

nClouds | AWS Case Studies

Yewno

How nClouds manages DevOps services for Yewno so its team can focus on product innovation and accelerating time-to-market while optimizing costs.

About Yewno

Yewno provides Augmented Intelligence. Its mission is to extract knowledge from an overwhelming quantity of unstructured and structured data. Yewno's technology helps its customers overcome the "information overload" problem and enables them to research and understand the world more naturally. It is inspired by how humans process information from multiple sensorial channels and leverages state-of-the-art computational linguistics, network theory, machine learning (ML), and methods from classical artificial intelligence (AI). To learn more, go to <http://www.yewno.com/>

Benefits Summary



Focus on innovation



Save costs and time



Enhance scalability, availability, and security

Challenge

Yewno wanted to free its engineers and data scientists from the time and expense of managing DevOps-related functions so that they could focus on new product innovation and time-to-market for Yewno's fast-growth business. Yewno wanted to modernize its application and ensure that the AWS environment had improved scalability and cost tracking controls.

Why AWS and nClouds

Since 2018, nClouds has been providing Yewno with Managed DevOps Services and maintaining Yewno's infrastructure on AWS. As a rapid-growth, venture-backed startup providing insights on vast quantities of data, Yewno needed a partner that could deliver a cost-optimized and scalable infrastructure. Vivian Peng, nClouds' MSP team project manager for Yewno, explained the working relationship between nClouds and Yewno. "We are their partner — they consider us a part of their team. We work with them to make their entire ecosystem work, and we strive daily to make their product successful and their infrastructure optimized."

Yewno

Industry

Computer Software, AI, Data Science

Location

Palo Alto, CA

Challenge

Offload DevOps functions from the Yewno team so they can focus on product innovation and accelerating time-to-market while optimizing costs.

Featured Services

Managed DevOps, Migration Services, Application Modernization, Security, 24/7 Support



nClouds is our extended team that manages DevOps services and provides ongoing support of our AWS infrastructure. This partnership has leveraged the Yewno team to focus on product innovation for our AI platform offering. This focus, combined with powerful automation like our CI/CD pipeline and modernization with EKS, has helped us deliver faster, with reduced costs, and better predictability."

— **Brendan Volheim**
CTO, Yewno

Recently, Yewno asked nClouds to help them migrate from Amazon Elastic Container Service (Amazon ECS) to Amazon Elastic Container Service for Kubernetes (Amazon EKS).

nClouds' services for Yewno include:

- **DevOps** - Ongoing DevOps consulting for Yewno's business and technology transformations, repeatable and scalable delivery of accurate application deployment and release management, and support of the CI/CD pipeline.
- **Infrastructure and application migration and modernization** - Integration with Yewno's CI/CD methodologies, abstraction of application deployment from infrastructure deployment, modernization with Amazon EKS, and alignment with AWS Well-Architected Framework best practices and reference architecture.
- **Security management** - Management of Yewno's security policies and procedures, e.g., multi-factor authentication (MFA) and encryption at rest services, to protect Yewno's system from unauthorized access from authenticated users. Security event logging with AWS CloudTrail enabled on all managed accounts and a process in place to maintain log integrity.
- **24/7 customer support and monitoring** - Management of Yewno's events, incidents, problems, and assets. Event/incident ticket creation and escalation with automated escalation alerts, immediate logging and timestamping of tickets. Systems, tools, applications with resource-level controls to monitor the performance of Yewno's infrastructure and AWS services to ensure the system remains within policy.



Yewno's architecture leverages 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 CloudFront (CloudFront)** - A large-scale, global, and feature-rich CDN that provides Yewno with secure, scalable, and intelligently integrated application delivery.
- **Amazon CloudWatch (CloudWatch)** - Monitors applications, responds to system-wide performance changes, optimizes resource utilization, and provides a unified view of operational health.
- **Amazon DynamoDB** - A key-value and document database that delivers single-digit millisecond performance at any scale.
- **Amazon Elastic Compute Cloud (Amazon EC2)** - A web service that provides Yewno with secure, resizable compute capacity in the cloud.
- **Amazon Elastic Container Service for Kubernetes (Amazon EKS)** - Makes it easy for Yewno to deploy, manage, and scale containerized applications using Kubernetes on AWS across multiple AWS Availability Zones to eliminate a single point of failure.
- **Amazon Relational Database Service (Amazon RDS)** - Makes it easy for Yewno 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 Route 53** - A highly available and scalable cloud Domain Name System (DNS) web service to provide a reliable and cost-effective way to route Yewno's end users to internet applications.
- **Amazon Simple Queue System (Amazon SQS)** - Allows Yewno's team to send, store, and receive messages between different applications in its environment.
- **Amazon Simple Storage Service (Amazon S3)** - A flexible way to store and retrieve data, providing Yewno with cost optimization, access control, and compliance.
- **Amazon Virtual Private Cloud (Amazon VPC)** - Enables Yewno to provision a logically isolated section on AWS where they can launch AWS resources in a virtual network that they define.
- **AWS Auto Scaling** - Monitors Yewno's applications and automatically adjusts capacity to maintain steady, predictable performance at the lowest possible cost.

