

White paper

Modernizing federal IT with AI-ready modular data centers

Gain speed, security, and customization





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Executive summary

U.S. federal agencies are modernizing their IT infrastructure to drive the adoption of data and artificial intelligence (AI) technologies. These capabilities are critical to improving mission outcomes: from increasing visibility into changing market dynamics and enabling real-time decision-making to enhancing national security, emergency response, and service delivery.

However, legacy data center power and cooling systems present a significant barrier to achieving these aims. Some organizations are now deploying up to 100 kW or more of compute per rack¹ for high-density AI training and inference workloads, whereas the average rack density in 2024 was 15 kW.² Traditional facilities typically lack the power density, cooling, and scalability required for AI and high-performance computing (HPC) workloads. Many existing facilities can be retrofitted with new technology for HPC and AI workloads. However, agency leaders may decide to build net-new to meet business and cost goals while future-proofing AI processing capabilities for years to come.

Deploying modern infrastructure for data, AI workloads, and future-ready technology strategies is a significant priority for the U.S. government.

Prefabricated modular data centers (PMDCs):

- **Provide advanced technologies:** Using the latest graphical processing unit (GPU), power management, and thermal management technology, including liquid cooling, while leveraging advanced controls and service partnerships to enable 24/7 monitoring, management, and maintenance of key systems.
- **Offer agile, scalable architecture:** Supporting core-to-edge designs and on-premises, colocation, and cloud-adjacent deployment models.
- **Accommodate customization and standardization:** Enabling agencies to customize capabilities to specific use cases, while also leveraging repeatable designs that can be easily scaled across locations as agencies embrace standardization.
- **Speed deployment:** Delivering AI-ready infrastructure in months, not years, to meet fast-changing mission requirements.
- **Deliver built-in security:** Meeting agency standards, such as Intelligence Community Directive (ICD) 705 requirements, by providing hardening of physical structures and equipment, access controls, non-contiguous data flows, and more.
- **Are a model supported by the federal government:** Allowing federal agencies to move purchases from balance sheets to profit and loss (P&L) statements by using lease instruments and loans. Using OpEx funds, rather than CapEx investments, can streamline procurement processes.
- **Provide future-ready capabilities:** Refreshing capabilities with new technology every 36 to 72 months to spur innovation and enabling intelligent automation of more processes.

Through their strategic partnership, Vertiv and Dell Technologies offer turnkey PMDCs that align with operational, technical, and compliance requirements of federal agencies. As a result, agencies can move faster, innovate more, and scale more easily to meet evolving mission requirements.

Five fast facts: How prefabricated modular data centers (PMDCs) meet federal IT modernization for AI imperatives

IT budget spotlight for 2025: Despite flat budgets, federal agencies still plan double-digit spending growth on generative AI (35%), AI (28%), and business intelligence and data analytics (24%).³



1. PMDCs are AI-ready

Vertiv's PMDCs with Dell technology are purpose-built for high-density AI workloads. PMDCs feature advanced compute with GPUs, high-density power, and liquid cooling systems to enable the processing of demanding AI workloads.



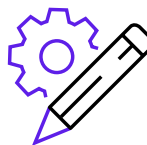
4. PMDCs offer controls and lifecycle services

PMDCs can be built with controls that enable real-time monitoring and visualization of critical infrastructure, as well as advanced algorithms that facilitate system auto-tuning, energy and cooling optimization, and capacity management. Vertiv can also provide services ranging from managing PMDC design, development, and commissioning to offering remote monitoring, performance optimization, and preventive maintenance.



2. PMDCs offer frequent refresh cycles

With advanced technology and refresh cycles every 36 to 72 months, PMDCs from Vertiv and Dell Technologies enable federal agencies to quickly adopt AI, meet demanding use case requirements, and adapt to evolving market trends and technology needs. By contrast, a stick-built facility that takes several years to design, build, and commission may be outmoded on Day 1.



5. PMDCs are designed for rapid deployment and scalability

Leveraging a customizable design and repeatable, scalable manufacturing processes, PMDCs can be built and deployed quickly to help achieve AI readiness and environmentally responsible operations. With innovative financing models such as [Dell DFS/Apex](#) and multiple process efficiencies, PMDCs also meet agency goals for an affordable total cost of ownership (TCO) while reducing project risks, remote monitoring, performance optimization, and preventive maintenance.



3. PMDCs meet federal requirements for security

PMDCs offer hardened structures, access controls, and ICD 705 compliance for intelligence, military, and other use cases requiring advanced security.

