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Data Center Cooling Market Opportunity, Growth Drivers, Industry Trend Analysis, and Forecast 2025 - 2034

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Abstracts

The Global Data Center Cooling Market was valued at USD 18.4 billion in 2024 and is estimated to grow at a CAGR of 10.2% to reach USD 49.9 billion by 2034.

Rising AI and high-performance computing (HPC) workloads are driving a transition from traditional air-based cooling to advanced liquid cooling solutions. Direct-to-chip and immersion cooling technologies are increasingly managing rack densities of 50 to 120 kW, allowing modern data centers to handle the latest compute infrastructure. Edge data centers, operating in varied environments, require flexible thermal management to maintain reliability in compact and remote spaces. With rack power densities nearly doubling from 5 kW to 8–10 kW, conventional air-based systems can no longer meet demand, prompting hyperscale and enterprise facilities to adopt liquid-based solutions. Direct-to-chip liquid cooling is emerging as a preferred method, ensuring stable temperatures for high-wattage CPUs and GPUs while reducing energy consumption and enhancing system reliability.

The solutions segment held a 66% share in 2024 and is expected to grow at a CAGR of 10.4% through 2034. This growth is fueled by investments in next-generation liquid cooling systems capable of supporting high-density AI and HPC workloads, driving infrastructure expenditure and advanced heat management adoption.

The room-based cooling segment held a 76.4% share in 2024 and is projected to grow at a CAGR of 9.7% through 2034. Modern room-based systems now integrate AI-assisted optimization, variable-speed fans, and containment solutions, enabling real-time airflow adjustments and energy efficiency improvements. These innovations extend system lifespan and improve overall sustainability and reliability.

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U.S. Data Center Cooling Market held a 89% share and generated USD 6.3 billion in 2024. Rising heat densities from AI workloads have accelerated the adoption of liquid and immersion cooling, as operators upgrade facilities to manage rack densities above 80 kW, particularly in large-scale campus environments.

Key players in the Data Center Cooling Market include Emerson Network Power, Johnson Controls, Vertiv, Schneider Electric, Motivair, Stulz, Degree Controls, Rittal, Airedale International, and Coolcentric. Companies in the Data Center Cooling Market are employing multiple strategies to strengthen their market presence. They are investing in R&D to develop high-efficiency liquid and immersion cooling technologies capable of handling extreme heat densities. Partnerships with hyperscale and enterprise data center operators help expand the adoption of advanced cooling solutions. Firms are also enhancing AI-based optimization tools for real-time energy management. Strategic mergers and acquisitions allow players to broaden their technology portfolios and geographic footprint.

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