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# Modern Data-Intensive Workloads Drive the Need to Consider Unifying Storage Infrastructure

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# Executive Summary

**Unified data storage can benefit modern workloads, including AI and analytics, by helping reduce infrastructure complexity and providing a consistent model for data management, security, and governance.**

**Workloads integral to digital transformation** require flexible, high-performance, and scalable storage capable of handling large volumes of structured and unstructured data from diverse sources that may span on-premises and public cloud sites.

**Trends toward hybrid cloud/multicloud storage infrastructure** create the potential for problematic data silos and management challenges that a unified data architecture can help address.

**Consolidating workloads**, where possible, onto unified multiprotocol storage can assist organizations in mitigating hybrid cloud/multicloud complexity by supporting a wide variety of data formats, structures, access mechanisms, and centralized AI-driven management tools that can ease administration and enhance efficiency.

**This IDC InfoBrief** examines survey results showing how the growth of modern data-intensive workloads will impact data storage architecture and infrastructure.

# The Growth of AI, Analytics, and Related Applications Will Spur the Need to Modernize Data Storage Infrastructure

## Worldwide Enterprise Infrastructure Spending Forecast, Top Workloads ($Billions)

| | Spending 2027 | CAGR 2022–2027 |
|---|---|---|
| AI lifecycle | $22 | 14% |
| Structured database/data management | $20 | 9% |
| Business intelligence/data analytics | $17 | 9% |
| Networking & security | $17 | 9% |
| Content applications | $17 | 9% |
| Digital services | $17 | 15% |
| Enterprise resource management | $16 | 10% |
| Content delivery | $15 | 12% |

Source: IDC *Quarterly Enterprise Infrastructure Tracker: Workloads, 2023H2 Forecast*, May 2024

- The increasing use of data-intensive AI and analytics workloads in digital business initiatives will fuel higher spending on infrastructure.
- AI and analytics applications often need to combine significant volumes of data from disparate block-, file-, and/or object-based storage that may span on-premises and public cloud sites.
- Many enterprises will need to modernize their storage infrastructure to address the data access, scalability, and performance demands of modern workloads.

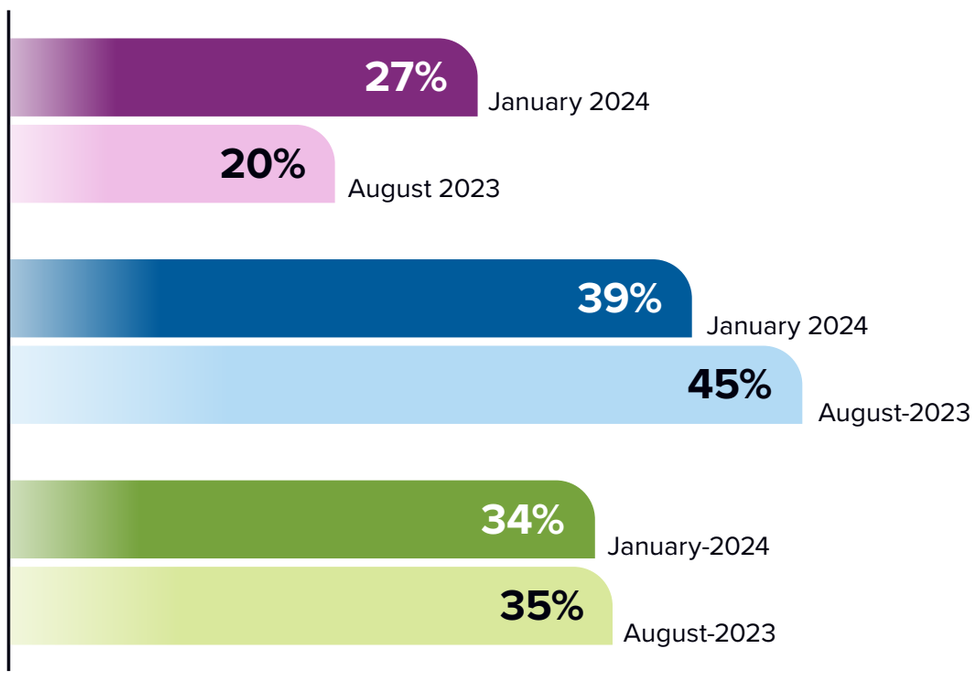
# Generative AI Continues to Gain Momentum

