LIQID

Sustainability
Solution Brief

Why Liqid

Liqid's composable infrastructure improves resource utilization rates which decreases power and water consumption and reduces infrastructure carbon footprint.

Key Advantages

» Reduce power consumption by composing only required resources to servers

» Add more GPUs without adding more servers for GPU performance without the environmental impact

» Reduce water consumption with higher efficiency infrastructure

» Reduce disposal rates by maximizing the lifespan of existing assets

» Reduce energy costs

Build for the Future with Sustainable Composable Infrastructure

Introducing New Levels of Utilization and Sustainability

Overview

Change the sustainability equation with Liqid composable infrastructure.

Current growth trajectories suggest that datacenters will consume as much as 20% of global energy by 2025[1]. They already represent 3.2% of our global carbon emissions, and that number is expected to jump to 14% by 2040.[2] To cool these energy consumers, the Wall Street Journal reports that the typical datacenter uses 130 million gallons of water a year. That's the same amount of water as a three-building hospital and more than two 18-hole golf courses.[3]

With the industry's most efficient and sustainable datacenter architecture, Liqid composable infrastructure gives you the power to affect change today. Slash datacenter power and water consumption, reduce datacenter emissions, and save on your energy bill by significantly improving datacenter utilization rates compared to traditional static architectures[4].

Reduce Power Consumption and Carbon Footprint

You can potentially double or triple your utilization rate – resulting in lower power consumption and carbon footprint -- by composing power-hungry resources only where they're required rather than overprovisioning every server for peak workloads. Valuable PCIe-connected resources like GPU, FPGA, NVMe SSD and Storage Class Memory are disaggregated from the server itself into PCIe enclosures. They are then interconnected to host servers over high-speed fabrics like PCIe, Ethernet and InfiniBand. Liqid Matrix software lives on the fabric, allowing you to configure and deploy servers that meet explicit workload requirements in seconds via software without worrying if a server can physically support its GPU and/or storage resources. If demand increases, add more resources on-demand. As business needs evolve, reclaim unused resources to be used by other servers. This approach means fewer servers, accelerators and storage, which translates to lower power requirements and a reduced carbon

footprint. Composing these resources also allows you to scale accelerator and storage resources independently for better resource utilization. At the same time, you can perform add/move/change operations remotely via software, saving gas and drive time.

Enable Massive GPU Performance without the Environmental Impact

Add GPUs without adding servers by composing these valuable and expensive resources. While a 1U server with 10 or 20x GPUs is simply impossible with conventional server design, this configuration can be composed and deployed with Liqid. In a GPU scale out cost analysis, one customer was able to use 88 percent fewer servers to reduce power consumption by 94 percent and decrease power and cooling cost by 74 percent. See Table 1 for the complete analysis.

Table 1

Customer Requirement:

- 585 Teraflops (100 NVIDIA A100 GPU @30% Utilization)
- 640 CPU Cores (5 Compute Servers @ 128c)

	2U 4X GPU Servers (100 GPUs)	4U 8X GPU Servers (100 GPUs)	Liqid Composable GPU (100 GPUs)	Liqid Composable GPU (43 GPUs)	Results
Servers	25	13	5	5	80% Fewer Servers
GPU	100 @ 30% util (585 TFlop)	100 @ 30% util (585 TFlop)	100 @ 30% uti (585 TFlop)	43 @ 70% util (587 TFlop)	40% Increased GPU Utilization
Total Product Cost	$2,853,625	$2,426,210	$2,489,358	$1,219,238	57% Lower Product Cost
Estimated Power Consumption/Year	525,600 KW	455,520 KW	374,928 KW	201,480 KW	62% Less Power Consumption
Power Cost/Year*	$105,120	$91,104	$74,986	$40,296	62% Lower Power Cost
Cooling Cost/Year**	$136,656	$118,435	$97,481	$52,385	62% Lower Cooling Cost
Total Power Cost/Year	$241,776	$209,539	$172,467	$92,681	62% Lower Total Power Cost/Yr
Total Power Cost/5 Years	$1,208,880	$1,047,696	$862,334	$463,404	62% Lower Total Power Cost/5yrs

* Cost/KwH Assumption = $0.20
** Cooling Capacity Ratio = 1.30

Reduce water consumption with a more efficient datacenter

Creating a more efficient datacenter with composable infrastructure allows you to reduce the water required to cool your operation. Help conserve one of the world's most valuable resources with a Liqid composable solution that operates more efficiently and at higher utilization rates, reducing the amount of equipment to cool, and in turn, reducing the amount of water required.

Reduce Disposal Rates by Maximizing the Lifespan of Existing Assets

Extend the lifespan of existing assets by enabling composability to add new accelerators and storage to otherwise maxed out servers. You'll reduce your disposal rate and your total cost of ownership (TCO) by making the most of your existing investment. Extend the life of devices by doing adds, moves and changes hands-free.

Reduce Energy Costs

Power and cooling costs now make up a significant percentage (roughly 30%[5]) of the monthly cost of operating a large-scale datacenter. By lowering your infrastructure investment with composability, you're contributing to both economic and environmental stewardship. It's a win-win. As energy costs continue to rise, the high utilization rates of composable infrastructure will pay off for years to come.

1) Source: World Economic Forum, By 2025 the IT industry could use 20% of all electricity produced. How can we make it sustainable?, June 2021
2) What impact are data centres having on climate change? | Computerworld
3) How much water do data centers use? (davidmytton.blog)
4) Source: Evaluator Group, Technical Insight Report: How Composable Infrastructure Addresses IT's Problem of Space and Time, November 2020
5) Overall Data Center Costs – Perspectives (mvdirona.com)

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