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CloudNativeCon

India 2026

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Unity in Diversity: Architecting "Shared-First" Kubernetes Platforms for Life-Critical Workloads

Siddiq Tanveer M A • Manoj K R • Rishi Nikhilesh Damerla • Geethika Chappidi

Motorola Solutions





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Meet the Panel



Siddiq Tanveer M A

Engineering Manager
Motorola Solutions

Architects and operates secure, resilient multi-cloud Kubernetes platforms at enterprise scale. Delivers managed and self-hosted environments that drive developer velocity and operational excellence.



Manoj KR

Senior Software Engineer
Motorola Solutions

Kubestronaut Platform Engineering professional specializing in large-scale Kubernetes, cloud-native infrastructure, and automation. Delivers secure and highly reliable self-hosted and managed container environments at enterprise scale.



Rishi Nikhilesh D

Engineering Manager
Motorola Solutions

Specialized in Kubernetes, Prometheus, Grafana, and Agentic AI. Active community leader and speaker at CNCF, Grafana, and Global AI groups, driving platform innovation from pain points to production.



Geethika Chappidi

Software Engineer
Motorola Solutions

Focuses on architecting cloud-native development, automation, and the evolving Kubernetes ecosystem. Brings a fresh perspective to building AI-enhanced infrastructure for mission-critical applications.



Unity in Diversity: Global Scale & Stakes



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At Motorola Solutions, our Platform Team provisions and manages the complete lifecycle of **multi-cloud, multi-tenant Kubernetes platforms**, hosting life-critical workloads.



The High-Stakes Paradigm



The Stakes

911 Dispatch & Emergency Systems



The Anti-Pattern

Fragmented 'One Cluster Per App' Silos

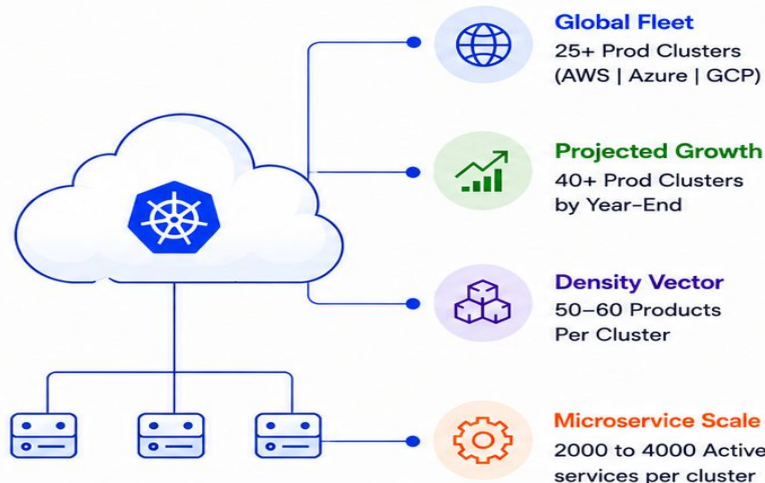


The Guardrail

Absolute Data Plane Isolation



Scale & Footprint



Global Fleet

25+ Prod Clusters
(AWS | Azure | GCP)



