

# ASUS and Open Source Community



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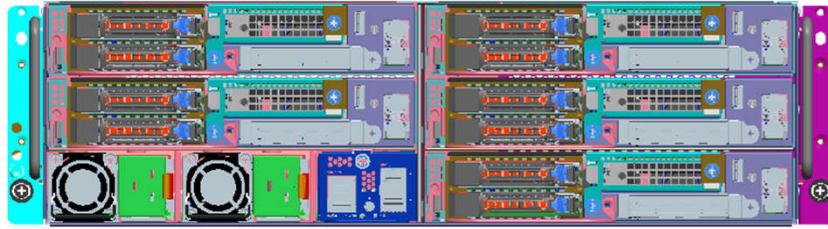
Specifications

# ASUS 3U5N OpenEdge: Capacity & Features

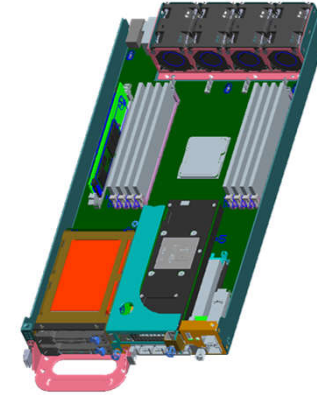


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**3U**



**5x SLED**



**90x Core**



**2,56Tb DDR4**



**5x GPU**



**10x NVMe SSD**



**OCP 3.0 Mezz**  
**20x 25G SFP+**



Specifications



# ASUS 3U5N OpenEdge: XeonD Selection



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| Processor Model | Core Gen | # of Cores | Base Freq | Turbo Freq | TDP   | Price      | Embedded | Max RAM | QAT | Integrated NIC |
|-----------------|----------|------------|-----------|------------|-------|------------|----------|---------|-----|----------------|
| D-2123IT        | Skylake  | 4          | 2.20 GHz  | 3.00 GHz   | 60 W  | \$213.00   | YES      | 512 GB  | NO  | 4 x 10GbE      |
| D-2146NT        | Skylake  | 8          | 2.30 GHz  | 3.00 GHz   | 80 W  | \$641.00   | YES      | 512 GB  | YES | 4 x 10GbE      |
| 4110            | Skylake  | 8          | 2.10 GHz  | 3.00 GHz   | 85 W  | \$501.00   | YES      | 768 GB  | NO  | N/A            |
| D-2187NT        | Skylake  | 16         | 2.00 GHz  | 3.00 GHz   | 110 W | \$1,989.00 | YES      | 512 GB  | YES | 4 x 10GbE      |
| 6130T           | Skylake  | 16         | 2.10 GHz  | 3.70 GHz   | 125 W | \$1,988.00 | YES      | 768 GB  | NO  | N/A            |

## Xeon-D Advantages:

- Wider operating temperature support
- More power efficient
- Longer life cycle

## Xeon-D Disadvantages:

- Longer lead time (CPU must be factory assembly)

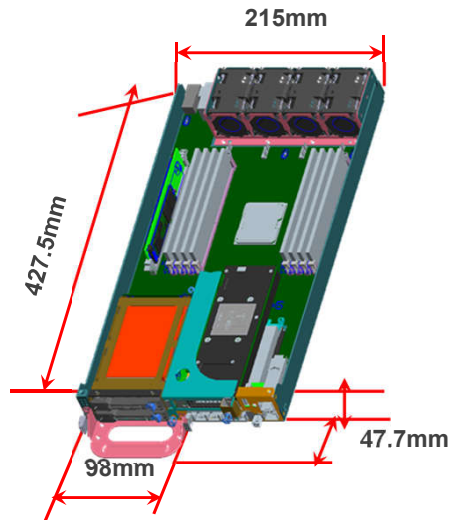
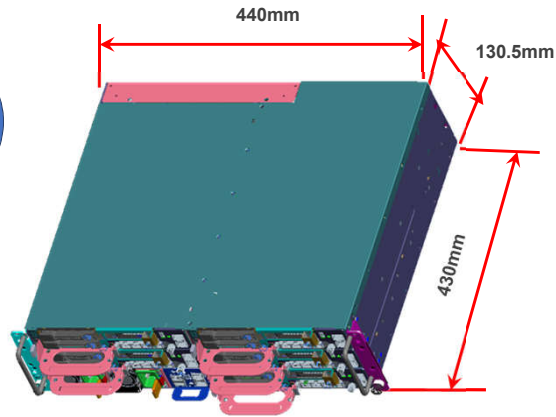


