Today's agenda

01 Introduction to Anthos Service Mesh

02 Lab: Anthos Service Mesh Walkthrough

03 Lab review

04 Architecture

05 Installation

06 Life of a request in the mesh

07 Mesh telemetry and instrumentation

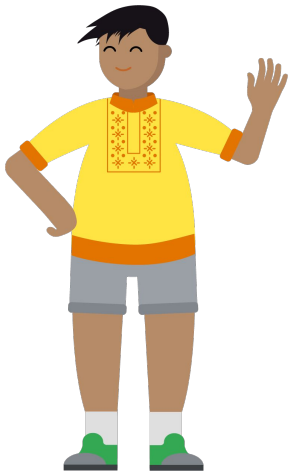
08 Anthos Service Mesh dashboards

09 Anthos Service Mesh pricing and support

10 Lab: Observing Anthos Services

Making microservices available

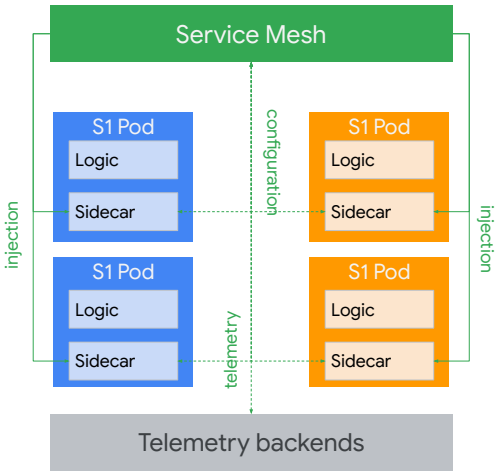
- The development team is containerizing a legacy monolithic application used by a Cymbal bank.
- The team recommends deploying the application on GKE.
- The application has many services, which will span multiple namespaces and multiple clusters.
- The team wants to use the GKE Kubernetes Gateway API to provide communication to the services.
- They ask Kofi, a network engineer, if he thinks that's the right approach.



Anthos Service Mesh (ASM)

(It's not just for Anthos!)

- Kofi advises the team to use Anthos Service Mesh (ASM).
- Anthos is essentially GKE expanded to include other public cloud and on-premises environments.
- ASM is designed to provide communication between services running on clusters inside and outside of Google Cloud.
- Sidecars deployed on each pod implement mesh communication.

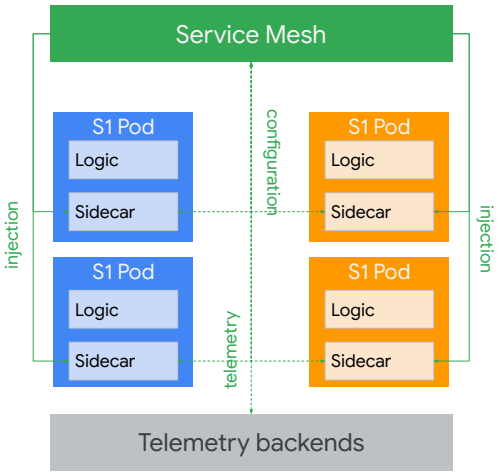


Google Cloud

Anthos Service Mesh can be used on clusters outside of Google Cloud - but it also can be used for GKE. Using Anthos Service Mesh on GKE alone is a common ASM use case.

You might be wondering...

- Where does the sidecar container with network functionality come from?
- How are the sidecar containers added to the pods?
- How are the sidecar containers configured?
- How are the metrics and logs from sidecar containers collected and forwarded?



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Managing the network functionality

