



High-Density Chilled Water Product Family Brochure



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Efficiently Deploy Water-Cooled Solutions in Any Data Center Environment

Coolant distribution units allow you to easily and cost-effectively tap into the advantages of liquid cooling with no need to redesign your air-cooled environment. It removes the traditional barriers to liquid cooling, giving you a cost-effective means for deploying water-cooled servers where you need them to support advanced applications and higher rack densities.

Effective solutions should be flexible!

Vertiv™ Liebert® XDM

The Liebert® XDM is a split indoor chiller with integrated pumped refrigerant economization (PRE) designed to bring up to 400kW of high-density cooling to targeted areas of air-chilled data centers, without the need for chilled water on site.

Vertiv™ Liebert® XDU

Designed to support liquid cooling within high density environments the Liebert® XDU Coolant Distribution Units are suitable for chip & rear door cooling applications up to 1368kW that offers easy, cost-effective deployment in any data center.

Vertiv™ Liebert® DCP

The Liebert® DCP is an isolating interface between the pumped water and the building chilled water system. With 200kW of cooling capacity, the Liebert DCP can manage several Liebert® DCD units at one time.



**Say Goodbye to Rigid Infrastructure,
Say Hello to System Scalability**

Room-Neutral Cooling

A common way to improve performance of existing raised floor cooling applications has been the "hot aisle / cold aisle" approach. In this configuration, rows of equipment racks are arranged in alternating "hot" and "cold" aisles. Only the cold aisles have perforated floor tiles that allow cold air to come up from under the raised floor. The Liebert® CDU solutions are compatible with existing hot aisle / cold aisle configurations and these are often well-suited to cooling with the Liebert® DCD system. The Liebert DCD door neutralizes the server's exhaust air before it leaves the rack, providing room temperature air back into the aisle for recirculation and eliminating the need for a "hot" aisle.

Maximize your investment by pairing the Vertiv™ Liebert® DCD with a Vertiv™ Liebert® CDU

Overview

Benefits

- Reduced capital expenditures
- Simplified installation
- Optimized configuration with in-row or perimeter placement
- Improved heat rejection capacity
- Enhanced reliability and efficiency
- Ensured water quality

Higher Availability

- Ensures continuous operation of critical IT systems under extreme heat conditions
- Local service and support experts, and 24 hour support call center

Flexibility

- Can cool up to 50 kW per rack
- Designed to work with or without the hot aisle/cold aisle configuration
- Works with or without raised floor

Lowest Total Cost of Ownership

- Increased total energy savings potential
- More cost-effective than increasing the overall room air conditioning capacity using floor-mounted cooling units only
- Minimal floor space requirements

The Internet of things (IoT), artificial intelligence (AI), and other data-intensive technologies like virtual reality are requiring data centers and colocation environments to deploy servers with ever-higher power and cooling requirements.

While liquid-cooled servers afford tremendous efficiency benefits in these high-density environments, it is no small task for an air-cooled data center to make the infrastructure changes needed to support liquid-cooled servers.

An ideal retrofit solution, the Liebert® CDU units for high-density applications allow you to easily and cost-effectively tap into the advantages of liquid cooling with no need to redesign your air-cooled environment.

Effective solutions should be flexible

Data center managers are constantly faced with the challenge of reducing energy consumption and increasing processing capacity, without compromising business activities. The Liebert CDU + Liebert® DCD chilled water high density cooling solution provides significant energy savings over traditional cooling solutions. The modular approach allows additional cooling to be added as compute capacity grows without disruption of the data center. Adding targeted cooling is more cost-efficient than trying to lower the temperature of the entire data center by increasing the overall room air conditioning capacity.

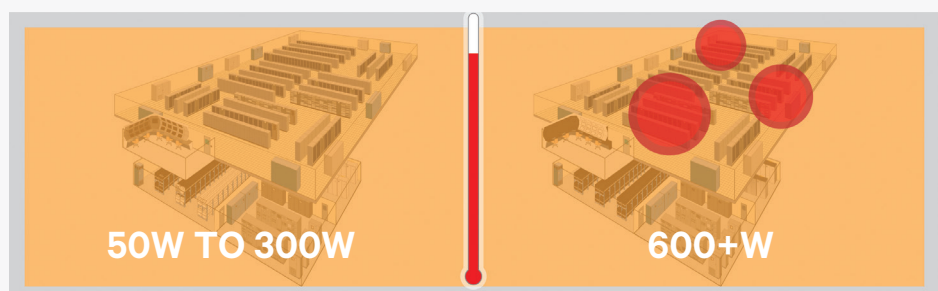
Fight increasing heat loads from two fronts

Hotter Facilities

As processor capabilities increase, so do computer room power densities—from 50 Watt per square foot (540W/m²) to over 300 Watt per square foot (320W/m²). Your whole data center just keeps getting hotter.

