A platform-based approach to enable hybrid by design

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Table of contents

Introduction

The public cloud is not the final destination for every application or workload, nor will it be in the foreseeable future. Only 13% of organizations say they have 100% public cloud IT environments, according to 451 Research's Voice of the Enterprise: Cloud, Hosting & Managed Services and Cloud Native, FinOps 2024 survey. Enterprise workloads have different resource, performance, security, compliance and data sovereignty requirements — all good reasons for keeping some applications on-premises.

The wave of recent AI-related activity drives this point home. Organizations often leverage public cloud for open-source and public AI models, pipeline tools, and some training and inferencing. However, cost considerations, data governance, privacy and security concerns, and the emergence of distributed edge application requirements mean that organizations also find value in private cloud/on-premises deployments. A hybrid cloud operating model is critical for harnessing modern workloads, including AI, that span multiple infrastructure environments.

IT heterogeneity is not a new phenomenon, and enterprise IT estates can take many forms. Complexity is the result as successive generations of typically siloed technology and infrastructure accumulate, reflecting a range of previous decisions and priorities. Organizations with these "hybrid-by-accident" IT environments often face steep challenges, particularly when public and private cloud enter the mix. This frequently results in "swivel chair" tooling and operations management, limited visibility across the IT estate and multiple vectors of inefficiency.

The challenges organizations face when they operate in hybrid-by-accident mode are primarily about management. Difficulties manifest in inconsistent operational experiences for security, visibility, monitoring and application performance across different IT environments and resource types (e.g., compute, storage, networking, databases and virtual machines, containers and Kubernetes clusters). Imposing order on the chaos of hybrid-by-accident means bringing the various environments together under a unified management framework that enables integration and orchestration across the stack. As a result, "hybrid-by-design" is emerging as a strategic posture for enterprises looking to reap the benefits of public cloud — agility, scale and cloud economics — and ensure similar experiences across all of their IT environments. Management, integration and interoperability are key elements of this intentional approach to hybrid cloud.

Visibility across hybrid cloud:

"It's challenging right now, and something I'd like to get better at. I'd say our InfoSec guys are working hard to get that really cleaned up and get a better picture. I'd love to have a single eye on glass, but we don't have that yet. Biggest challenge is, we don't have full visibility into other agencies' cloud instances. Many agencies like to run their own instances."

CTO, state government
5,000+ employees, US

Hybrid cloud platforms make hybrid-by-design possible because they provide the connective tissue that turns infrastructure silos into federated systems and creates a "single pane of glass" across public and private clouds deployed in centralized and edge locations. This ideally covers all fronts: overall security posture, provisioning on-premises and public cloud resources, monitoring and remediation, migration and capacity planning, application performance and observability, financial governance, and data management.

About this report

This report explores the journeys organizations have taken to overcome these challenges by abstracting complexity from their IT infrastructure through their cloud platform, as well as the key business and financial outcomes of these infrastructure changes.

The report is based on five in-depth interviews that S&P Global Market Intelligence 451 Research conducted with hybrid cloud decision-makers at midsize and large organizations across various industry sectors. In these interviews, respondents analyzed their organizations' hybrid cloud deployments and shared key reflections and insights from their experience. This diverse set of research participants included:

