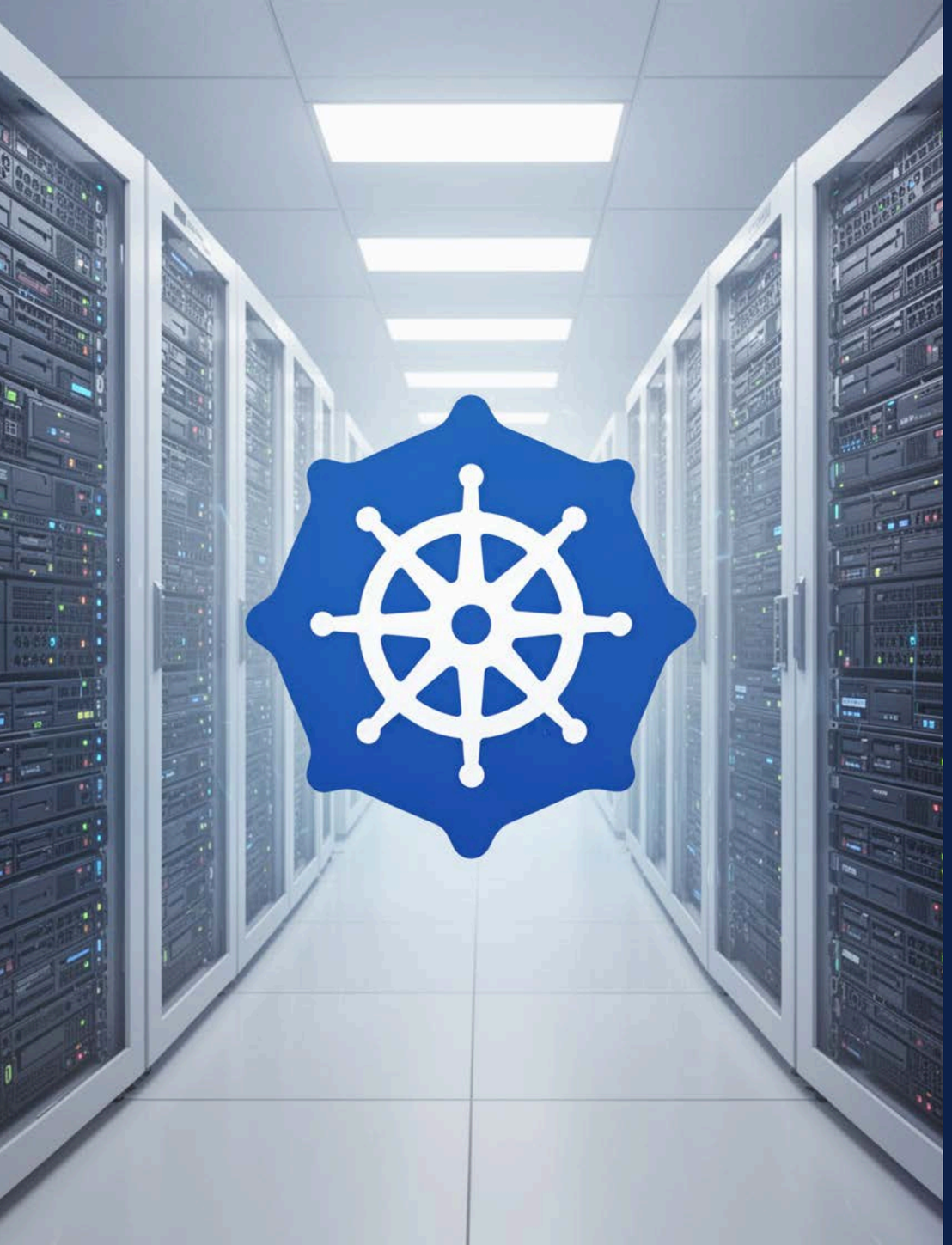

Reducing On-Call Pain in Hybrid Platforms: Operating VMs and Containers Reliably on Kubernetes

PRESENTED BY

Shruthi Rajashekar

Broadcom Inc.

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SRE Tooling Fragmentation

Site Reliability Engineering (SRE) teams tasked with managing hybrid platforms frequently face the daunting challenge of fragmented tools. This fragmentation creates a complex web of inefficiencies, making it increasingly difficult for these teams to swiftly and effectively respond to incidents. As a result, operational challenges surge, forcing teams to navigate a maze of disconnected systems. This not only hampers their ability to maintain seamless operations but also demands innovative solutions to bridge the gaps, ensuring the reliability and stability of their platforms.

