



KubeCon



CloudNativeCon

China 2021

Virtual

Solving the Service Mesh Adopter's Dilemma

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Agenda



- Introduction
- Getting started with Service Meshes
- Functionality
- Why Adopt Service Meshes
- Service Mesh Architecture
- Service Mesh Abstractions
- The Adopters Dilemma
- Meshery



About Me

Anita Ihuman

Software developer,

 MeshMate @ Layer5,

Developer Advocate @ Kyverno,

Technical Writer,

Open Source Advocate.





What are Service Meshes

Service Meshes are simply a way to control how different parts of an application share data with one another.

Partially considered as a microservice platform.



Functionality

Observability

- Metrics without instrumenting apps
- Consistent metrics across fleet
- Trace flow of requests across services
- Portable across metric back-end

providers

Security

- Central to service mesh concept is Identity
- Every service gets a unique ID
- These ID are used to facilitate secure connections



Functionality

Traffic Control

(content-based traffic steering)

- Traffic steering
 - Look at the centers to request and route to a specific set of instances
- Traffic splitting
 - L7 tag base routing?
- Ingress and egress routing

Resiliency

(control over chaos)

- Timeouts and Retries with timeout Budget.
- Systematic fault injection
- Control connection pool size and request load
- Circuit breakers and Health checks

Why People Adopt Service Meshes



to avoid..

- Bloated service (application) code
- Duplicating work to make services production-ready
 - Load balancing, auto scaling, rate limiting traffic routing...
- Inconsistency across services
 - Retry, tls, failover, deadlines, cancellation, etc., for each language, framework
 - Siloed implementations lead to fragmented, non-uniform policy application and difficult debugging
- Diffusing responsibility of service management



Why People Adopt Service Meshes

Helps with Modernization

- Modernise your IT inventory without
- Rewriting your application
- Adopting microservices, regular services are fine
- Adopting new frameworks
- Moving to the cloud

Improves Developers' Speed

Service Mesh Architecture



Management Plane

- Provides federation, backend system integration, expanded policy and governance, continuous delivery integration, workflow, chaos engineering, and application performance tuning.

Control Plane

- Provides policy, configuration, and platform integration.
- Takes a set of isolated stateless sidecar proxies and turns them into a service mesh.
- Does not touch any packets/requests in the data path.

Data Plane

- Touches every packet/request in the system.
- Responsible for the execution of traffic control, health checking, routing, load balancing, authentication, authorization, and observability.



A service mesh

Meshery enables operators, developers, and service owners to realize the full potential of a service mesh...

...and enhances in-network intelligence

Service mesh standards to the rescue



Service Mesh Interface (SMI)

A standard **interface** for service meshes on Kubernetes.



Meshery
[the SMI Conformance Tool](#)

Service Mesh Performance (SMP)

A format for describing and capturing service mesh **performance**.



Meshery
[an implementation of SMP](#)

Multi-Vendor Service Mesh Interoperation (Hamlet)

A set of API standards for enabling service mesh **federation**.