Hot Spots

Compounding the problem, this higher heat load is not evenly distributed throughout the room. Sometimes, power densities can grow into hundreds of Watt per square foot, creating localized “hot spots” of extreme heat.



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Vertiv™ Liebert® XDM + Vertiv™ Liebert® DCD

Liquid-Cooled Solution for Air-Cooled Environments

With its compact modular format and up to 400 kW of heat rejection, the Liebert® XDM chilled liquid coolant distribution unit removes the traditional barriers of a centralized chiller to deploy liquid cooling directly where your high density infrastructure is located giving you a cost-effective flexible means for deploying high density rack servers where you need them to support advanced applications.

Overview

These installations that drive higher heat load densities require more deliberate consideration when choosing solutions to manage the excess heat. The Vertiv Liebert XDM paired with Liebert® DCD family of Rack Door Cooling Modules is the ideal solution for these types of applications without increasing the rack footprint.

Flexible to work with a variety of standard IT Equipment and adaptable to support IT refresh cycles.

The Liebert® XDM features Vertiv™ Liebert® iCOM™ cooling unit control for realtime optimization of your cooling assets including monitoring and automation.

Benefits

- Supports High density Servers
- Modular configuration to grow as required
- Improved heat rejection capacity
- Enhanced reliability and efficiency
- Ensured water quality

The Liebert XDM makes it possible for data centers to deploy liquid-cooled rack door cooling modules without a centralized facility chiller while delivering coolant directly to the rack doors overhead or under floor with full control of flow and volume.

The perimeter-based units designed to be modular for flexibility to support immediate deployment and growth requirements with teamwork capabilities. With integrated Vertiv™ Liebert® Liqui-Tect™ leak detection, the Liebert XDM provides peace of mind.

The Liebert XDM is an indoor chiller that connects directly to the Liebert DCD rack door cooling modules and provides circulation and control of the secondary fluid circuit.

The Liebert XDM primary circuit uses R-410A to Vertiv™ Liebert® MCV High Density Condenser with premium efficiency control and EC fans with operational efficiency in EconoPhase mode.

Reliable, efficient chilled coolant distribution

With up to 400kW of heat rejection, the Liebert XDM offers the cooling power to support multiple Liebert DCD passive or active rack door cooling modules making it ideal for efficiently handling the thermal needs of advanced IT equipment while giving you the capability to grow.

The redundant modular design ensures the reliability of your mission critical load. The variable-speed pump controls coolant flow to match heat load with your efficiency goals, giving you the flexibility of allowing you to set the flow rate based on facility conditions.



Complete visibility and control

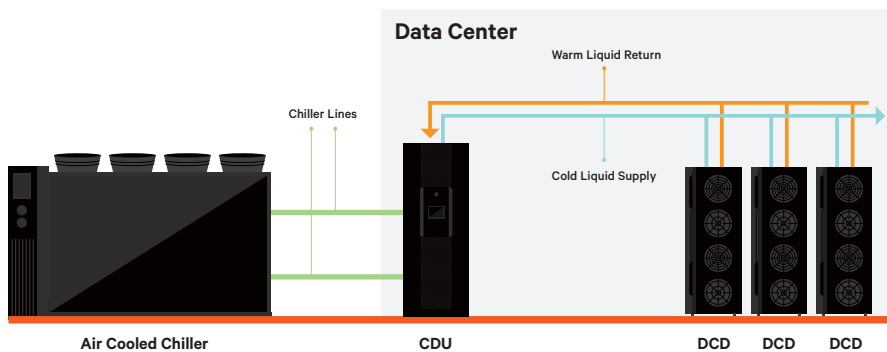
For further peace of mind, the Liebert iCOM™ control display affords complete visibility into unit status and operating conditions, which can also be monitored remotely. You can set flow rates and receive alerts if operational parameters are outside of boundary conditions or if the unit ever requires to switch to a backup unit.

Solve High-Density Challenges in Your Air-Cooled Environment

Data centers with air cooled architecture have long enjoyed the efficiency, scalability and flexibility in their cooling strategies. However, deploying newer high-density equipment in these environments presents a formidable challenge: How do you effectively cool the equipment without access to chilled water on site? The new Vertiv™ Liebert® XDM resolves the issue, making it simple to integrate high-density cooling where needed, with no need to re-engineer the entire data center environment.

