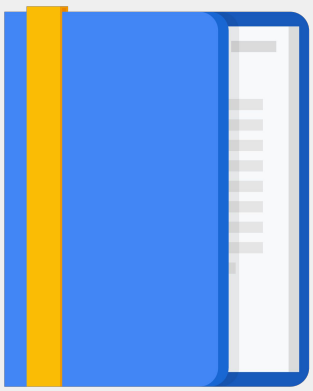
Architecting Hybrid Infrastructure with Anthos

Configuring GKE and Service Mesh for Multi-Cluster Operation

Agenda

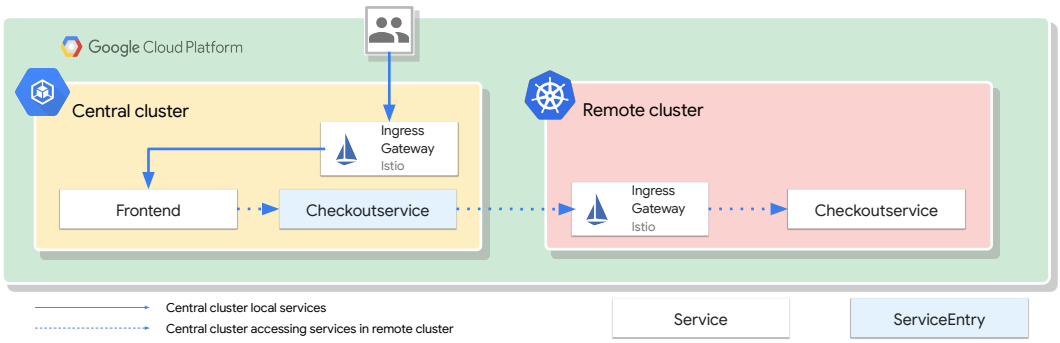


- **Multicluster Overview**
- Shared Control Plane
- Multi Control Plane
- External Services

Service Mesh Across Clusters

Services may need to talk across

- Clusters
- Regions
- Environments



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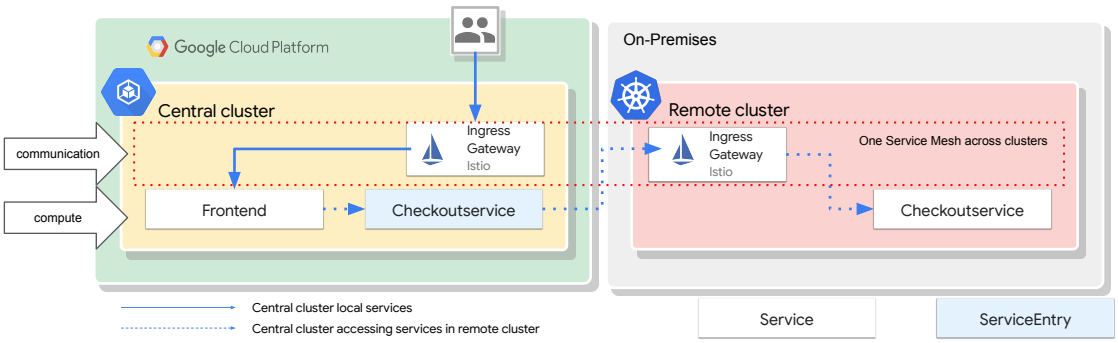

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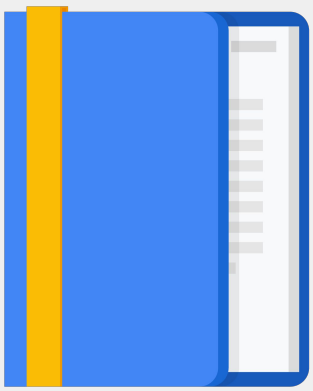

