Enterprise Storage as a Service Is Transforming IT Operating Models

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Initiatives: Data Center Infrastructure; Cloud and Edge Infrastructure

Advancements in storage automation and consumption-based delivery models provide multiple pathways to a productive, scalable IT services operating model. I&O leaders must leverage managed storage-as-a-service cloudification strategies to eliminate storage hardware administration and support costs.

Overview

Impacts
- Disruptive, costly capital expenditure (capex) processes are forcing I&O leaders to seek alternative sourcing models such as managed storage as a service (STaaS).
- As storage vendors continue investing in artificial intelligence operations (AIOps), vendor-managed STaaS offerings now enable infrastructure and operations (I&O) leaders to eliminate most of their storage administration and support costs, including third-party maintenance fees.
- Improvements in hybrid cloud storage fundamentally alter IT budget priorities, as I&O leaders redirect investments to develop cloud-native platform skills that support business growth initiatives.
- I&O leaders are prioritizing productivity gains and new growth initiatives to bring IT and business units closer together.

Recommendations

I&O leaders responsible for modernizing storage data center infrastructure must:
- Replace capex activities and related processes with a flexible, service-based sourcing model by outsourcing IT storage administration and support activities.
- Reduce storage hardware administration costs and support fees and avoid third-party maintenance charges by shifting activities to vendor-managed hybrid cloud solutions that leverage AIOps tools.
- Upskill the I&O team with cloud-native capabilities by hiring or training platform engineers with IT storage and compute system experience, application design, or software development principles.
Strategic Planning Assumptions

By 2025, more than 40% of all on-premises IT storage administration and support costs will be replaced by managed STaaS, up from less than 5% in 2020.

By 2025, more than 70% of corporate enterprise-grade storage capacity will be deployed as consumption-based service offerings, up from less than 40% in 2020.

Analysis

Many I&O leaders are embracing cloud-based storage and its benefits as a replacement for owned, on-premises storage infrastructure. This trend is driven by the massive growth in enterprise data, the flexibility of cloud-based delivery models and the rise of remote workplace initiatives. In 2020, 36% of global corporate enterprise-grade storage petabytes (PBs) were consumed off-premises as part of a cloud consumption service. We predict this rapid adoption to continue, with 59% of corporate PBs being consumed off-premises by 2025, and enterprise storage being increasingly managed as STaaS as part of a hybrid IT multicloud initiative.

During 2021, Gartner expects cloud spending to grow at 18.4%. By 2025, managed, consumption-based storage systems and hybrid IT will serve as the foundation for more than 70% of corporate enterprise storage workloads. Hybrid IT — defined as the blending of traditional services, public cloud services and private cloud services into a singular IT environment — will dominate the IT landscape for the forecast period. Through 2030, consumption-based, managed STaaS solutions built on disaggregated cloud-native storage architecture and industry-standard computing platforms will increasingly dominate the storage market. Cloud-native storage are cloud model capabilities enabled by disaggregated, high-performance, policy-based, software-defined storage systems. I&O leaders can flexibly scale compute and storage independently throughout the diverse hybrid cloud platform. Cloud-native STaaS abstracts the hardware layer into an IT services-centric operating platform in which IT is no longer required to manage, refresh or support the storage hardware.

In contrast, on-premises, external controller-based (ECB) storage (which powers most mission-critical workloads) is shrinking in terms of enterprise PB market share — a trend that will continue through 2030. While ECB arrays and special-purpose storage appliances will continue to service some on-premises mission-critical applications, their controller-based architecture provides limited options to disaggregate pools of storage and compute in a highly elastic, composable and cost-performant-flexible manner.

Figure 1 illustrates this rapid transition from on-premises enterprise PB storage capacity to off-premises corporate hyperscale consumption. As I&O leaders adopt storage cloudification strategies, they are increasingly using vendor-managed STaaS offerings as a cloud-native storage IT operating model. I&O leaders should understand that storage hardware is becoming a diminutive percentage of the overall
costs of managing the asset, over its useful life. Embracing cloudification requires a solid automation layer, an understanding of how software works “higher up the stack” and cloud-enabled business model outcomes.

Figure 1: Projected Adoption Rates of Corporate Enterprise Storage as a Service, 2019-2030

Projected Adoption Rates of Corporate Enterprise Storage as a Service, 2019-2030

STaaS provides organizations of all sizes with an affordable, flexible storage that is delivered and managed via a globally accessible, centralized control panel for hybrid multicloud deployments. These platforms leverage vendor investments in:

- Automation, especially artificial intelligence (AI) and machine learning (ML)
- Data management, data services capabilities and analytics tools
- A rich ecosystem of value-add services and innovation, including service providers and independent software vendors (ISVs)
Recent STaaS market entrants and programs have included Dell Technologies Project Apex, NetApp Keystone, Hitachi Vantara EverFlex, Hewlett Packard Enterprise (HPE) GreenLake, Pure Storage Pure-as-a-Service and Zadara Cloud Services. The market is highly fragmented and is constantly changing, with both established and emerging vendors delivering differentiated value propositions and product capabilities. Vendors may use one or more products as part of their STaaS offerings to address different use cases and provide ancillary data services.

