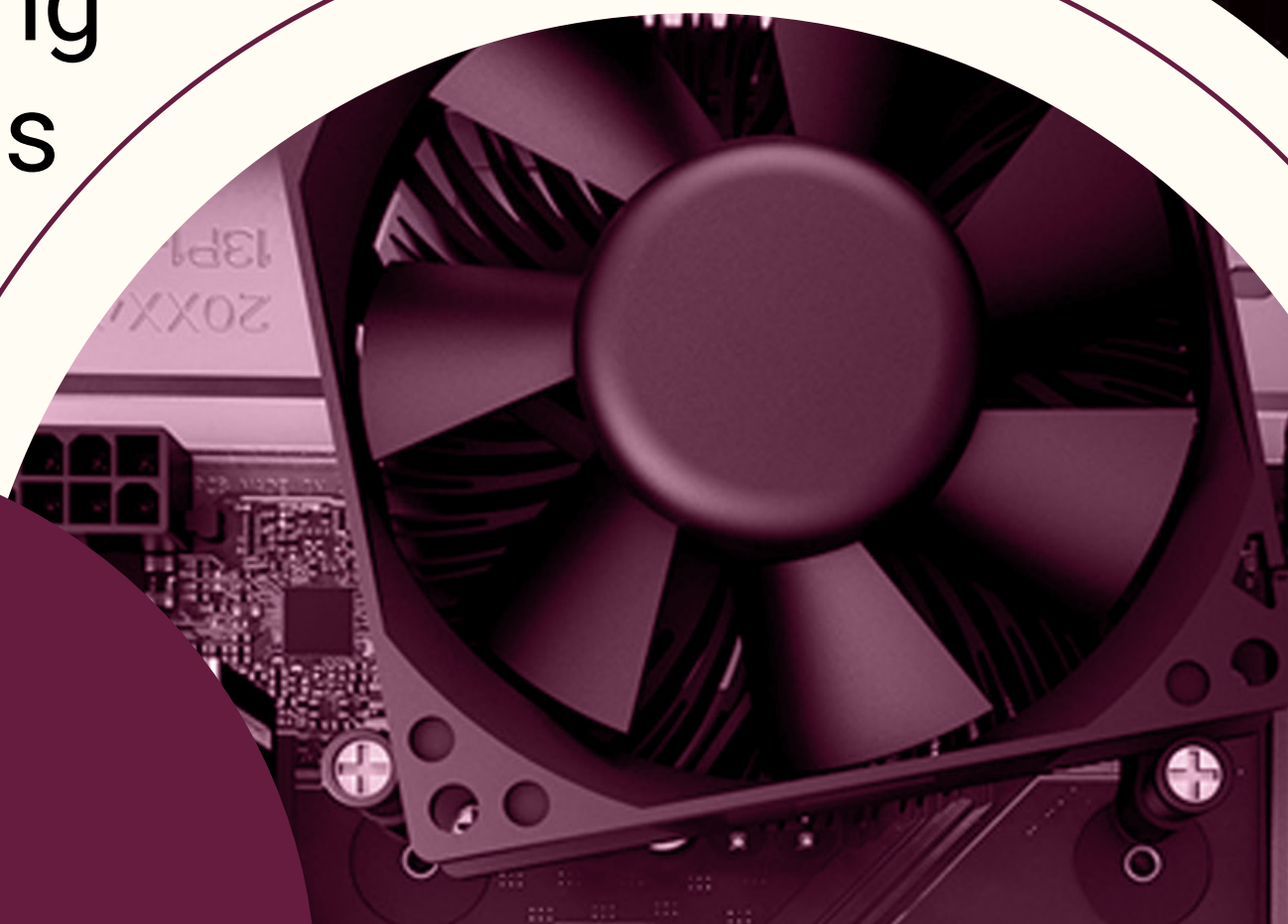
DELL Technologies

Revolutionize Data Center Cooling with Servers Tailored for Modern IT Demands

The future of data centers hinges on efficiency as IT and Facilities grapple with a possible power crisis. Dell Technologies is leading the charge with Smart Power and Cooling technologies built into its portfolio of PowerEdge servers. Innovative solutions deliver a balanced approach to managing energy and thermal challenges, which empower data centers to achieve higher performance, increase rack density, and gain substantial energy savings.

Smart Cooling Technologies



Air Cooling

Dell combines the latest air-cooling technologies with sophisticated software algorithms to optimize cooling across all PowerEdge server configurations, ensuring both energy efficiency and peak performance.

- Cutting-edge Computational Fluid Dynamics (CFD) is used to model airflow simulations to optimize system designs.
- Multi-Vector Cooling (MVC) intelligently provides the right amount of cooling directed to the right locations inside the server.
- Fan and heat-sink innovations enable Dell to extend the supported air-cooled configurations.

Benefits:

Extend the useful life of your air-cooled data center.

Maximize the range of air-cooled configurations.

Intelligent cooling controls ensure the highest efficiency and lowest power utilization effectiveness (PUE).

Direct Liquid Cooling (DLC)

Benefits:

Increased System Cooling Capacity for configurations such as high TDP CPUs, dense storage, and/or add-in cards.

Improved Energy Efficiency (PUE) reduces energy costs by up to 45% relative to cooled air and extends the life of existing air infrastructure.

Higher Compute Density supports up to 25% more cores per rack and enables 2x the core count over air-cooling.

Servers with Direct Liquid Cooling (DLC) are pivotal for managing the heat of high-power components in dense data center environments. Factory-installed cold-plate loops connect to a complete liquid cooling solution, managing IT heat more efficiently than air cooling alone.

- Available on dense compute systems, as well as 1U and 2U servers
- Leak Sense technology detects and alerts customers through iDRAC to minimize potential issues quickly and automatically.

Immersion Cooling

Immersion Cooling is used for niche applications where conditioned air is not available. It enables 100% heat capture to liquid with no air required. Dell supports single-phase immersion projects through its OEM solutions.

Benefits:

Manages high TDP components in dense server systems.

Dell OpenManage Power Manager

OpenManage Power Manager, a plug-in to the OME console, orchestrates all cooling solutions, minimizing manual interventions. It intelligently monitors and adjusts system sub-components in real-time, ensuring sustained performance while optimizing energy efficiency and reducing carbon footprint.

Benefits:

Reduce power usage by automating policies that place power caps on racks, rows and rooms of servers.

Intelligently identify what components are consuming the most power.

Reduce the carbon footprint of a data center.

Quickly identify and fix issues before they create a negative impact.

The Synergy of Power and Cooling in Modern Data Centers

As data centers evolve with artificial intelligence (AI) and machine learning (ML) advancements, the synergy between power and cooling in the server becomes even more critical. PowerEdge servers with Smart Power and Cooling technology ensures that watts are used efficiently, support higher density within the rack, and enhance performance across data centers worldwide.

To learn how our servers with Smart Power and Cooling solutions can address your needs, visit our Data Center Power and Cooling Solutions web page or download our brochure.

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