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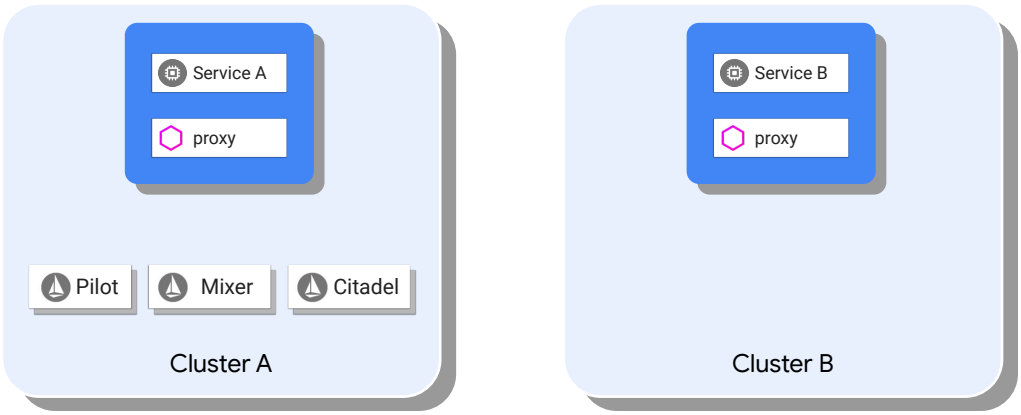
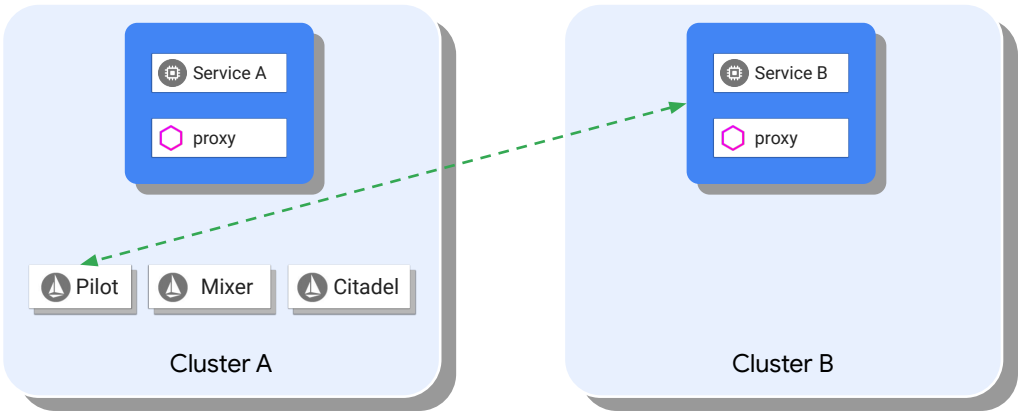
Google Cloud

