

eBook

Understanding Cloud Costs and How to Manage Them Effectively

NUTANIX



Introduction

Controlling Cloud Costs Is Top of Mind

The past decade in the world of technology could be summarized as a massive push toward cloud adoption across publicly hosted clouds, privately hosted/on-premises clouds, and co-hosted environments.. These styles of deployment offer tremendous value and opportunity for IT teams, so countless organizations have rushed to take advantage of this new industry standard. However, with convenience and access come sprawl and difficulties managing a constantly growing and expensive ecosystem. Business leaders are finding themselves needing to reel back cloud costs and even re-examine the costs of their on-premises datacenter deployments.

Attributing Costs Is a Major Challenge

Beyond just limiting costs and cloud investments to reasonable levels, many business leaders are uncertain of where the true cost centers are within their complex and expansive hybrid cloud deployments. Business leaders need to break down, understand, and evaluate every expense involved in cloud and IT operations to maximize value. In this eBook, we will explore some key avenues to understand and manage cloud costs, including new techniques in Financial Operations (FinOps) used to examine cloud cost obligations and investments. In addition, we will examine the likely culprits of high budget consumption and explore best practices to stay on top of continuously evolving technology landscapes.

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Cloud Adoption

A Brief History of the Cloud

Traditional infrastructure means purchasing physical hardware and the space to keep, run, and maintain it, which is a costly affair as new hardware becomes available. With the cloud, however, businesses can invest in similar technology capabilities while avoiding the costs and complexities of managing hardware. With physical appliance being responsibility of the cloud provider, cloud customers can instead focus their efforts on expanding into cloud services and enhancing their capabilities.

Benefits of the Hybrid Multicloud Model

Hybrid multicloud describes an IT environment where computing and storage capabilities are distributed across multiple public and private cloud ecosystems, enabling customers to combine individual public cloud capabilities with on-premises datacenters. By decoupling hardware and software, cloud platforms enable truly flexible deployment models that allow customers to build their own custom stacks or collection of services for highly-specialized workloads either in public cloud datacenters or in private datacenters. This degree of flexibility provides new pathways for innovation and differentiation, and opportunities to drive new technologies and lines of business with agility, scalability, and resilience.

“Organizations leveraging best practices that enable them to access all their applications and data, wherever they reside, is the preferred approach for modernizing cloud infrastructure.

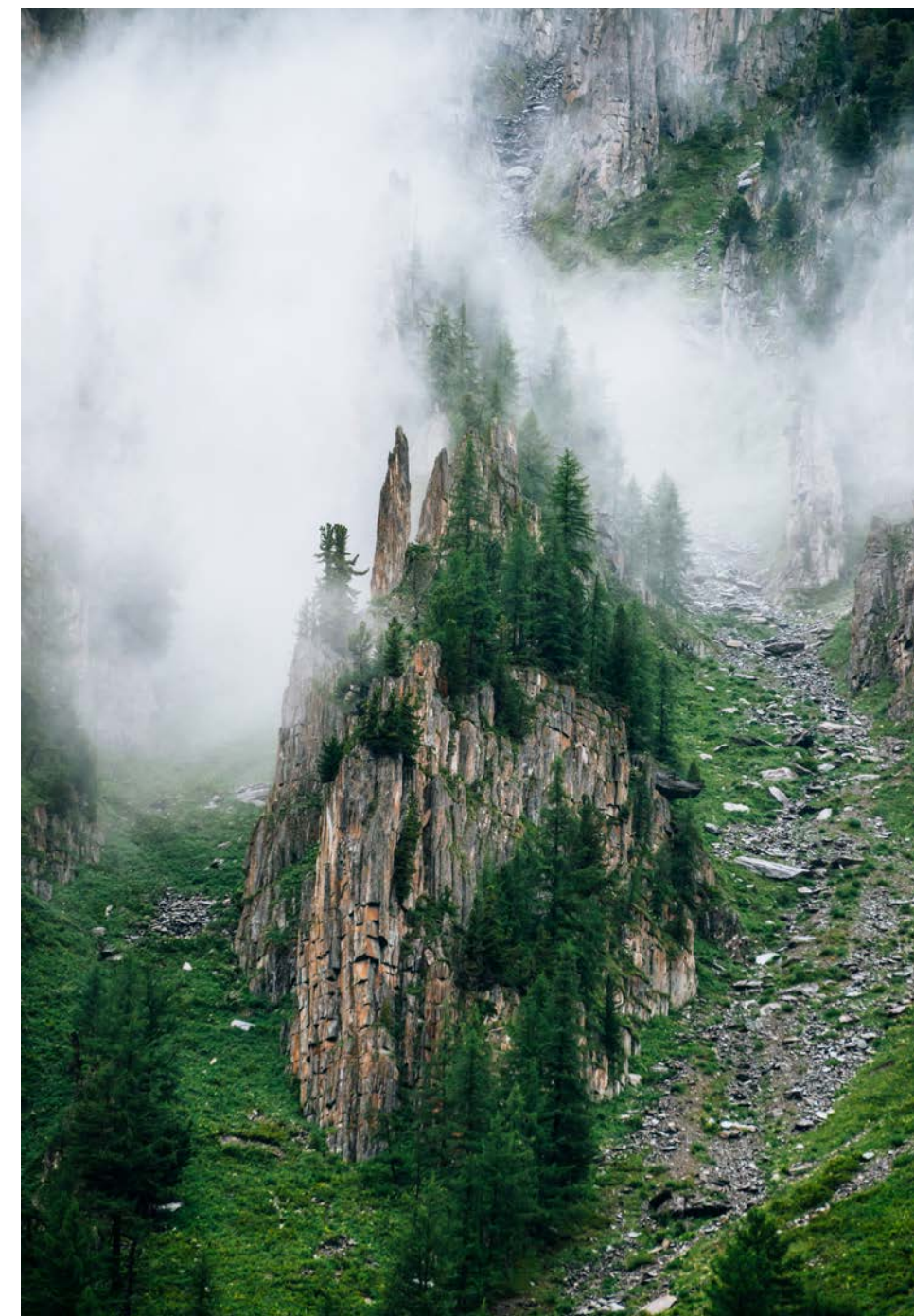
White Paper: Managing Application and Data On-premises and Across Hybrid Clouds
ESG Research