Projected Growth

40+ Prod Clusters
by Year-End



Density Vector

50-60 Products
Per Cluster



Microservice Scale

2000 to 4000 Active
services per cluster

Shared control plane, dedicated data plane & workload isolation

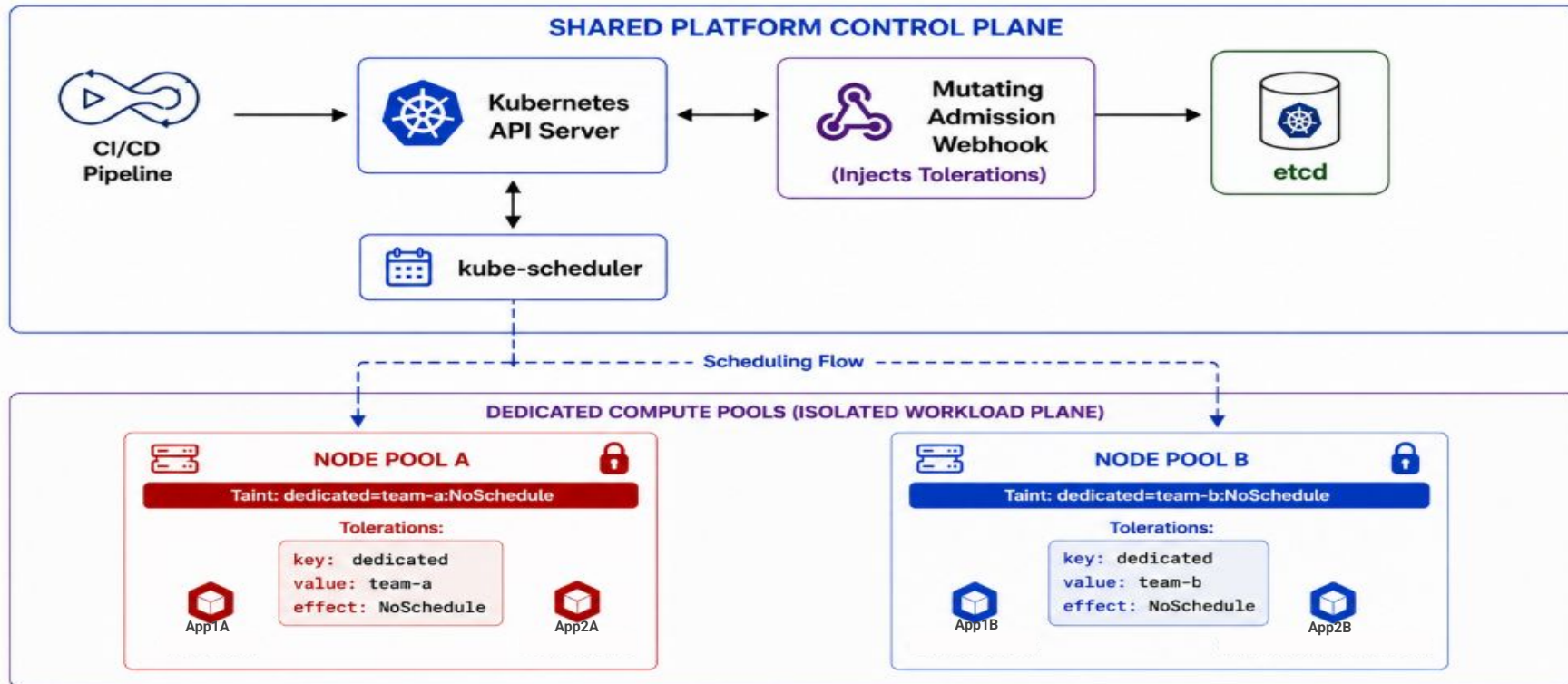


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Network Isolation with Dedicated Nginx Ingress Controller

