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

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Abstracts

The global Data Center Direct to Chip Cooling market size is expected to reach $ 7484 million by 2032, rising at a market growth of 17.1% CAGR during the forecast period (2026-2032).

Data Center Direct-to-Chip Cooling is a liquid cooling solution designed for high-power servers, AI chips, GPUs, CPUs, and accelerator cards. It uses cold plates, microchannel cold plates, liquid cooling loops, and coolant distribution systems to deliver coolant directly to or near the main heat-generating components, enabling efficient heat transfer from high-heat-flux devices. Compared with traditional air cooling, direct-to-chip cooling can handle much higher power density, reduce server inlet temperature and fan energy consumption, improve rack-level power density, and enhance overall data center energy efficiency. It is widely used in AI data centers, cloud computing facilities, high-performance computing, edge computing, and large-scale internet data centers.

The main growth drivers for the Data Center Direct to Chip Cooling market come from the rapid increase in cooling demand from AI servers, HPC, high-density cloud computing, and large-scale model training. As the power consumption of GPUs, CPUs, and AI accelerators continues to rise, traditional air cooling is becoming increasingly limited in terms of heat dissipation efficiency, rack power density, and energy consumption control. Direct-to-chip cooling brings coolant directly to cold plates close to the heat source, enabling higher power density, lower PUE, and more stable chip operating conditions, which is accelerating adoption among hyperscale cloud providers, AI data centers, and supercomputing facilities.

The key restraint for the Data Center Direct to Chip Cooling market is the high system

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complexity, relatively high upfront investment, and greater operational requirements. Direct-to-chip cooling requires cold plates, CDUs, piping, connectors, pumps, heat exchangers, and monitoring systems, while also needing deep integration with server architecture, rack layout, facility water loops, and data center maintenance procedures. For traditional data centers, retrofit costs, leakage concerns, technical requirements for maintenance teams, supply chain maturity, and compatibility across different server platforms may slow down large-scale deployment in the short term.

Future opportunities mainly come from new AI data center construction, standardization of liquid-cooled servers, green data center policies, and the continuous increase in chip power consumption. As rack power density moves from tens of kilowatts toward hundreds of kilowatts, direct-to-chip cooling is expected to expand from high-end HPC and AI training environments into cloud computing, internet, financial, telecom, and enterprise data centers. In addition, cold plates, CDUs, quick connectors, secondary-loop coolants, monitoring software, and modular liquid cooling infrastructure will create broader supply chain opportunities, while vendors with strong server integration, engineering delivery, and reliability validation capabilities are likely to gain higher market share.

The Data Center Direct-to-Chip Cooling market is expanding rapidly as the power density of AI servers, high-performance GPUs, CPUs, and accelerator cards continues to increase. Traditional air cooling is increasingly constrained by thermal efficiency, energy consumption, and rack power density limitations in high-heat-flux environments. Direct-to-chip liquid cooling uses cold plates, microchannel cold plates, CDUs, liquid cooling piping, and coolant circulation systems to remove heat directly from chip-level heat sources, significantly improving cooling efficiency and reducing fan power consumption. The market is mainly driven by AI data centers, cloud computing, high-performance computing, hyperscale data centers, and edge computing applications. As liquid-cooled servers become more standardized, energy-efficiency requirements tighten, and rack power densities move toward 50kW, 100kW, or even higher levels, direct-to-chip cooling is expected to become a key growth segment in the data center thermal management market.

This report studies the global 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 Data Center Direct to Chip Cooling, and provides market size (US$ million) and Year-over-Year (YoY) growth, considering 2025 as the base year. This report explores demand

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trends and competition, as well as details the characteristics of Data Center Direct to Chip Cooling that contribute to its increasing demand across many markets.

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

This report profiles major players in the global 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 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 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 Data Center Direct to Chip Cooling Market, Segmentation by Type:

Water-based Coolant Direct Cooling

Non-water-based Coolant Direct Cooling

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

Server-grade Direct Cooling System

Rack-level Direct Cooling System

Other

Global 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 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
- ZutaCore

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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 Data Center Direct to Chip Cooling market?
2. What is the demand of the global Data Center Direct to Chip Cooling market?
3. What is the year over year growth of the global Data Center Direct to Chip Cooling market?
4. What is the total value of the global Data Center Direct to Chip Cooling market?
5. Who are the Major Players in the global Data Center Direct to Chip Cooling market?
6. What are the growth factors driving the market demand?

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