What the H* is Istio ?

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Today we're going to cover the why and what of Istio

Containers?

Great!

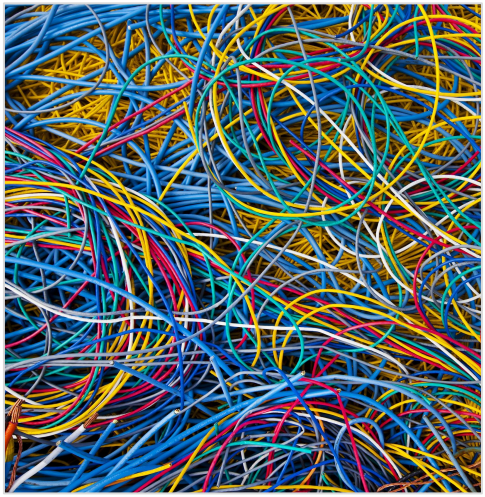
Google Cloud

Kubernetes?

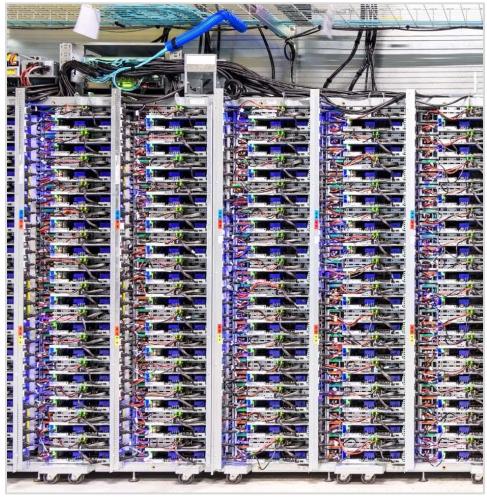
Also Great!

Google Cloud

But microservices deployments are hard



How do you go from a bunch of services...



...to a well organized and functioning deployment?

Google Cloud

What makes microservices difficult?

Canary releases require infrastructure scaling

Don't know if you're talking to the right service

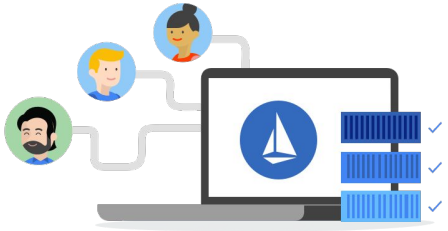
Digging into high latency drivers takes work

Can't control who accesses what service

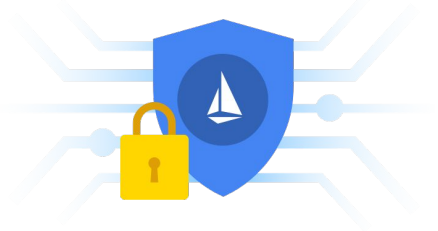
Can't track requests from start to finish

How does Istio help?

