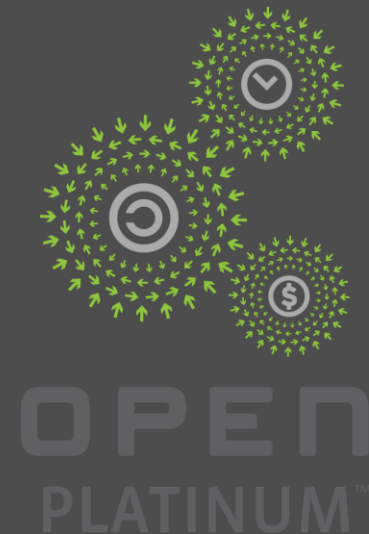




ASUS 3U5N OpenEdge

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

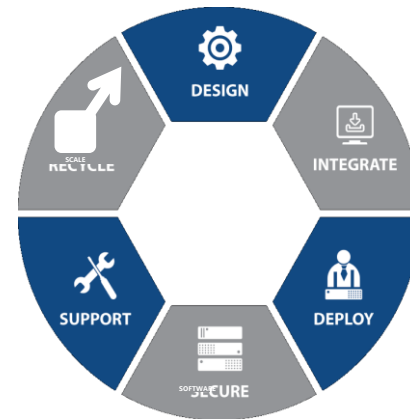


Facts About ASUS

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



**GLOBAL
PROFESSIONAL
SERVICES**



**APPLICATION
ORIENTED
END to END
SOLUTIONS**

ASUS Server Business Unit

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

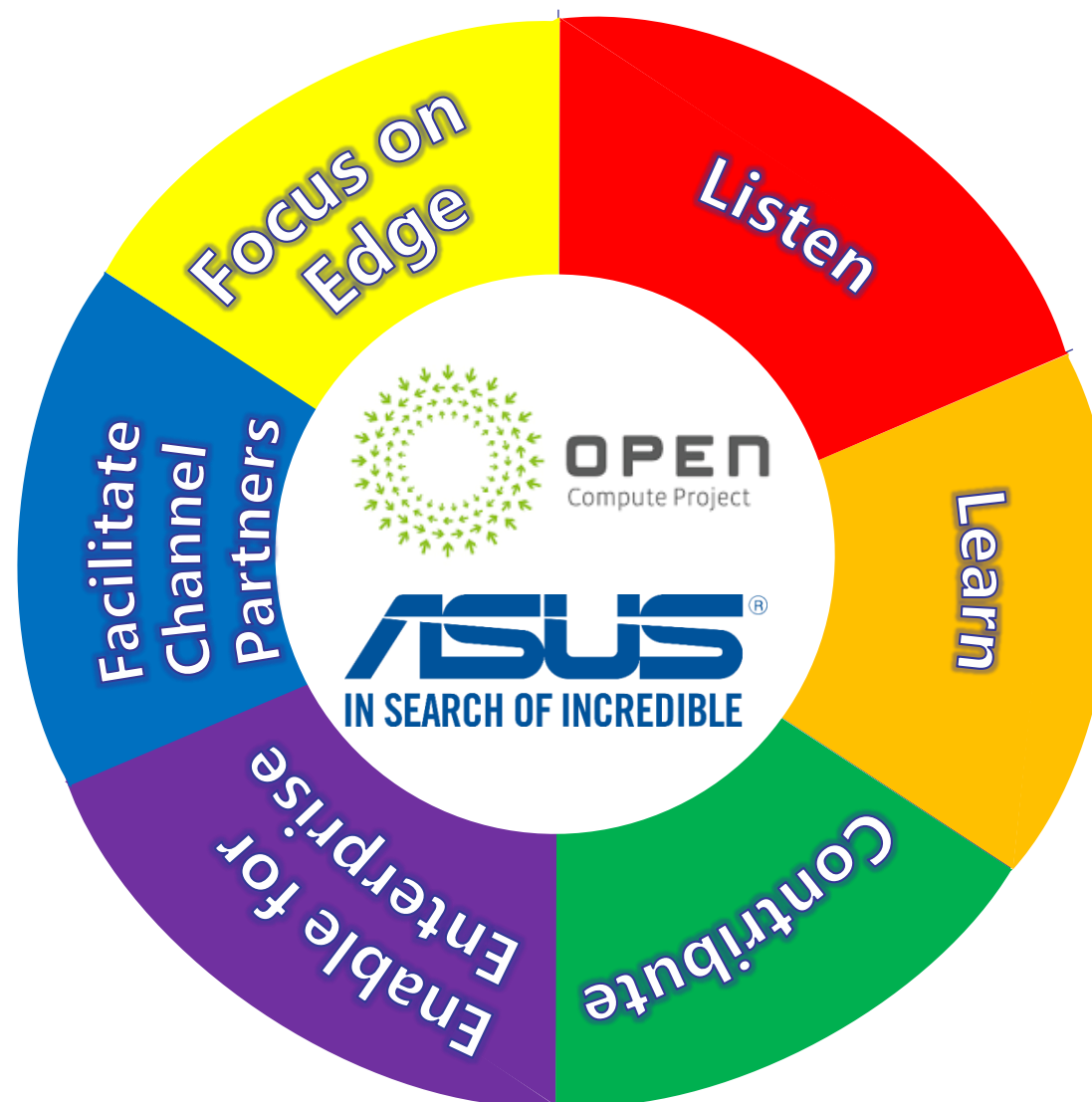
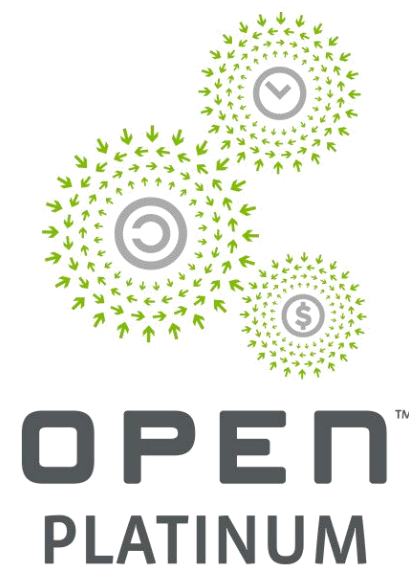


