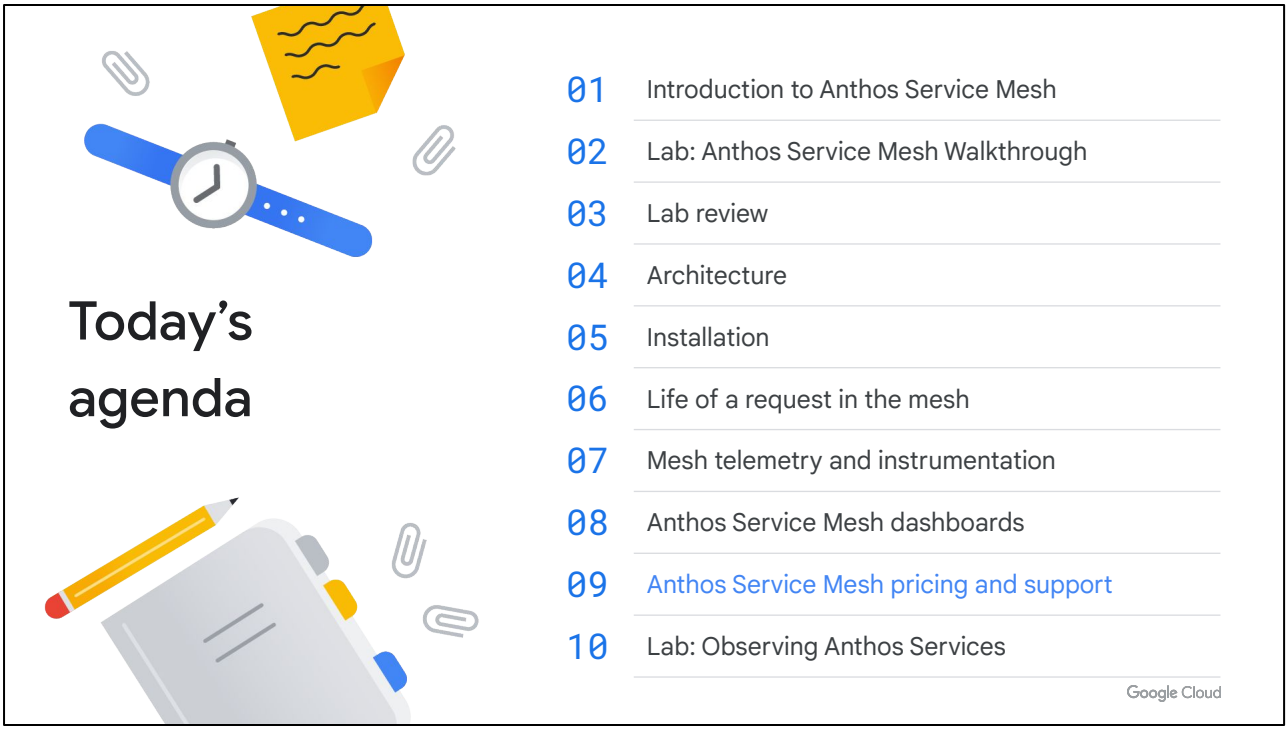


Here is our agenda for the module

The module begins with an introduction to the Anthos service mesh. First, you will do a lab that shows you the benefits of using Anthos Service Mesh to manage a microservices-based application deployed across multiple GKE clusters. After the lab, there will be a presentation about why a service mesh is needed and what it can do. Next we'll go through an overview of Anthos Service Mesh features - followed by presentations regarding the product architecture and product installation.

After that, we'll look at a request in the mesh - from beginning to end.

Then, we will look at mesh telemetry and instrumentation, the Anthos Service Mesh dashboards that are available in Google Cloud Console, and Anthos Service Mesh pricing and support.