The federal push to accelerate AI adoption

U.S. federal agencies are well into their second decade of modernizing IT infrastructure capabilities.⁴ Leaders want to use new technology to spur digital transformation and use artificial intelligence (AI) to transform mission delivery. Addressing earlier legislation and executive orders, agencies have consolidated underutilized data centers, adopted hybrid and multi-cloud strategies, and migrated key workloads. Most (90%) of the 24 largest agencies have also implemented zero-trust architectures in response to Executive Order 14028, “Improving the Nation’s Cyber Security.”⁵

However, the explosive pace of AI innovation in the commercial sector, stateside and overseas, is raising the stakes for the U.S. government. Chief information officers (CIOs), data center leaders, and facility executives must modernize

IT infrastructures to accommodate AI even faster for use in top application areas such as “mission-enabling (internal agency support), health and medical, and government services (includes benefits and service delivery).”⁶

Modernization requires overcoming the legacy of decades-old, custom-coded systems that are difficult to refactor and migrate; integrating siloed data sets to enable analytics and AI; and deploying new capacity quickly while working within federal procurement cycles and compliance frameworks.

How the federal government is using AI

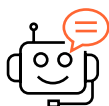
Agency adoption is accelerating. Publicly reported AI use cases have tripled from 710 in 2023⁷ to 2,133 in 2024 across 41 federal agencies.⁸

AI use cases by federal agencies in 2024*⁹

- Department of Health and Human Services (HHS)—271
- Department of Justice (DoJ)—240
- Department of Veterans Affairs (VA)—229¹⁰

*The actual total is higher; classified and Department of Defense (DoD) projects are not disclosed.

Examples of popular use cases include



Deploying internal and external chatbots.



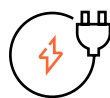
Strengthening cybersecurity capabilities.



Detecting payment fraud.



Accelerating the investigation of disease outbreaks.



Powering predictive maintenance.



Enabling autonomous systems.¹¹

Figure 1. Federal adoption of AI is accelerating, as agencies identify and operationalize myriad use cases. Source: Vertiv.

Recognizing the critical importance of AI to national competitiveness, presidential administrations have passed new legislation and revised policies to reduce barriers to adoption—and this work will be ongoing. Recent activity includes:

- **Passing the Federal Data Center Enhancement Act of 2023:** The Act and its implementation guidance direct agencies to strengthen data center reliability, resilience, and environmental stewardship¹² and consider commercial colocation, interconnection, and hybrid cloud as alternatives to federal data centers.¹³
- **Issuing a new federal order on AI:** “Removing Barriers to American Leadership in Artificial Intelligence,” the executive order of January 23, 2025, requires agencies to submit an artificial intelligence action plan within 180 days.¹⁴
- **Revising federal policies on AI:** The White House Office of Management and Budget revised two key AI policies. “Accelerating Federal Use of AI through Innovation, Governance, and Public Trust” charges agencies with streamlining processes and using shared guardrails.¹⁵ “Driving Efficient Acquisition of Artificial Intelligence in Government” mandates timely, cost-effective procurement of trustworthy AI capabilities.¹⁶
- **Appointing AI officers within departments:** The US government has directed AI officers to focus on enabling high-impact AI use cases and streamlining risk management.¹⁷
- **Identifying new sites for AI:** The DOE pre-qualified 16 sites that could host gigawatt-scale data center developments—an unprecedented move for the U.S. government.¹⁸

These developments signal a whole-of-government commitment to spurring AI innovation and removing impediments that slow its deployment.

How PMDCs solve federal challenges while maximizing opportunity

Multiple industries are using prefabricated modular solutions to enhance quality and speed of deployment: residential housing, education buildings, and electric vehicles, to name a few.

Prefabricated modular data centers (PMDCs) are manufactured and assembled by experts in a controlled environment, using standardized processes and rigorous quality control measures. They provide an all-in-one solution that can be customized to customer application requirements and then transported to the site for deployment and commissioning, minimizing operational disruption. This eliminates the need for federal agencies to manage long-term development projects.

The U.S. government recognizes and supports pre-engineered and prefabricated buildings. To assist buyers, the U.S. General Services Administration (GSA) offers an ordering guide that explains the concept, compares these solutions to traditional construction, and outlines the evaluation and purchasing process.

Unlike traditional data centers that require lengthy custom requests for proposals (RFPs), PMDCs use standardized, modular components with pre-assigned stockkeeping units (SKUs), allowing agencies to quickly purchase or lease them through GSA schedules or other contract vehicles, often with just a few clicks. This streamlined process reduces procurement time from months to weeks and supports flexible options such as blanket purchase agreements (BPAs), indefinite delivery/indefinite quantity (IDIQ) contracts, and DoD programs.

Nine out of ten traditional data center projects face delays, with the average delay extending the project timeline by 34%.¹⁹

Hyperscale projects are completed on average 20 months late, with average costs exceeding estimates by 80%.²⁰

Vertiv and Dell Technologies have partnered to deliver AI-ready PMDC solutions that can be customized to any mission, security posture, or deployment model. Vertiv provides deep expertise in developing prefabricated modules that include the latest power management and cooling technologies, including liquid and immersion cooling. Dell Technologies provides validated designs for NVIDIA-based workloads and AI-ready infrastructure with the latest central processing units (CPUs), GPUs, and GPU clusters.