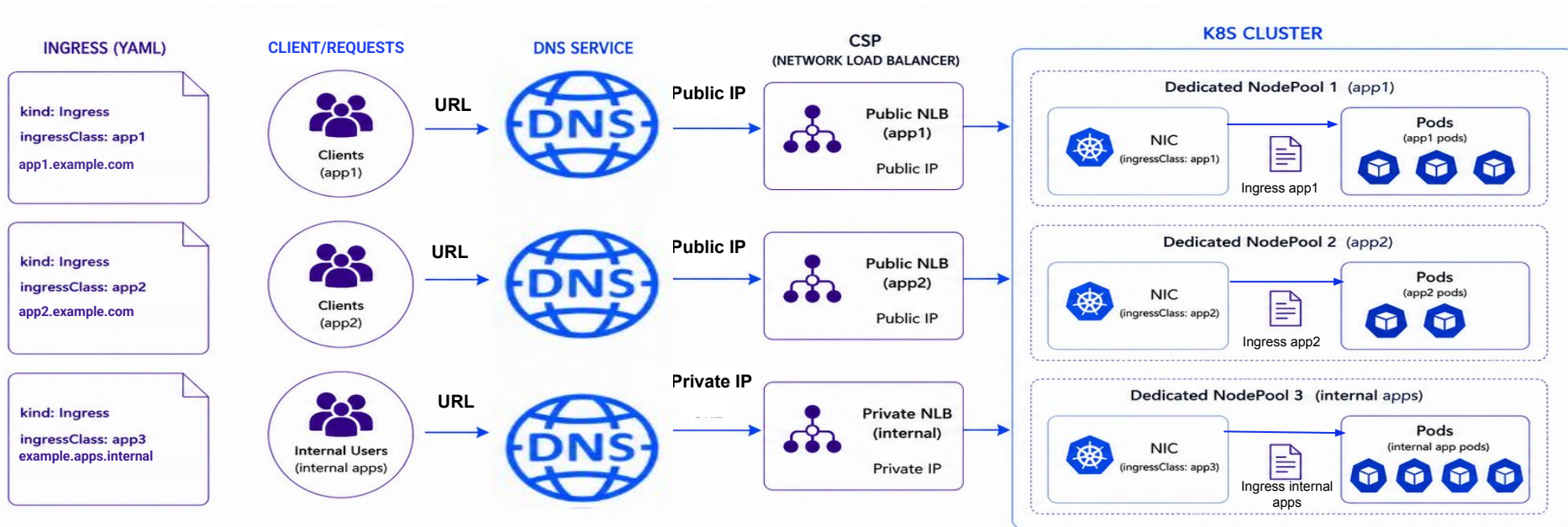


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Multi-Cloud High-Availability DNS & Collision Prevention



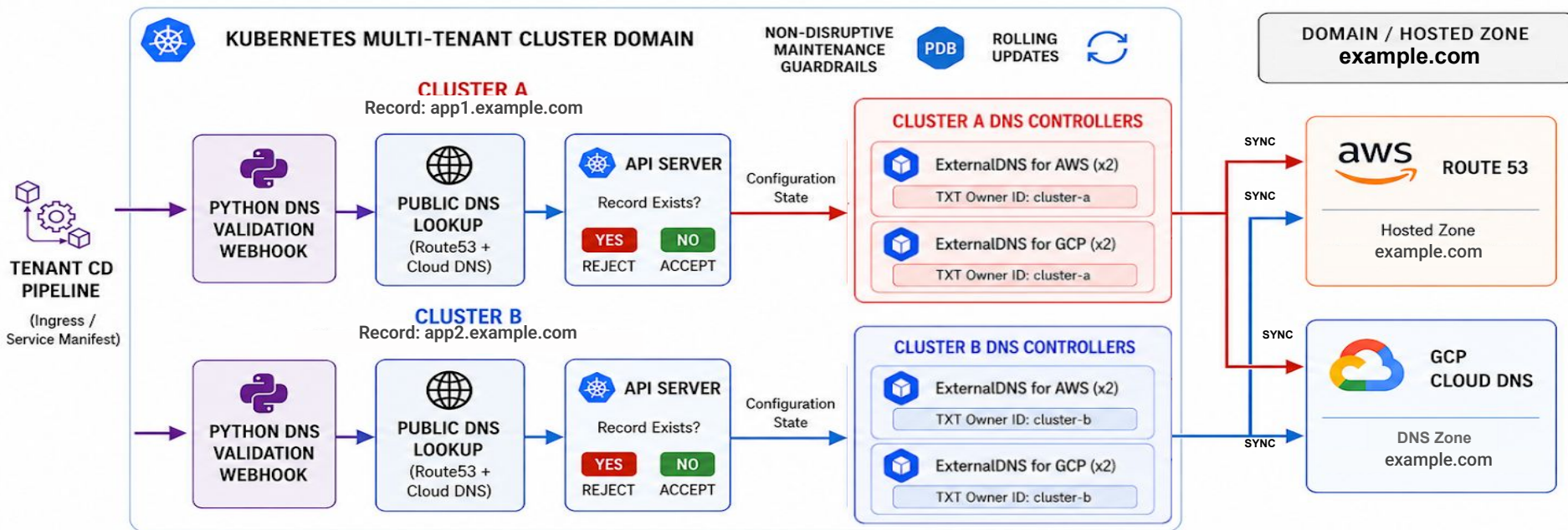
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ACTIVE-ACTIVE REDUNDANCY & TENANT RECORD GUARDRAILS



