Move to AWS with Confidence

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How IBM® Instana® Observability can help accelerate AWS cloud migrations by minimizing disruptions and uncertainty.

Organizations migrate from on-premises environments to the cloud in order to gain faster time-to-market for new applications, a greater focus on innovation, and infrastructure cost savings. Yet 33% of all cloud migrations fail.

To boost your chances of successful cloud migration, consider adding observability to your efforts. Cloud migration observability involves tracking the performance and availability of your technology stack, as well as the end-user application experience, throughout the entire migration process.

Amazon Web Services (AWS) is a leading cloud services provider that specializes in large-scale migrations for enterprises who want to move from on-premises environments to the cloud. The "Guide for AWS large migrations" recommends a three-phase approach.

Assess
Allows you to evaluate your existing IT environment to determine readiness for cloud migration

Mobilize
Prepare for the actual migration by planning and organizing the necessary resources and processes

Migrate and modernize
Build standard operating procedures and automations that simplify and accelerate a repeatable process

How to use observability for more successful AWS migrations

Increasingly, observability is a critical aspect of a successful cloud migration. However, observability is often overlooked until the migrate and modernize phase. In this paper, we'll explain the role of observability in all three phases, along with the steps you can take to ensure a more successful outcome.

Utilizing observability can help accurately assess the environment to properly right-size it for the migration. It also helps identify and address any issues or bottlenecks that may arise to minimize disruptions during the migration. Finally, observability ensures that a new cloud environment maintains high performance and availability as well as offers optimization capabilities.

IBM® Instana®, available on the AWS Marketplace, is an observability solution that provides real-time visibility into your on-prem and AWS cloud infrastructures. Using high data fidelity—100% capture every second—Artificial Intelligence (AI) and automation, Instana® allows you to monitor your applications and infrastructure. You'll gain insights into performance, availability, and end-user experience all throughout your migration journey.

Phase 1: assess

This first phase of the migration is critical, since IT teams must effectively assess the dependencies that exist within the environment to inform migration planning. It is imperative to accurately benchmark application performance and the availability of the on-premises environment to allow for accurate provision and management of cloud resources. IBM Instana uses a single agent architecture to monitor each technology and automatically collects performance metrics such as error rates, page load times, and slow transactions to provide an in-depth understanding of how your workloads are functioning in the pre-migration phase. These performance baselines help optimize your cloud planning, prioritization, and sizing, as well as ensure application health throughout every phase of the migration.

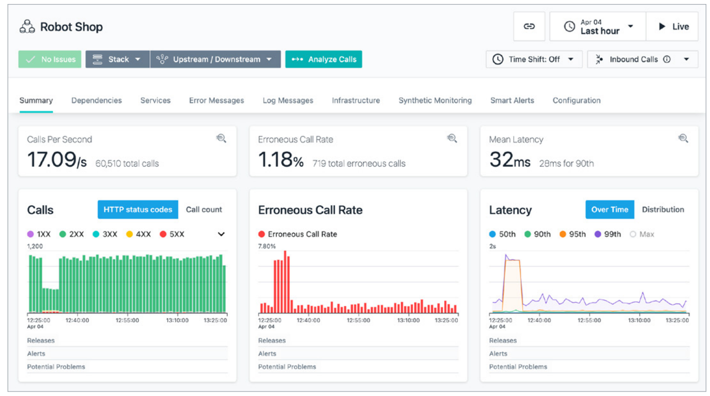

Figure 2. IBM® Instana® applications summary dashboard

Application dependency mapping stitches together execution times and the health of the supporting technology tiers to deliver an end-to-end view into customer experiences, revealing contributions from each element of the technology stack.