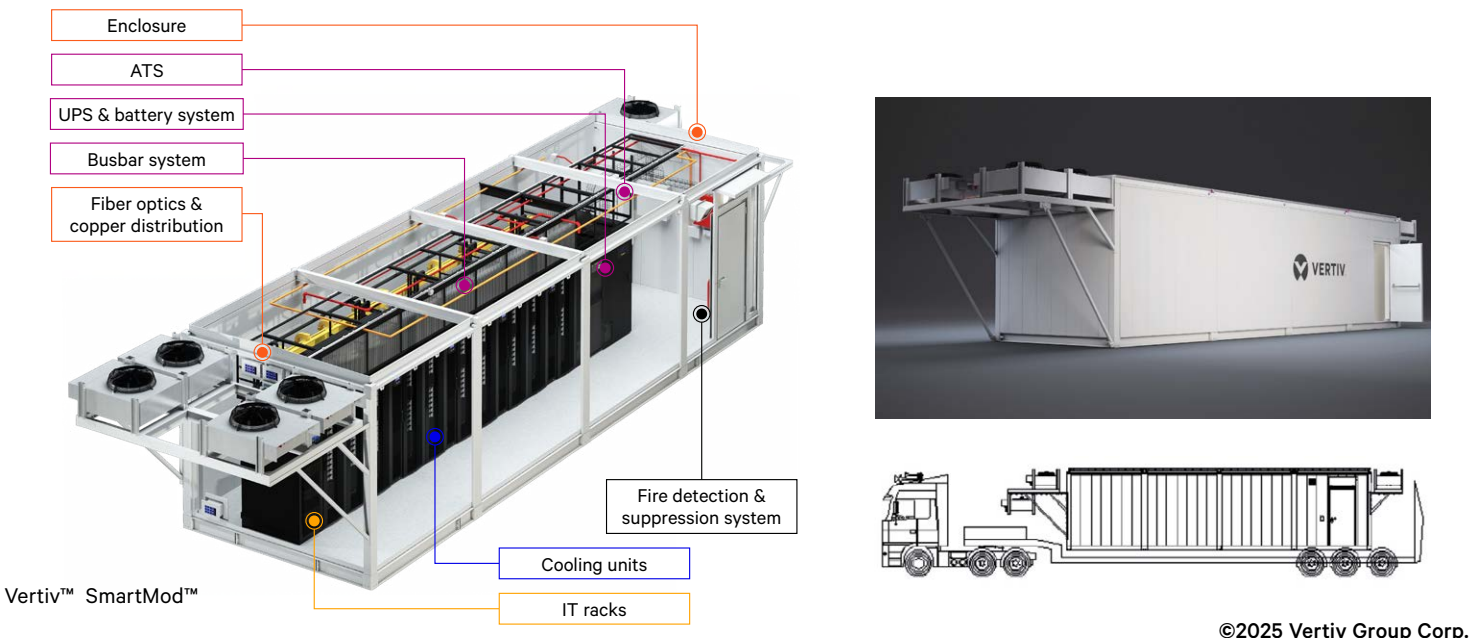
Vertiv™ PMDCs at a glance

Form factor	IT capacity (IT load)	Time to deploy	Key attributes
Prefabricated modular data center	Up to 210 kW today ²¹ 300 kW by 2026 ²²	10 to 18 months	GPU clusters, liquid/ immersion cooling

Table 1. Vertiv™ PMDCs offer access to the high-density compute, power, and cooling that federal agencies need for AI workloads. Source: Vertiv.

A recent Gartner survey identified federal agencies' top three priorities for competitive/differential technologies like AI as total cost of ownership (75%), innovation (56%), and product roadmap (46%).²³ Vertiv™ PMDCs, combined with Dell technology, excel on all three fronts.

- **Total cost of ownership (TCO):** Providing a compelling TCO with modern, rapidly deployable AI-ready capabilities and the opportunity to refresh technology. A more detailed TCO discussion is presented in the next section of this paper.
- **Innovation:** Offering scalable architecture and modern technology, such as GPU clusters, for data-intensive processing and advanced power and cooling management. PMDCs optimize HPC/AI training and inference workload processing to spur the innovation of federal products and services.
- **Product roadmap:** Vertiv and Dell have long-term product roadmaps to enhance AI capabilities and accelerate customer adoption. Both companies are also strategic partners with NVIDIA in developing solutions parallel to their technology roadmaps.



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Figure 2. Vertiv and Dell provide an all-in-one PMDC solution that can be integrated with chillers and transformers to overcome site cooling and power limitations. Source: Vertiv.

Addressing seven federal AI deployment challenges

Federal agencies have unique mission requirements that they must meet. At the same time, they face numerous obstacles to deploying AI-ready data centers. Here's how PMDCs help address these challenges.

