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Amazon Web Services Monitoring

The emerging opportunities for service providers and how
CA Unified Infrastructure Management can help



Table of Contents

Executive Summary	3
Cloud Services: A Key Element of Digital Transformation	3
The digital transformation imperative	
Challenges with traditional IT infrastructures	
Why cloud services are so vital to digital transformation	
AWS: A Strategic Enabler of Digital Business Transformation	4
AWS offerings	
AWS customers	
Customer Challenges	5
Large-scale, highly dynamic environments	
Limited monitoring	
Challenges of employing multiple tools	
The Opportunity for Service Providers: Managed Monitoring Services for AWS	6
The Solution: Deliver Compelling Managed Monitoring Services with CA Unified Infrastructure Management	7
Unified monitoring services powered by CA UIM	
Conclusion	10

Executive Summary

Today, your customers are in the midst of a massive paradigm shift, undertaking digital business transformation so they can compete more effectively in their dynamic markets. As they seek out technologies that can help accelerate their digital transformation, IT decision makers are increasingly gravitating toward cloud offerings from Amazon Web Services (AWS). This paper offers a detailed look at the drivers that are prompting the adoption of AWS—and the challenges that enterprise IT teams are likely to confront when they start leveraging these services. The paper then introduces CA Unified Infrastructure Management (CA UIM) and shows how the solution enables service providers to deliver managed monitoring service offerings that address their customers' emerging requirements.

Cloud Services: A Key Element of Digital Transformation

The digital transformation imperative

To compete and win in the application economy, it's critical for enterprises to pursue digital business transformation. Only those organizations that become truly digital businesses will be able to operate with the speed, agility and efficiency that emerging markets will demand.

Digital transformation requires innovation across the spectrum of how digital services are developed, supported and delivered. As a result, businesses are adopting a wide range of new technologies and approaches. The following sections highlight one approach that will be increasingly vital in supporting digital business transformation: cloud services.

Challenges with traditional IT infrastructures

Over the decades, enterprise IT environments have continued to evolve and expand, but fundamental challenges emerged. While the specifics vary according to each organization, there are a few common themes:

- **Complexity increases.** Each element and service within the environment has typically been individually procured, deployed, configured and integrated. Ultimately, a complex ecosystem with disparate platforms, versions, vendors, support mechanisms and more has emerged. Given this complexity, administrators struggle to handle ongoing efforts like patches and upgrades—leaving little time and resources available to pursue strategic efforts and innovation.
- **Costs spiral.** Each time more capacity is needed or new services have to be supported, IT teams contend with the cost and effort associated with procurement, configuration, integration, testing and deployment of more infrastructure. If capacity demands fluctuate, IT organizations either have to waste a lot of money on overprovisioning of resources during non-peak times, or they run the risk of failures and performance issues when demand spikes.
- **Business agility suffers.** Ultimately, the rigid, costly and complex nature of the IT infrastructure impedes the business in harnessing new technologies and approaches and in delivering new innovations to market.

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Why cloud services are so vital to digital transformation

In recent years, cloud services were introduced to enable organizations to address the challenges associated with legacy environments and approaches. By offering virtualized cloud infrastructures that enable computing to be consumed as a service, cloud infrastructures provide a wide range of benefits.

These infrastructures offer significant advantages in efficiency, elasticity and agility, enabling faster support of new services. Quite simply, organizations that leverage cloud services are better equipped to pursue digital transformation initiatives and boost their competitive position.

AWS: A Strategic Enabler of Digital Business Transformation

Since its founding in 2006, Amazon Web Services (AWS) has emerged as the largest provider of cloud services. The organization offers the most comprehensive and broadly adopted cloud platform, with more than one million active customers in 190 countries.¹

AWS has eclipsed USD\$10 billion in annual sales², and it accounts for 45 percent of the global public infrastructure-as-a-service (IaaS) market. The next three companies combined account for less than half that amount.³

Through its cloud services, AWS is enabling customers across a range of industries to pursue their digital transformation initiatives, enabling breakthrough advances in such areas as big data, machine learning, Internet of Things (IoT), API management, DevOps and mobile services.

