AWS Cloud Adoption, Visibility & Management

It’s a multi-cloud, cost-containment world.

2019 KENTIK REPORT

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Overview

We've reached a point where cloud providers are broadly recognized for taking away the huge overhead of building, maintaining, and upgrading physical infrastructure. That, in turn, allows organizations to better focus resources on scaling their own businesses.

At the same time, however, the rapid expansion of public cloud use, as well as multi-cloud, hybrid cloud and cloud-native environments, is creating new visibility challenges. With increasingly distributed systems, many organizations and the operations personnel behind them (e.g. NetOps, SREs, SecOps, etc.) are struggling to find a realistic visibility strategy that spans their entire infrastructure: monitoring systems old and new; those they own and the ones they don't.

To surface specific cloud visibility challenges and identify trends in cloud monitoring, Kentik® conducted a survey of our industry at the recent Amazon Web Services (AWS) re:Invent conference. Given the location of the survey facilitation, a large majority (97% of the 310 survey respondents) reported that their organization is actively an AWS customer. For that reason, we are confident that the findings in this report accurately reflect the needs and behaviors of the broader AWS customer community.

Methodology

Kentik surveyed 310 conference attendees during the AWS user conference held in Las Vegas, Nevada. The survey respondents varied in titles, including C-level, SVPs / VPs, directors, managers, engineers, architects, and developers. Respondents also spanned industries, such as education, eCommerce and retail, finance and insurance, government, health care, technology, and more.

Key Findings

A common multi-cloud combo: AWS + Microsoft Azure. While it's no surprise that when surveyed at an AWS user conference, 97% of our survey respondents reported that their organization actively uses AWS. However, more than one-third (35%) of respondents said their organization also actively uses Azure. Twenty-four percent (24%) reported using AWS and Google Cloud Platform together.

There are more multi-cloud than hybrid-cloud users. Forty percent (40%) of respondents are multi-cloud users, who reported actively using at least two cloud service providers within their organization. Another 18% said they actively use all of the big-three cloud service providers, i.e. AWS, Azure, and Google Cloud. When compared to hybrid-cloud use, only 33% of respondents reported having at least one cloud service provider as well as some type of traditional infrastructure (i.e. company-owned or co-location / third-party data centers).

The biggest cloud challenge: Cost management (depending on who you ask). Nearly 30% of the 310 survey-takers said their biggest cloud management challenge is cost management. Security took second place with 22% of responses. However, when looking at the responses by title, respondents who identified as "C-level Executive / Owner (CEO, CIO, CTO, CISO, COO)" were divided: 36% said cost management is their biggest challenge, but another 36% said it is security. Fifty percent (50%) of SVPs / VPs marked it as cost management. Those in the largest respondent group, "manager-level" (26%), said control is their biggest challenge. (We have a lot more analysis on this on page 5.)

There is an influx of monitoring tools; no clear leader. While the largest percentage of respondents (54%) reported having a cloud monitoring tool for visibility into their cloud applications, other tools are being used to attempt to achieve total visibility, including: log management tools (48%), application performance management (APM) tools (40%), open source tools (34%), network performance management (NPM) tools (25%), and more.

At least two tools are used to try to gain cloud visibility. Respondents also noted using monitoring tools together in various combinations for cloud application monitoring. Fifty-nine percent (59%) of respondents reported using at least two tools for visibility into their cloud applications. Thirty-five percent (35%) of respondents use three or more tools for this.

Spreadsheets are still being used to understand AWS spend. Fifty-six percent (56%) of respondents say they use built-in tools within AWS (e.g. CloudWatch). Another 30% use third-party commercial tools. However, 10% of respondents reported that their organization still uses "manual tracking via spreadsheets" to understand what the drivers of their AWS data transfer costs are.

A big gap exists in using AWS VPC Flow Logs for cloud visibility. While VPC Flow Logs have been discussed in the industry as a way for organizations to gain more granular, real-time cloud visibility, a gap exists between those organizations who are actively using VPC Flow Logs (according to 32% of respondents) and those who know nothing about them at all (37%).