Challenge: Modernizing legacy data centers for AI

Agencies have a vast network of legacy data centers and infrastructures that need to be modernized. Many of these data centers may not be suitable for AI workloads for various reasons, including the cost and complexity of retrofits, as well as power and water limitations.

Solution: Vertiv™ PMDCs offer modern HPC/AI computing capacity on-premises or at a colocation facility. They can be configured for GPU clusters, support high-density workloads up to 100 kW per module, provide optimized networking for AI training and inference, and offer integrated liquid or immersion cooling. Units can be stacked, sequenced, and relocated as needed. When deployed at the edge, MDCs support low-latency applications, such as real-time analytics and personalization.

Challenge: Accelerating AI deployments to speed time to mission value

Federal agencies face rigid annual funding cycles and slow procurement processes, even as mission demands and AI innovation accelerate. Building a traditional, stick-built data center can take up to six years, meaning the technology is already outdated the day it goes live.

Solution: PMDCs have unique attributes that simplify purchasing and deployment. Multiple levels of precertification for building structures, modular solutions, and security standards make it easier for procurement officers to review and approve solutions.

PMDCs offer financial predictability through upfront pricing and cost savings from modular design. They also provide flexible payment options that streamline procurement. Most importantly, with rapid deployment and scheduled technology refreshes, PMDCs deliver systems that are one to two generations ahead of traditional data centers built at the same time.

11.3 years: Average age of a global data center.²⁴

How Vertiv™ PMDCs speed the path to deployment

Vertiv™ PMDC with Dell Technologies systems	Traditional data center
Compliance	
<p>Complies with:</p> <ul style="list-style-type: none"> • Building codes: International Building Code (IBC), National Electrical Code (NEC), and National Fire Protection Agency (NFPA) • Energy efficiency standards • Uptime Institute Tier Levels • Modular solutions provide a factory certificate of compliance 	Compliance must be independently verified at each step
Security	
<ul style="list-style-type: none"> • Accreditation covers all deployments of the same design: • Electromagnetic interference (EMI) security using TEMPEST standards • Cyber controls on management systems 	
Procurement	
<ul style="list-style-type: none"> • Fixed scope for purchase • Savings on labor, waste, and materials • Leverage multiple contract vehicles (GSA, BPA, IDIQ, DoD) • Purchase or lease options (CapEx versus OpEx) 	<ul style="list-style-type: none"> • Final price subject to schedule and cost overruns • Large-scale CapEx investment: \$7 million to \$12 million per megawatt of commissioned IT load

Vertiv™ PMDC with Dell Technologies systems

Traditional data center

Customer-driven design changes	
<ul style="list-style-type: none"> Select different module configurations and see immediate pricing 	<ul style="list-style-type: none"> Issue change order to construction contract
Deployment timeframes	
<ul style="list-style-type: none"> 10-18 months Suitable for DoD and Federal Emergency Management Agency (FEMA) requirements, such as battlefield reconnaissance or disaster recovery, which require a fast response 	<ul style="list-style-type: none"> Up to six years Suitable only for long-term mission use
Technology refreshes	
<ul style="list-style-type: none"> Every 36 to 72 months, meaning that PMDCs are 1-2 generations ahead of stick-built facilities deployed at the same time 	<ul style="list-style-type: none"> Technology is outmoded on Day 1 Won't be upgraded until the next scheduled refresh

Table 2. PMDCs offer multiple advantages that speed time to mission value and provide agencies with advanced AI capabilities from the first day. Source: Vertiv.

Challenge: Balancing customization with standardization for scalability

While federal agencies have unique mission-driven needs that require customized capabilities, the growing maturity of AI is likely to drive greater standardization, enabling faster scaling and broader adoption across government.

Solution: Vertiv and Dell Technologies take an outcome-based approach to developing modular data solutions for agency clients. We can easily customize PMDCs to agency goals for application requirements, such as workload processing, latency, security requirements, and more.

PMDCs also offer repeatable design and manufacturing processes that federal agencies can leverage to accelerate rollouts across facilities, agencies, and regions.

Different ways to use Vertiv™ PMDCs

Stack: Vertically rack PMDCs in space-constrained environments.

Sequence: Line up modules side by side to expand compute within existing fence lines.

Separate: House compute in one module and power and cooling in another for dense AI loads.

Secure them: Create a sensitive compartmented information facility (SCIF)-grade, non-contiguous data flow.

Increase redundancy: Double power feeds, networking, and cooling for Tier III-plus reliability.

Ruggedize: Engineer to withstand extreme heat, cold, dust, snow, hurricanes, and electromagnetic pulses (EMP).

Table 3. Vertiv™ PMDCs are customizable to a wide array of applications and site requirements. Source: Vertiv.

Challenge: Exacting security standards for sensitive use cases

Federal agency IT systems must comply with the Federal Information Security Act (FISMA), the Federal Risk and Authorization Management Program (FedRAMP), and the National Institute of Standards and Technology (NIST) guidelines, while sensitive data use cases must also meet ICD 705 security requirements.