## What is your best estimate for how you will allocate your AI-related investments over the next 18 months?

**GenAI:** Creation of new content/code from previously created content/code

**Interpretive AI:** Analysis of unstructured data, such as language, images, or event data streams, to discover patterns and insights

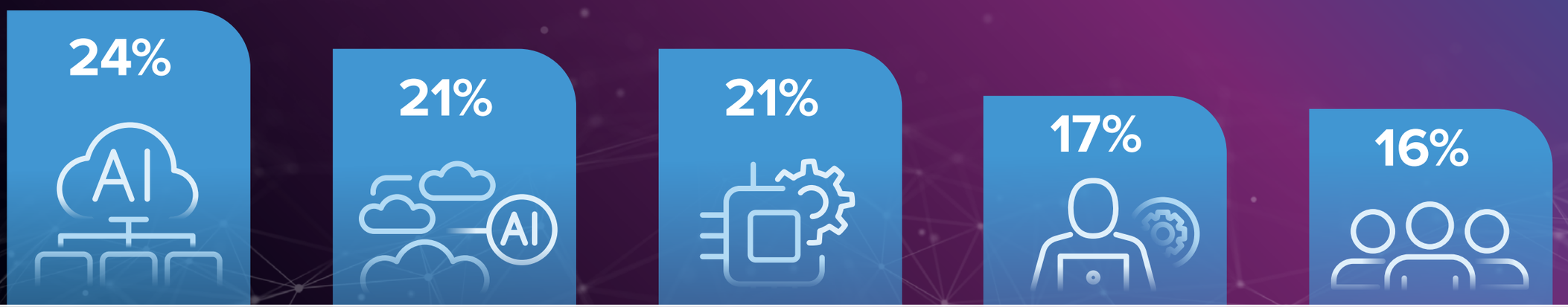
**Predictive AI:** Analysis of large data sets to identify long-term patterns in behavior




n = 881; Source: IDC's *Future Enterprise Resiliency & Spending Survey Wave 1*, January 2024; n = 1,304, Source: IDC's *GenAI ARC Survey*, August 2023

