



Smart modernization with nClouds and AWS

**Application modernization best practices for
your digital transformation**

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The drive for digital transformation

During the past few decades, digital transformation—the integration of digital technology into all business areas—has delivered quantum leaps in customer value for old markets and has generated new ones through innovative products and globalization. As these new markets disrupt existing ones, organizations are inclined to fail if they maintain a “same old, same old” approach. To outpace the competition and drive sustainable business outcomes, successful companies are implementing application modernization to drive unprecedented innovation. nClouds—an AWS Premier Consulting Partner specializing in building and managing modern infrastructure solutions—and Amazon Web Services (AWS) are a powerful force in helping organizations on their application modernization journey.

Application modernization creates a foundation that supports the competitive need for product innovation and a customer-first approach: speed, resilience, performance, scalability, observability, and cost-efficiency.

Get to know nClouds:

As a long-time AWS Premier Tier Services Partner, nClouds is proud to say that our core competence with AWS is in our DNA. We offer complete DevOps and AWS consulting services, including managed services (MSP), migration, data and analytics, cost optimization, site reliability engineering (SRE), and 24/7 support services. In particular, our Smart Start Application Modernization services unleash the power of AWS behind your success.



Cloud-native architecture

[The Cloud Native Computing Foundation \(CNCF\)](#) defines cloud-native technologies as techniques that “enable loosely coupled systems that are resilient, manageable, and observable. Combined with robust automation, they allow engineers to make high-impact changes frequently and predictably with minimal toil.”

As organizations move to a cloud-native architecture, they implement serverless technology, containers, microservices, automation, cloud services, and modern cloud operations. Since the cloud platform is core to these practices, we call the operation and governance of a modernized infrastructure CloudOps.



¹Shanhong Liu, [Statistics and Facts about Digital Transformation](#), Statista, July 31, 2021.

²Gartner, [Digital Transformation](#), Gartner Glossary.

³McKinsey Digital, [Seven Lessons on How Technology Transformations Can Deliver Value](#), March 2021.



By 2023, digitally transformed organizations—those that have integrated digital technologies into all business areas—**are forecast to contribute more than half of global GDP.¹**

According to Gartner, a leading research and advisory company, digital transformation can refer to anything from IT modernization to digital optimization to the invention of new business models,² to spark innovation and growth.

Global management consulting firm McKinsey interviewed nearly 700 chief information officers to learn what initiatives their organizations are engaged in as part of their digital transformation.³ Among those cited were:

- Tech-forward business strategy (new tech-enabled business models or customer-facing products).
- Next-generation infrastructure services (e.g., cloud, end-to-end automation).
- Flexible, business-backed architecture rehaul delivered iteratively (e.g., open architecture, microservices, serverless, APIs).

Application modernization requires CloudOps

Think of CloudOps as an extension of DevOps, focusing on the processes of managing and delivering cloud computing infrastructure services to optimize the efficacy, availability, flexibility, and cost-efficiency of cloud solutions. AWS and nClouds have teamed up to bring the benefits of CloudOps modernization to organizations like yours.

The growing use of serverless, containers, and microservices for application modernization requires a complementary CloudOps approach to cost optimization, governance, and performance management:

- Near-real-time monitoring of costs, usage, performance, security, and compliance for actionable insights to a dynamic cloud-native architecture (microservices and containers).
- Application-centric and function-based governance, since events trigger cloud functions in a serverless platform.
- Automation.
- Resilience/anti-fragility.



An analysis by B2B research firm MarketsandMarkets projects that the worldwide **serverless architecture market size will grow from USD 7.6 billion in 2020 to USD 21.1 billion by 2025.**⁴

nClouds-AWS pro tip

Implement managed application deployment for container and serverless applications to free developers to focus on innovation and productivity improvement.

Learn more

Check out the nClouds blog, [Top 3 signs that you need modern AWS cloud operations \(CloudOps\)](#).

⁴MarketsandMarkets, [Serverless Architecture Market by Service Type](#), June 2020.