Hybrid Platform Complexity

Managing containerized services in conjunction with long-standing virtual machines results in significant operational fragmentation. This fragmentation poses substantial obstacles in incident response and resource management across a wide array of environments. The need to coordinate between these diverse systems can lead to inefficiencies, complicating efforts to maintain seamless operations and effectively allocate resources.

Operational Challenges for SRE Teams

FRAGMENTED FAILURE MODES

SRE teams encounter **increased complexity** due to fragmented failure modes across hybrid platforms, making it difficult to identify and resolve incidents efficiently.

DIVERSE TOOLING

The use of multiple tools for monitoring and incident response results in **inconsistencies**, complicating the alerting process and hindering effective remediation efforts.

COGNITIVE LOAD

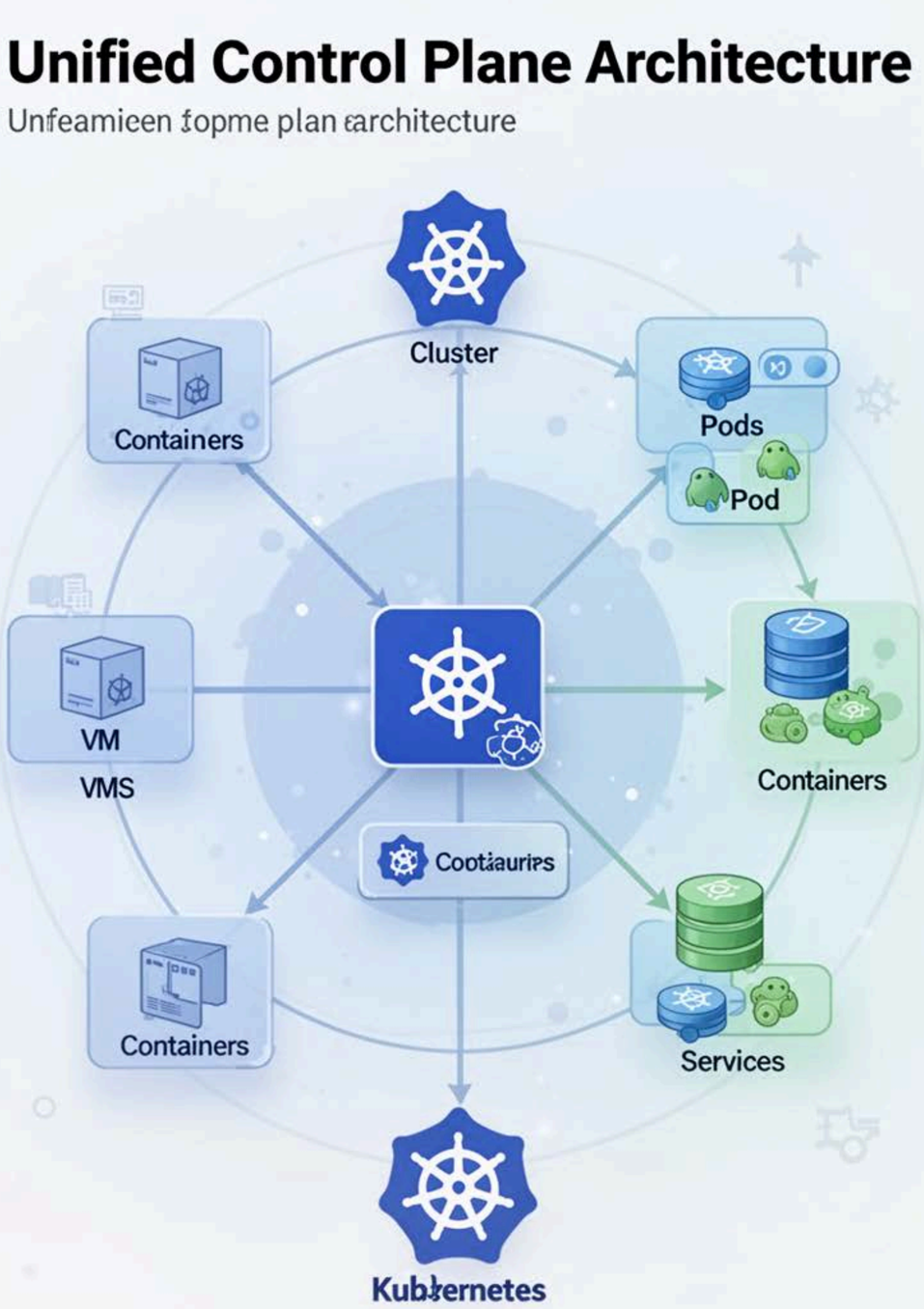
High cognitive load from managing various systems affects the SRE team's ability to respond quickly, leading to potential **missed service level objectives** and increased stress.