Performance Management

Understand value vs Overhead



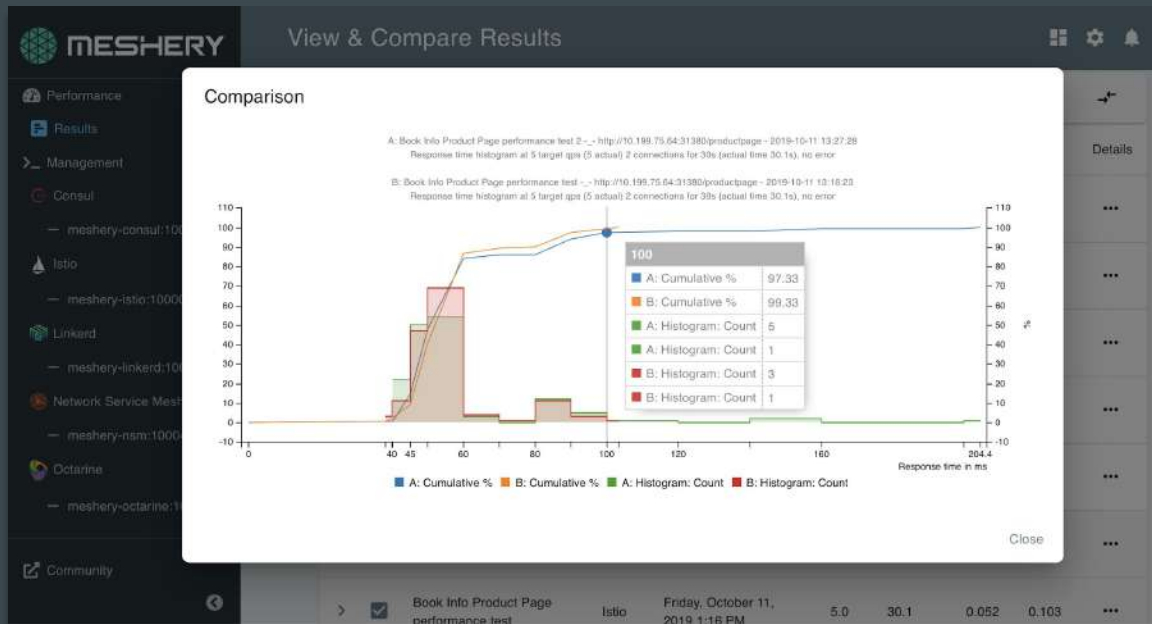
SMP

A vendor neutral specification for capturing details of infrastructure capacity, service mesh configuration, and workload metadata.

smp-spec.io



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Service Mesh Interface Conformance

Meshery, the service mesh compliance tool



The screenshot shows the Meshery web interface with a modal window titled "SMI Conformance Result". The table lists various conformance tests and their outcomes.

<input type="checkbox"/>	Test	SMI Version	Service Mesh	Service Mesh Version	SMI Specification	Capability	Test Status
<input type="checkbox"/>	TA-01	v1alpha3	Linkerd	edge-20.7.5	Traffic Access	Full	Passed
<input type="checkbox"/>	TA-02	v1alpha3	Linkerd	edge-20.7.5	Traffic Access	Full	Failed
<input type="checkbox"/>	TM-01	v1alpha3	Linkerd	edge-20.7.5	Traffic Metrics	Half	Passed
<input type="checkbox"/>	TM-02	v1alpha3	Linkerd	edge-20.7.5	Traffic Metrics	None	Passed
<input type="checkbox"/>	TM-03	v1alpha3	Maesh	v1.3.2	Traffic Metrics	None	Failed
<input type="checkbox"/>	TM-04	v1alpha3	Maesh	v1.3.2	Traffic Metrics	Full	Passed

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Operate and upgrade
with confirmation of
SMI compatibility.

Meshery Functionality

- ✓ Defines compliant behavior.
- ✓ Produces compatibility matrix.
- ✓ Ensures provenance of results.
- ✓ Runs a set of conformance tests.
- ✓ Securely ensures integrity of results.
- ✓ Manages all SMI compatible service meshes.
- ✓ Built into participating service mesh's release pipeline.
- ✓ Common [sample application](#) for validating test assertions.

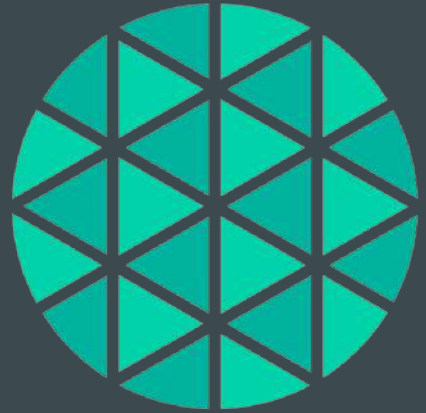


The Adopter's Dilemma

Questions frequently ask by adopters are:

- Which Service Mesh to use?
- How do I get started?
- What is the catch? Nothing is free.
- What overhead does being on the service mesh incur?

