



# Grow and Innovate on Energy-Efficient, Sustainable IT Infrastructures

**Enterprises looking to decrease carbon emissions in their data centers should consider hybrid-cloud infrastructure to help minimize their overall total impact on sustainability (TIS).**

Data centers and data-transmission networks each account for about 1–1.5% of global electricity use.<sup>1</sup>

To meet net-zero scenario goals, greenhouse gas emissions by the IT industry must drop by half by 2030.<sup>1</sup>

Data centers are responsible for a large amount of greenhouse gas emissions due to the energy required to power and cool servers. As demand continues to grow for IT services, such as cloud computing, streaming video and artificial intelligence (AI), so will the environmental impact of data centers.

Dell APEX Cloud Platform for Microsoft Azure, running on the latest generation of Dell PowerEdge servers, is a powerful, sustainable IT solution that can help organizations meet their energy efficiency and environmental goals.

### What's Needed for Sustainable IT

Enterprises face more pressure than ever to ensure the sustainability of their IT infrastructures. This is due to trends such as stricter climate control regulations, the need to increase cost savings and corporate responsibility initiatives. IT sustainability requires a holistic approach that addresses several key areas to reduce the environmental impact of technology. It begins with data center energy efficiency, through which organizations optimize their servers, storage and infrastructure to reduce power consumption. Reducing power consumption not only cuts costs for the organization but also helps lessen the demand on power grids, contributing to a smaller carbon footprint.

Sustainability can also extend to manufacturing processes. Companies are increasingly adopting practices such as using recycled materials, minimizing waste and reducing the use of harmful chemicals in the production of IT equipment. End-of-life recycling also plays a crucial role in IT sustainability—instead of discarding old or obsolete equipment, companies can recycle or refurbish components, reducing electronic waste.

As a result, many businesses are approaching their IT infrastructure decisions by looking at the total impact on sustainability (TIS). Instead of evaluating hardware and software separately for sustainability and performance, enterprises are starting to review hybrid-cloud infrastructure systems holistically for their overall TIS.

### Optimize Sustainability with Dell APEX Cloud Platform for Microsoft Azure

To help enterprises lower their overall TIS, Dell Technologies and Microsoft have collaborated to design APEX Cloud Platform for Azure. This hybrid-cloud infrastructure solution can help organizations meet the need for environmentally friendly IT infrastructure balanced with delivering the required levels of performance and agility for demanding modern workloads. And because APEX Cloud Platform for Azure is built on next-generation PowerEdge servers and is deeply integrated with Azure Stack HCI, it provides ways to optimize resource usage and measure and manage an organization's carbon footprint.

Companies can overcome hybrid and multicloud complexity with a turnkey hybrid-cloud platform that allows them to seamlessly run workloads wherever they need them. APEX Cloud Platform Foundation Software, an integral part of the platform, provides deep, cross-layer integrations and intelligent automation to simplify initial deployments and cluster creation. IT admins can access familiar tools, such as Windows Admin Center and the Azure portal, for a simple, consistent and centralized way of operating dispersed Azure deployments.

By extending Azure from cloud to ground, enterprises can bring the sustainability and business benefits of the cloud to workloads and data that cannot be moved to the cloud. Hybrid-cloud infrastructure is more manageable because compute, storage and networking are combined in a single system. This consolidation helps reduce data center space requirements, and therefore power consumption and cooling costs, providing an overall better TIS.

### Resource Optimization

APEX Cloud Platform for Azure can help enterprises streamline management and improve energy efficiency. Azure cloud services offer scalability and flexibility, which are key to driving sustainability. Companies can precisely manage resources, easily scaling up or down based on their needs rather than overprovisioning their environments and leaving them underutilized much of the time, which can contribute to wasted energy use. With APEX Cloud Platform for Azure, companies can reduce their carbon footprints because of Microsoft’s commitment to energy efficiency in its data centers.<sup>2</sup>

APEX Cloud Platform Foundation Software integrates with Windows Admin Center and the Azure portal, enabling the use of familiar tools and providing a simple, consistent and centralized mechanism for operating dispersed Azure deployments. APEX Cloud Platform for Azure users can use the latest hardware technologies to optimize resource utilization, allowing users to do more work on fewer nodes that combine compute, network and storage functions.

### Sustainability Built on the Latest PowerEdge Innovations

The latest PowerEdge servers with 4th Gen Intel® Xeon® Scalable processors deliver advanced performance and energy-efficient designs for use with data-intensive workloads. Hardware power management, optimized thermals and design improvements in PowerEdge servers all contribute to the energy efficiency of APEX Cloud Platform for Azure multicloud nodes.

### Energy-Efficient Technologies

Integrated Dell Remote Access Controller (iDRAC) is part of PowerEdge server technology that uses telemetry to allow users to manage the server, even when it is turned off. The capabilities of iDRAC include power monitoring (such as the ability to view power status, history of power use, current averages and peaks), power capping (enabling users to view and set minimum and maximum power consumption) and power control (with the ability to power on/off, reset the system and perform a graceful shutdown). APEX Cloud Platform for Azure consistently communicates with iDRAC to manage the underlying infrastructure.

