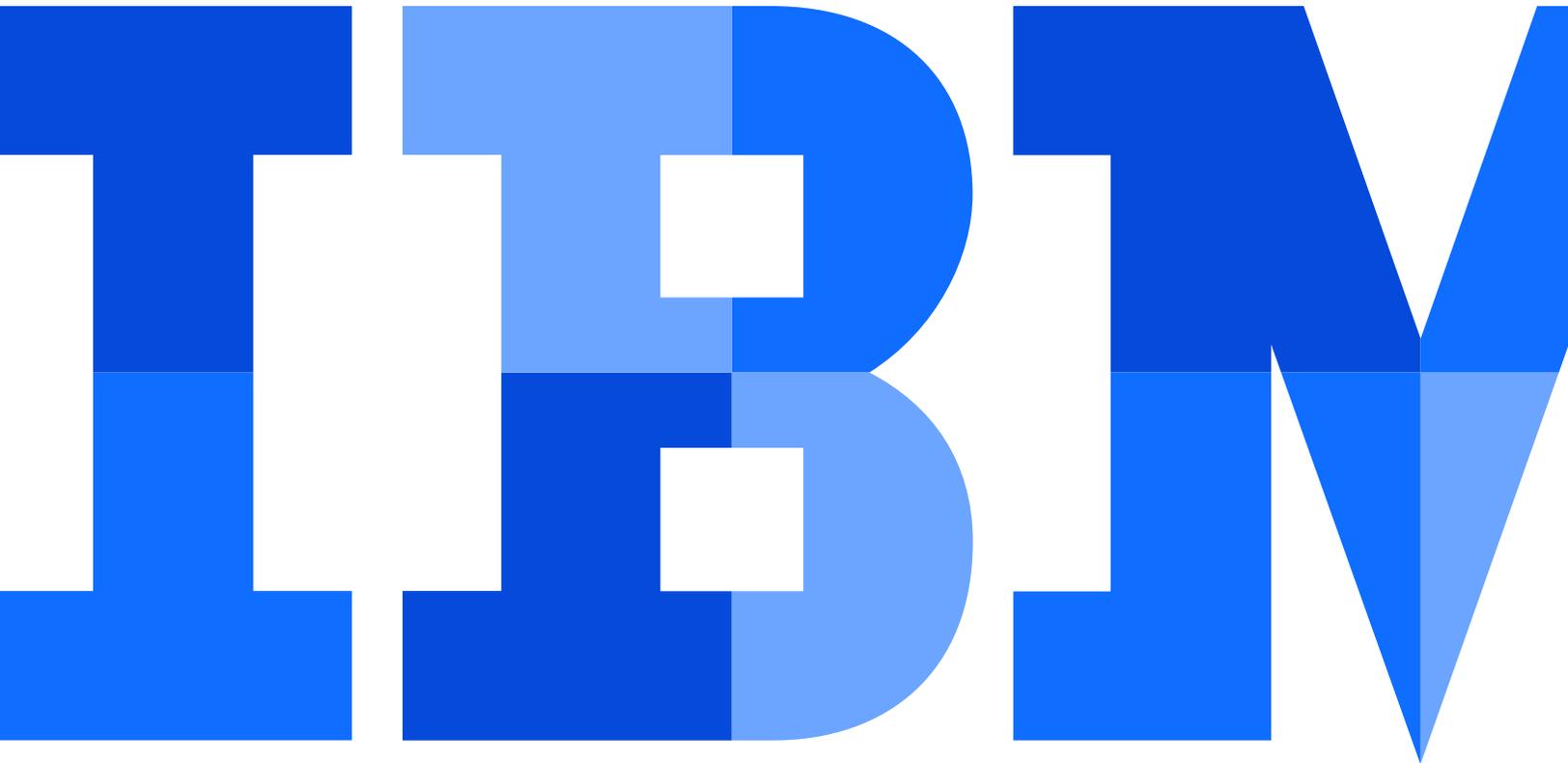


Cost governance for multicloud environments

*Effectively manage cloud consumption
at reduced costs and greater efficiency*



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Industry transformation

IT, like many other domains, is undergoing transformational shifts. IT organizations are under intense pressure to be more responsive to business demands. They’re also being forced to support the use of public cloud services. And runaway spending on these services isn’t acceptable. Sometimes it may be cost-effective to run workloads in existing data centers and virtualized infrastructure. But some applications simply can’t run in the public cloud for security or software licensing reasons. Additionally, lines of business (LOBs) may decide to use specific public cloud services for business imperatives. All these issues lead to the inevitable multicloud model, where organizations