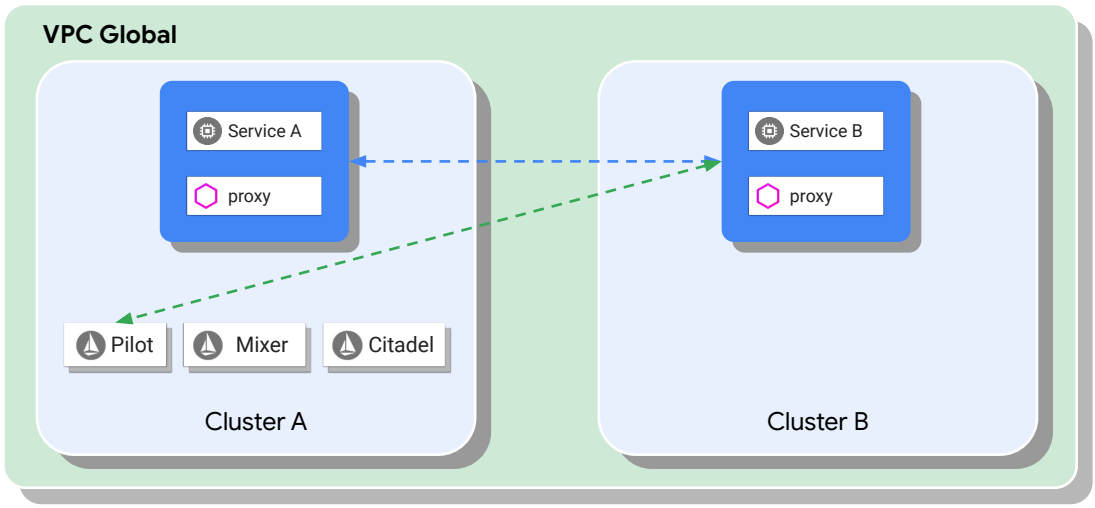
Shared Control Plane



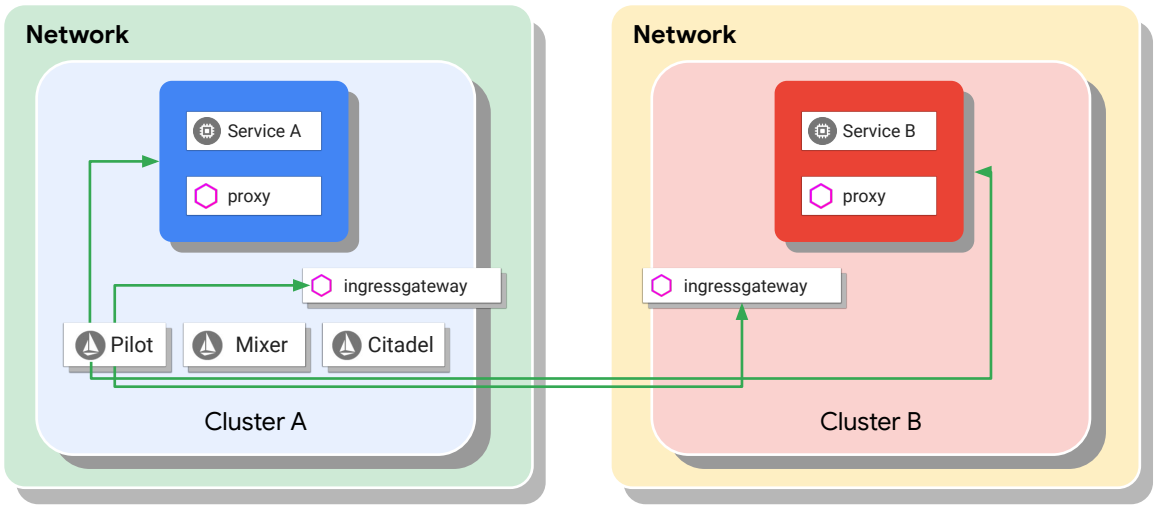
Multi Cluster Shared Control Plane



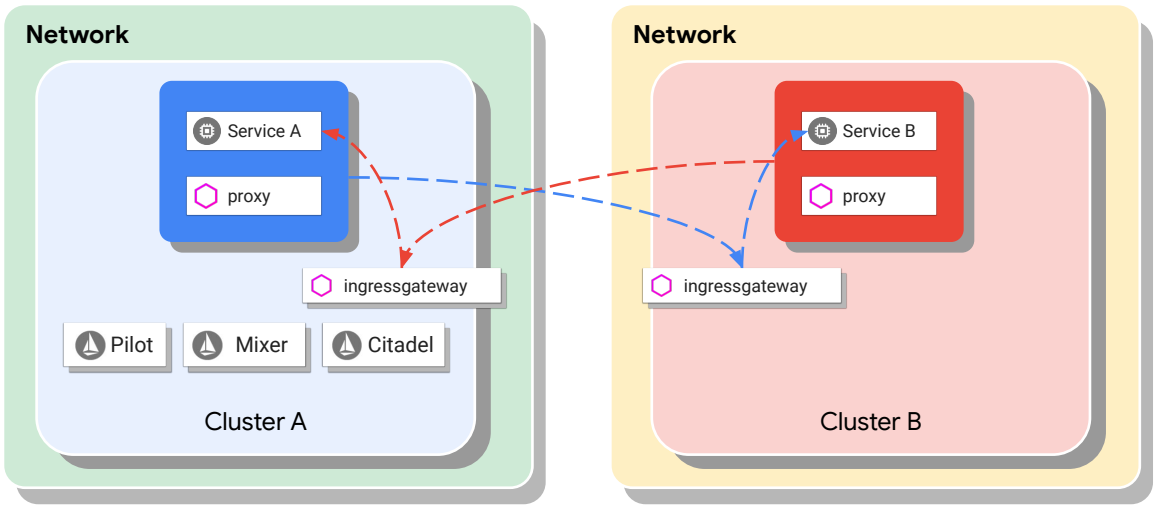
Single Network Shared Control Plane



Multiple Networks Shared Control Plane



