



CoreStack Framework

Governance for Kubernetes Excellence

Scalable Kubernetes Governance

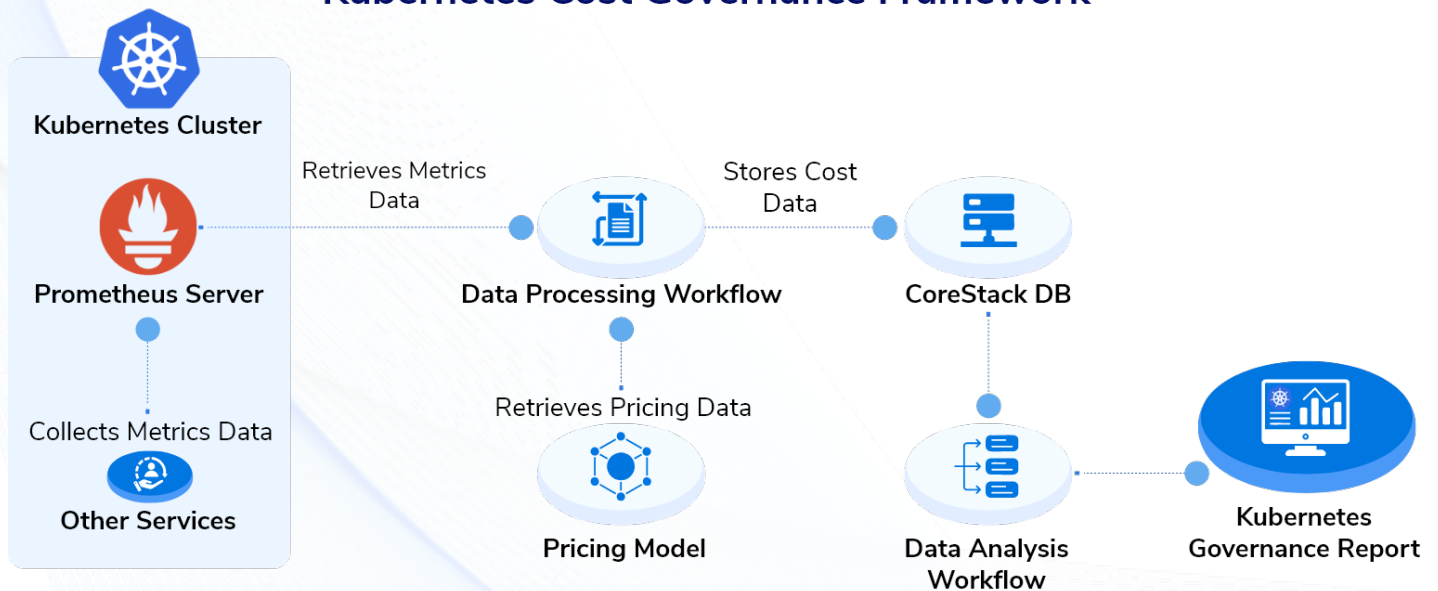
By Perumal Balakrishnan, Senior VP – CoreStack

Executive Summary

Kubernetes has transformed how organizations manage containerized applications by providing exceptional automation and scalability. However, the complexities involved in managing Kubernetes environments require a structured governance approach. The CoreStack Cloud Services Governance framework offers comprehensive visibility, tailored assessment scenarios, and protective guardrails. By implementing effective governance strategies, organizations can secure their Kubernetes clusters, streamline operational workflows, and achieve cost efficiencies.