Movement from Traditional On-Premises Deployments to Hybrid Multiclouds

At first, businesses moved their workloads to private clouds, offering the benefits of a cloud deployment while maintaining critical security. Next, organizations started moving workloads into public or even hybrid deployments to get the best performance for their specific workload needs. To effectively manage cloud costs and resource needs, cost needs to be understood holistically across all styles of cloud deployment.

Hidden Costs and Complexities

While cloud advantages were clear and abundant, in the chaos of opportunity many unseen costs and complexities quietly grew in the unchecked corners of advanced public or on-premises cloud deployments. Whether due to incorrectly-sized resources, misconfigurations, out-of-control data growth, or simply a lack of visibility into workloads and resources, many businesses found themselves with surprise bills and uncertainty about where those costs actually came from.



How to Measure Cloud Costs

Track Resource Usage

One of the key methods of measuring public and private cloud costs is simply tracking which available resources are being utilized at any given time. Here are some examples of different strategies an organization can employ to track resources:

Resource Tagging

Most public or private cloud providers allow resource tagging using metadata to indicate ownership, environment-associated projects, cost centers, and more.

Billing Reports

Detailed billing reports are often broken down by resources, service, region, utilization, and provisioning.

Resource Reservations

Organizations that can predict their utilization can reserve cloud resources for potentially substantial cost savings.

Allocate Costs

Understanding where cloud costs are coming from via projects, departments, or business units can help an organization optimize costs and plan accordingly.

Chargeback

The act of charging departments or projects for real-world cloud usage and costs can help establish accountability.

Account Structure

Creating separate cloud accounts for each project or business unit can help differentiate cost centers, but may require more overhead.

Tag-based Allocation

Simply using tags to allocate costs can work for some organizations; however, regular auditing is recommended.

Budgeting

Defining a budget for projects or departments to limit spend can be a simple solution.

Leverage Tools and Platforms

Deploying the right tools or platforms that simplify, manage and measure cloud costs can help organizations stay on top of ever-growing complex IT environments. Some examples include:

Native Cloud Tools

Most public and on-premises cloud providers have native tools that integrate with their cloud platforms to measure and track cloud utilization in real-time.

Third-Party Tools

For organizations deploying workloads across on-premises and public cloud providers, third-party tools will be needed in lieu of native cloud cost management tools.

DIY with Dashboards

Organizations not shy of large amounts of data can deploy custom dashboards to transform cost-related data into actionable insights and reports.