PowerEdge technology also provides BIOS-level options that can be configured to balance power efficiency with performance under various workload types. The PowerEdge system profile in BIOS enables IT administrators to easily change a group of settings that define how the server is configured. Admins can also choose a power-efficient scenario that provides recommendations for optimal power efficiency while still retaining high-performance characteristics.

PowerEdge servers are designed for improved thermal performance and reduced energy usage. Exhaust lanes help prevent overheating, and high-performance fans allow hot air to exit the system quickly. Multi-Vector Cooling (MVC) allows airflow for each PCIe slot in PowerEdge servers to be fine-tuned to ensure proper cooling, along with greater power efficiency and more precise cooling for APEX Cloud Platform within each multicloud node.

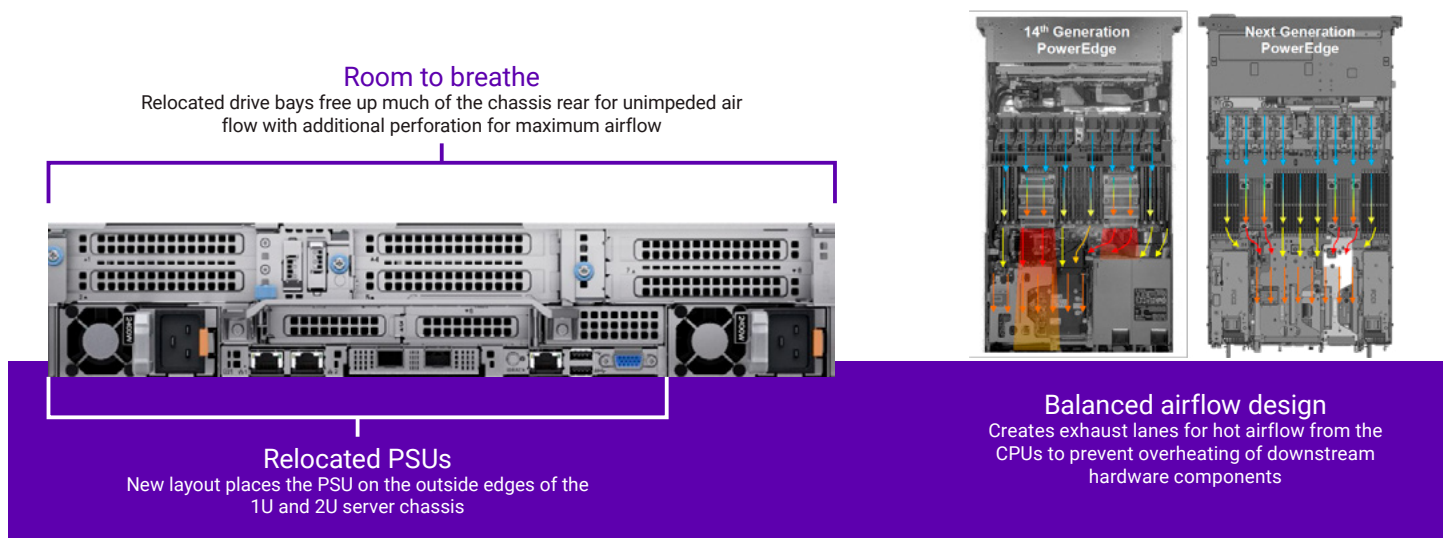


Figure 1. Physical design elements in PowerEdge servers help reduce energy use by allowing air to flow and cool server components



## Case Study: Empowering Financial Inclusion with Sustainable Technology

India is the world's fifth largest economy,<sup>3</sup> with more than a billion citizens who must each pay bills for rent, utilities and groceries. But, in India, using cash to purchase and pay for things can be challenging and time-consuming. The PhonePe digital app is one solution that gives users the convenience of making all forms of payment over their phones.

To support more than 185 million app users conducting transactions that exceed more than \$1.2 trillion per month, PhonePe needed a technology partner that could help build and maintain a data center that was sustainable, both financially and environmentally. PhonePe holds close to 50 percent market share by value of transactions processed,<sup>4</sup> so it was absolutely necessary to consider the environmental impact of running thousands of servers in a data center.

The company chose PowerEdge servers powered by Intel® Xeon® Platinum processors for several reasons: data security, power efficiency, ease of operations and cloud solutions. PhonePe can load up its server racks with more than twice the number of PowerEdge servers as competitors and still see a power savings of 3–4 million US dollars (USD) per year. PowerEdge servers also result in improved overall power efficiency, which is expected to lower PhonePe's power usage effectiveness (PUE) from 1.6 to 1.35.

"I chose the Dell PowerEdge server for its density and the number of cores that I get for the space that it takes—the core-to-space ratio—and for its power efficiency," says Burzin Engineer, PhonePe co-founder and chief reliability officer. "There are thousands of providers that can give you a server. But to tie it cohesively together into an alternative cooling solution is where the Dell PowerEdge servers actually shine through."

