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Global AI Data Center Direct to Chip Cooling Market 2026 by Company, Regions, Type and Application, Forecast to 2032

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Abstracts

According to our (Global Info Research) latest study, the global AI Data Center Direct to Chip Cooling market size was valued at US$ 1244 million in 2025 and is forecast to a readjusted size of US$ 6916 million by 2032 with a CAGR of 29.0% during review period.

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.

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The main restraints for the AI data center direct-to-chip cooling market are high upfront 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 is a detailed and comprehensive analysis for global AI Data Center Direct to Chip Cooling market. Both quantitative and qualitative analyses are presented by company, by region & country, by Type and by Application. As the market is constantly

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changing, this report explores the competition, supply and demand trends, as well as key factors that contribute to its changing demands across many markets. Company profiles and product examples of selected competitors, along with market share estimates of some of the selected leaders for the year 2025, are provided.

Key Features:

Global AI Data Center Direct to Chip Cooling market size and forecasts, in consumption value ($ Million), 2021-2032

Global AI Data Center Direct to Chip Cooling market size and forecasts by region and country, in consumption value ($ Million), 2021-2032

Global AI Data Center Direct to Chip Cooling market size and forecasts, by Type and by Application, in consumption value ($ Million), 2021-2032

Global AI Data Center Direct to Chip Cooling market shares of main players, in revenue ($ Million), 2021-2026

The Primary Objectives in This Report Are:

To determine the size of the total market opportunity of global and key countries

To assess the growth potential for AI Data Center Direct to Chip Cooling

To forecast future growth in each product and end-use market

To assess competitive factors affecting the marketplace

This report profiles key 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.

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Market segmentation

AI Data Center Direct to Chip Cooling market is split by Type and by Application. For the period 2021-2032, the growth among segments provides accurate calculations and forecasts for Consumption Value by Type and by Application. This analysis can help you expand your business by targeting qualified niche markets.

Market segment by Type

Water-based Coolant Direct Cooling

Non-water-based Coolant Direct Cooling

Market segment by System Architecture

Server-grade Direct Cooling System

Rack-level Direct Cooling System

Other

Market segment by Cold Plate Heat Exchange Method

Single-phase Cold Plate Direct Cooling

Two-phase Cold Plate Direct Cooling

Market segment by Application

Cloud Data Centers

AI Data Centers / AI Servers

High-Performance Computing (HPC)

Enterprise Data Centers

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Others

Market segment by players, this report covers

Vertiv

nVent

Lenovo

Supermicro

Schneider Electric

Flex Ltd.

CoolIT System

Modine

DCX Liquid Cooling Systems

Inspur

Malico

ZutaCore

Chilldyne

Accelsius

Delta Power Solutions

Stulz

Iceotope Precision Liquid Cooling

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Iceotope

BOYD

Wiwynn Corporation

Kaori

Rittal GmbH & Co. KG

LiquidStack

Taisol Electronics

Quanta

Shenzhen Green Cloud Map Technology

Goaland Energy Conservation Tech

Market segment by regions, regional analysis covers

North America (United States, Canada and Mexico)

Europe (Germany, France, UK, Russia, Italy and Rest of Europe)

Asia-Pacific (China, Japan, South Korea, India, Southeast Asia and Rest of Asia-Pacific)

South America (Brazil, Rest of South America)

Middle East & Africa (Turkey, Saudi Arabia, UAE, Rest of Middle East & Africa)

The content of the study subjects, includes a total of 13 chapters:

Chapter 1, to describe AI Data Center Direct to Chip Cooling product scope, market overview, market estimation caveats and base year.

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Chapter 2, to profile the top players of AI Data Center Direct to Chip Cooling, with revenue, gross margin, and global market share of AI Data Center Direct to Chip Cooling from 2021 to 2026.

Chapter 3, the AI Data Center Direct to Chip Cooling competitive situation, revenue, and global market share of top players are analyzed emphatically by landscape contrast.

Chapter 4 and 5, to segment the market size by Type and by Application, with consumption value and growth rate by Type, by Application, from 2021 to 2032.

Chapter 6, 7, 8, 9, and 10, to break the market size data at the country level, with revenue and market share for key countries in the world, from 2021 to 2026.and AI Data Center Direct to Chip Cooling market forecast, by regions, by Type and by Application, with consumption value, from 2027 to 2032.

Chapter 11, market dynamics, drivers, restraints, trends, Porters Five Forces analysis.

Chapter 12, the key raw materials and key suppliers, and industry chain of AI Data Center Direct to Chip Cooling.

Chapter 13, to describe AI Data Center Direct to Chip Cooling research findings and conclusion.

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