Launching your application modernization journey

Here are a few application modernization options to consider as your scale and scope increase. These options vary in their level of complexity, depending on your organization's particular technical and business requirements:



Move to Managed (Cluster Migrations)

Fully managed container orchestration provides automation and a simplified operating model for faster cluster migration, improved repeatability and predictability, and mitigation of the impact on business operations.

nClouds:

- Migrates from self-managed or container cluster technologies to fully managed Amazon ECS or Amazon EKS for faster, easier deployments, reduced overhead and direct costs, improved scalability, and enterprise-grade support to run reliably and securely at scale.



Modern Operations with Shared Services Platform (SSP)

A standardized, serverless, microservices-based platform for software delivery, policy management, security, monitoring, and networking. Get automated self-service infrastructure provisioning and application deployments, improved governance of standards and policies, and enhanced visibility into costs and application performance.

nClouds:

- Builds a shared services platform in compliance with the best practices guidance of the AWS Well-Architected Framework.
- Uses deployment patterns that best suit your workloads: managed node groups, serverless deployment options with AWS Fargate, and Amazon Elastic Kubernetes Service (Amazon EKS) optimized AMIs.



AWS Proton

If your environments have evolved into numerous container and serverless platforms, consider using a centralized deployment engine like [AWS Proton](#) to manage your application's development process automatically. Its set of curated application stacks has built-in AWS best practices for security, architecture, and tools so that infrastructure teams can distribute trusted stacks to development teams quickly and easily.

nClouds:

- Accelerates your adoption of AWS Proton.
- Uses our deep experience in DevOps to apply battle-tested practices to your standardized environment and service templates.
- Helps with developing AWS CloudFormation scripts and third-party integrations to bridge the gap between your existing platform and your standardized AWS Proton-based platform.



nClouds Managed Kubernetes Service

To enhance your teams' ability to deliver, go for a fully value-added service like [nClouds Managed Kubernetes Service](#). Get a future-proof architecture with best practices baked in, a simplified operating model, reduced overhead, automation for faster iteration and deployment, and enterprise-grade support.

nClouds:

- Migrates from self-managed Kubernetes or container cluster technologies to fully managed Amazon EKS.
- Builds the core Kubernetes infrastructure according to your standards (or migrates your existing setup to a standardized setup) and maintains it, so your engineers can focus on innovation.
- Provides [nClouds ShareSave Service](#) and [nOps](#) to optimize AWS costs continuously.
- Offers [Site Reliability Engineering](#) (SRE) and [24/7 support](#).

Application modernization mistakes to avoid

nClouds' proven approach to application modernization helps you avoid these critical—but completely preventable—mistakes:

Underestimating the time and cost investment and risk involved in building infrastructure yourself. We build your infrastructure on AWS using best practices that save you time and money. What's more, we'll show you how to help fund your modernization initiative with savings from AWS commitments (Reserved Instances, Savings Plans) that are risk-free and flexible — no need to wait.

Migrating applications to AWS exclusively using the rehosting (lift and shift) approach. While this approach enables the fastest time to production, it won't deliver the benefits of elasticity, resiliency, ease of deployment and management, and flexibility that AWS offers. And you'll risk taking legacy technical debt to the cloud, generating failures, compromising observability, and dealing with provisioning difficulties. That said, moving your existing applications and data to AWS can serve as a first step, followed by taking a re-platforming, repurchasing, or refactoring approach to leverage AWS services and capabilities to achieve the benefits of application modernization.

Not making data-driven decisions to analyze legacy and cloud workloads. Using a data and analytics framework to drive workload-level optimization planning helps improve reliability and application performance.

Focusing first on technology without considering business process transformation. Instead, start by considering the goals of application modernization and how business processes may need to transform to achieve those goals. Be sure to make this a team effort, including all relevant stakeholders.





Managed Kubernetes service success story

BKJ Digital migrated its application stack to Kubernetes on AWS for increased flexibility, improved infrastructure reliability, and enhanced security and compliance with nClouds.

Challenge

BKJ Digital needed a sophisticated compute platform for its fast-growing business that provided the performance efficiency of a flexible, reliable infrastructure and met end customers' security and compliance requirements. The company wanted to migrate its production applications from a legacy infrastructure provider to a modern, flexible, Kubernetes-based stack.