Anthos Service Mesh pricing

- Anthos Service Mesh is available as part of Anthos or as a standalone offering.
- Pricing is available for customers that don't use Anthos.
- Anthos Service Mesh standalone pricing includes the following:
  - Compute Engine VMs and GKE pods
  - Telemetry dashboards
    Anthos Service Mesh standard metrics are included. Custom metrics are charged based on Cloud Monitoring pricing.
  - Anthos Service Mesh managed control plane
  - Mesh CA, a managed CA service, with no per-certificate charge

Google Cloud

To learn more about pricing for customers that don't use Anthos, refer to Pricing for non-Anthos customers in the Google Cloud documentation.

Anthos Service Mesh is available as part of Anthos or as a standalone offering on Google Cloud. Google APIs enabled on the project determine how you are billed. To use Anthos Service Mesh as a standalone service, don't enable the Anthos API on your project. If you want to use Anthos Service Mesh on-premises or on other clouds, you must subscribe to Anthos. If you are subscribed to Anthos, there are no additional costs for ASM.

Pricing for Anthos Service Mesh as a standalone service is based on the number of clusters and the number of Anthos Service Mesh clients. There is a GKE flat fee of 7 cents per hour, which is around 50 dollars per month. The flat fee includes 100 ASM clients, which is equivalent to 72,000 client hours per cluster in a month. Every additional client costs around 50 cents per client per month.

Anthos Service Mesh standalone pricing includes:

- Compute Engine VMs and GKE pods.
- Telemetry dashboards. Anthos Service Mesh standard metrics are included in the fees above. Custom metrics are charged based on Cloud Monitoring pricing.
- Anthos Service Mesh managed control plane.
- Mesh CA, a managed CA service, with no per-certificate charge.

How ASM differs from Istio

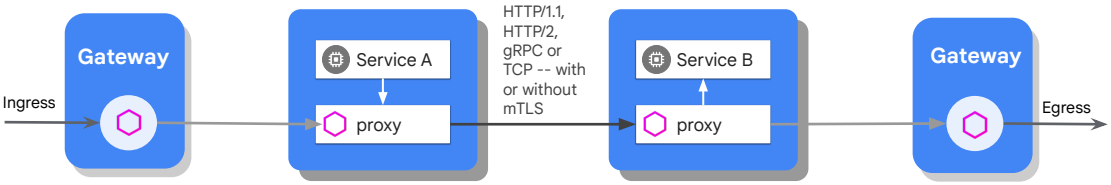
- Integration with custom CAs
- Usage of Envoy Filters to extend Istio for additional telemetry and policy
- Usage of arbitrary telemetry and logging backends
- Multi-network support and IPv6 support for Kubernetes

Google Cloud

Additionally, there are a couple of limitations on Anthos Service Mesh with respect to Istio as of version 1.11. Those include:

- Service mesh integration with custom CAs. With Istio, you can set up your own custom root CA which might manage identities both inside and outside of your cluster.
- Usage of Envoy Filters to extend the service mesh for additional telemetry and policy. With Istio, you can extend the default functionality to provide additional checks at the networking layer.
- Usage of arbitrary telemetry and logging backends. Anthos Service Mesh provides an out-of-the-box integration with Google Operation Suite, but it's not possible to configure additional backends.
- Multi-network support and IPv6 support for Kubernetes is also only available in Istio.

Lab prerequisite: Introduction to Gateways



- Gateways allow traffic to ingress and egress the service mesh.
- Think of them as a load balancer and a NAT service.
- Gateways leverage Envoy proxies to configure traffic routing, security, and observability.
- Similar to a Kubernetes Ingress, a Gateway creates and configures Cloud Load Balancing.

Google Cloud

Gateways will be covered in depth later in the course, but we wanted to share a few notes because you encounter them in the next lab.

- Gateways allow traffic to ingress and egress the service mesh.
- You can think about them as a load balancer and a NAT service.
- The same way as other pods in the mesh, Gateways leverage Envoy proxies to configure traffic routing, security, and observability.
- Similar to a Kubernetes Ingress, a Gateway creates and configures Google Cloud Load Balancing, and you can set up ports, protocols, and certificates.