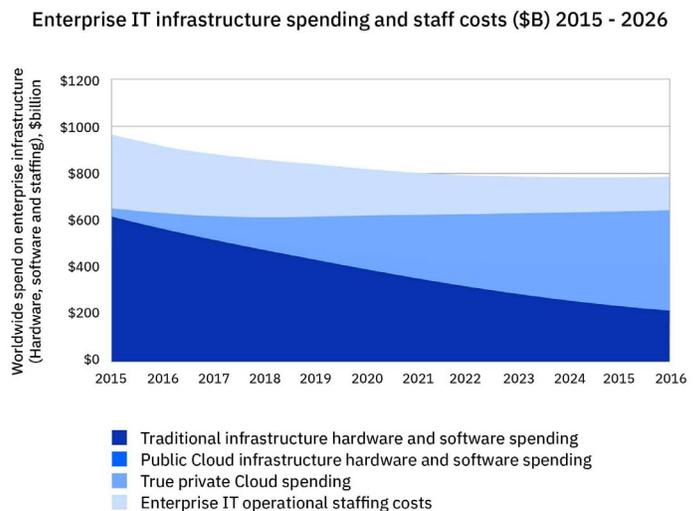


Figure 1: Enterprise IT cloud projection by vendor revenue segmentation, based on analyst Wikibon.¹

use a mixture of public and private cloud services to meet enterprise needs. The following chart, from analyst Wikibon, predicts the growth of true private cloud and public cloud spending by enterprises.

According to Eric Hanselman of 451 Research, “The most recent 451 Research Voice of the Enterprise cloud transformation study shows how enthusiastic support has become for hybrid deployment models for new infrastructure. Respondents identified hybrid cloud as the fastest growing area (at more than 72 percent) of expected application deployment over the next two years.”²

Challenges in a multicloud model

IT organizations must overcome numerous challenges to run a multi-cloud model. Traditional virtualization vendor tools haven't included the notion of cost, nor do they support a standard list of services. To operate the private cloud "as a service," metering and rating must be introduced. Additionally, IT departments should publish a list of services provided and consistently deliver on them. IT must also bill customers based on published pricing. In other words, the private cloud should operate more like a public cloud. Governance models should now allow for private cloud costs to be viewable right beside the multiple public cloud costs. Given the wide variety of public cloud services, it's important to see the costs of all clouds in use within a governance system. The system must handle enterprise needs, such as data security, role-based access control and the ability to apportion costs to various departments.

According to Eric Hanselman of 451 Research "Managing multiple clouds comes with a set of complexities that can be dealt with by getting to a more effective hybrid management arrangement. Hybrid architectures coordinate operations across clouds and can be more efficient and effective than multiple, disconnected clouds."³ IT organizations must enable business units to self-provision cloud services and address related risks, integrations and service-level considerations.

A lack of standard policy definitions and language across services can make auditing challenging

According to Brandon Butler, author of The Enterprise wish-list for the hybrid cloud, "Different products and services have different names across different providers, making the tracking and auditing of hybrid clouds difficult. A common language for common services among providers would make tracking and using these services easier."⁴ Eric Hanselman of 451 Research adds, "To get to hybrid cloud capabilities, you've got to be able to coordinate and integrate operations across cloud providers. It can be a challenging task, as the controls and even billing models can differ significantly between clouds."⁵

Enterprise cloud governance from IBM

IBM® Cloud Brokerage—Cost and Asset Management takes all the above-mentioned issues into account to serve the needs of enterprise IT.

Coverage of public clouds

The solution obtains cost and asset information from major public cloud providers. Given the dizzying set of options, IBM Cost and Asset Management provides a normalized view of cloud service use across multiple providers. The service covers the most common cloud providers, including IBM, Amazon, Microsoft and Google.

Private cloud "as-a-service" model

IBM Cost and Asset Management lets users view private cloud data along with their public cloud spend. The service tracks assets and usage within VMware vSphere installations. IBM Cost and Asset Management allows organizations to apply custom rate cards to the metered data for private cloud resources and then show private cloud cost data in the dashboards. This ability enables an "as-a-service" model for VMware-based private clouds.

Enterprise-class features

IBM Cost and Asset Management helps provide the security, scalability and user management features that enterprises depend on. It supports a robust governance model for procured cloud services based on budgets and financial controls. The service also supports apportioning of cloud service costs for showback and chargeback purposes.

Data-driven decisions

According to Andy Soanes' article *Hybrid Cloud: 5 tips to find your hybrid cloud sweet spot*: "For most organizations, the solution won't be as simple as just using the hybrid cloud to expand beyond current capacity and meet service demands. For instance, for some services it may be more cost-effective to expand on an in-house application or infrastructure, or to retrain skilled personnel, than to adopt a public cloud service; while for others the exact opposite will be true. To gain this level of understanding, the IT department needs to investigate each service it provides in detail. It should be able to tell the precise value that service brings to the business and exactly what it costs to provide; as well as how those costs will change as the business evolves. These costs need to include software licensing, infrastructure, skilled resources and all other factors involved—as well as considering that many of these factors will benefit multiple services. With this knowledge, IT departments can then accurately compare costs between in-house and public cloud services to know exactly where each service is best served and where the tipping point lies."⁶

In a multicloud model, services can be consumed from different providers. A large amount of data is available on usage and cost, and historic trends can be useful for operational decisions. Decisions and actions should be based on deep analysis of large data sets. Data science and artificial intelligence (AI) are a must for informed decisions. Governance tools need to manage big data in a security-rich manner and process it efficiently for timely action.

