KubeCon | CloudNativeCon

North America 2023

Policy-based GRC

CNCF Kubernetes Policy WG

Hi, there!

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Kubernetes Policy WG

Provide an overall architecture that describes both the current policy related implementations as well as future policy related proposals in Kubernetes. Through a collaborative method, we want to present both operators and users a universal view of policy architecture in Kubernetes.

Slack:
https://slack.k8s.io/#wg-policy

GitHub:
kubernetes-sigs/wg-policy-prototypes

Projects

- Kubernetes Policy Management Paper
- Policy Report CRD <API>
  - Policy Report Adapters: Trivy, Kyverno, kube-bench, Falco, …
  - Policy Report CRD → NIST OSCAL
- Kubernetes Governance, Risk, and Compliance Paper

Audience Question 1

For Kubernetes, how many are implementing or planning to implement:

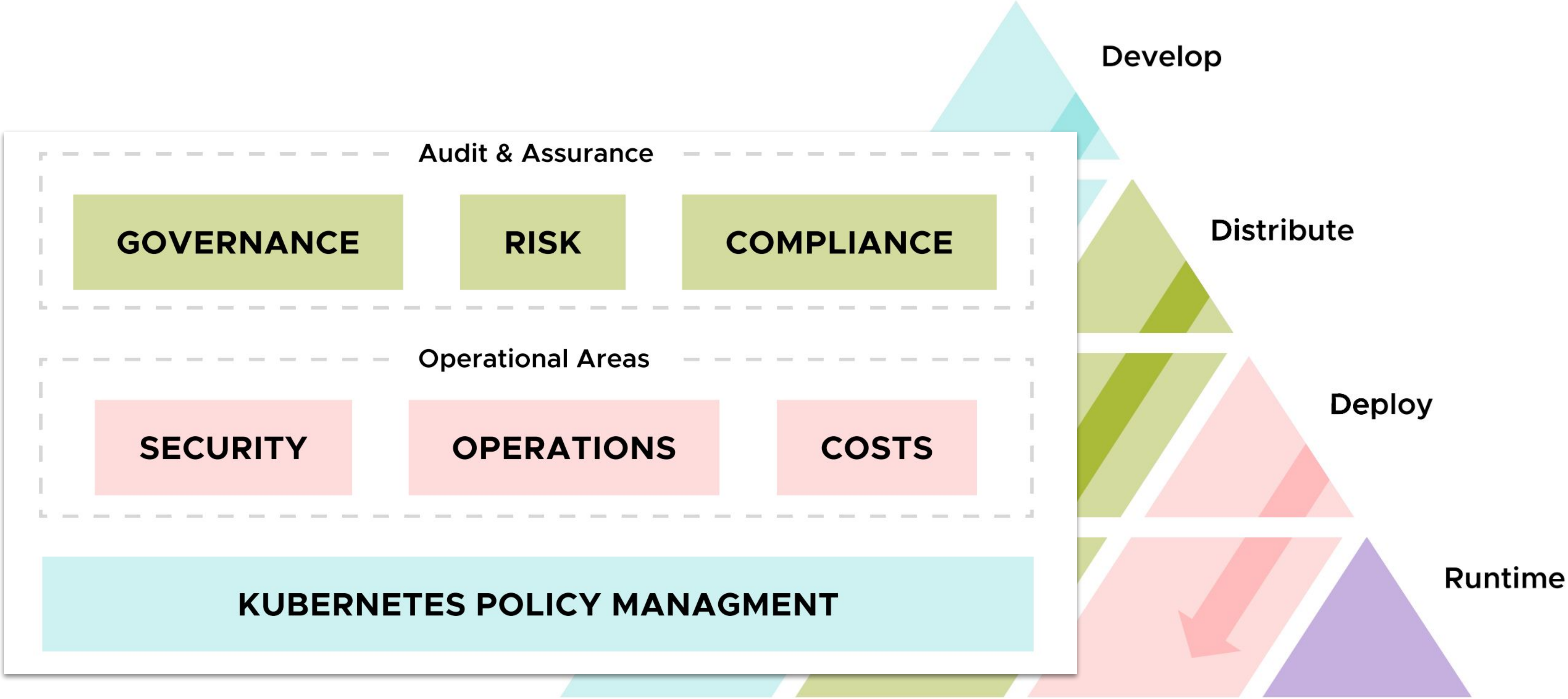
1. Any form of policies?
2. Policy as Code (via CI, GitOps, etc.)?
3. Compliance as Code?

Audience Question 2

What are your top pain points for Kubernetes policy & governance?