Solution: Vertiv™ PMDCs integrate with Dell's zero-trust, cyber-resilient architecture. They can be hardened to meet ICD 705 SCIF requirements—DoD Impact Level 5 for mission-critical systems and controlled unclassified information, and DoD Impact Level 6 for classified information up to the secret level — making them ideal for sensitive intelligence and military applications.

Challenge: Deploying data centers in remote and harsh environments

Agencies may need to transport modular data centers to operating environments in extreme conditions. For DoD, this could mean flying a PMDC via aircraft, air dropping it into a forward operating base or combat outpost, and operating it via satellite backhaul. For FEMA, this could mean trucking a PMDC over rough terrain to support large-scale natural disaster recovery efforts.

Solution: Vertiv™ PMDCs are transportable and can be customized for use in harsh environments. Small-scale PMDCs with five to 10 racks are less obtrusive than stick-built facilities and can be camouflaged more easily.

Challenge: Power and water shortages on-site

Legacy data centers often lack the power or cooling capacity for AI workloads. Many DoD data centers have 208-volt architectures, while the commercial market has moved to 415- and 480-volt architectures.²⁶

Solution: Vertiv™ PMDCs can be placed on site and connected to a transformer station or near a substation to gain additional power for computing.

Similarly, Vertiv uses cooling architectures that rely on direct expansion heat rejection systems, which are mounted on dry coolers or condensing units, enabling efficient, waterless operation.

Challenge: Build using energy-efficient designs

Stick-built facilities often generate high emissions due to material choices, overbuilt capacity, underutilized technology, and frequent truck deliveries for maintenance and supplies.

Solution: Vertiv and Dell Technologies provide energy-efficient PMDC solutions aligned with Executive Order 14057, the Federal Sustainability Plan.



Vertiv™ PMDCs offer several resource-efficient advantages over stick-built facilities. Their compact footprint reduces embodied carbon, energy use, and cooling demands. By minimizing underutilized servers, they also cut waste and unnecessary costs. Deployment is streamlined with a single integrated system delivery, eliminating the need for multiple truck rolls for equipment installation and reducing emissions and logistical complexity. Another option is to deploy Vertiv™ TimberMod™, a PMDC that uses mass timber instead of steel as its structural element, potentially lowering embodied carbon emissions compared to a traditional data center.



How agencies can use PMDCs to enable key AI use cases

- **Acquire next-generation defense capabilities:** Provide DoD compute that can be deployed throughout CONUS (the continental U.S.) and OCONUS (outside CONUS) and used to enable threat detection, autonomous systems such as drone surveillance, onsite model training, and high-trust compute for model lifecycle management.
- **Empower national intelligence:** Aggregate sensitive data, including IoT and sensor data; enhance energy system management; enable secure AI model training at edge nodes; and facilitate threat detection and autonomous system operations.
- **Equip civilian agencies with AI capabilities:** Expand AI processing capabilities at existing sites rapidly while overcoming space and power constraints; enable sensor data aggregation; and manage smart building infrastructure.
- **Speed emergency response:** Provide mobile compute for analytics, guide search-and-rescue operations, and streamline resource allocation.

PMDCs enhance operational flexibility

Different deployment models

Core: Gain access to fundamental computing resources to meet mission requirements.

Edge: Deploy compute in remote locations and/or enable latency-sensitive applications.

Hybrid: Use PMDCs to meet core-to-edge deployment requirements and avoid legacy facility retrofits for AI.

Different designs

On-premises: Extend compute and provide secure AI processing capabilities on-premises.

Colocation: Access to federated systems and caged PMDCs can streamline the acquisition of AI capacity, enable outsourced management, and potentially reduce egress and ingress charges.²⁷

Cloud-adjacent: Leverage colocation providers to place infrastructure near hyperscalers and interconnect them while maintaining control over data and infrastructure.

Table 4. PMDCs offer federal agencies deployment and design flexibility. Source: Vertiv

Guidelines for implementing PMDCs for AI use with Vertiv and Dell

1. Design your target solution: To meet goals around capacity, speed, and cost optimization for AI training and inference, it's essential to align your platform architecture and IT infrastructure with the demands of next-generation GPUs, such as NVIDIA's Blackwell and GeForce RTX 50. These high-density chips significantly raise infrastructure requirements, including power, cooling, and physical layout. By leveraging Vertiv's reference infrastructure architectures, you can design a solution that's infrastructure-ready—fully aligned with NVIDIA's latest chip specifications, down to details like busbar configurations and pipe dimensions

Another option is using a digital twin solution to virtually design the PMDC solution to meet application requirements. Explore the impact of different parameters, such as what happens in an overload situation. Conduct a computational fluid dynamics (CFD) analysis to simulate and analyze fluid flows and interactions for air-only or air-assisted liquid cooling, changing parameters, or using 1D flow to model all-liquid systems. Make sure that your assumptions about air and fluid flow are correct. You will also need to model power distribution: determining whether there is sufficient busbar capacity to deliver amperage to the GPU and where the busbar would be placed.