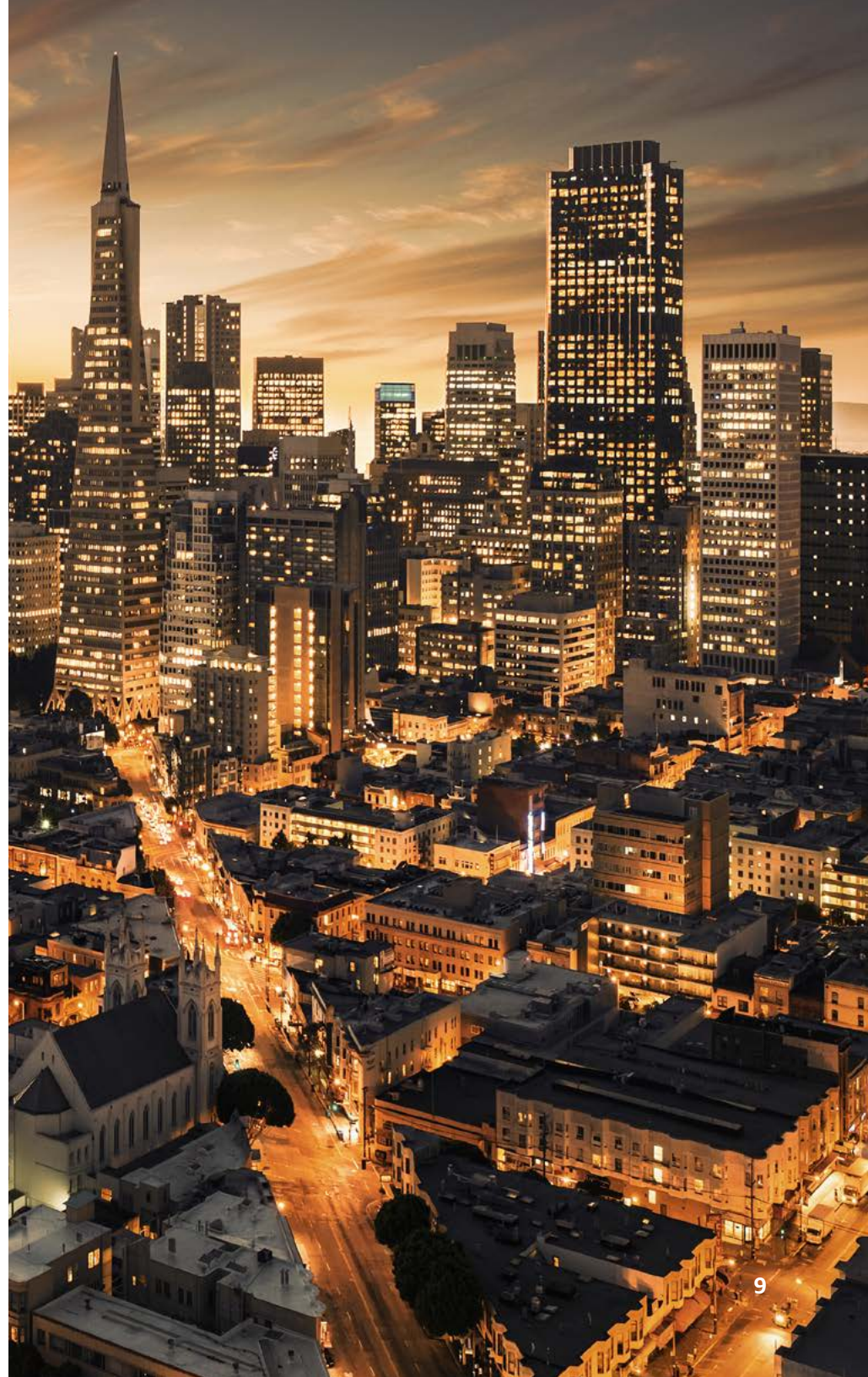
Solution

nClouds started with a Migration Readiness Assessment to better understand BKJ Digital's existing infrastructure and future needs. During the migration phase, nClouds' migration team integrated with BKJ Digital's existing team to implement faster infrastructure buildout using nClouds' [nCodeLibrary](#), best practices for CI/CD and monitoring, and multiple environments with an infrastructure as code (IaC) approach. The new infrastructure leveraged several AWS services.

