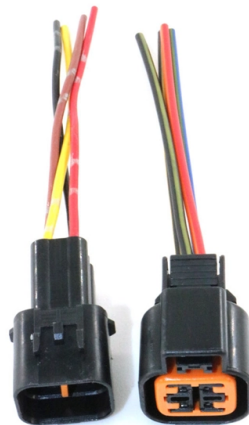


Hot aisle enclosure between computer room modules



AI Overview

Hot aisle containment (HAC) encloses the hot exhaust air from server racks, directing it back to cooling units to improve efficiency, prevent hot spots, and enable higher IT load capacity.

How Hot Aisle Containment Works

Hot aisle containment uses physical barriers such as ceiling panels, end-of-aisle doors, and side panels to enclose the hot aisle between rows of server racks. The system captures the warm exhaust air from the rear of IT equipment and channels it toward the air conditioning return system, often through a ceiling plenum or ductwork (). This separation prevents hot and cold air from mixing, ensuring that cold supply air reaches server intakes efficiently while hot air is returned directly to cooling units ().

Benefits of Hot Aisle Containment

- **Increased Cooling Efficiency:** By preventing hot and cold air mixing, HAC allows cooling units to operate more efficiently, often reducing energy consumption by 30–50% ().
- **Higher Setpoint Temperatures:** Facilities can safely increase server inlet temperatures by up to 10°F (5.5°C) while staying within ASHRAE guidelines, reducing cooling energy costs ().
- **Improved Equipment Performance:** Stable temperatures reduce the risk of overheating.

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With hot aisle architecture, the supply air is directed onto the front of the racks and the hot discharge air

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Figure 4: Cold aisle containment with rigid enclosures prevents cold supply air from the CRAC units from mixing with hot exhaust air.

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