



UltraStack Datasheet

Why Liquid

Liquid offers unparalleled GPU density and efficiency, redefining high-performance computing and delivering significant cost savings in power and software, all with immediate availability.

Key Advantages

- » Unmatched GPU Density: The world's first 16-way NVIDIA L40S system, delivering unprecedented computational density.
- » Immediate Productivity: Leverages shorter GPU lead times to expedite deployment and accelerate productivity.
- » Energy and Cost-Efficient: Ensures operational cost-efficiency with significant reductions in power and software expenses.

Key Features:

- » 8-way and 16-way systems with ubiquitous NVIDIA L40S GPUs.
- » Built on Dell PowerEdge R760xa.
- » 35% higher performance.
- » 35% reduction in power.
- » 75% reduction in software licensing costs.

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Liquid UltraStack

Satisfy High GPU Density Demand

Overview

In the ever-evolving landscapes of Artificial Intelligence (AI), High-Performance Computing (HPC), and graphics-intensive workloads, computational demands are quickly outpacing the capacity of traditional servers, many of which have a maximum of 4 to 8 GPUs each. Furthermore, the constraints of high GPU lead times further complicate their ability to meet the performance demands.

Introducing Liquid UltraStack

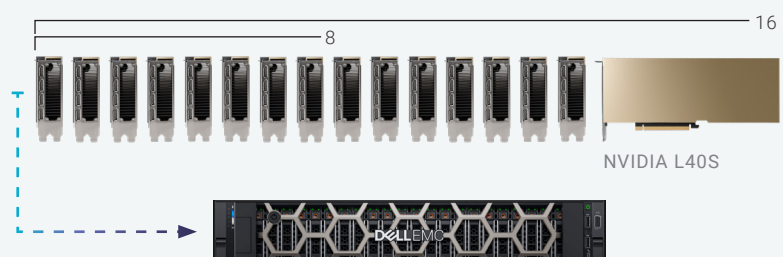
The Liquid UltraStack reference architecture represents a paradigm shift in server design that addresses these issues directly and immediately. The UltraStack transforms 2U servers into complete 8- and 16-way GPU systems that are readily available today.

Liquid has designed the UltraStack around Dell Technologies PowerEdge R760xa servers and NVIDIA L40S GPUs. It is available in several variations that provide requisite resources for seamless deployment at scale. UltraStack leverages Liquid Matrix software composability to enable the allocation of key resources to the Dell R760xa server, including up to 16 NVIDIA L40S GPUs, 16 NICs, 8 NVMe drives, and Data Processing Units (DPUs). The included RDMA Peer-2-Peer technology between GPUs and other devices can enable up to a 10x performance improvement.

Liquid UltraStack L40S reference architecture emerges as a powerful solution to the intensive demands of AI, Large Language Models (LLM), HPC, and graphics-heavy applications. Purpose-built for unparalleled GPU density and performance, Liquid UltraStack stands as a testament to innovation, redefining what's possible in high-density GPU systems and positioning organizations to lead in the computational race.

A High-Density GPU Reference Architecture for Dell Servers

8 - and 16 - Way GPU Servers



Liquid UltraStack L40S Reference Design Tech Specs



	UltraStack x8	UltraStack x16
Description	8-GPU Scalable System	16-GPU Scalable System
Composable Software	Liquid Matrix Software	
Host Server	1x 1U Server, R760 Dual Intel Xeon Gold 6430 1.9GHz 32c, 1TB RAM	1x 1U Server, R760 Dual Intel Xeon Gold 6430 1.9GHz 32c, 2TB RAM
Management Appliance	1x Liquid Director 1U	
GPUs	8x NVIDIA L40S 48GB PCIe	16x NVIDIA L40S 48GB PCIe
NVMe Storage	30 TB Liquid NVMe Flash Storage	60 TB Liquid NVMe Flash Storage
Networking (NIC)	16x 200Gb IB/Eth Ports – 8x CX-7 - Dual Port Adapters	
Networking (DPU)	1x 200Gb IB/Eth Ports – 1x Bluefield-3 - Dual Port Adapters	16x 200Gb IB/Eth Ports – 1x Bluefield-3 - Dual Port Adapters
Expansion Chassis	2x Liquid PCIe Chassis	3x Liquid PCIe Chassis
Host Bus Adapter	2x Liquid Gen 4.0 x16 HBA	
PCIe Fabric	1x 24 Port PCIe Gen 4.0 Switch	1x 48 Port PCIe Gen 4.0 Switch
Avg. Power	4500W	7500W
Rack Units	12U	16U