"The BKJ Digital team needed to migrate a fleet of production applications from a legacy infrastructure provider to a modern, flexible, Kubernetes-based stack. The nClouds team's deep experience with Kubernetes on Amazon EKS helped us plan and execute our migration to AWS in record time."

Ben Durbin, Director of Technology, BKJ Digital

[Read more](#)



Application modernization the nClouds way

The nClouds way combines experience, collaboration, and technical skills to deliver proven results. Here's how we do it:



Teamwork

We work with our clients as valued extensions of their teams. Our team members are flexible and have expertise in best-practices tools. We can actively participate in your Agile ceremonies and stand-ups, adhere to your SRE error-budgeting approach, and use your organization's selected communication and management tools like Slack and Jira.



Alignment of production and non-production environments

We start by building a localized production-like environment. The lightweight nature of containers enables developers to recreate them quickly, driving easy experimentation and a "fail-fast" culture. For the core infrastructure buildout, we believe that infrastructure provisioning should be performed via code changes, just as code deployments are optimized via coded processes. And all with "autopilot" cost optimization by ShareSave so you have the freedom to innovate.



Container orchestration to run and manage containers on AWS

Orchestrators make life easy when it comes to managing containers by providing reliability and cost optimization. We select from Amazon Elastic Container Service (Amazon ECS), Amazon EKS, AWS Fargate, or custom-built Kubernetes.

nClouds-AWS pro tip

For modern applications that are reliable at deployment, automate test procedures and monitor every stage of the development lifecycle so that your developers get immediate feedback on any failure and can identify areas for improvement.



Building and accelerating your CI/CD pipeline

We minimize the disruption of applications during deployment and implement well-tested rollback mechanisms.

- Integrate testing into your deployment so that you can release code frequently and with confidence.
- Deliver continuous innovation.
- Accelerate the idea-to-cash cycle.



Amplifying the feedback loops to your team

nClouds uses monitoring such as Datadog, Amazon CloudWatch, Amazon Managed Prometheus and Grafana, or open-source Prometheus/Grafana. We create a runbook, add monitoring, and build escalation paths to detect and remediate issues before they impact any of your customers.

- Identify issues proactively to avoid system outages.
- Set protocols to proactively prevent container failure.
- Continually assess container performance.



Providing post-buildout, SLA-level ongoing DevOps support

Are you tired of being awakened in the middle of the night? nClouds provides 24/7 Support Services and Site Reliability Engineering (SRE) Services. We're the first point of contact for all your infrastructure needs.

- Maintain operations, infrastructure as code (IaC), automation scripts, and automated deployment pipelines.
- Improve website uptime, reliability, and scalability with SRE Services.
- Build and maintain a runbook.
- Identify and remediate the root cause of operational issues.
- Patch managed AWS services.
- Provide AWS expertise and feedback on architecture/processes to your development team.

Application modernization success story

Global energy and petrochemical leader accelerates DevOps and enhances scalability for its next-generation machine learning platform with nClouds.

Challenge

The company launched a new machine learning (ML) platform for data analytics for use by its customers and trading partners across the globe. However, in the company's traditional workflows, data was locked in application silos. Due to tight deadlines, it needed expert help to accelerate its DevOps initiatives. And, it wanted to ensure that AWS best practices were applied to scale the environment to handle petabytes of data.

Solution

nClouds helped the company automate and deploy its next-generation energy platform regionally and globally by leveraging several AWS services.

"nClouds has been the trusted partner for my distributed team across five countries. Within our first engagement, they partnered with us on a critical project that enabled us to automate and deploy services from our next-generation energy platform regionally and globally. We could not have hit these targets if not for their well-architected and well-executed work. Exceptionally talented folks!"

Chief Technology Officer, Energy Platform, Global Energy & Petrochemical Leader

[Read more](#)



Start with the right containerization strategy

Containers help eliminate potential conflicts among development and operations teams and facilitate DevOps and CI/CD best practices. At nClouds, we understand that modernizing your applications starts with choosing the right containerization strategy.