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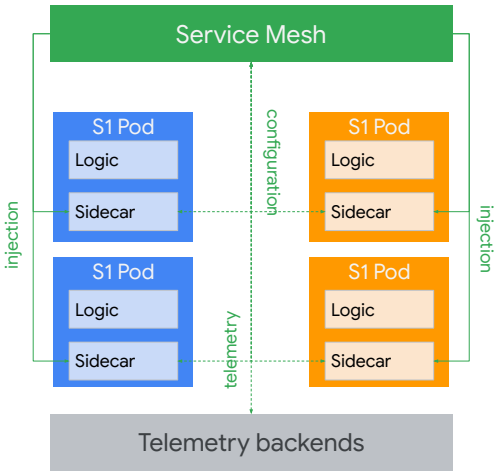
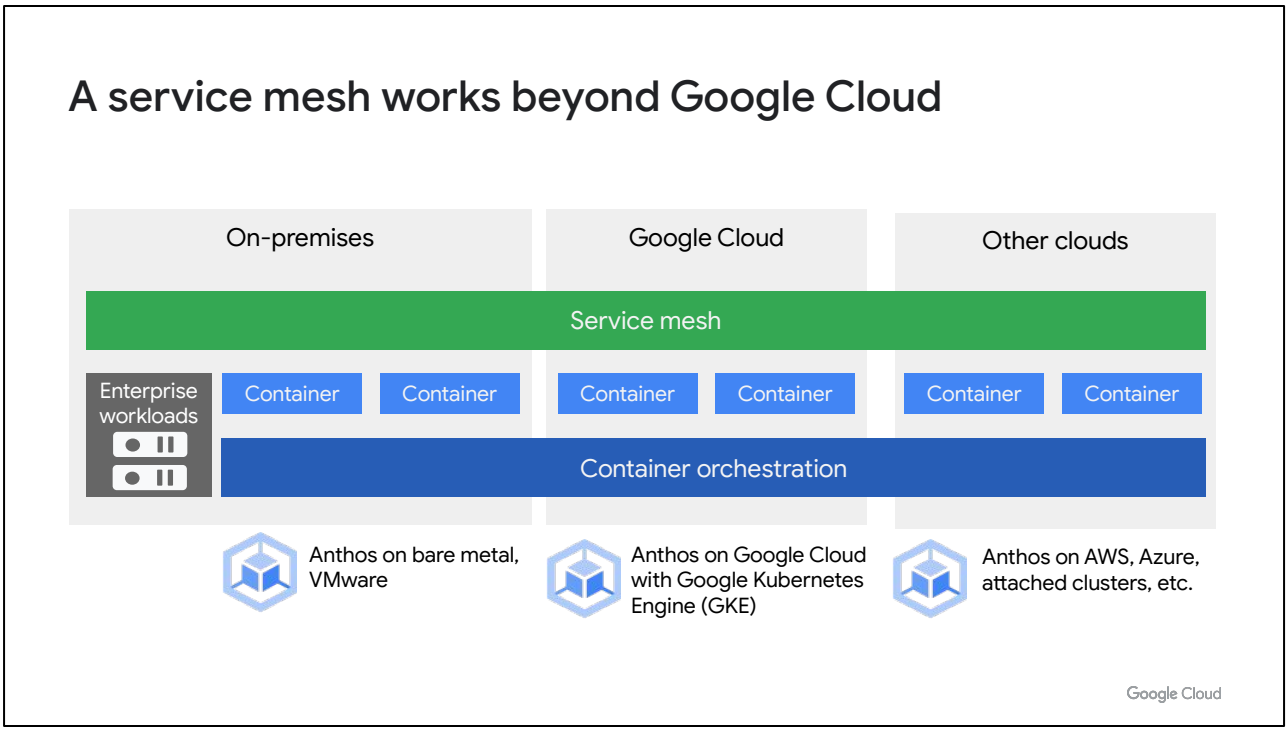


Google Cloud

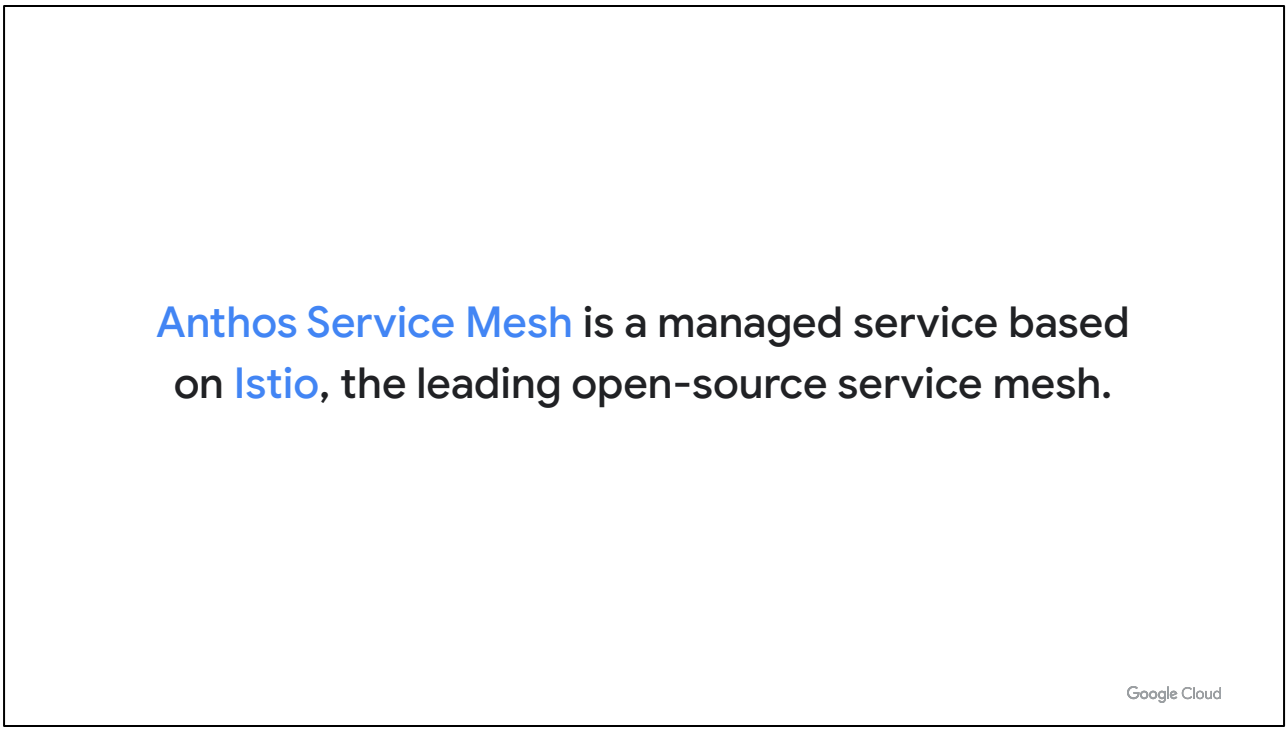
The service mesh provides, manages, and works with the sidecar containers to make everything work across all your services.

