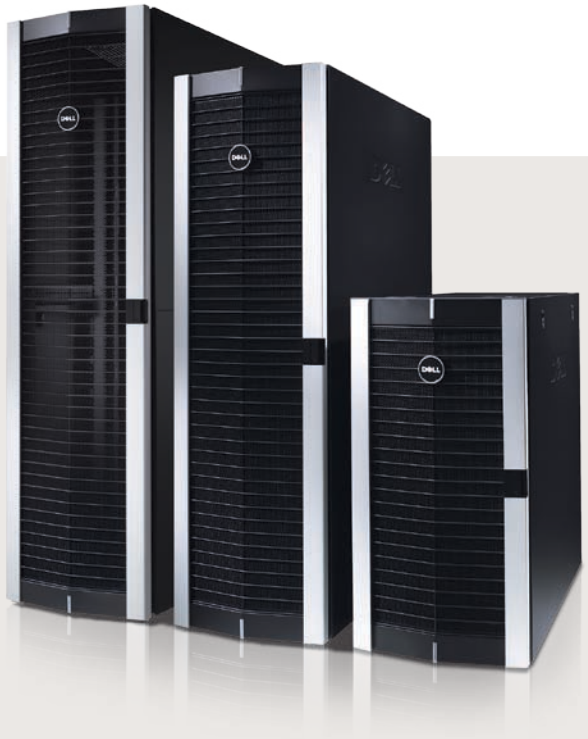
Racking up data center efficiency

By Joyce Ruff

Designed to meet the needs of high-density data center environments, the Dell™ PowerEdge™ 4820 rack enclosure can hold and protect a wide range of IT equipment while supporting enhanced power management, efficient cooling, and simplified component storage and mounting.

When organizations deploy or expand their data centers, they often struggle with finding the right balance between server capacity and power management. Many choices depend on the space available in the room being used for equipment storage, and IT managers must also account for weight, power, cooling, and data management requirements to help ensure that the data center is both functional and efficient. One key decision is the selection of a rack infrastructure: racks have become far more than simple cabinets, and the inclusion of features that help organizations store, power, cool, manage, and secure their hardware makes them a key part of the overall data center design.

Dell PowerEdge racks include an array of features to address the critical power, cooling, and cabling issues that many organizations face in their data centers. The Dell PowerEdge 4820 rack enclosure is the latest addition to the PowerEdge rack family, which now includes three models to help meet different needs: the 24U PowerEdge 2420 rack, the 42U PowerEdge 4220 rack, and the 48U PowerEdge 4820 rack. Each rack is 600 mm wide and 1,070 mm deep to fit within a two-tile floor plan. Designed to hold and protect server, storage, and networking equipment, the PowerEdge 4820 provides a high-density option for organizations with high-performance computing centers and similar environments that need to support additional servers while still maintaining the existing footprint.



The Dell PowerEdge rack family includes three models to help meet a variety of data center needs

The 10-second challenge

The Dell ReadyRails mounting interface is designed for easy installation—with no tools required. In this video, see just how quickly this design can be fitted onto a Dell rack.

youtube.com/watch?v=7GCPOKSNuC4

Designing for flexibility, strength, and security

Built with adjustable vertical mounting rails within the rack, Dell PowerEdge rack enclosures are designed to accommodate multiple types of IT equipment. Because they adhere to the EIA-310-E standard for rack mounting of electronics, the racks can fit not only Dell PowerEdge servers, but also Dell EqualLogic™, Dell PowerVault™, and Dell/EMC storage; Dell PowerConnect™ switches along with other networking equipment such as routers, switches, and hubs; and even telephony equipment.

The PowerEdge 4820 has a static load rating of 2,500 pounds (1.13 metric tons), enabling it to hold a typical complement of equipment without the need for special infrastructure. To help increase rigidity, IT departments can take advantage of accessories such as side stabilizer bars to secure the rack to the floor, as well as interconnect kits to bolt adjacent racks to each other. Rotating rear casters and accessible leveling feet on Dell racks enable easy maneuvering and positioning. And because they incorporate lockable doors at the front and rear of the rack as well as lockable side panels that use the same key, these racks can be used in almost any environment—including data centers, remote offices, wiring closets, and even factory floors.

Incorporating key accessories

Although rack enclosures provide the necessary capacity for holding key data center components, it takes more than just a rack to create an efficient data center. To help organizations implement best practices for efficiency, Dell racks support a range of complementary accessories to enhance power management, airflow, and component storage and mounting.

To enable IT staff to mount Dell half-height and full-height managed power distribution units (PDUs) without cables impeding airflow and equipment access, the Dell PowerEdge 4820 rack provides a large distance between the back panel of the server and the PDU outlets. This rack also supports a wide range of options for PDU types and form factors, and includes a tray for mounting PDUs at the rear of the rack as well as support for installing them in the U-spaces. The PDU tray has been enhanced with additional mounting locations for PDUs and cable management accessories.

Rack fan kits and blanking panels can help ensure proper airflow in the rack and enhance cooling efficiency. Plastic blanking panels in 1U and 2U sizes are now available in addition to steel blanking panels in 1U, 2U, 3U, and 6U sizes. The plastic blanking panels have a tool-less snap-in design that enables quick, easy installation and removal in the unused U-spaces in a square-hole rack. The screw-in design of the steel panels provides support for a wider range of racks, including threaded and unthreaded round-hole racks as well as square-hole racks.

IT staff can quickly and easily mount latest-generation PowerEdge servers in PowerEdge rack enclosures using the Dell ReadyRails™ tool-less mounting interface, which includes spring-loaded latches designed to engage automatically. This efficient design makes the release latch visible and accessible from the front of the rack, without requiring special tools or empty U-spaces above or below to disengage them.

These rail kits are available in sliding or static styles to accommodate the needs of different server specifications and the environment as a whole. Sliding rails allow the system to be fully extended out of the rack for service,

and additionally support an optional cable management arm (CMA) that attaches without the use of tools and provides a guide for component cable routing to the rear of the rack. Because static rails are less complex than sliding rails and do not need CMA support, they offer a smaller footprint. Both types of ReadyRails mounting kits can be installed in EIA-310-E-compliant four-post square-hole and unthreaded round-hole racks; the static rail kits can also be mounted into four-post threaded-hole racks and two-post racks.

For components that do not come with rails for rack installation, IT staff can take advantage of the 1U fixed equipment shelf, which is designed for tool-less installation into square-hole or unthreaded round-hole racks using the ReadyRails mounting interface. The rail design for the shelf also supports tooled installation in four-post and two-post threaded-hole racks for added versatility. This steel shelf is designed to hold up to 200 pounds of weight, and comes with a pair of hook-and-loop straps to secure cables to the shelf.

Enabling efficient, high-density environments

Server racks are an important part of effective data center design. In conjunction with key accessories, the Dell PowerEdge 4820 rack enclosure provides a flexible way for organizations to create efficient, high-density environments without increasing floor-space requirements. PS

Joyce Ruff is a product marketing manager for the Data Center Infrastructure team within the Dell Enterprise Product Group.

Learn more

Dell racks and accessories: dell.com/poweredge/rack