1. Deciding on a policy engine
2. Writing & managing policies
3. Mapping across policies, compliance standards and controls

Kubernetes GRC



Upcoming project ideas

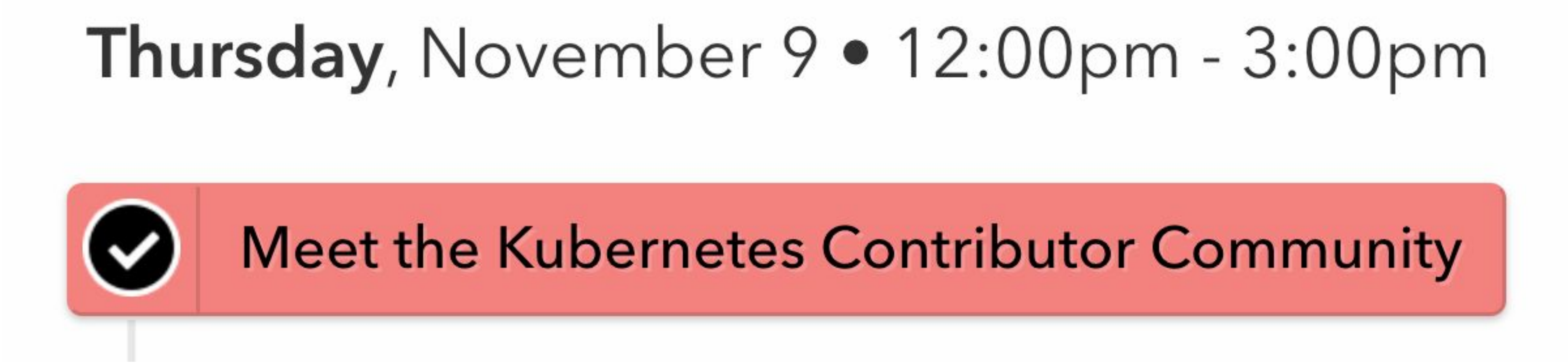
1. Map Kubernetes policies to compliance standards and controls?
2. Kubernetes controls catalog?

Meetings

Wed 8:00 AM Pacific, Every two weeks;

Join kubernetes-wg-policy@googlegroups.com to get a calendar invite

Let's continue the conversation…



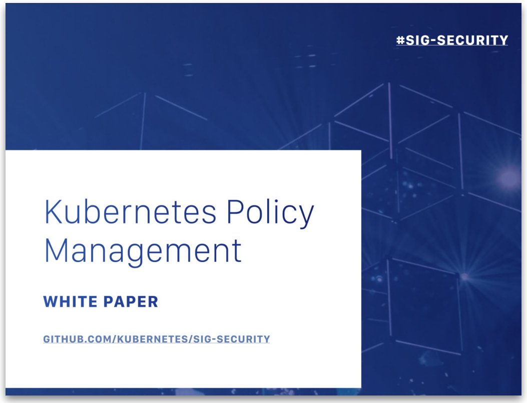
Thursday, November 9 • 12:00pm - 3:00pm

✓ Meet the Kubernetes Contributor Community

Please scan the QR Code above
to leave feedback on this session

Thanks!

