



# Cloud vs. On-Prem? You Might Have a Better Option

MARKET TRENDS REPORT



# Executive Summary

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Federal IT leaders seem to be at a crossroads when it comes to their infrastructure and operations, facing a choice of what to move to the cloud and what to keep on premises.

The cloud, of course, is often the option of choice – not just because it is pushed by such mandates as the federal Cloud Smart policy and the White House’s [Executive Order on Improving the Nation’s Cybersecurity](#), but also because of its scalability, functionality and cost benefits. An overwhelming 91% of federal respondents in a [recent survey](#) said they have all, most or some of their systems and solutions in the cloud. In the same survey, however, 56% of federal respondents said they still prefer to keep at least some of their sensitive citizen data and mission-critical data on premises.

**But agencies have another choice beyond on-prem and public/private/hybrid cloud operations.** On-premises operations can be impractical because of the requirements for on-site staff and the costs of managing the premises. The public cloud necessitates tradeoffs in terms of security, control and predictable costs. An on-demand, single-tenant infrastructure, however, can provide scalability and cost efficiency in line with agency missions while – importantly – avoiding some of the security challenges of the cloud and matching the IT agency skillsets. On-demand dedicated infrastructure offers the best of both worlds, giving agencies control without the burdens of managing their own data center – and still meeting the requirements of the Cloud Smart policy.

To learn more about on-demand infrastructure and what it offers, GovLoop partnered with global data center operator and infrastructure provider [Cyxtera](#). In this report, we’ll examine the challenges agencies face, the advantages of leveraging on-demand hardware and how to get started with a best-in-class as-a-service option.

## By The Numbers

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91%

of federal agencies and 93% of state and local agencies said they have at least some of their systems and solutions in the cloud.

58%

of IT and security professionals say network security is their biggest concern with operating in the cloud.

31%

of federal agencies say they are struggling with understanding the security compliance requirements for cloud solutions.

99%

of cloud security risk exposures will be the fault of cloud customers, according to Gartner.

80%

of federal agencies' IT budgets typically are spent on operating and maintaining on-premises legacy systems.

79%

of IT and security professionals reported staff-related issues as a top concern with handling cloud deployments and a largely remote workforce.

95%

of federal respondents and 97% of state and local respondents say they recognize the benefits of choosing FedRAMP-authorized solutions.

26%

of federal respondents said budget is the biggest barrier in shifting to vendor-provided cloud solutions, followed by workforce issues **(25%)** and uncertainty about procurement **(17%)**.

# Agencies Need to Take a Closer Look at the Economies of the Cloud

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## The Challenge: Cloud Benefits Don't Always Add Up

Without a doubt, agencies need to make their operations more flexible, scalable and cost-effective. That was the thinking behind the 2011 Cloud First policy and the 2019 [Cloud Smart](#) policy. The challenge is that using the cloud alone is not always the best way to achieve those aims.

"There's a general push in the government to get out of the business of managing data centers and focus more resources on actually delivering the services that Americans expect from government," said Brad Scyrkels, Vice President and General Manager at Cyxtera Federal Group Inc. "The push to move to the cloud has become single-minded and narrow in its scope, to the point of being a detriment to the actual practitioners."

Some of the challenges of the public cloud include:

- Running applications in early stages of development in the cloud makes sense, but as the application requirements for compute and storage grow, it becomes more efficient to run the application on dedicated, bare-metal hardware.
- When it comes to autoscaling, a key driver of the cloud's flexibility, benefits can be limited by cloud contracts. Some cloud vendors require agencies to agree to a particular range of scalability – and to pay a premium if they exceed it.
- Agencies often end up paying a premium for capabilities they don't need, such as unnecessary bulk storage, or unnecessary cloud storage of local files.
- Cloud lock-in is a legitimate concern. If an agency decides to move a workload out of the cloud, or to switch vendors, it often ends up paying significant data egress fees.

For all of the advantages of the cloud, agencies can face excess costs for "super agility, super scalability, instant access to services," Scyrkels said. "If you're not in absolute need of those, why pay for them?"

## The Solution: Cloud Advantages Without the Cloud

The good news? There is an option that offers the best of both worlds, enabling agencies to avoid both the technical and financial overhead associated with managing their own data centers and the prohibitive costs of the public cloud.

On-demand access to single-tenant infrastructure can provide the security of dedicated hardware, the flexibility of a subscription-based pricing model and the scalability of programmatic provisioning of compute, storage and network connections. This approach is valuable in certain situations, such as managing small workloads or services that need to be quickly scaled up or down, as well as maintaining control of sensitive data.

On-demand, single-tenant infrastructure isn't exactly a private cloud, which can be described as a shared resource that you own. It's a collocated infrastructure on which you can build cloud-type offerings.

An on-demand infrastructure service can provide what agencies are looking for, including:

- Flexible bandwidth that can be scaled up as needed
- Remote access with low-latency connections
- Instant computing power via automated provisioning
- Custom-configured servers, matching the processor, random access memory (RAM), storage, graphics processing unit (GPU) and network hardware to an agency's workloads
- Total control over the data and the entire stack, as opposed to giving that control to a cloud provider

Also, moving operations to a public cloud is not only a conversion effort, it's one that requires skills in monitoring and maintaining security, taking existing workloads and converting them to security controls that are just as effective in the cloud.

"It's a rare skillset, and it's in demand," said Robert Picarillo, Systems Engineering Manager at Cyxtera Federal Group Inc.