Specifications

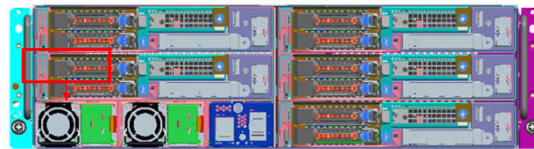
# ASUS 3U5N OpenEdge: Spec & Dimension



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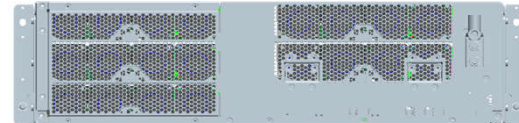


Front Side



1+1 Redundant CRPS  
1600W -48V 80+ Platinum

Rear Side



| Model                      | 3U5N: Per Sled /Node                                                                                         |
|----------------------------|--------------------------------------------------------------------------------------------------------------|
| Processor                  | Intel® Xeon® D processor Scalable family(up to 110W)                                                         |
| Memory Type                | 8 x DIMM<br>DDR4 2666 RDIMM/LRDIMM (2 DIMM per Channel)                                                      |
| Memory Size                | 4GB, 8GB, 16GB, 32GB (RDIMM)<br>32GB, 64GB, 128GB (LRDIMM)                                                   |
| Expansion Slot (Available) | 1 x PCI-E Gen3 x16 (HH,HL)<br>1 x OCP 3.0 Gen3 x 8                                                           |
| Front I/O                  | 1 x USB 2.0 port<br>2 x 10 GbE SFP+ LAN ports (from CPU)<br>Up to 4 x SPF+ LAN ports via OCP 3.0 add on card |
| Networking                 | Intel® X722 + Mgmt Lan (via RMC 10G SFP+)                                                                    |
| HDD/ ODD Bay/ M.2          | Front: 2 x 2.5" 15mm HDD (SATA, SAS, NVMe)<br>Onboard: 2 x M.2(Up to 22110, SATA & PCIe)                     |
| PSU                        | 1+1 1600W -48VDC, or 2200W AC 80+ Platinum Redundant CRPS                                                    |
| Server Management          | ASMB9-iKVM Onboard                                                                                           |
| Dimension (W x H x D)      | 130.5mm(H) x 440mm(W) x 430mm(D); standard 3RU short.                                                        |
| Weight (Full System)       | 20KG (TBD)                                                                                                   |