**INNOVATIVE HW DESIGN
ON DEMAND
RACK LEVEL HW
COMPOSABLE INFRASTRUCTURE**



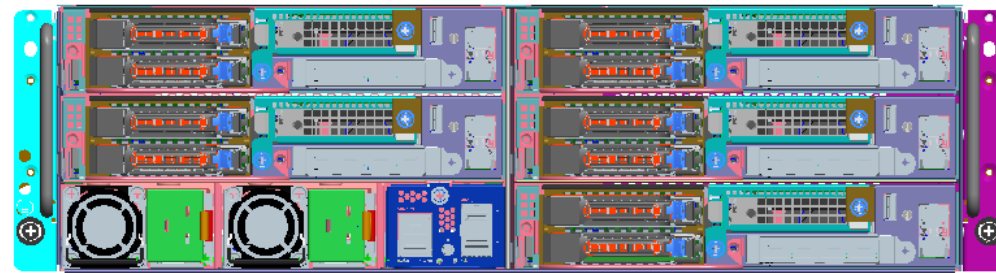
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About Asus ESB Team

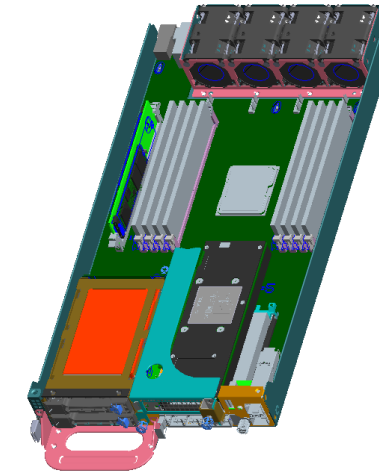


ASUS and Open Source

3U



**5x
SLED**



90x Core



2,56Tb DDR4



5x GPU



10x NVMe SSD



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



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ASUS 3U5N OpenEdge: Capacity & Features

