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Rafay Systems Multi-Cluster Management Platform

Automate Kubernetes cluster management, application deployment and operations at scale

Overview

The application modernization paradigm is being adopted en masse by enterprises that view agility - being able to react faster to market needs - as a competitive advantage. Docker containers are a foundational component of the modern application stack, and Kubernetes has taken the top spot in container orchestration technologies in the community.

Enterprise teams experienced with deploying Kubernetes for containerized application operations have recognized that its far simpler to operate **many, smaller Kubernetes clusters** when the enterprise expects to run tens or hundreds of services across hybrid and multi-cloud environments. The industry as a whole has recognized that running many, smaller clusters makes scaling, reliability, security and integration less complex. Operating clusters across hybrid and multi-cloud environments is also driving another trend: Operations teams prefer to use the Kubernetes distribution delivered by the cloud or hybrid provider in question: They prefer to use Elastic Kubernetes Service (EKS) in Amazon Web Services (AWS) regions, Google Kubernetes Engine (GKE) in Google Cloud Platform (GCP) regions, and so on. Thus, the new normal is we live in a multi-distro, multi-cluster world.

Having been early operators of mission critical production workloads that relied on Kubernetes, Team Rafay has direct experience operating in the new normal and has developed a container and cluster operations platform uniquely suited for the new normal. Rafay Systems has pioneered and innovated multi-cluster management, application deployment and operations at scale. With Rafay, Kubernetes innovators now have a path to programmatically operating any type of Kubernetes cluster, in any environment today **without vendor lock-in.**

Rafay Systems Multi-Cluster Management Platform

The Rafay Systems Multi-Cluster Management Platform is a turnkey offering that automates Kubernetes cluster management, application deployment and operations at scale. The platform enables development, operations and site reliability engineering teams to govern, manage and monitor multiple Kubernetes clusters and distros, and operating applications in Kubernetes environments running on-premise, in the cloud or at the Edge. Rafay accelerates team productivity resulting in faster time-to-market for new business capabilities.

530 Lakeside Drive, Suite 210 Sunnyvale, CA 94085
info@rafay.co, (669) 247-2551

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Foundational Elements

Rafay's platform is built around four foundational elements:

Kubernetes Bringup and Operations

Reduce operational complexity by delivering automation workflows for Kubernetes bringup and ongoing operations in the cloud (natively available managed Kubernetes) or on premises (upstream Kubernetes), with flexible cluster blueprinting capabilities for fast bringup in any environment. Workflows include Kubernetes upgrades, cluster auto-scaling, ESX-friendly packaging, and more. Customers can optionally leverage Rafay's managed Kubernetes distribution for on-premise and/or IaaS (e.g. AWS, GCP, Azure) deployments, while using the Rafay management framework to simplify operations for cloud-based managed Kubernetes services (e.g. Amazon EKS) in the cloud.