# Best Practices in Using On-Demand, Single-Tenant Infrastructure

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Agencies considering on-demand infrastructure as the most efficient and cost-effective option for managing certain workloads should follow some basic principles and look for certain features.



## Don't let cloud hype drive your strategy.

Large-scale cloud implementations aren't for every agency, or every type of workload. That reasoning was behind the federal government's shift from Cloud First to Cloud Smart as a policy.

"Place the workloads where they make the most business sense," Picarillo said, "depending on what is most cost-effective, from a total cost of ownership perspective, and where it provides the least amount of security strain and the lowest level of demand on technical human resources." For some workloads and processes, on-demand, single-tenant infrastructure can be the ideal choice.

## Take advantage of security features.

Major cloud providers are painstakingly careful in securing the cloud itself, but agencies can run into difficulties in securing all the elements under their purview, resulting in vulnerabilities such as misconfigured storage or applications, unsecure application programming interfaces or inadequate access management.

An on-demand infrastructure platform that offers FedRAMP architecture can provide highly secure operations in a self-contained, continuously monitored data center environment. It can even improve security operations: Because it replicates the operations of an on-premises data center so closely, the infrastructure provider can also take over some of the environmental and physical security controls that were previously done in-house.

In addition, some agency workloads still require single-tenant environments for various security controls, like penetration testing, which the cloud does not provide.

## Look for geographic diversity.

Major hyperscalers and public cloud providers currently offer a limited number of secure regions, typically on the East or West Coasts. A colocation provider can offer more diversity because they are available in a wider range of markets. Cyxtera, for example, has over 60 data centers around the world, and can provision a secure enclave in just about any one of them.





# On-Demand Infrastructure: The Business Outcomes

The benefits of on-demand, single-tenant infrastructure are most evident when it comes to business outcomes – that is, how well it helps an agency perform its mission and deliver services securely, while keeping costs under control in a way that matches the skills of its IT staff.

**Meeting Demand for Services:** An agency can centralize the systems it's not sending to a public cloud in an automated, software-defined platform with on-demand provisioning and customized storage, compute power, networking and management. The ability to spin up dedicated servers when needed – and do it without buying the hardware – via a provider's connected infrastructure will provide reliable, low-latency access, enabling an agency to meet demands for services efficiently. It also allows an agency to layer on advanced technologies such as artificial intelligence (AI) and machine learning (ML).

**Providing Predictable, Manageable Costs:** The platform enables agencies to build, deploy and manage that infrastructure on an entirely OpEx model, allowing for predictable, manageable costs. It saves money on both the overhead of maintaining an on-premises data center and the many expenses associated with operating in a large cloud infrastructure.

**Improving Security:** “By design, single-tenant infrastructure, especially if it is built on a FedRAMP architecture, can help ensure security through its self-contained, continuously monitored environments,” said Picarillo. There's more control of the platform, and that, in some ways, allows the owner to customize their security in ways that satisfy the risk that they're trying to address.

## HOW CYXTERA CAN HELP

Cyxtera's Enterprise Bare Metal offering provides the benefits of cloud with dedicated compute servers that are provisioned on demand, providing agencies with the performance and security they require alongside the speed and scale of the cloud.

Cyxtera's Bare Metal servers can be customized to handle specific workloads, including high-bandwidth workloads involving AI and ML. The company's Digital Exchange, which allows for rapid provisioning of Enterprise Bare Metal, AI/ML Compute-as-a-Service and other high-performance services, is certified as FedRAMP Ready at the High Impact Level, making it an ideal option for agencies looking for a secure, single-tenant option.

The prevailing opinion in certain circles is that the only way to get speed and scale is by accessing a cloud environment through a large-scale cloud provider such as AWS, Azure or GCP. “But what cloud really means is a flexible, scalable infrastructure that is based on consumption pricing,” Scyrkels said. “And that's what we offer.”

Learn more: <https://www.cyxtera.com/federal>

# Conclusion

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Some workloads require more control than agencies get from cloud implementations. And paying a premium for the agility of the cloud may not always be the smartest choice when speed and scale are available at a far lower cost. “With Enterprise Bare Metal, you gain on-demand access to the same compute and storage capabilities and data transmission capabilities for far less,” Scyrkels said.

In today’s computing environment, agencies may have to change their thinking about how they can comply with policy mandates to move to the cloud while meeting their own needs in a cost-effective manner. On-demand, single-tenant infrastructure such as Cyxtera’s Enterprise Bare Metal offering – which provides a secure, efficient option with predictable, manageable costs – is an approach they should consider.



## ABOUT CYXTERA

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Cyxtera is a global leader in data center colocation and interconnection services. The company operates a footprint of 61 data centers in 28 markets around the world, providing services to more than 2,300 leading enterprises and U.S. federal government agencies. Cyxtera brings proven operational excellence, global scale, flexibility, and customer-focused innovation together to provide a comprehensive portfolio of data center and interconnection services. For more information, please visit [www.cyxtera.com](http://www.cyxtera.com).



## ABOUT GOVLOOP

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GovLoop’s mission is to “connect government to improve government.” We aim to inspire public-sector professionals by serving as the knowledge network for government. GovLoop connects more than 300,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to connect and improve government.

For more information about this report, please reach out to [info@govloop.com](mailto:info@govloop.com).



1152 15th St. NW Suite 800  
Washington, DC 20005

P: (202) 407-7421 | F: (202) 407-7501

[www.govloop.com](http://www.govloop.com)  
@GovLoop