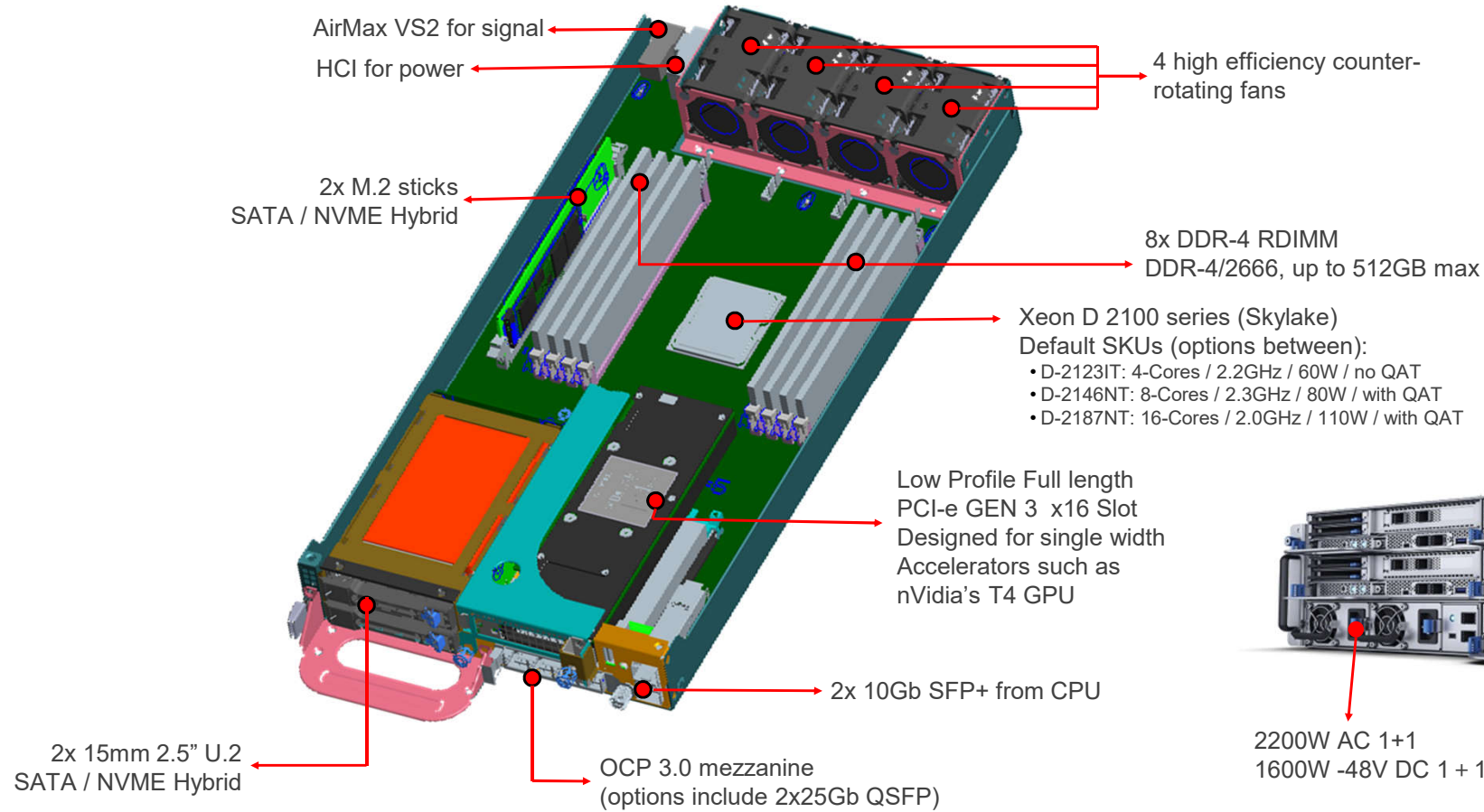


Specifications

# ASUS 3U5N OpenEdge: Compute Sled



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2200W AC 1+1  
1600W -48V DC 1 + 1