Kubernetes Governance Framework

Kubernetes Cost Governance Framework

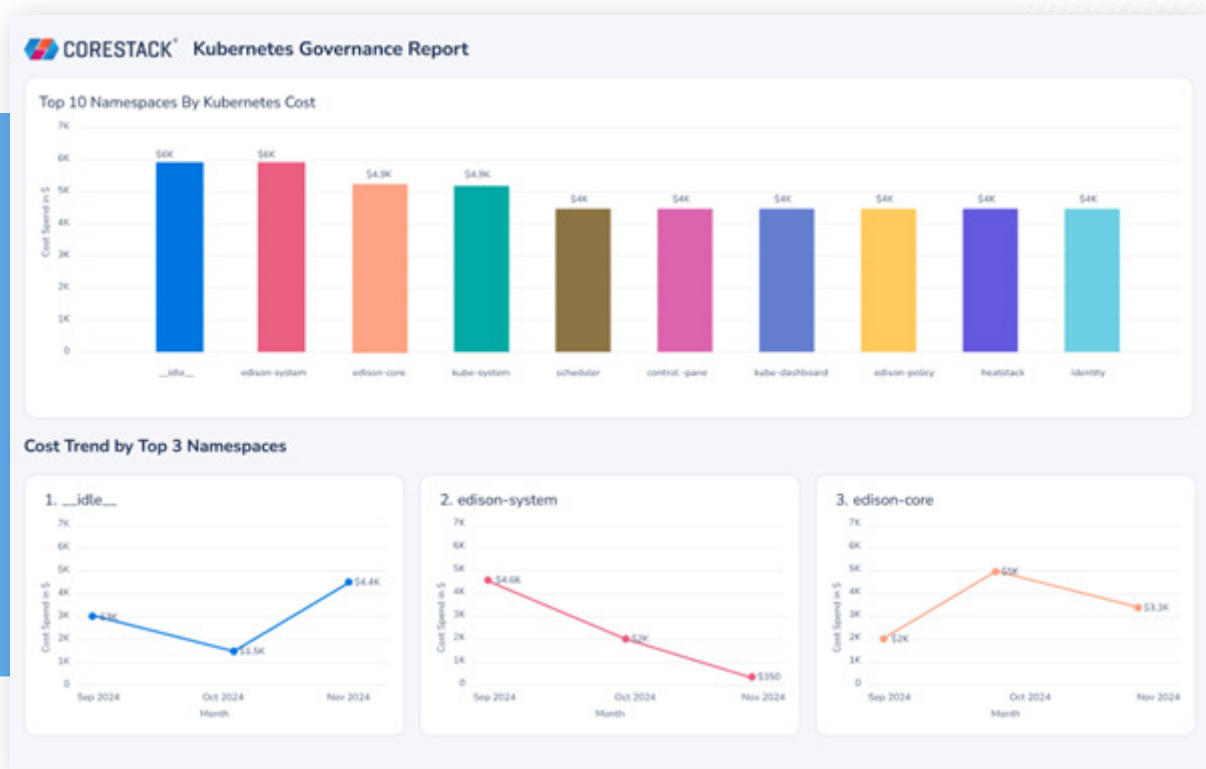


Kubernetes Cost Visibility

Kubernetes In-depth cost visibility includes:

Cost Allocation

Cost Visibility grouping by Business Unit, Department, Application. Showback report based on shared Namespace, Labels.



Granular Cost Breakdown

CoreStack provides a detailed breakdown of Kubernetes costs, such as pods, nodes, and containers, and their metrics, such as computing, storage, and networking. This enables organizations to understand precisely where their cloud spending is occurring.

Top 10 Pods By Kubernetes Cost

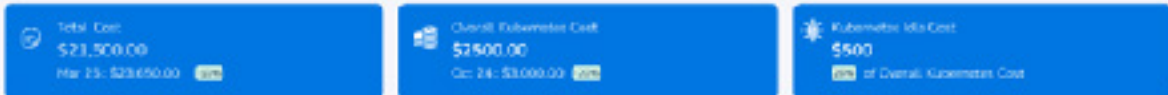


Cost Trend by Top 3 Pods



Cost Trends

Track Cost trends by Cloud providers, Cloud accounts, Cluster Usage, Namespaces, Departments and Applications.



Kubernetes Cost Visibility



Cost Trend by Cloud Providers



Idle/Unused Cost

Identify and quantify the cost associated with idle or unused resources within the clusters.

Budget Tracking

Compare actual spending against budgets for Departments, Namespaces and Applications.

Top Cost Consumption

Identify and track the pods, Namespaces, Department that are consuming the most resources and incurring the highest costs.

Seasonality Insights

Analyze seasonality, peaks and troughs to predict future capacity needs.

Assessment Framework

Implement Assessment Framework and Automated workflow to ensure adherence to best practices in security, cost management, and operational efficiency.

Create organization-specific rules to enable Automation workflow for Cluster Resource Rightsizing, Idle Cluster Resources Identification, Abandoned Resources Termination, and Spot Instance Utilization. The goal is to enhance the maturity of Kubernetes deployments, enabling organizations to scale their operations seamlessly while maintaining ambitious standards of performance, cost control, and security.