1. AI/ML engineer, food manufacturer, 2,500+ employees, US

2. Cloud chief technology innovation officer, financial services/banking, 5,000+ employees, UK

3. Chief technology officer (CTO), state government, 20,000+ employees, US

4. VP of IT, media and entertainment, 5,000+ employees, US

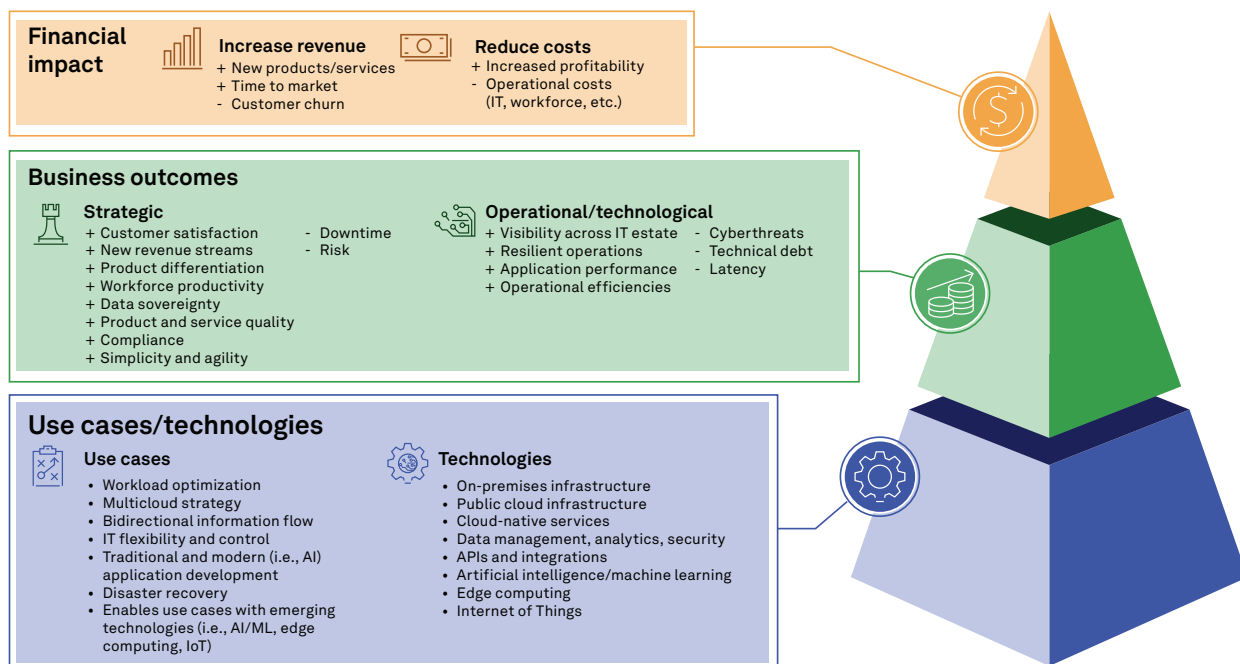5. Chief information officer (CIO), financial services, 5,000+ employees, US

Each deployment analysis provides background context about the organization. It also includes details on IT headcount, footprint and spending, hybrid cloud deployments, strategy and challenges, as well as the measurable benefits, business outcomes and financial impacts recognized from deploying and using hybrid cloud.

The value of hybrid-by-design with a cloud platform delivers key business outcomes

Hybrid cloud environments support vast collections of technologies across IT while providing structure for the implementation of emerging technologies (e.g., generative AI, industrial IoT, private 5G networking). These technologies underpin use cases that unlock key strategic, operational and technological business outcomes, which drive top-line revenue and bottom-line profits. For example, a manufacturer could be running AI-enabled inspection on a production line to improve product quality and increase revenue; hybrid cloud provides necessary on-premises support for an AI application including model development (training and fine-tuning with private data, inferencing) and impacting costs, performance, latency, compliance and security, among other outcomes. Hybrid cloud with a centralized control plane abstracts complexity from the existing IT estate and drives efficiencies by unlocking holistic visibility, allowing optimization of workloads across several venues.

A global nut manufacturer reports using more than 50 AI models in production, with use cases including generative AI for marketing sentiment analysis. About one-third of its total annual IT spending, or $10 million, is allocated to on-premises AI investments to support these efforts.

Figure 1: Value pyramid: Hybrid-by-design with a platform

Financial impact

Increase revenue
+ New products/services
+ Time to market
- Customer churn

Reduce costs
+ Increased profitability
- Operational costs
  (IT, workforce, etc.)

Business outcomes

Strategic
+ Customer satisfaction
+ New revenue streams
+ Product differentiation
+ Workforce productivity
+ Data sovereignty
+ Product and service quality
+ Compliance
+ Simplicity and agility
- Downtime
- Risk

Operational/technological
+ Visibility across IT estate
+ Resilient operations
+ Application performance
+ Operational efficiencies
- Cyberthreats
- Technical debt
- Latency

Use cases/technologies

Use cases
• Workload optimization
• Multicloud strategy
• Bidirectional information flow
• IT flexibility and control
• Traditional and modern (i.e., AI) application development
• Disaster recovery
• Enables use cases with emerging technologies (i.e., AI/ML, edge computing, IoT)

Technologies
• On-premises infrastructure
• Public cloud infrastructure
• Cloud-native services
• Data management, analytics, security
• APIs and integrations
• Artificial intelligence/machine learning
• Edge computing
• Internet of Things

Source: S&P Global Market Intelligence 451 Research, 2024.

Hybrid cloud platforms orchestrate many of these critical use cases that drive business outcomes and financial impacts. Gaining visibility across the IT footprint is a major benefit of implementing a hybrid cloud platform in situations where substantial challenges still exist, including complexity from legacy on-premises IT systems, significant IT and workforce costs, and losses from a lack of optimization across multiple clouds/IT environments. The impact of this visibility is immediate through "day 0" operations identifying pockets of unoptimized costs and compounds over time and at scale through "day 2" operations embedding end-to-end IT visibility into the entire organization's workflows and processes, knocking down silos and forming a path to hybrid-by-design.

A complete view of workloads includes full transparency, control and optimization of costs that may be a casualty of over-usage of public clouds. By reducing informational and systems silos, linking key data sources and mitigating "tool sprawl," a centralized platform can help organizations form a "single source of truth" across the hybrid cloud and its operations.

