

nClouds | AWS Case Studies

nOps

How nClouds helped nOps migrate to Amazon EKS for better application performance, scalability, fault tolerance, and more.

About nOps

nOps is a real-time event-driven cloud data platform. nOps allows companies to automate mitigation and recurrence of cost, security, governance, and compliance.

Your team gets access to normalized cloud data through a GraphQL endpoint to automate routine tasks without the headache of managing cloud data infrastructure. Companies can easily automate their reserved instances, tune Lambdas after their deployments, right-size resources, and automate countless manual tasks.

nOps is an AWS Advanced Technology Partner and an AWS Marketplace Seller that has achieved AWS Cloud Management Tools Competency status.

Benefits Summary



Faster
time-to-market.



More robust availability,
scalability, and fault
tolerance.



Improved application
performance.

CHALLENGE

Migrate nOps from Amazon ECS to Amazon EKS.

To meet nOps's critical governance and SOC 2 compliance requirements related to availability and scalability, the nClouds team migrated nOps's compute workload from Amazon ECS to Amazon EKS. This solution proved to be a better fit for nOps's cloud data platform architecture. Part of nOps's challenge was to execute the modernization project while keeping most of the team focused on product development. Then that was coupled with a tight timeline to meet governance and compliance deadlines. So nOps turned to nClouds because overcoming challenges and meeting deadlines is a hallmark of nClouds' DevOps teams.



Industry

SaaS, Software Development

Location

San Francisco, CA

Challenge

Migrate nOps from Amazon Elastic Container Service (Amazon ECS) to Amazon Elastic Kubernetes Service (Amazon EKS).

Featured Services

Managed DevOps Services,
Migration Services, Application
Modernization

Why AWS and nClouds

nOps runs its cloud data platform on AWS. One of the essential features of AWS is its flexibility. All its services work and communicate together, automatically estimating demand and scaling accordingly. nOps can quickly shut down instances, essentially enhancing cost optimization.

nOps chose nClouds to provide Managed DevOps Services based on its expertise in AWS services and DevOps. Further, nClouds has distinguished itself as an innovator in AWS application and infrastructure modernization services, notably with Amazon EKS and Kubernetes.

nOps leveraged several Amazon Web Services:

- **Amazon Aurora (Aurora)** - Delivers the speed and reliability of high-end commercial databases simply and cost-effectively. It is a fully managed relational database engine that is part of the managed database service Amazon Relational Database Service (Amazon RDS).
- **Amazon ElastiCache for Redis** - An in-memory data structure service to enhance the ease-of-use and power of Redis, and improve availability, reliability, scalability, security, and performance.
- **Amazon Elastic Container Service for Kubernetes (Amazon EKS)** - Makes it easy for nOps to deploy, manage, and scale containerized applications using Kubernetes on AWS across multiple AWS Availability Zones to eliminate a single point of failure.
- **Amazon Managed Streaming for Kafka (Amazon MSK)** - A fully managed service that makes it easy for nOps to build and run applications that use Apache Kafka to process streaming data.
- **Amazon OpenSearch Service** - An open-source, distributed search and analytics suite derived from Elasticsearch that performs interactive log analytics, real-time application monitoring, website search, and more.
- **Amazon Relational Database Service (Amazon RDS)** - Makes it easy for nOps to set up, operate, and scale a relational database in the cloud. It provides cost-efficient and resizable capacity while automating time-consuming administration tasks such as hardware provisioning, database setup, patching, and backups.
- **Amazon Virtual Private Cloud (Amazon VPC)** - Enables nOps to provision a logically isolated section on AWS where they can launch AWS resources in a virtual network that they define.
- **Amazon VPC peering** - A networking connection between two Amazon Virtual Private Clouds. It enables nOps to route traffic between them using private IPv4 addresses or IPv6 addresses so that instances in either Amazon VPC can communicate with each other as if they are within the same network.
- **AWS Load Balancer Controller** - Manages AWS Elastic Load Balancers for a Kubernetes cluster. It was formerly named the AWS ALB Ingress Controller.
- **AWS Virtual Private Network (AWS VPN)** - Enables nOps to establish a secure and private encrypted tunnel from its network or device to the AWS global network.



The nClouds DevOps team acted efficiently to scope and prioritize the migration effort. They integrated the effort into our normal engineering sprint cycles and were careful to meet commitments and timelines. The team worked independently and coordinated with our Software Engineers to execute the project with a high level of competency and maturity."

James Wilson,
VP of Engineering,
nOps

nOps's solution stack also included additional, essential third-party tools:

- **Datadog** - A monitoring and analytics tool to determine performance metrics and event monitoring for infrastructure and cloud services. The software can monitor services such as servers, databases, and tools.
- **GitLab** - A complete DevOps platform for the entire software development and operations lifecycle, delivered as a single application.
- **Kubernetes Ingress** - An API object that provides routing rules to manage external users' access to the services in a Kubernetes cluster, typically via HTTPS/HTTP.
- **OpenVPN Access Server** - A full-featured SSL VPN software solution to provide fine-grained access control of the infrastructure.