# Generative AI Will Fuel Investments in On-Premises and Cloud Infrastructure

## How do organizations that plan to increase IT spending on GenAI in 2024 plan to allocate their investments?




**Dedicated infrastructure**
(AI-specific server and storage hardware; on-premises, colocation, hosted, and edge sites)

**Public cloud infrastructure**
(e.g., compute and storage cloud services)

**External AI platforms**
(e.g., software/dev tools, AI models and external data sources)

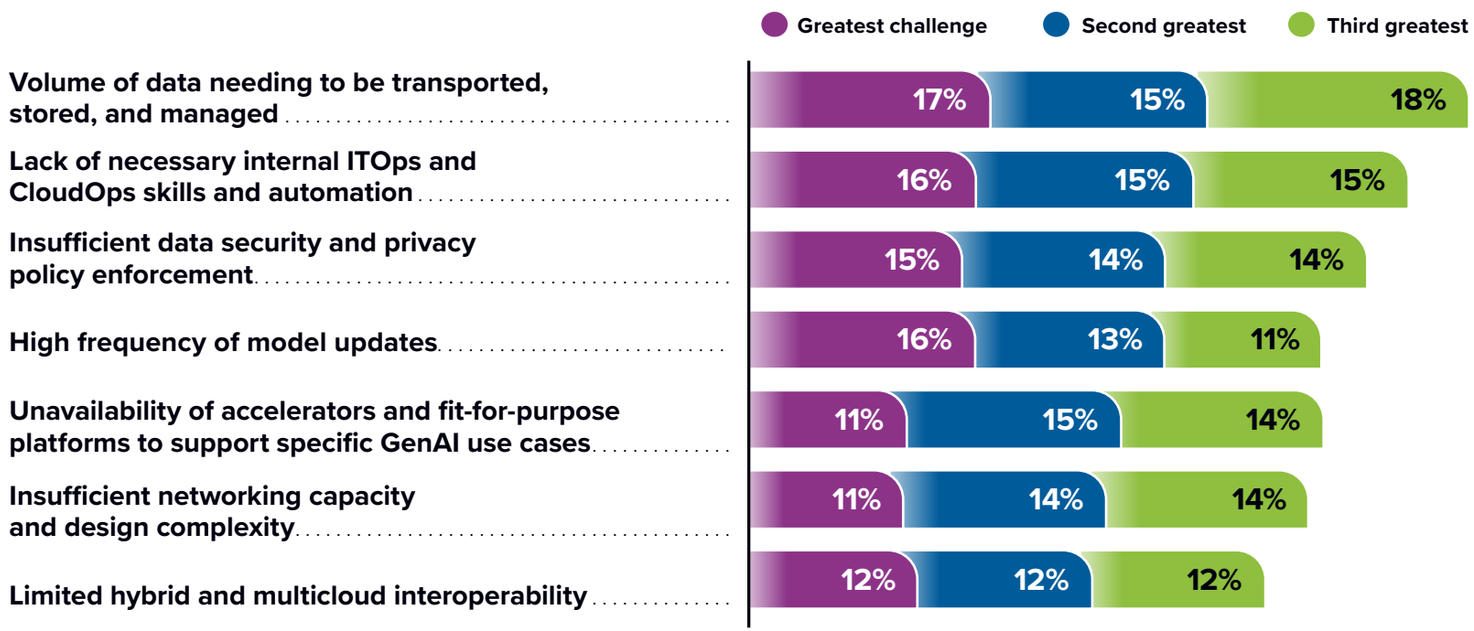
**Internal data scientists, developers, DataOps employees, and other IT/line-of-business staff**

**External service providers**
(e.g., consulting, custom development and managed managed services)

n = 534; Source: IDC's *Future Enterprise Resiliency & Spending Survey* Wave 10, November 2023

# Many Problems Associated with AI Workloads Relate to Data Storage Architecture and Infrastructure Decisions

## What operational concerns related to digital infrastructure will pose the greatest challenges to the successful implementation of your organization's highest-priority GenAI use cases in the next 18 months?




n = 881 (pharmaceutical); Source: IDC's *Future Enterprise Resiliency & Spending Survey Wave 1*, January 2024

***"The data needs to be brought to our infrastructure location. Network latency and data volume are difficult challenges to solve."***