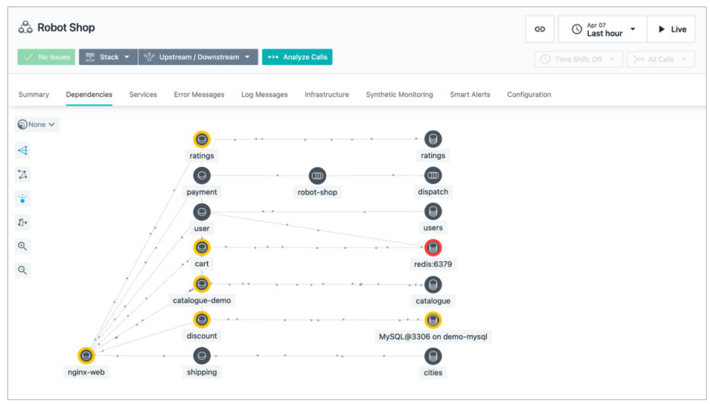

Figure 3. IBM® Instana® application dependencies map

Finally, in the assess phase the IBM® Instana® infrastructure map provides an overview of all monitored systems, including granular detail highlighting resource usage patterns. These metrics provide full visibility into infrastructure performance to help identify usage hotspots and allow you to right-size your cloud infrastructure throughout the migration.

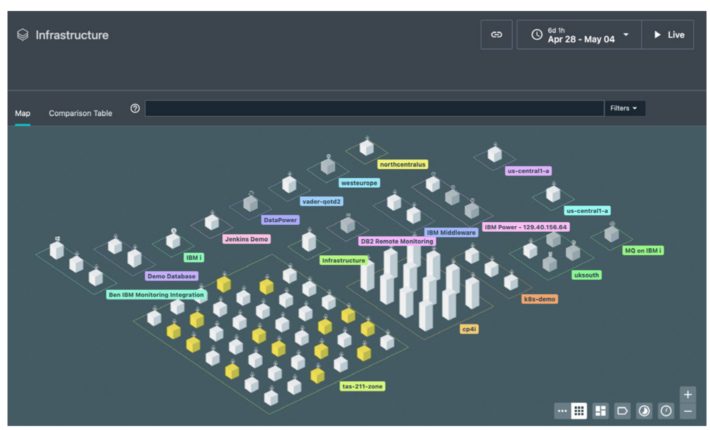

Figure 4. IBM® Instana® infrastructure map

Overall, the comprehensive understanding of applications or workloads that will be migrated is critical to appropriately determining the correct AWS migration strategy, prioritizing their migration based on their benchmarks—so as to not risk business continuity—and assessing their technical feasibility by determining the performance requirements of existing workloads so they can right-size to the cloud. Properly developing a migration strategy in the assess phase, with all the information needed at hand, allows companies to more accurately forecast the cost and time needed for the migration.

Phase 2: mobilize

Having established observability readiness from the previous phase, it's important to ensure that AWS infrastructure and application configuration are right-sized so the same challenges are not re-created in the cloud. IBM® Instana® can automate cloud infrastructure provisioning (see, for example, Automatically Visualize and Monitor Applications on Amazon EKS with Instana) and orchestration by deploying monitoring sensors for each part of the application technology stack, tracing all application requests, and profiling every process—without requiring any human configuration or even application restarts.

When the application is provisioned in AWS it's imperative to identify key performance indicators (KPIs) to ensure alignment between monitoring activities, migration goals and business objectives. KPIs such as resource utilization, delivered experience, and throughput are collected during migration to assist in the initial sizing of the AWS infrastructure, and guide ongoing assessments of provisioning to ensure the environment remains right-sized.

