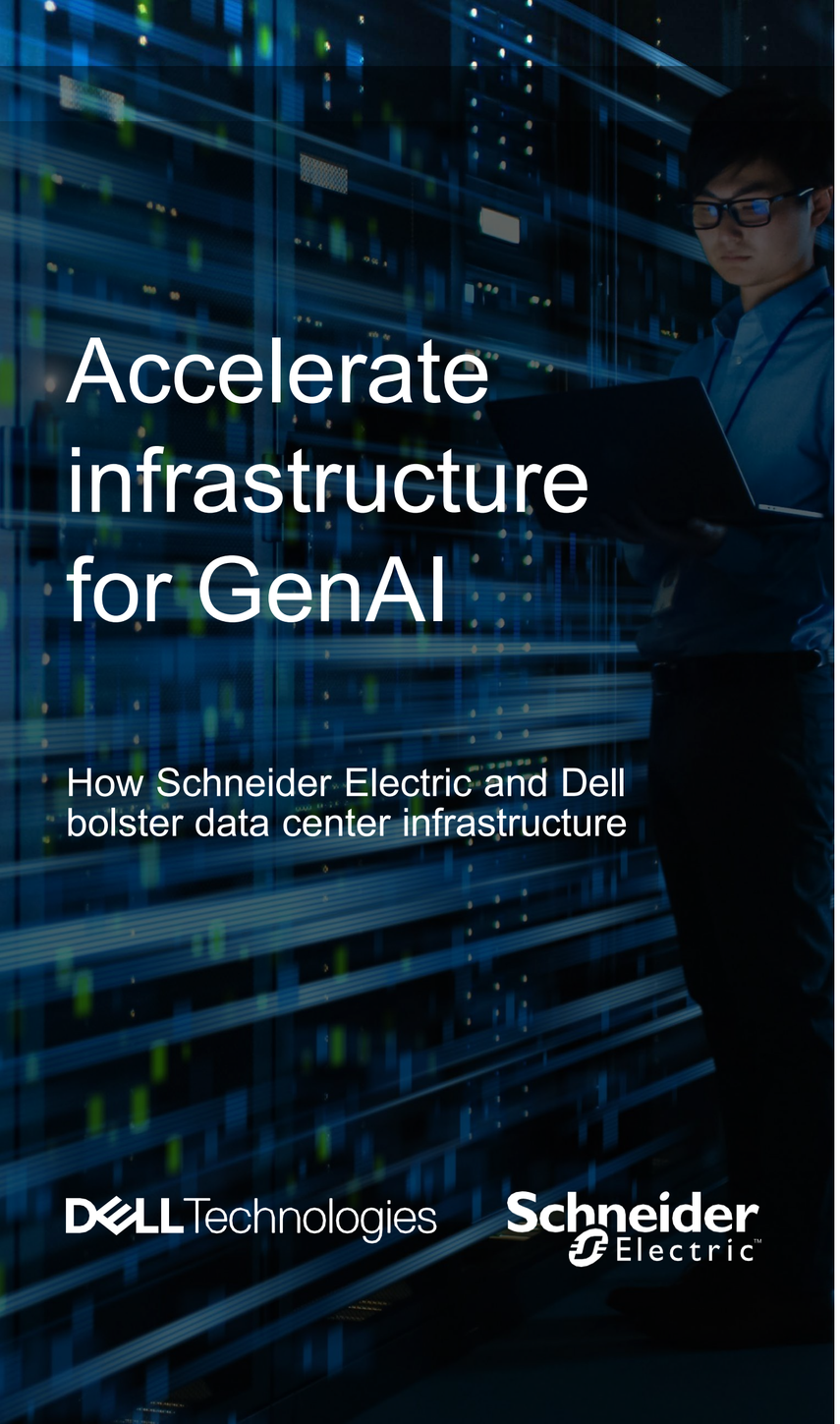


Accelerate infrastructure for GenAI

How Schneider Electric and Dell bolster data center infrastructure

DELL Technologies Schneider Electric

In this new era, achieving higher rack density is essential. More servers are packed into tighter spaces, generating more heat and requiring more power and cooling. At the core of AI operation, the white space is where the intricate interaction of power and cooling systems takes place at the rack and pod levels. Here, space is valuable. It presents a challenging paradox: AI servers need to be densely clustered to maximize the number of GPUs per rack, but with the interior rack space pushed to its limits, organizing power and cooling infrastructure becomes a complex puzzle akin to a high-stakes game of Tetris.

