AWS Marketplace Series: AppDynamics Application Performance Monitoring

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JANUARY 2020

Cloud Application Management Challenges

Cloud infrastructure adoption has passed the tipping point. ESG research indicates that the percentage of midmarket and enterprise-sized organizations that use infrastructure-as-a-service has risen from 38% in 2016 to 67% in 2020.[1] This indicates that most organizations currently have hybrid cloud environments. However, many organizations are struggling to meet the needs of the business due to the complexity and cost associated with monitoring and managing the performance of a growing number of applications that rely on cloud infrastructure and services.

When asked about their biggest hybrid cloud monitoring challenges, ESG research respondents reported that the diversity of technologies is making it harder to monitor (42%), the frequency of application and infrastructure changes is making it harder to keep up (39%), and it's increasingly difficult to understand the relationships and interdependencies between application services and infrastructure components (34%). When asked what developments need to take place to improve the management of their organizations' hybrid cloud environments, respondents' most often cited answer was application performance monitoring (APM).[2]

39% Application performance monitoring	**37%** Integration with existing managment frameworks	**36%** Integration between on-premises infrastructure and cloud services mgmt.

AppDynamics: An AI-powered Central Nervous System for IT

AppDynamics Application Intelligence Platform is an AI-powered application performance monitoring solution that provides one place to monitor applications that rely on AWS cloud services (e.g., Amazon EC2, Amazon ECS, Amazon EKS, AWS Fargate, AWS S3, AWS DynamoDB, AWS Lambda, etc.) and on-premises IT infrastructure. AppDynamics works like a central nervous system for IT administrators, developers, and site reliability engineers (SRE) as they migrate existing applications to and develop new applications on the AWS cloud. AppDynamics provides cross-domain visibility and insight so you can find and fix application performance problems, reduce time-consuming IT tasks, increase customer satisfaction, and drive innovation. The AppDynamics software platform uses a combination of powerful technologies to drive application and business performance with AI-powered insights:

End-to-end Visualization: The AppDynamics UI makes it easy to visualize real-time performance metrics that are collected by agents deployed across your AWS, hybrid, and on-premises application infrastructure.

Auto-discovery and Mapping: AppDynamics auto-discovers the flow of traffic requests and provides a topology map to visualize application performance as it flows through your IT infrastructure.

Business Transaction Mapping: All the services that are required to fulfill a request for a service by a user can be monitored and visualized with AppDynamics (e.g., login, search, and checkout).

AI-powered Insight and Remediation: The AppDynamics Cognition Engine uses machine learning to detect anomalies and correlate software problems with business metrics so IT teams can swiftly diagnose application performance problems and recover from outages by performing automated actions such as scaling using CloudFormation, triggering AWS Lambda functions, etc. This forms the foundation for artificial intelligence for IT operations (AIOps) environments.
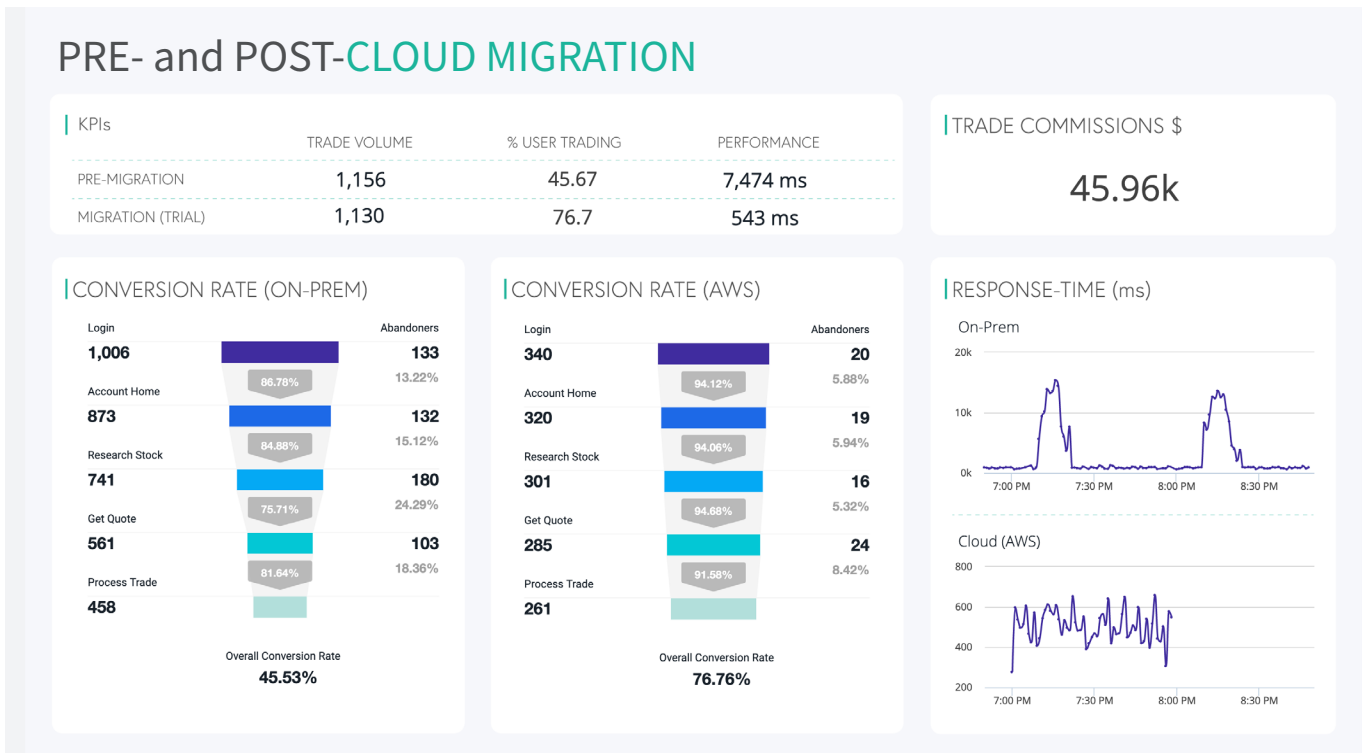
Migrate