Hybrid cloud platform:

"When you're talking about supercomputing and having hybrid cloud integration work at very much a large scale and flexibility, a hybrid cloud platform is definitely something we're going towards, because pay as you go is what you want, it's like you want to use what you want to use for both cloud and hybrid cloud. Adding more storage, the hybrid cloud platform supports that, how we are operating, instead of keep increasing servers, bandwidth, trying to put in more racks, it makes more sense to align with a product, a service and a hardware that replicates an environment."

AI/ML engineer
Food & beverage manufacturing
5,000+ employees, US

Greater control and lower costs with hybrid:

"The hybrid approach gives us a single panel, to a certain degree, across multicloud, on-prem, colo[cation] site, etc. For cost management, we assumed cloud would be cheaper — not necessarily true. The billing is confusing, data egress they charge you quite a bit. Getting to cloud/cloud-only is highly unlikely and cost-prohibitive. For AI training and inference, with the GPU cost differences, on-prem provides more control of costs."

VP of IT
Media & entertainment
5,000+ employees, US

Global food manufacturer

Company background and deployment scenario

A US-based global nut manufacturer's team of 50 IT employees is responsible for building out and managing its IT infrastructure to support more than 2,500 employees and several business processes (supply chain, manufacturing, etc.), as well as digital transformation projects, tooling and client-facing applications for its online customer engagement reach of 3.6 million. The infrastructure must also support partnerships with key sales channels (e.g., Rite Aid, Amazon, Kroger), more than 20 logistics firms, 100 distributors and 1,000 agriculture operators. The manufacturer's key strategic initiatives are to come up with new nut flavors to beat the competition, cut down shipping and material costs, drive customer insights from analytics, and enhance and scale technology for greater accessibility by customers and partners.

In 2017, the manufacturer began developing its hybrid cloud and digital transformation strategy by migrating some legacy manufacturing applications to cloud environments, yet 40% remain on-premises.

AI-enabled manufacturing quality inspection, a critical on-premises use case, instantly recognizes nut-quality issues (i.e., weight, shape, etc.) on the production line, dramatically improving product quality while reducing wasted materials and machine debris. The nut manufacturer has more than 50 AI models in production (i.e., generative AI for marketing sentiment analysis), and about one-third of the organization's annual IT budget, or $10 million, is allocated to on-premises AI investments. Even with this significant uptick in on-prem spending to support AI development, the manufacturer says running AI workloads entirely in the public cloud would be cost-prohibitive. To manage this massive on-premises AI initiative in coordination with its multicloud strategy, the manufacturer is constantly fine-tuning its hybrid cloud strategy.

Deployment overview

Firmographics	AI/ML engineer, US nut manufacturer
	More than $4 billion revenue
	2,500 employees
IT footprint	50 IT employees
	6 datacenters (US, Japan, UK, Australia) and multiple clouds
	$30 million+ annual IT spending
	$10 million annual AI spending

Infrastructure mix

■ On-premises ■ Cloud

40%	60%

Resiliency, flexibility and control:

"Sometimes a cloud service might be down, so we might shift to on-prem, spinning an on-prem resource, and replicate it. That usually takes a couple of hours, depending on the time, ticket and availability. Usually, it is right away when it impacts the business. We do have on-prem databases that can back up anywhere. That's what's great about hybrid — you can make your plan to replicate what's in cloud to on-prem if something happens in the cloud. So, say if your datacenter in Northern Virginia goes down, you can shift over."

Hybrid cloud key benefits

The top hybrid cloud-related benefits the manufacturer has recognized include:

1. **Private AI on-premises drives key use cases and differentiation:** By leveraging a combination of on-prem AI infrastructure and multiple public clouds, the manufacturer's more than 50 AI/ML models in production are significantly impacting the top and bottom lines through critical use cases such as customer sentiment analysis, production visibility and manufacturing quality inspection. The manufacturer also leverages hybrid cloud to optimize AI development costs; much of the initial AI model training, testing and validation is completed on-premises.

2. **Resiliency, flexibility and control:** The ability to replicate and quickly shift compute resources between on-premises and public clouds has improved IT production runtime by 30% and reduced IT downtime by 35% annually. This reduction of downtime has led to $150,000 in monthly cost savings, or $1.8 million annually. The manufacturer also indicated that its hybrid cloud platform helped improve the resiliency, flexibility and control of its IT estate at scale, and helped it reap the benefits of pay-as-you-go consumption pricing and operating models.

3. **Reduced cybersecurity risks with on-premises deployments:** The manufacturer was able to reduce the number of cyberattacks (malware, ransomware) by 15%-20% by leveraging cybersecurity innovations in the public cloud while keeping some legacy applications on-prem for cyberrisk purposes.

AI infrastructure:

"Productionizing ML models was the primary driver behind on-prem investments. It was on-premises because of the cost."

Cybersecurity:

"The last report we had, we got down 15%-20% of cybersecurity hacks. Malware has been down, ransomware has been down because of more security. Cloud has stepped up their security services/policies."