Monitoring, Visibility & Governance

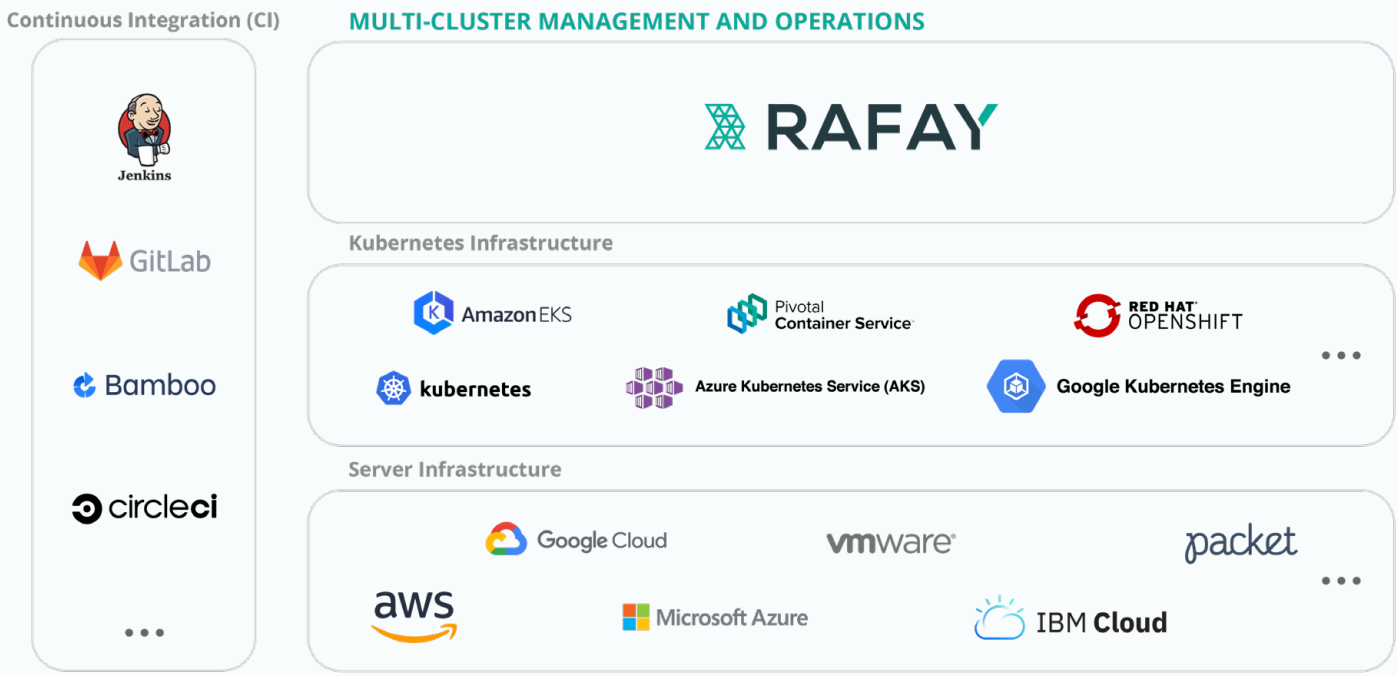
Provide operations and compliance teams with a historical view of all cluster and application activity across your Kubernetes cluster fleet to help SREs resolve issues through a single interface. Operations and compliance teams no longer have to work with multiple products to manage their cluster fleets.

Application Deployment Pipelines

Deliver complete control to application and operations teams by helping them consolidate the source of truth for application and infrastructure lifecycle management. Workflows include customizable stages (dev, pre-prod, prod, etc.), approval workflows for stage transitions, automated application deployment policies across environments, etc.

Zero-trust Kubernetes Access

Enforce permissions management, access enforcement & auditing across all clusters, with just-in-time service account creation for heightened security. Security and compliance teams get full visibility into all on-cluster activity, while making sure that developers are able to easily access clusters as needed without having to learn new tools.