Analysis of Findings

CLOUD COMBINATIONS: MULTI-CLOUD & HYBRID-CLOUD USE

As mentioned in our key findings, it is no surprise that when surveyed at an AWS user conference, 97% of our survey respondents reported their organization actively uses AWS. However, we did find it interesting that more than one-third (35%) of respondents said their organization also actively uses Azure. This aligns with the industry consensus that AWS is leading the cloud-grab, and Azure is in the number two spot.

We think this is real evidence that "multi-cloud" is not just a buzzword, but beginning to be the fact on the ground as well.

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WHICH DOES YOUR ORGANIZATION USE?

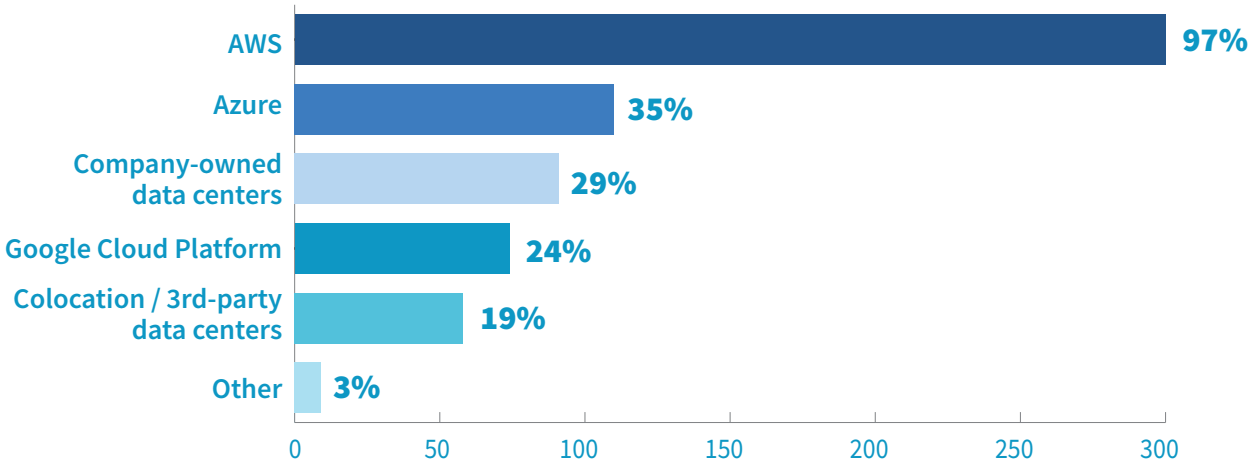

Chart 1: Based on 310 responses for select-all-that-apply question

Multi-Cloud vs. Hybrid-Cloud

Per chart 1, and in segmenting the data to better understand user behavior across multi-cloud and hybrid-cloud environments, we found 40% of respondents are multi-cloud users, who reported actively using at least two cloud service providers within their organization. Another 18% said they actively use all of the big-three cloud service providers, i.e. AWS, Azure, and Google Cloud. Combined, 58% are using multi-cloud strategies. However, when compared to hybrid-cloud use, only 33% of respondents reported having at least one cloud service provider as well as one traditional environment (i.e. company-owned or colocation / third-party data centers).

Since organizations that have entirely migrated away from traditional infrastructure are still relatively rare, we believe most of this delta likely represents younger organizations whose infrastructure has been cloud-only since their inception.

THE BIGGEST CLOUD CHALLENGE: COST MANAGEMENT

Cost management arose as the single greatest cloud management challenge, with nearly 30% of respondents marking it as such. This was followed by the security challenge, which 22% of respondents noted.

While it's not surprising to see security remains a top concern for cloud (or any enterprise technology), based on conversations we've had with AWS users and with industry media and analysts, we believe cost management concerns may be caused by a few potential drivers:

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- Development teams have been embracing a "full speed ahead" approach to cloud adoption, without a full understanding of costs in many cases.
- Management and finance teams are playing catch-up with respect to processes and controls for pay-as-you-go cloud pricing models.
- In many cases, organizations don't have the data or visibility necessary to allocate costs to individual teams or departments, which makes it difficult to implement controls.