Multiple Networks Shared Control Plane



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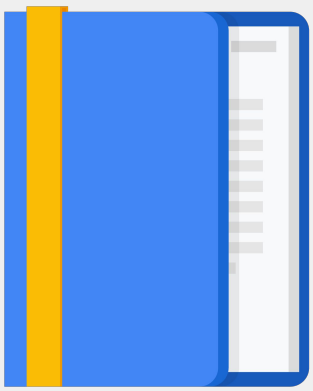

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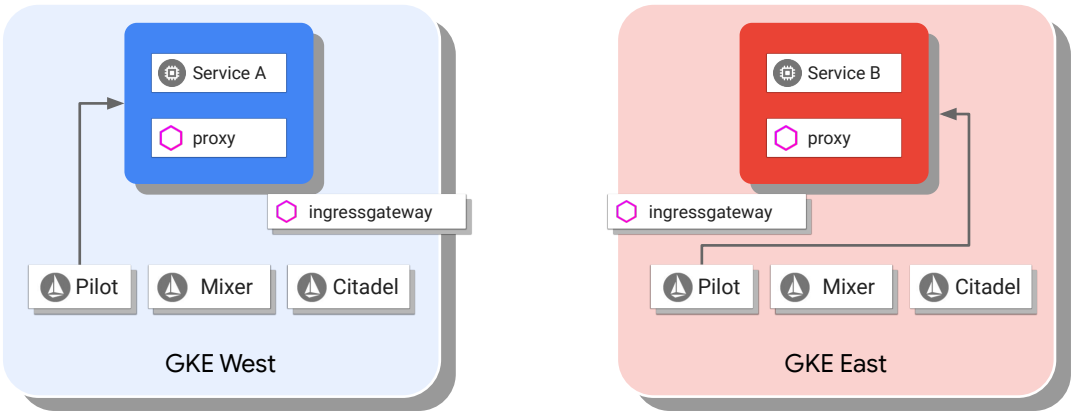
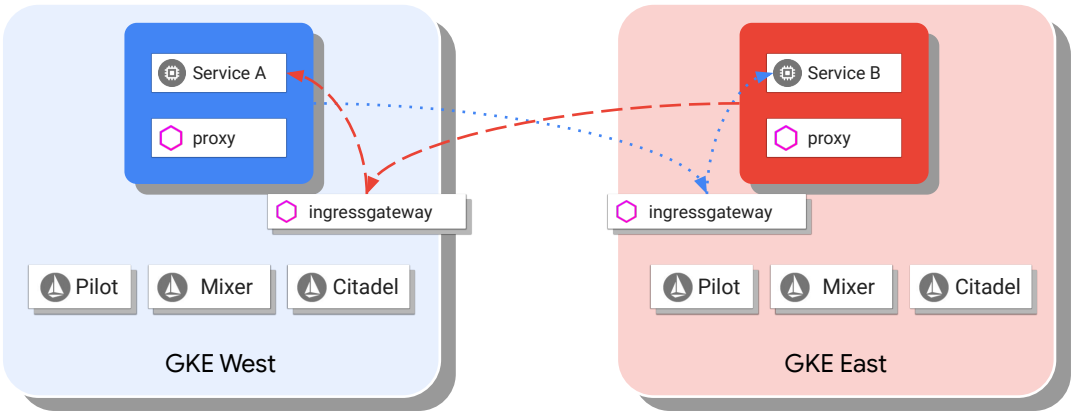
Google Cloud