Despite the simplicity, flexibility and agility offered by public cloud storage, I&O leaders have been hesitant to embrace a cloud-first storage strategy for mission-critical applications. In contrast, I&O leaders are often confident and reassured in their relationships with storage vendors and the vendors’ investments in operating software, data service tools and support. It can be operationally difficult to provide an integrated multicloud-native enterprise-class storage experience that encompasses:

- Maintenance
- Upgrades
- Performance and quality of service (QoS)-based service-level objectives (SLOs)
- Data protection services like backup, disaster recovery (DR) and anti-ransomware

The benefits of adopting a managed STaaS as part of a hybrid multicloud platform strategy greatly outweigh concerns related to public cloud infrastructure. “Managed” fundamentally alters the economics in a favorable way due to vendor investments in AIOps and its ability to replace administration and support tasks.

To maintain a competitive edge throughout the next wave of digital services, I&O leaders must implement a new hybrid IT operating model that is standardized on cloud-native platform-as-a-service (PaaS) architecture principles. This research will help I&O leaders eliminate costly storage administration and support fees via storage cloudification, enabling their teams to be more productive and cost-efficient by 2025.

**Impacts and Recommendations**

**STaaS Replaces Disruptive, Costly Capex Processes**

Replacing the disruptive, costly and process-laden capex model with a managed STaaS model will free up IT resources, preserve cash and simplify budgeting activities. I&O leaders must collaborate with finance leaders to develop flexible cloud model funding approaches to innovation to enable digital transformation.
I&O leaders will need finance’s support to restructure the approach to technology innovation and secure capital as part of a new sourcing strategy.

The effort of transitioning to a new budgeting and finance methodology to support innovation will take time, but I&O leaders are encouraged to get started now. Some are already embracing this trend and will enjoy the competitive advantages that come with these new capital expense strategies.

The capex model acts as a throttle on innovation. I&O leaders must be willing to move beyond legacy practices and mindsets to embrace trends that profoundly impact infrastructure strategies.

Poor financial resource management is rarely the result of a single policy or IT decision, but rather a byproduct of entrenched, outdated IT methods. COVID-19 exacerbated this problem, as budget constraints disrupted growth capital initiatives in 2020 and fundamentally altered infrastructure plans for the foreseeable future. As the storage environment becomes increasingly complex in a digital service era, the financial implications extend beyond IT budget decisions.

Inefficiencies in financial engineering — such as capital productivity, risk management and contingency planning — have the potential to undermine cost optimization efforts and negatively impact long-term capital projects. For the remainder of the 2020s, various enterprise PB growth scenarios, ranging from 25% to 50% growth, have the potential to distort budget priorities (see Figure 2).
This distortion makes it nearly impossible for finance leaders to forecast capital needs. Conversely, market uncertainties create supply constraints and business continuity issues by starving strategic initiatives that create value or profit gains.

I&O leaders must shift to a managed STaaS platform service delivery model to avoid any shortfalls in capacity through this uncertain growth period (or else risk high levels of volatility).

Capex is generally approved during the annual budgeting process, compromising agility and flexibility when changes in business conditions warrant an expedient response. In a crisis, preserving cash and cash flow, as well as maintaining or obtaining capital, become the highest priorities for sustaining business operations. However, capex projects impinge on how responsive I&O leaders can be during a financial crisis or shortfall. In particular, the capex process related to storage hardware assets — and the operating costs to manage and sustain them — are major inhibitors to business agility and increased technical debt.
Hybrid-cloud-managed STaaS can mitigate risk management issues and cost liabilities associated with the outdated capex model. Replacing capex with STaaS will:

- Improve the capital allocation decision-making process.
- Rightsize and align IT infrastructure to demand.
- Unlock balance sheet assets and preserve cash for strategic I&O initiatives in the face of uncertainty.
- Gain access to new and emerging technologies to drive IT modernization plans.
- Enhance sourcing strategies with improved supply chain terms and flexibility.
- Free up valuable resources that would otherwise be spent managing on-premises hardware.
- Make future spending more predictable in alignment with business demands.
- Increase return on invested capital beyond the customary five- to seven-year financial return profile.

