Total Rack Scale
Liquid Cooling
Solutions

ACCELERATED TIME-TO-DELIVERY OF PLUG-AND-PLAY LIQUID COOLED RACKS WITH PROVEN QUALITY AND RELIABILITY
Why Supermicro Direct-to-Chip Cooling Solutions?

- Broad range of modular cold plate designs
- Unique liquid cooled server designs to double GPU density at server and rack level
- Cabling for optimizing cooling and maintenance
- Rack scale validation of customer applications and environments to ensure the highest quality and satisfaction
- Plug-and-play data center level integration readiness
- Single-vendor total IT solution from design to delivery

Scan the QR code to learn more about Supermicro Immersion and Rear Door Heat Exchanger liquid cooling solutions!
Based in Silicon Valley, complementing Supermicro’s unwavering commitment to quality, sustainability and minimizing turnaround time.

### Rack Capacity

5,000+/month with 1,350/month liquid cooling capacity

Production, testing and shipping for integrated full-scale liquid cooled rack solutions

### Network Speed Testing Environment

Up to 800 Gb/s

Complete testing environment for a wide range of network requirements

### Mass Production Center

**11MW**

total capacity

designed for high efficiency, reduced greenhouse gas emissions, minimized air pollutants and reduced water use

### Ready-to-Deploy Liquid Cooling Tower

Up to **6.5MW**

N+1 redundancy cooling tower supports up to 136 liquid cooled racks

### Power at Scale

Up to **480 VAC**

Including 208V, 415V, 277V/480VAC for 3-phase & 48VDC-ready
Supermicro provides total rack scale liquid cooling solutions from hardware to software. Supermicro delivers a completely tested solution, including servers, racks, networking and liquid cooling infrastructure which speeds up time to deployment and results in higher quality of the entire infrastructure.

**Single-Vendor Proven Solution**

Comprehensive Software Management tool from components level to data center level.

**Cooling Tower**

**Rack Integration Service**

**Liquid Cooling Servers**

**Cooling Components**
## Liquid Cooling Rack Sample Configurations

### SRS-48UGPU-SKU1-L1-SMCI
Up to 8 GPU Servers (4U, 8 NVIDIA H100/ H200 GPUs per server) per 48U Rack (64 NVIDIA H100/200 GPUs per Rack)

<table>
<thead>
<tr>
<th>Product</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermicro GPU Server SYS-421GE-TNHR2-LCC</td>
<td>8</td>
</tr>
<tr>
<td>Cooling Distribution Unit (CDU)</td>
<td>1</td>
</tr>
<tr>
<td>Vertical Cooling Distribution Manifold (CDM)</td>
<td>1</td>
</tr>
<tr>
<td>Networking Switches</td>
<td>1-4</td>
</tr>
</tbody>
</table>

### SRS-48UBTW-SKU1-L1-SMCI
Up to 76 Server Nodes / 19 Systems in a 48U Rack

<table>
<thead>
<tr>
<th>Product</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BigTwin® (2U4N) or 2U Hyper or 1U Hyper (shown)</td>
<td>19</td>
</tr>
<tr>
<td>Cooling Distribution Unit (CDU)</td>
<td>1</td>
</tr>
<tr>
<td>Vertical Cooling Distribution Manifold (CDM)</td>
<td>1</td>
</tr>
<tr>
<td>Networking Switches</td>
<td>1-4</td>
</tr>
</tbody>
</table>

### SRS-48UBLD-SKU1-L1-SMCI
Up to 80 Server Blades / 4 Enclosures in a 48U Rack

<table>
<thead>
<tr>
<th>Product</th>
<th>Qty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SuperBlade® Enclosure (8U20N)</td>
<td>4</td>
</tr>
<tr>
<td>Cooling Distribution Unit (CDU)</td>
<td>1</td>
</tr>
<tr>
<td>Vertical Cooling Distribution Manifold (CDM)</td>
<td>1</td>
</tr>
<tr>
<td>Horizontal CDM</td>
<td>8</td>
</tr>
<tr>
<td>Networking Switches</td>
<td>9-17</td>
</tr>
</tbody>
</table>
Supermicro Liquid Cooled Servers

Universal GPU Family
*Flexible support for NVIDIA, AMD, and Intel GPUs*

SYS-221GE-TNHT-LCC
2U 4-GPU, NVIDIA HGX H100

SYS-421GE-TNHR2-LCC
4U 8-GPU, NVIDIA HGX H100

NVIDIA MGX™ Family

ARS-111GL-DNHR-LCC
1U2N, NVIDIA GH200 Grace™ Hopper Superchip

AMD APU Family

AS-2145GH-TNMR
2U 4-APU, AMD Instinct™ MI300A

Liquid Cooling Solutions - March 2024
Server Families Supporting Optional Liquid Cooling

- 4U SXM/OAM GPU
- 8U SXM/OAM GPU
- 4U PCIe GPU
- NVIDIA MGX™
- 2U2N / 2U4N BigTwin®
- SuperBlade®
- 1U / 2U Hyper
- 4U4N / 4U8N FatTwin®
The Supermicro Liquid Cooling Solution now includes a complete Liquid Cooling Tower solution, which is designed to efficiently remove the heat produced by today’s and tomorrow’s most powerful CPUs and GPUs, including those for AI Training and Inferencing. Supermicro’s pioneer total Liquid Cooling Infrastructure enables customers to obtain everything that is required for a modern data center from a single vendor.
Supermicro Cooling Tower