AWS offerings

Today, AWS provides a wide range of services:

- **Core infrastructure.** The company offers complete infrastructure services, including computing, storage, content delivery, database management and networking.
- **Platforms.** AWS delivers a range of platforms that offer complete environments for analytics, enterprise applications, mobile services, IoT and more.
- **Developer and operational tools.** AWS offers a wide range of tools and services for developers and infrastructure operators, including application development tools, management tools, security and identity management services and more.
- **Industry solutions.** AWS offers a number of solutions for organizations in such industries as financial services, digital marketing, media and entertainment, gaming, enterprise IT, healthcare and life sciences, government, nonprofit and education.

¹ David Jones, E-Commerce Times, “AWS Enjoys Top Perch in IaaS, PaaS Markets,” November 17, 2016, URL: <http://www.ecommercetimes.com/story/AWS-Enjoys-Top-Perch-in-IaaS-PaaS-Markets-84050.html>

² Business Cloud News, “AWS, Google, Microsoft and IBM pull away from pack in race for cloud market share,” April 29, 2016, URL: <http://www.businesscloudnews.com/2016/04/29/aws-google-microsoft-and-ibm-pull-away-from-pack-in-race-for-cloud-market-share/>

³ David Jones, E-Commerce Times, “AWS Enjoys Top Perch in IaaS, PaaS Markets,” November 17, 2016, URL: <http://www.ecommercetimes.com/story/AWS-Enjoys-Top-Perch-in-IaaS-PaaS-Markets-84050.html>

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AWS customers

AWS has a broad and rapidly growing customer list that features fast growing startups and some of the largest enterprises and government agencies. Following are a few examples of the customers and their results:

- **GE Oil and Gas.** GE Oil and Gas is running more than half of its core applications on AWS. By moving to AWS, the company has achieved 52 percent reduction in total cost of ownership.⁴
- **Capital One.** By using AWS as a central part of its strategy, Capital One is expecting to reduce its footprint from eight data centers to three by 2018.⁵
- **National Bank of Canada.** In less than two weeks, the National Bank of Canada Global Equity Derivatives Group (GED) was able to implement an application built on Hadoop, an effort that would have taken several months if deployed internally.⁶
- **Intuit.** By moving its TurboTax AnswerXchange application to AWS, Intuit was able to eliminate the need to maintain servers year around for an application that was only active during tax season—and reduced costs by a factor of six.⁷

Customer Challenges

Once organizations start to run their production applications in AWS, these services become critical to business success. If these platforms encounter downtime or performance issues, it can have an immediate and significant impact on customer-facing services, workplace productivity and company revenues.

Consequently, establishing effective, continuous monitoring of AWS environments is critical. IT staff members need to constantly monitor AWS implementations so they can identify bottlenecks and fix issues. To be effective, organizations need to gain robust capabilities for tracking and managing performance, availability, utilization and service levels. However, while establishing these capabilities can be challenging in many circumstances, AWS environments can present intensified challenges.

Large-scale, highly dynamic environments

Many AWS deployments are comprised of a diverse, expansive range of locations, and may require monitoring across multiple facilities and clouds, and thousands of hosts and hundreds of thousands of virtual machines (VMs). Further, in these environments, instances and VMs can be deployed in seconds, and may only run for minutes or hours, which represents a stark contrast to legacy infrastructures, where systems would often be deployed and run for years.

Limited monitoring

AWS offers customers CloudWatch, which is a tool for monitoring AWS deployments. However, this tool poses several critical limitations:

- **Limited data retention.** CloudWatch only retains 14 days of monitoring data, so it doesn't facilitate ongoing long-term trend analysis and forecasting.

“IT teams have a hard time gaining timely, useful insights needed to pre-empt issues, so they remain consumed with reacting to problems after the fact, and service levels suffer.”

- **Limited metrics.** CloudWatch doesn't offer deep or broad monitoring metric coverage. For example, the tool doesn't offer visibility into metrics on memory usage and users are restricted in terms of how frequently they can do resource polling.
- **Limited dashboards and reports.** CloudWatch only delivers rudimentary dashboard and reporting capabilities, making it difficult for different stakeholders to quickly and efficiently keep tabs on the specific systems, services and metrics that they care about.
- **Limited IT coverage.** CloudWatch is not a unified infrastructure monitoring tool; it doesn't provide the comprehensive coverage of an enterprise's complete hybrid IT ecosystem, lacking coverage of different data centers, cloud services and on-premises infrastructure elements and services.