Why containers

- Less technical overhead and more consistency across developer teams.
- Faster time to market.
- Lower upfront modernization risks and costs by reducing refactoring.
- Higher upfront business value with costs spread across a longer migration journey.
- A hardened, modern operating infrastructure that enables the continuous delivery of additional workloads with speed, reliability, predictability, and security.



nClouds has extensive experience using highly scalable container management and registry services to simplify the containerization and distribution of applications. We help you build, deploy, manage, and scale containers in production so you can build your applications quickly and efficiently.

nClouds-AWS pro tip

Fully managed Amazon ECS or Amazon EKS provides a future-proof architecture, simplified operating model, reduced overhead, and enterprise-grade support.

Developing your containerization strategy

Developing the right containerization strategy for your organization begins with considering:

Which application components should be containerized to help prioritize and move to an Agile approach?

What are the periodic and long-term scaling needs for your applications? Will you opt for self-managed or fully managed container cluster technologies?

What are the traffic load profiles of your services? Some platforms for orchestration and automation of the main processes handle various kinds of loads better than others.

What type of container will be used—an application container like Docker or a system container like LXC, OpenVZ, or Virtuozzo—based on current and future needs?

What are the security needs for your services? Various platforms will have different strengths and weaknesses for security.

What is your budget? All decisions have trade-offs, and cost is critical.

nClouds helps you:

- Migrate workloads from physical machines or VMs to AWS using a containerization approach.
- Decouple and containerize your existing applications for seamless deployment to Amazon ECS, Amazon EKS, and AWS Fargate.
- Build, deploy, manage, and scale containers in production.
- Build everything with infrastructure as code (IaC) for AWS CloudFormation and Terraform using nClouds nCodeLibrary.
- Optimize costs continuously — from the start.
- Comply with best practices guidance of the AWS Well-Architected Framework.





Containerization success story

Appify improves performance efficiency, elasticity, and scalability while reducing AWS costs for its field services SaaS app with nClouds.

Challenge

Appify wanted to migrate its existing compute workload on Amazon ECS to Amazon EKS. The company wanted a uniform Kubernetes-based platform to enhance its ability to distribute and scale its field service software solution, improve the communication speed between microservices, and save costs.