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

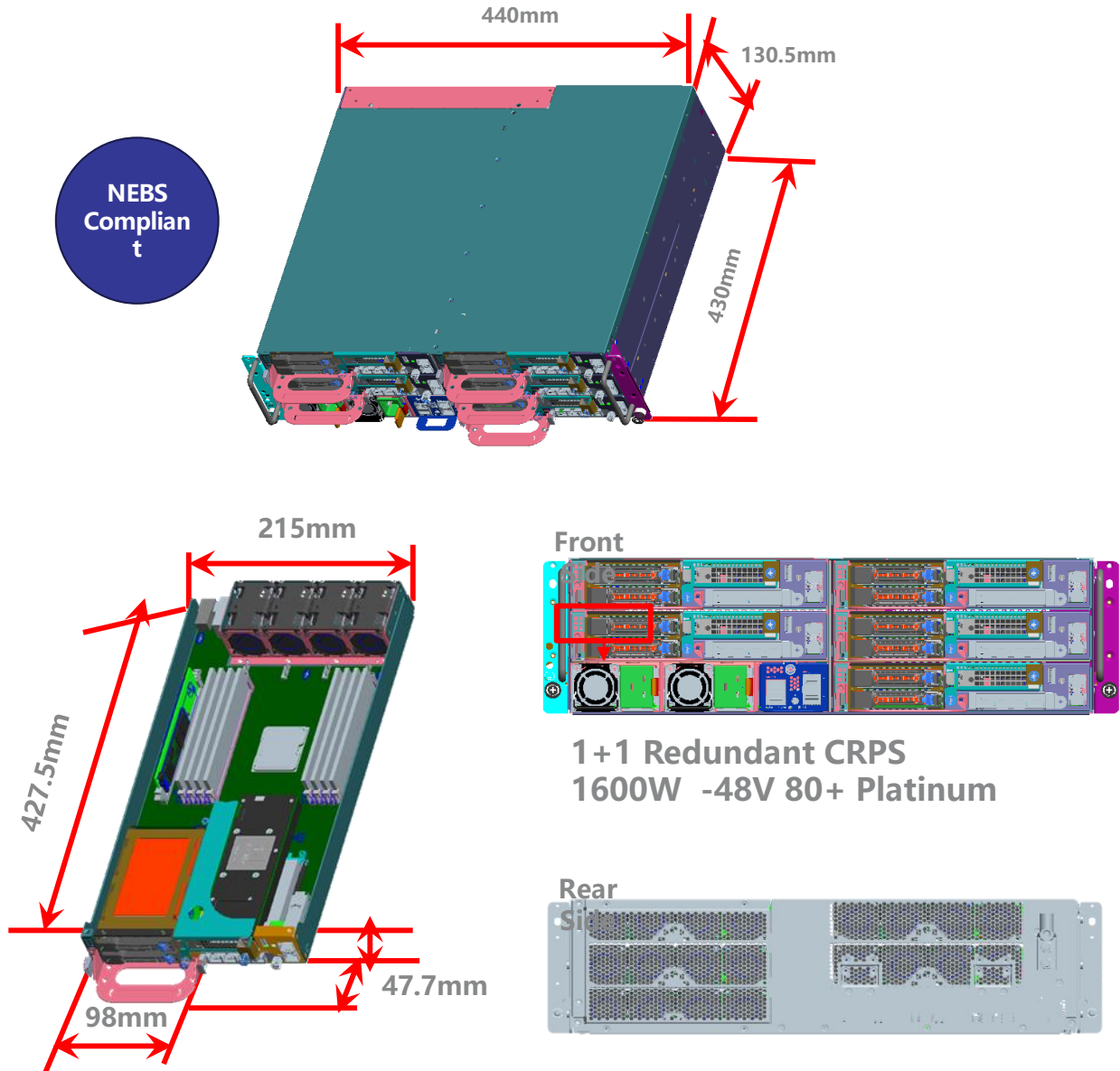
- Xeon-D Advantages:
 - Wider operating temperature support
 - More power efficient
 - Longer life cycle
- Xeon-D Disadvantages:
 - Longer lead time (CPU must be factory assembly)



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ASUS 3U5N OpenEdge: XeonD Selection