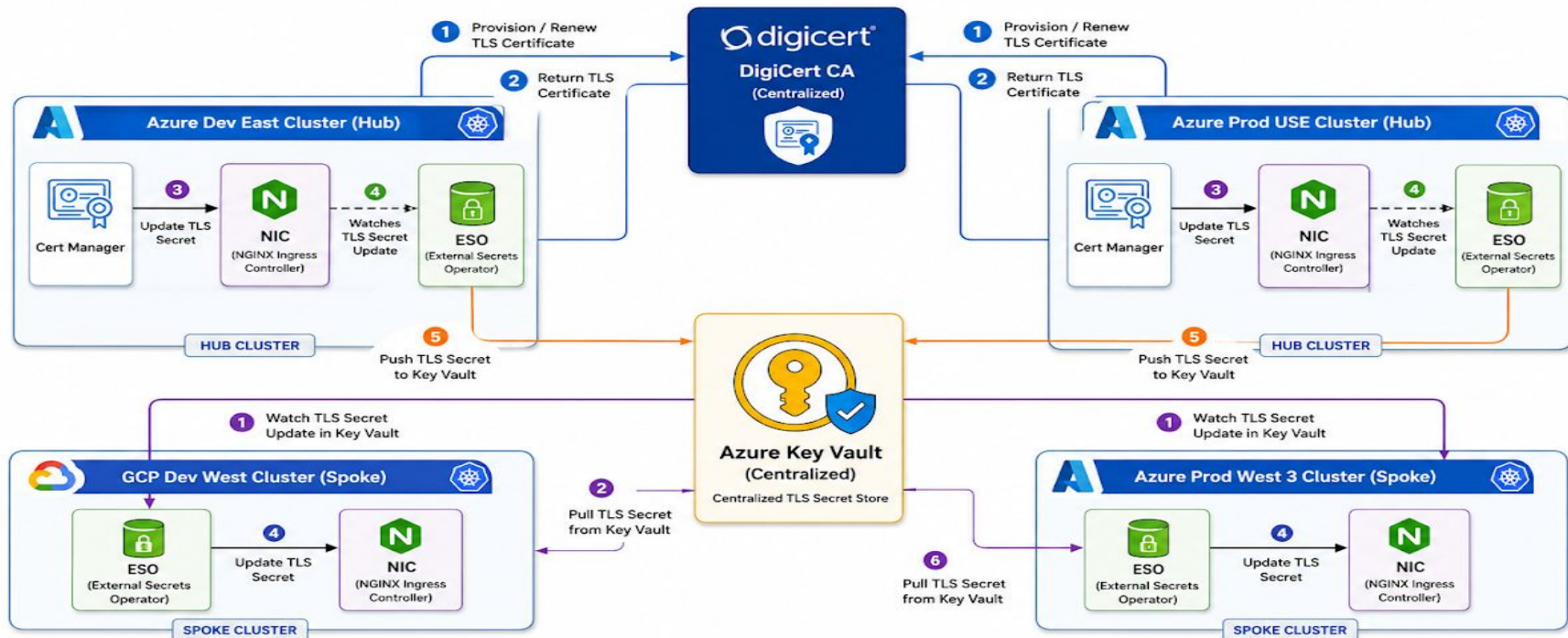
Automated Certificate Lifecycles & Day-2 Stability



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Multi-Dimensional Dynamic Scaling