Gartner® predicts that by 2026,
75% of organizations will adopt a digital transformation model predicated on cloud as the fundamental underlying platform¹

44%
of respondents expect IT cost price increases stemming from inflation²

Gartner® forecasts Worldwide IT Spending to grow
4.3% in 2023³

How to Manage Cloud Costs

Set Budgets and Review Regularly

For businesses that want to be proactive rather than reactive when managing cloud costs, a reliable strategy is to define budgets early and set up automation and alerts to indicate when those budgets are at risk of being over- or underutilized. Organizations should examine their budget granularity to determine if they want to set budgets based on projects, departments, or at the application level, and then define automation to automatically manage resources based on optimized utilization settings.

Once budgets have been defined, organizations can then begin forecasting to gauge potential future cloud resource utilization based on historical usage data, and then use automation based on forecasting results. Combining this with regular budget review cycles can help ensure a business can reconcile budget predictions with actual costs and then adjust their forecasting models appropriately.

Many public cloud providers offer their own native version of budget-related toolkits that integrates within their cloud environment and automatically measures key performance and resource utilization metrics. These toolkits can even be combined with business intelligence tools like reports or dashboards to drive further cost insights.

Optimize Unused or Underutilized Services

Understanding which cloud resources are being underutilized can help organizations correct their spend by choosing to cut back where it makes sense. From virtual compute instances to databases or storage volumes, each can cost an organization a lot over time, even if they sit idling.

Organizations that can understand their current cloud utilization are in a position to begin right-sizing their deployment to ensure purchased resources are as close as possible to what's truly needed to support the workload and real-world use cases. A key component to this strategy is that it can evolve alongside a business as it scales its cloud needs to match business demand.

Certain businesses may need to ramp up cloud resources to support seasonal demand but will then return to normal afterwards. Regularly right-sizing or consolidating unused or underutilized resources can help businesses keep costs down by eliminating opportunities for inefficient cloud resource utilization.

Regular Cost Audits and Reviews

To ensure optimal cloud resource utilization, it is critical to define periodic cost audits at regular intervals to review metrics and adjust cloud resources accordingly. For example, a business may choose to conduct audits monthly, quarterly, and yearly; with each focusing on a different strategic path.

- **Monthly:** Examine detailed billing reports to identify unusual trends, spikes, or cost anomalies.
- **Quarterly:** Dive deeper quarterly to help identify broad patterns and then strategize for the next few months until the next quarterly cycle.
- **Yearly:** Once a year, IT and business leaders should seek to align their budgets and then adjust forecasts and strategies accordingly.
- **Framework:** In addition, organizations can develop an assessment framework to gauge if a workload is running in the most ideal cloud environment, which can help with cost and performance optimization.