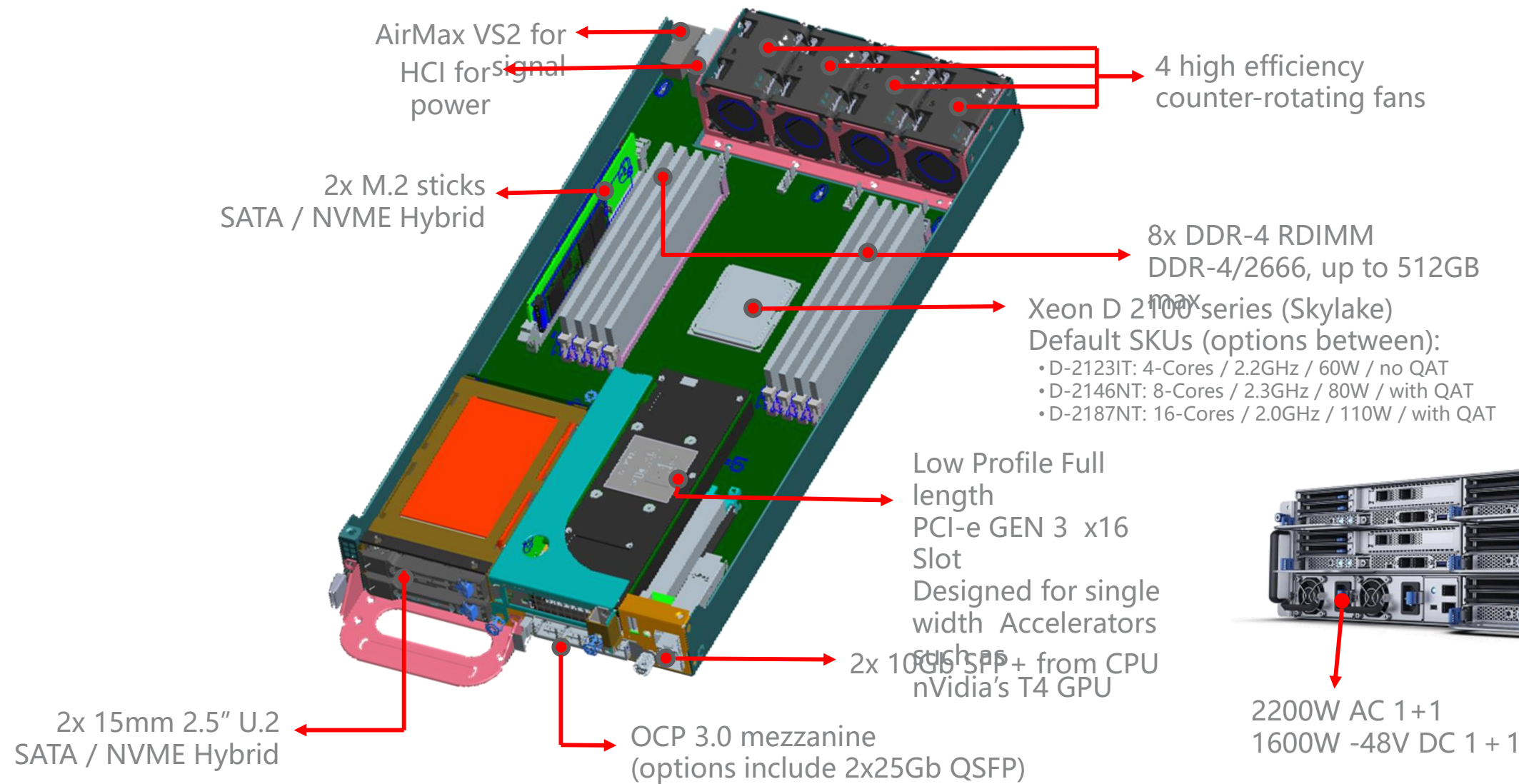


Model	3U5N: Per Sled /Node
Processor	Intel® Xeon® D processor Scalable family(up to 110W)
Memory Type	8 x DIMM DDR4 2666 RDIMM/LRDIMM (2 DIMM per Channel)
Memory Size	4GB, 8GB, 16GB, 32GB (RDIMM) 32GB, 64GB, 128GB (LRDIMM)
Expansion Slot (Available)	1 x PCI-E Gen3 x16 (HH,HL) 1 x OCP 3.0 Gen3 x 8
Front I/O	1 x USB 2.0 port 2 x 10 GbE SFP+ LAN ports (from CPU) 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) 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)



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ASUS 3U5N OpenEdge: Spec & Dimension