Challenges of employing multiple tools

The reality is that, in addition to AWS, organizations are typically running a mix of virtualization, private cloud and traditional infrastructures—and they have tools in place for monitoring these different environments. If an organization adds monitoring tools specifically for AWS, the result will be multiple, isolated monitoring tools, which presents a number of challenges:

- **Disjointed alerting.** With myriad monitoring tools, IT teams are exposed to inconsistent, fragmented alerting, with each tool generating unique data, alerts and escalation processes. Not only does this mean a lot of work in compiling and aggregating data for reporting, but administrators may have to deal with issues like so-called “alarm blizzards” when one system failure has a ripple effect on other systems.
- **Time-consuming troubleshooting.** When issues arise, administrators struggle because distinct teams each need to check their own tools to try and identify the source, adding to the effort and complexity associated with managing IT environments.
- **Limited insights into service levels.** Working with multiple tools, teams fundamentally lack insights into the performance of the end-to-end infrastructure and the business services that users rely on. IT teams have a hard time gaining timely, useful insights needed to pre-empt issues, so they remain consumed with reacting to problems after the fact, and service levels suffer.
- **Lack of holistic insights for capacity planning.** Relying on isolated tools, IT teams struggle to track resource utilization across various service silos. As a result, it is time consuming and difficult to intelligently allocate workloads and make optimized infrastructure investments.

The Opportunity for Service Providers: Managed Monitoring Services for AWS

Given its massive adoption, cloud services from AWS are likely to be playing an increasingly prominent role in your existing customer accounts and prospect organizations. This reality is fueling increasing demand for AWS vendors and partners.

Some large organizations will be able to invest in hiring and training staff to acquire expertise in AWS and its evolving solution set. However, acquiring and retaining this kind of talent, which is in short supply, will be a significant challenge for many businesses. As a result, many organizations will increasingly rely on service providers.

By leveraging the services and expertise of partners, organizations can accelerate onboarding, avoid common pitfalls and maximize the benefits of AWS. Those service providers that can help customers with their AWS deployments can therefore deliver significant value, and gain a distinct competitive advantage. Service providers that gain the necessary experience and expertise can work with organizations that have already implemented AWS, and those that have yet to do so.

For organizations that have yet to deploy AWS, service providers can deliver initial consulting and engagement services, helping with such efforts as evaluating various cloud services and solutions, architecting implementations and planning and managing deployments.

Ongoing managed monitoring services can represent a great complement to these offerings. In addition, these monitoring services can be an optimal way for service providers to gain entry into organizations that already have workloads running on AWS. As a result, delivering AWS monitoring services will enable service providers to enhance offerings, expand markets and deepen account penetration.

The Solution: Deliver Compelling Managed Monitoring Services with CA Unified Infrastructure Management

To maximize revenue potential and customer value, your service provider business needs to leverage monitoring platforms that can provide visibility across customers' IT environments and from the top to the bottom of their IT stacks. CA Unified Infrastructure Management (CA UIM) offers the comprehensive capabilities that are critical to establishing successful AWS managed services:

Figure A.

With CA UIM, administrators can get at-a-glance insights into the status of AWS environments.