Uniform observability



Operational agility



Policy driven security

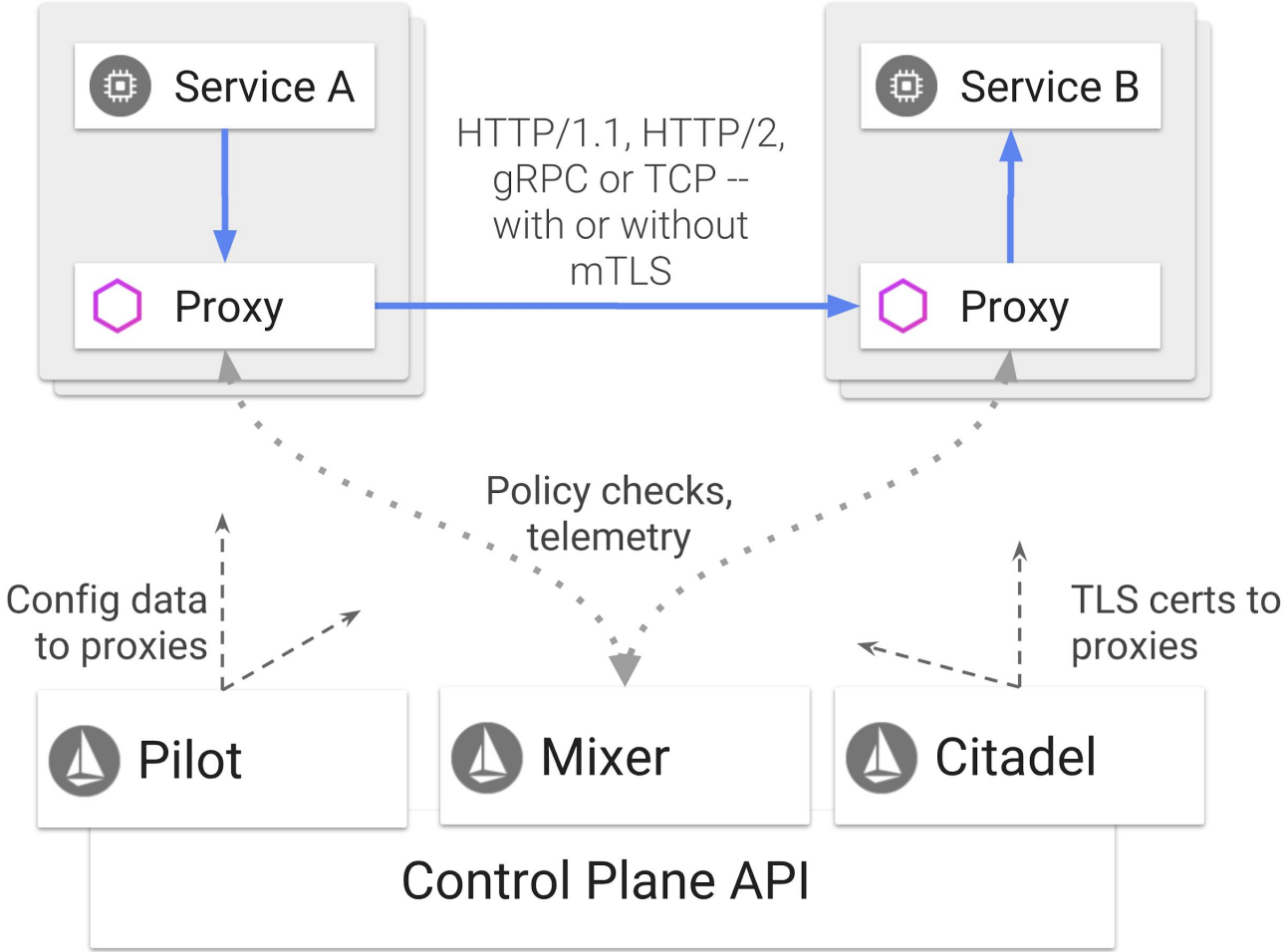
How does Istio help?

Examine **everything** happening with your services with little to no instrumentation

Manage the flow of traffic **into**, **out of**, and **within** your complex deployments