IT Operations Executive, Financial Services

***"Integrating data from several sources has been a significant and costly challenge for us."***

Data Science VP, Telecommunications

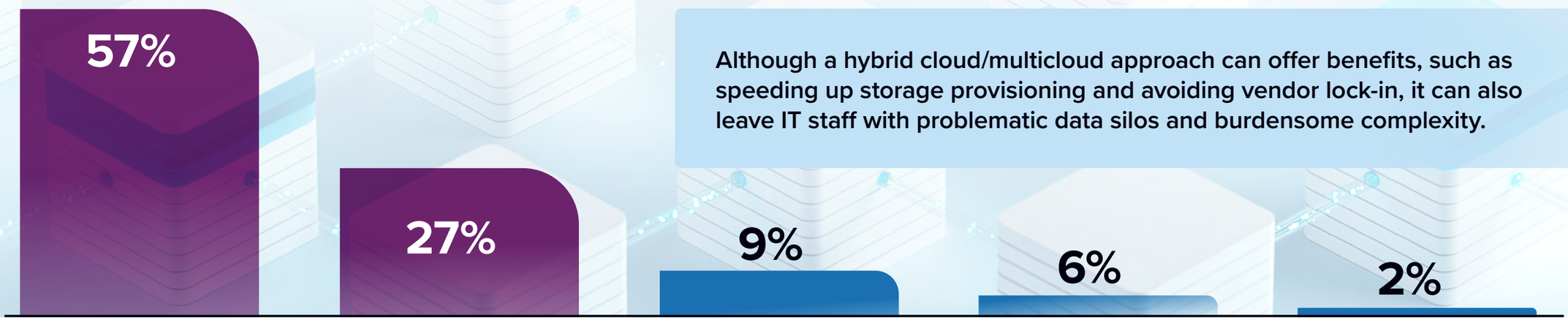
***"The biggest challenge with our data is lack of standardization of data formats, data structures, governance, quality, availability, and access mechanisms."***

Data Science Director, Telecommunications

Source: *IDC study on data requirements for AI*, December 2023

# Taking a Hybrid Cloud/Multicloud Approach to Storage Infrastructure Creates Data Management Challenges

## What best describes the approach your organization takes for data storage infrastructure?




**Hybrid Multicloud**
Dedicated on-premises infrastructure and public cloud services from multiple cloud providers

**Hybrid Cloud**
Dedicated on-premises infrastructure and public cloud services from a single cloud provider

**Dedicated Infrastructure Only**
On-premises, colocation, and/or hosted/managed services

**Public Cloud Only**
Single cloud service provider

**Public Multicloud Only**
Multiple cloud service providers

Although a hybrid cloud/multicloud approach can offer benefits, such as speeding up storage provisioning and avoiding vendor lock-in, it can also leave IT staff with problematic data silos and burdensome complexity.

n = 600; Source: IDC's *IT Infrastructure for Storage and Data Management Survey*, January 2023

# Designing a Unified Data Architecture Is an Important Step to Confront the Challenges of Modern AI and Analytics Workloads

## Data migration and management tools can help unify data on new or existing storage systems.

Data architecture is the overarching design that applies to the collection, distribution, storage, and management of data.

A unified data architecture provides a single, comprehensive blueprint for all of an organization's data, no matter where it resides.

A well-designed data architecture supports many data formats (i.e., text, image), types (i.e., structured, unstructured), and access mechanisms (i.e., block, file, and object).

A unified architecture ensures that data is manageable through a common control plane with consistent data protection and security policies.

*"Having a **unified architecture** ensures that all important data for AI is together and can be easily utilized."*

Data Science Developer, Retail Trade

Source: *IDC study on data requirements for AI*, December 2023

# The Next Step to Consider Is Consolidating Workloads onto Unified Data Storage Infrastructure, Where Feasible

## The definition of unified data storage has changed over the years and varies by vendor.

Unified storage is a multiprotocol block, file, and/or object system that stores and manages multiple data structural types, formats, and access mechanisms.

Unified data storage products are evolving to enable the operating system to run on general-purpose servers and facilitate scaling in hybrid cloud/multicloud environments.

Unified data storage offers the benefits of centralized management and a consistent model for data protection, governance, and security to guard against cyberthreats.


Consolidating storage can ease administration, increase efficiency, and help organizations avoid complex and costly data migration projects.