Integrate liquid-cooled racks without chilled water onsite

The new Liebert XDM gives you a simple, cost-effective way to cool concentrated pods of high-density equipment in your air-cooled data center. The Vertiv™ Liebert® XDM uses integrated pumped refrigerant economization (PRE) to stand in for chilled water, increasing the efficiency and simplicity of the solution. Paired with Liebert DCD chilled water rear door heat exchangers, the Liebert XDM provides the variable speed pumps and heat rejection solution you need to effectively handle the high heat output from racks of high-density equipment located in your data center.



Working in tandem rear door Vertiv™ Liebert® DCD, the Vertiv™ Liebert® XDM integrates pumped refrigerant economization (PRE) to eliminate the need for chilled water, allowing you to easily and efficiently cool pods of high-density racks in your air-cooled data center.

Vertiv™ Liebert® XDM Features

Pumped Refrigerant Economization (PRE) efficiently and reliably cools pods of high-density racks without the need for chilled water.

Variable Speed Pumps allow for variation in flow of PRE based on load demand, increasing efficiency and saving energy dollars.

Modular Design supports efficiency and redundancy needs by allowing units to function independently or in teamwork mode, so you can add the cooling capacity and protection you need.

Standard Footprint that mirrors the size of air-cooled Vertiv™ Liebert® DSE units, simplifying retrofits, future proofing new data center designs, and allowing you to mix and match units to customize your cooling strategy.

Front and Top Service Access increases installation flexibility.

Dual Power with Reversing Starter allows you to apply a backup generator in addition to the main power source and enables automatic switchover between the two, ensuring uninterrupted operation.

Supercap for quickstart and fast restart after power loss.

Overview

- Easily and cost-effectively incorporate liquid-cooling for small pods of high-density racks in your air-cooled environment
- Eliminate the need for onsite chilled water and simplify operations by leveraging efficient pumped refrigerant economization (PRE) in place of chilled water
- Add flexibility and redundancy with modular units that can function independently or in teamwork mode
- Add top or bottom liquid connection to device heat load
- Improve efficiency with variable speed pumps
- Mix and match air-cooled and liquid-cooled units to simplify retrofits and future-proof your data center design, thanks to standardized footprint and flexible service access
- Lower your total cost of ownership with an easy-to-deploy, efficient, and highly flexible high-density cooling solution

High-Density Chilled Water Product Family Brochure

Vertiv™ Liebert® XDU + Vertiv™ Liebert® DCD

IT cooling challenges continue to escalate as new server and GPU technologies, machine learning, artificial intelligence, and high-performance computing drive heat densities ever higher in the data center environment. Liquid cooling is rapidly emerging as the technology of choice for efficiently handling power-dense hot spots. But introducing new cold liquid plate cooled servers into the sensitive IT environment requires innovative cooling distribution infrastructure that's ideally suited to the many challenges data center managers face.

Be ready to take the heat.

As global demand for rapid data processing continues to escalate, the new Liebert® XDU 450 & 1350 liquid cooling distribution units give data center managers the confidence to put liquid cooling to work in their IT environments. Designed with flexibility to manage liquid quality, and redundancy for peace of mind, the Liebert XDU ensures a seamless transition to high-efficiency liquid cooling required in today's hard-working data centers.

Easily accommodate liquid cooling technologies in your unique environment.

As data centers adopt liquid cooling like the Liebert® DCD, fitting in new cooling distribution infrastructure can be a real challenge. From hyperscale and colocation environments to edge applications, the Liebert XDU simplifies your work with the flexibility to support rear door heat exchangers or direct contact liquid cooling. The Liebert XDU's compact footprint allows for end of row or perimeter placement. However and wherever you incorporate the Liebert XDU, you can easily distribute coolant to efficiently manage power-dense hot spots up to 450 kW or 1,368 KW.

Count on strict water quality control to ensure optimal performance of cold plates and rear doors.

The Liebert XDU manages the entire liquid loop with an innovative contaminant-free design that ensures the highest water quality while providing essential separation of the primary facility water from the ITE heat load. The stainless-steel unit means you will never have to worry about corrosion. A built-in 50-micron filtration unit works around the clock to keep the secondary fluid network free from debris and contaminants that could hinder performance.

Enjoy peace of mind for your mission critical applications.