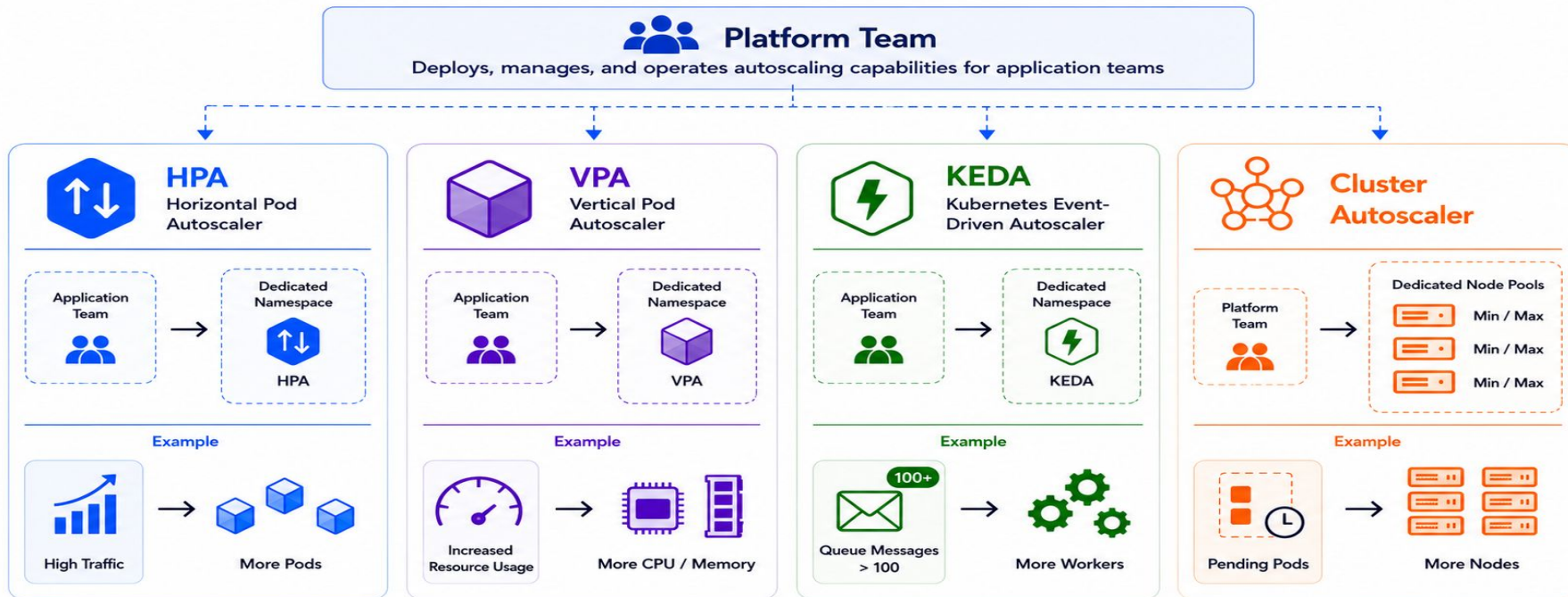


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Automatically scale applications and cluster capacity based on demand while maintaining tenant isolation.

Observability, Security, SRE & FinOps



Observability

Centralized Monitoring
& Chargeback



Logs & Traces sent to
Elasticsearch (Platform,
Application logs)



Metrics to Remote
Prometheus /
Thanos Receivers



Partner Remote Config for
Centralized Kubernetes
Cluster



Index Size & Ingestion Rate
determine Partner Chargeback



Security

FIPS Compliance &
Secure Posture



Security-Hardened Images
from ChainGuard (FIPS
Compliant)



Continuous Monitoring
(COMMON) of Vulnerabilities
across all clusters



Self-Hosted Cluster Patching
by Team



Security Monitoring with
Twistlock Defender (migrating
to Wiz)



ChainGuard coordinates
upstream fixes; Team
maintains highly secure posture



SRE

Reliability Engineering
& AI Support



Separate SRE Platform Team
follows best practices



SRE AI Agent summarizes
root cause for faster Incident
Resolution



Human review of AI-generated
Incident Response Docs (IRD)



Blameless Postmortems after
Major Incidents



Litmus Chaos Testing
experiments carried out
frequently (e.g., monthly)



FinOps

Cost Management &
Anomaly Detection



Central Cost Management Team
tracks irregularities & anomalies



Partner Chargeback based on
utilization metrics:
- Observability: Index Size,
Rate of Ingestion
- Infra: Proportional
Compute/Memory usage
(common/dedicated node pools)



Transparent charging and
resource upscale notifications



FinOps Agent identifies and
recommends unused resource
usage

Defeating the Paradigm & The Economic Impact



The Old Paradigm vs. The New Reality



Abandoned expensive, over-provisioned 'one cluster per app' silos.



Unified commercial, sovereign, and federal tenants onto AWS, Azure, and GCP.



Replaced manual silo management with automated, zero-touch guardrails.

vs.



The 'Unity Dividend'



Delivered immediate **50% to 60%** infrastructure cost savings fleet-wide.



Hardened a single control plane to host **2,000–4,000** microservices per cluster.



Proved absolute data plane isolation for life-critical workloads.



Platform Thesis: Absolute isolation does not require resource fragmentation; **life-safety reliability** can securely thrive in a shared-first ecosystem.

FINANCIAL OPTIMIZATION AT GLOBAL SCALE



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 Cluster Environment	 Hosting Scale	 Total Cost Savings Percentage
 Dev	 Hosts 60+ Teams	 70%
 Prod	 Hosts 20+ Teams	 73%
 CJIS Prod	 Hosts 50+ Teams	 46%
 Fed Prod	 Hosts 30+ Teams	 50%

Key Takeaways



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Shared Kubernetes Clusters →
Isolated Multi-Tenant Kubernetes Platform



Shared Node Pools →
Dedicated Node Pools & Workload Isolation



Shared Ingress Controllers →
Dedicated Ingress Controllers & Network Isolation



Automated & Highly Available DNS Management



TLS Certificate Renewal per Cluster →
Automated TLS Lifecycle Management



Autoscaling as a Platform Service



Unified Observability, Security & SRE Enablement



Cost-Optimized Shared-First Platform Architecture



Delivering Highly Available, Secure, Scalable, and Cost-Optimized Multi-Tenant Shared Platforms for Life-Critical Workloads.



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ANY QUESTIONS?





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WE THANK YOU ALL FOR BEING HERE

Let's Connect



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Senior Software Engineer
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