U.S. Agencies Lead in Deploying Mixed IT Environments

About this Report

For the fifth consecutive year, Nutanix commissioned a global research study to learn about the state of global enterprise cloud deployments. In December 2022 and January 2023, U.K. researcher Vanson Bourne surveyed 1,450 IT decision-makers about the progress they're making in their cloud-deployment journeys. The respondent base spanned 12 industries and a range of business sizes and geographies, including North and South America; Europe, the Middle East, and Africa (EMEA); and the Asia-Pacific-Japan (APJ) region.

This report is supplemental to the global _5th Annual Enterprise Cloud Index_ master report and focuses on cloud deployments in the **U.S. federal government.** It highlights the cloud plans, priorities, challenges, and experiences of IT professionals in this sector and how they compare to other industries and the full, cross-industry global response pool.

Key Findings

1. U.S. federal agencies are deploying mixed-cloud environments at a rate that surpasses the global average. However, they plan to streamline infrastructure diversity within three years. The percentage of _ECI_ respondents in the U.S. federal sector using multiple IT operating modes—whether a mix of private and public clouds, multiple public clouds, or on-premises and hosted private infrastructure—is moderately ahead of the global cross-industry average. Organizations in this group report 68% penetration of mixed IT models today, compared to 60% globally (Figure 1).

Figure 1. Use of Multiple IT Environments

	U.S. Federal Government	All
Today	68%	60%
In 1 – 3 years	62%	74%

They're fairly far along in their cloud journeys, as evidenced by their 40% current adoption rate of hybrid cloud, which pairs private infrastructure with a single public cloud platform. On this score, their reported adoption is nearly twice that of the full global response pool (21%). Moreover, U.S. federal agencies represent the greatest penetration of multicloud deployment today, with 18% saying they rely on multiple public clouds exclusively for their IT infrastructure. All other industries surveyed indicate single-digit adoption today, and two—utilities/energy and healthcare—report 0% usage.

While most _ECI_ respondents intend to grow their overall percentage of mixed IT environments during the next three years, U.S. agencies actually plan a 6-point decrease. Much of the expected reduction is attributable to their intention to expand their exclusive use of hosted datacenter services as IT infrastructure by 19 percentage points (Figure 2). These plans sync with U.S. agencies' relatively high ranking of IT outsourcing as a driver of application movement (_**see Key Finding 4**_).

Figure 2. U.S. Federal Government: IT Models in Use and Planned

	Today**	In 1–3 Years**
On-premises infrastructure only*	18%	8%
Hosted infrastructure only*	4%	23%
Single public cloud only*	10%	7%
Both on-premises and hosted infrastructure	4%	5%
Hybrid cloud	40%	13%
Hybrid multicloud	6%	23%
Multicloud only*	18%	21%

*Exclusively in use/planned.
**Totals may not equal exactly 100% due to rounding.

Even as they grow their exclusive hosted datacenter usage, however, U.S. federal IT pros intend to increase their hybrid multicloud and multicloud deployments. Hybrid multicloud—private IT infrastructure combined with two or more public cloud

platforms—is the operating model with the highest expected growth across global *ECI* respondent organizations. The percentage of U.S. federal government organizations that have deployed hybrid multicloud today (6%) trails the global response pool (12%) by half (Figure 3). While those in U.S. federal agencies expect to grow these deployments by nearly 4-fold over the coming three years to 23% penetration, this growth substantially trails global plans for 38% penetration.

Figure 3. Comparative Hybrid Multicloud Usage Today*

U.S. Federal Government	Business & Professional Services (Highest Penetration)	Education, Private and Public (Lowest Penetration)	All
6%	33%	2%	12%

*Percentage of respondents in each group currently using private IT infrastructure in combination with two or more public cloud platforms.

2. Cybersecurity is the biggest IT investment driver. When *ECI* respondents were asked to name the single most important factor driving their IT infrastructure purchasing decisions, they offered a diverse array of answers (Figure 4). Industry, business size, geography, local compliance regulations, business and sustainability goals, and internal IT philosophies and strategies all play a role throughout the *ECI* respondent base. That said, among those in the U.S. federal sector, cybersecurity was the top criterion, with nearly a fifth (19%) of respondents choosing it as the number one priority. Related issues were mentioned second and third most often: data protection/backup/recovery (15%) and data sovereignty (11%), or the ability to comply with national rules for data storage and control. Cost came in last place globally (5%) and tied for third to last with regulatory compliance among U.S. agencies (5%), as Figure 4 shows.