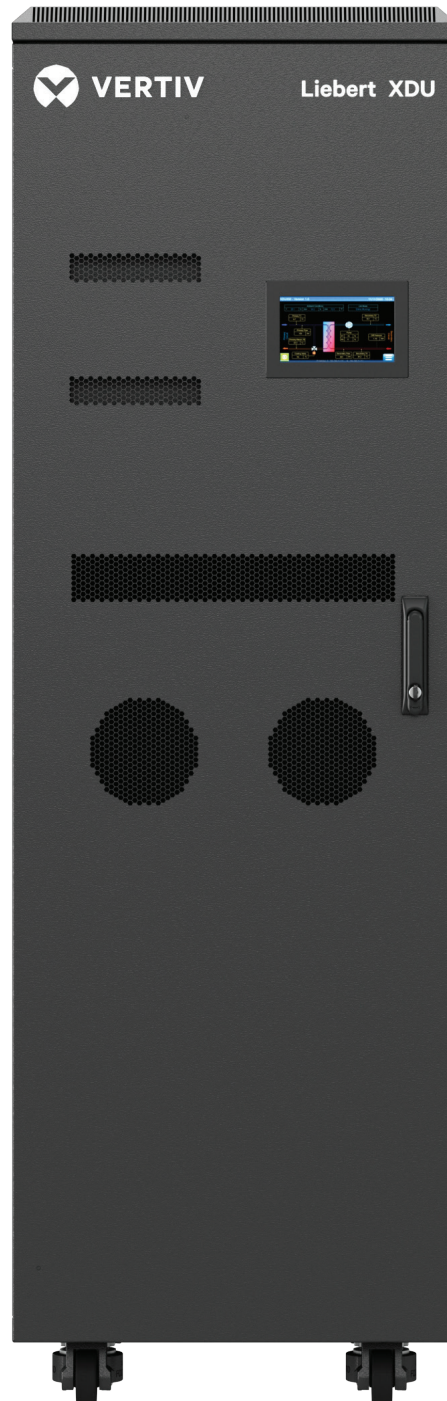
Redundant pumps and power inputs ensure the Liebert XDU is always doing its job while smart settings and teaming options ensure the precise temperature, flow rate, and pressure are continuously maintained to cool your IT environment as effectively and efficiently as possible. You enjoy complete visibility and control over your operational parameters with flexible touchscreen displays, centralized remote management and monitoring, and instant alerts about leaks or any other system problems.

Key Benefits

- Supports a seamless transition to high-efficiency liquid cooling with the flexibility to accommodate rear-door heat exchangers or direct contact liquid cooling.
- Easily and quickly installs and deploys in any data center environment with in-row or perimeter placement.
- Strictly controls water quality and maintains Secondary Fluid Network integrity.
- Ensures complete visibility and control over operational parameters.
- Allows teaming options for greater efficiency and reliability.
- Offers instant notifications and alarms for leaks or other system issues.
- Engineered for optimal redundancy to support mission critical applications.
- Industry leading service support with local installation and same-day maintenance support (where available).

Vertiv™ Liebert® XDU 450 & Vertiv™ Liebert® XDU 1350 Features

- **Efficient Cooling Distribution** to manage power-dense hot spots and up to 450 kW or 1,368 kW.
- **Precise Temperature Control** to eliminate thermal shock for server CPU and GPUs.
- **Redundant Pumps and Dual Power Feeds** for optimizing reliable operation.
- **Teaming Capabilities** allow for fleet control to optimize efficiency and reliability.
- **Innovative Stainless-Steel Design and Hygienic Couplings** help ensure Secondary Fluid Network integrity.



- **Integrated 50-Micron Filters** designed for concurrent maintenance without system shutdown keeps supply water contaminant-free to protect server integrity and performance.
- **Remote Monitoring** available through communications with HTTP, SNMP, RS-485 Modbus, Modbus IP.
- **Intelligent Flow Monitoring with Alarm Features** to help maintain system performance and efficiency.
- **Integrated Leak Detection** and alerts to protect your data center equipment.
- **Easily Accessible Fill Port and Drain Locations** to streamline and simplify maintenance.