Resource Rightsizing

CoreStack Framework supports recommendations and rule-based automation workflows for rightsizing cluster resources like Cluster Nodes, Container Requests, and Persistent Volumes. This helps reduce costs by matching resource allocation with actual usage patterns.



Idle Resource Identification

CoreStack framework enables the identification of idle resources within clusters and enables organizations to decommission them automatically through the ITSM Approval flow.



Pod Rightsizing

Pod rightsizing is crucial for achieving both cost efficiency and performance optimization in a Kubernetes environment. By accurately determining the appropriate resource allocations for CPU and memory, organizations can avoid the pitfalls of over-provisioning, which wastes resources and increases costs, and under-provisioning, which can lead to application performance issues. Monitoring resource usage helps teams establish a baseline for workloads, setting effective resource requests and limits to ensure pods have the necessary resources without overconsumption.



Rebalancing Nodes

Rebalancing fragmented nodes in a Kubernetes cluster is crucial to optimize resource utilization and ensure efficient workload distribution.

As applications scale and workloads fluctuate, resources can become unevenly distributed across nodes, leading to inefficiencies and underutilization. By actively monitoring resource allocation and employing strategies such as pod migration, cluster operators can consolidate fragmented resources and minimize idle capacity. This practice enhances cluster performance, reduces costs, and ensures efficient resource usage. Ultimately, rebalancing fragmented nodes promotes a more resilient and responsive Kubernetes environment, enabling seamless scaling and improved application performance.



Autoscaling

Horizontal Pod Autoscaler (HPA) or Vertical Pod Autoscaler (VPA) enables dynamic adjustments of pod replicas and resource requests based on real-time demand, resulting in a balanced and agile application environment.

Guardrails Notification Framework

Implementing proactive notifications to maintain stringent control and pre-emptively address potential issues ensures continuous compliance and operational excellence in Kubernetes environments.

This framework includes custom organizational governance rules based on defined thresholds for Business Units, Applications, and Namespaces. The organizational rules for Kubernetes Clusters encompass comprehensive metrics such as CPU Utilization, Disk Utilization, Memory Utilization, Container Requests, Pod Health, Node Health, and Container Health, ensuring robust management and proactive issue resolution.

Daily Budget - Application

Provide notifications at the Application or Business Unit level to manage daily budgets and alert when spending exceeds the threshold.

TTL Rules

Implement Time-To-Live (TTL) rules, notifications, and cleanup policies for Kubernetes clusters to enhance management and cost efficiency. Setting up alerts and budget constraints is crucial for controlling Kubernetes clusters and avoiding budget overruns. Effective cleanup policies also play a vital role in the cost monitoring system, allowing teams to eliminate obsolete and unused resources and optimize resource utilization efficiently.

Metric Threshold and Resource Health

Implement a Notification system for all Kubernetes metrics and resource health.

AI-Powered NextGen Cloud Governance and Security

Our NextGen Cloud Governance portfolio transforms organizations from a reactive posture to a proactive one, enabling predictable increases in top-line revenues and bottom-line efficiencies. To get started or to learn more, visit www.corestack.io or reach out to us at sales@corestack.io.

Industry Recognition

Gartner

Magic Quadrant: Cloud Management Platforms

FORRESTER

Forrester Wave: Cloud Cost Management and Optimization

IDC

Innovator in Multicloud Management

FROST & SULLIVAN

Frost Radar: Leader, Global Hybrid Cloud Management

Deloitte
Technology Fast500

Deloitte Technology Fast 500 Winner

GeekWire

GeekWire 200 Winner

Inc. 5000

Inc. 5000 Winner

Inc. Best Workplaces

Inc. Best Workplaces Winner



CoreStack is an AI-powered NextGen Cloud Governance platform that enables enterprises to embrace cloud with confidence, rapidly achieving continuous and autonomous cloud governance at scale. CoreStack helps 750+ global enterprises govern more than \$2B in annual cloud consumption. The company is a Microsoft Azure (Legacy), Gold Partner, Amazon AWS Technology Partner with Cloud Operations Competency, Oracle Cloud Build Partner, and Google Cloud Build Partner.