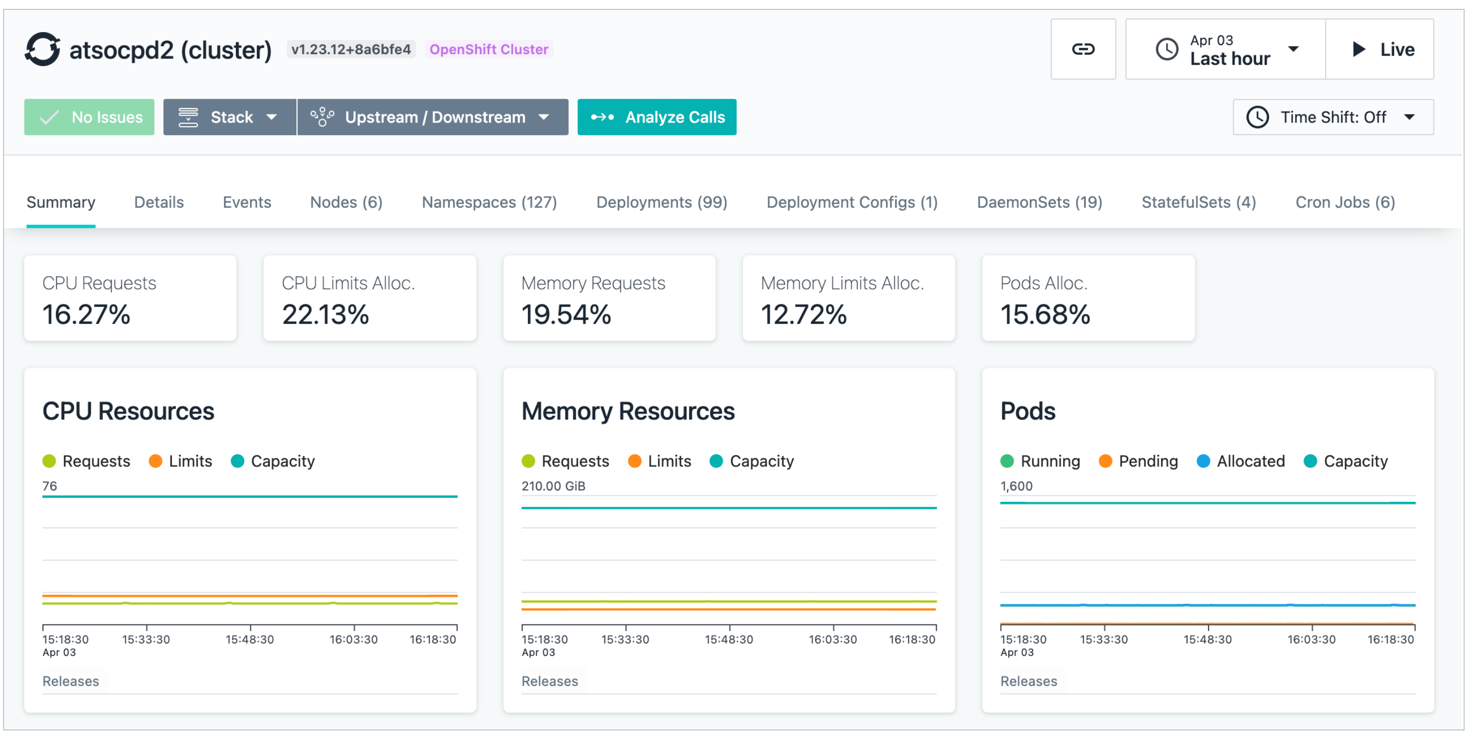

Figure 5. IBM® Instana® Kurbenetes resources dashboard

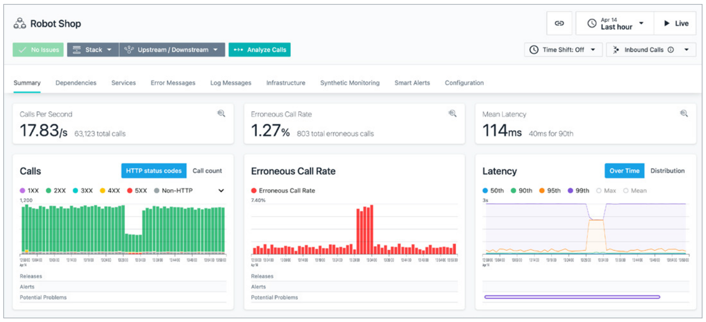

Figure 6 - IBM® Instana® DEM dashboard

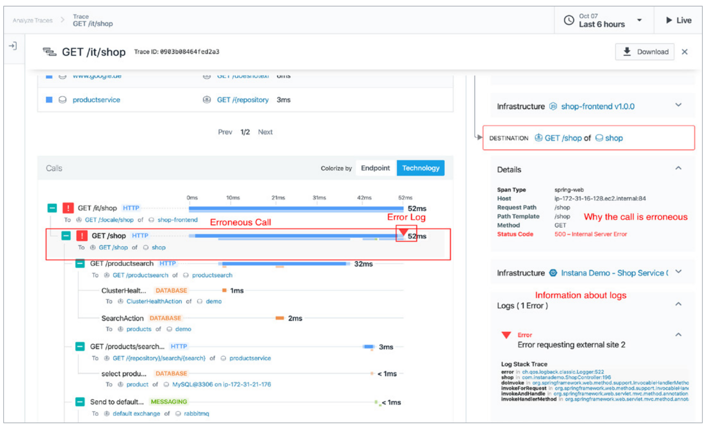

Figure 7. IBM® Instana® APM tracing

During the mobilize phase it is crucial to understand how potential users will interact with their digital endpoints—applications, websites, mobile apps or other online services—and proactively resolve any issues that might lead to an unpleasant user experience. Digital experience monitoring (DEM) with IBM® Instana® makes it possible for your IT teams to observe application performance issues, in real time, from an end user’s perspective. This can also be used to prove the business value of migration, by demonstrating how migration has positively impacted performance, and how that performance correlates to key business-related transactions.

If problems arise during this phase, application monitoring by IBM® Instana® provides AI-powered analytics to enable automatic root cause analysis of performance issues. This advanced analytics capability quickly identifies whether a service incident is caused by an issue with the infrastructure, orchestrator, container run-time cloud platform, or code—directing your teams to the root cause of any issue. This allows you to automatically observe, monitor, and address performance issues before they impact end-user experience.

Finally, the mobilize phase needs to be used to build a solid understanding of both the AWS cloud environment and the monitoring capabilities that can assist during the migration and modernization phase. That initial assessment of the environment creates confidence for the IT team and allows them to communicate with the business more accurately on the progress of the project.

Phase 3: migrate and modernize

Although this is the last step of the migration process, the journey is far from over. As soon as organizations operationalize their applications in AWS, they need to be able to demonstrate improvements in function and cost—constantly enhancing and evolving to fully take advantage of the benefits of cloud, both for user experiences and application performance.

As an AWS Partner, IBM® Instana® has a proven track record of helping customers use observability services to understand what is happening across their technology stack at any time, leveraging AWS-native services, application performance monitoring (APM), and open-source solutions. With IBM® Instana®, customers can get an end-to-end view into events in cloud, hybrid or on-premises environments. They also gain insights into the behavior, performance, and health of their systems to reduce time to detect and resolve issues. The AWS Agent from IBM® Instana® collects data from AWS APIs, such as CloudWatch, S3, and X-Ray, for which it is not possible to install a host agent or any other type of agent to monitor a plethora of AWS services. Further, by integrating with DevOps tools such as Jenkins and Ansible, it allows you to automate your monitoring workflows.