You can then leverage Vertiv's integration with NVIDIA Omniverse, a modular development platform, to visualize the solution in 3D and understand how it will perform before spending a single dollar on hardware. This avoids situations where solutions like switchgear and uninterruptible power supplies are pre-purchased but don't work together as planned.

2. Determine the right cooling architecture:

While current-generation chips use air cooling or close-coupled cooling, next-generation chips require air-assisted liquid cooling or liquid-only cooling, which dictates a certain proximity between IT and the facility. Your government IT teams and data center leaders can collaborate with Vertiv to design and integrate a customized cooling system that meets your agency's specific requirements.

3. Developing the right power architecture: Vertiv offers different infrastructures to distribute power to the rack, sizing components based on expected load levels (from medium voltage to 480 volts to DC in the rack), using transformers and substations to overcome site power constraints and providing redundancy at either a rack, room, or facility level to achieve target redundancy levels (N+1 to 2N+1). Alternatively, if space permits, your agency can deploy a second data center that acts as the failover system. Work with Vertiv to design a PMDC solution that meets application requirements and overcomes any site cooling and power limitations.

4. Plan for security: Share your requirements (FISMA, FedRAMP, NIST, and ICD 705) with Vertiv to determine the suitable security controls, including physical and network security, access controls, and risk management processes. Your customized PMDC solution will provide multiple layers of protection to maintain data privacy and security.



- 5. Use pre-validated designs:** Reduce risk, verify alignment with application requirements, simplify lifecycle processes, and speed time-to-market (TTM) with proven designs that have been tested and validated with all systems, including compute.

Vertiv is deeply embedded in the data center ecosystem and continuously engages with chip, server, and other original equipment manufacturers. We hold regular workstream calls with NVIDIA and conduct periodic engineering reviews to confirm that the reference architectures we develop meet all the specifications. In this manner, we can identify and address risks before solutions are commercialized. This process helps facilitate the delivery of a PMDC with fully interoperable systems that perform to spec and can be deployed and commissioned quickly.

- 6. Plan for scale:** Design rollouts to support steady growth. After gaining experience with new technology, roll out more PMDCs at one or more sites.

- 7. Prioritize automation:** PMDCs can be plug-and-play components within larger systems, reducing data interfaces and simplifying management while enhancing security.

For example, you can use an integrated platform to consolidate power, thermal, and building management into a single, unified interface. This allows teams to automate configurations and controls, adapt to changing loads, act on alerts and alarms that identify anomalies, and simplify routine and preventive maintenance. Gain insights that optimize equipment uptime and performance.

Using a single interface improves service quality and reduces management and maintenance times.

- 8. Leverage partner services:** AI infrastructure often powers mission-critical services with strict service-level agreements, demanding exceptional performance from compute, power, and cooling systems alike.

Leverage Vertiv's domain, technical, and product knowledge; service delivery expertise; and safety procedures to monitor, manage, and service advanced technologies such as liquid cooling and high-voltage and direct current (DC) power systems.

For example, liquid cooling systems require careful maintenance, including monitoring coolant levels and quality, regularly flushing the loop to prevent and remove contaminants, replacing coolant every 12 to 24 months, and maintaining the pumps. Similarly, power systems must be handled by experts who conduct preventive maintenance, test and maintain batteries, and conduct testing to monitor that power systems can handle loads during peak times. Vertiv leverages its global network of specialists to monitor equipment and maintain that it is proactively serviced.



Determining TCO and ROI

With fixed budgets and challenging appropriation cycles, federal leaders want to maximize the business value of new IT investments by calculating total cost of ownership (TCO) and return on investment (ROI) for potential solutions and comparing them.

It is challenging to provide PMDC TCO metrics for the U.S. federal market, given the high level of customization that government entities require. However, leaders can consider the following variables as they seek to develop TCO models for these investments:

- 1. Accelerating deployment timeframes:** PMDCs can be designed, transported, and deployed in 10-18 months, compared to up to four-six years for traditional data centers.²⁸ Additionally, since they are manufactured off-site and transported via truck, there is no need to manage a complex construction project that requires multiple trades and intricate logistics. With PMDCs, deployment tasks are more limited, such as pouring concrete and pulling cable from the local substation.
- 2. Buy only the compute you need:** Purchase Vertiv™ PMDC capacity in 100kW increments, ramping up capacity within a smaller footprint than a stick-built facility.
- 3. Reduce waste and costs:** Compared to stick-built facilities, PMDCs reduce waste, deliver labor savings, decrease the amount of equipment that's rented and stays onsite, and power and cool compute efficiently.
- 4. Decrease project risks:** There's no need to schedule and manage trades onsite, navigate weather risks, deploy outmoded technology on Day 1, or navigate operational disruptions. When agencies partner with Vertiv and Dell, they gain a proven solution that has been manufactured and deployed thousands of times for customers worldwide. PMDCs arrive ready to deploy, requiring fewer people onsite to commission them for service.