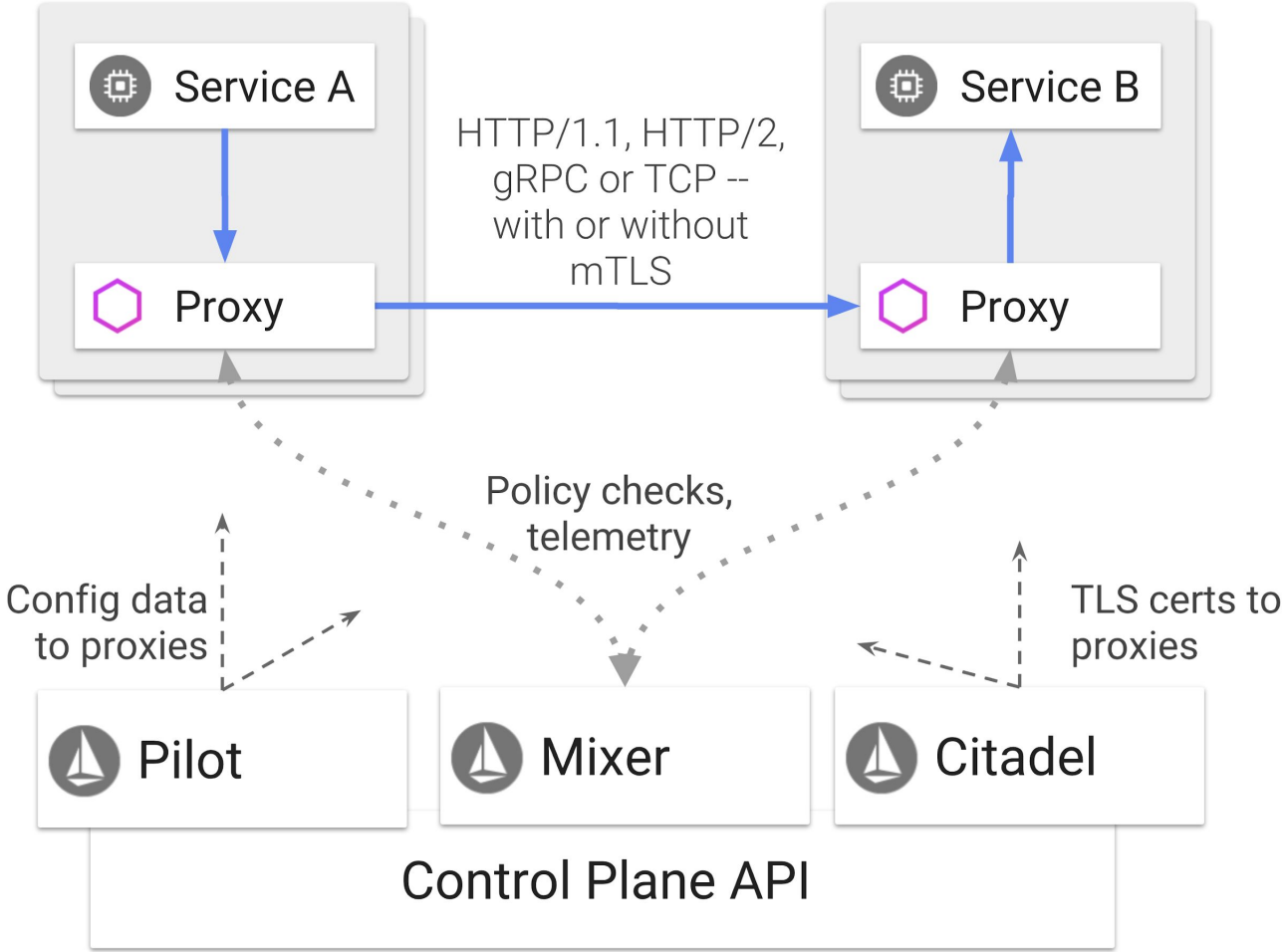
Secure **access** and **communications** between some or all services