**Recommendations:**

- Collaborate with finance personnel to develop a full cost accounting model for cloud-based storage systems and prioritize which capex projects should be reduced/eliminated.
- Restructure capex planning and allocation processes by redirecting IT storage administration budget dollars to align with the new IT operating model.
- Replace the capex model with a managed STaaS solution by replacing on-premises storage administration and support with managed STaaS cost-per-GB offering.
- Retire legacy array technical debt and egregious support fees while modernizing storage systems with STaaS by using third-party data migration vendor tools to move data to new systems.
- Capture future savings as storage costs fall over time by eliminating redundant spending, locking in superior pricing and hedging against market supply cost fluctuations.

**Vendor Investments in AIOps and Managed Services Help Reduce Storage Administration and Support Costs**

Advancements in automation, orchestration and AI/ML technologies enable I&O leaders to reduce IT operating expenses and complexity while optimizing resource utilization. IT organizations have been slower to employ ML technologies within their own functions. In the past few years, a number of vendors have begun designing and developing powerful automation tools to address the particular challenges that IT personnel face in managing, updating and running IT hardware and software across the enterprise. I&O leaders should prioritize hyperautomation in 2021 (see Top 10 Strategic Technology Trends for 2020: Hyperautomation).
STaaS requires far less storage infrastructure oversight by incorporating AI-powered, autonomous operations with sophisticated ML algorithms. AIOps will revolutionize IT operations and the shift to deploy is already underway. AIOps enables a more resilient, increasingly self-aware infrastructure environment. STaaS enables I&O leaders to shift traditional on-premises storage administration tasks to vendor-partner managed STaaS offerings that leverage investments in AIOps (see Figure 3). As I&O adopts STaaS and increasingly intelligent cloud-native infrastructure technologies, it must invest in developing staff to oversee these activities in collaboration with STaaS providers.

**Figure 3: Transition From Traditional Storage Models to Managed Storage as a Service**

**Transition From Traditional Storage Models to Managed Storage as a Service**

<table>
<thead>
<tr>
<th>Traditional On-Premises IT Operations</th>
<th>Managed Storage as a Service (STaaS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Support</td>
<td>Application Support</td>
</tr>
<tr>
<td>Change Management</td>
<td>Change Management</td>
</tr>
<tr>
<td>Capex/Refresh</td>
<td>Subscription/Renewal</td>
</tr>
<tr>
<td>Capacity Planning</td>
<td>Capacity On-Demand</td>
</tr>
<tr>
<td>Performance</td>
<td>Performance</td>
</tr>
<tr>
<td>Support Level 1 &amp; 2</td>
<td>Support Level 1 &amp; 2</td>
</tr>
<tr>
<td>Optimization</td>
<td>Optimization</td>
</tr>
<tr>
<td>Backup and DR</td>
<td>Data Protection</td>
</tr>
<tr>
<td>Config/Test/QA</td>
<td>Config/Test/QA</td>
</tr>
</tbody>
</table>

Source: Gartner

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Continued investments in AIOps are the foundation for innovation in storage administration. Autonomous analytics outperform human monitoring, analysis and time to action. With this input, AIOps continuously rightsizes data infrastructure assets to optimize costs, capacity usage and availability. This is especially crucial for data life cycle management and workload placement, as I&O leaders must continuously balance cost optimization projects with investments in IT products that support business growth.
Vendor investments in AIops, automation tools and data service software produce insights that are simpler, more proactive and integrated to prescriptive actions. These insights are tightly coupled with vendor service and support capabilities, which are contiguous with back-end agile engineering quality assurance (QA) and test processes. As a result, vendors are better able to accept responsibility for on-premises and hybrid cloud infrastructure asset management.

Recommendations:

- Shift cost basis from equipment and licensing to provisioned computing and storage units used and managed by STaaS vendors that retain ownership of the hardware assets.
- Increase operational agility and productivity by using AIops tools to replace the patchwork of existing scripts, processes and specialized knowledge functions.
- Reform storage hardware administration tasks to eliminate costs and hardware support fees by shifting accountability to storage vendors’ hyperautomation investments.
- Leverage vendor investments in data services (such as data protection and recovery) by including the IT administrative functions in STaaS offerings.
- Reduce time to infrastructure provisioning by embracing planning and change management methods rooted in automated algorithms and recommendation engines (AIops).
- Alter approach to managing infrastructure by embracing change management rooted in AIops, on-demand capacity hydration techniques and service-based sourcing.

Hybrid Cloud Storage Alters IT Budget Priorities as I&O Leaders Redirect Investments to Digital Services

The global cloud storage market is projected to grow from $50.1 billion in 2020 to $137.3 billion by 2025, at a compound annual growth rate (CAGR) of 22.3%. The percentage of enterprise IT budget spent on cloud storage is projected to increase from 5.1% in 2017 to 11.5% in 2023. At a time when hybrid IT environments are becoming the new normal — with many enterprises managing workloads in data centers, public cloud and edge — most organizations still lack a comprehensive hybrid cloud strategy. As a result, many I&O leaders have a shortage of cloud engineering skills and program management talent in their teams. I&O leaders cite insufficient skills and resources as the top barriers when planning to invest in cloud and automation skills. Due to this skills gap, they experience significant delays when migrating to a hybrid multicloud architecture. This is especially problematic at a time when CIOs face an increasing demand for IT services and tighter budgets.