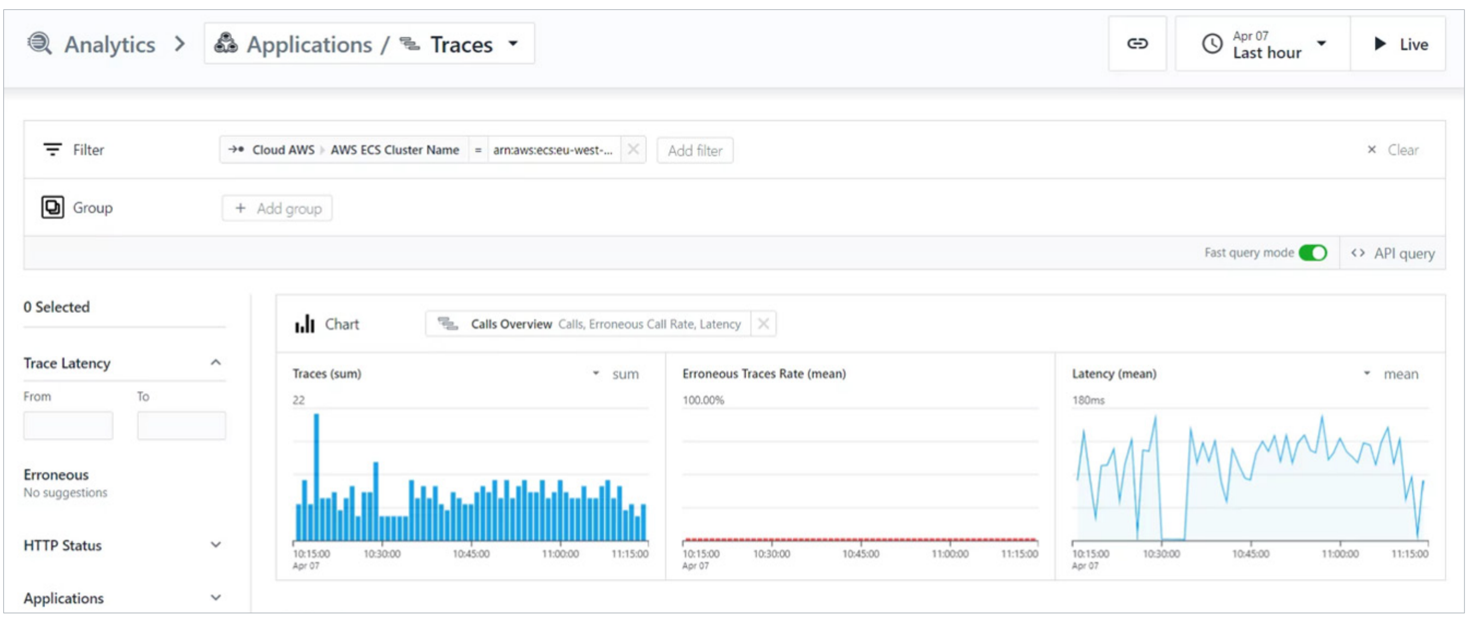

Figure 8. IBM® Instana® AWS ECS monitoring dashboard

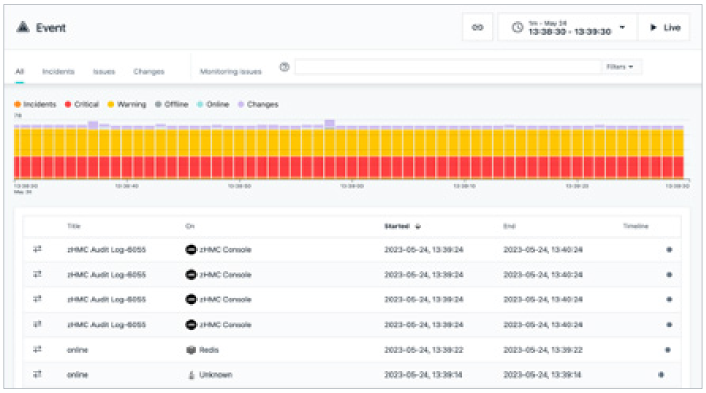

Figure 9. IBM® Instana® event monitoring dashboard

For a successful migration it's important to understand failures, performance, and availability issues promptly. IBM® Instana® automatically discovers and maps your cloud deployments to provide complete visibility into every cloud infrastructure component and application service. Real-time event alerts and dependency maps allow everyone, from cloud operators to DevOps teams, to quickly respond and prevent downtime or slowdowns.

Furthermore, the IBM® Instana® Smart Alerts feature provides the ability to automatically generate alerting configurations using relevant KPIs and automatic threshold detection for use cases like website slowness or website errors. Combined with the power of Unbounded analytics, Smart Alerts is the first alerting mechanism that automatically generates alerts based on use cases designed for the environment at hand.