As a growing number of enterprises continue to migrate and move their production applications into the public cloud, IT organizations are struggling to minimize downtime, manage performance, and stay within the budget. The cloud migration questions that time-starved IT professionals are struggling to answer include the following:

- Can we streamline our migration planning and infrastructure sizing requirements?
- How will we collect application, end-user, and infrastructure metrics and dependencies?
- How will we measure the technical and business success at each major migration milestone?
- Can we accelerate our migration schedule while improving visibility?

AppDynamics provides the application- and business-level context that's needed to ensure a successful cloud migration. Instrumenting an application with AppDynamics agents before, during, and after a migration helps you manage and validate real-time correlations between cloud service utilization, application performance, and end-user experience. Business intelligence monitoring works at a higher level as it tracks and correlates the end-user experiences as transactions and services work their way through your AWS and hybrid cloud infrastructure. Put it all together and AppDynamics gives you the end-to-end visibility that's needed to ensure a successful cloud migration.

The screenshot below illustrates one of the many ways that AppDynamics can accelerate your next AWS cloud migration. In this example, AppDynamics is being used to validate the pre- and post-cloud migration volume, conversion rate, and performance (in latency) for end-user transactions.

PRE- and POST-CLOUD MIGRATION

KPIs	TRADE VOLUME	% USER TRADING	PERFORMANCE
PRE-MIGRATION	1,156	45.67	7,474 ms
MIGRATION (TRIAL)	1,130	76.7	543 ms

TRADE COMMISSIONS $

45.96k

CONVERSION RATE (ON-PREM)

		Abandoners
Login	1,006	133
	86.78%	13.22%
Account Home	873	132
	84.88%	15.12%
Research Stock	741	180
	75.71%	24.29%
Get Quote	561	103
	81.64%	18.36%
Process Trade	458	

Overall Conversion Rate
45.53%

CONVERSION RATE (AWS)

		Abandoners
Login	340	20
	94.12%	5.88%
Account Home	320	19
	94.06%	5.94%
Research Stock	301	16
	94.68%	5.32%
Get Quote	285	24
	91.58%	8.42%
Process Trade	261	

Overall Conversion Rate
76.76%

RESPONSE-TIME (ms)

On-Prem

Cloud (AWS)

Note how end-user response times and conversion rates are being tracked pre- and post-cloud migration. Bear in mind that while cloud providers provide a rich set of metrics for responding to changes in your cloud infrastructure (e.g., Amazon CloudWatch), they lack the ability to capture information from the on-premises environment that AppDynamics provides. Capturing and correlating all this information is vital when planning for a successful cloud migration.

Monitor

Application- and business-level monitoring is a crucial requirement for the growing number of organizations that are migrating legacy applications to the cloud and developing new cloud-native applications. Cloud application performance monitoring questions that these organizations should be asking include the following:

- Can we have the same end-to-end application monitoring experience regardless of application architecture or environment —monolithic; SOA; microservices or emerging serverless; or traditional, hybrid, or cloud-native?

- Can we have a unified application monitoring experience, irrespective of the underlying cloud-based application architecture (e.g., Amazon EC2, Amazon ECS, Amazon EKS, AWS Fargate, and AWS Lambda)?

- Will we able to track the correlation between application performance, customer experience, and business outcomes?

- Can we create a common language between business and IT in order to help drive business success?

AppDynamics monitoring solutions ensure that every part of even the most complex cloud-based application environments—from software to infrastructure to business outcomes—is highly visible and optimized. As you can see in the screen shot below, AppDynamics helps you visualize the dependencies between application and infrastructure components. Note how load levels, response times, and errors are visualized with topology maps, graphs, and colors. Machine learning and anomaly detection help flag exceptions so IT teams can diagnose and fix problems quicker (as shown in red).

AppDynamics complements the infrastructure monitoring capabilities of existing cloud infrastructure monitoring tools with instrumentation and monitoring at the application layer. For example, with Amazon CloudWatch, you can predict and avoid a performance problem due to organic growth and infrastructure resource bottlenecks. And with AppDynamics, you can do root-cause analysis of a performance problem down to an individual line of code.

