

# Taming the Burgeoning Hybrid Cloud

Fragmented monitoring and management of a combination of physical and virtual IT assets with public and private cloud can frustrate enterprise goals.

## Enterprise clouds often take shape haphazardly

Today, an agile enterprise increasingly means a cloud enterprise. But rapid adoption on a use-case basis has resulted in complex hybrid infrastructures over which enterprises have little control.

In a recent worldwide survey conducted by IDG Research Services, IT managers indicate their **cloud resource usage will increase an average of 54% over the next three years**. Already the combination of private cloud (33%) and public cloud (24%) exceeds the proportion of non-cloud resources (43%) within the total IT environment. Over the coming two years, non-cloud will shrink by a third to 30% of the total, while private cloud is expected to capture the leading share at 40% and public cloud is expected to grow to 29%.

Industry data also makes it clear that enterprise use of cloud technologies is growing by leaps and bounds. Operator and vendor revenue across six key cloud services and infrastructure market segments reached \$110 billion for the year ending September 2015, according to Synergy Research, growing 28% on an annualized basis.<sup>1</sup>

Clearly, cloud has become the predominant technology for providing IT services into the future. Enterprises are banking on enjoying greater flexibility and control by shifting from legacy technologies that generally involve long-term investments. In the IDG survey, **operational agility is ranked the key driver behind the shift to cloud by 79% of participants**. Other reasons include cost efficiencies (65%), innovation (57%), digital business transformation (54%), and rapid time to market (51%).

What's more, there's virtually no area of IT that isn't being impacted by cloud. Applications, storage, and databases each are slated for increased cloud deployment by more than half of the survey respondents. Another

49% plan to increase cloud deployment for big data and 46% for compute resources.

But enterprises have discovered there is no one, uniform cloud to meet all their needs. Survey respondents indicate that, on average, an overwhelming **76% of IT assets reside in a hybrid mix of private and public cloud resources**. That number is expected to increase to 83% over the next two years.

But that hybrid environment generally requires reliance on multiple providers – 97% are using multiple vendors for public cloud and 94% for private cloud. Two-thirds of those surveyed are using two or more vendors for public cloud, and 55% are using two or more vendors for private cloud. Almost a third use three or more providers.

## Key challenges of managing hybrid cloud environments

Enterprises typically have approached cloud on a use-case basis, implementing to meet specific needs while they learned to be comfortable with this new way of delivering IT services. As a result, organizations have wound up creating a morass of interconnections over which they generally have little visibility, which limits their ability to monitor and manage the entire hybrid IT environment.

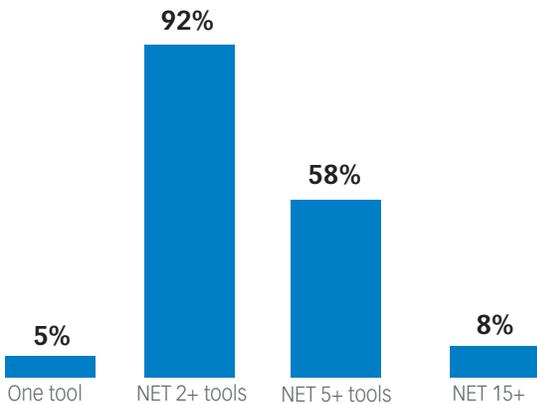
The challenges are many. In the past, applications would run on a tightly managed collection of data center assets, but today different applications may run in and across different environments. For example, one application may run entirely on public cloud infrastructure, while another runs in a virtualized data center environment but uses public cloud “bursting” capabilities during peak demand. Yet another



<sup>1</sup> Synergy Research Group, January 7, 2016



### Number of Tools Used to Monitor Cloud & On-Premise Infrastructures



SOURCE: IDG RESEARCH SERVICES

approach may see a data center-based application using the public cloud for storage.

“In a hybrid IT environment that spans public cloud services, private cloud infrastructure, and legacy infrastructure, the failure of a single workload in the cloud or the failure of a single device in an enterprise data center can have a cascading deleterious effect on the health and performance of applications,” states a recent report by Enterprise Management Associates (EMA).<sup>2</sup>

On the provider side, organizations are reliant on a bevy of public cloud platforms, from Amazon Web Services to Microsoft Azure and more. For private cloud, they use those as well as VMware, EMC, and open source platforms such as OpenStack.

Noting that most enterprises use multiple clouds to support a wide range of applications and workloads, IDC analyst Mary Johnston Turner recently observed that “efficient management of these resources depends on IT operations and DevOps teams having access to consistent, accurate infrastructure performance monitoring data and reporting that span the full set of on-premise cloud infrastructure and public cloud IaaS services.”<sup>3</sup>

But the reality is that IT organizations have typically utilized different tools to monitor the different types of environments, creating a portfolio with a hodgepodge of

legacy and specialized cloud products.

