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Global AI Data Center Direct to Chip Cooling Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global AI Data Center Direct to Chip Cooling market size is expected to reach $ 6916 million by 2032, rising at a market growth of 29.0% CAGR during the forecast period (2026-2032).

AI Data Center Direct to Chip Cooling is a liquid cooling technology in which cold plates are mounted directly on GPUs, CPUs, AI accelerators, memory modules, or other high-power electronic components, allowing coolant to flow inside the cold plates and remove heat from the chips efficiently. Compared with traditional air cooling, this technology offers higher cooling efficiency and better support for high-density deployment, making it especially suitable for AI training servers, inference servers, HPC clusters, and high-power rack environments. A typical system includes cold plates, liquid cooling pipes, quick connectors, CDUs, secondary cooling water loops, pump and valve assemblies, and leak detection devices, making it one of the key technical routes for efficient thermal management and energy reduction in AI data centers.

The rapid increase in rack power density in AI data centers is the key driver for the Direct to Chip Cooling market. As GPUs, AI accelerators, high-performance CPUs, and switching chips continue to consume more power, traditional air cooling is approaching its limits in thermal efficiency, energy consumption, and space utilization. Direct-to-chip liquid cooling places cold plates close to high-heat-flux chips and removes heat efficiently through liquid circulation, helping reduce PUE, improve server stability, and support higher-density AI cluster deployment. As a result, it is becoming an important cooling solution for hyperscale cloud providers, AI computing centers, and high-performance computing data centers.

The main restraints for the AI data center direct-to-chip cooling market are high upfront

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investment, system complexity, and the lack of fully unified operation and maintenance standards. Compared with traditional air cooling, direct-to-chip cooling requires cold plates, CDUs, liquid cooling pipelines, quick connectors, leak detection systems, secondary water loops, and deep integration with server racks. This raises higher requirements for data center design, construction, and maintenance capabilities. In addition, retrofitting existing data centers can be difficult, while interface standards, reliability validation, and responsibility boundaries among server OEMs, liquid cooling suppliers, and data center operators still need further maturity, limiting rapid large-scale adoption.

The continuous growth of AI computing demand will create significant opportunities for the Direct to Chip Cooling market. As large model training, inference clusters, AI servers, HPC systems, and edge AI data centers expand, more newly built facilities are expected to adopt liquid cooling architecture from the design stage. This will drive demand for cold plates, CDUs, liquid cooling pipes, pumps, valves, heat exchangers, leak detection systems, and related operation and maintenance services. In addition, stronger policy requirements for green data centers, energy efficiency, and low-carbon infrastructure will further promote the penetration of liquid cooling from high-end AI data centers into enterprise, cloud computing, and regional computing center applications.

The AI Data Center Direct to Chip Cooling market refers to the market for cooling solutions used in artificial intelligence data centers, high-performance computing facilities, and high-density cloud data centers, including cold plates, liquid cooling pipes, CDUs, pumps, valves, heat exchangers, and monitoring systems for GPUs, CPUs, AI accelerators, and other high-power chips. As AI server power consumption and rack power density continue to rise, traditional air cooling is becoming less capable of handling high-heat-flux chips. Direct to chip cooling transfers heat directly from the chip or key heat-generating components to a liquid circulation system through cold plates, improving cooling efficiency, reducing energy consumption, and enabling higher-density deployment. In the future, the market is expected to benefit from large model training, AI inference clusters, green data center construction, and liquid cooling standardization, with adoption expanding from leading cloud providers and supercomputing centers to broader enterprise AI data centers.

This report studies the global AI Data Center Direct to Chip Cooling demand, key companies, and key regions.

This report is a detailed and comprehensive analysis of the world market for AI Data Center Direct to Chip Cooling, and provides market size (US$ million) and Year-over-

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Year (YoY) growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of AI Data Center Direct to Chip Cooling that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global AI Data Center Direct to Chip Cooling total market, 2021-2032, (USD Million)
Global AI Data Center Direct to Chip Cooling total market by region & country, CAGR, 2021-2032, (USD Million)
U.S. VS China: AI Data Center Direct to Chip Cooling total market, key domestic companies, and share, (USD Million)
Global AI Data Center Direct to Chip Cooling revenue by player, revenue and market share 2021-2026, (USD Million)
Global AI Data Center Direct to Chip Cooling total market by Type, CAGR, 2021-2032, (USD Million)
Global AI Data Center Direct to Chip Cooling total market by Application, CAGR, 2021-2032, (USD Million)

This report profiles major players in the global AI Data Center Direct to Chip Cooling market based on the following parameters - company overview, revenue, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Vertiv, nVent, Lenovo, Supermicro, Schneider Electric, Flex Ltd., CoolIT System, Modine, DCX Liquid Cooling Systems, Inspur, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the world AI Data Center Direct to Chip Cooling market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US$ Millions), by player, by regions, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global AI Data Center Direct to Chip Cooling Market, By Region:

United States

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China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global AI Data Center Direct to Chip Cooling Market, Segmentation by Type:

Water-based Coolant Direct Cooling

Non-water-based Coolant Direct Cooling

Global AI Data Center Direct to Chip Cooling Market, Segmentation by System Architecture:

Server-grade Direct Cooling System

Rack-level Direct Cooling System

Other

Global AI Data Center Direct to Chip Cooling Market, Segmentation by Cold Plate Heat Exchange Method:

Single-phase Cold Plate Direct Cooling

Two-phase Cold Plate Direct Cooling

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Global AI Data Center Direct to Chip Cooling Market, Segmentation by Application:

- Cloud Data Centers
- AI Data Centers / AI Servers
- High-Performance Computing (HPC)
- Enterprise Data Centers
- Others

Companies Profiled:

- Vertiv
- nVent
- Lenovo
- Supermicro
- Schneider Electric
- Flex Ltd.
- CoolIT System
- Modine
- DCX Liquid Cooling Systems
- Inspur
- Malico

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ZutaCore

Chilldyne

Accelsius

Delta Power Solutions

Stulz

Iceotope Precision Liquid Cooling

Iceotope

BOYD

Wiwynn Corporation

Kaori

Rittal GmbH & Co. KG

LiquidStack

Taisol Electronics

Quanta

Shenzhen Green Cloud Map Technology

Goaland Energy Conservation Tech

Key Questions Answered

1. How big is the global AI Data Center Direct to Chip Cooling market?
2. What is the demand of the global AI Data Center Direct to Chip Cooling market?
3. What is the year over year growth of the global AI Data Center Direct to Chip Cooling market?
4. What is the total value of the global AI Data Center Direct to Chip Cooling market?

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5. Who are the Major Players in the global AI Data Center Direct to Chip Cooling market?
6. What are the growth factors driving the market demand?

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