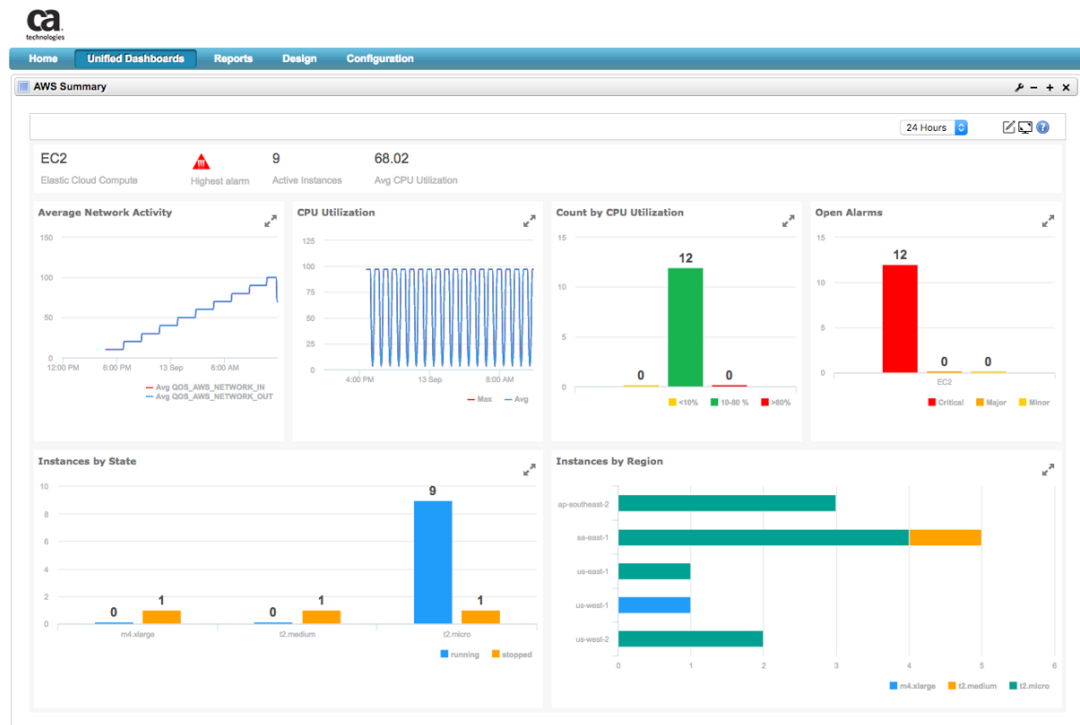
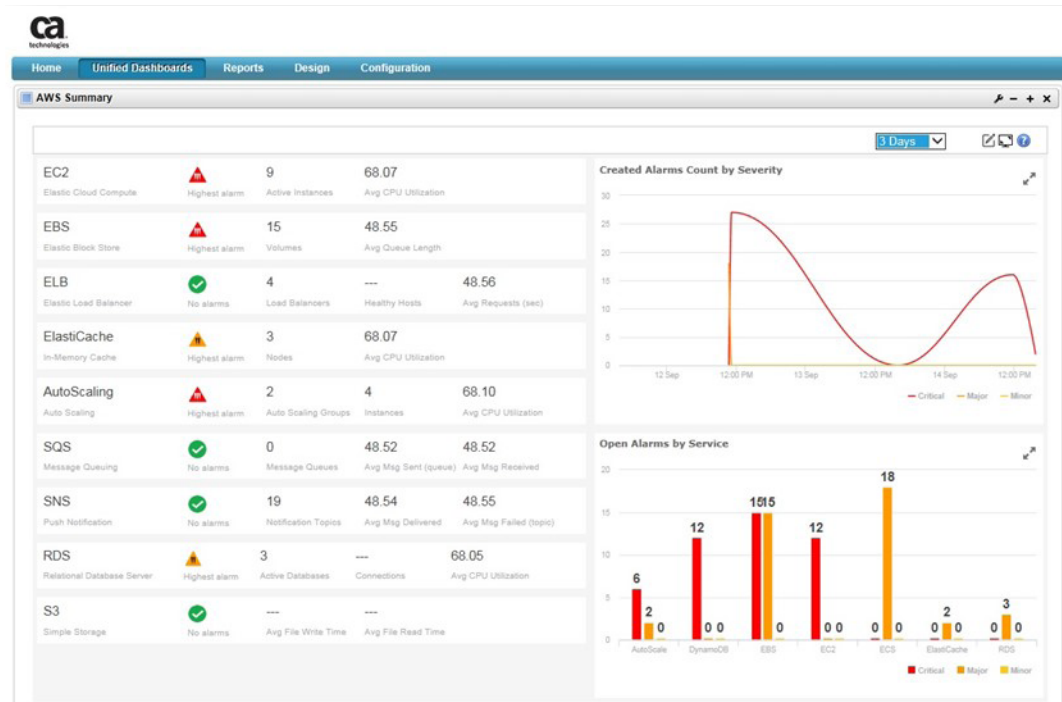


Figure B.