Primary data center infrastructure considerations for GenAI solutions

Space

More equipment in the rack leads to space and air flow constraints Compute, storage, and networking applications have different needs. Racks must be stronger, deeper, optimized for high-density computing, and flexible for multiple applications.

Complexity

White space is just as important as the rest of the data center and can't be viewed in isolation

- Engineering silos (power, cooling, services, etc.) lead to inefficiencies and failure risk
- Hybrid cooling and power solutions are often required (such as air and liquid cooling)

Unpredictability

AI innovation is happening at unprecedented speeds

- It's difficult to plan for IT needs even one or two years in the future — yet deployments must happen quickly and at scale
- Regulatory changes and sustainability goals are in flux

Data center infrastructure considerations

Dell PowerEdge Acceleration-optimized server portfolio

Air Cooled

- 1200mm rack depth is minimum
- Heavy Duty racks ensure weight of multiple units is sustained
- PSU per breaker is needed for optimal performance solution
- Sufficient front-to-rear airflow and rack clearance
- Robust cable management and power routing

XE9680

XE7745

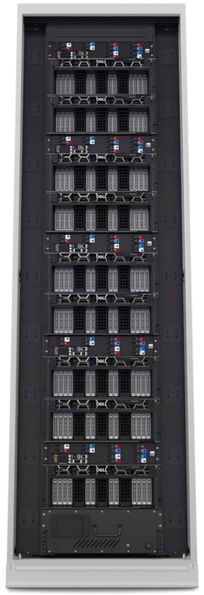
XE9780

Data center infrastructure considerations

Dell PowerEdge Acceleration-optimized server portfolio

Integrated Racks

Scalable: Lower deployment costs while enabling large-scale growth with a future-proof infrastructure.
Future - ready: Built for heterogeneous technologies and multi-generational adaptability, ensuring you're prepared for the next wave of innovation.
Energy efficient: Optimize sustainability with our liquid cooling and thermal management solutions, enhancing energy efficiency across your AI infrastructure.
High density: Maximize space and supercharge performance with our expertly engineered designs, delivering industry-leading GPU and CPU density.