The food manufacturer saved nearly $2 million, or 7%, of its annual budget from reduced IT downtime. These savings could possibly be reallocated to its growing AI initiatives.

Figure 2: Hybrid cloud value: Manufacturing

Financial impact	
• Reduced operational costs by $1.8 million per year	• Increased distributor-driven sales by 5%-15%

Strategic	Operational/technological
• Improved food quality • Improved product differentiation against competition • Reduced risk from 15%-20% fewer cyberattacks	• 30% increase in IT runtime • Improved resiliency/backup/DR • 133% operational visibility improvement • Running 50+ AI/ML models in production • 20% less downtime this quarter, 35% annually

Use cases	Technologies	
• AI-enabled manufacturing quality inspection • Customer sentiment analysis • IoT agriculture monitoring • Workload flexibility • Cloud migration	• AI-enabled analytics • AI Infrastructure • Cloud-based business applications • Cloud database service	• Data warehouse • Hybrid cloud platform • IoT • On-prem infrastructure • Public cloud(s)

Source: S&P Global Market Intelligence 451 Research, 2024.

European bank

Company background and deployment scenario

A large bank with more than 5 million UK customers offers retail and commercial banking products. The bank's cloud transformation strategy underpins four strategic initiatives: provide service excellence, grow the bank's customer base via hyper-personalization and analytics, simplify operations for efficiency and cost reduction, and reduce its environmental impact. The bank leverages AI-enabled customer analytics to drive revenue (i.e., hyper-personalization, virtual assistants) and leans on its hybrid cloud strategy to defend against customer attrition, keeping customers at a low cost point and improving profitability.

The majority of the bank's applications (60%) reside on-premises, but the bank ultimately aims to have 70%-80% of applications in the cloud. The bank spends $40 million per year on a managed on-premises infrastructure service that hosts 100 applications and more than 5,000 VMs. There are significant migration challenges for its core banking legacy and mission-critical applications, which make up 70%-80% of on-prem applications.

The large bank has implemented a hybrid cloud strategy to manage this complex environment where greenfield applications are built in the public cloud and legacy applications are either migrating to public cloud environments (i.e., business applications) or will remain on-premises (core banking) for the foreseeable future. The bank's strategy is to:

1. Recognize the immediate cost benefits of moving to a hybrid cloud infrastructure

2. Optimize the infrastructure further for additional cost benefits

3. Use the hybrid cloud infrastructure as a differentiator

Deployment overview

Firmographics	Cloud CTIO, UK bank
	Over 5 million UK customers

IT footprint	30 IT employees
	On-prem Private cloud 2 public clouds
	100+ applications on-prem, 5,000+ VMs
	$40 million annual spending on IT infrastructure managed service

Infrastructure mix

■ On-premises   ■ Cloud

60%	40%

Application mix

■ Core banking
■ Digital infrastructure
■ Data
■ Business applications

50%	25%	15%

10%

The bank cites visibility across its hybrid cloud environment as a major challenge. The system includes native and siloed observability across different infrastructure that impacts performance, costs, data egress, service levels and cybersecurity.

Hybrid cloud key benefits

The top hybrid cloud-related benefits the bank has recognized include:

1. **Partnership-driven revenue:** Increasing the wallet share of the bank's customers outside of traditional sales through partners (i.e., video streaming services) is an important growth driver. Supported by its hybrid cloud strategy, the bank increased partnership revenue by 40%.

2. **AI-enabled applications improve service levels:** The bank leveraged AI and analytics to improve service levels for its customers. Specifically, the bank improved the net promoter score (NPS) for its virtual assistant application by 70%. The bank is beginning to pilot generative AI for code generation and security monitoring.

3. **Cost savings from moving to opex model:** Lifting and shifting business applications has resulted in 35% reduction in opex from savings in network, storage and compute, and this cloud operating model could be applied to on-premises and hybrid environments.

Lack of visibility impact:

"Some of these metrics are impacted by lack of visibility. First is higher cost. To accurately view cost performance on an app, you have to cobble together several things — there isn't anything you can deploy to quickly do this. Build that view with a lot of manual effort and time elapsed. Service is second impact. Since you don't have single pane of glass, it takes time to see and react to issues, especially customer-impacting issues. Time to react to issues is much longer. Third is, since you are observing stack in pockets, you don't have observability into hardware security module. If you have an issue, it is hard to tell."

Partner-driven revenue:

"To increase banks' stickiness, you need a partner marketplace that is cloud-agile. You increase the wallet share of your customer from not just mortgage feeds, but now your revenue share with partners (Sky, Netflix, etc.). The banks are adding to their income by partnership through cloud. We've increased 40% income from partnership."