“When an IT organization adopts an entirely new type of technology, it is often tempted to procure specialized management tools to operationalize these new components,” the EMA report notes.

Case in point: More than half of those in the IDG survey indicate **they are using five or more tools to monitor their hybrid environment**, with some using 15 or more separate tools.

### Managing mediocrity in monitoring hybrid cloud

“Enterprise-scale organizations consistently tell IDC that one of their top cloud management priorities is consistent performance monitoring and reporting across all IT assets – whether traditional, physical, on-premise, private cloud, or public cloud services,” says IDC’s Turner.

But enterprises hoping to exploit hybrid cloud are currently hampered by a monitoring and management structure that is siloed and inefficient. The ongoing management of each tool is too time-consuming, risky, expensive, and complex. That results in constant chaos, fire drills, and lost time spent chasing answers and pointing fingers.

Employing separate point products to monitor specific technologies also means that each will have separate interfaces, databases, infrastructures, and administrators, which leads to further problems. The executives surveyed by IDG say that implementing and learning new tools and processes is the top challenge in adopting and managing cloud environments. Other challenges include **complexity of management and lack of end-to-end visibility across cloud and on-premise infrastructures**.

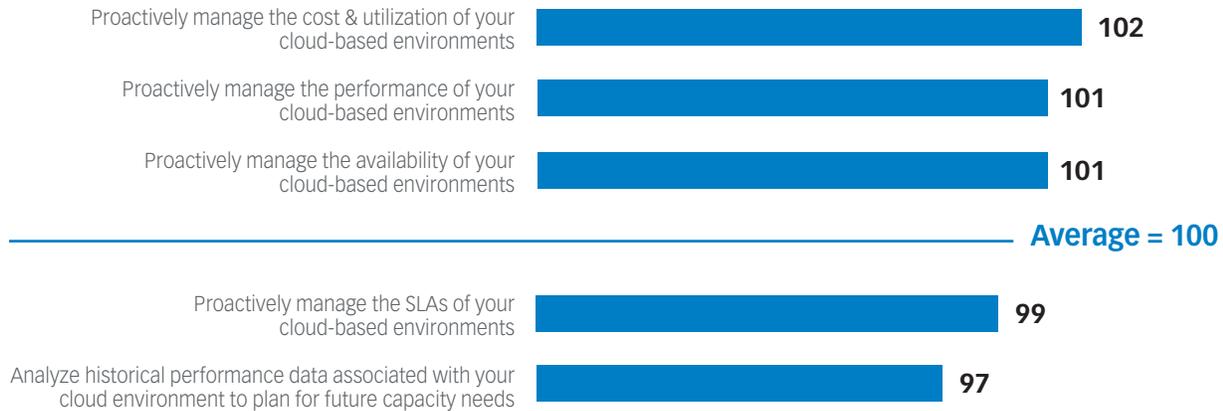
Not surprisingly, given such a fractured monitoring situation, these IT executives are currently underwhelmed by their proactive management capabilities. Worldwide, **they assigned mediocre ratings for their ability to monitor and manage the cost and utilization, performance, and availability of their cloud-based environments**. Lack of end-to-end visibility requires the IT team to troll through each monitoring tool to track down problems. Having to learn and use multiple monitoring tools just increases the learning curve for IT staffers.

<sup>2</sup> CA-sponsored white paper: “CA Unified Infrastructure Management Deepens its Visibility Into Cloud and Hybrid IT With Comprehensive New Capabilities,” June 2016

<sup>3</sup> “CA Technologies Introduces Robust Multicloud Infrastructure Monitoring,” Mary Johnston Turner, IDC, June 29, 2016



## Ratings of Various Cloud/Hybrid Environment Management Capabilities



SOURCE: IDG RESEARCH SERVICES

Perhaps most troubling: Survey respondents are **least confident in their ability to proactively manage SLAs or to analyze historical performance data in cloud environments for future planning needs**. Without those capabilities, it will be difficult if not impossible for organizations to meet enterprise demands for improved IT service quality and reduced cost of service delivery. This type of situation is also likely to slow down migration efforts.

"It is difficult enough to wrangle a fragmented management toolset to monitor and troubleshoot the health and performance of infrastructure that sits under one roof, wholly owned by a single IT organization," the EMA says. "When applications, services, and business processes span traditional infrastructure, private clouds, and public clouds as they do in hybrid IT environments, performance monitoring and management becomes even more complex."

### Simplifying cloud and hybrid IT infrastructure management

Public cloud can be relatively inexpensive for core infrastructure needs, but the meter is always running; organizations need to be able to efficiently leverage it and other components of the hybrid environment.

