

Server racks for liquid-cooled servers in data centers



AI Overview

For high-density data centers, liquid-cooled server racks such as Flex OCP ORv3, Supermicro rack-scale solutions, and direct-to-chip or immersion cooling systems are recommended for efficient thermal management and scalability. Key Liquid Cooling Methods

1. Direct-to-Chip (DLC) Cooling: Coolant flows through cold plates mounted directly on CPUs, GPUs, and DIMMs, providing targeted heat removal. DLC is highly efficient for high-density racks, supporting server densities up to 80 kW per rack and beyond, and is suitable for AI and HPC workloads.
2. Immersion Cooling: Servers are fully or partially submerged in dielectric fluid, allowing complete heat coverage across all components. This method is ideal for extreme-density deployments exceeding 100 kW per rack.
3. Rear-Door Heat Exchangers: Liquid-to-the-rack cooling uses chilled water coils in rear doors to remove heat from air exiting the rack, suitable for moderate-density racks and hybrid cooling setups.

Recommended Rack Solutions

- Flex Liquid-Cooled Racks:** Supports up to 120 kW per rack with single-phase and two-phase liquid cooling. Integrates JetCool SmartPlate™ direct-to-chip technology for high-power GPUs and AI accelerators. Customizable for AI and HPC workloads with high thermal headroom.
- Supermicro Rack-Scale Solutions:** End-to-end liquid cooling including servers, racks, networking, and in-rack CDUs. Supports densities up to 80 kW per rack with redundant hot-swappable pumps. Offers both direct liquid cooling and immersion options, reducing PUE and TCO while enabling rapid deployment of AI infrastructure.
- Hybrid Cooling Approaches:** Combining air cooling for low-density racks with liquid cooling for high-density racks optimizes cost and efficiency. Incremental deployment allows retrofitting existing data centers without full redesign.

Deployment Considerations

Conduct a site audit and CFD anal...

Article Content

DGX GB300: AI Factory Infrastructure for Enterprises

AI Factory Infrastructure, the NVIDIA Way NVIDIA DGX™ GB300 is the highest-performing, largest-scale AI system available for enterprises. Built with NVIDIA

[Home » Open Compute Project](#)

Community-Driven Hyperscale Innovation for All! The Open Compute Project is a vibrant Community that spans the data center IT infrastructure worldwide.

NVIDIA 800 VDC Architecture for AI Data Centers

Data center architectures will gradually evolve from today's AC distribution to 800 VDC. The NVIDIA 800 VDC architecture supports all existing data centers while

[Direct liquid cooling solutions | HPE](#)

Learn about innovative 100% fanless direct liquid cooling and other liquid cooling solutions from HPE for demanding AI and HPC workload efficiency.

A collaboration between \$AIRJ & \$TGEN could be a game changer

A partnership or integration between these clean-tech leaders directly addresses the data center density crisis. The technical synergy: ✂ On-site power generation: @Tecogen_DC ultra-low

[KAYTUS | Provider of IT Infrastructure Products and](#)

KAYTUS AI Compute Pod Wins 2026 iF Design Award and Red Dot Award, Setting a New Standard for AI Data Center Delivering up to 130kW of liquid cooling per

[Liquid-cooled compute racks for AI data centers | Flex](#)

AI data center cooling through integrated, scalable, & liquid-cooled compute rack servers designed & engineered to the specific demands of

[Liquid-cooled rack solutions | Flex](#)

The Flex liquid-cooled system and rack solutions provide a versatile platform for hyperscalers and data center customers to design customized AI

[Diving Deep into the Liquid Server Cooling Choices](#)

If we fast forward to 2024, we're supplying server cooling solutions, like the Dell DLC3000 DLC rack that Verne Global is using and the Dell modular

[MiTAC Computing Technology](#)

Rack-scale Solutions Scalable rack-scale solutions built for modern data centers
Liquid Cooling Efficient liquid cooling and thermal management for high-density

Designed for AI Reasoning Performance & Efficiency

The NVIDIA GB300 NVL72 features a fully liquid-cooled, rack-scale architecture that integrates 72 NVIDIA Blackwell Ultra GPUs and 36 Arm®-based NVIDIA

Deploying liquid cooling in the data center

Readers of this technical guide are likely seeking insight into how to deploy liquid cooling to support rack densities up to, and in some cases exceeding 50 kilowatts (kW) per rack.

NVIDIA Blackwell HGX™ B300, B200 and GB200

End-to-End AI Data Center Building Block Solutions Advantage A broad range of air-cooled and liquid-cooled systems with multiple CPU options, a full data center

Supermicro Data Center Server, Blade, Data Storage,

Petascale All-Flash Array with NVIDIA Grace CPU Superchip and E3.S PCIe Gen5 SSDs Enterprise-Optimized Storage Application Optimized High-Performance

LCS ZPServer | Immersion-Cooled Rack Server for

Designed for data centers and AI, the zero-pressure ZPServer offers maximum scalability with up to 4kW per standard rack unit. It's configured with the latest

Infrastructure for Scalable AI Reasoning | NVIDIA Vera

NVIDIA Vera CPU The NVIDIA Vera CPU rack delivers dense, liquid-cooled CPU infrastructure purpose-built for reinforcement learning and agentic AI at scale.

LiquidCool Solutions: Immersion-Cooled Rack Servers

Meet soaring compute demands efficiently with LiquidCool Solutions' versatile, immersion cooling for high-performance GPU dense servers. Perfect for data

ASHRAE TC9.9 Data Center Power Equipment Thermal Guidelines

This paper discusses how changes to the data center thermal environment may affect power distribution equipment. This paper also provides an overview of data center power distribution and

Rack-Scale Liquid Cooling Solutions | Supermicro

Linus heads to the roof to see how Supermicro is transforming data center efficiency with their complete liquid cooling solutions, offering everything from cold plates to

Direct Liquid Cooling for High-Compute Servers

See how direct liquid cooling enables better thermal management for high-compute servers by improving heat removal, reducing energy use, and

NVIDIA GB300 NVL72 AI Supercomputer Rack | Rack

Discover the NVIDIA GB300 NVL72, a liquid-cooled rack-scale AI supercomputer with 72 Blackwell GPUs, NVLink interconnect, and up to 800Gb/s

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The next big shifts in AI workloads and hyperscaler strategies

AI workloads are reshaping data center economics, power planning, and leasing decisions. Their influence is already evident across most new builds and will only intensify.

GRC The Immersion Cooling Authority®

GRC's immersion cooling solutions increase the performance, enhance the sustainability, and optimize the TCO of your data center. With a legacy spanning

Your Sustainability Transformation Partner | Fujitsu Global

Our purpose: Make the world more sustainable by building trust in society through innovation.

Data Center Coolant Distribution Units Market Research

Therefore, hyperscale operators are adopting more coolant distribution units to enable efficient liquid cooling, optimize energy use, and

Ihr Partner für nachhaltige Transformation | Fujitsu

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Liquid Cooling Rack Integration

Driven by the increasing need for high-power chips and servers in data center infrastructure, AHEAD's state-of-the-art facility is designed for the complexities of direct-to-chip liquid cooled racks.

A global leader in critical digital infrastructure

Vertiv is a global leader in critical digital infrastructure for applications in data centers, communication networks, and commercial and industrial

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