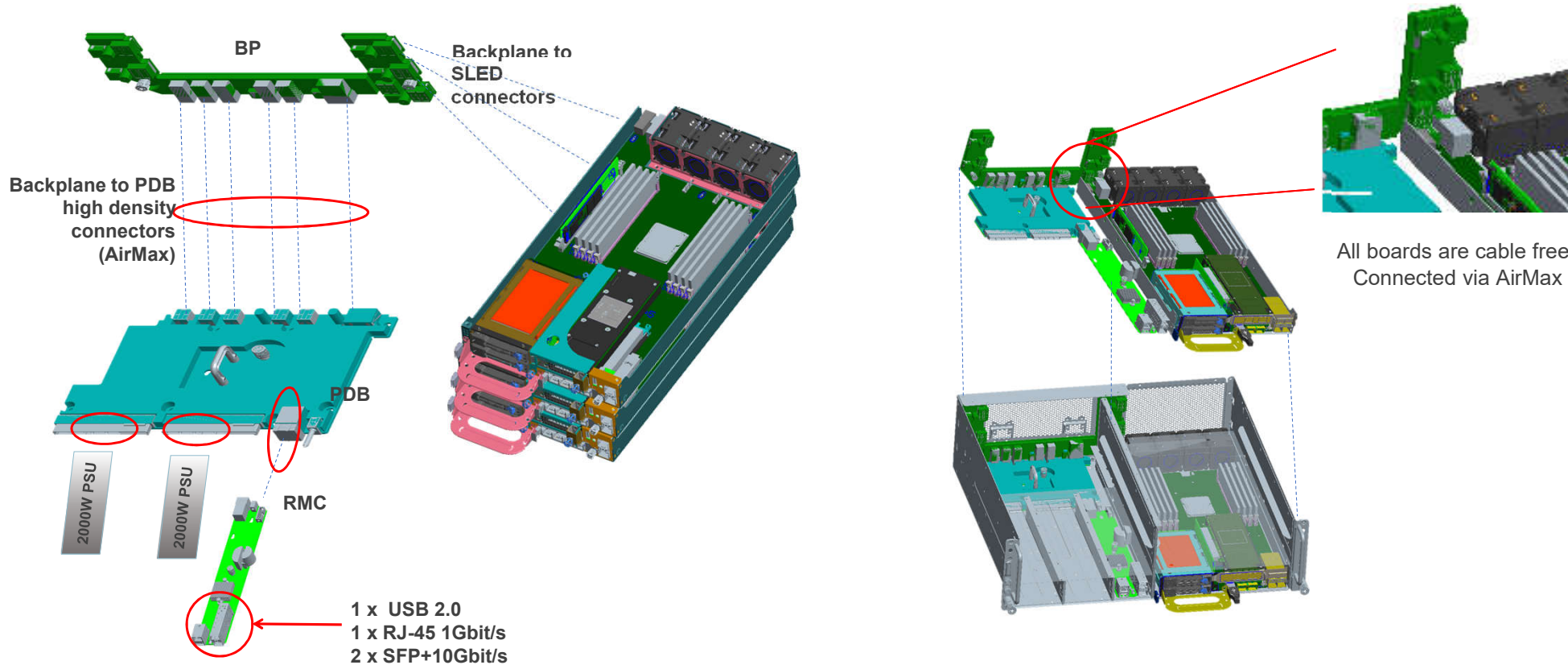
Specifications



# ASUS 3U5N OpenEdge: Cable Free Design



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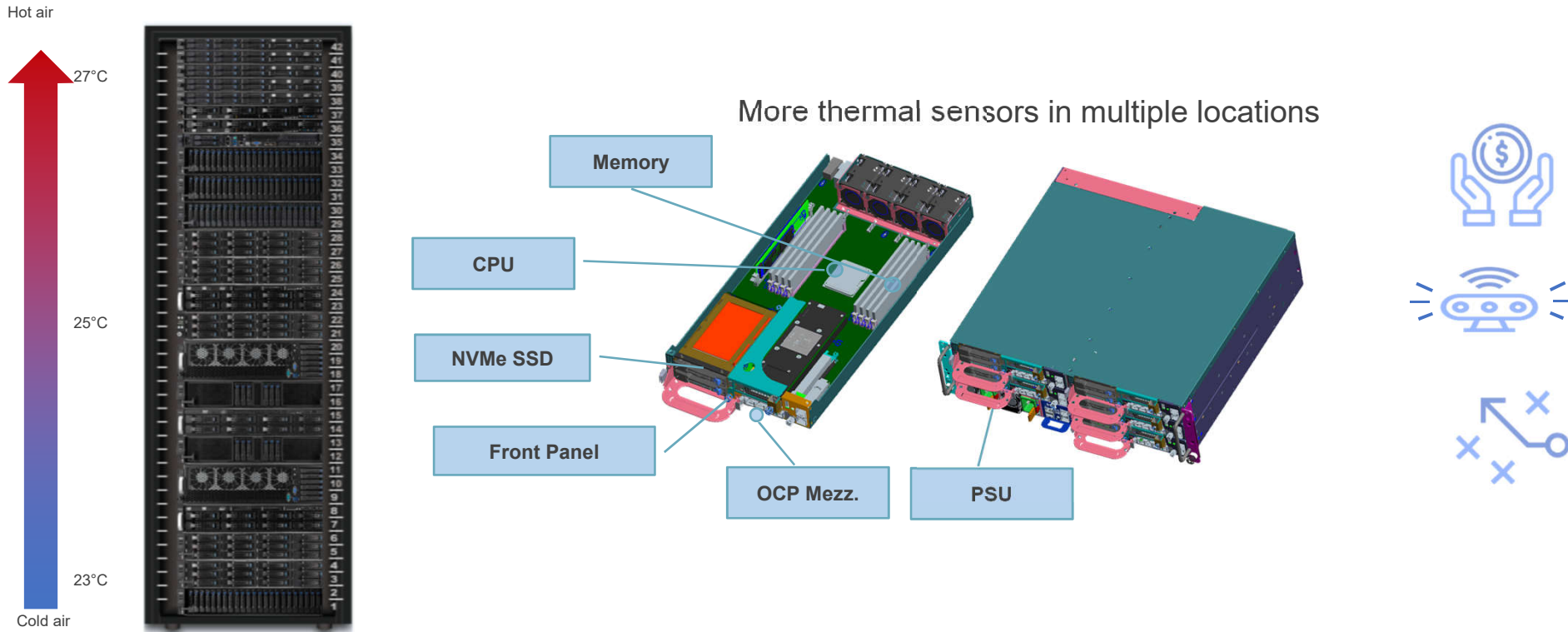
Specifications