"Things will go wrong with a hybrid IT environment – and identifying exactly where the problem is won't be easy," says Clive Longbottom, co-founder and service director at business and IT advisory firm Quocirca. "With multiple

independent entities now involved, generally across multiple contracts, finger-pointing at each other becomes almost unavoidable."<sup>4</sup>

Identifying the problem and determining who has responsibility for it are significant issues of hybrid IT, Longbottom adds.

Simply adding more tools as more cloud resources are utilized only complicates the situation. Multiple monitoring tools and point solutions increase the time and expense of learning how to use them and coordinating management with other tools. Rather than optimizing the hybrid, multi-cloud environment, IT will be stuck in firefighting mode, constantly trying to track down the source of the latest problem.

EMA urges enterprises to keep management and monitoring systems simple and unified in order to better understand the interdependencies of the hybrid environment. "Otherwise, IT Operations might find itself struggling with situations where a single device failure can set off hundreds of alerts across dozens of monitoring tools," it says.

IT organizations also must deal with the constant pace of change and ensure their monitoring solutions can deal with adoption of new resources such as Docker containers, PureStorage arrays, Nutanix hyperconverged systems, and OpenStack cloud environments.

"As has been the case with legacy IT for decades, the better the overall management, the better the adoptions success, productivity, and return on investment (ROI) for

<sup>4</sup> "Five hybrid IT infrastructure breaking points," Clive Longbottom, Quocirca

## Regional Variances

Global surveys provide great data on worldwide trends, but they also reveal interesting regional distinctions. Here are some compelling data points from the IDG Research survey on enterprise cloud management that provide some insights into regional differences:

- U.S. organizations are most critical of their current cloud management capabilities, with an average rating of 5.7 on a scale of 10 over five categories. In Latin America, the average was a more optimistic 7.8. EMEA and Asia-Pacific ratings were virtually tied at 6.9 and 6.8, respectively.

- The top growth area for increasing cloud deployment over the next 12 months is:

- U.S. = Applications (81%)
- Latin America = Databases (76%)
- EMEA = Big Data (76%)
- Asia Pacific = Storage (58%) and Databases (58%)

- Amount of non-cloud infrastructure:

- Today: U.S. (58%), EMEA (37%), Asia-Pacific (35%), Latin America (24%)
- In two years: U.S. (38%), EMEA (29%), Asia-Pacific (25%), Latin America (19%)

IT systems and the apps they support – no matter their location of IT architecture,” says Dana Gardner, principal analyst with InterArbor Solutions.<sup>5</sup>

### Unified, actionable view on performance

Enterprises face substantial challenges as they seek to replace on-premise infrastructure and migrate workloads to a dynamic, cloud-based hybrid IT environment. A unified approach to infrastructure management will help address these challenges and advance IT’s ability to meet business

demands for cloud performance.

Key factors to focus on when implementing a hybrid cloud monitoring solution include:

- Tracking SLAs and performance
- Delivering deeper insights on the applications and processes running on cloud resources to rapidly find performance bottlenecks
- Serving up information on utilization history and predictive alerts on impact on performance and budget thresholds
- Monitoring infrastructure utilization throughout the migration process

While a number of new vendors have emerged to offer cloud-friendly monitoring products, they generally “offer more niche cloud performance monitoring functions” that are more limited than traditional monitoring systems that can accommodate private clouds and legacy infrastructure.<sup>6</sup>

Achieving end-to-end visibility in hybrid IT environments requires the ability to manage the virtual, physical, and cloud IT infrastructure, while monitoring applications, servers, networks, databases, and the end-user experience.

IT organizations should aim for a single, unified architecture that monitors the entire IT environment. Only with the benefit of that “single pane of glass” viewpoint can you take proactive control in managing your virtual, physical, and cloud IT infrastructure. That will eliminate the need for disparate monitoring solutions, help optimize operational efficiency, and reduce the complexity and costs of using and integrating multiple IT monitoring tools.

### CA Unified Infrastructure Management

CA’s Unified Infrastructure Management (CA UIM) provides a single, most comprehensive monitoring solution that spans both traditional data centers and newer virtualization and cloud environments. Enterprises can utilize CA UIM to choose the right mix of modern cloud enablement technologies that best support new endeavors that contribute to business growth. ■

For more information, go to [www.ca.com/cloud-monitoring](http://www.ca.com/cloud-monitoring)

<sup>5</sup> “CA Technologies enhances offerings to streamline cloud and hybrid infrastructures,” Dana Gardner, IT-Director.com, July 14, 2016

<sup>6</sup> “Cloud performance monitoring tools eliminate IT’s blind spot,” Paul Korzeniowski, TechTarget