European bank

Figure 3: Hybrid cloud value: Financial services

Financial impact		
• Increased partnership revenue by 40%	• Reduced operating expenditure by 35%	
Strategic	**Operational/technological**	
• Improved net promoter score for virtual assistant application by 70% • AI applications improving customer attrition • Diversifying revenue streams via partnerships	• Reduced IT cost footprint • Migrated key business applications • Developing generative AI applications (code generation, security monitoring)	
Use cases	**Technologies**	
• AI-enabled virtual assistants • Customer hyper-personalization • GenAI code generation • Workload optimization	• AI-enabled analytics • Cloud and networking services • Cloud database service • Cybersecurity monitoring	• Data visualization tool • Public cloud infrastructure • On-prem managed service

Source: S&P Global Market Intelligence 451 Research, 2024.

State government

Company background and deployment scenario

This state government has a customer base of between 6 million and 10 million immediate citizens and 40 million to 60 million secondary citizens (tourists, people doing business with the state, etc.). Initiatives include forming a digital infrastructure, bringing in necessary and emerging technologies to the state, better servicing its citizen base and reducing staffing requirements from manual-intensive processes.

Uplifting the digital infrastructure is a massive initiative because there are many antiquated legacy systems across the state's agencies and departments that are difficult to update or are not conducive to cloud environments. There is also workforce-level and cultural reluctance to move from existing systems. Several paper-based operations (e.g., birth/death certificates, driver licenses) drive revenue and are difficult to justify digitizing.

On-premises datacenters run critical day-to-day operations (standard 911) and backup/recovery functions. Within these datacenters, many datasets cross various systems, environments and departments (DMV, taxes, etc.). The state has extremely sensitive systems for elections and legal processes that require on-premises support. Its infrastructure must also enable myriad emerging use cases leveraging AI, satellites and IoT, which deliver important services to citizens and have varying processing requirements.

For these reasons, the state relies heavily on its hybrid cloud deployment and operations.

Deployment overview

Firmographics	CTO, state government
	20,000 employees
IT footprint	30 IT employees
	On-prem Multicloud environment
	$30 million-$50 million in total cloud and infrastructure spending

Infrastructure mix

■ On-premises ■ Cloud

2019

90%   10%

2024

50%   50%
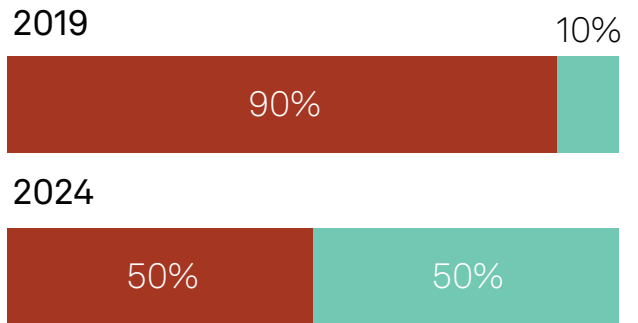
Legacy applications and infrastructure:

"One of the biggest things [preventing us from moving to the cloud] is some of these applications are not conducive to cloud — legacy environments, or the applications are so old there is no application set available for us to do a lift-and-shift. We can maybe take some legacy servers and containerize them and put into a cloud environment. We still have some 16-bit apps; when you're in a 32/64-bit environment in cloud, it doesn't work. Some of the state agencies also don't have the ability to access cloud-based systems."

Hybrid cloud key benefits

The top hybrid cloud-related benefits the state government has recognized include:

1. **Infrastructure cost savings:** The state government saved 15% on costs from the lift-and-shift of applications into the cloud, saving between $4.5 million and $12 million annually. Additionally, the state indicated that it saved 20%-25% in total costs by replacing legacy with SaaS-based applications. This includes 10%-12% in cost savings for HR and finance SaaS-based applications. The state government could benefit from finding more opportunities to optimize costs across its hybrid cloud deployment and bring cloud-native capabilities to on-premises applications.

2. **Enabling a broad range of emerging use cases using hybrid cloud:** The state government is rolling out a broad range of use cases leveraging emerging technologies (AI, IoT, satellites, etc.) that require a hybrid cloud infrastructure. These examples include AI-enabled GIS mapping systems to confirm locations and individual residencies instead of relying solely on cartographers and map managers, AI-validating identity from driver licenses, edge-enabled police vehicles and low-orbit satellites for internet access at remote camp sites.

3. **Hybrid cloud improves disaster recovery, backup, performance and trust:** The state government cited several key instances in which its hybrid cloud infrastructure provided DR and backup services, including when a datacenter serving the state capital flooded. Ensuring high and consistent performance and trust is key for the state and is a driver for keeping applications for legal, elections, critical operations (i.e., 911), criminal records and other highly sensitive systems on-premises.

DR, backup and trust:

"There will be a hybrid cloud split because of the needs in the state to have that comfort and backup of an infrastructure (i.e., standard DR issues). We have certain systems and activities that are extremely sensitive, that need a high level of trust. For example, elections and our legal systems and networks. If I told someone I was going to put our entire election up onto the public cloud, there are trust and perception issues."