Figure 4. Top-Ranking Infrastructure Decision Criteria

	Single Response Allowed	
	U.S. Federal Government	**All**
Cybersecurity	19%	13%
Data protection and recovery	15%	10%
Data sovereignty	11%	10%
Sustainability	9%	7%
Performance	9%	8%
Application requirements	9%	6%
Data distribution across edge, datacenter, public cloud(s)	8%	8%
Regulatory concerns and compliance	5%	8%
Cost	5%	5%
Ability to easily move existing applications to the public cloud	4%	8%
Flexibility to run across clouds and on-prem	3%	10%
Data services (e.g., files, blocks, objects)	3%	8%

3. Most *ECI* respondents agree that having a single platform to manage their diverse private and public infrastructures would be ideal. Among those from the U.S. federal sector, 91% agreed, as did 94% of IT pros globally. Unified management would help them tackle the most challenging, data-centric aspects of operating hybrid environments across multiple datacenters and cloud sites. Those from the U.S. federal government chose data security (54%) most often as a mixed-infrastructure management challenge (Figure 5). This factor was followed by data storage costs (47%), data analytics and orchestration (44%), and data portability (41%). Similarly, the full global response pool mentioned both data analytics/orchestration and data storage costs (43% each) as mixed-cloud management challenges most often, as Figure 5 shows, followed by security and disaster recovery (41% each) and data synchronization (40%)

Figure 5. Top Data Management Challenges with Mixed Environments

		Multiple Responses Allowed
U.S. Federal Government	Security	54%
All	Data analytics and orchestration	43%
	Data storage costs	43%

While 93% of respondents from the U.S. federal sector agree that tackling their cross-cloud management challenges requires visibility into where all data resides across the extended IT infrastructure, far fewer—45%—report actually having that visibility today. While this percentage is moderately higher than the global response pool (40%), the visibility findings indicate a capabilities gap that leaves room for improvement in the availability of integrated tools for hybrid IT operations, given that IT shops can't manage, secure, synchronize, or analyze what they can't see.

4. The overriding driver of application movement last year was to improve data access speeds. A large majority of respondents in the U.S. federal sector (92%) indicated that they had moved applications between IT infrastructures in the past 12 months. More than four in 10 (42%) cited a desire to improve data access speeds as a reason (Figure 6). The second most-mentioned reason was a desire to improve their data security posture or ability to meet regulatory requirements (39%). Globally, improving data security was the reason for moving applications mentioned most often (46%).

Figure 6. Reasons for Moving Apps Across Infrastructure in the Past Year

	Multiple Responses Allowed	
	U.S. Federal Government	**All**
Improve data access speeds	42%	41%
Improve security posture and/or meet regulatory requirements	39%	46%
Gain better control of the application	36%	40%
Outsourcing IT management	35%	32%
Integrate with cloud-native services	26%	42%
Faster application development	26%	35%
Meet sustainability goals	25%	39%
Disaster recovery	23%	28%
Executive mandate	23%	24%
Cost	22%	21%
Capacity concerns	17%	27%

5. Cost remains a wild card. *ECI* respondents tend to be fickle in their attitudes toward IT costs. In addition to playing the smallest role in most *ECI* groups' infrastructure decisions, cost was the lowest-ranking driver behind application movement across nearly all industries globally. It was mentioned as infrequently as by 10% of those in the construction and property industry and as often as by 37% in the energy/utilities market (yet still less frequently than any other factor). As a subset of the global public sector, the U.S. federal government was one of two industries that mentioned cost second-to-least frequently (22%), with capacity concerns as the only factor ranking lower, as Figure 6 shows. The other industry was the media, leisure, and entertainment sector, which ranked improving security less often (15%) than cost 20%. Among all other verticals surveyed, cost was mentioned least often on its own or tied with other factors as the least-mentioned driver.

At the same time, however, most respondents rank controlling costs high on their list of challenges. For example, 88% of U.S. federal respondents and 85% of those globally described cloud cost control as a challenge with managing their current IT infrastructures. About a third (34%) of each group said it was a "significant" one. One explanation is that as the value and volume of corporate data continue to skyrocket, data management issues are moving top of mind. Data is now a business asset that must stay up-to-date, secure, and readily available for continued operations, decisions, and monetization. A second explanation is that infrastructure total cost of ownership (TCO) has many components that make it difficult to compare apples to apples during the evaluation and purchasing processes, particularly given that public cloud offerings, pricing models, and service fees are in a perpetual state of change.

Summary and Outlook

5th Annual ECI findings generally indicate a notable increase in the use of mixed IT infrastructure. While mixed deployments among U.S. federal organizations currently outpace the global average at 68% penetration, this group intends to streamline its overall level of IT diversity in the coming years as it grows its hosted datacenter, hybrid multicloud, and multicloud usage while paring back its use of standalone on-premises datacenters, single public clouds, and hybrid clouds. Data security, protection, sovereignty, storage, and access speeds are guiding many of this group's infrastructure investment and application mobility decisions as they progress on their cloud journeys.

Infrastructure diversity joins a heightened emphasis on data management in driving hybrid operations that transcend private and public infrastructure. Nearly all respondents, including 91% of U.S. federal respondents, expressed a desire for a single place to see and manage the many aspects of their mixed infrastructures. As these capabilities emerge, respondents will gain access to unified tools that deliver visibility into where all data resides, allow IT teams to holistically manage their applications

and data, and let them make adjustments as needed to meet ever-shifting requirements for data security, backup, compliance, access, and cost.

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