Service Mesh Management



LAYER5

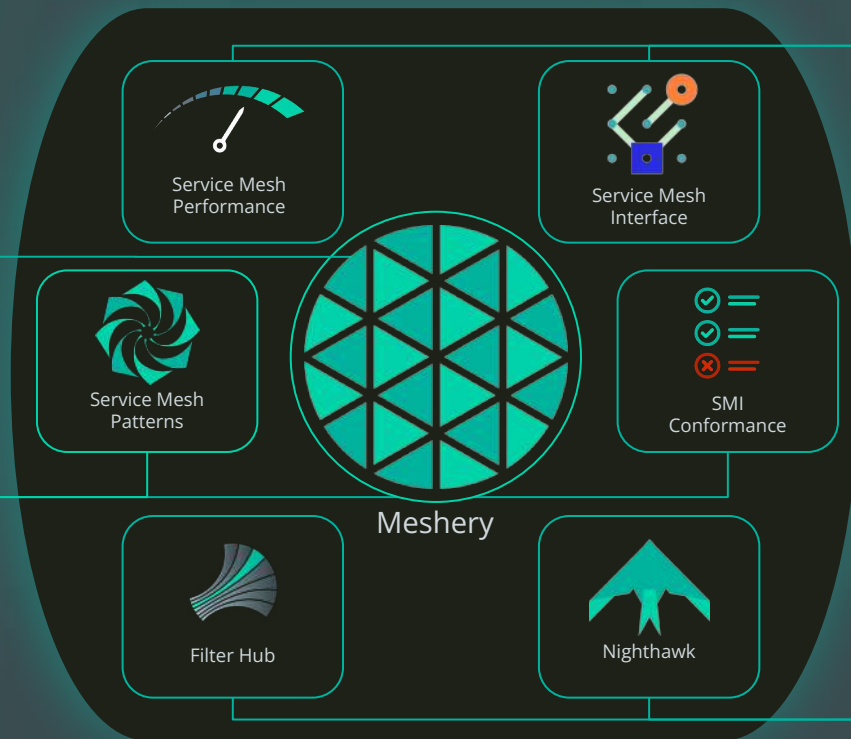
Cloud Native Application Networking



The Only Openly Governed
Service Mesh Manager



Defining Service
Mesh Best Practices



Define and Enforce
Service Mesh Standards



Advanced Analysis and
Service Mesh Intelligence



MESHERY

THE MULTI-MESH MANAGER



Google
Season of Docs



Core Infrastructure
Initiative



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Google
Summer of Code



SNP



Service Mesh
Interface (SMI)



Mentorship

The service mesh management plane



Multi-Mesh Management

- ✓ Lifecycle
- ✓ Workload
- ✓ Performance
- ✓ Configuration
- ✓ Patterns and Practices
- ✓ Chaos and Filters

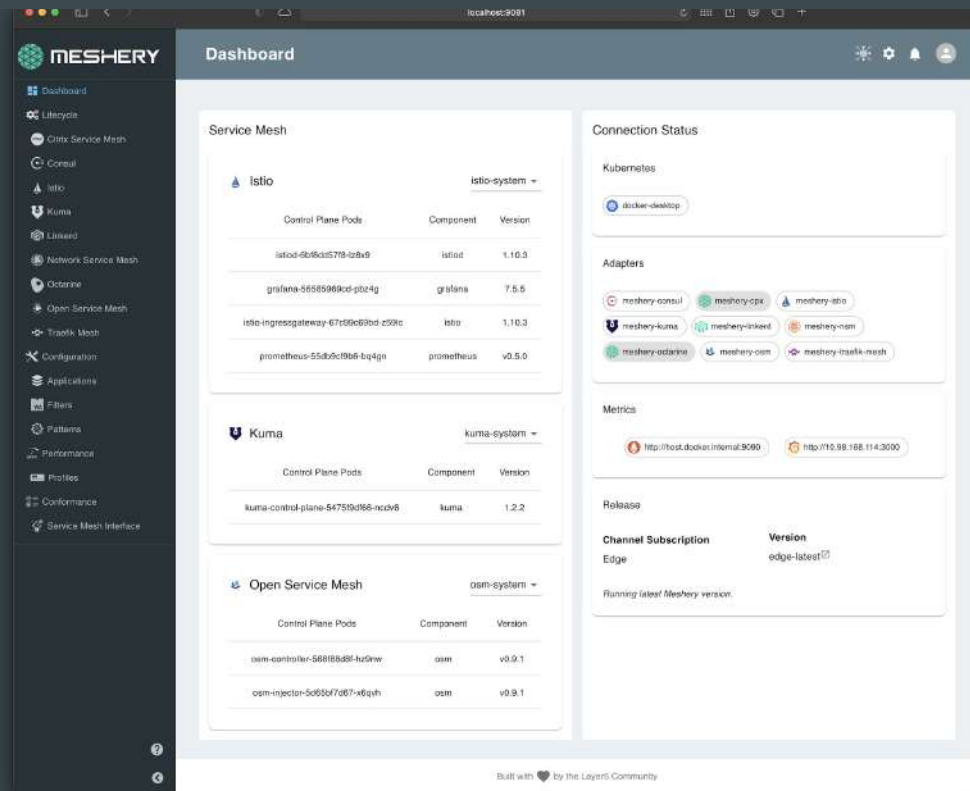
Supports:



Working with each service mesh project to incorporate Meshery into their release process as the measure of their adherence to service mesh standards.