Istio at a glance



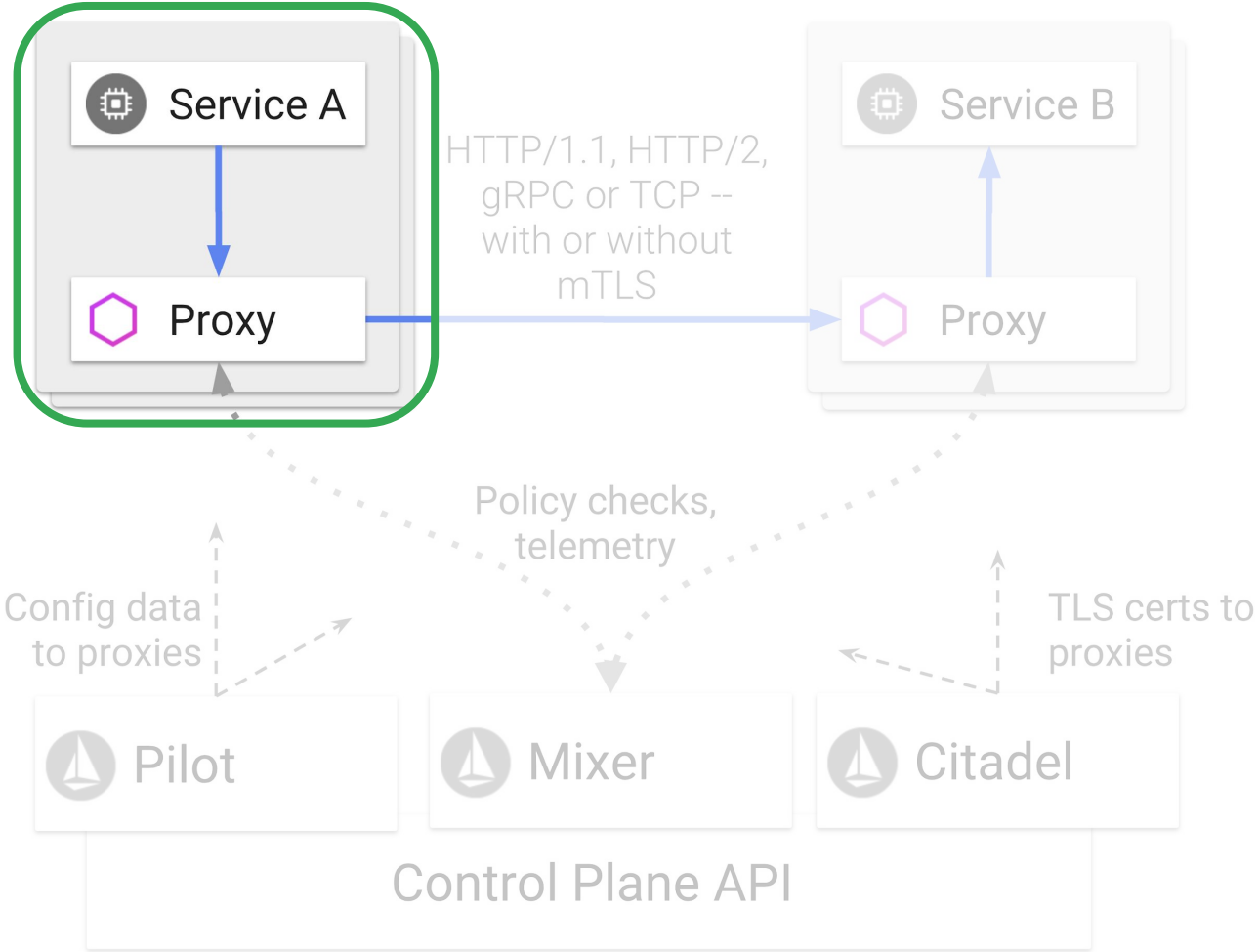
Google Cloud

Istio at a glance



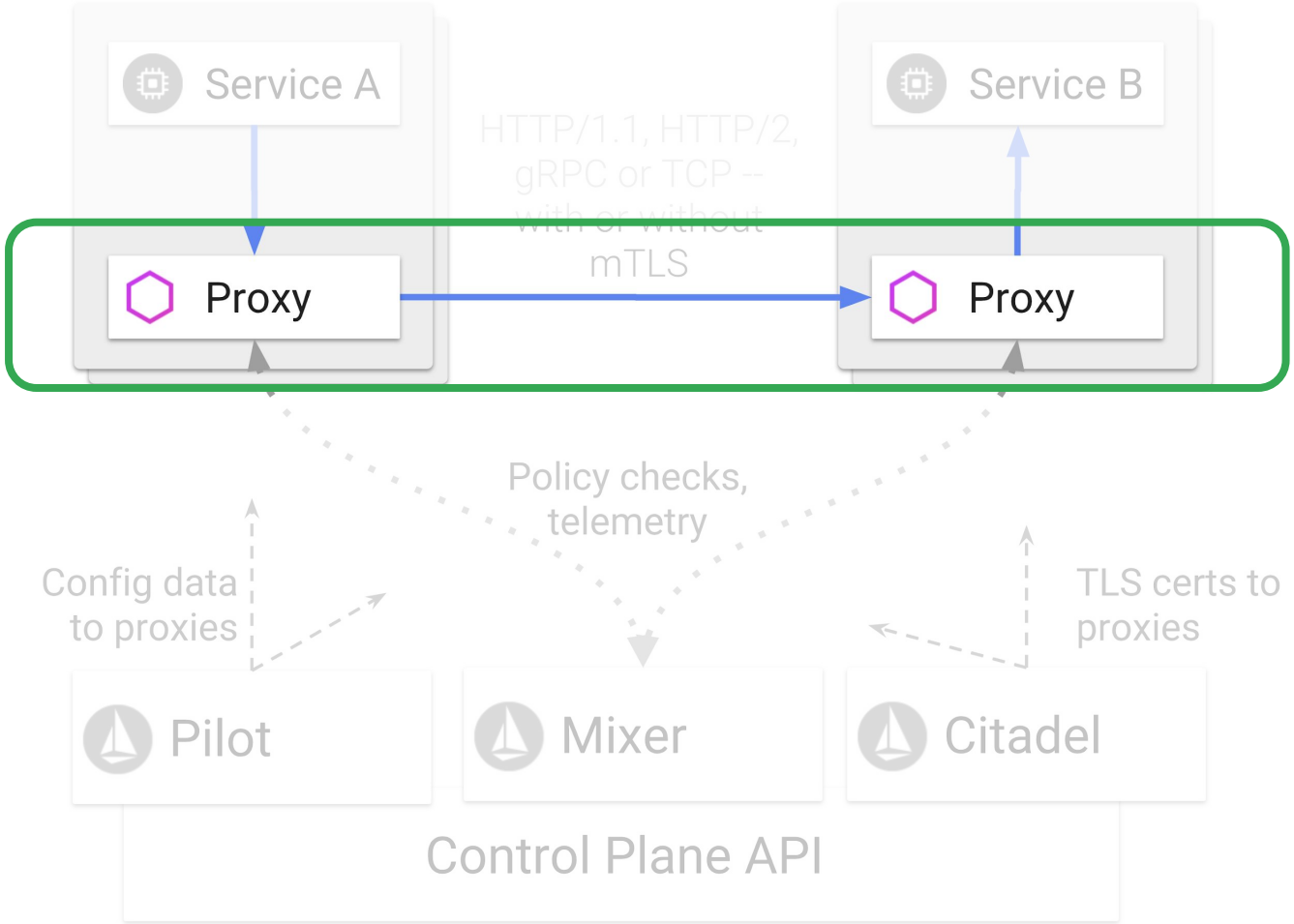
Google Cloud