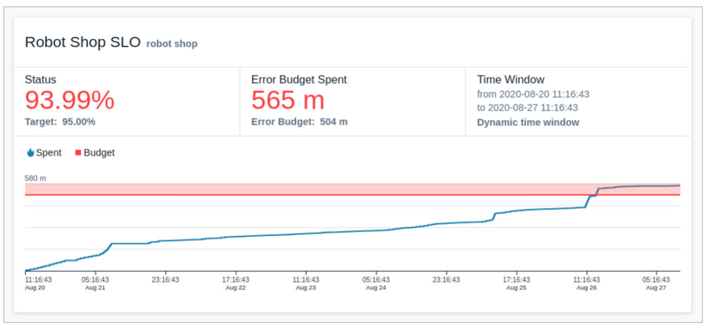

Figure 10. IBM® Instana® SLO monitoring dashboard

During the migration process it's not enough to just monitor failures or slowness, but organizations also need to assure that applications are performing appropriately by adhering to performance goals. With IBM® Instana®, you can create and manage your Service Level Objectives (SLOs), which are necessary to analyze the quality of service (QoS) and reliability goals in concrete, measurable, objective terms.

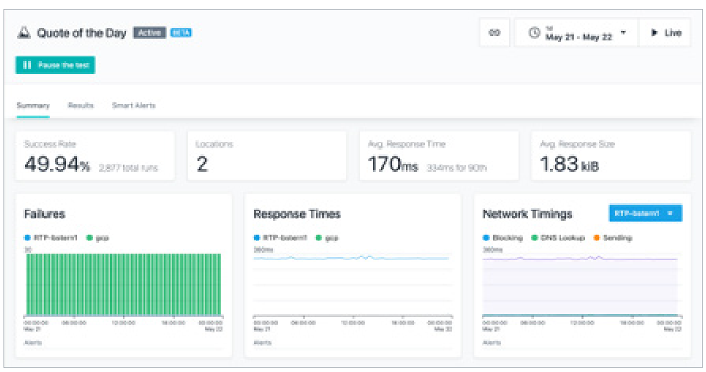

Figure 11. IBM® Instana® synthetic monitoring dashboard

Moreover, in this phase it's imperative to solidify availability of the new environment. IBM® Instana® synthetic monitoring allows you to run automated, API test scripts to simulate user interactions with your mobile or web applications and monitor the performance and availability of these endpoints from a hypothetical user's perspective. This helps identify issues such as slow response times, high error rates, or missing functionalities before users are impacted.

Many customers use the migration phase as an opportunity to also look at modernization and optimization efforts for their applications. IBM® Instana® Analyze Infrastructure (open Beta) provides an infrastructure-centric ad-hoc exploration solution that lets you perform multivariate comparison of infrastructure entities in a concise table across various customizable key metrics. This feature allows organizations to dynamically compare their on-prem and AWS cloud environment to not only right-size, but also to find optimization opportunities in the cloud. In addition, they can leverage IBM® Instana® metrics with AWS Compute Optimizer, to help achieve optimal efficiency for applications running on AWS. Utilizing machine learning models, AWS Compute Optimizer produces recommendations to optimize Amazon EC2 instance sizing, and early data show that compute optimizer customers can improve their cloud utilization several times over.

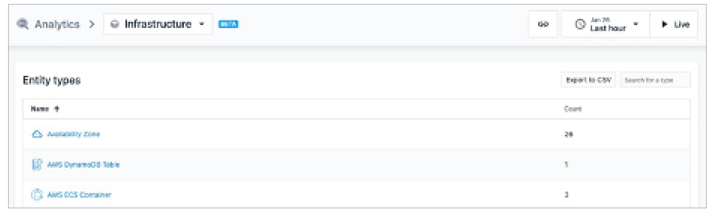

Figure 12. IBM® Instana® analyze infrastructure entities dashboard

Another area of modernization is the use of automation. AWS relies heavily on automation to provide the core features of elasticity and scalability, and strongly believes that the use of automation is critical for realizing the full benefits of the cloud. From a monitoring perspective, supporting automated actions to diagnose and remediate events aligns with AWS automation strategy. The IBM® Instana® Action Framework (open Beta) provides the concept of an action catalog where you can create new actions or reuse your existing automations (e.g., Ansible, PagerDuty, etc.). By using the action catalog, you can create new actions or integrate with existing automation through a script, webhook, or other third-party automation providers. You can associate actions with various IBM® Instana® events and run the actions by using an action sensor on the IBM® Instana® host agent.