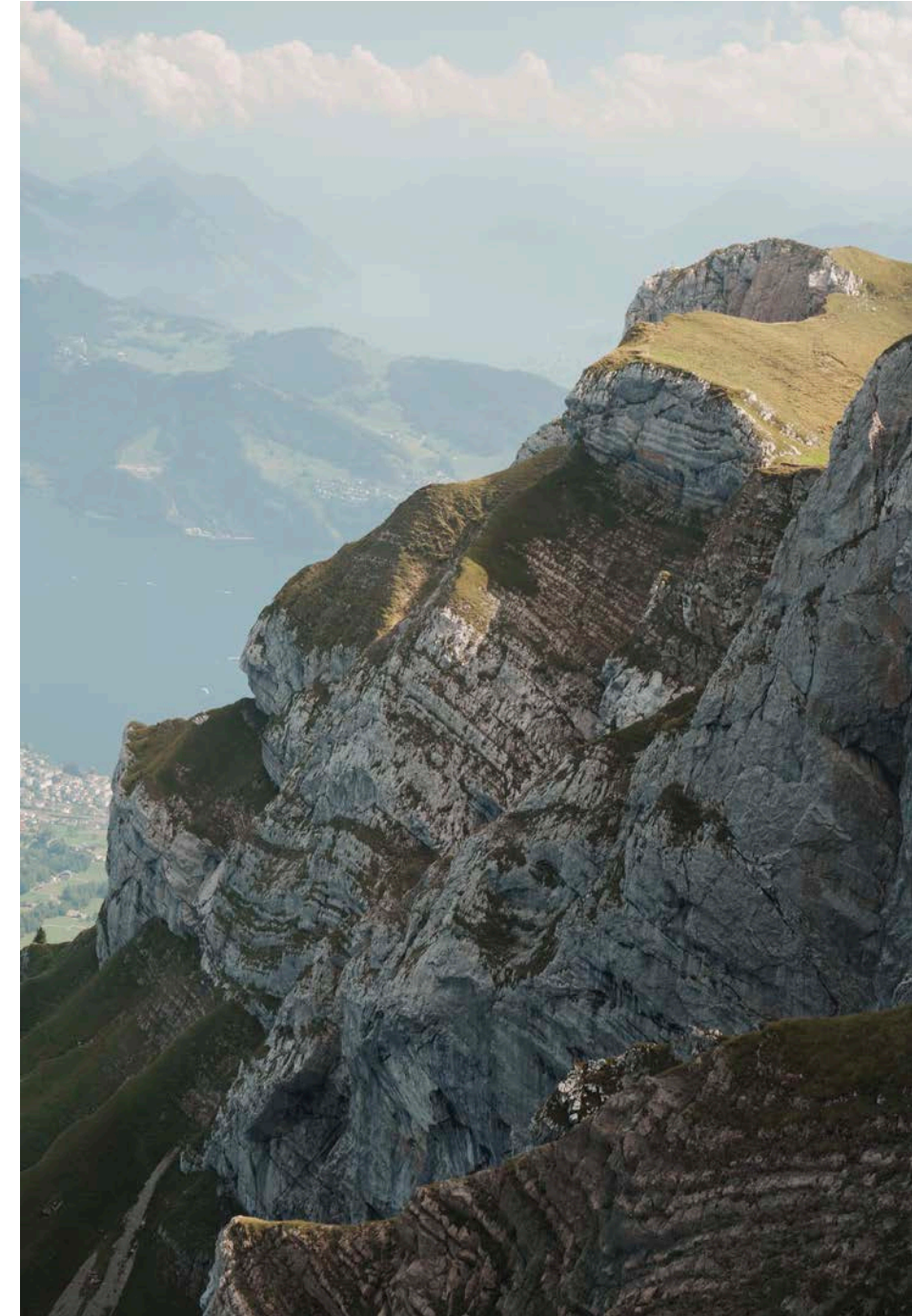
FinOps

- **Chargeback and Showback:** Automate the process of attributing costs to departments, teams, or projects. This instills accountability and encourages responsible cloud consumption.
- **Automated Governance and Policy Enforcement:** Implement policies that automatically enforce best practices and defined configurations, like terminating unused resources or moving data to cost-effective storage tiers.

Selecting the Right Pricing Model

Cloud providers, whether public, private, or managed, know that their customers have different needs. Because of this, they usually provide multiple avenues and cost models for businesses to select from based on their specific workload requirements. Each offers specific advantages that IT teams or business leaders want to emphasize. Some examples of these various cost models and their advantages include:

- **On-Demand / Standard Pricing:** Pay only for what you use, no upfront costs, no long-term contractual commitments. Ideal for unpredictable workloads.
- **Reserved Instances (RIs):** Discounted compared to on-demand pricing, suitable for predictable workloads, requires a typical 1-3 year commitment.
- **Serverless:** Charged only based on actual usage, no charges for idle time. Ideal for event-driven or unpredictable workloads.
- **Hybrid Models:** Combine on-premises infrastructure with cloud resources to deploy certain technologies strategically.
- **Contract Negotiation:** Businesses with a large cloud footprint can often directly negotiate cloud costs with public cloud providers.



Hybrid Multicloud Cost Management Best Practices

While there are many best practice strategies to wrangle cloud costs, it will take a combination of strategic IT planning as well as business-led governance planning to ensure a holistic approach to predicting, optimizing, and managing budgets. Here are some best practices and tactics to leverage:

Eliminate All Silos

- **Unified Storage Management:** Leverage centralized storage tools or platforms from cloud providers to unlock a holistic view of storage resources.
- **Lifecycle Policies:** Define policies to automatically retire aging storage subsystems that have outlived their contracted value or move data to less expensive storage options.
- **Deduplication and Compression:** Reduce overall storage needs by eliminating duplicate data or compressing volumes of data that don't need immediate access.

Self-Service Tools

- **Resource Template:** Provide teams with pre-defined templates for standard deployments, ensuring optimized configurations.
- **Cost Dashboards:** Enable the use of self-service dashboards where various teams can examine their cloud resource consumption in real time.
- **Approval Workflows:** Define a process or workflow that requires specific approval before deployment.

Virtualization

- **Increase Utilization:** Treat all resources as one big pool and allocate only what is required for each virtual machine (VM), optimizing spend and hardware utilization on-premises.
- **Template Management:** Regularly audit and update VM templates to ensure deployments are performance and cost optimized.
- **Monitor VM Sprawl:** Mitigate the VM sprawl that occurs due to the simplicity of spinning up virtual machines. Audit and remove unnecessary VMs.

