Dell PowerEdge Energy Smart Containment Rack Enclosure

The Energy Smart rack is a stand-alone containment solution that can overcome density limitations and improve cooling efficiency in a raised-floor data center.

Optimizing air distribution in data centers

In the pursuit of cost-efficient IT, improving the distribution of air to data center equipment can have a surprisingly favorable impact on energy costs and capital expenses. The Dell™ PowerEdge™ Energy Smart Containment Rack Enclosure provides a passive and effective way to manage the air consumption of IT equipment and lower the costs in a data center using raised-floor cooling. The Energy Smart rack's cold-air containment system helps:

- Ensure sufficient cold air reaches all IT equipment
- Remove data center hot spots by eliminating the mixing of hot and cold air
- Maintain a consistent inlet temperature
- Prevent Computer Room Air Conditioning (CRAC) unit over-provisioning

The innovative design utilizes a solid front door to create an integrated plenum that contains the cold air from the ventilated grate positioned below the rack. The Energy Smart rack is coupled to the floor with a tight brush seal around its lower perimeter, enabling the IT equipment fans to take part in the CRAC distribution process, controlling how much air comes out of the floor and reducing waste while ensuring density.

To achieve the maximum potential energy savings, the Energy Smart rack is designed to work with CRAC units that control airflow delivery by sensing static pressure under the floor and responding to pressure fluctuations that occur when IT demands change, such as to accommodate an increase in compute loads. While it is not a requirement, using this configuration can result in optimized CRAC capacity by efficiently directing the right amount of cold air directly to the IT equipment and helping decrease CRAC utilization.

Providing simple deployment and high density

Deployment is easy: simply roll the Energy Smart rack into place over a ventilated grate and install IT equipment. With the integrated containment, there is no additional expense for customized ducting panels or curtains, and there is no impact to data center facilities such as water, power or fire-suppression systems. This containment enclosure is designed to be placed anywhere in the data center and can be installed one unit at a time, as needed. It is also compatible with other forms of cold-air containment.

Equipment can be installed anywhere in the rack without concern for hot spots, because the system enables the proper amount of air to be delivered into the entire plenum. Moreover, the plenum is designed to maintain a consistent temperature, even at the top of the rack. Because the passive design does not limit airflow, the Energy Smart rack can achieve system densities exceeding 25kW at 25°C.

Boosting data center cost efficiencies

As IT directors look for ways to lower costs associated with energy usage and capital expense, implementing containment can help organizations further their goals for cost-efficient IT. The easy-to-deploy Energy Smart rack enclosure is designed to improve CRAC efficiency for reduced operating expenses and to support high-density deployments for reduced capital expenses.

> Affordable and easily deployed passive design seals to the floor and directs air evenly to all installed IT equipment, with support for 25kW at 25°C.

Feature	PowerEdge Energy Smart Containment Rack Enclosures technical specification
Rack Unit (U) spaces	40U and 46U capacity for rack-mounted equipment Bottom 2U of 42U and 48U height is occupied by horizontal plenum
Dimensions	**4020S:** Width: 23.8" (605 mm) Depth: 47.2" (1200 mm) Height: 78.7" (1998 mm) Weight: 381 lbs (173 kg) **4620S:** Width: 23.8" (605 mm) Depth: 47.2" (1200 mm) Height: 89.5" (2273 mm) Weight: 407 lbs (185 kg)
Static load capacity	1.25 tons (1.13 metric tons) or 2500 lbs (1136 kg)
Vertical PDU capacity	Up to 4 full-height units (2 per side) Up to 8 half-height units (4 per side)
Access features	Removable tail-bars for easy cable routing Dual rear doors with single latch mechanism Reversible front door Removable front and rear doors and side panels Removable extension service cover Rotating rear casters Easily accessible leveling feet

Energy Smart Rack accessories

Accessories include blanking panels, keyboard-monitor-mouse (KMM) consoles, power distribution units (PDUs), interconnect kits, top-of-rack fans, and an equipment shelf.

Item	Interconnect kit	Equipment shelf	1U panels	2U panels	6U panels
Description	Connects two racks of the same height together	1U fixed steel shelf holds up to 200 pounds of equipment	Steel blanking panels are available in multiple sizes to provide cold/hot air separation, and are required to fill any unused space in the Energy Smart rack.		
DAO[1] tied SKU	330-3601	330-5781	330-8935	330-8942	330-8943
DAO non-tied SKU	330-4455	330-5782	330-8932	330-8940	330-8933
EMEA tied SKU	770-10734	N/A	770-11149	770-11151	770-11154
EMEA non-tied SKU	770-10740	770-11038	770-11158	770-11155	770-11164
APJ tied SKU	770-10950	770-11018	750-30458	750-30454	750-30456
APJ non-tied SKU	321-10102	770-11229	350-10886	350-10881	350-10884

[1]Region codes: DAO = Americas; EMEA = Europe, Middle East, and Africa; APJ = Asia Pacific and Japan

Learn more at Dell.com/PowerEdge/Rack