LIQID

UltraStack Datasheet

Why Liqid

Liqid 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.

» Cost-Efficient: Ensures operational cost-efficiency with significant reductions in power and software expenses.

» Immediate Productivity: Leverages shorter GPU lead times to expedite deployment and accelerate productivity.

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.
» Cluster-ready options to scale performance

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Liqid UltraStack

Meet Massive GPU Demand Today

In the rapidly evolving landscapes of AI, High-Performance Computing (HPC), and graphics-intensive workloads, computational demands are swiftly outstripping the capabilities of traditional servers, which are typically limited to 4-8 GPUs. Adding to this challenge, extended GPU lead times are exacerbating the situation, as organizations struggle to even acquire the necessary compute resources to meet these growing demands.

Introducing Liqid UltraStack - representing a paradigm shift in server design, this system directly addresses these challenges. It transforms 2U servers into high-density GPU systems, supporting up to 20 NVIDIA L40S GPUs.

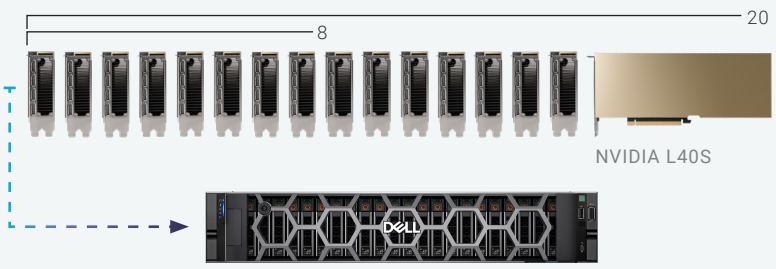
Liqid has thoroughly designed the UltraStack around trusted Dell Technologies PowerEdge R760 & R7625 servers and NVIDIA L40S GPUs. It includes standalone and cluster-ready solutions for seamless, scalable deployment.

Liqid Matrix software integrates Dell PowerEdge servers with direct-access pools of NVIDIA L40S GPUs, NICs, DPUs, and Liqid IO Accelerator NVMe SSDs, ensuring high-speed, localized connectivity. Furthermore, with Liqid's RDMA Peer-2-Peer communication, it can enable up to a 10x performance improvement, significantly boosting processing speeds in critical applications.

As a robust solution for the intensive demands of AI, HPC, and graphics & design applications, the Liqid UltraStack L40S reference architecture stands out for its unparalleled GPU density and performance. It exemplifies innovation, pushing the boundaries of high-density GPU systems, and equips organizations to lead in the computational forefront.

High-Density GPU Reference Architecture for Dell Servers

Up to 20 - Way GPU Servers



UltraStack

1x Expansion Chassis

2x Expansion Chassis

2x Expansion Chassis

	UltraStack UX-1010	UltraStack UX-2016	UltraStack UX-2020
Description	10-GPU Server (7U)	16-GPU Server (12U)	20-GPU Server (12U)
Intel Host Server Option	Dell R760, Dual Intel Xeon Gold 6426Y 32 core, 512GB DRAM	Dell R760, Dual Intel Xeon Gold 6430 64 core, 1TB DRAM	Dell R760, Dual Intel Xeon Gold 6430 64 core, 1TB DRAM
AMD Host Server Option	Dell R7625, Dual AMD EPYC™ 9124, 32 core, 3.0GHz, 512GB DRAM	Dell R7625, Dual AMD EPYC™ 9354, 64 Core, 3.25GHz, 1TB DRAM	Dell R7625, Dual AMD EPYC™ 9354, 64 Core, 3.25GHz, 1TB DRAM
Mgmt. Appliance	1x Liqid Director 1U	1x Liqid Director 1U	1x Liqid Director 1U
GPUs	10x NVIDIA L40S 48GB PCIe	16x NVIDIA L40S 48GB PCIe	20x NVIDIA L40S 48GB PCIe
NVMe Storage	*1x 30 TB Liqid NVMe SSD	*1x 30 TB Liqid NVMe SSD	*1x 30 TB Liqid NVMe SSD
Networking (NIC)	*2x NVIDIA ConnectX-7	4x NVIDIA ConnectX-7	*2x NVIDIA ConnectX-7
Networking (DPU)	*1x Bluefield-3 - Dual Port Adapter	*1x Bluefield-3 - Dual Port Adapter	*1x Bluefield-3 - Dual Port Adapter
Expansion Chassis	1x Liqid EX-4410 10-Slot Chassis	2x Liqid EX-4410 10-Slot Chassis	2x Liqid EX-4410 10-Slot Chassis
Host Bus Adapter	1x Liqid Gen 4.0 x16 HBA	2x Liqid Gen 4.0 x16 HBA	2x Liqid Gen 4.0 x16 HBA
PCIe Fabric	Included in Expansion Chassis	1x 24 Port PCIe Gen 4.0 Switch	1x 48 Port PCIe Gen 4.0 Switch
Avg. Power	4675W	7532W	8832W

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

*Installed in Server

Cluster-Ready UltraStack

2x Expansion Chassis

3x Expansion Chassis

	UltraStack UX-1608	UltraStack UX-3016
Description	8-GPU Scalable System (12U)	16-GPU Scalable System (16U)
Intel Host Server Option	1x Dell R760, Dual Intel® Xeon® Gold 6426Y, 32 core, 2.50GHz, 512GB RAM	1x Dell R760, Dual Intel® Xeon® Gold 6430, 64 Core, 2.10GHz, 1TB RAM
AMD Host Server Option	1x Dell R7625, Dual AMD EPYC™ 9124, 32 core, 3.0GHz, 512GB RAM	1x Dell R7625, Dual AMD EPYC™ 9354, 64 Core, 3.25GHz, 1TB RAM
Mgmt. Appliance	1x Liqid Director 1U	1x Liqid Director 1U
GPUs	8x NVIDIA L40S 48GB PCIe	16x NVIDIA L40S 48GB PCIe
NVMe Storage	60 TB Liqid NVMe Flash Storage	60 TB Liqid NVMe Flash Storage
Networking (NIC)	4x NVIDIA ConnectX-7 - Dual Port (16x 200Gb IB/Eth Ports)	4x NVIDIA ConnectX-7 - Dual Port (16x 200Gb IB/Eth Ports)
Networking (DPU)	2x Bluefield-3 - Dual Port Adapter (4x 200Gb IB/Eth Ports)	2x Bluefield-3 - Dual Port Adapter (4x 200Gb IB/Eth Ports)
Expansion Chassis	2x Liqid EX-4408 8-Slot Chassis	3x Liqid EX-4410 10-Slot Chassis
Host Bus Adapter	2x Liqid Gen 4.0 x16 HBA	2x Liqid 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	4195W	8392W

Power estimates reflect 50% CPU and 100% GPU load with heavy network use. Actual consumption may vary.