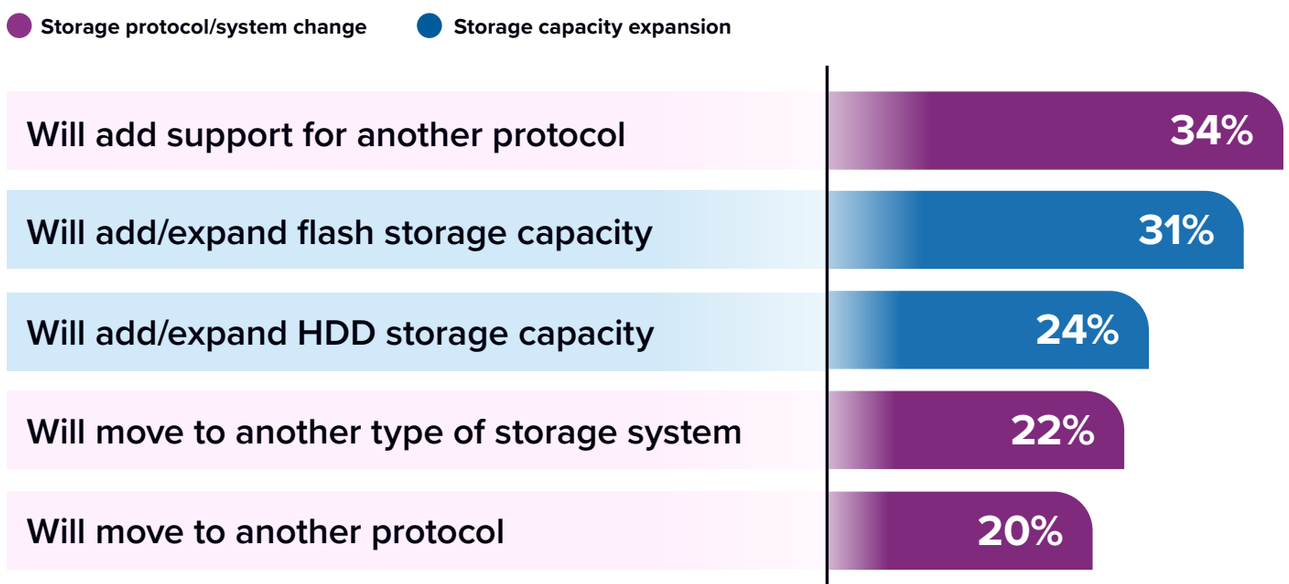
*"We need to simplify and unify our **data storage** as much as possible."*

