Hewlett Packard Enterprise

HPE Modular Cooling System 200

Scalable, efficient, and flexible
The innovative design of the HPE Modular Cooling System (MCS) 200 can increase the capacity of data centers with limited cooling resources.

The HPE MCS 200:

- Provides a path for increasing power density up to 55kW per rack, with the option of keeping power as low as 15kW per rack.
- Supports fully populated high-density racks, while reducing the facility's overall heat load.
- Saves valuable floor space and cooling resources that would be required for underutilized racks.

Extend data center limits

The deployment of high-density compute is on the rise. While the space-saving benefits are indisputable, these systems create a significant problem for data center managers around the world. The challenge? Extending the capacity of existing data centers to support high-density systems—even with limited cooling sources.

HPE Modular Cooling System (MCS) 200 makes it possible to achieve hardware densities and power consumption levels (up to 55kW in a single rack) that have been difficult—if not impossible—to support with conventional HVAC systems.

Match your IT to the right cooling solution

Each new generation of server provides more compute power at higher densities, driving the need for higher rack power and more cooling. The growth in power density (watts per U of rack space) will ultimately challenge the limits of your conventional cooling infrastructure. To overcome these challenges, you may limit rack utilization based on cooling capacity or deploy excess air conditioning. In either scenario, you face an unsustainable future.

HPE MCS 200 warm water capacity
Based on measured thermal performance, the HPE MCS 200 can support IT loads up to 50kW at 25°C inlet water with 44 gallons per minute (GPM) and a server supply air temperature of 35°C. Higher water temperatures are possible with decreased IT load. For example, the HPE MCS 200 can support 20kW of IT at 31°C water and 35°C supply air temperature.

Realize the full value of your high-density servers

To help you reap the benefits of high-density systems without the associated power and cooling challenges, HPE designed the HPE Modular Cooling System 200—a closed-coupled cooling solution that removes the high levels of heat, even with power consumption up to 55kW in a single rack.

Designed to extend the capacity of your data center, the HPE MCS 200 uses modular fans and a dedicated air-to-liquid heat exchanger to cool heated rack components. Using the cooling efficiency of water, the system cools fully populated high-density racks and keeps them free of hot spots.

HPE bi-directional cooling technology allows simultaneous cooling of two racks when utilizing the HPE MCS expansion rack. The HPE MCS 200 racks can cool as little as 15kW, (depending on configuration), and as high as 55kW of server capacity, either all in one rack or split between two racks.

The HPE MCS 200 enables server cooling at temperatures that cannot be established within the data center, increasing both performance and energy efficiency. The HPE MCS 200 creates an isolated hot and cold-aisle environment separate from ambient temperatures. In addition, the environment within the HPE MCS 200 can be controlled independently of ambient data center conditions, allowing for user-adjustable cold-aisle set points and the ability to use warmer facility water dependent on IT requirements.

Figure 1. Fan modules (blue) and heat exchanger (tan) for the HPE MCS 200

Take a look under the hood

Supporting the front-to-back cooling principle used in most server designs, the HPE Modular Cooling System 200 evenly distributes cold air at the front of the rack. Each server receives an adequate air supply, regardless of its position or the overall density of the rack. As the servers expel warm exhaust air from the rear of the rack, the HPE MCS 200 fan modules redirect the warm air into the dedicated heat exchanger. The air is then cooled and recirculated to the front of the rack. Any condensation that forms is collected in the heat exchanger and sent through a discharge tube to a condensation tray located in the base of the enclosure.

The enclosure has solid front and rear doors, sidewalls, and top and bottom covers. The front and back doors must be kept closed to allow a high volume of cool air to remain within the system. All rack space must be either filled by equipment or enclosed by blanking panels so the cool air is routed through the equipment and cannot bypass through or around the rack.

The HPE MCS 200 can ship with your IT infrastructure fully integrated and cabled. The HPE Modular Cooling System 200 model includes the dedicated heat exchanger and four fan modules, with an option to upgrade to up to six fan modules. Each fan module contains a variable-speed circulation fan. The heat exchanger is an air-to-water heat transfer device, which discharges cold air to the front of the rack via a side portal. Cool water for the heat exchanger can be provided by your facility water system or by a dedicated water cooler. The HPE MCS 200 can support water temperatures of 7°C–31°C, making it ideal for chilled or warm water data centers.

Each fan module contains a variable-speed circulation fan. The heat exchanger module contains an air-to-water heat transfer device, which discharges cold air to the front of the rack via a side portal. Chilled water for the heat exchanger can be provided by your facility's chilled water system or by a dedicated chilled water unit.

Up to

55kW

per rack.

6X

more power and cooling[1]

90

percent more efficient[2]

[1] The HPE MCS 200 has a 55kW power capacity per rack compared to the industry average of 8kW.

[2] The traditional data center PUE is ~2.0 while the HPE MCS 200 partial PUE is ~1.1. The value for the HPE MCS 200 is for "partial PUE" only (and dependent on model and on the configuration and on the load).

Key features and benefits

High-performance cooling

- Supports a full rack of density-optimized or blade servers, which at peak configuration requires a power load in excess of 35kW.
- Provides chilled air along the full height of the rack, reducing hot spots.

Versatility for a wide range of options

- Comprehensive platform support
  - HPE servers, including HPE ProLiant, HPE BladeSystem, and HPE Integrity
  - HPE Storage
  - Third-party standard-rack servers
- Support for 2,000 pounds of IT equipment
- Optional configuration and delivery by HPE Factory Express

Engineered for reliability and ease of ownership

- Hot-swappable fans can be replaced while the unit is operating, allowing for greater flexibility and easier serviceability.
- Full-featured environment manager is accessible locally or remotely using a web browser or smart phone.
- A 42U industry-standard rack maintains the height of your data center rows, with no effect on how your servers are racked.
- Ability to maintain data center tiling, with the HPE MCS 200 enclosure being one-half the width of a standard rack.
- Redundant power automatically detects power failures and switches to an alternate source.
- Ability to drain condensation through an evacuation pipe.
- Level-2 integration with HPE Systems Insight Manager (SIM), helping to increase your system uptime and health.

Technical specifications—HPE MCS 200

Overall dimensions Standard product with single rack configuration (excludes packaging)	Width: 915 mm Depth: 1510 mm Height: 2004 mm
Weight	2694 lb (1222 kg)
Max cooling capacity	15kW to 55kW per rack Up to 4500 CFM (single rack) Up to 4800 CFM (dual rack)
Standard amount fan modules	4 fan modules Upgradable to 6 fan modules
Rear extension	Standard Supports the complete width of the IT rack and cooling unit
Water temperature	7°C to 22°C
Water hook-up	Top, bottom, or rear
Color touch-screen display	Standard
Automatic door release	Standard
Condensation pump	Standard
Automatic transfer switch	Standard

Resources

HPE Modular Cooling System User Guide

HPE Modular Cooling System Maintenance and Service Guide

HPE Modular Cooling System Site Preparation Guide

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