WHAT IS YOUR GREATEST CHALLENGE WITH CLOUD MANAGEMENT?

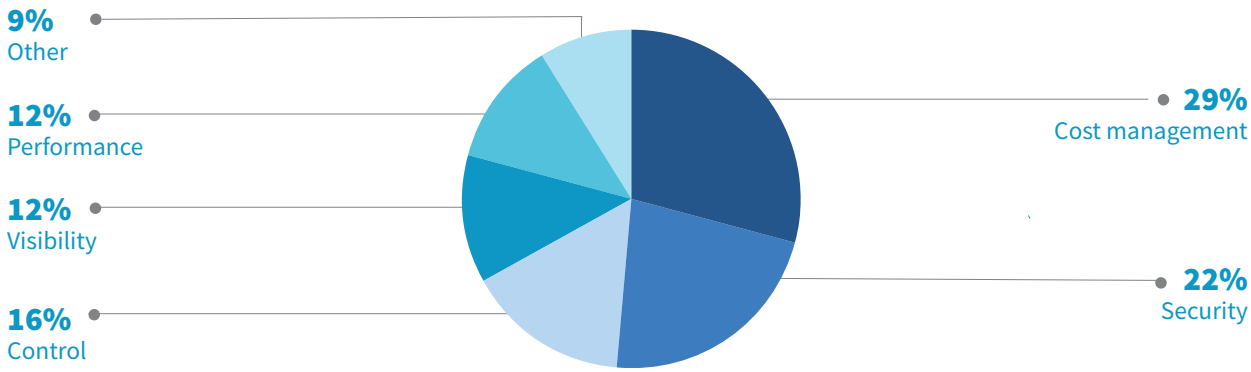

Chart 2

Cloud Management Challenge by Title

When considering how answers varied by respondents' titles, the cost management challenge still emerges as a top issue. However, challenges vary by role, as shown in chart 3.

What is most striking is that cost management consistently remained the top (or number two) challenge, even among technical stakeholders.

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Job Title	#1 Challenge	#2 Challenge
C-level Executive / Owner	**36%** – Cost management	**36%** – Security
VP / SVP	**50%** – Cost management	Evenly split between other options
Director	**24%** – Security	**22%** – Cost management
Manager	**26%** – Control	**24%** – Cost management
Engineer	**24%** – Cost management	**20%** – Security
Architect	**40%** – Cost management	**27%** – Security
Developer	**30%** – Cost management	**23%** – Performance

Chart 3

The Cloud Skills Gap Challenge

For those who selected "other" and input an option not offered in our survey choices, a surprising 9% of survey respondents called out the skills gap as their single greatest cloud challenge. As we continue to hear more about the struggle for organizations to find and compete for trained cloud talent, we believe this challenge would have surfaced more if we had a specific question geared towards it. This datapoint highlights the complexity of cloud technology, and the labor shortage resulting from its rapid adoption. The industry is responding with a growing ecosystem of cloud-focused education providers, as well as internal on-the-job training programs.

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THE INFLUX OF TOOLS FOR CLOUD MONITORING

The issue of "too many tools" has existed in our industry for quite some time. We noticed it emerge, too, in this survey when we asked respondents about what tools they use to monitor their cloud applications.

While the largest percentage of respondents (54%) said they used a cloud monitoring tool for visibility into their cloud applications, other tools are also being used, including: log management tools (48%), application performance management (APM) (40%), open source tools (34%), network performance management (NPM) tools (25%), and more.

WHAT TOOLS ARE YOU USING TO MONITOR YOUR CLOUD APPLICATIONS?

