Enterprise Strategy Group™

BRIEF

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Supermicro Direct Liquid Cooling DLC-2

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Abstract: Earlier this year, Supermicro announced multiple improvements to its Direct Liquid Cooling (DLC) portfolio. As processing and accelerator technology advances, the demand for superior power and cooling increases. For enterprise data centers embracing AI, the use of air cooling can quickly become unsustainable, necessitating the need to consider direct liquid cooling in the near term.

Key Highlights

- 44% of organizations expected to increase the number of data center facilities they own, operate, and manage over the next five years.[1]
- 66% of organizations expected to increase their number of data center facilities identified new AI initiatives as a top rationale.
- 78% of organizations agreed that they prefer to run AI applications on premises.[2]

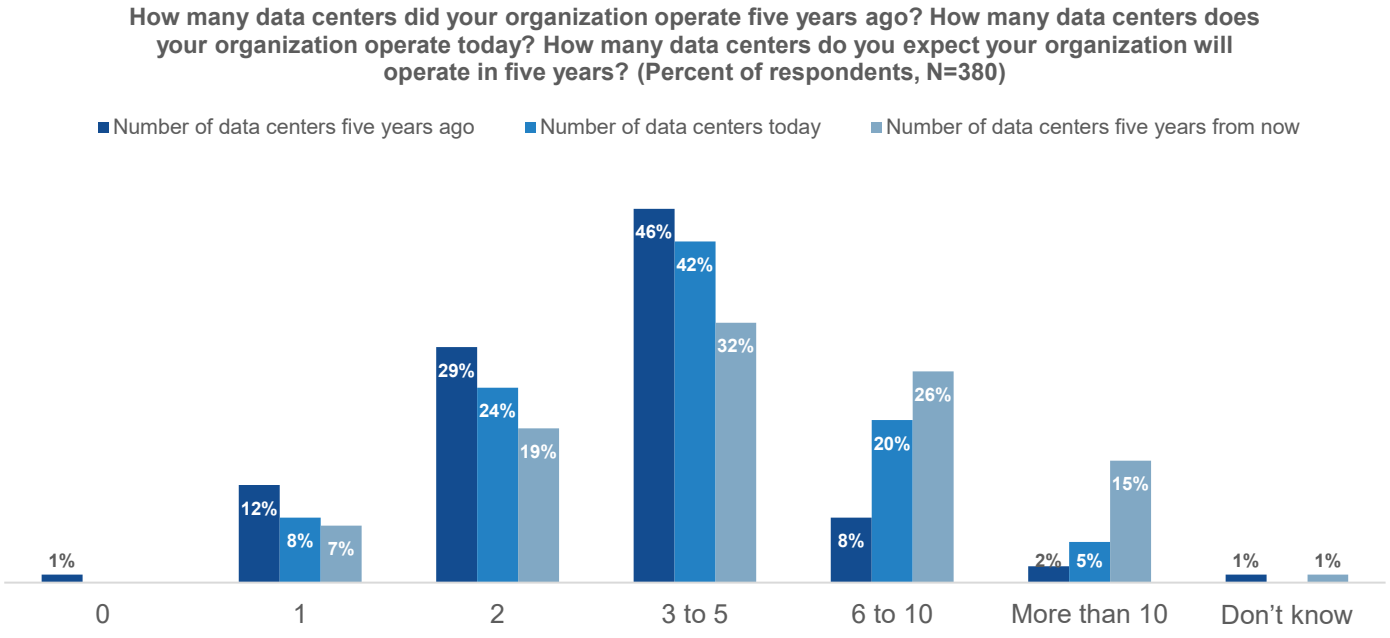
Artificial Intelligence Driving Liquid Cooling

According to research by Enterprise Strategy Group, increased investment in local, private AI is also diving increased investment in existing data centers as well as the construction of new ones. Nearly half (44%) of organizations expected to increase the number of data center facilities they own, operate, and manage over the next five years (see Figure 1). The most common rationale for that increase was to support new AI initiatives on on-premises infrastructure (cited by 66% of respondents).