Multiple Control planes



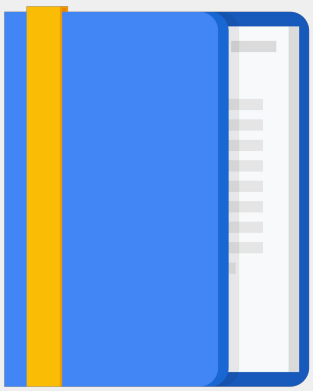
Multiple Control planes



Shared vs Multiple Control planes

	Shared Control plane	Multiple Control planes
	- Easy configuration - Centralized control	- Distributed / decentralized controlplane - No SPoF - Scalable
	- Single point of failure - Latency considerations - Scalability considerations	- Harder configuration - Larger footprint

Agenda



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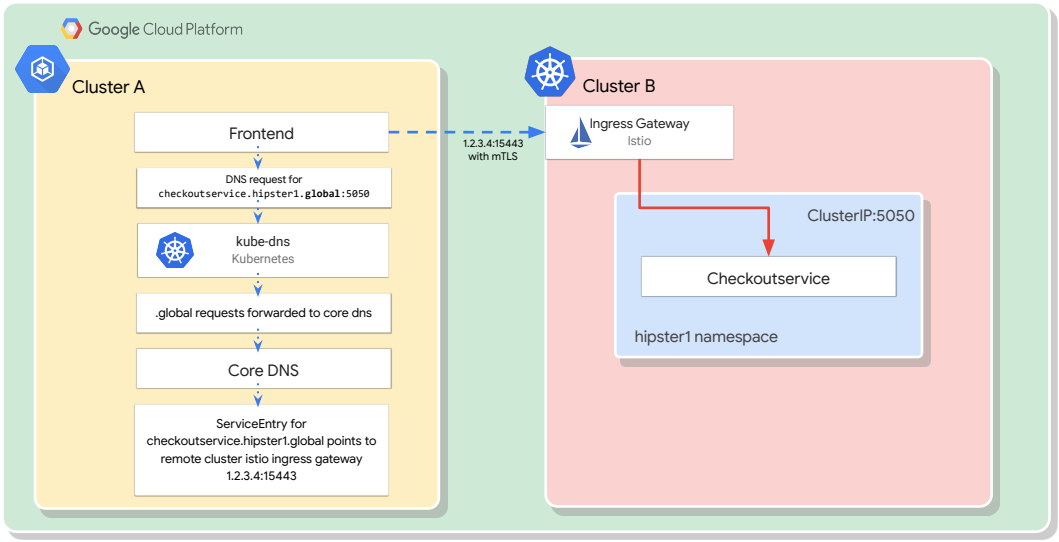
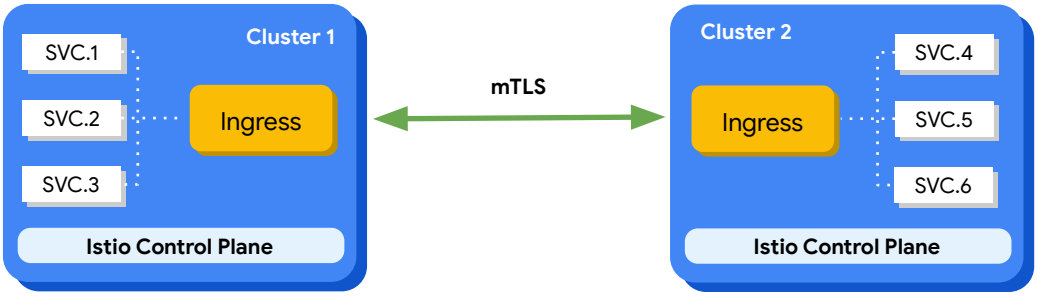
Multiple Control planes DNS