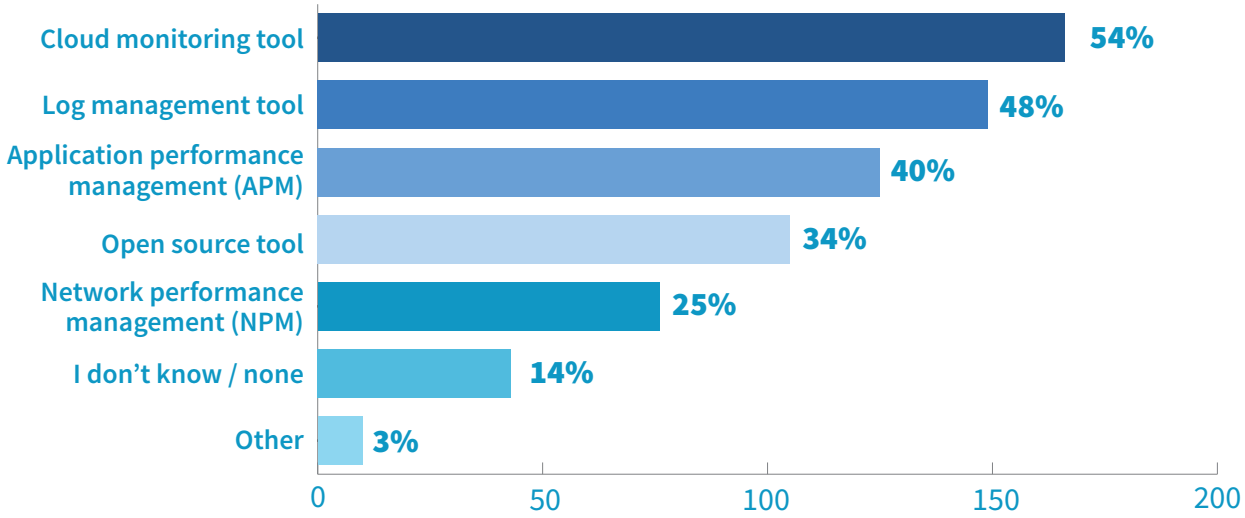

Chart 4: Based on 310 responses for select-all-that-apply question

When we examined the data by survey respondent, we found:

- **Only one tool: 27%** of respondents reported using only one tool for visibility into their cloud applications; with a cloud monitoring tool being the most commonly reported tool used.
- **Two or more tools: 59%** of respondents reported using at least two tools.
- **Three or more tools: 35%** of respondents use three or more tools.
- **Four or more tools: 10%** of respondents use four or more tools.
- **Five or more tools: 7%** of respondents use five or more tools!

Lower Use of Cloud-Specific Tools

Overall, we found it surprising that only around half of respondents are using cloud-specific tools to monitor their cloud environments. This may stem from functional gaps that still exist between native monitoring toolsets, such as CloudWatch for AWS or StackDriver for Google Cloud, and commercial solutions from traditional monitoring vendors. It may also represent organizations' attempts to employ consolidated monitoring strategies that are not cloud-specific.

Lower Use of NPM Tools for Cloud Monitoring

Based on the data from chart 4, we were surprised to see only 25% of respondents are using an NPM tool for cloud monitoring. This would seem to indicate that the network viewpoint is being under-appreciated, or at least under-utilized, for cloud. With VPCs, VPNs, multiple regions, and cloud interconnects, cloud environments have network architectures that are often more complex than traditional infrastructure. Kentik believes that this will change rapidly in the near future, as organizations realize they still need to understand network activity, dependencies and performance in the cloud, just as they have in traditional environments.

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UNDERSTANDING CLOUD COSTS (WITH SPREADSHEETS OR NOT)

When we asked survey respondents about what they use to understand the drivers of data transfer costs in AWS, 56% of respondents reported using built-in tools in AWS, such as CloudWatch. Another 30% reported using third-party commercial tools.

WHAT DO YOU USE TO UNDERSTAND THE DRIVERS OF DATA TRANSFER COSTS IN AWS?