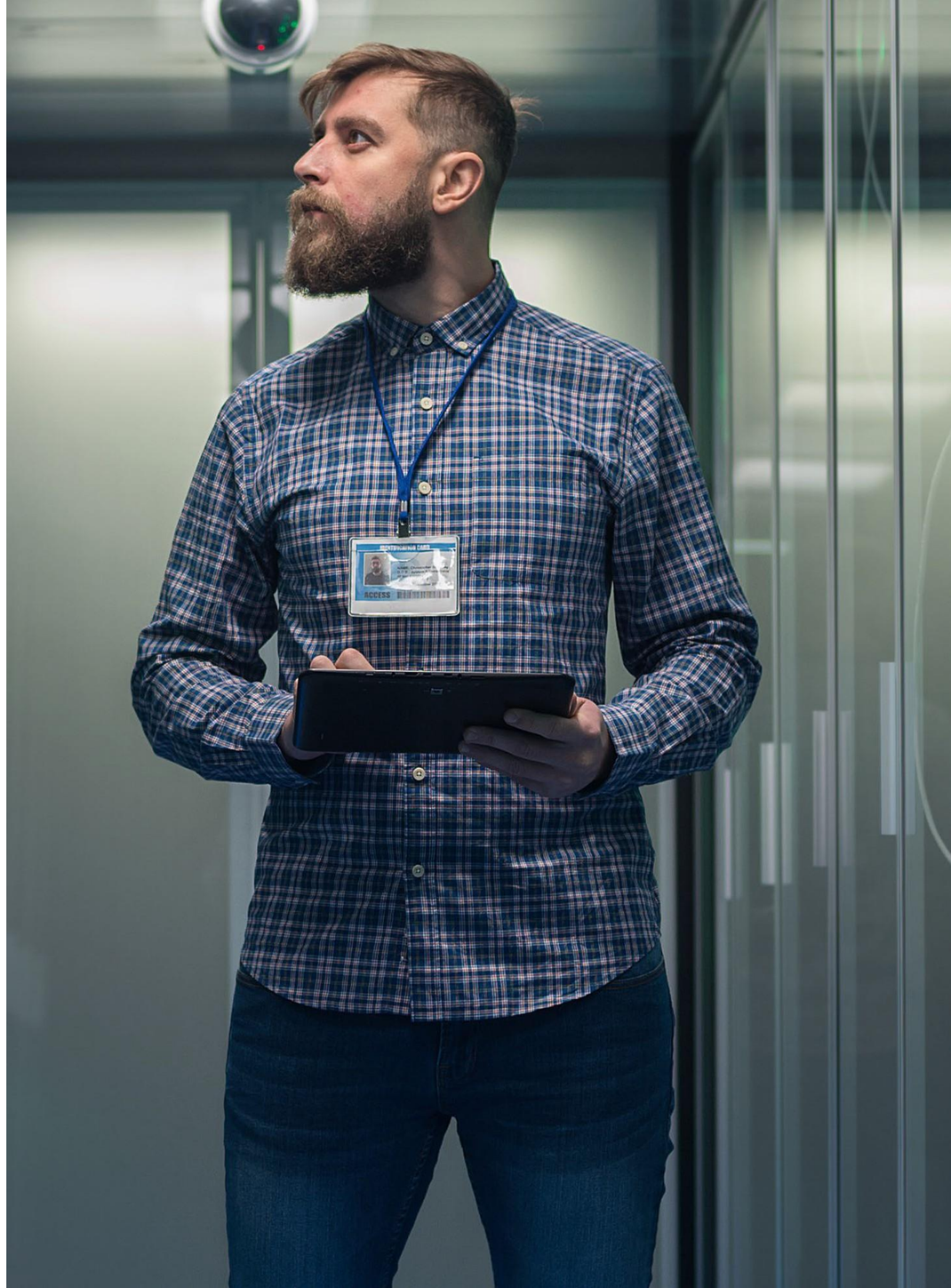


IR5000

The 19" IR5000 series racks deliver the highest available GPU density in standard racks while ensuring energy efficiency through advanced thermal management, offering both air and liquid cooling options. Expand your choices further with silicon diversity for various processors.

IR7000

Introducing next generation rack infrastructure for rack-scale deployments. Optimized for large rack-scale AI and dense compute with direct liquid cooling, this 21" OCP standards is designed to support multiple generations of CPU and GPU technologies.



Dell PowerEdge Acceleration-optimized server portfolio – customer readiness guide

Power and cooling

Power

GenAI servers are more powerful, requiring robust power infrastructure. **Does the customer have enough power capacity, or is an upgrade needed?**

Air cooling

GenAI servers can generate significant heat, challenging standard data center cooling. **How will the customer address increased thermal requirements?**

Does the GenAI server have a direct liquid cooling requirement? **If liquid cooling is needed, does the customer have the plumbing infrastructure in place to support DLC?**

Liquid cooling

DLC requires numerous considerations to ensure proper deployment:

- Customer's facility water readiness and cooling capacity
- Other considerations: configuration of server, node count, additional hardware to be cooled on liquid infrastructure in the same environment

Rack

GenAI servers feature larger dimensions and heavier weights, which may require making rack alterations to ensure proper support and fit.
Has the customer considered how the servers will be racked?

- What are the dimensions of the servers?
- What are the cooling requirements of the servers?
- How many GenAI servers need to be supported per rack?
- What is the networking fabric, and will the bend radius of the cabling impact the rack design?
- Do the PDUs need alternate mounting points to avoid interference with servers and cabling?

To ensure compatible rack designs, customers may need to consider customized rack solutions.
Examples: specialty/custom racks, rack extender kits, rack door removal, alternative PDU mounting points, resetting the rack rail positions to support front-end cabling

Learn more

Power Distribution Unit (PDU)

GenAI servers will require scalability, outlet flexibility, and intelligent design for high-density power consumption. **How will the customer distribute a redundant and power-dense connected load?**

- How much power capacity is required per PDU?
- Will the rack support enough channel space to accommodate a scalable PDU design?
- How will the PDUs be mounted in a tailored rack solution?
- How many power supply units (PSUs) are needed per server?
- What outlet types are needed?
- What level of intelligent monitoring is needed?

Learn more

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