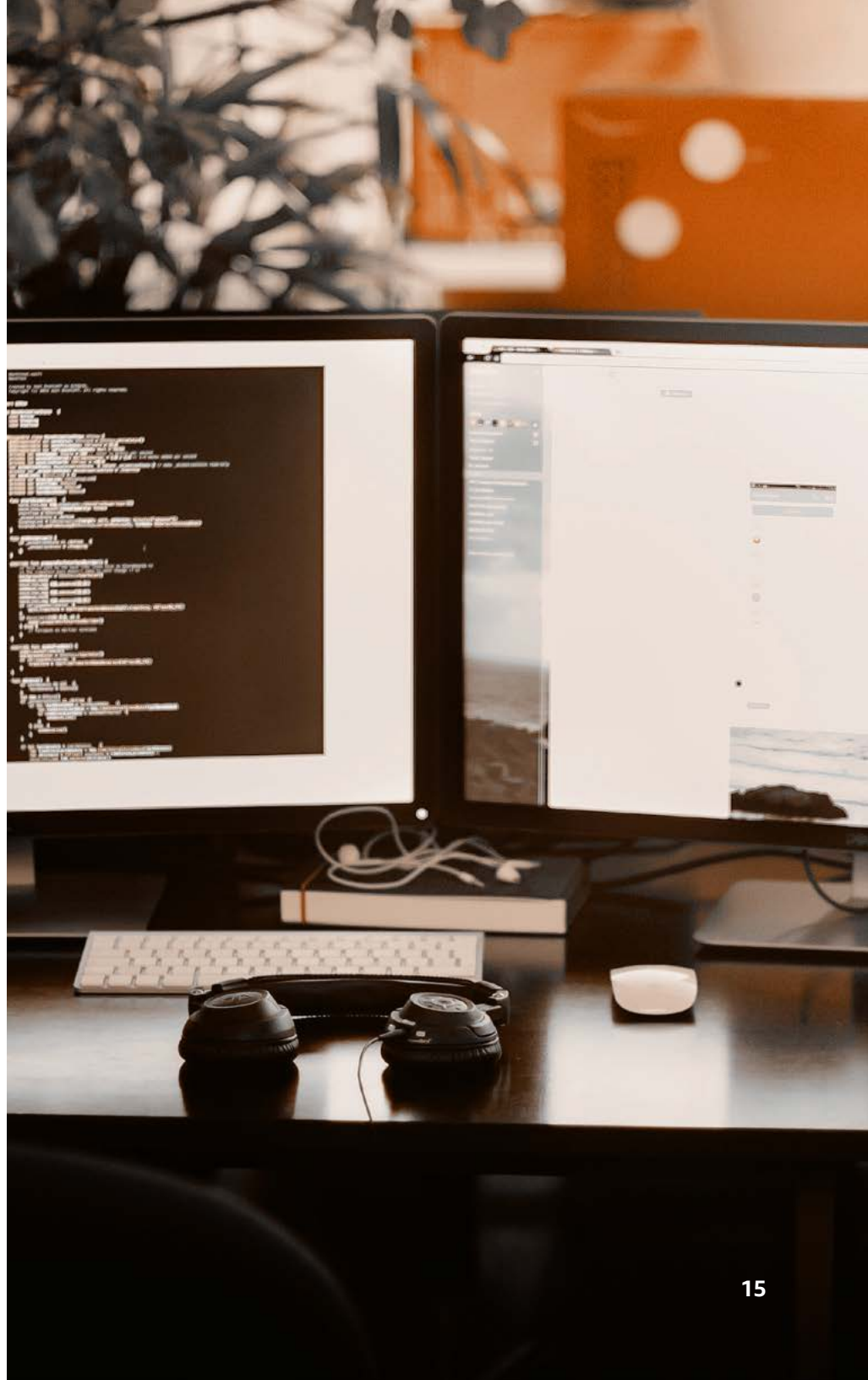
Solution

nClouds applied its expertise in building and managing infrastructure modernization projects, helping Appify build out its application cloud and operations cloud core infrastructure for a new Kubernetes platform by leveraging several AWS services.

"Moving from ECS to EKS and VPC deployment is a major milestone for Appify. It's enhanced the scalability and high availability required for our SaaS solution. The nClouds team came in at the right time and helped us achieve our goals. We appreciate all the great work that went into this project."

Rangarajan Vaithyalingam, Platform Architect, Appify

[Read more](#)



Container monitoring and observability

Why implement container monitoring and observability?

Modern cloud application environments are complex, running across hundreds or even thousands of compute instances.

- Automated CI/CD requires real-time visibility into test and production.
- Application requests traverse dozens of third-party APIs and technologies.
- Change management is complex because containers are ephemeral—they can quickly be created and destroyed—and have a layered structure.
- Containers share resources like memory and CPU across one or more hosts.

Because of this complexity:

- Modern applications require modern container monitoring to continuously collect metrics, track potential failures, and gather granular insights into container behavior.
- DevOps engineers need observability—visibility to all system components—so they can evaluate the system's state.



In his presentation during the nClouds-AWS webinar [Kubernetes on AWS: Observability](#), AWS Principal Solutions Architect Curtis Rissi explained that **monitoring tells you whether a system is working, and observability lets you understand why it isn't working.**

AWS offers several observability tools designed to help you generate actionable insights:

- Amazon CloudWatch Container Insights
- Amazon CloudWatch Anomaly Detection
- AWS X-Ray
- Amazon CloudWatch ServiceLens

Both CloudWatch Container Insights and CloudWatch Anomaly Detection provide automatic dashboards to view aggregated logs and metrics and custom dashboards to visually correlate them across AWS services.