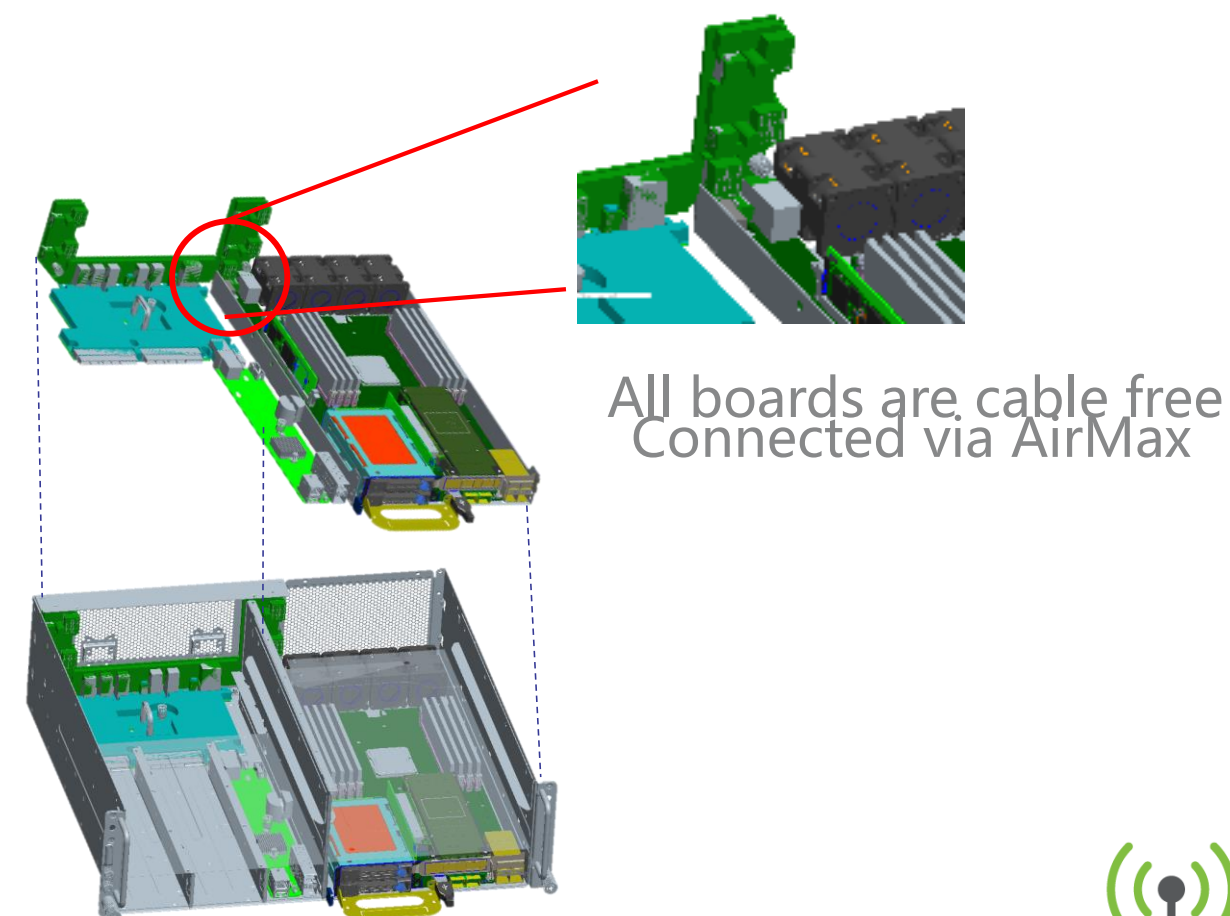
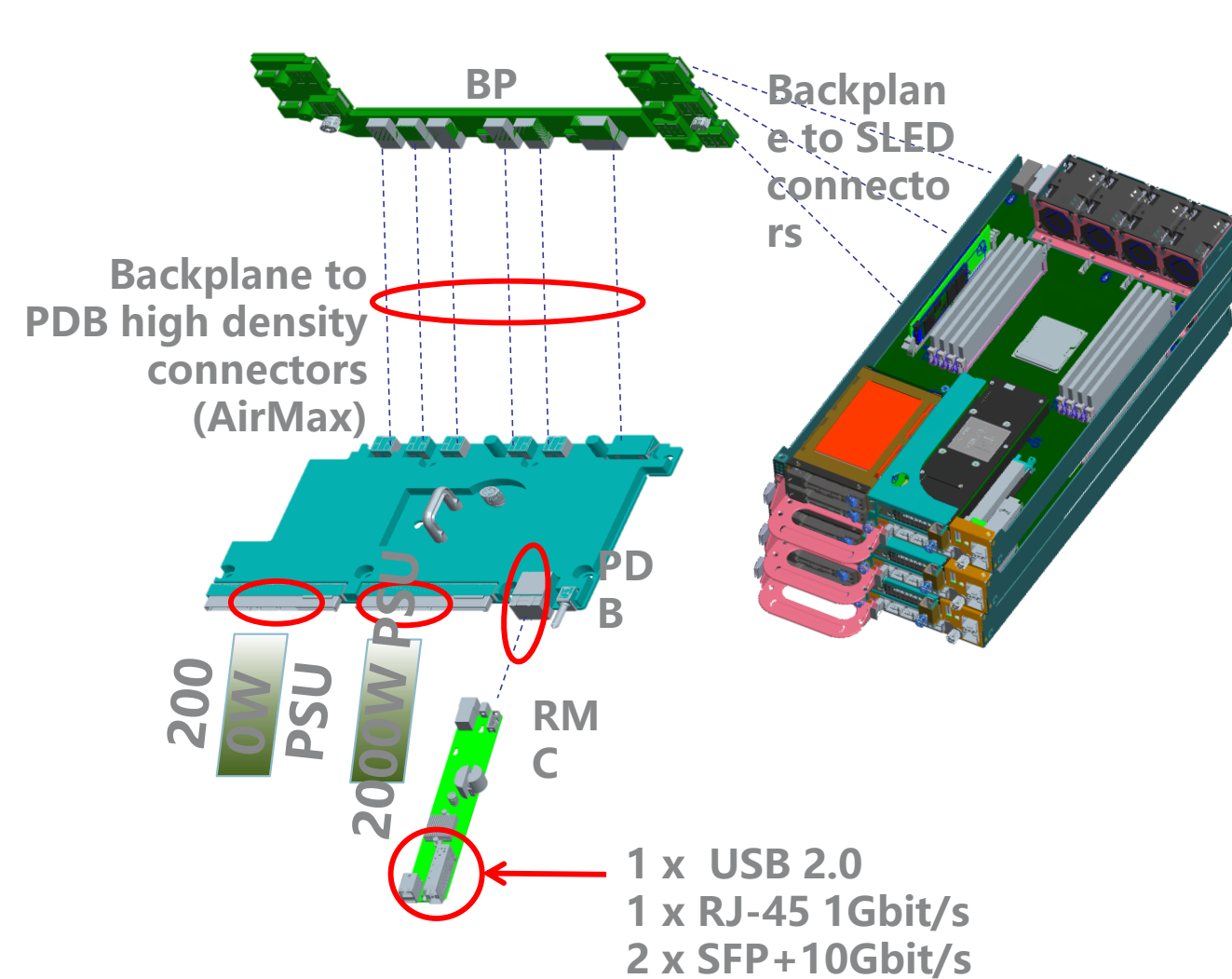