Optimize

AppDynamics Cognition Engine uses machine learning and artificial intelligence to automate anomaly detection, root-cause analysis, and problem resolution. Also known as AIOps, the goal with this powerful emerging technology is to maximize customer experience and reduce mean time to resolution (MTTR). Questions that organizations should be asking when considering whether it makes sense to invest in an AIOps solution include the following:

- Can we reduce alert fatigue with machine learning and automated actions?
- How can we spend less time reacting and more time driving innovation?
- Can we maximize the digital experience for our customers?

AppDynamics Cognition Engine uses self-learning to automatically identify the root cause of application performance issues down to the code, function, thread, or database call. Real-time performance anomalies are detected by comparing key performance indicators to historical business baselines. In the example shown below, the performance anomaly has been correlated down to an HTTP service call in a Java function.
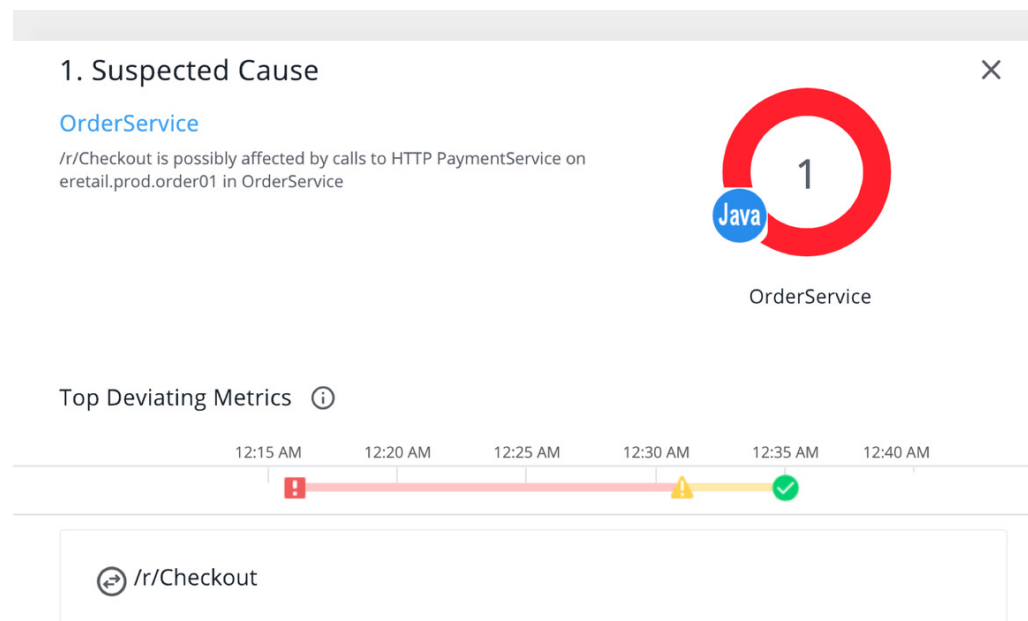
> ❝ *You can't afford not having the visibility that AppDynamics provides.* *If we don't have AppDynamics, where we're using it, it would be like driving a car at 100 miles per hour with your eyes closed."*
>
> *- Jaikumar Bathija, Performance Software Architect, Okta*

Why AppDynamics?

Migrate, build, and deploy applications faster

Find and fix problems quicker with a real-time view of AWS infrastructure and services

Optimize customer experience and business outcomes with AI-driven correlation and insight

AppDynamics can be purchased on the AWS Marketplace and consumed as a service running on AWS infrastructure.

Other benefits include the following:

- Code-level visibility
- Powerful alerting
- Dynamic baselining
- Browser and synthetic monitoring
- Mobile app scorecards

AWS Marketplace is a digital catalog with thousands of listings from independent vendors that make it easy to test, buy, and deploy software that runs on AWS. Solutions are available through a wide variety of delivery methods.

Other benefits include the following:

- Ready-to-run software
- Searchable catalog
- Detailed usage tracking
- Free trials
- Simple procurement, no provisioning required

Why AWS Marketplace?

Choose from thousands of solutions

One-click deployment

Pay only for what you use

The Bigger Truth

When asked what they had learned about systems management due to the use of public cloud infrastructure, 32% of IT decision makers indicated they've shifted management focus toward application performance, and 30% found a need for better application and end-user experience monitoring for their workloads.[3] The AppDynamics platform leverages AI to build on its application performance management heritage to provide a modern AIOps solution that delivers proactive visibility across both legacy and modern application architectures as well as on-premises and AWS cloud services environments. This in turn enables faster application migrations, effective end-to-end monitoring, and the ability to optimize complex application environments to ensure positive customer experiences.

AWS Marketplace gets you to the cloud quickly and cost-efficiently with preconfigured solutions that expand your capabilities. ESG recommends evaluating AppDynamics to instrument your applications so you can identify and resolve performance issues before they impact users and ensure a successful migration to the cloud.

LEARN MORE

[3] Source: ESG Master Survey Results, *The Emergence of Multi-cloud Strategies*, April 2018.