- **AWS Availability Zone (AWS AZ)** - One or more discrete data centers with redundant power, networking, and connectivity in an AWS Region, enabling Yewno to operate production applications and databases that are more highly available, fault-tolerant, and scalable than would be possible from a single data center.
- **AWS CloudFormation (CloudFormation)** - Allows Yewno to treat its infrastructure as code, automate operations, and bring up new environments.
- **AWS Config** - A service that enables Yewno to assess, audit, and evaluate the configurations of AWS resources.
- **AWS Lambda (Lambda)** - Enables Yewno to run code without provisioning or managing servers. Pay only for the compute time consumed – there is no charge when code is not running.
- **AWS Single Sign-On (SSO)** - Makes it easy to centrally manage SSO access to multiple AWS accounts and business applications.

Yewno's solution stack also includes 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.
- **Elasticsearch** - An open-source, RESTful, distributed search and analytics engine built on Apache Lucene that supports various languages, high performance, and schema-free JSON documents.
- **Jenkins** - An open-source automation server written in Java to support CI/CD.
- **Kong** - An API gateway and platform that provides a flexible abstraction layer to securely manage communication between clients and microservices. It focuses on scalability, high performance, and reliability.
- **Kubernetes Event-driven Autoscaling (KEDA)** - A Kubernetes-based event-driven autoscaler that monitors event sources and feeds the metrics from those sources into the Kubernetes horizontal pod autoscaler. It enables Yewno to drive the scaling of any container in Kubernetes based on the number of events needing to be processed.
- **Kubernetes Event-driven Autoscaling Operator (KEDA Operator)** - Deploys and manages installation of the KEDA Controller in the Kubernetes cluster.

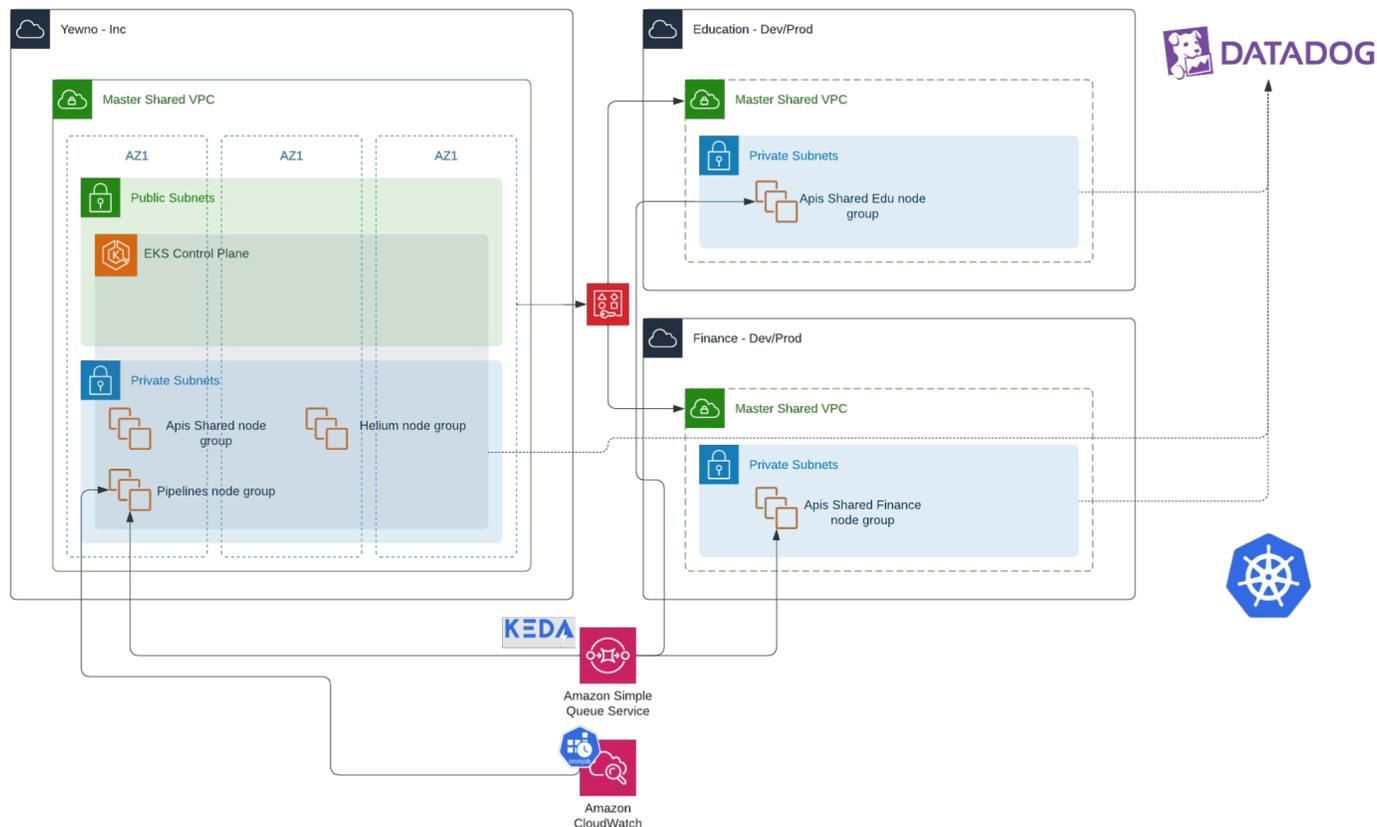
nClouds' Solution Architecture for Yewno