Figure 4: Hybrid cloud value: State government

Financial impact	
• Reduced IT infrastructure costs by 15% from lift-and-shift to cloud	• Reduced IT infrastructure costs by 20%-25% from adopting SaaS-based applications
Strategic	**Operational/technological**
• Ensuring performance and trust for sensitive applications • Better servicing citizens with emerging use cases • Lower IT cost footprint	• Reducing technical debt • Critical backup/disaster recovery activities • Migrated key business applications to cloud • Several emerging use cases leveraging AI, IoT, satellites • Supports sizable base of legacy applications and infrastructure
Use cases	**Technologies**
• AI-enabled driver's license verification • Edge-enabled police vehicles • GIS location validation • Satellite connectivity for remote internet access	• AI-enabled services • Low-orbit satellites • Cloud-based applications • On-premises infrastructure • Edge computing • Public cloud infrastructure • IoT

Source: S&P Global Market Intelligence 451 Research, 2024.

Large media and entertainment provider

Company background and deployment scenario

This media and entertainment organization delivers a range of broadcasting (sporting events, TV station) and digital (YouTube TV, Hulu) media services. Existing and emerging competitive threats (i.e., Netflix, Google, Facebook) are disrupting traditional media revenue models, pushing the organization to differentiate to drive growth while increasing cost efficiency. The IT team of 150 is responsible for and evaluated on key business outcomes to unlock strategic initiatives such as increasing revenue by acquiring customers, leveraging customer insights to improve satisfaction and enabling technology to support business stakeholders.

Despite initiating its public cloud deployments in 2016, the majority (65%) of its applications and workloads still reside on-premises. This includes corporate datacenters and local IT staff who are also making IT decisions (i.e., choosing new providers). This scenario has created more silos, technology debt and overlapping capabilities. The company has made several inorganic investments that have further complicated the infrastructure mix with legacy equipment and software built in-house or by an external software provider that controls the application source code.

A hybrid cloud strategy is crucial to extracting value from this complex on-premises infrastructure in which many applications have minimal likelihood of operating in the public cloud. The organization is adopting bidirectional broadcasting through which it can gain and leverage real-time insights from viewers. The media company requires the control, data processing, performance, latency and compliance benefits of hybrid cloud to support bidirectional broadcasting and an array of AI use cases leveraging large language models.

Deployment overview

Firmographics	VP of IT, media and entertainment provider
	5,000+ employees
IT footprint	200 IT employees
	On-prem Private cloud Public cloud

Infrastructure mix

■ On-premises ■ Cloud

65%	35%

However, the lack of visibility across the organization's hybrid cloud environment has significant consequences. These include an inability to see into all the underlying infrastructure (regions, datacenters, private cloud, etc.) and understand the impact on performance and business outcomes (e.g., customer experience). Noise and false positives across this infrastructure generate excessive workforce costs and lead to more expensive and revenue-impacting downtime.

Lack of visibility

Customer experience:

"We have some visibility, not across underlying infrastructure (region, datacenter, private cloud, storage nodes). Is that complete? It's not. It's too IT system/component-driven. It doesn't translate to customer experience. Let's say a streaming service slows down or has a security issue (fraud, account hijacking) — how can you detect customer experience real-time? That's a gap. It can't cover legacy, hybrid and cloud workloads from one panel. We have separate tools for legacy tools for different folks (datacenter vs. systems admins, etc.),"

Workforce costs and revenue:

"Noise or false positive is very detrimental and can put a heavy load on your IT support. We have so much local equipment and IT on-call people (SysAdmin, IT team, app team). During busy times (Super Bowl), the amount of alerts/noise are so significant, it suppresses real events. In a very distributed environment, that coordination is difficult across scheduling. It can impact revenue. How can you detect/mitigate quickly without taking hours/half day to finding the root cause? That's why visibility without noise can bring in on-call person without specific expertise, can troubleshoot quickly. Having the database go down, performance degrading or outages, it can cost half a million in revenue leakage. We try to automate this reporting, but sometimes we still need to collaborate."

Hybrid cloud key benefits

The top hybrid cloud-related benefits the media and entertainment company has recognized include:

1. **Greater control and lower costs with hybrid cloud:** The company cited initial cost challenges from leveraging public cloud and has found that hybrid cloud allows it to better optimize resources across its infrastructure and reduce costs. The control of hybrid cloud is particularly useful to optimize AI workloads for training and inference across different venues, also lowering costs.

2. **Competitive differentiation:** Bidirectional broadcasting is key to fend off emerging competitors and is only feasible via hybrid cloud due to performance (i.e., local data processing, latency), compliance and costs.