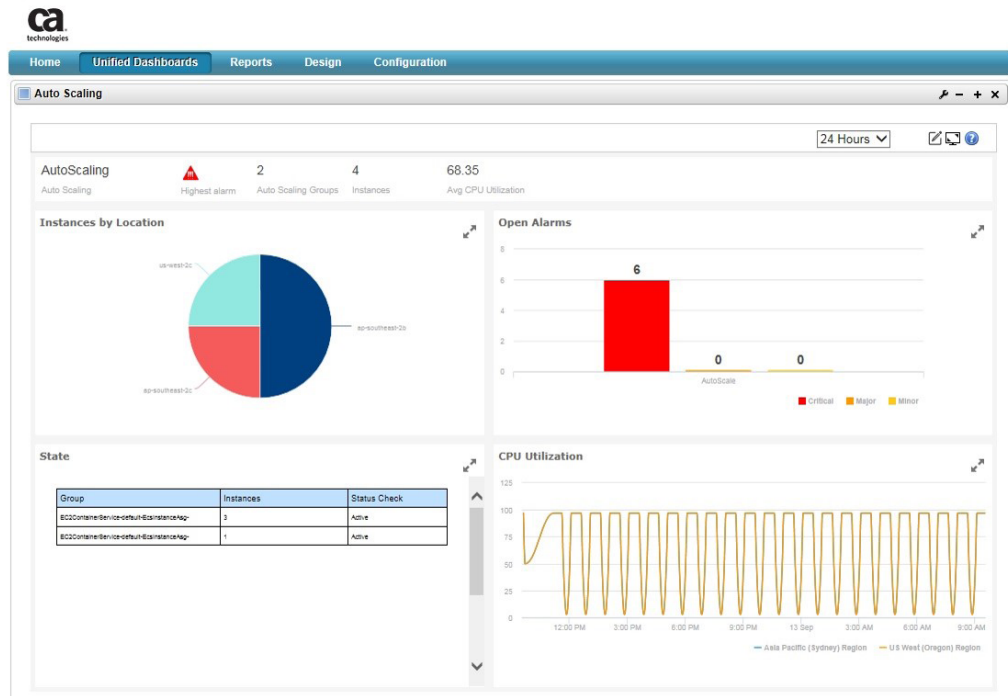
CA UIM offers unified visibility across a wide range of AWS services.



- **Extensive AWS coverage.** CA UIM can help your business deliver compelling, high-value managed monitoring services to clients running AWS services. With CA UIM, you can track and optimize the health, availability and performance of your customers' AWS deployments. The solution provides comprehensive coverage and insights, delivering metrics on CloudWatch, Elastic Compute Cloud, Elastic Block Storage, Elastic Load Balancing, Auto Scaling, Simple Storage Service, Relational Database Service, ElastiCache, Simple Queue Service, Simple Notification Service, EC2 Container Service, Route 53 and DynamoDB.
- **The most comprehensive coverage of cloud and hybrid IT environments.** CA UIM provides a solution for monitoring all elements across a heterogeneous IT environment—all with a single product, architecture and console. CA UIM supports more than 140 technologies and services, including physical and virtual servers, networks, storage systems, databases, applications, user experience, public and private clouds, power and cooling infrastructure and more. With CA UIM, you can monitor and manage virtually all business applications—whether they're running in SaaS, hosted or virtualized environments. CA UIM enables service providers to quickly address new, high-growth markets and changing customer demands.
- **Intelligent alarms and predictive analytics.** CA UIM offers sophisticated alarm functionality that enables fast, effective response when issues arise. The solution offers dynamic thresholds that minimize false alarms and improve staff productivity. In addition, with CA UIM, you can leverage predictive analytics capabilities that help you proactively identify issues before the user experience suffers. The solution can provide a prioritized list of problems that represent situations administrators should watch.
- **Multitenancy support.** CA UIM provides true multitenancy—enabling service providers to use a single instance of the solution to centrally and efficiently monitor and manage all customer environments. At the same time, the solution enables you to deliver secure, tailored reports, dashboards and portals to each customer.

Figure C.

With CA UIM, administrators can efficiently track highly dynamic AWS services.



- **Scalability to support large-scale deployments.** Many of the world's largest cloud providers, service providers and hosting providers rely on CA UIM to deliver the high scalability required. With CA UIM, organizations get the monitoring scalability they need to serve more clients with existing staff, serve larger clients and monitor more devices and simultaneous events. CA UIM features an efficient, high-performance event-processing engine that can scale to support event volumes generated from tens of thousands of servers. Plus, it offers a secure, reliable and efficient client access model that can support hundreds of concurrent connections.

- **Automation for elastic cloud environments.** With CA UIM, you can efficiently manage monitoring of highly dynamic, elastic AWS environments. With the solution, you can use templates and AWS tags to set up automated, agentless monitoring of AWS instances. You can automatically deploy monitoring through predefined templates, and gracefully retire monitoring when VMs and hosts are intentionally decommissioned.