Istio sidecar proxy



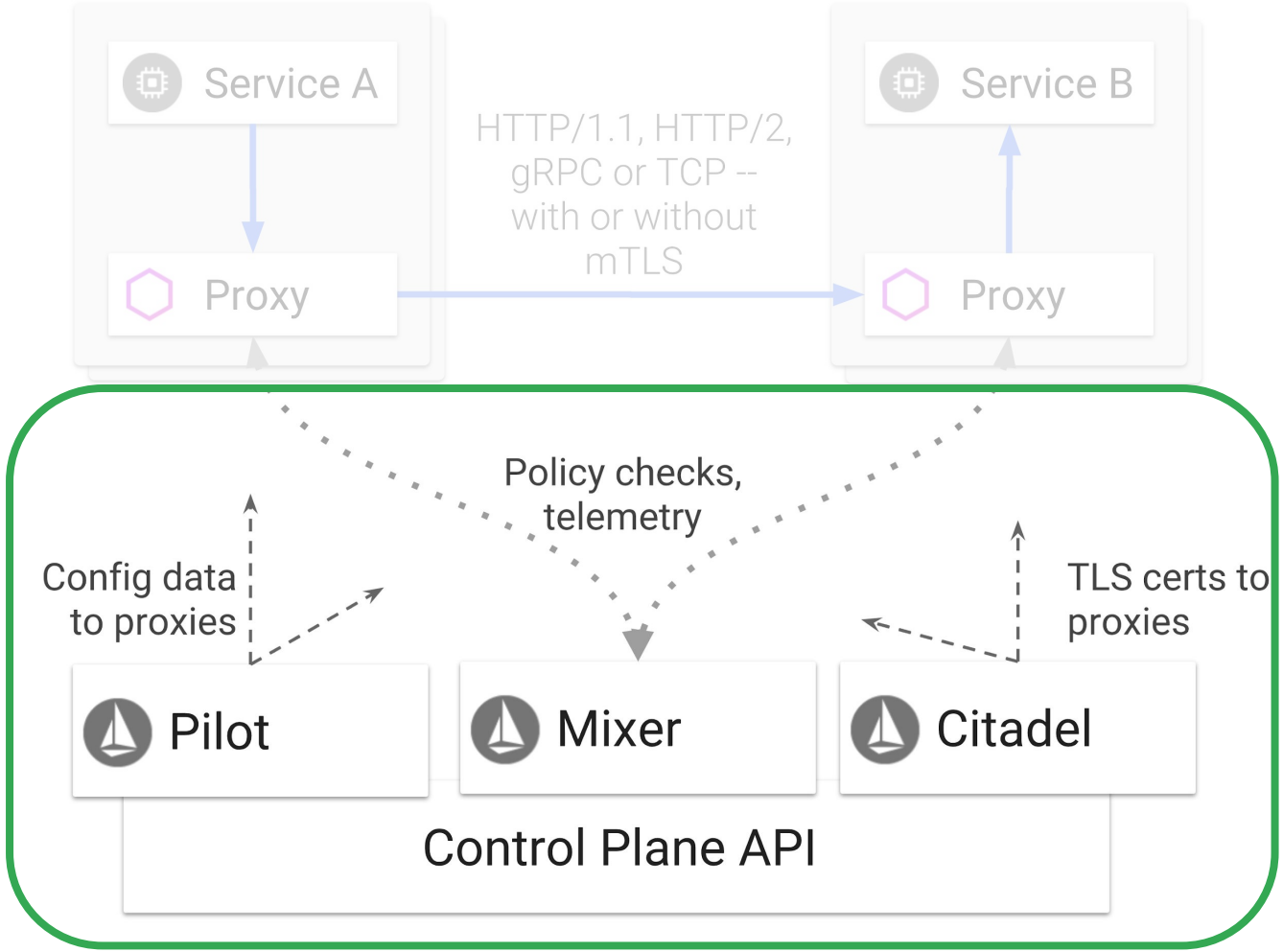
Google Cloud

Istio data plane



Google Cloud

Istio control plane



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