Recently, Yewno was interested in exploring the use of Kubernetes. nClouds migrated their existing Amazon Elastic Container Service (Amazon ECS) clusters to Amazon EKS to leverage some of Kubernetes' native features to improve deployment and resource strategies:

- **Resource management.** The Kubernetes scheduler allocates Pods to Nodes with sufficient resources to boot and run the containers in the Pods. Resource quotas restrict cluster tenants' resource usage per namespace to avoid resource naming conflicts and manage capacity.
- **Availability.** Amazon EKS Managed Node Groups and Kubernetes taints and tolerations restrict which hosts can be used per service to provide service isolation and ensure that traffic to one service does not impact the availability of another service. Disruption budgets limit the number of concurrent disruptions that Yewno's application experiences to improve availability.
- **Scalability.** KEDA Operator scales Yewno's Pods based on Amazon SQS queues or Elasticsearch queries directly from Kubernetes.

The architectural diagram below shows the solution developed by the nClouds team in collaboration with Yewno.

High-level architecture diagram:



The Benefits

nClouds' managed services have enabled Yewno to:



Focus on innovation

nClouds' integrated team of engineers, architects, developers, SREs, and project managers apply their cutting-edge skills, certified AWS expertise, and a passion for delivering solutions across the DevOps landscape and toolchain. nClouds handles the DevOps-related tasks and provides 24/7 customer support and monitoring so Yewno's engineers and data scientists can spend more time on innovation.



Save costs and time

nClouds' broad breadth of DevOps knowledge and cost optimization experience saves Yewno costs on AWS and speeds their time-to-market. Amazon EKS provides Yewno with improved cost tracking for different services in the cluster by using custom tags and Amazon EKS Managed Node Groups. Yewno relies on nClouds' in-depth oversight and monitoring to ensure that large amounts of data are ingested and stored at affordable prices. nClouds accelerates Yewno's delivery of quality software by supporting its CI/CD pipeline and automating software delivery lifecycle processes.



Enhance scalability, availability, and security

nClouds manages Yewno's infrastructure and application migration in alignment with the AWS Well-Architected Framework's best practices and reference architecture.

Infrastructure as code (IaC) and KEDA Operator automate Yewno's scalability to deliver improved availability. Amazon EKS provides Yewno with more freedom to configure scaling actions for different services, such as implementing Blue/Green, Canary and other deployment strategies.

nClouds manages Yewno's security policies, procedures, and event logging to protect its system from unauthorized access from authenticated users.

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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