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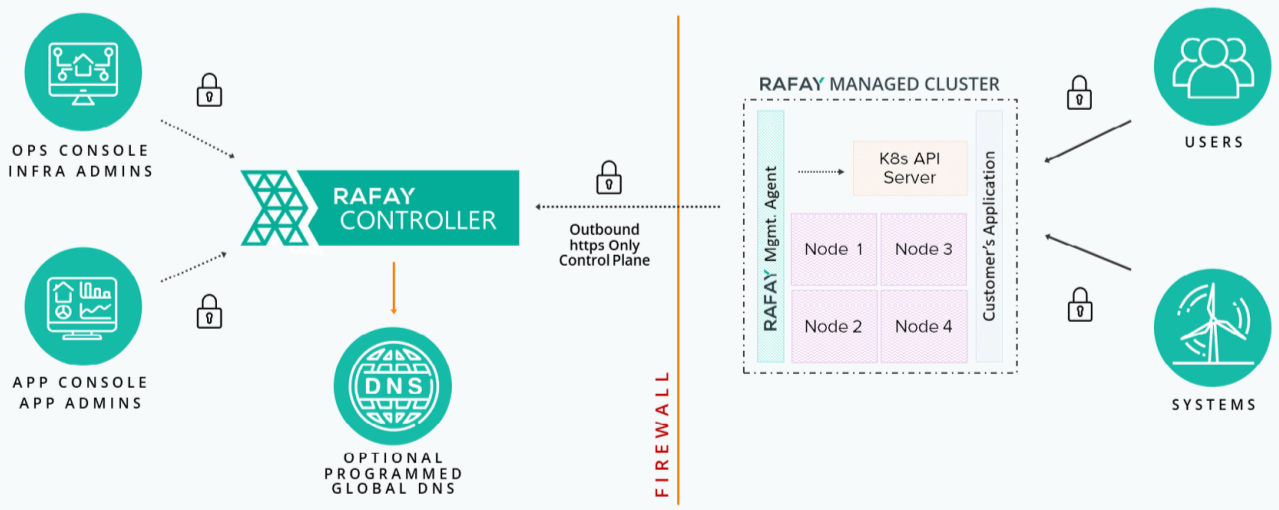
To further reduce operational burden and streamline the application modernization journey for customers, The Rafay Platform has been designed to integrate and interoperate with multiple tools and frameworks used by enterprises:

Integration Type	Supported Options
Public Cloud Infrastructure	aws, Microsoft Azure, Google Cloud Platform
Private Cloud Infrastructure	vmware, openstack.
Managed Kubernetes Services	vmware
Continuous Integration Platforms	Jenkins, GitLab, circleci
Container Registry Services	docker, Microsoft, Amazon ECR, Sonatype Nexus, QUAY by CoreOS, JFrog
Single Sign-On Services	okta, Azure Active Directory, Ping Identity
Key Management Systems	AWS KMS, HashiCorp Vault

Rafay Systems Architecture



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Rafay Systems Architecture

Designed to work with large numbers of clusters deployed across the cloud, data centers and the edge, the Rafay platform is built around a unique architecture that makes it easy for operations teams to leverage anywhere. Key components of the platform are described below:

Rafay Controller

The Rafay Controller is responsible for managing the lifecycle of the Kubernetes clusters deployed across cloud, data center and edge environments. The Controller also exposes interfaces (UI, CLI and APIs) for streamlined application deployment and visibility across clusters. The Controller can be consumed as a multi tenant, managed SaaS service or can be deployed on customer owned infrastructure as needed.

Rafay Agent

Packaged as a Kubernetes operator, the Agent is deployed on Rafay-managed clusters as part of cluster onboarding. Because the Rafay platform works with pre-existing and newly created clusters, the Agent has been designed to be inserted in new and brownfield clusters. Agent operators, when deployed, in turn deploy low-footprint Kubernetes deployments on each node, and act as secure interfaces for enterprises to interact with clusters.

Agents are designed to interact with the Rafay Controller over outbound-only HTTPS (TCP/443) sessions, making it easier for security teams to protect their global application footprints. Security teams no longer have to manage complex firewall and security group policies to allow for CI/CD tools to access remote clusters, or set up jump hosts for developers to access clusters for debugging purposes.

Collectively, the Controller and Agent pairing results in a zero-trust model of operations and security that modern enterprises have come to expect.

About Rafay

Rafay Systems delivers a turnkey offering that automates Kubernetes cluster management and application operations at scale. Development and SRE teams can leverage Rafay's unique offering to reduce the complexity they face today when deploying multiple Kubernetes clusters and distros, and operating applications in Kubernetes environments running on premises or in the cloud, resulting in faster time to market for new business capabilities. The platform delivers multi-cluster management via a "single pane of glass" and is secured using a "Zero Trust" access model to cluster control planes. Used in public cloud, on-premise and edge deployments, Rafay tames both cluster sprawl without the need for additional in-house expertise.

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