3. **AI use-case enablement:** The company uses its hybrid cloud infrastructure to support several highly impactful AI use cases (e.g., content moderation, content generation, data extraction). Many of these leverage large language models based on media environments with vast sums of historical data (video, auto, text, etc.).

Greater control and lower costs with hybrid:

"The hybrid approach gives us a single panel, to a certain degree, across multicloud, on-prem, colo[cation] site, etc. For cost management, we assumed cloud would be cheaper — not necessarily true. The billing is confusing; data egress, they charge you quite a bit. Getting to cloud/cloud-only, it's highly unlikely and cost-prohibitive. For AI training and inference, with the GPU cost differences, on-prem provides more control of costs."

Bidirectional broadcasting:

"Hybrid cloud is critical to support bidirectional broadcasting because you still have local data processing and latency requirements. Since you have more control, you can also optimize costs such as storage. Compliance for GDPR, CCPA and PCI data, in theory, in the cloud it's fine, but there are always concerns."

Figure 5: Hybrid cloud value: Media & entertainment

Financial impact	
• Reduced IT spending by a single-digit percentage annually	

Strategic	Operational/technological
• Greater control lowers IT costs • Supports competitively differentiating use cases • Enables highly impactful AI use cases • Reduces compliance concerns	• Optimizing AI workloads for training and inferencing • Local data processing and latency are key for multiple use cases • Managing diverse IT footprint formed from local IT teams and M&A

Use cases	Technologies
• AI and IT workload optimization • Bidirectional broadcasting • Content moderation/generation • Content search	• AI-enabled applications • Data warehouses • Edge computing • Managed cloud database service • On-premises infrastructure • Public cloud infrastructure

Source: S&P Global Market Intelligence 451 Research, 2024.

Global financial services provider

Company background and deployment scenario

A financial services organization with $3 billion in annual revenue provides retail banking services, digital payment services, SaaS applications and physical systems (e.g., smart safes) across North America and Western Europe. It aims to expand its business and country footprint for digital payments to drive revenue growth, as well as maintain operational excellence and high service quality.

The company's 300 IT employees manage two colocated datacenters (including primary and backup) in the US and Europe and multiple public cloud deployments. While cloud costs make up the majority (55%) of annual IT spending and new application development is "cloud-first," a large proportion (60%) of traditional applications remain on-premises, including 80% of storage environments and several applications with sensitive and highly regulated data. The team's challenges include:

– Difficulty staffing the in-demand IT skill set to implement new technology and maximize efficiencies in its infrastructure, resulting in a reliance on expensive external consultants

– High public cloud costs driving a need for cloud-specific financial management and financial literacy skill sets (i.e., FinOps) to better understand and optimize pricing models and deployments to reduce costs

Deployment overview

Firmographics	CIO, financial services
	$3 billion+ annual revenue
	11 countries
	23,000+ employees
IT footprint	300 IT employees
	2 on-prem datacenters Edge systems Multiple public clouds
	Annual IT spending: $18 million Cloud spending: $10 million On-prem spending: $8 million

Infrastructure mix

■ On-premises ■ Cloud

2020

On-premises	Cloud
75%	25%

2024

On-premises	Cloud
60%	40%
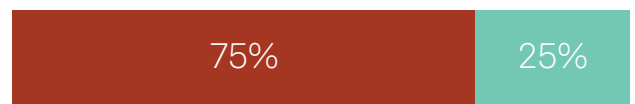
Cloud cost complexity:

"We've been investing in a number of tools to get visibility. I don't think visibility is that challenging. It's more about financial management. Having someone on staff who can understand your cloud, proactively manage it for utilization or data archiving or users using cloud-based apps. Costs can be quite variable. Orgs need to think about having a financial analyst, small finance team that is cloud-educated. Cloud architects aren't financial analysts. Your costs can be excessively higher than expected; you have to be aggressive in managing costs (i.e., data egress). Financially, on-prem was easier to manage (one-time purchase of firewall, network, etc.) and depreciate over time. All clouds have different pricing; makes it more complex. We've being stealing people out of finance department to get trained [on cloud costs]."

– A high volume of banking industry regulatory audits that the organization's cloud providers must support

– Cybersecurity vulnerabilities across the infrastructure

– Learning curve of getting senior stakeholders comfortable with opex models.

IT infrastructure challenges:

"Staffing, engineers and architects — a lot of demand for these skills, not many resources. As we look to implementing technologies in our infrastructure, it can be a challenge to have the right skill set. We have to bring in consultants, but those make the cost higher than we would prefer. Security is an ongoing concern, every day investing in security resources, trying to address and assess vulnerabilities. We go through a lot of audits because of banking regulations. We have to make sure cloud providers (Azure, AWS) can go through the audits as well. Containerization is a challenge. Getting CEO, CFO comfortable [moving from] capex to opex model from a strategic planning perspective and explaining to shareholders."