Introducing VM Service in VCF

Treating virtual machines (VMs) as first-class resources in Kubernetes via VM Service a VCF offering enhances integration, simplifies management, and improves reliability. This method optimizes resource use, supports unified management, and boosts operational efficiency. It allows organizations to modernize infrastructure while ensuring stability for existing applications, enabling IT teams to deploy and scale with agility. Additionally, VM Service supports DevOps practices, enhancing continuous delivery and integration, fostering innovation, and adaptability in a changing digital landscape.

Simplifying Operations

The VM Service's declarative control plane integrates virtual machines and containers, enhancing operational efficiency and simplifying hybrid infrastructure management. It creates a unified IT environment that improves scalability, resource allocation, and reduces costs and downtime. The intuitive interface allows IT teams to manage workloads with agility, crucial for businesses modernizing their workloads. Additionally, robust security features ensure data integrity and compliance in a dynamic digital landscape.



Benefits of a Unified Control Plane

CONSISTENT ALERTS

A unified control plane ensures **consistent alerts** across both VMs and containers, allowing SRE teams to respond to incidents more efficiently and minimize downtime.

SIMPLIFIED CAPACITY PLANNING

By standardizing resources, teams can achieve **simplified capacity planning**, making it easier to allocate resources effectively and respond to changes in demand.

IMPROVED FAILURE ISOLATION

Enhanced failure isolation capabilities reduce the impact of incidents, enabling teams to manage mixed workloads effectively and maintain **system stability** during incidents.

Before and After

FRAGMENTED TOOLING

Separate tooling for VMs and containers leads to inefficiencies, lack of standard automation, increased alert noise, and **slower incident resolution**, complicating operations for SRE teams managing hybrid environments effectively.

UNIFIED CONTROL PLANE

A unified Kubernetes control plane standardizes lifecycle management, streamlines operations, and enhances reliability, enabling SRE teams to respond faster and more effectively to incidents across their infrastructure.

Reliability Lessons

FAILURE ISOLATION

Implementing failure isolation strategies is crucial as it significantly reduces the blast radius in mixed workloads, ensuring that issues in one service do not propagate widely.

POLICY ENFORCEMENT

Consistent policy enforcement guarantees compliance and stability across hybrid environments, enabling teams to manage configurations, security, and performance expectations effectively and reliably.

SAFE ROLLOUTS

Employing safe rollout strategies minimizes disruptions during updates, allowing teams to deploy new features with confidence while maintaining system stability and user satisfaction.

OBSERVABILITY

Tailoring observability for hybrid environments is essential for day-2 operations, enabling SRE teams to swiftly identify issues, recognise patterns, and respond to incidents efficiently.

Observability Patterns

Unified monitoring of virtual machines (VMs) and containers allows for early issue detection by utilizing consistent telemetry signals. This approach facilitates swift incident triage and minimizes operational noise. By integrating these systems, organizations can gain a holistic view of their infrastructure, ensuring that resources are utilized efficiently. Furthermore, this unified approach supports scalability, allowing businesses to adapt quickly to changing demands. It also enhances security by providing comprehensive visibility into potential vulnerabilities across all platforms. As a result, teams can proactively address concerns before they escalate, maintaining optimal performance and reliability.

Practical Guidance

ADOPT VM SERVICE

Using VCF full stack and VM Service to treat VMs as Kubernetes resources, streamlines operations and enhances reliability across your hybrid platform while leveraging existing Kubernetes capabilities.

IMPLEMENT OBSERVABILITY

Establish observability patterns that combine signals from VMs and containers, facilitating early detection of issues and improving the overall reliability of hybrid workloads.

STANDARDIZE TOOLING

Implement uniform tooling across all environments to simplify incident response, reduce complexity, and enable SRE teams to manage resources more effectively and efficiently.

DEFINE SAFE ROLLOUT

Create policies for safe rollouts and failure isolation, minimizing disruptions during deployment while ensuring compliance and stability across hybrid environments.

Thank You!

Engagement drives better solutions and collaboration

Contact Information

- SHRUTHI RAJASHEKAR
- BROADCOM INC.
- CONF42 SITE RELIABILITY ENGINEERING (SRE) 2026