Traditional storage administration skills such as firmware updates, device configuration, performance optimization and data recovery are being replaced by automation. By 2025, 70% of IT storage administrators and engineers will shift their skills and job responsibilities. By 2025, more than 90% of enterprises will have an automation architect, up from fewer than 20% today. Automation architects
guide investments through the lens of the automation strategy, ensuring that automation is central to platform initiatives and align with business strategies.

To enable growth initiatives and deliver operational efficiency at scale, I&O leaders must embrace innovation-led, software-defined storage (SDS) solutions built on disaggregated cloud-native storage platforms. They must chart out a bold, proactive strategy to leverage managed cloud-native storage consumption models. Managed STaaS will provide I&O leaders with a competitive advantage to forge a cost-effective, scalable path to an application-aware IT operating model.

**Recommendations:**

- Upgrade infrastructure operations by hiring cloud engineers with knowledge of IT systems, storage application-aware design principles (to redesign workloads for the hybrid multicloud capabilities), supply market analysis and advanced cost saving methods.
- Upgrade the IT operating model to a hybrid cloud service platform by embracing SDS solutions that increase deployment flexibility.
- Select vendors that allow porting of on-premises licenses to use in public cloud infrastructure.

**STaaS Amplifies I&O Productivity Gains and Unlocks Business Innovation**

I&O leaders are tasked with managing an expanding portfolio of storage technologies with limited resources and staff, making it difficult to provide consistent value to business units. STaaS provides the methodology and partnership resources needed to achieve greater productivity and efficiency.

In the 2020 Gartner CIO Survey, 38% of respondents listed severe operating cost pressure as a disruptive force, second to organization disruption (47%). To alleviate cost pressures associated with storage, I&O leaders should offset the higher premium of opex cost-per-GB consumption by replacing low-value, repetitive hardware and data service administration tasks with managed STaaS.

By replacing storage capex activities with managed STaaS, I&O leaders can deliver infrastructure services with greater efficiency and flexibility, leading to higher productivity rates in IT. As more organizations adopt cloud solutions, the relative cost per raw gigabyte of performant storage ($/GB-IOPS) is expected to decline during this period. However, on-premises storage administration costs and support fees are increasing as a percentage share of the total $/GB-IOPS. Our interactions with clients suggest that IT organizations spend up to 50% of the life of their storage asset capacity ($/GB-IOPS) on hardware administration and support.

Cloud-native storage leads to several financial benefits by bringing a noticeable reduction in hardware usage via automating usage to flex to meet business demand. Moreover, it also helps reduce IT maintenance fees, as manual tasks are supplanted by intelligent software. By boosting productivity and making asset utilization more efficient, cloud-native storage will redefine IT operations.
Recommendations:

- Increase productivity levels by offloading hardware administration costs to integrate with and expand on vendor’s AIOps tools and support services.
- Eliminate manual, repetitive tasks that cause unforced errors by increasing use of automation.
- Streamline IT processes that drive higher efficiencies and business-critical outcomes by offloading activities that cannot be adequately invested or resourced to meet growing threats.
- Unlock innovation in IT by refocusing IT resources and skills to high-value platform services and customer centricity initiatives.
- Improve resilience and recoverability by leveraging vendor investments in data protection methods, anti-ransomware and cybersecurity technologies.

Evidence

1. Cloud Storage Market by Component (Solutions and Services), Application (Primary Storage, Backup and Disaster Recovery, and Archiving), Deployment Type (Public Cloud and Private Cloud), Organization Size, Vertical, and Region — Global Forecast to 2025, Markets and Markets.

2. 3 Essential Shifts to Accelerate Reskilling of the Product Organization.


4. The 2020 Gartner CIO Survey was conducted online from 4 June 2019 through 5 August 2019 among Gartner Executive Programs members and other CIOs. Qualified respondents are the most senior IT leader (CIO) in their overall organization or a part of their organization (for example, a business unit or region). The total sample is 1,070, with representation from all geographies and industry sectors (public and private). The results do not represent “global” findings or the market as a whole, but reflect sentiment of the respondents and companies surveyed. The survey was developed collaboratively by a team of Gartner analysts, and was reviewed, tested and administered by Gartner’s Research Data and Analytics team.

5. 2020 Strategic Roadmap for Storage.


Recommended by the Authors

2020 Strategic Roadmap for Storage
Harness Infrastructure-Led Innovation to Drive Digital Business Growth
Top 10 Strategic Technology Trends for 2020: Hyperautomation