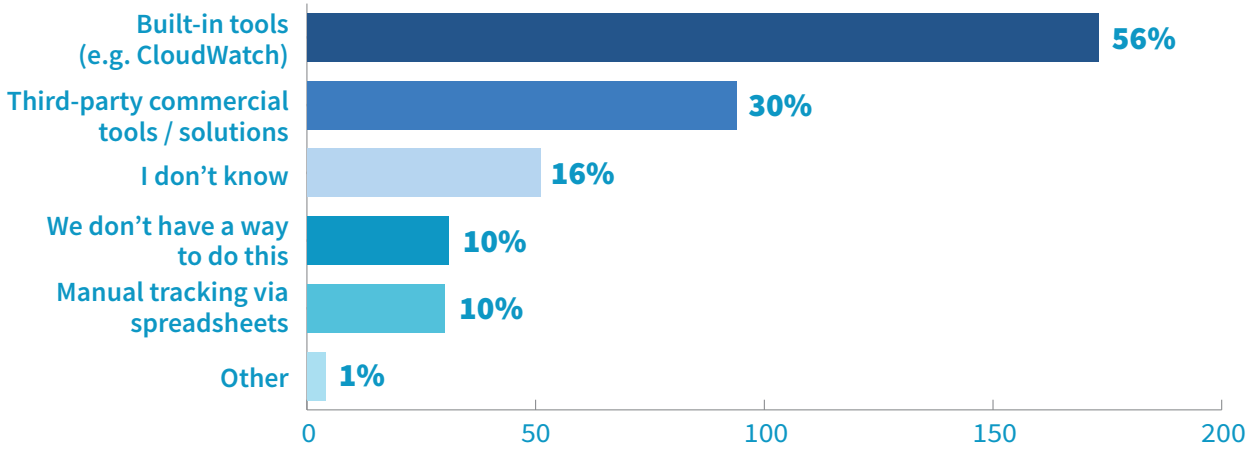

Chart 5: Based on 310 responses for select-all-that-apply question

We've heard from many users that AWS' built-in tools don't provide sufficient visibility for allocating data transfer costs to specific instances, teams, applications and other internal divisions. That's why we found the high-response rate for built-in tools rather surprising. Kentik's conclusion is that there are no better options, in the eyes of many AWS customers.

Another interesting finding was that nearly 10% of respondents reported that their organization still uses "manual tracking via spreadsheets" to understand what the drivers of their AWS data transfer costs are. This can only be interpreted as evidence that many organizations' business and finance processes haven't caught up with cloud adoption and pricing models.

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VPC FLOW LOGS & THE CLOUD VISIBILITY GAP

While VPC Flow Logs have been available for years as a way for organizations to establish cloud visibility, a clear gap exists between those who taking advantage and those who do not know of the option to do so. Only 32% of respondents were actively using them today, with another 15% planning to do so. This leaves the clear majority, 54%, with no plans or no knowledge of this rich visibility option.

For organizations not using VPC Flow Logs, we see a missed opportunity to better understand the health and usage of cloud infrastructure and to achieve more success with cloud deployments. It would also seem that there is a market education opportunity for AWS and complimentary vendors around this topic.

HOW IS YOUR ORGANIZATION USING AWS VPC FLOW LOGS?

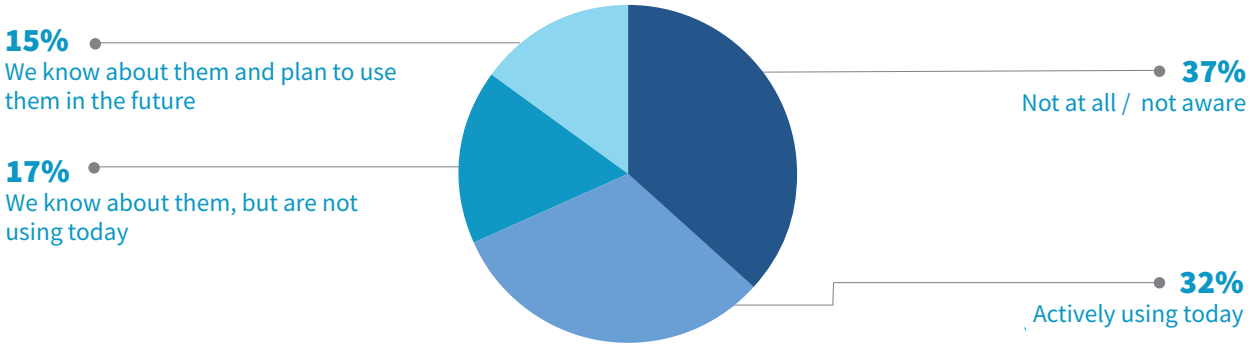

Chart 6

SUMMARY

Understanding infrastructure costs, performance, and security are not new problems. But the scale, complexity, and rapid adoption of cloud technology have made these problems more difficult to solve.