Artificial intelligence workloads, however, often demand higher levels of processing power and increased performance from the supporting storage and networking infrastructure. The result can often strain traditional data centers' existing power and cooling resources. The rise of AI only accelerates a long-running trend of newer infrastructure generations demanding more power, a trend that will likely end the future of air-cooled data centers.

[1] Source: Enterprise Strategy Group Research Report, *Private AI, Virtualization, and Cloud: Transforming the Future of Infrastructure Modernization*, July 2025. All data in this brief is from this research report unless otherwise stated.
[2] Source: Enterprise Strategy Group Research Report, *Cloud Application Deployment and Migration Decision-making*, August 2024.

Figure 1. Enterprises Project Increased Data Center Construction Over the Next Five Years



Source: Enterprise Strategy Group, now part of Omdia

Supermicro DLC-2

Supermicro's Direct-to-chip Liquid Cooling (DLC-2) portfolio offers a blend of infrastructure technology and services that can assist organizations in the design of liquid-cooled data center facilities and help simplify the deployment of liquid-cooled technology into existing data center environments. From a technology perspective, the portfolio includes liquid-cooled server systems along with its own in-house developed in-rack and in-row cooling distribution units (CDUs) and manifolds (CDMs) as well as cold-plate technology for CPUs, GPUs, and dual in-line memory modules, delivering a complete liquid-cooling rack and cluster solution.

To help simplify the adoption of liquid cooling technology into an existing data center environment, Supermicro offers liquid-to-air sidecars that integrate with its in-house developed manifolds (CDMs) in the liquid cooling rack solution. This enables rapid deployment and easy maintenance without interruption, enabling data centers to upgrade to high-density performance faster and more cost-effectively.

In addition, for new data center constructions, Supermicro offers infrastructure-level products such as water cooling towers and dry coolers in the liquid cooling system. Water cooling towers employ open-loop evaporative cooling to achieve near wet-bulb efficiency, making them the mainstream choice for new data centers in hot, humid climates. For water-limited areas, dry coolers use closed-loop air cooling to reject heat efficiently without water consumption, ensuring low maintenance and reliable, year-round performance. With a strong breadth of options, Supermicro is able to provide a cooling solution for any water condition.

From a benefits standpoint, Supermicro touts the ability to utilize warmer water (45º C) cooling and achieve up to 98% rack-level heat capture by its own design liquid-cooling and systems. For the data center, according to Supermicro, the adoption of direct liquid cooling can provide data center space savings of up to 60% and reduce the noise of the data center to as low as 50 dB, which is approximate to that of a quiet office or library environment.

Analyst Take

Given the trajectory of processing and accelerator (e.g., GPU) design, the adoption of liquid cooling technology looks to be an inevitability. For organizations that are reluctant to retrofit their existing data center environments, colocation facilities can offer ready-to-deploy liquid-cooled infrastructure. And while colocation facilities can be an option for smaller environments, there is a larger macro-trend in hybrid cloud design that will eventually force the need to modernize data center environments with liquid cooling.

According to Enterprise Strategy Group research, 78% of organizations agreed that they prefer to run AI applications on premises. This is in part due to data locality requirements as well as concerns over public cloud costs. But largely, businesses increasingly desire to keep their most valuable workloads within the walls of their own data center environments. Assuming that desire holds true, businesses will want to ensure that they can deploy the latest, highest-performing technology on premises, which will only reinforce the need to adopt liquid-cooling on premises.

For IT decision-makers, it comes down to a strategic question: If you take a path where your data center will be a center of innovation for your organization, then doesn't it make sense to start investigating the adoption of liquid cooling technology sooner rather than later? While Supermicro is just one of multiple server vendors with liquid-cooling options available, the effect that that liquid cooling will have on the cost, scalability, and performance of data center infrastructure moving forward reinforces the importance of evaluating all the options.

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Enterprise Strategy Group, now part of Omdia, provides focused and actionable market intelligence, demand-side research, analyst advisory services, GTM strategy guidance, solution validations, and custom content supporting enterprise technology buying and selling.

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