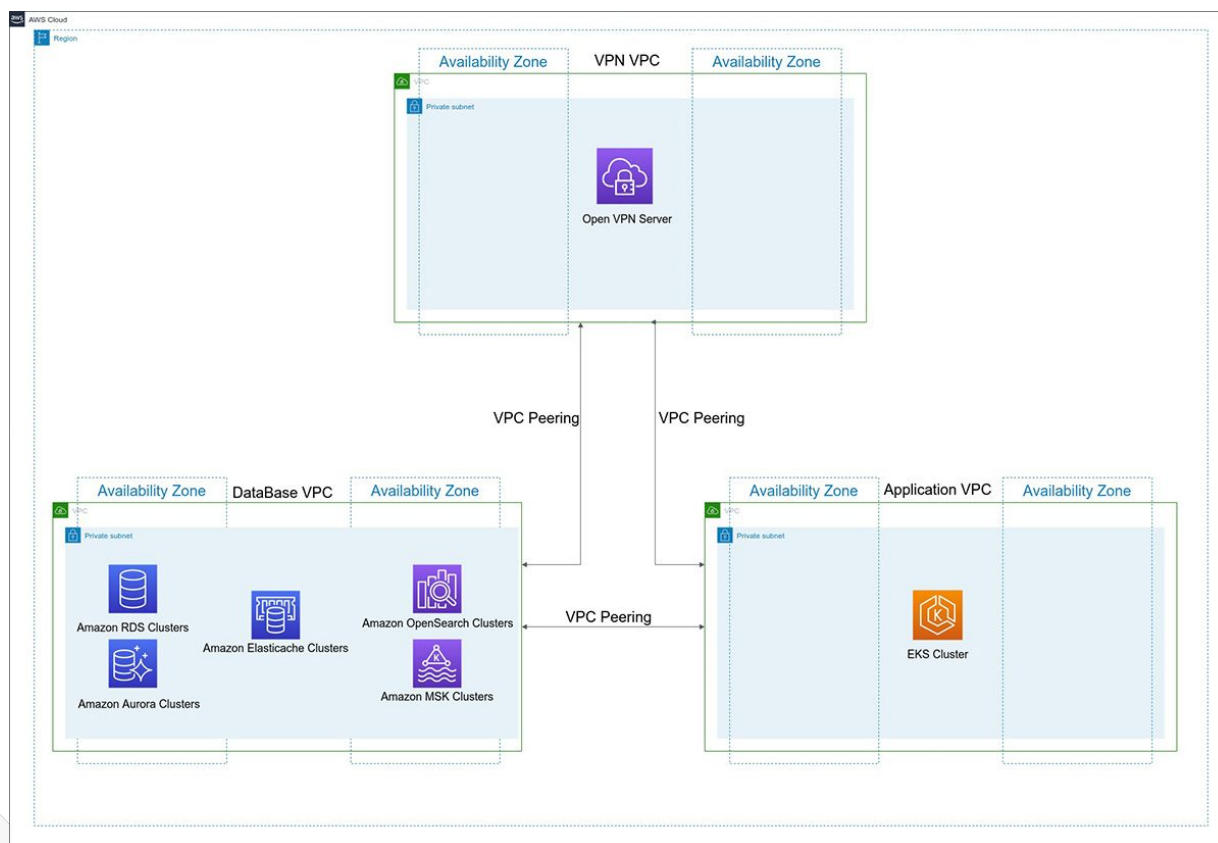
nClouds' Solution Architecture for nOps

nOps asked nClouds to migrate its cloud data platform compute workloads from Amazon ECS to Amazon EKS as part of nClouds' Managed DevOps Services.

nClouds implemented VPC Peering between the AWS VPN VPC, database VPC, and application VPC. OpenVPN Access Server resides in the VPN VPC. Within the database VPC are clusters for Amazon RDS, Aurora, Amazon ElastiCache for Redis, Amazon OpenSearch Service, and Amazon MSK. The Amazon EKS cluster resides in the application VPC.

Because connectivity to Amazon EKS clusters, deployment scripts, and deployment manifest files are different in a Kubernetes environment than in a non-Kubernetes environment, the migration from Amazon ECS to Amazon EKS required the migration of nOps's CI/CD pipelines to the new Kubernetes environment.

High-level architecture diagram:



The Benefits

Teaming with nClouds, nOps now has a cloud data platform with enhanced governance and SOC 2 compliance. The project has yielded numerous benefits:



Faster time-to-market.

By migrating to Amazon EKS, nOps developers can move fast and test in Kubernetes without breaking things. Amazon EKS provides faster control plane creation time, so developers rapidly test new features and iterate on the application infrastructure. Kubernetes is run locally, replicating the identical stack on the developer's machine, so developers maintain productivity even as the nOps application grows to hundreds or thousands of services.



More robust availability, scalability, and fault tolerance.

Kubernetes enables nOps to react to traffic spikes and load changes quickly. Amazon EKS automatically manages the availability and scalability of the Kubernetes control plane nodes responsible for scheduling containers, managing application availability, storing cluster data, and other vital tasks. Amazon MSK's Application Auto-Scaling policy automatically expands a cluster's storage in response to increased usage. Amazon ElastiCache for Redis also provides enhanced scalability.

Amazon MSK enables nOps to implement event-driven service communication. Messages are persisted to disks and replicated across multiple servers, providing robust reliability and fault tolerance. An event-driven architecture enables nOps to develop dependable, loosely connected, and scalable systems.



Improved application performance.

The nOps application now has improved performance contributed by more flexible routing. The new architecture has a gateway to route traffic from endpoints to specific services. Kubernetes Ingress provides routing rules to manage external users' access to the services in a Kubernetes cluster (via HTTP or HTTPS), while AWS Load Balancer Controller satisfies Kubernetes Ingress resources by provisioning Application Load Balancers.

Amazon OpenSearch performs interactive log analytics and real-time application monitoring. It integrates with Datadog, which collects key metrics, visualizes them in an out-of-the-box dashboard, and sends alerts on resource shortages or performance issues.

About nClouds

nClouds is a certified, award-winning provider of AWS and DevOps consulting and implementation services. We partner with our customers, as extensions of their teams, to build and manage modern infrastructure solutions that deliver innovation faster. We leap beyond the status quo.

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