## Using Technology for a More Sustainable Future

Tech buyers must carefully consider TIS when choosing an IT solution to ensure that decisions align with business objectives and environmental sustainability. The unique benefits of APEX Cloud Platform for Azure running on PowerEdge servers can play an important role in meeting the needs of organizations today. This solution addresses the immediate technological requirements of businesses and contributes significantly to long-term sustainability goals.

Like their customers, Dell Technologies and Microsoft share overarching climate action goals. Dell Technologies has adopted innovative, sustainable practices that consider the end-to-end environmental impact for everything from internal operations and supply chains to product materials and packaging. These practices have earned 37 Electronic Product Environmental Assessment Tool (EPEAT)-registered products, among the highest in the industry.<sup>5</sup> Dell Technologies also has set a goal for net zero greenhouse gas emissions across Scopes 1, 2 and 3 by 2050 and sourcing 75 percent of electricity from renewable sources across all its facilities by 2030—and 100 percent by 2040.<sup>6</sup>

Microsoft aims to become a carbon-negative corporation by 2030, with the additional goal of removing its historical carbon emissions from the atmosphere by 2050.<sup>7</sup> Microsoft Azure sustainability guidance is focused on workload optimizations that lead to more sustainable application design and storage options, strategies for continuous integration (CI)/continuous deployment (CD) pipelines and automation and network considerations that reduce traffic and the amount of data transmitted to and from applications.

A future lies ahead where sustainable IT is not just an option but the norm. Dell Technologies and Microsoft are helping to shape this future, driving innovation that balances technological advancement with environmental responsibility. The synergy of sustainability and technology will continue to grow, paving the way for a greener, more efficient tomorrow.

Start achieving your sustainability goals today. Visit [Dell APEX Cloud Platform for Microsoft Azure](#) and the [Dell Climate Action](#) page.

- <sup>1</sup> International Energy Agency (IEA). "Data Centres and Data Transmission Networks." July 2023. [www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks](http://www.iea.org/energy-system/buildings/data-centres-and-data-transmission-networks). Licensed under CC BY 4.0: <https://creativecommons.org/licenses/by/4.0/deed.en>.
- <sup>2</sup> Microsoft. Microsoft Azure sustainability webpage. Accessed December 2023. [www.microsoft.com/en-us/sustainability/azure](http://www.microsoft.com/en-us/sustainability/azure).
- <sup>3</sup> Forbes India. "The top 10 largest economies in the world in 2023." December 2023. [www.forbesindia.com/article/explainers/top-10-largest-economies-in-the-world/86159/1](http://www.forbesindia.com/article/explainers/top-10-largest-economies-in-the-world/86159/1).
- <sup>4</sup> Inc42. "PhonePe Maintains Lead In UPI With 49% Market Share In Jan 2022, WhatsApp At 0.02%." February 2022. <https://inc42.com/buzz/phonepe-maintains-lead-in-upi-with-49-market-share-in-jan-2022-whatsapp-at-0-02/>.
- <sup>5</sup> Global Electronics Council. EPEAT registry. Accessed April 2023. <https://epeat.net/computers-and-displays-search-result/page-1/size-25?countryId=112&manufacturerId=317&productName=Latitude&productStatusId=1>.
- <sup>6</sup> Dell Technologies. "Our purpose in action." 2022. [www.dell.com/en-us/dt/corporate/social-impact/esg-resources/reports/fy22-esg-report.htm?hve=read%20report#pdf-overlay=/www.delltechnologies.com/asset/en-us/solutions/business-solutions/briefs-summaries/delltechnologies-fy22-esg-report.pdf](http://www.dell.com/en-us/dt/corporate/social-impact/esg-resources/reports/fy22-esg-report.htm?hve=read%20report#pdf-overlay=/www.delltechnologies.com/asset/en-us/solutions/business-solutions/briefs-summaries/delltechnologies-fy22-esg-report.pdf).
- <sup>7</sup> Microsoft. "Microsoft CEO Satya Nadella on Microsoft's Commitment to Become Carbon Negative by 2030." January 2020. [www.youtube.com/watch?v=LeQxTI-s48A](http://www.youtube.com/watch?v=LeQxTI-s48A).



Learn more about  
Dell APEX Cloud Platform



Contact a Dell  
Technologies Expert



View more resources



Join the conversation

The information in this publication is provided as is. Dell Inc. makes no representations or warranties of any kind with respect to the information in this publication, and specifically disclaims implied warranties of merchantability or fitness for a particular purpose.

Use, copying, and distribution of any software described in this publication requires an applicable software license.

Dell Inc. believes the information in this document is accurate as of its publication date. The information is subject to change without notice.

© 2024 Dell Inc. or its subsidiaries. All Rights Reserved. Dell, the Dell logo and other trademarks are trademarks of Dell Inc. or its subsidiaries. Intel, the Intel logo, Xeon, and other Intel marks are trademarks of Intel Corporation or its subsidiaries. Microsoft, the Microsoft logo, Azure, and Windows are trademarks of Microsoft Corporation. Other trademarks may be trademarks of their respective owners.