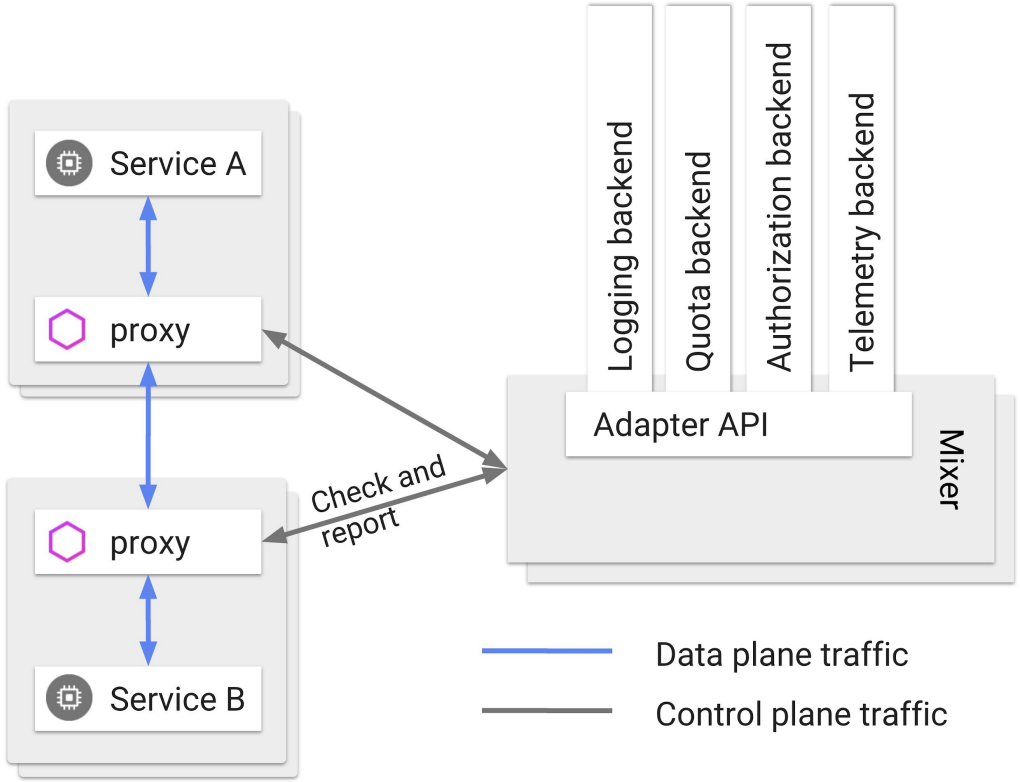
Observing services

Get automatic tracing, monitoring, and logging of all your services.