Even with all the features and functionality offered by AWS and other cloud providers, technical teams struggle to establish and maintain visibility into what's happening in their cloud environments. Managing these issues will require new approaches, technology, and products built for the cloud era.

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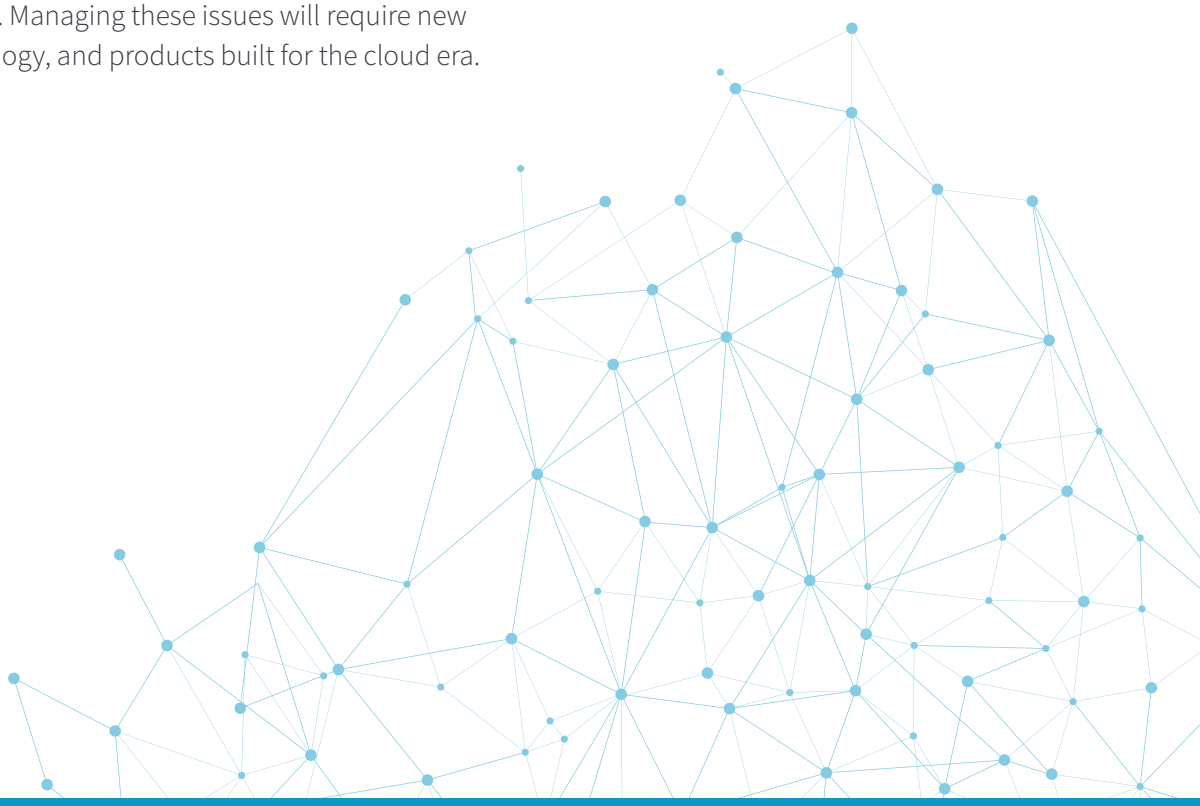

FOR MODERN CLOUD VISIBILITY

Kentik is the modern analytics platform that understands the network behavior of your applications and services across hybrid and multi-cloud environments. Kentik gives you the details and the big-picture insight you need, at any scale, so that your cloud applications stay performant, reliable and secure, and the promises of cloud infrastructure are delivered. For more information on our cloud visibility offerings, download our Cloud Solution Brief or visit www.kentik.com.

Products from Kentik have patents pending in the US and elsewhere.