



CIM Technical Specification

Smart Top-Of-Rack (TOR) Switch for Data Center

CIMware, a Deep-Tech startup developing a Revolutionary, the world's first Top-of-Rack (ToR) Smart Switch to envisage cloud infrastructure as one super-computer. Our ToR switch CIM – Composable Infrastructure Module, will compose all the unused and shared resources as one computing server to improve the efficiency of the Data centre operations.

CIM will create a Homogeneous memory space from a Heterogeneous Server memory as a Memory Management Unit.

Constraints in the Current Data Center Ecosystem

- Due to the growing amount of Data generated by social media, IoT, on-demand video, and other digital technologies, Data centers need to be scaled up with disruptive architecture and software to meet increasing demands for compute, storage, and network capacity.
- Data centers use an enormous amount of Water for cooling. A single data center can consume up to 5 million gallons of drinking water per day, enough to supply thousands of households or farms. The increasing use and training of AI models has further exacerbated the water consumption challenges faced by Data centers.
- Data centers will be constrained by Physical space, Power limitations, and outdated infrastructure, making it hard to adapt to rising demands. The need of the hour is to offset these challenges by building data centers with scalability and sustainability at its core.

CIM – A clear Advantage

- CIM's Solution will require lesser number of CPUs in Data Centers.
- The average spend for a Rack in a Data centre is approximately US\$ 2.4 Million.
- CIM's Solution will cost US\$ 0.84 Mn offering a Saving of 66% in Capex.
- A Unit of 30 Servers & 5 Racks will consume 6 MW power/day.
- CIM will bring down the Consumption by 25% as only One CPU would be required for every 4 Servers.
- The Carbon Emission for a 3 Ton HVAC would be 57 KG per day. CIM will reduce the carbon footprint as lesser Number of HVAC would be required to run the Data Center.

CapEx of rack with traditional ethernet technology (without server + storage price)				
Description	Price / Unit	Units / Rack	3 Yrs Support / Unit	SUM
1U Managed Ethernet Switch	\$ 95,000.00	2	\$ 100,000.00	\$ 390,000.00
Dual Ported NiC	\$ 500.00	30	\$ 150.00	\$ 19,500.00
SDN	\$ 250,000.00	4	\$ 100,000.00	\$ 1,400,000.00
SDS	\$ 100,000.00	4	\$ 50,000.00	\$ 600,000.00
Cables	\$ 150.00	30		\$ 4,500.00
SUM of CapEx				\$ 2,414,000.00
CapEx of rack with CIM - without server price				
CIM	\$ 300,000.00	2	\$ 45,000.00	\$ 690,000.00
NiCs	\$ -	0		\$ -
SDN			\$ 45,000.00	\$ 45,000.00
SDS			\$ 45,000.00	\$ 45,000.00
Cables	\$ 150.00	30		\$ 4,500.00
SUM of CapEx				\$ 784,500.00

Rack	Power Consumption KW / hour	Power Consumption of Rack/Day in KW	For 5 Racks, 6 mega watts / day
30 Servers (30x1500W)	45	1080	
2 x L2/L3 switches (2 x 1000W)	2	48	
3 Tonne HVAC	3	72	
SUM		1200	
HVAC in Ton	Carbon Emission KG / Day	Source	For 5 Racks, 57 KG / Day
1.5	5.728	American Journal of Engineering Research - http://www.ajer.org/papers/v2(4)/I0247274.pdf	
3	11.456		



Models	CIM5024
NPU	AMD EPIC 9365
Form Factor	1 U
Performance	
Switching Capacity (Tbps, Full Duplex)	24 * 512 * 2 <i>(Number of Ports×Port Speed)×2=Switching Capacity</i>
Buffer size (MB)	512
Latency (ns)	NA
Ports	
512 Gbps (QSFP56-DD)	24
Power and Cooling	
Power Consumption (W)	500
Power Options	AC
Redundant Power	2 hot swappable
Airflow	Normal
Features	
Operating System	CIMOS
Raid Support	Yes
Network as a Service	Yes
Storage as a Service	Yes