Data management

IBM Cost and Asset Management can discover cost and usage data from multiple cloud providers, as well as on- or off-premises private clouds. The service has a rich custom tagging capability across cloud accounts. It can manage large amounts of data in a data lake in a security-rich manner and restrict access only to authorized personnel. IBM Cost and Asset Management can also assess policy deviations, make recommendations and track budgets across cloud services by analyzing data gathered.

Artificial intelligence

IBM Cost and Asset Management uses cognitive algorithms with a focus on actionable insights. The service uses the large quantities of data collected and automatically finds the most meaningful recommendations for organizations to act on. IBM Cost and Asset Management also uses data science to determine actionable insights on grooming, optimizing and transforming the use of cloud services.

Cloud comparisons

IBM Cost and Asset Management allows data to be discovered on existing assets and can then be used to compare options. Understanding current cloud service costs and usage allows your business to objectively evaluate options. The data collected, analyzed and normalized by IBM Cost and Asset Management helps organizations evaluate alternate clouds for workloads running in virtualized environments.

Information integration with other IBM multicloud management solutions

Multicloud governance is possible only when there's a holistic management system in place across cloud service procurement and operations. IBM Cost and Asset Management is a solution within the IBM multicloud management portfolio. IBM multicloud management solutions are designed to facilitate effective migration to the cloud, and manage consumption, operations and governance of hybrid cloud environments.

Case study 1: Grooming recommendations for cloud assets

A governance tool, such as IBM Cost and Asset Management helps with asset grooming. Within the IBM organization, the data-driven, trained classification machine learning model helped decrease cloud usage cost by over 80 percent, while cutting 35 percent of the cloud assets based on 88 recommended changes.⁷ Without the built-in data analysis model, users would have had to analyze the bill and groom assets using the following steps:

Step 1: Quarantine high-cost, low-use assets

By analyzing bills and usage, an analyst would need to identify expensive items that aren't often used. These items include server reservations that are unallocated and underutilized large virtual machines (VMs), as well as software subscriptions that are purchased and later forgotten.

Step 2: Shut off abandoned assets and mark for termination

This step would involve identifying cloud assets previously used for important projects and then not shut down. This step is frequently the case with development and test accounts.

Step 3: Snapshot aged assets and archive them

In this step, an analyst would need to pay attention to storage assets. While many of these assets aren't expensive, keeping them in the cloud for too long only invites trouble. All storage assets older than one year should be a snapshot and switched to a lower-availability storage class, and those assets more than two years old should be archived.

Step 4: Delete any dependent assets

An analyst would find assets related to deleted assets, flag them as abandoned assets and then delete them. In this way, elastic Internet Protocols (IPs), storage volumes, load balancers, network address translation (NAT) gateways and hosted zones are cleaned.

Step 5: Review and return to Step 2

Finally, analysts need to handle VMs that are shut off but can turn back on. This happens because VMs are part of some auto-scaling groups in a different geographic region that triggers them to turn back on. In such cases, analysts should return to Step 2 and delete the autoscaling groups to stop the chain of events. It can take several iterations of pruning to reach a steady state.

Case study 2: Governance of multicloud assets

In this case, a large enterprise used IBM Cost and Asset Management to ingest costs and assets from multiple public clouds. The project sponsor characterized the problem as follows:

- “I need a consolidated cost and asset management view across all my cloud providers—such as IBM Cloud, Azure, Google Cloud and private cloud.”
- “I need to understand how much is spent on the Google Cloud platform by the development organization.”
- *“I need to be able to show different LOB stakeholders how much they are spending in the cloud.”*

The intention was to understand who was using the services and for what purpose. Another goal was to identify any shadow IT activity and unauthorized expenses. The enterprise also wanted to see the private cloud costs alongside the public cloud expenses. This capability gave users visibility into where costs were accruing in a multicloud environment, making any violations of spend policies easier to detect.

Additionally, the enterprise used tags to classify costs in dimensions relevant to the business. Detecting any anomalies early in the cycle was critical from a governance perspective, so the organization wanted to gain a clear picture of how much they were spending on different clouds. They also wanted to enable infrastructure and operations managers to access the console and quickly determine how these assets were being used by different domains and brands within the organization. Additionally, they wanted a report they could share with financial analysts on different projects.

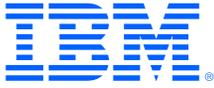
The initial project resulted in the following benefits:

- Clear visibility of costs by the cloud provider
 - Ability to view costs by business attributes
 - Ability to distribute cloud cost reports to business stakeholders
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For more information

For more information about IBM Cloud Brokerage Managed Services—Cost and Asset Management, please contact your IBM representative or IBM Business Partner, or visit: ibm.com/us-en/marketplace/cloud-brokerage-cam

You may also view a brief interactive [demo](#).



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- 7 Based on IBM internal analysis of available data. Individual client results will vary.



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