2200W AC 1+1
1600W -48V DC 1 + 1



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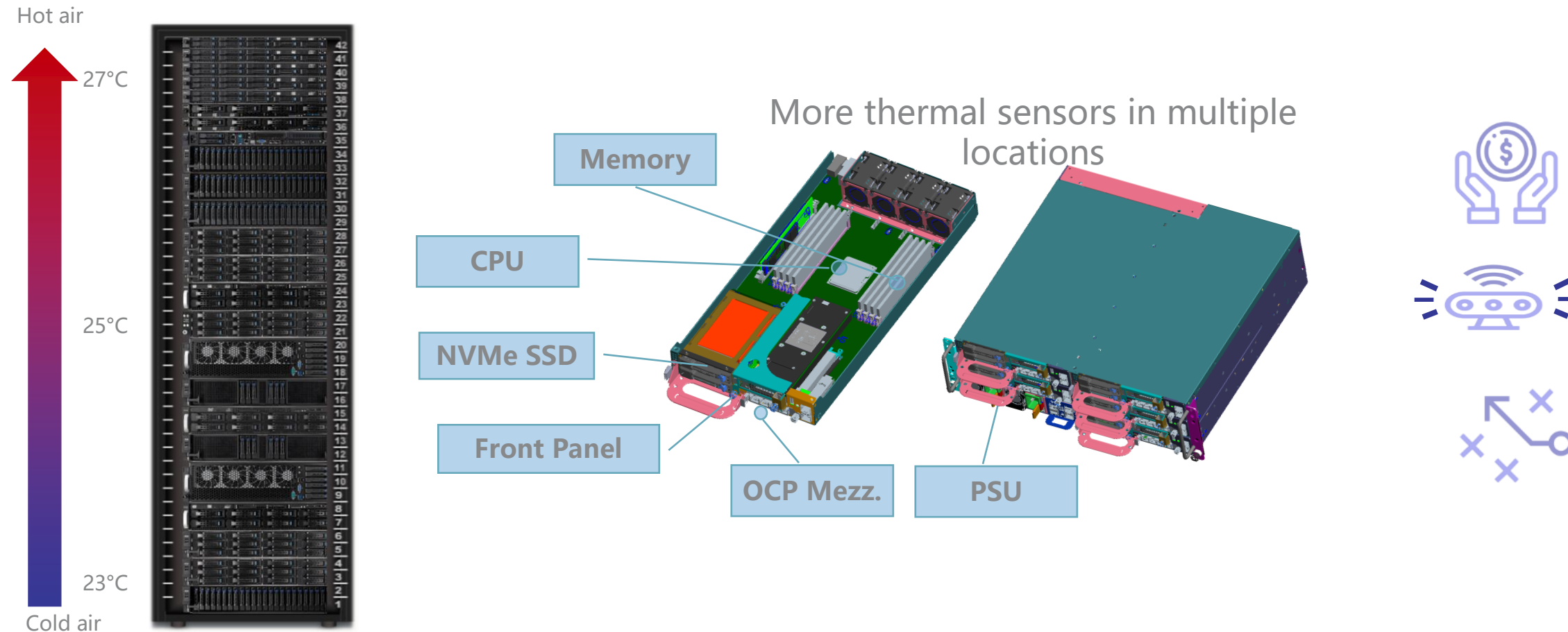
ASUS 3U5N OpenEdge: Compute Sled



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ASUS 3U5N OpenEdge: Cable Free Design

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.



Economic

Reduce fan power consumption and lower down TCO.