Benefits & Capabilities

• Modular design available in different sizes with multiple cell configurations up to a maximum of 10MW per unit

• Each cell can be used separately, enabling cooling tower redundancy

• Closed-loop design to optimize system reliability

• High Temperature Fills (>60°C) – Higher temperature water can be returned to the cooling tower enabling higher efficiency

• Low power consumption with 6.2kW/MW of cooling

• Low water consumption with 6.2GPM/MW of cooling

• Epoxy coated stainless steel preventing corrosion and rated for 20+ years

• Quick deployments based on facility readiness
Plug-And-Play Flexible Hose Kits

The Supermicro liquid cooling rack solution includes standard 1.25-inch CDU hose kit connections. The hose kit design makes it easy to connect racks directly to data center primary water supply or cooling tower. The Hose Kit ensures seamless integration with existing facility piping and provides the flexibility for future expansion to potentially lower data center upfront investment costs.

Benefits & Advantages

- Flexible length design to fit different rack and data center placements
- High liquid pressure tolerance with 10-bar rate
- Ball valve connection prevents liquid from drying out
- Universal camlock for seamless integration with existing facility piping
- Dummy-proof camlock design with one female and one male connector
- Preinstalled Hose Kit in rack for plug-and-play toolless deployment
High Performance, User-Friendly CDU

Supermicro 4U Cooling Distribution Unit (CDU) contains the pumping system that circulates coolant to the cold plates, which carry heat away from CPUs, GPUs, and DIMMs.

Fast Maintenance & Advantages

- Automatic anti-condensation control
- Supports up to 45°C facility water
- Cooling capacity up to 100kW
- Maximum uptime and redundancy
- Peak operating efficiency
- N+1 hot-swappable pumps and PSUs
- Replace pumps in 2 minutes
- Replace PSU in 1 minute

Dedicated Management & Advantages

- Intelligent CDU monitoring and control
- CDU physical assets information detection such as coolant pressure, flow rate and leakage
- Flexible CDU touch panel and remote access
- Fully integrated with Supermicro SuperCloud Composer software
- Real-time sensor reading
- Historical data available
CDM

Supplies cold coolant to each server and returns warm coolant back to the CDU. Supermicro offers vertical and horizontal CDMs for maximum configuration flexibility.

Benefits & Advantages

- Optimized flow distribution
- Supports 42U and 48U rack configurations with customizable spacing and size Quick Disconnect Couplings (QDC)
- One-handed QDC operation
- Liquid level and air pressure sensors with sight glass
- Easy maintenance facilitated by user-friendly mounts
Modular Design Cold Plates

CPU and GPU cold plates designed for exceptional thermal performance and minimal pressure drop

Benefits & Advantages

• Lower thermal resistance compared to industry-standard thermal mechanism specifications and design guidelines

• GPU cold plate also helps cool other related components that require liquid cooling, such as GPU switches

• Advanced heat dissipation efficiency with micro-sized channels thinner than a human hair
Cooling Components – Cold Plate Supporting List

CPU Cold Plate

Latest Intel® Xeon® Processors

Latest AMD EPYC™ Processors

GPU Cold Plate

NVIDIA HGX H100 8-GPU

NVIDIA HGX H100 4-GPU

AMD Instinct™ MI300X

NVIDIA GH200 Grace™ Hopper Superchip

for illustration purposes only

Intel® Data Center GPU Max 1550

Memory Cold Plate

DIMM Module
The Supermicro SuperCloud Composer’s LCCM (Liquid Cooling Consult Module) is a powerful tool to collect vital information on physical assets and sensor data from a CDU (Cooling Distribution Unit), including pressure, humidity, pump and valve status, and more. CDU data is presented in real-time, enabling users to monitor operating efficiency of their liquid cooled racks. In addition to providing insights, SuperCloud Composer (SCC) helps user to set up alerts, manage firmware updates, and more.
Industry’s broadest portfolio of workload-optimized servers

Rack scale plug-and-play service delivers complete, validated solutions within weeks

Liquid cooling rack production capacity up to 1,350 racks per month worldwide

Made in the USA program

Industry standard compliance for attestation of components throughout the entire supply chain

Rack Scale Solutions / Design / Production / Validation / Logistics and Service with 5,000+ Integrated Rack Solution Capacity per Month.

Flexible AC Power (120/208/230/480VAC, Single/3-phase) 48VDC Power

10/25/40/100/200/400/800 Gb/s Network Testing Environments

Air Cooling / Free Air Cooling / Liquid Cooling

Turnkey Data Center Solutions Within Two Weeks

www.supermicro.com

© 2024 Copyright Super Micro Computer, Inc. Specifications subject to change without notice. All other brands and names are the property of their respective owners. All logos, brand names, campaign statements and product images contained herein are copyrighted and may not be reprinted and/or reproduced, in whole or in part, without express written permission by Supermicro Corporate Marketing.