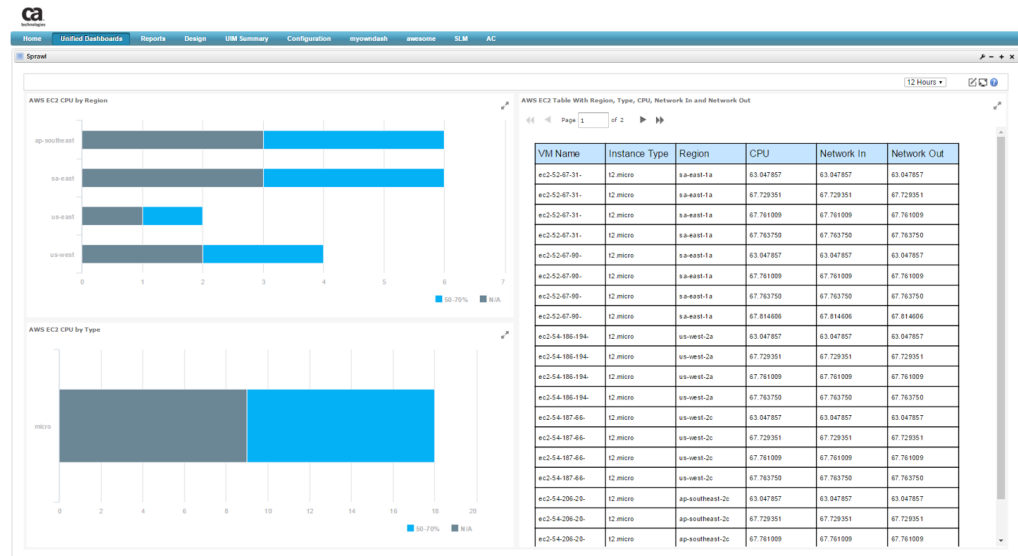
Unified monitoring services powered by CA UIM

By delivering comprehensive coverage of AWS environments and the entire IT infrastructure, CA UIM can help your organization maximize the business opportunities presented by the emergence of AWS services in your markets. By leveraging CA UIM, your organization can deliver a range of monitoring services:

- **Unified AWS monitoring.** Combine CA UIM and your AWS expertise to provide around-the-clock monitoring services of customers' critical AWS implementations. With CA UIM, you can deliver a compelling monitoring service that offers deep coverage of all aspects of customers' AWS implementations—and provide the vital insights needed to optimize service levels. Monitor availability, performance, usage and more.

Figure D.

With CA UIM, service providers can provide insights into resource utilization.



- **Unified cloud infrastructure monitoring.** Today, many organizations are running workloads across a mix of cloud environments, including in AWS and other cloud services. With CA UIM, you can deliver complete coverage of all your customers' cloud environments. Monitor their AWS implementations, private cloud infrastructures like those from VMware, Citrix and OpenStack, and other public cloud platforms like Azure.
- **Unified business service monitoring.** Today, any given business service your customers operate may rely on different technology stacks and hybrid IT environments, including different hosted infrastructures, AWS and other cloud services and on-premises data centers. Tracking service levels across these composite, hybrid environments can present a real challenge for customers, particularly if they're relying on a collection of point tools. By leveraging CA UIM, you can deliver unified visibility across these environments and track service levels from end to end, no matter where underlying components reside. As a result, your organization can provide significant, strategic value to customers.

Within each of these offering categories, your organization can provide multiple levels of service. For example, in addition to standard performance and availability monitoring, your organization can offer advanced, predictive analytics, dashboards and remediation services. With CA UIM, your organization can also provide advanced capacity planning services that leverage comprehensive visibility across technology and service silos.

Conclusion

Regardless of the markets you serve, chances are good that the customers you work with have either moved workloads to AWS or may soon be doing so. By leveraging CA UIM and establishing AWS monitoring services, your business can provide significant value—and help accelerate customers' digital transformation. Through these services, your organization can expand its revenues, margins and market share.

For more information about AWS, see the [AWS products page](#) and the [AWS partner page](#).

For more information about CA UIM, please visit the [product page](#). For more details on how CA supports service providers, see the [CA service provider page](#).



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