Google Cloud

Connecting services

Using `VirtualService`, `DestinationRule`, `Gateway`, and `ServiceEntry` objects, Istio helps you with:

Traffic splitting

Traffic steering

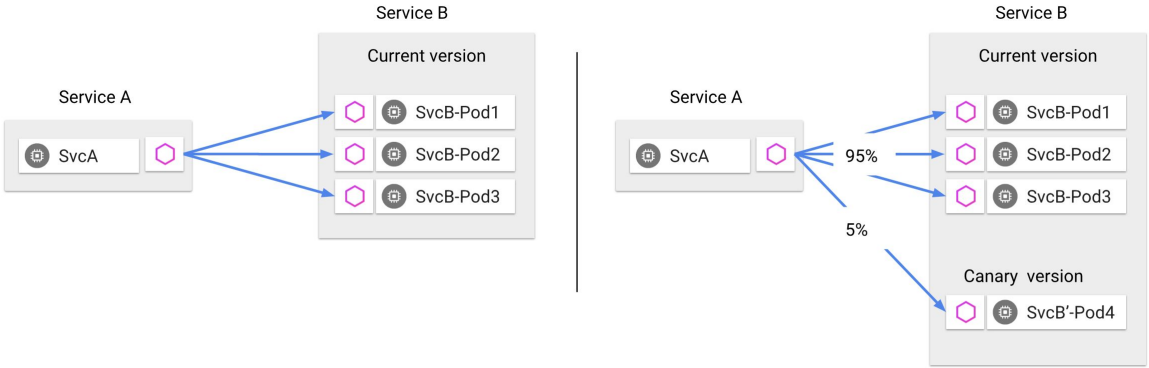
Fault injection

Circuit breaking

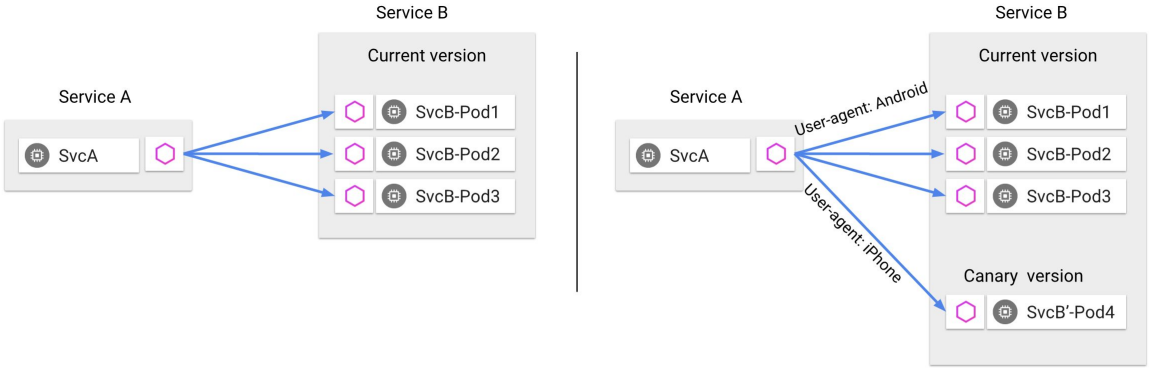
Egress control

Connecting services

Traffic splitting and traffic steering



Traffic splitting decoupled from infrastructure scaling - proportion of traffic routed to a version is independent of number of instances supporting the version



Content-based traffic steering - The content of a request can be used to determine the destination of a request