More Sensors

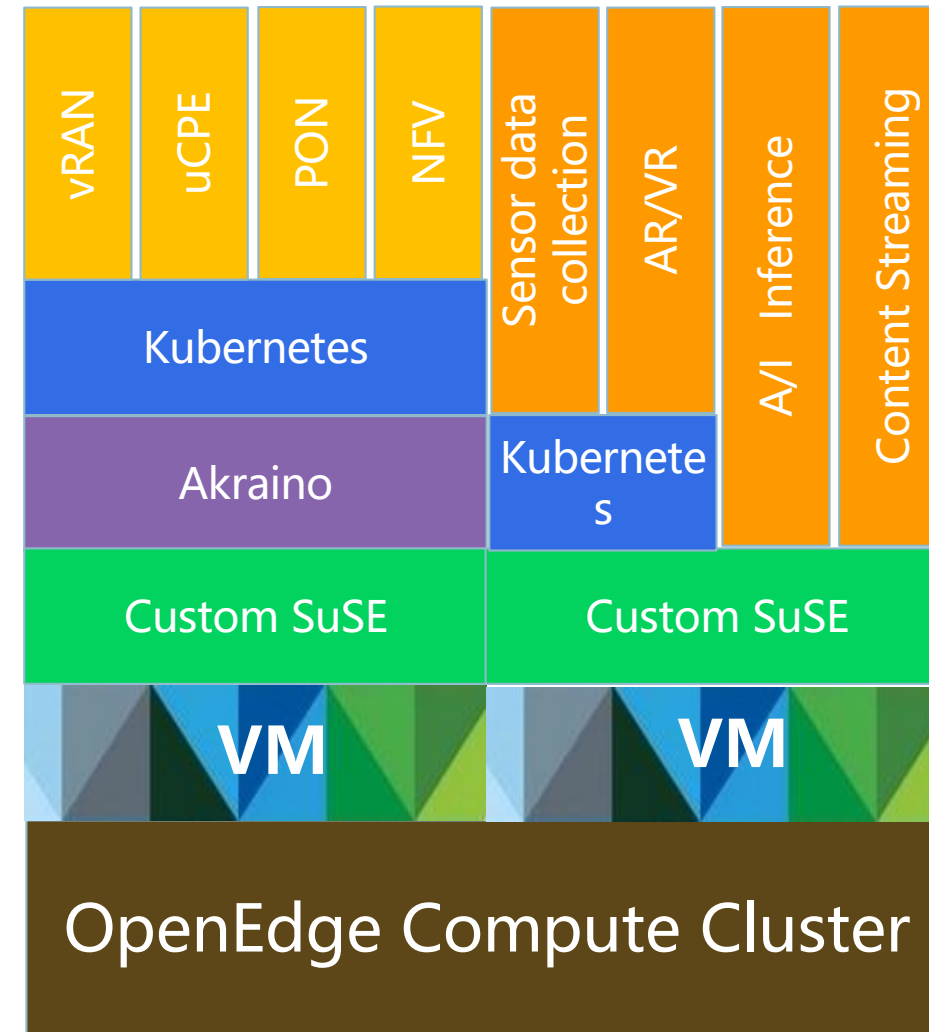
Up to 56 ambient sensors on selected models in Thermal Radar 2.0

Intelligent Adjustment

Provides more precise internal and external temperature monitoring and enables dynamic fan curve adjustment for different fan zones.

ASUS 3U5N OpenEdge: Thermal Radar 2.0

- 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



ASUS 3U5N OpenEdge: Akraino

- Standard Compute
- Usage Cases:
 - Packet Routing, inspection, security, etc.
 - Content delivery, media streaming
- Configuration Options:

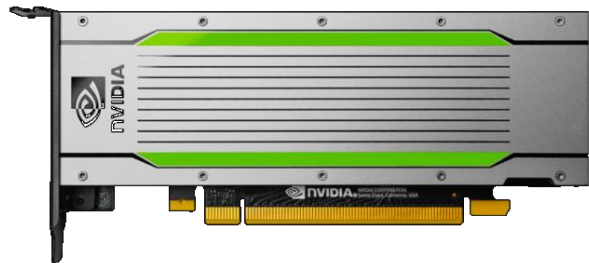
CPU	RAM	Storage	Networking
D-2123IT (4-Cores / 2.2GHz)	64GB	1TB / 2TB NVME	Onboard 2x10Gb
D-2146NT (8-Cores / 2.3GHz)	128GB	2TB / 4TB NVME	Onboard 2x10Gb Or OCP 2x 25Gb
D-2187NT (16-Cores / 2.0GHz)	128GB / 256GB	4TB – 6TB – 8TB NVME	Onboard 2x10Gb Or OCP 2x 25Gb



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Potential Config & Use Case 1

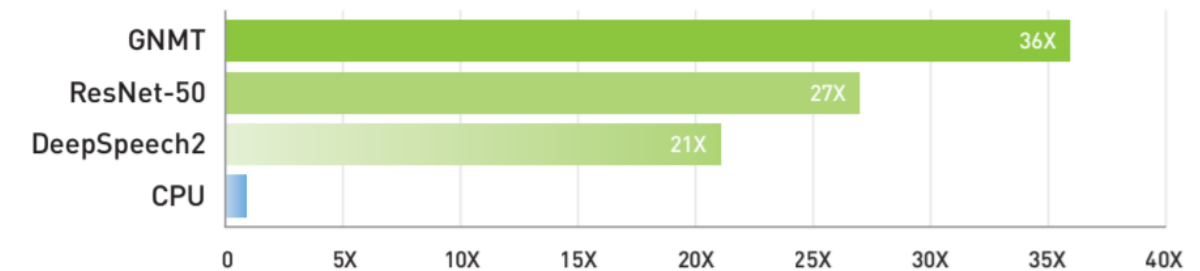
- GPU Edge Computing
- Usage Cases:
 - Autonomous Driving
 - AR/VR
 - A/I Inferencing
- Configurations:
 - Add nVidia T4 GPU