# ASUS 3U5N OpenEdge: Thermal Radar 2.0

The Thermal Radar design provides internal and external temperature monitoring and enables dynamic fan curve adjustment, lowering fan power consumption up to 20% and reducing TCO which is ideal for extreme workload data center.



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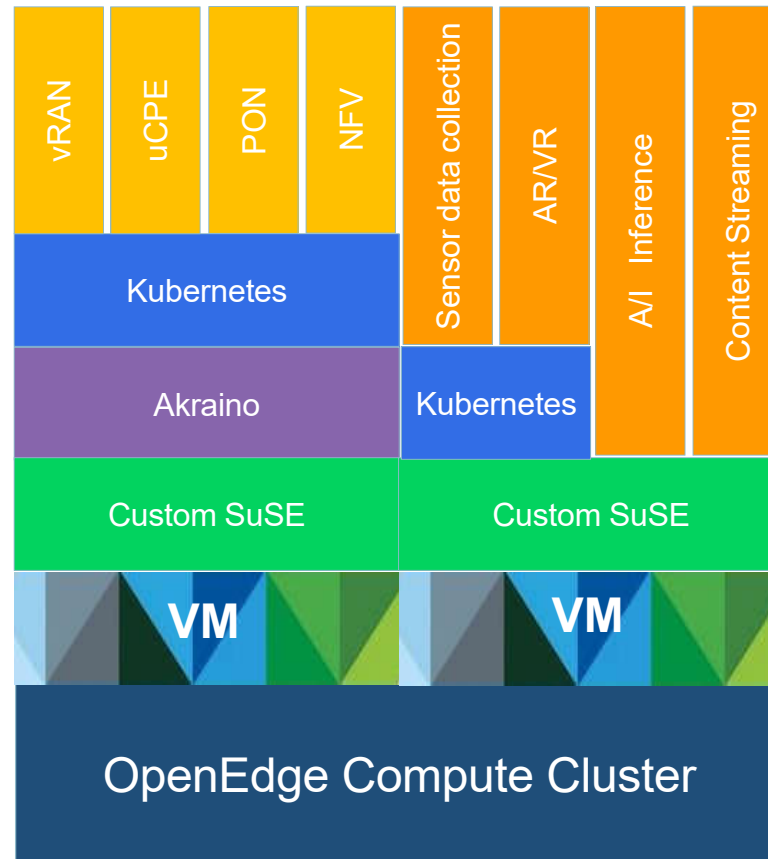
# ASUS 3U5N OpenEdge: Akraino



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## Deployment Model:

- Minimum Order Product =
  - OpenEdge Chassis
  - OpenEdge Compute Sled
  - Pre-select CPU: 4/8/16 cores
  - Custom configurable with memory and drive device
- Complete System :  
OpenEdge Chassis + OpenEdge Compute Sled
- Complete System + Akraino :  
Akraino on top of custom SuSE for quick boot
- Complete System + Akraino + Kubernetes :  
Akraino on top of custom SuSE for quick boot  
+ custom configurable Kubernetes Ready Node



Specifications



# Potential Config & Use Case 1

Standard Compute

Usage Cases:

- Packet Routing, inspection, security, etc.
- Content delivery, media streaming

Configuration Options:

| CPU                             | RAM           | Storage              | Networking                         |
|---------------------------------|---------------|----------------------|------------------------------------|
| D-2123IT<br>(4-Cores / 2.2GHz)  | 64GB          | 1TB / 2TB NVME       | Onboard 2x10Gb                     |
| D-2146NT<br>(8-Cores / 2.3GHz)  | 128GB         | 2TB / 4TB NVME       | Onboard 2x10Gb<br>Or OCP 2x 25Gb   |
| D-2187NT<br>(16-Cores / 2.0GHz) | 128GB / 256GB | 4TB – 6TB – 8TB NVME | Onboard 2x10Gb<br>Or OCP 2/4x 25Gb |



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# Potential Config & Use Case 2

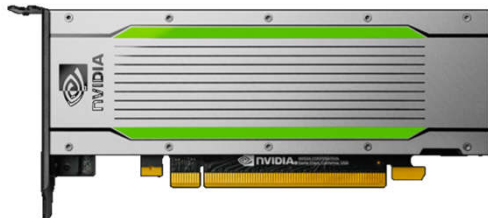
## GPU Edge Computing

### Usage Cases:

- Autonomous Driving
- AR/VR
- A/I Inferencing

### Configurations:

- Add nVidia T4 GPU



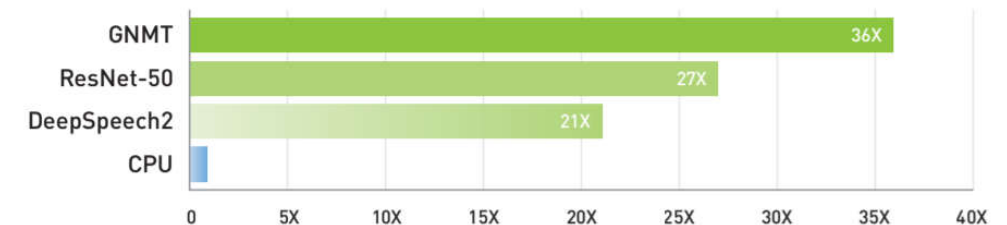
#### SPECIFICATIONS

|                             |                                     |
|-----------------------------|-------------------------------------|
| GPU Architecture            | <b>NVIDIA Turing</b>                |
| NVIDIA Turing Tensor Cores  | <b>320</b>                          |
| NVIDIA CUDA® Cores          | <b>2,560</b>                        |
| Single-Precision            | <b>8.1 TFLOPS</b>                   |
| Mixed-Precision (FP16/FP32) | <b>65 TFLOPS</b>                    |
| INT8                        | <b>130 TOPS</b>                     |
| INT4                        | <b>260 TOPS</b>                     |
| GPU Memory                  | <b>16 GB GDDR6<br/>300 GB/sec</b>   |
| ECC                         | <b>Yes</b>                          |
| Interconnect Bandwidth      | <b>32 GB/sec</b>                    |
| System Interface            | <b>x16 PCIe Gen3</b>                |
| Form Factor                 | <b>Low-Profile PCIe</b>             |
| Thermal Solution            | <b>Passive</b>                      |
| Compute APIs                | <b>CUDA, NVIDIA TensorRT™, ONNX</b> |



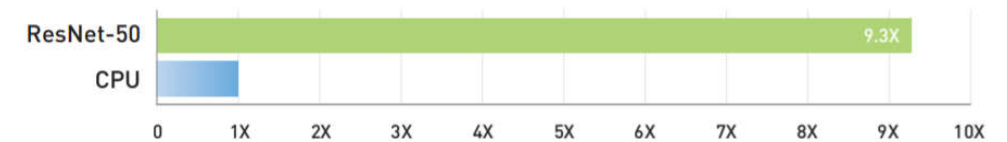
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#### Inference Performance



Comparisons made of one NVIDIA Tesla T4 GPU and servers with a dual-socket Xeon Gold 6140 CPU.