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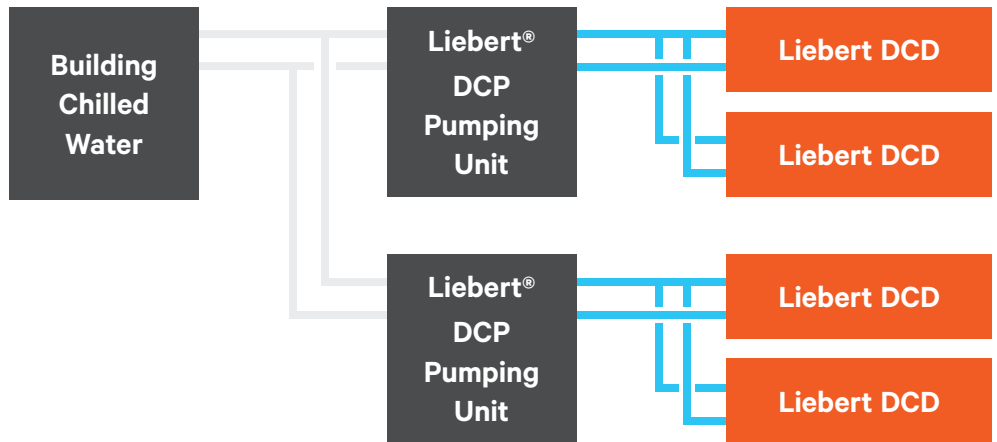
Vertiv™ Liebert® DCP & Vertiv™ Liebert® DCD Cooling Solutions



200 kW of Sensible Cooling

The Liebert® DCP Coolant Pumping Unit is the key to the performance, efficiency and spacesaving design of the Liebert® DCD passive chilled water door. The unit houses the isolating heat exchanger between the Liebert DCD circuit fluid and building chilled water, the control valve, the dual redundant pumps and the system controls. It controls the fluid temperature above the actual room dewpoint. The Liebert DCP can also be used with other brands of rack cooling equipment.

Building Chilled Water



The Liebert® DCP isolates the building's chilled water circuit from the chilled water circuit within the data center. Separating the data center from the building chiller also minimizes the impact of a leak within the data center. Should a leak occur, the volume of water is limited to the amount within the secondary piping system instead of the entire building chiller system. The separation from the building chiller system also ensures proper water quality to the cooling modules in the data center by creating a closed loop system. The Liebert DCP circulates the chilled water to cooling modules (Liebert DCD) while preventing condensation by maintaining the water temperature above the room dew point.

Intelligent System Control

The Liebert® iCOM™ control system on the Liebert DCP features maintenance history, spare parts list, Liebert® IntelliSlot for up to two cards (web compatibility and BMS), and comprehensive monitoring. The enhanced Liebert iCOM with its IT-focused user interface allows real-time monitoring and data capture. Status may be reported back to the BMS via Liebert IntelliSlot communications cards.

Flexible Approaches For Energy Efficient Cooling

Data center managers are constantly faced with the challenge of reducing energy consumption and increasing processing capacity, without compromising business activities. The Vertiv™ Liebert® DCP + Vertiv™ Liebert® DCD chilled water-based high density cooling family provides energy savings of up to 70% over traditional cooling. The modular approach allows additional cooling to be added as compute capacity grows, without disruption of the data center.

Adding targeted cooling is more cost-efficient than trying to lower the temperature of the entire data center by increasing the overall room air conditioning capacity. Liebert DCP + Liebert DCD mission-critical cooling systems are specifically designed to address the higher heat loads generated by tightly packed electronic rack enclosures.