SPECIFICATIONS

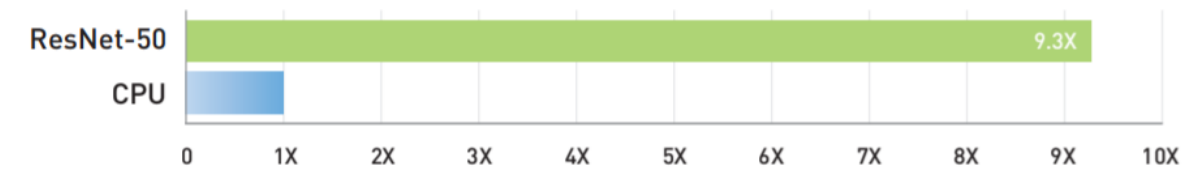
GPU Architecture	NVIDIA Turing
NVIDIA Turing Tensor Cores	320
NVIDIA CUDA® Cores	2,560
Single-Precision	8.1 TFLOPS
Mixed-Precision (FP16/FP32)	65 TFLOPS
INT8	130 TOPS
INT4	260 TOPS
GPU Memory	16 GB GDDR6 300 GB/sec
ECC	Yes
Interconnect Bandwidth	32 GB/sec
System Interface	x16 PCIe Gen3
Form Factor	Low-Profile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

Inference Performance



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

Training Performance



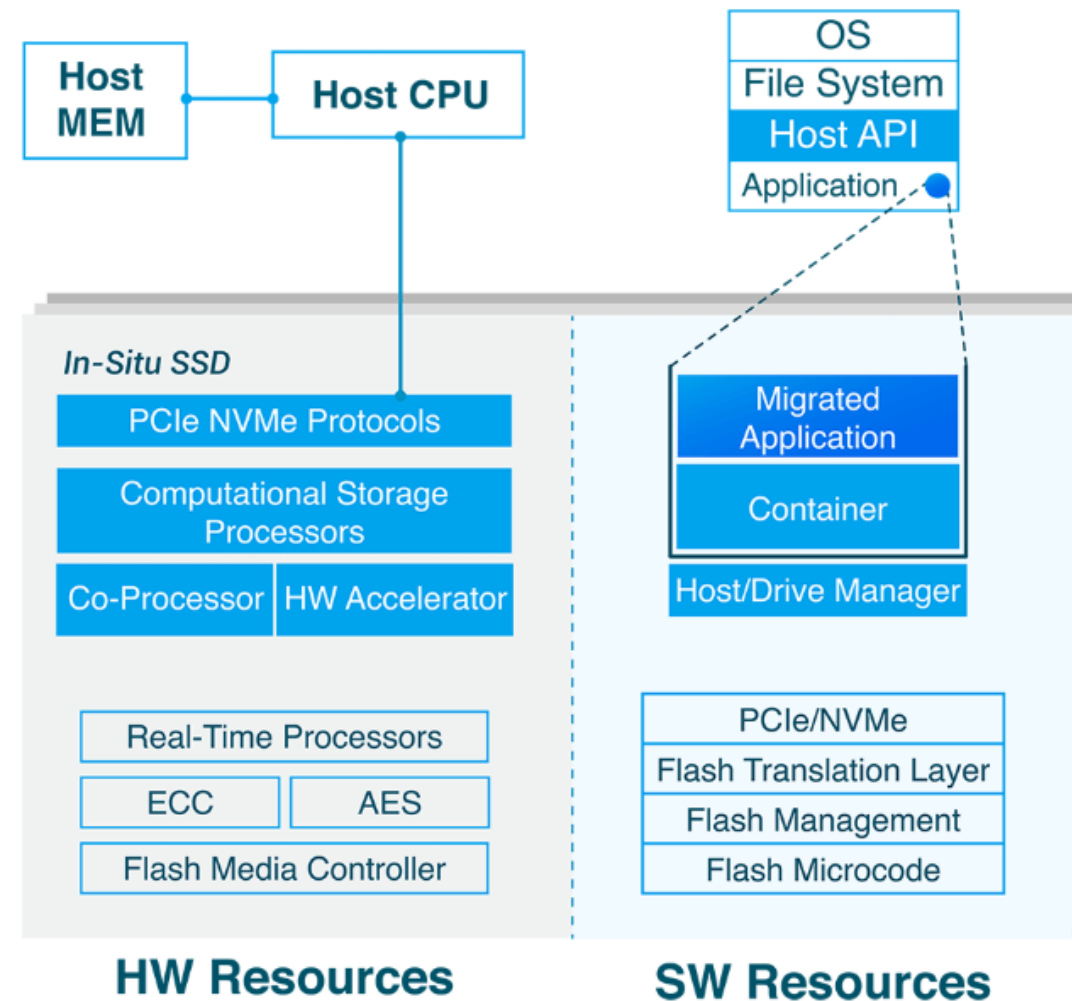
Comparison made between dual NVIDIA Tesla T4 GPUs and servers with a dual-socket Xeon Gold 6140 CPU.



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Potential Config & Use Case 2

- 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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Potential Config & Use Case 3

- VAPOR KINETIC EDGE



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.



TELCO

Edge Data Center Partner: Vapor IO

THANK
OPEN
Compute Project
YOU
OPEN
Compute Project