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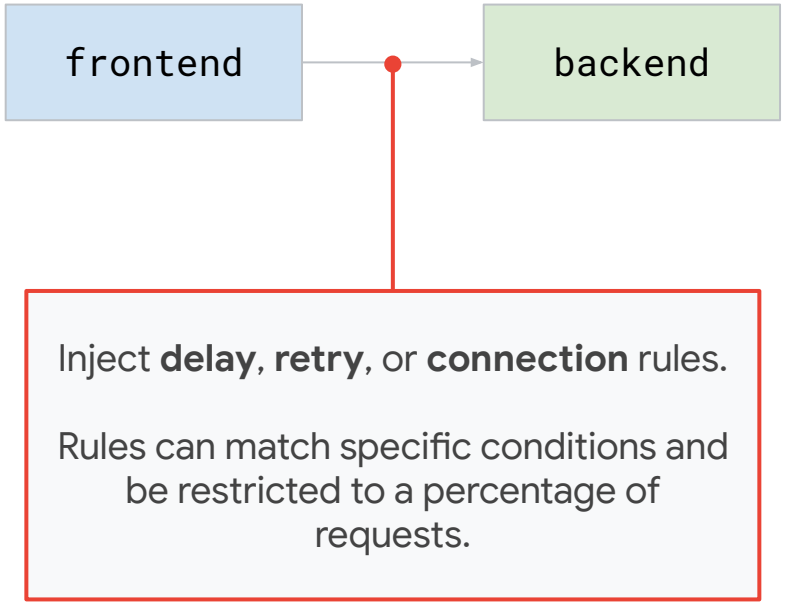
Connecting services

Fault injection and circuit breaking



Securing services

Automatically secure your services through managed authentication, authorization, and encryption of communication between services.

Traffic encryption

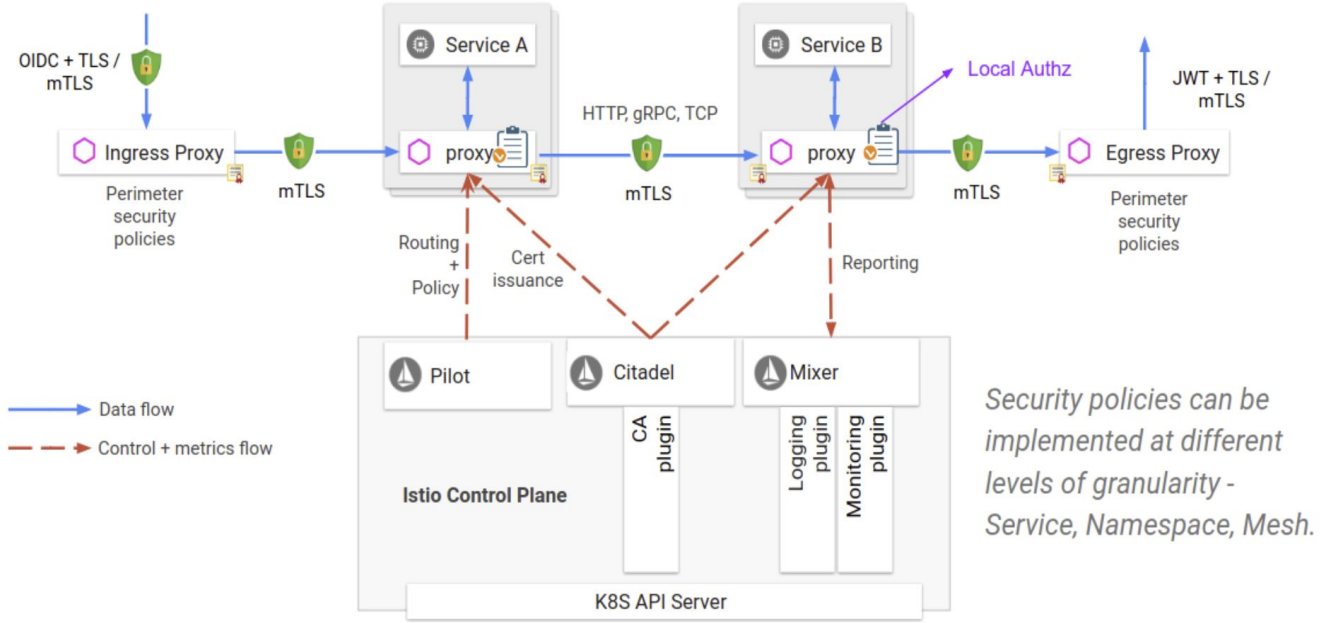
Service auth

Auditing controls

Access policies

Controlling and securing services

Apply broad or fine-grained security policies to some or all of your workloads



Istio Security Architecture

Security policies can be implemented at different levels of granularity - Service, Namespace, Mesh.

Google Cloud