- 5. Access Vertiv services:** Use federal procurement vehicles to gain access to lifecycle services, including technology upgrades, ongoing monitoring, predictive maintenance, and other service calls. Gain the latest AI technology to increase competitiveness and maintain a fast pace of innovation.
- 6. Leverage predictive maintenance:** Increase the PMDC lifespan with ongoing monitoring, anomaly detection, and alerts that trigger proactive maintenance. Meet service level agreements (SLAs), enhance performance, and avoid costly outages that harm service reliability.
- 7. Use innovative financing models:** If considered as buildings, PMDCs are budgeted and paid for with CapEx spending. If financed and leased, agencies can use OpEx funds to deploy PMDCs and contact their partner to remove them when they are no longer needed. Taking an OpEx approach can streamline federal procurement processes.

Why choose Vertiv and Dell Technologies federal-ready modular infrastructure

Vertiv and Dell are better together in designing and deploying PMDCs for federal agency requirements.

- **We are proven federal partners:** We have established contracting vehicles (such as CHES ITES-3H, NASA SEWP V, and CIO-CS) and deployed PMDCs for both federal and defense department clients. Dell is a proven partner of scale for federal compute, IT, and AI modernization.

Vertiv and Dell Technologies are market leaders in providing AI-ready data centers²⁹

Vertiv is

Top three

among all PMDC data center providers globally, according to Omdia.

An expert at quality, scale manufacturing processes

Deploying more than 1,500 MDCs globally to 800 locations for commercial and government clients.³⁰

Dell Technologies is

A leader in AI infrastructure

The Forrester Wave™: AI Infrastructure Q1 2024³¹

#1 in hyperconverged systems

IDC WW Quarterly Converged Systems Tracker CY24Q2

#1 in key storage categories

IDC WW Quarterly Enterprise Storage Systems Tracker CY24Q2

Table 5. Industry analysts like Omdia and IDC attest to the strength of the Vertiv AI-ready PMDC solution with Dell Technologies' compute. Source: Vertiv.

- **A commitment to federal priorities:** Vertiv and Dell Technologies' PMDC solutions are secure, compliant, and resource-efficient, enabling agencies to future-ready their infrastructure strategies and models. We adhere to all applicable data, IT, and AI standards. We closely monitor developments from regulatory and oversight bodies to understand emerging requirements, along with how and when to adopt them.
- **Strategic chip partnerships:** Both Vertiv and Dell Technologies are strategic partners of NVIDIA, AMD, and Intel. As NVIDIA's premier compute partner, Dell Technologies provides fast access to NVIDIA GPUs, such as H1000 and Blackwell, as well as GPU clusters.
- **A broad partner ecosystem:** We team with solution integrators and value-added resellers to provide federal agencies with an end-to-end PMDC solution that offers AI processing capabilities, speeds TTM, and causes minimal disruption.
- **U.S. and overseas manufacturing capabilities:** Vertiv manufactures its PMDCs in the U.S. and trade-compliant countries, and has recently opened a 215,000-square-foot plant in Pelzer, South Carolina. Vertiv also provides global logistics and support for OCONUS deployments. Dell Technologies manufactures from locations in Round Rock and Austin, Texas; Franklin, Massachusetts; and Apex, North Carolina.
- **Federal IT and AI requirements:** Vertiv offers a comprehensive line of power and thermal management solutions, as well as IT services, that federal agencies can harness to meet a broader range of data center needs.



Accelerate federal AI adoption with Vertiv and Dell Technologies

U.S. federal agency leaders want to enhance their ability to deliver their missions and provide innovative services to their stakeholders.

By leveraging modular data centers, agencies can rapidly modernize their IT environments and gain advanced AI processing capabilities, without needing to retrofit existing facilities. Modular data centers can be customized to meet a wide range of business and technical requirements, provide high-density compute for even the most demanding workloads, and offer technology refreshes to keep AI capabilities future-ready.

Vertiv and Dell Technologies are modernizing IT environments for AI, enabling mission success with scalable, secure, and resource-efficient modular data centers for data and AI workloads.

Contact Vertiv or Dell Technologies for a complimentary 60-minute discovery call. Learn more at [Vertiv Federal Government](#) and [Dell Federal Government IT](#).



