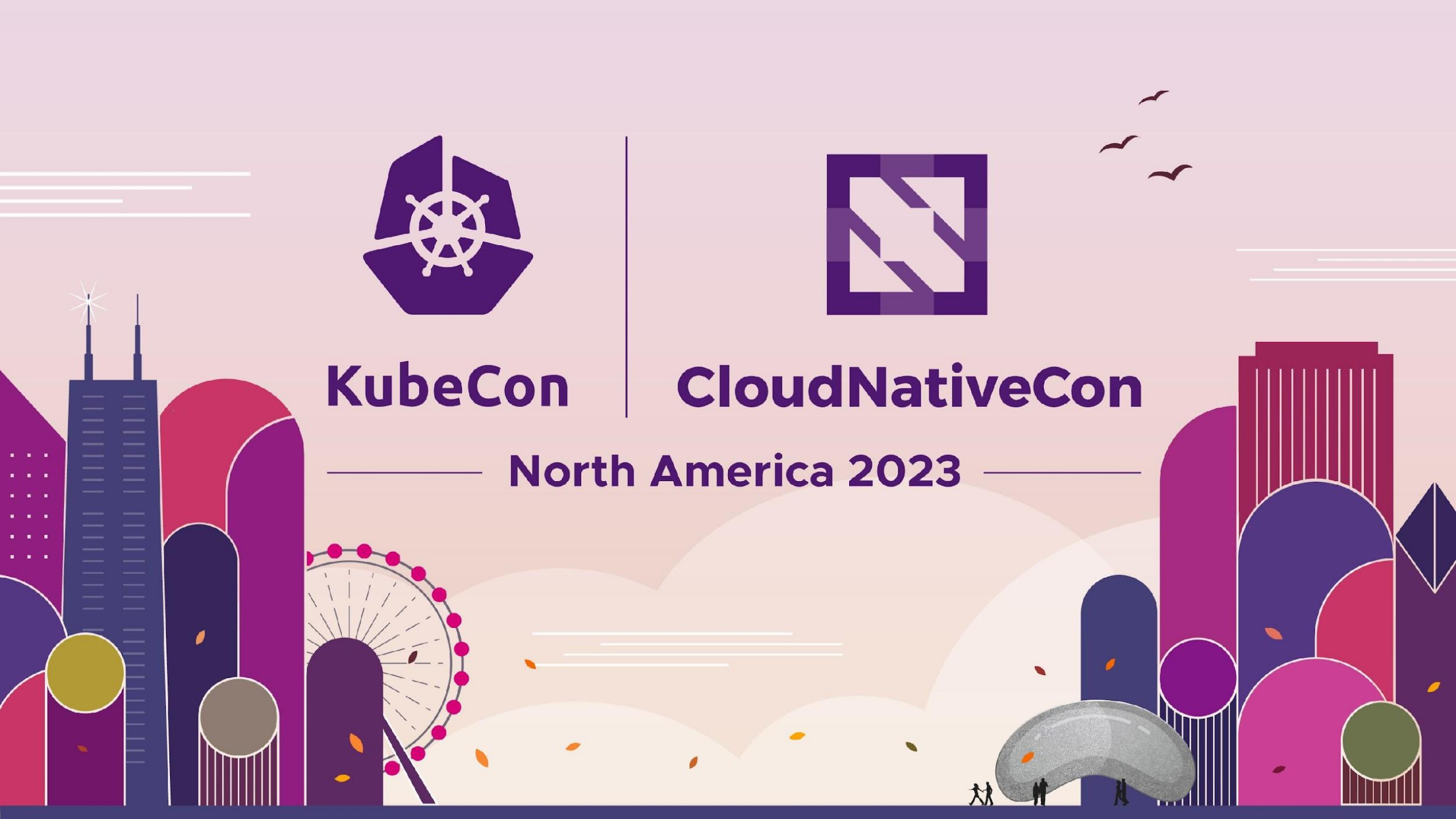
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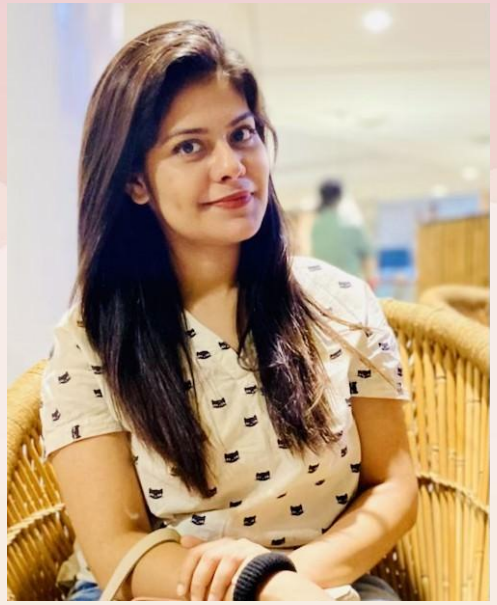
Automate Production-Ready Clusters Using Crossplane Compositions and Kyverno

Dolis Sharma

Sr. Customer Success Engineer

Nirmata



Agenda

- Why automate production clusters?
- How can Crossplane Composition be beneficial?
- Demo 1: Automate production-ready cluster creation using Crossplane Compositions.
- Challenges in the current cluster automation workflow.
- How Kyverno is beneficial?
- Demo 2: Integrating Crossplane Compositions and Kyverno for seamless cluster/infra creation.

About me

Dolis Sharma

- Sr. Customer Success Engineer at Nirmata
- CKA, CKAD, AWS SA Certified

What are Production-Ready Clusters?