Service Mesh Across Clusters



CoreDNS

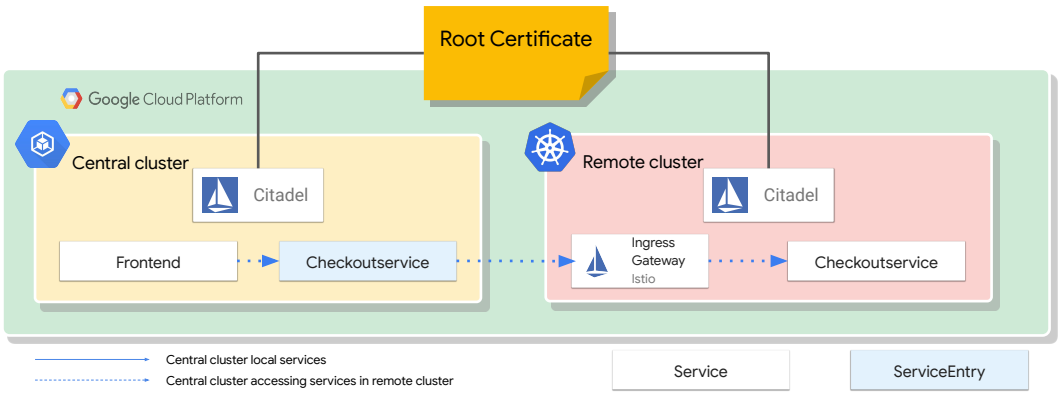
SVC_1.namespace.svc.cluster.**local**
SVC_2.namespace.svc.cluster.**local**
SVC_3.namespace.svc.cluster.**local**
SVC_4.namespace.**global**
SVC_5.namespace.**global**
SVC_6.namespace.**global**

CoreDNS

SVC_4.namespace.svc.cluster.**local**
SVC_5.namespace.svc.cluster.**local**
SVC_6.namespace.svc.cluster.**local**
SVC_1.namespace.**global**
SVC_2.namespace.**global**
SVC_3.namespace.**global**

Security across the mesh

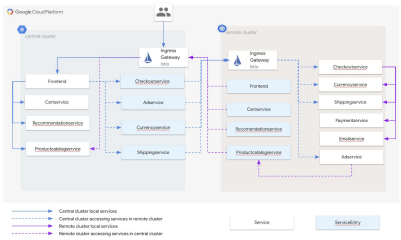
Common Root CA



1st Lab

Configuring GKE for Multi-Cluster Operation with Istio

120 min



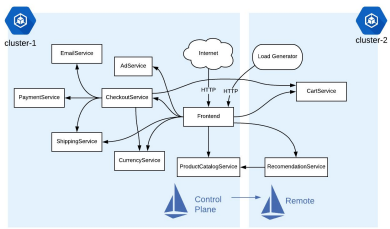
Objectives

- Understand and install a multi-cluster Kubernetes environment
- Understand configuring service mesh multicluster control planes with Istio
- Understand Citadel, certificate files, and the cacerts secret
- Configure DNS to locate services external to a cluster
- Understand the ServiceEntries in both clusters
- Migrate workloads from the non-GKE cluster to the GKE cluster

2nd Lab

Configuring GKE for Shared Control Plane Multi-Cluster Operation

60 min



Objectives

- Set up the lab environment with 2 GKE clusters
- Install the Istio control plane to cluster 1
- Install the Istio remote on cluster 2
- Connect cluster 2 to cluster 1
- Deploy the Hipster Shop multi-service application
- Use Hipster Shop services running across multiple clusters