20.7%

growth in public cloud spending between 2022 and 2023³

43%

of leaders achieve their cost-saving targets in the first year of cost reduction³

65%

of organizations don't leverage a cost-management framework³

Automation

- **Automated Cleanup:** Define scripts and/or functions that automatically delete unused resources such as old snapshots or detached storage volumes.
- **Scheduled Start and Stop:** Automate the start and stop of VMs based on known usage patterns.
- **Infrastructure as Code (IaC):** Deploy specific cloud-based virtual infrastructure through code.
- **Auto-Scaling:** Automatically adjust resource levels based on demand to ensure you're not paying for unused capacity.
- **Budget Alerts:** Set automated alerts to notify stakeholders if spending exceeds defined thresholds.
- **Cost Anomaly Detection:** Implement machine learning-based solutions to detect anomalies in spending patterns and get alerts.

Right-Sizing Resources

- **Continuous Monitoring:** Deploy monitoring tools to track utilization over time and identify resources that can be scaled appropriately.
- **Right-Size Recommendation Tools:** Leverage tools to provide recommendations for right-sizing your current and forecasted cloud workloads.
- **Regular Resourcing Review:** Audit workloads to ensure they are matched with the most appropriate resource type. CPU-intensive tasks should be deployed on compute-focused instances.
- **Optimize Data Transfer and Storage:** Automate movement of infrequently used data to storage or archive tiers, or to locations that reduce data ingress and egress between regions.

Introducing Nutanix

Drawing on a proven track record of cloud innovation, Nutanix delivers the technology and expertise to help you break down the barriers between on-premises, cloud, and edge. Only Nutanix delivers a single, unified simple-to-use platform across all endpoints—with full license portability. Eliminate infrastructure and management silos and take control of costs across your entire hybrid multicloud environment from a single pane of glass. Enjoy faster time to value by deploying an application-ready cloud 97% faster than three-tier on-premises infrastructure.

The Nutanix Cloud Platform empowers you to seize the power of simplicity to gain financial control over cloud costs across hybrid multicloud deployments. With a single platform, 1-click upgrades, seamless scaling, and consistent management, Nutanix eliminates the need for retooling, retraining, or refactoring.

Security and Compliance: Unify cloud computing security for all enterprise and cloud-native applications in any location.

Reduce Project Risk: Dramatically minimize project risk by migrating applications as-is using lift-and-shift portability.

Break Free of Legacy: Quickly migrate applications into or out of public clouds and hosted-private clouds without modifying any applications.

Unlock Cloud-Native Apps: Improve cloud integration and reduce latency between enterprise and cloud-native applications by moving your applications to a virtual private cloud.

Multicloud Coverage: Support AWS, Azure, GCP, and Nutanix workloads to ensure cost control across all major private and public clouds.

Visibility: Visibility into public and private cloud spending simplifies cost management and multicloud governance.

Control Cloud Sprawl: Impose organization and accountability across your business via tag-based mapping of cloud resources.

Automated Insights: Eliminate unused resources and automate manual tasks to save time and money.

Dashboards and Reporting: Gain visibility into multicloud spend and build custom reports and dashboards to fit your business needs.

Automated Right-sizing: Leverage insightful machine-learning algorithms that automatically identify anomalous spending patterns.



Conclusion

Optimizing cloud costs can be complicated and nuanced, as it requires carefully balancing available cloud resources with workload and performance requirements. In this eBook, we proposed the following opportunities for understanding, attributing, and exploring cloud cost optimization:

- Some cloud workloads may be ideal to shift to a different cloud or on-premises environment.
- Tracking resource utilization with tagging, billing reports, and reserving resources.
- Allocating costs through chargebacks, tag-based allocation, and budgeting.
- How specialized tools and platforms can help understand, explore, and attribute complex cloud costs.
- The importance of establishing regular cost audits and reviews.
- Planning ahead with the right cloud pricing models.
- Best practices for hybrid multicloud deployments.

Thank you

Nutanix recognizes the flexibility needed for operating complex cloud environments at the speed and scale of business. To learn more about out how Nutanix can help you save on cloud costs, visit www.nutanix.com/save.

Sources:

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2. How to Manage IT Spend in an Inflationary Environment (2023) IDC. [How to Manage IT Spend in an Inflationary Environment | IDC Blog](#)
3. Gartner Forecasts Worldwide IT Spending to Grow 4.3% in 2023 (July 2023) Gartner Press Release. [Gartner Forecasts Worldwide IT Spending to Grow 4.3% in 2023](#).

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