Considerations

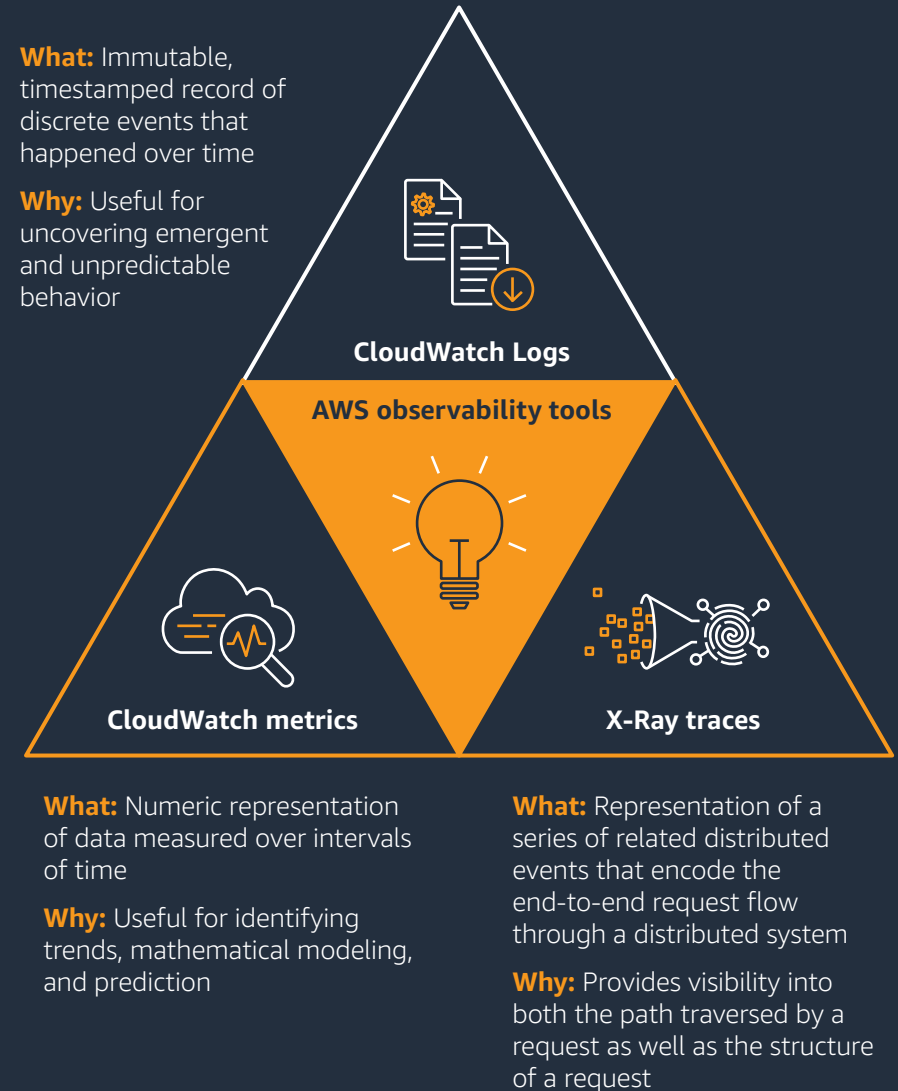
- What impact will monitoring have on your infrastructure?
- What impact will monitoring have on your app development and system standards?
- Do you need AI?
- What is your budget?

nClouds helps you

- Design observability and select AWS observability technologies.
- Integrate, tune, and manage monitoring, observability, and notifications.



AWS observability tools



Get started: nClouds Application Modernization Assessment

Jumpstart your digital transformation by jumpstarting your application modernization. nClouds Application Modernization Assessment is your opportunity to talk directly to nClouds' AWS-certified application modernization experts. Explore how:

- Continuous integration and continuous delivery (CI/CD) pipelines automate your software delivery process.
- Container strategy helps you deploy software quickly and efficiently.
- Microservices are used to build highly scalable environments and support continuous delivery.
- Infrastructure automation helps build, automate, manage, and support cloud infrastructures and implement change, configuration, and service catalog management.
- We can help find ways to fund your application modernization initiative.
- Or anything else you have in mind.

Getting started is easy

e-mail us at sales@nclouds.com, complete [this form](#), or visit us at www.nclouds.com.