Data Science Director, Large Telecom Provider

Source: *IDC study on data requirements for AI*, December 2023

# Modern Workloads Are Driving Enterprises to Make Changes to Storage Protocols and Systems

## Top Changes Enterprises Plan To Make Within 24 Months To Storage Infrastructure For Key Workloads



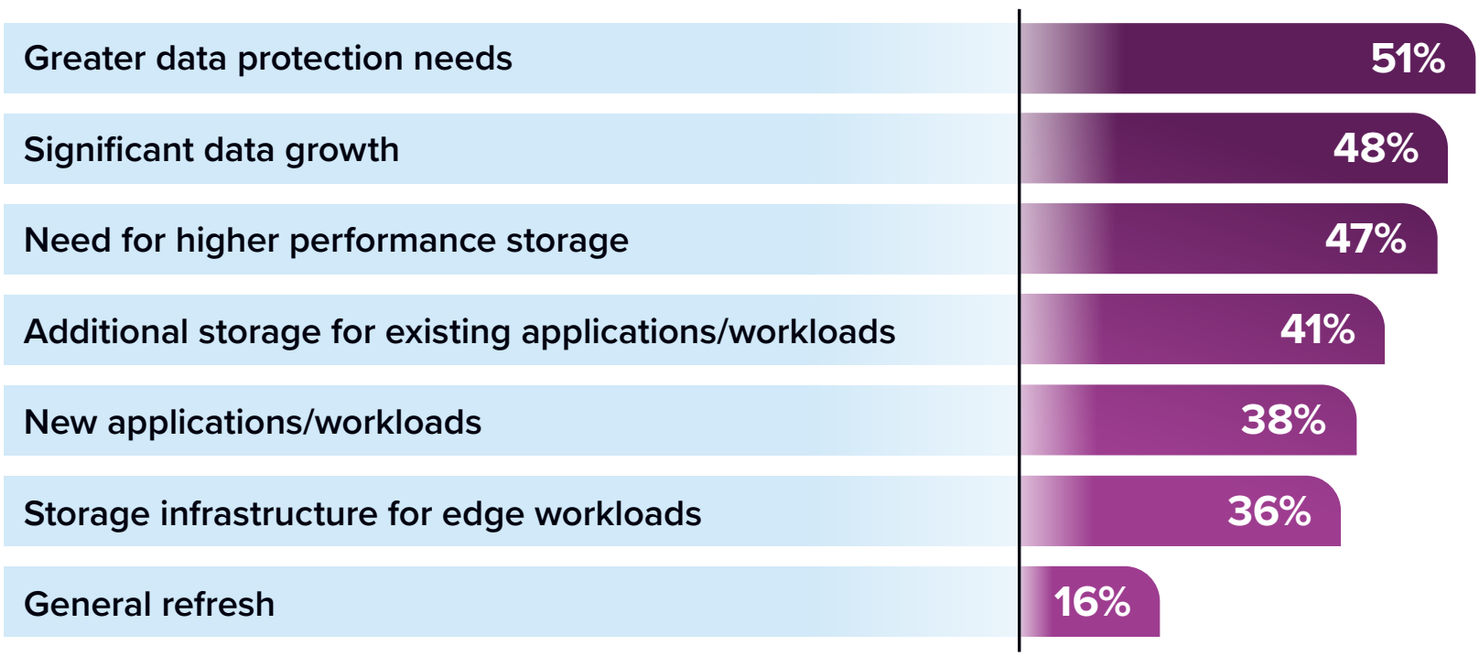

n = 1,148 (workloads); Source: IDC's *Enterprise Infrastructure Pulse Survey,* March 2024

- Beyond flash and hard disk drive (HDD) capacity expansion, the storage infrastructure changes that enterprises most commonly expect to make within two years center on block-, file-, and/or object-based protocols and systems.
- Horizontal business applications are the top workload among a sizable list for which survey respondents expect to add support for another storage protocol.
- Scale-out storage that supports more than one protocol offers the potential to reduce infrastructure complexity and ease capacity expansion.

# Data Protection and Security Drive Storage Budget Increases

## What are the primary drivers of your organization's storage budget increases?

(% of responders)




- Requirements for additional data protection are a primary reason that enterprises have expanded their storage budgets.
- Security remains a critical priority to address the ongoing threats of ransomware and other cyberattacks and to protect sensitive data in new AI and GenAI applications.
- Unifying storage infrastructure can provide a consistent control plane for data protection, governance, and security.

n = 389; Source: *IDC IT Infrastructure for Storage and Data Management Survey,* January 2023

# Essential Guidance

Consolidating workloads onto unified data storage, where appropriate, offers potential benefits for a wide range of enterprise workloads — especially those requiring access to both structured and unstructured data and support for more than one block, file, or object storage protocol.

**Workload Assessment**
Examine storage requirements, such as performance, availability, scalability, data access, protection, and security.

**Consolidation Opportunity**
Identify the applications that would benefit the most from a consistent model for data storage, management, and security.

**Storage Objectives**
Prioritize goals such as reducing complexity, containing costs, lowering power, and running in hybrid clouds.

**Unified Data Storage Comparison**
Evaluate suppliers by weighing variances in supported protocols, access, security, management, and other capabilities.

**Storage as a Service**
Seek unified storage vendors that offer services if you prefer an opex model or need to burst capacity on demand.

**Customer Support**
Modern data-intensive workloads often require deployment assistance. Select a vendor that will be a strong partner.

# About the IDC Analyst

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Carol Sliwa is a Research Director for Storage Systems in IDC's Enterprise Infrastructure Practice. Her core research area spans block, file, and object storage, with a special focus on the storage of unstructured data. With more than 25 years of experience as a technology journalist, including 13 years covering enterprise storage, Carol gained extensive insight into the ways in which the industry has adapted systems over time to address the evolving needs of IT customers.

More about Carol Sliwa

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