

# PowerEdge Server Design

To continue leading the movement for more eco-friendly server designs, we developed PowerEdge servers focusing on front-to-back efficiency and start-to-finish thoughtfulness.

We can offer more efficient technology without introducing new costs, enabling faster adoption that benefits the planet and our customers. We make every effort to reduce waste and reuse available resources; that's why our PowerEdge servers contain up to 35% recycled material (2019).<sup>1</sup> Our Moonshot goal to have our products made with at least 50% recycled or renewable materials by 2030.<sup>2</sup>

### Efficient Design; From Front to Back

Efficient design focuses on maximizing the amount of work that can be done with the least amount of resources possible. Following this strategy ensures that no space, energy or opportunity is wasted in each box. Customers benefit from a solution that has been designed to output as much work as possible, therefore optimizing the total number of servers needed to meet their data center needs.

### PowerEdge Efficiency Achievements

1. Drive carrier rail structures now have thin folded metal edges that allow for increased airflow throughout the server chassis. Additionally, the motherboard design has been modified to a T-shape that better organizes airflow distribution throughout the server structure. These design modifications improve fan and power supply usage which reduces total power consumption.
2. Refined front-end perforation patterns more effectively prevent the buildup of dust around intake and exhaust vents as well as within the system. This improvement in airflow and fan performance reduces power consumption and enhances energy efficiency. Therefore, PowerEdge products can be further populated with valuable hardware as the efficiency of cool air has increased throughout the box.

3. I/O ports were relocated from within the chassis to the rack ears. Implementing this design change enabled more drive space within the box that customers can utilize for additional capabilities.

### Balanced Airflow Design

Creates exhaust lanes for hot airflow from the CPUs to prevent overheating of downstream hardware components.

### Thoughtful Design; From Start to Finish

Thoughtful design focuses on making conscious efforts to create positive environmental impacts, such as reusing resources to minimize the global footprint. PowerEdge servers prioritize thoughtfulness over inconsequential aesthetics to protect and preserve the environment and its future.

### PowerEdge Thoughtful Achievements

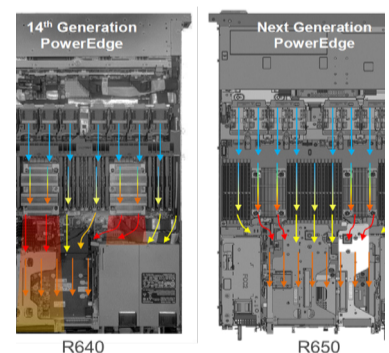
1. Paint was removed from the front end of the server, hard drive carriers and the rear handles. The front end of the server uses hemmed edges to conceal the metal edges, thereby eliminating any need for paint, enhancing the chassis structure, as well as enabling IO components to relocate to the rack ear. Hard drive carriers use a natural finish stainless steel, which reduces the volume of paint used on each server and improves signal integrity. Lastly, the rear handles utilize a die cast process with a bead blast finish as an alternative to using paint. These design changes allowed harmful paints to be removed from multiple processes, therefore producing less air pollutants.
2. Black plastics contain up to 30% recycled resin (2019).<sup>3</sup> Internal components such as latches, air shrouds and casings now use recycled plastics to reduce the production of excess undesired plastics that pollute the oceans and harm our ecosystem.
3. Designs are being standardized across the PowerEdge portfolio. Standardizing primary components, such as the chassis, rails and guards, means less prototyping and tooling is required, which must use a small yet significant amount of toxic metal material that will eventually become waste. By moving forwards with a standardization approach, prototyping will be needed much less frequently, and tooling can be reused.

### What you can expect from Dell Technologies:

We are committed to manufacturing our PowerEdge servers with the future in mind: Server technology and innovation can continue to advance and provide high performance in data centres, while simultaneously helping preserve our environment.

To read more about PowerEdge design, click [HERE](#).

**Room to breathe:** relocated drive bays free up much of the chassis rear for unimpeded air flow with additional perforation for maximum airflow.



**Relocated PSUs:** New layout places the PSU on the outside edges of the 1U and 2U server chassis.

<sup>1</sup> Based on Dell analysis of publicly available data, October 2019.

<sup>2</sup> Source: <https://www.dell.com/en-sg/dt/corporate/social-impact/reporting/2030-goals/advancing-sustainability-moonshot-goal-overlay.htm>

<sup>3</sup> Based on Dell analysis of publicly available data, October 2019.