



UltraStack Datasheet

Why Liquid

Liquid redefines GPU density and efficiency for peak performance and operational cost savings, all with immediate availability.

Key Advantages

- » Unmatched GPU Density: World's first 20-way NVIDIA L40S system, delivering unprecedented computational density.
- » Immediate Productivity: Leverages shorter GPU lead times to expedite deployment and accelerate productivity.
- » Cost-Efficient: Ensures operational cost-efficiency with significant reductions in power and software expenses.

Key Features:

- » Up to 20-way systems featuring NVIDIA L40S GPUs.
- » Built on Dell Technologies PowerEdge R760 & R7625 Servers.
- » 35% higher performance.
- » 35% reduction in power.
- » 75% reduction in software licensing costs.

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Liquid UltraStack

Meet Massive GPU Demand Today

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 traditional servers into high-density GPU systems that support up to 20 NVIDIA L40S GPUs.

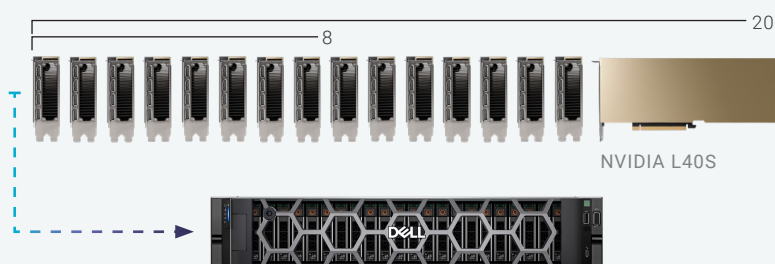
Liquid has designed the UltraStack specifically around Dell Technologies PowerEdge R760 & R7625 servers and NVIDIA L40S GPUs. It is available in several variations that provide resources needed for seamless deployment at scale.

UltraStack leverages Liquid Matrix software composability to enable the allocation of key resources to the Dell PowerEdge server, including NVIDIA L40S GPUs, NICs, DPUs, and NVMe storage. In addition, the included RDMA Peer-2-Peer communication 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, HPC, and graphics & design applications. Purpose-built for unparalleled GPU density and performance, 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.

High-Density GPU Reference Architecture for Dell Servers

Up to 20 - Way GPU Servers





2x Expansion Chassis



3x Expansion Chassis

	UltraStack UX-1608	UltraStack UX-3016
Description	8-GPU Scalable System	16-GPU Scalable System
Composable Software	Liquid Matrix Software	
Intel Host Server Option	1x Dell R760, Dual Intel® Xeon® Gold 6426Y, 32 core, 2.50GHz, 1TB RAM, 2U	1x Dell R760, Dual Intel® Xeon® Gold 6430, 64 Core, 2.10GHz, 2TB RAM, 2U
AMD Host Server Option	1x Dell R7625, Dual AMD EPYC™ 9124, 32 core, 3.0GHz, 1TB RAM, 2U	1x Dell R7625, Dual AMD EPYC™ 9354, 64 Core, 3.25GHz, 2TB RAM, 2U
Management Appliance	1x Liquid Director 1U	
GPUs	8x NVIDIA L40S 48GB PCIe	16x NVIDIA L40S 48GB PCIe
NVMe Storage	60 TB Liquid NVMe Flash Storage	
Networking (NIC)	4x NVIDIA ConnectX-7 - Dual Port Adapters (16x 200Gb IB/Eth Ports)	
Networking (DPU)	2x Bluefield-3 - Dual Port Adapter (4x 200Gb IB/Eth Ports)	
Expansion Chassis	2x Liquid EX-4408 8-Slot PCIe Chassis	3x Liquid EX-4410 10-Slot 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

Complete UltraStack Offerings

GPU Density	8x GPUs	10x GPUs	16x GPUs		20x GPUs
Model	UX-1608	UX-1010	UX-2016	UX-3016	UX-2020
Expansion Chassis	2x 8-Slot	1x 10-Slot	2x 10-Slot	3x 10-Slot	2x 10-Slot
NVIDIA L40S GPU	8	10	16	16	20
NVIDIA ConnectX-7 NIC	4	2	4	8	2
NVIDIA BlueField DPU	2	1	1	2	1
Liquid HB NVMe SSD	2	1	1	2	1
DRAM	1TB	1TB	2TB	2TB	2TB

Storage (Liquid HB) and networking device (Bluefield & NIC) quantities are recommended but can be customized or omitted.

Installed in Server