Service Mesh: Putting It Together, Taking It Apart

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What is a service mesh? The simplest possible example:

[Service A] <=> [Service B]

What is a service mesh? The simplest possible example:

[Service A] [Proxy] <=> [Proxy] [Service B]

Services I know; why is it called a mesh?

- Each service contacts other services through an intermediary network of agents (proxies)
- Instead of service-to-service traffic being routed through the usual service routing mechanisms, traffic is sent directly to other mesh agents
- The proxies are programmed with knowledge of the other agents by the mesh control plane

What can I do with a service mesh?

You can ~~attack~~ observe, modify and conduct tests and experiments on your application traffic:

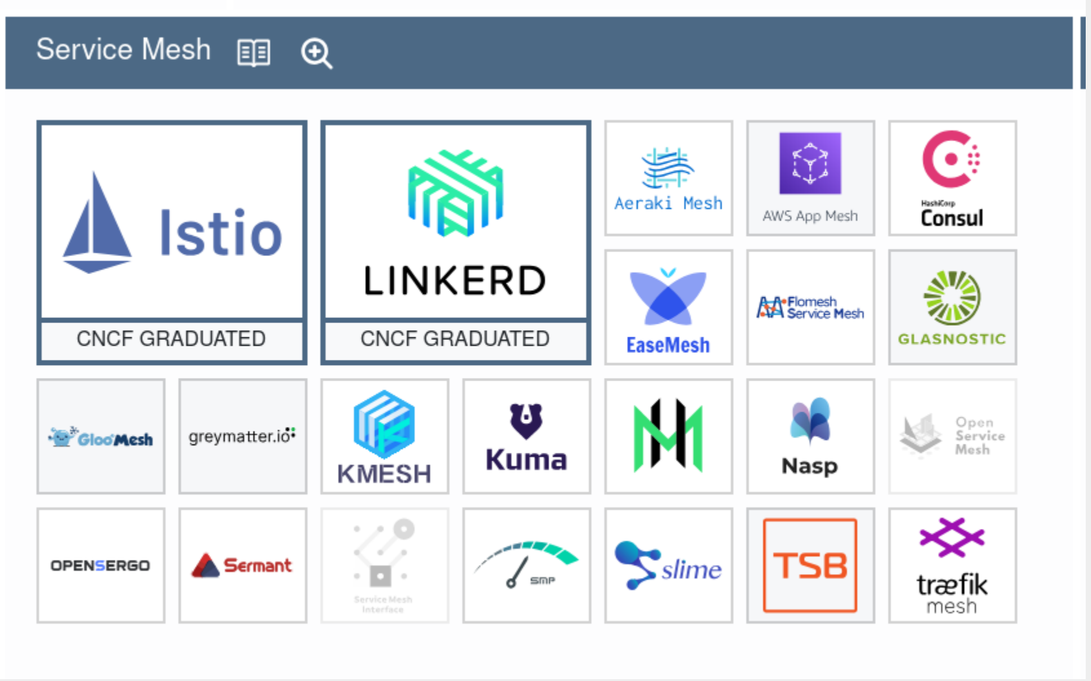
- mTLS
- Metrics gathering
- A/B tests and progressive rollouts
- Fault injection
- Circuit breaking
- ...etc.

Wait, how does this work?

- Applications use their local proxy (either explicitly or via transparent proxying)
- Most service meshes implement the proxies as *per-pod* sidecars
  - Typically injected by a Mutating Admisson Controller
- Recently Istio added "ambient mode" features via eBPF and *per-host* data plane proxies

How do you get started picking a service mesh?

The CNCF Landscape has a whole section devoted to them:



Further reading and information

Service mesh support in Gateway API: blog post and documentation

Service mesh talks from KubeCon NA 2023

Thank you!

Slides:

https://tinyurl.com/taking-apart-service-mesh (PDF)