Hybrid cloud key benefits

The top hybrid cloud-related benefits the financial services organization has recognized include:

1. **Supporting critical on-premises applications:** Many daily operations continue to rely on on-premises systems that have specific performance, resilience and compliance factors.

2. **Flexibility allows optimization of costs, carbon and uptime:** Leveraging the hybrid cloud to quickly scale and optimize workloads and switch between cloud providers saves costs and carbon emissions. Additionally, not relying solely on datacenters has improved the business's resiliency and uptime.

3. **Visibility across hybrid cloud:** Deploying a hybrid cloud platform helps the organization to monitor its IT infrastructure; the platform is primarily leveraged for cybersecurity and compute scaling purposes.

4. **New services revenue:** The organization recognized a 10% increase in revenue from deploying new cloud services.

5. **Workforce cost savings:** Reducing manual tasks has resulted in 10%-20% workforce cost savings.

Supporting on-premises applications:

"For some homegrown applications we support, may not be a motivation to move to cloud if there isn't cost savings. Some data we have to keep in the country of origin. When we choose a cloud provider, it has to be hosted in country of origin. We're still investing in edge. Since we have equipment with antiquated architecture (i.e., counting cash machines), we have equipment on sites process cash at high speed and volume, they have to report data back to us and the banks in near-real time. It's forced us to keep on-prem environment."

Hybrid cloud flexibility:

"Flexibility of hybrid cloud has been positive: We can scale up and also switch cloud providers easily if we have to. Our emissions are going down because we are sharing across the public cloud versus datacenters. We use AI to help us collect that data."

Global financial services provider

Figure 6: Hybrid cloud value: Financial services

Financial impact		
• 10% increase in revenue from cloud-based services	• Reducing manual tasks results in 10%-20% in workforce cost savings	
Strategic	**Operational/technological**	
• Support and ensure performance of critical on-premises applications • Reduce compliance concerns in heavily regulated environment • Reduce carbon emissions	• Support local data processing and latency requirements • Support new cloud-based applications • Improve IT infrastructure resiliency and uptime	
Use cases	**Technologies**	
• Code generation • Edge-enabled cash machines • IT workload optimization • Security monitoring	• AI-enabled applications • Edge computing • Hybrid cloud monitoring	• Network monitoring • On-premises infrastructure • Public cloud infrastructure

Source: S&P Global Market Intelligence 451 Research, 2024.

Conclusion

Whether implemented by accident or by design, hybrid cloud environments have become the rule rather than the exception. Organizations need diversified infrastructure to accommodate performance, security, governance, cost and locality/sovereignty requirements that vary across enterprise workloads. However, monitoring, managing and automating a hybrid IT estate is not an easy task. Without the right approach, organizations fall into a hybrid-by-accident architecture. Hybrid cloud platforms provide abstraction and a unified control plane to simplify management, operations and integration for these complex IT estates. These controls help organizations govern and secure datasets and workloads as they move across environments. With hybrid cloud platform capabilities, organizations can tap into technology and business benefits such as:

- **Reduce costs and gain operational efficiencies** from improving workforce productivity and developer velocity, optimizing the IT infrastructure.

- **Obtain visibility** across hybrid cloud and IT estates composed of complex and traditional systems.

- **Establish control** over multiple IT environments, enabling opportunities for optimization and cost reduction.

- **Enable emerging use cases** that leverage AI, edge computing or IoT to achieve product and service differentiation and reduce operational costs for key business processes.

- **Enforce security and regulatory requirements** for applications with sensitive data, performance or compliance parameters.

In the digital economy, organizations' ability to drive innovation, business value and competitive differentiation is highly IT-dependent and increasingly data- and application- centric. Hybrid cloud managed through a centralized platform provides a secure foundation for consistent experience across the IT estate and enables secure movement of data and workloads. The result is integrated and agile IT environments that allow organizations to harness the flexibility and scale of cloud and the security and control of an on-premises solution — without the chaos and inefficiency inherent in fragmented infrastructure and application environments.

Methodology

S&P Global Market Intelligence 451 Research conducted five hour-long in-depth interviews (IDI) with hybrid cloud decision-makers. These research participants shared significant details about their organization, IT infrastructure, hybrid cloud strategy, technologies, use cases, business outcomes and financial impacts from their hybrid cloud deployments. S&P Global has not conducted subsequent research to validate the information and data that participants provided in the IDIs.
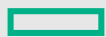
Hewlett Packard Enterprise

HPE GreenLake cloud is a portfolio of platform-based hybrid cloud services designed to simplify IT operations, deliver IT agility, and enable innovation and growth. Organizations choose HPE GreenLake to deploy modern private and hybrid clouds in edges, co-location facilities and data centers, to unify and protect data, and to streamline observability and control across hybrid, multi-cloud environments.

To learn more about HPE GreenLake cloud and how it helps solve ops challenges and drive transformative business outcomes, visit:

https://www.hpe.com/us/en/greenlake.html.

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