Kubernetes Policy Management

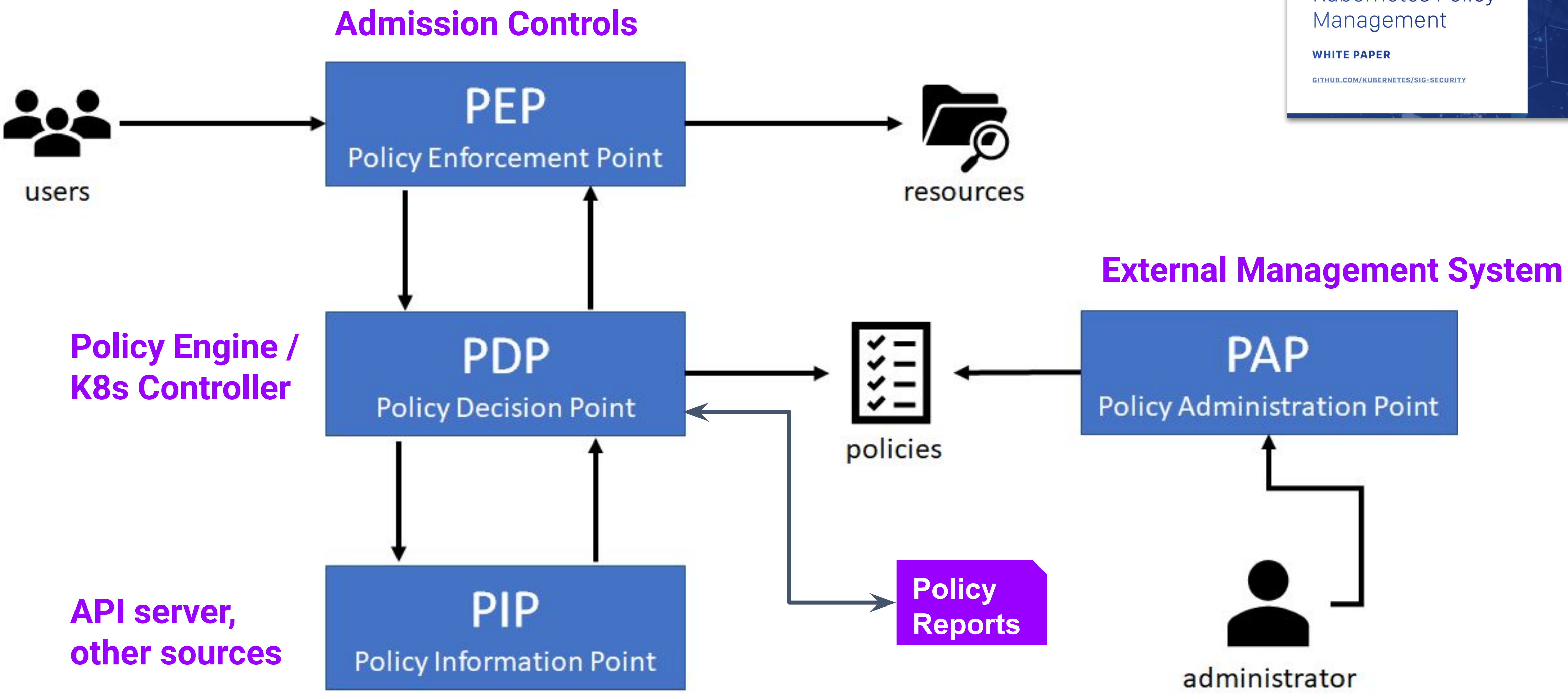


#SIG-SECURITY

Kubernetes Policy Management

WHITE PAPER

GITHUB.COM/KUBERNETES/SIG-SECURITY



Admission Controls

users

PEP

Policy Enforcement Point

resources

External Management System

Policy Engine / K8s Controller

PDP

Policy Decision Point

policies

PAP

Policy Administration Point

API server, other sources

PIP

Policy Information Point

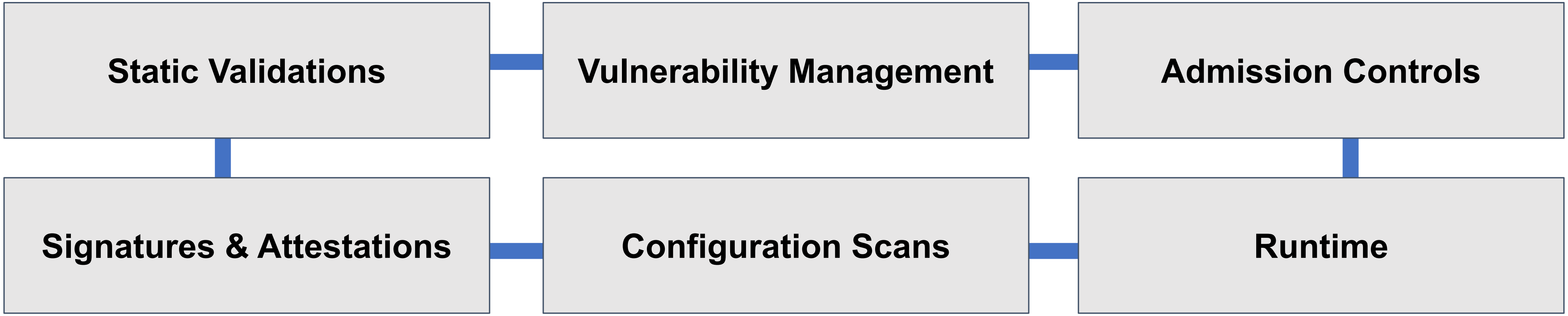
Policy Reports

administrator

https://github.com/kubernetes/sig-security/blob/main/sig-security-docs/papers/policy/CNCF_Kubernetes_Policy_Management_WhitePaper_v1.pdf

Kubernetes Policy Report CRD

Kubernetes Custom Resource Definition (CRD) in OpenAPI v3 schema that unifies reporting of Kubernetes security and compliance issues