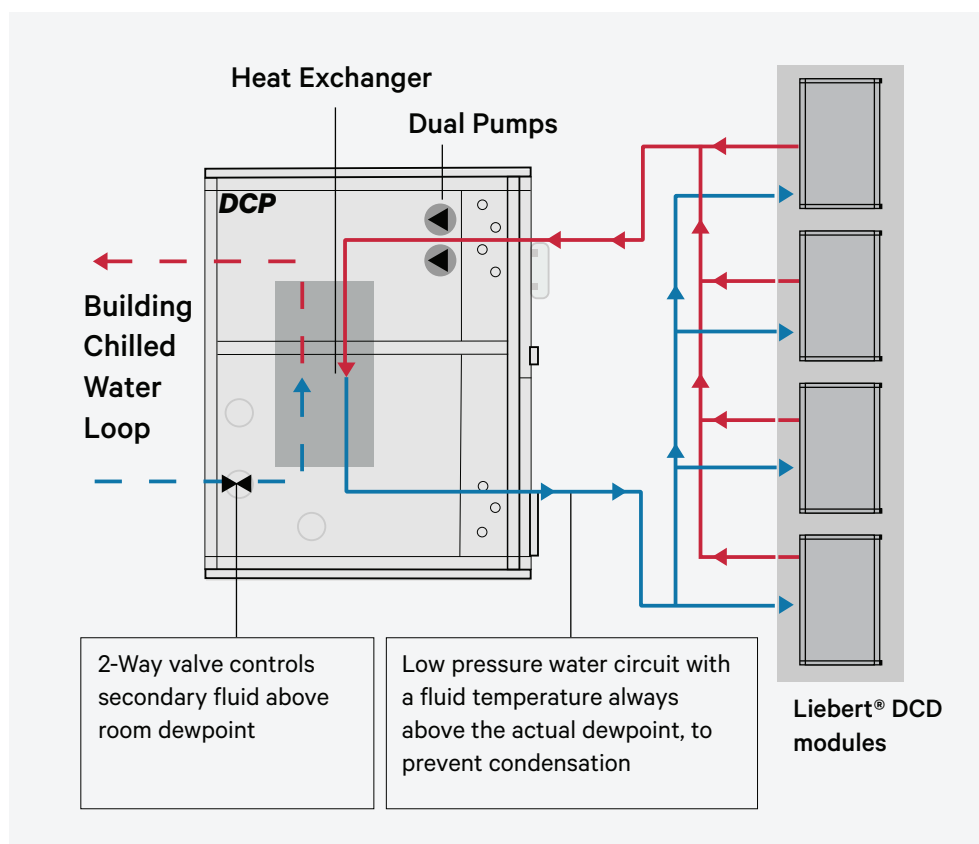
Liebert DCP + Liebert DCD Water-Based Systems

Liebert DCP + Liebert DCD is a family of water-cooled systems that offers a cost-efficient cooling alternative. They are designed to work in any size space from a small computer room to a large data center with loads from 5 to 50 kW per rack. Business continuity professionals are demanding an integrated high heat density cooling solution — one that considers both room-level and rack-level needs.

Effective Solutions need to be flexible

Added as heat loads increase, Liebert DCP + Liebert DCD cooling capacity allows your facility to adapt as heat loads rise — allowing cooling solutions to be added to react to the changes in your environment.

Hydraulic Schematic



Key Benefits

- Supports a seamless integration into existing infrastructure, eliminating mission critical downtime
- Improves system efficiencies and reduces operational costs
- Ensures high cooling availability for all racks
- Advanced controls maintain chilled water temperature above the dew point, reducing the risk of condensation on the cooling coils
- Isolates the chilled water circuit from the DCD water circuit and provides filtration to ensure long system life
- Allows for scalability for future growth of business operations

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Build Your Total Infrastructure Solution with Vertiv

Discover expert designed IT infrastructure solutions with proven success in diverse environments and countless applications. By pairing the Vertiv™ Liebert® DCD with a Liebert® CDU, a Vertiv™ rack, a Geist™ rPDU, or a Liebert® UPS, explore your options into a more flexible data center.

Vertiv™ Liebert® DCD
Provides energy-efficient cooling close to the IT equipment

Vertiv™ Rack
Supports a wide variety of equipment and gives you the flexibility you need with easy installation

Vertiv™ ACS Console
Enables integrated remote monitoring, out-of-band management, and IoT connectivity

Vertiv™ Geist™ rPDU
Reliably distributes power to the rack, supporting dynamic data center operations and DCIM

Vertiv™ KVM Switch
Enables single-point access for switching between multiple computers

Vertiv™ Geist™ SwitchAir™
Prevents overheating of network switches by directing cool air to switch intakes, keeping hot exhaust air out

Vertiv™ Liebert® GXT5
Helps protect mission-critical equipment from all power disturbances due to blackouts, brownouts, sags, surges or noise interference



Vertiv™ Racks

Server racks designed to simplify equipment installation and provide an additional 6cm of useable depth.

Vertiv™ Liebert® DCP

Isolate the chilled water loop and dial in temperature and flow rate to maximize the sensible cooling capacity of the units.

Vertiv™ Geist™ Rack PDU

Reliable power distribution from basic to outlet level remote monitoring and management providing the highest level of power reliability, visibility, and control.

Vertiv™ Liebert® DCD

With increasing heat densities, keeping the IT equipment running at optimal temperatures is more important than ever. Ensure peace of mind with highly efficient, room-neutral cooling.

- ✓ **Easy Integration**
- ✓ **Fully Customizable for your IT Needs**
- ✓ **Worry-Free Operation with Remote Monitoring**



Vertiv.com | Vertiv Headquarters, 1050 Dearborn Drive, Columbus, OH, 43085, USA

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