#### Training Performance



Comparison made between dual NVIDIA Tesla T4 GPUs and servers with a dual-socket Xeon Gold 6140 CPU.

# Potential Config & Use Case 3

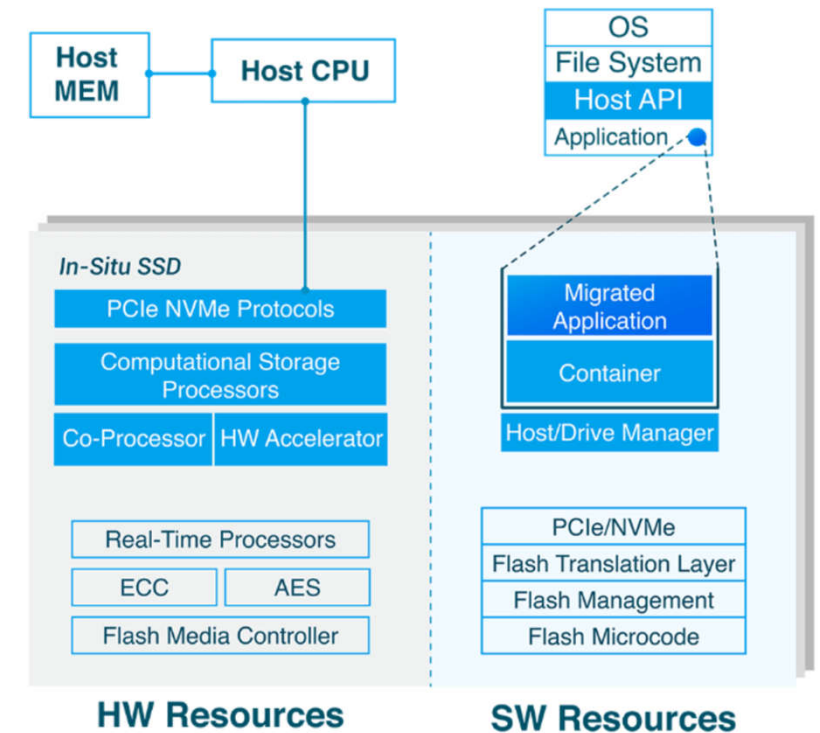
Computational Storage

Usage Cases:

- A/I Inferencing
- Machine Learning
- Image Recognition
- Automotive A/I
- CDN & Content Stream

Configurations:

- Use NGD Systems' Computational NVME



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# Edge Data Center Partner: Vapor IO

VAPOR KINETIC EDGE



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## Nationwide network

The Kinetic Edge is a nationwide network of edge data centers, tightly integrated into the wireless network for the lowest possible latency.

## Remote operation

Kinetic Edge sites are designed to be operated remotely, drastically lowering the time, cost and effort required to keep them running smoothly 24/7, 365.

## Purpose-built technology

Instead of repurposing old technologies, the Kinetic Edge relies on technology built from the ground up for edge. Build your success on a cutting-edge foundation.

## Flexible and performant

The Kinetic Edge enables high-performance multi tenancy, custom topologies and interconnection with carriers, network partners and other data centers.



# Open. Together.

# Call to Action

- How to get involved in the project
  - Design and contribute OpenEdge Compute Node based on XeonD
  - Develop and contribute OpenRMC Codes
- Timeline for Contribution Availability
  - Q4/2019
- Schedule if product is being promoted
  - Q4/2019 – Q1/2020
- Link to Contribution/Marketplace on OCP website
  - TBA
- Where to find additional information (URL links)
  - TBA



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Specifications





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OCP Regional Summit  
26–27, September, 2019