Static Validations

Vulnerability Management

Admission Controls

Signatures & Attestations

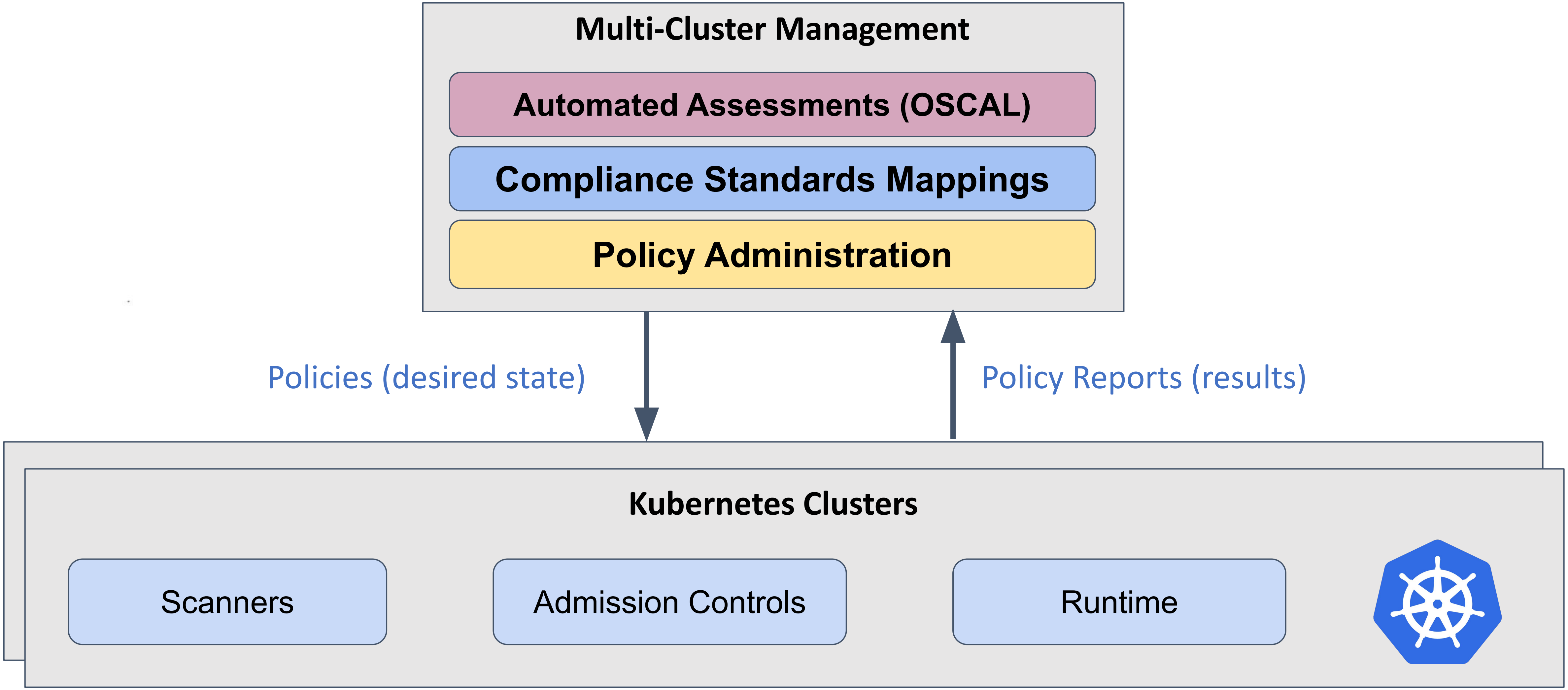
Configuration Scans

Runtime

Policy Report CRD

Tool	Area	Status
Kyverno	Configuration Security	Completed
kube-bench	CIS Kubernetes Benchmarks (Control plane, worker nodes)	Completed
Falco (Sidekick)	Runtime Security	Completed
Trivy	Vulnerability scanning	Completed
KubeArmor	Runtime Security	Completed
Policy Reporter	UI / Reporting / Notifications	Completed
OSCAL Policy Report	Trestle lib / cli	Completed

Policy - Compliance Mappings



Multi-Cluster Management

Automated Assessments (OSCAL)

Compliance Standards Mappings

Policy Administration

Policies (desired state)

Policy Reports (results)

Kubernetes Clusters

Scanners

Admission Controls

Runtime

IaC

CI/CD

Application Workloads

Question

What are the standards you want to be compliant with?

1. Pod Security Standards
2. NIST
3. CIS Kubernetes Benchmarks
4. CIS Standard Controls
5. PCI DSS