Upgrading 500+ Kubernetes Clusters in 90 Days

From unpredictable outages to secure, repeatable upgrades, OpsWerks™ stabilized EKS versioning across hundreds of clusters to unlock automation, security, and platform innovation.

Client Background

This Fortune 100 technology firm operates one of the world's largest cloud-native environments. Hundreds of internal applications run across globally distributed AWS accounts. Their engineering organization depends on Amazon EKS for development, testing, and production services.

This fast-moving ecosystem requires consistent, up-to-date Kubernetes environment to deliver reliable services and enable platform innovation.

The Challenge

Our client was maintaining hundreds of Kubernetes clusters without any defined upgrade process. Cluster upgrades were ad hoc, manually executed, and often poorly communicated.

The impact: hundreds of clusters across multiple regions ran different versions of Kubernetes which resulted in service disruptions, missing dependencies, and delayed production releases.

The platform unreliability created security vulnerabilities, blocked critical features like enhanced autoscaling, and reduced application developer confidence.

OpsWerks' Solution

OpsWerks took over end-to-end responsibility for managing EKS upgrades. We started with non-production environments and once proven moved onto upgrading production environments. EKS doesn't support control plane rollbacks, forcing meticulous upgrade planning.

OpsWerks built extensive proactive validation and automation to minimize this elevated risk. This extensive planning enabled rapid intervention when issues arose.

Scope of Work

The OpsWerks' teams combined infrastructure expertise with cloud-native knowledge, and stakeholder coordination which enabled them to specialize in EKS upgrades at scale.

The team developed a comprehensive framework to upgrade 500+ clusters across production and non-production environments in multiple regions while establishing repeatable processes for future consistency. This included:

- **Systematic Process:** developed documented, reusable upgrade approaches combining Infrastructure as Code (IaC) best practices with automation, coordinated change windows with service owners, and centralized communication with enforced signoffs.

- **Risk Mitigation:** pinned Terraform versions, implemented CI/CD pipeline checks, and created automated post-upgrade validation with custom diagnostics to prevent downstream disruptions and enable rapid issue resolution.

- **Problem Response:** quickly identified root causes, coordinated with affected teams, and applied targeted patches while using proactive planning and instance-level recovery to minimize downtime.

This framework helped define the standard operating procedure, ensuring future upgrades maintain version consistency across the entire infrastructure.

The OpsWerks Advantage

Kubernetes Expertise, Certified: Our team excels with the technical complexity of EKS upgrades and the operational challenges of coordinating changes across very large enterprises.
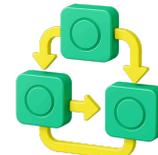
Proven Methodology: We developed battle-tested processes that eliminate the guesswork from Kubernetes upgrades while maintaining flexibility to handle unexpected issues.

Deep Expertise: Our approach specifically addresses EKS upgrade challenges and creates standard processes which includes version pinning to post-upgrade validation to automated remediation.

Risk Mitigation: We plan for EKS limitations like no control plane rollbacks, building recovery techniques that minimize downtime and maintain developer productivity.

Results

OpsWerks upgraded 500+ Kubernetes clusters over a three-month cycle without any major disruptions. Service disruptions from version upgrades vanished. Platform stakeholders now view upgrades as dependable, low-risk operations.

OpsWerks established a clear operating process for future Kubernetes upgrades: maintenance windows are now consistently scheduled, clearly communicated, and approved in advance, eliminating surprise disruptions.

Developer confidence has improved significantly as deployments now behave more predictably across environments.

OpsWerks' ability to quickly diagnose and contain issues has helped reduce mean time to recovery (MTTR) and prevent minor failures from escalating into major incidents.

Facing Similar Challenges?

Contact our Partner Success Team at partnerwithus@opswerks.com to see how we can help.

About OpsWerks

- ✓ OpsWerks is a trusted partner to the world's most elite platform and infrastructure engineering teams, helping them operate at scale.

- ✓ We streamline hybrid cloud operations, execute complex migrations without downtime, and enable developers to quickly build and deploy global apps used by hundreds of millions.

- ✓ From managing CI/CD ecosystems and building orchestration tools to 24/7 support for business-critical systems, for over a decade we've kept developers focused on building.