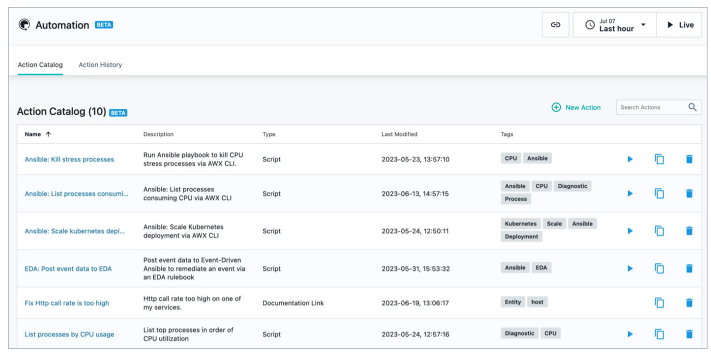

Figure 13. IBM® Instana® action catalog

Lastly, optimizing the AWS resources to realize the highest return possible from the migration investment should be a core priority. While the most important objective of deploying observability solutions is to improve the reliability, performance, and availability of the applications, it can be combined with Application Resource Management (ARM) to provide operational efficiency. The IBM® Instana® APM solution combined with the IBM® Turbonomic® ARM solution can identify bottlenecks and performance issues, define service-level objectives (SLO), while also identifying the infrastructure utilization, comparing of cloud vendor prices, and so on. By associating the data collected by IBM® Instana® in IBM® Turbonomic, customers can identify the efficiency of the AWS cloud resources used by the application and the possibility to size up the AWS cloud resources to improve the application's performance.

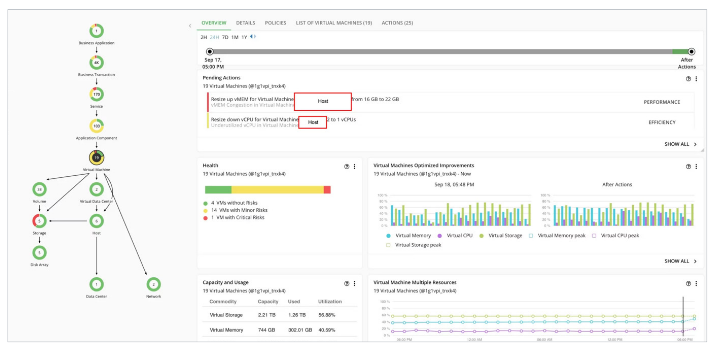

Figure 14. IBM® Turbonomic® application overview

Conclusion

Enterprises migrating from on-premises environments to AWS achieve value in staff productivity, operational resilience, business agility and cost savings. This value comes with a cost, however, and can take months—or even years—to realize. But for many organizations, migration and modernization are a must. A solution that offers holistic insights during every phase is critical to success.

IBM® Instana® helps minimize disruptions during migrations with comprehensive monitoring capabilities, both on-prem as well as in the AWS environment. Instana® assists with validating the size of the AWS environment. The solution allows you to maintain performance and availability by mitigating issues quickly and effectively so you can migrate with confidence.

About IBM® Instana®
IBM® Instana® is an AWS Partner and available on the AWS Marketplace. As an AWS Cloud Operations Competency Partner, Instana® has demonstrated expertise in helping customers build a strong and scalable foundation for their end-to-end cloud operations. The product is with Cloud Operations Software Competency in five solution areas: Cloud Operations; Cloud Financial Management; Monitoring and Observability, Compliance and Auditing; Cloud Governance; and Operations Management.

IBM® Instana® is purpose-built for cloud-native and designed to provide high-fidelity data automatically and continuously (e.g., one-second granularity and end-to-end traces) with the context of logical and physical dependencies across mobile, web, applications, and infrastructure. Our customers have been able to achieve tangible results using real-time observability.

Start your free trial →

About the product →

About the author

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Produced in the United States of America
September 2024