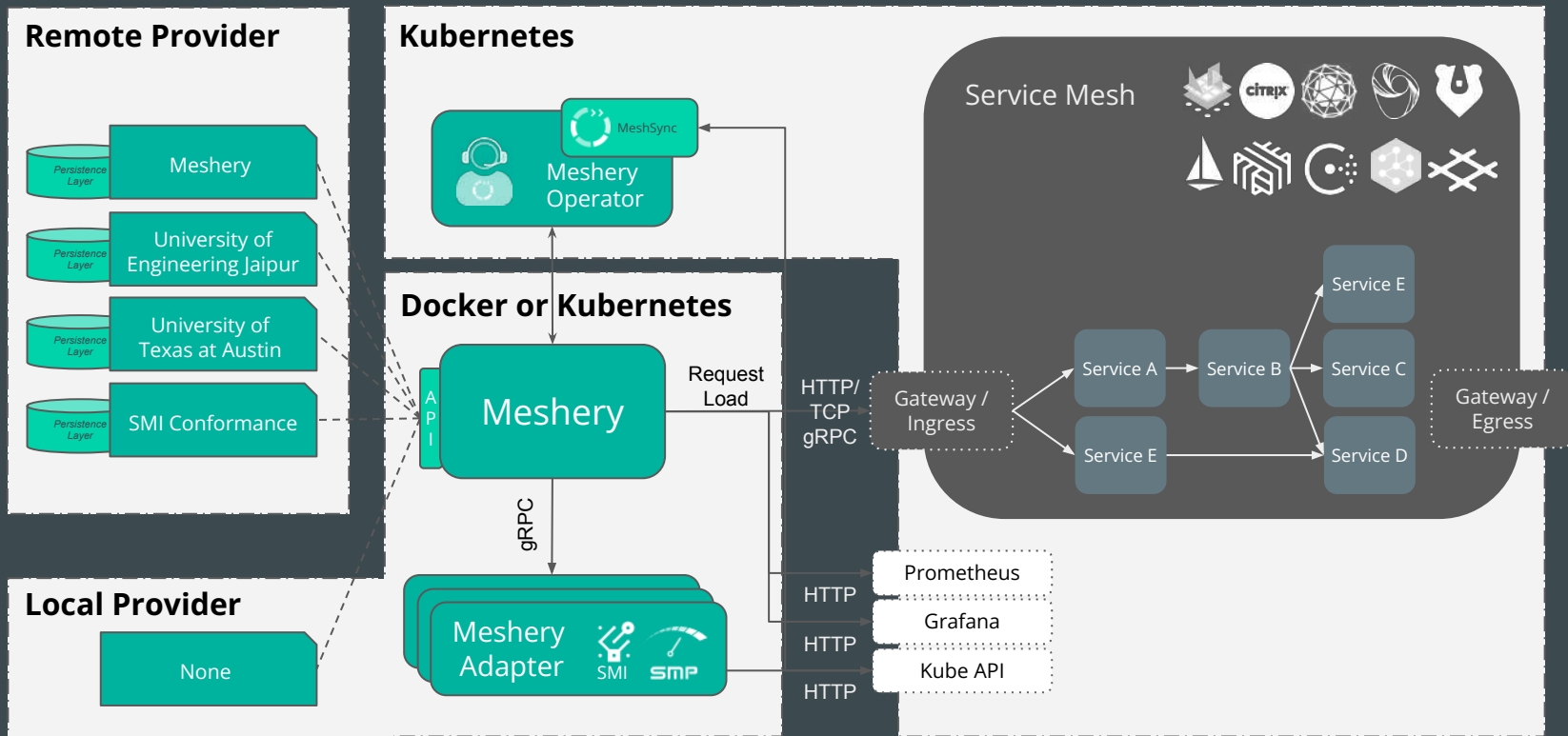
- Citrix Service Mesh
- Containous Maesh
- HashiCorp Consul
- Istio
- Linkerd*

- Octarine
- Network Service Mesh
- VMware NSX-SM
- AWS App Mesh
- Kong Kuma



Meshery Architecture

Providers



Join the Meshery Project!

A warm and welcoming community



300+ contributors

15 maintainers across different organizations:

Layer5, Red Hat, Rackspace, Intel, Quantex, Lumina Networks, VMware, Citrix, Octarine, HashiCorp, Independent, Microsoft, Google

Statistics

- 1,100+ Meshery users
- 1,050+ Twitter followers
- 1,000+ stars, 100+ releases
- 5,200+ performance tests collected
- 2,200+ Slack community



#1 Most Popular Project
in Linux Foundation
Mentorship Program



Thank You For Listening

You can connect via:

- GitHub: @Anita-ihuman
- Twitter: @Anita_ihuman
- LinkedIn: @anita-ihuman



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Service Mesh
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Mentorship