Parameters:

- Cluster Architecture and Sizing.
- Cluster Add-ons.
- Security and Access Management.
- Configurations for optimizing workloads.

Why Automate Production Clusters?

- Self Service.
- Automating DR and failover processes.
- Efficient and Scalable.
- Standardized Deployment.
- Ease of Management.

How is Crossplane Beneficial ?

- IaC capabilities.
- Native Kubernetes integration.
- Automated reconciliation.
- Infrastructure resource abstraction.
- Provides extensible and adaptable framework for managing complex infrastructure setups.

What is Crossplane Composition?

- Compositions are a template for creating multiple managed resources as a single object.
- Composes individual managed resources together into a larger, reusable, solution.
- An example Composition may combine a virtual machine, storage resources, and networking policies.

Creating Compositions consists of:

- Resource templates define the resources to create.
- Enabling Composite Resources to use this Composition template.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Demo 1:

Automate production-ready cluster creation using Crossplane Compositions.

Challenges in Current Cluster Automation workflow

- Excessive privileges.
- Compliance and Governance.
- Consistency.
- Misconfigurations.

About Kyverno

- “Govern” in Greek (*κυβερνώ*)
- CNCF Incubating project.
- Kubernetes admission controller.
- Purpose-built for Kubernetes.
- No programming language/knowledge required!
- Most popular (by stars) policy engine.
- Largest policy library of any policy engine.

How is Kyverno Beneficial ?

- Addressed IaC security risk
- Automate Policy enforcement.
- Block misconfigurations.
- Shift-left security with early detection.
- Policy as Code (Policies in YAML)
- Background scanning.
- Validate, Mutate, generate, verify images, and cleanup.


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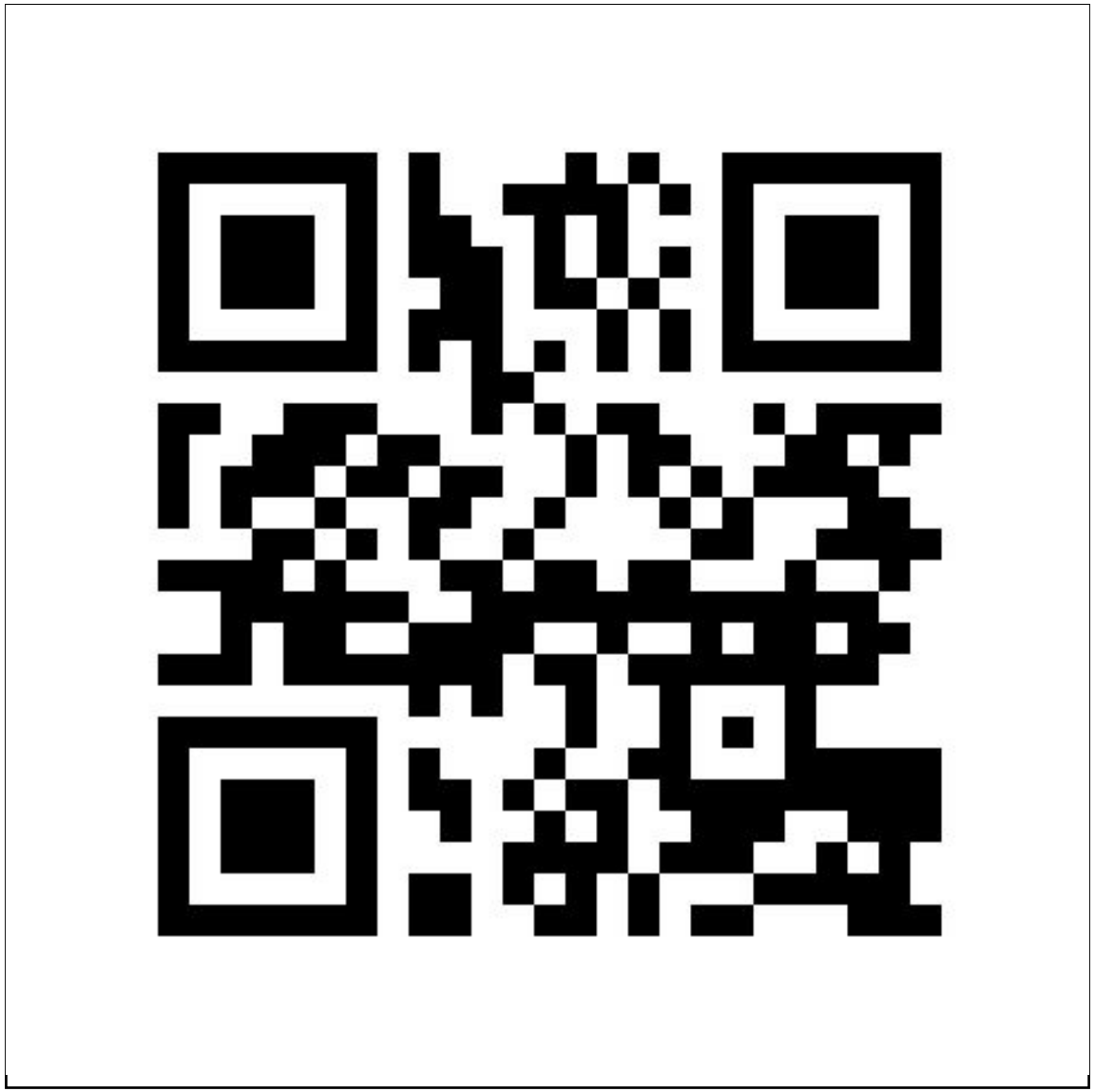
Demo 2:

Integrating Crossplane Compositions and Kyverno for Seamless Cluster/infra creation



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