Scan the QR code to book a meeting

References

1. Interview with Vertiv expert.
2. Dell'Oro Group. (2024, February 2). Liquid cooling to go mainstream with \$10 billion in revenues over the next five years [Report synopsis]. <https://www.delloro.com/news/ai-power-and-cooling-requirements-lift-data-center-physical-infrastructure-market-to-over-46-billion-in-2028/>
3. Gartner. (2024, October). 2025 Gartner CIO and technology executive survey [PowerPoint, slide 4]. Focuses on U.S. federal government respondents, including defense. Not available online.
4. Past legislation includes The Federal Information Technology Acquisition Reform Act of 2014, which sought to improve federal IT acquisitions and operations; and Cloud Smart, the U.S. federal government's updated cloud computing strategy (2019) which provides implementation guidance (see CloudCIO.gov. [Undated.] Federal cloud computing strategy. <https://cloud.cio.gov/strategy/>); and the Federal Register. [2021, May 12]. Executive Order 14028, Improving the nation's cybersecurity, which seeks to improve threat information sharing, implement stronger cybersecurity standards, improve software supply chain security, and other aims.
5. Curran, J. (2024, September 4). Federal CIO gives high grades for agency zero trust progress [Article]. MeriTalk. <https://www.meritalk.com/articles/federal-cio-gives-high-grades-for-agency-zero-trust-progress/>
6. Alder M. (2024, December 18). Federal government discloses more than 1,700 AI use cases [Article]. FedScoop. <https://fedscoop.com/federal-government-discloses-more-than-1700-ai-use-cases/>
7. Alder, M.
8. GitHub. (2025, January 23). 2024-federal-AI-use-case-inventory [List]. <https://github.com/ombegov/2024-Federal-AI-Use-Case-Inventory>
9. Alder, M. (2024, December 18). Federal government discloses more than 1,700 AI use cases [Article]. FedScoop. <https://fedscoop.com/federal-government-discloses-more-than-1700-ai-use-cases/>
10. GitHub.
11. Martorana, C. (2025, January 15). AI in action [Article]. CIO.gov. <https://www.cio.gov/ai-in-action/> and interviews with Dell and Vertiv experts.
12. Biden Administration. (2025, January 14). Implementation Guidance for the Federal Data Center Enhancement Act [Executive memo]. <https://bidenwhitehouse.archives.gov/wp-content/uploads/2025/01/M-25-03-Implementation-Guidance-for-the-Federal-Data-Center-Enhancement-Act.pdf>
13. Gwiazda, J. and Young, D. (2024, February 12). Congress to agencies: Prioritize commercial data center solutions, including colo and hybrid [Blog]. Equinix. <https://blog.equinix.com/blog/2024/02/12/congress-to-agencies-prioritize-commercial-data-center-solutions-including-colo-and-hybrid/>
14. Trump Administration. (2025, January 23). Removing barriers to American leadership in artificial intelligence [Executive order]. <https://www.whitehouse.gov/presidential-actions/2025/01/removing-barriers-to-american-leadership-in-artificial-intelligence/>
15. Trump Administration. (2025, April 3). Accelerating federal use of AI through innovation, governance, and public trust [Executive memo]. <https://www.whitehouse.gov/wp-content/uploads/2025/02/M-25-21-Accelerating-Federal-Use-of-AI-through-Innovation-Governance-and-Public-Trust.pdf>
16. Trump Administration. (2025, April 3).
17. Trump Administration. (2025, April 3).
18. Energy.gov. (2025, April 3). DOE identifies 16 federal sites across the country for data center and AI infrastructure development [Article]. <https://www.energy.gov/articles/doe-identifies-16-federal-sites-across-country-data-center-and-ai-infrastructure> and interview with Vertiv expert.
19. Diana Goovaerts. (2025, March 14). Optimism could kill the data center boom [Article]. FierceWireless. <https://www.fierce-network.com/cloud/optimism-could-kill-data-center-boom>
20. XYZ Reality. (2023, December 13). The secret to successful data center construction [blog]. <https://www.xyzreality.com/resources/successful-data-center-construction>
21. Capacity of Vertiv™ SmartMod™ Max.
22. Interview with Vertiv expert.
23. Gartner. [Survey, Slide 5].
24. Davis, J. Uptime Institute (2024, December 6). How much capacity is in aging data centers? [Article]. DatacenterDynamics, <https://www.datacenterdynamics.com/en/opinions/how-much-capacity-is-in-aging-data-centers/>
25. Zhang, M. (2023, November 5). How much does it cost to build a data center? [Blog]. Dgtal Infra. <https://dgtlinfra.com/how-much-does-it-cost-to-build-a-data-center/>
26. Interview with Dell expert.
27. Colocation firms may provide flat rates or no data transfer fees within a facility and offer direct peering and cross-connects with partners, dedicated bandwidth, and better control over network routing.
28. Interviews with Vertiv and Dell experts.
29. Omdia. Prefabricated Modular Data Centers Market Tracker 2025 [Spreadsheet]. Not available online. Dell Federal. [Undated]. Federal government IT. [Webpage]. <https://www.dell.com/en-us/lp/dt/industry-federal-government-it>
30. Namlić, K. (2023, August 14). Scaling up your data center with prefabricated modular solutions from Vertiv [Blog]. Vertiv <https://www.vertiv.com/en-us/about/news-and-insights/articles/blog-posts/scaling-up-your-data-center-with-prefabricated-modular-solutions-from-vertiv/>
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