- First, a DevOps operator configures the service mesh with security and routing policies.
- Second, on pod creation, the service mesh injects the sidecar container and configures it with the network configuration.
- Third, communication is handled by the injected container and metrics, logs, and traces get exported from the sidecars to enhance observability.



While service mesh started with containers and microservices, its benefits can be applied to traditional applications. Service mesh addresses workloads that stretch across clusters and environments with isolation and security. It extends beyond Kubernetes container clusters to bare metal servers and virtual machines and links them together in an elegant, logical, and secure manner. That way, you can modernize existing brownfield applications in place, without the need to go through the expensive process of rewriting them.

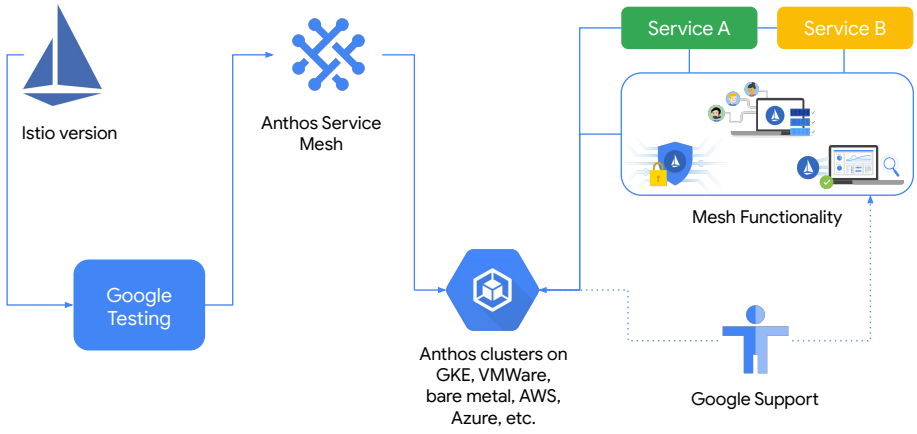
Kofi can add non-mesh workloads to the mesh. These workloads won't get the full benefits of mesh but can at least communicate with it.



Anthos Service Mesh is a managed service based on Istio, the leading open-source service mesh.

Istio draws on a lot of inspiration from Google-internal systems, but is built together by multiple parties, including Google, IBM, and Lyft, the ride-sharing company.

Anthos Service Mesh is an enterprise-ready mesh solution



Google Cloud

Google takes new Istio versions, tests them, adds in some Google Cloud-specific components that improve management, and makes them available for installation on all your Anthos clusters.

- Google Cloud provides support and SLAs.
- When installed, Anthos Service Mesh provides all the standard Istio goodness with additional features such as the user interface.
- Anthos Service Mesh can be purchased as a standalone product or as part of the Anthos subscription.

A fleet groups clusters together

A fleet

- Provides a way to logically group Kubernetes clusters.
- Makes administering the infrastructure easier.
- Is comprised of made up of Google Kubernetes Engine clusters on Google Cloud, or include clusters outside Google Cloud.

What Kofi must do

To use ASM to manage communications, Kofi must put the clusters into a fleet and install ASM.