

Istio is the Future!



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www.container-solutions.com



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Istio





IBM

Google

Lyft [Envoy]



- Abstraction
- Intelligence
- Extendable

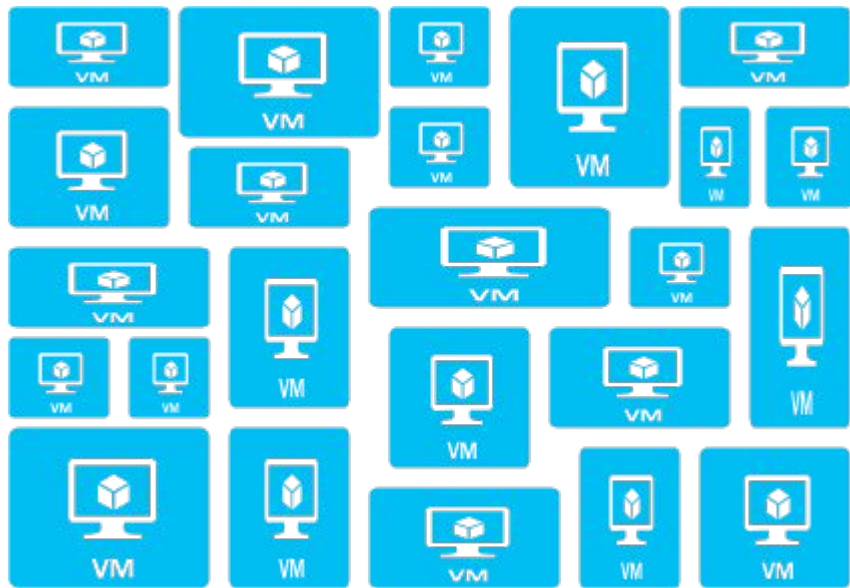
Abstraction

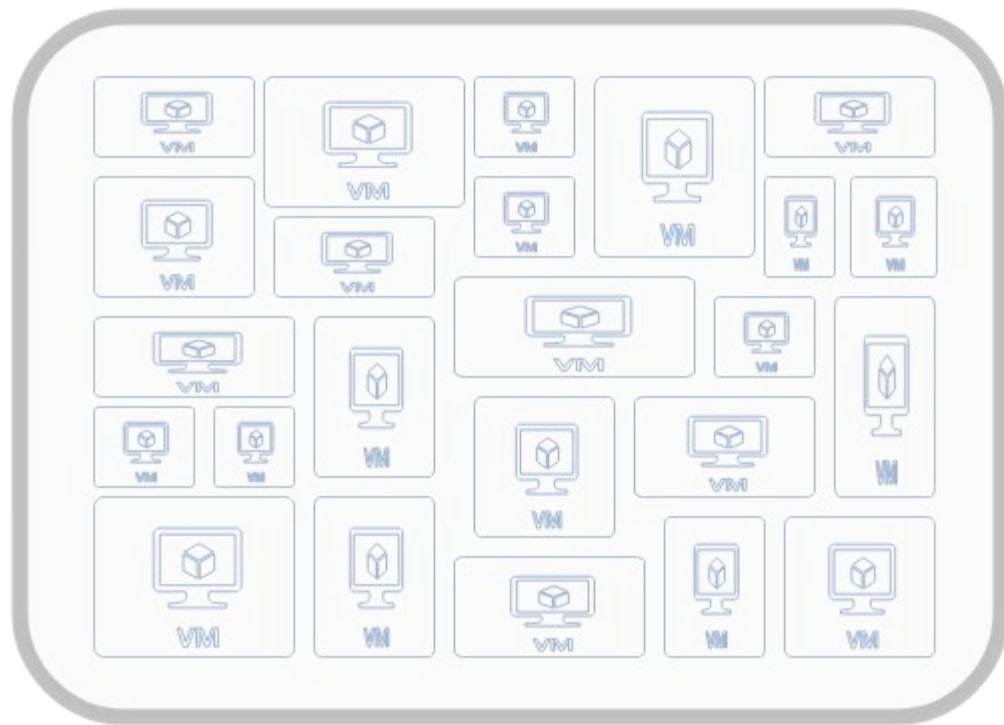


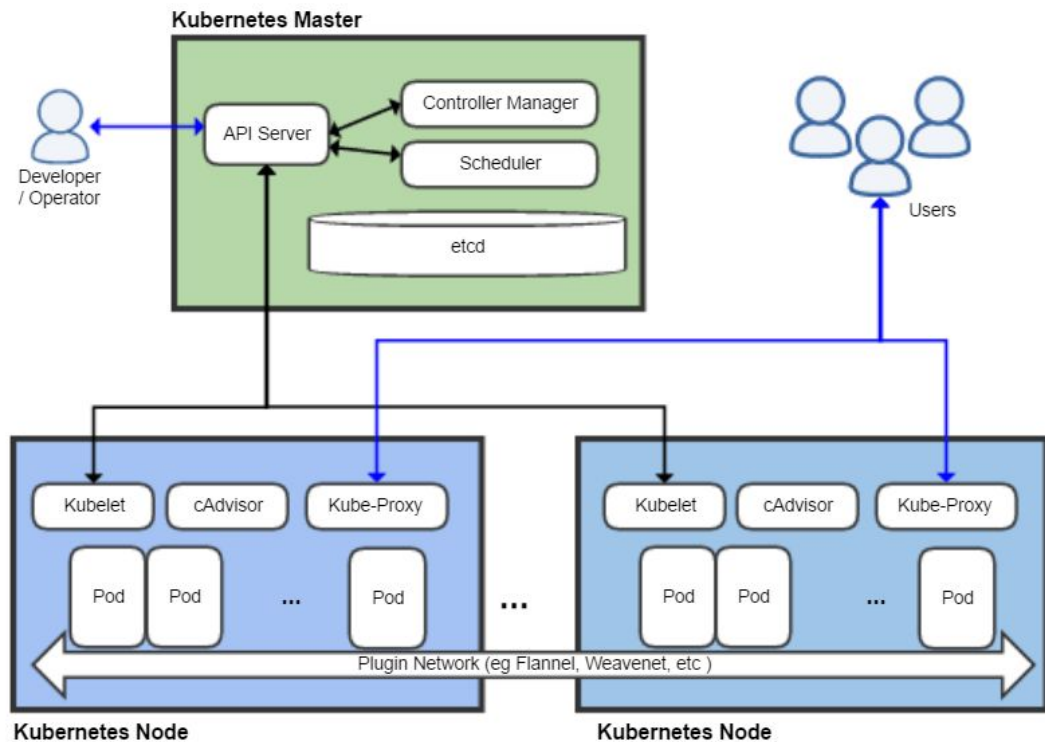


kubernetes

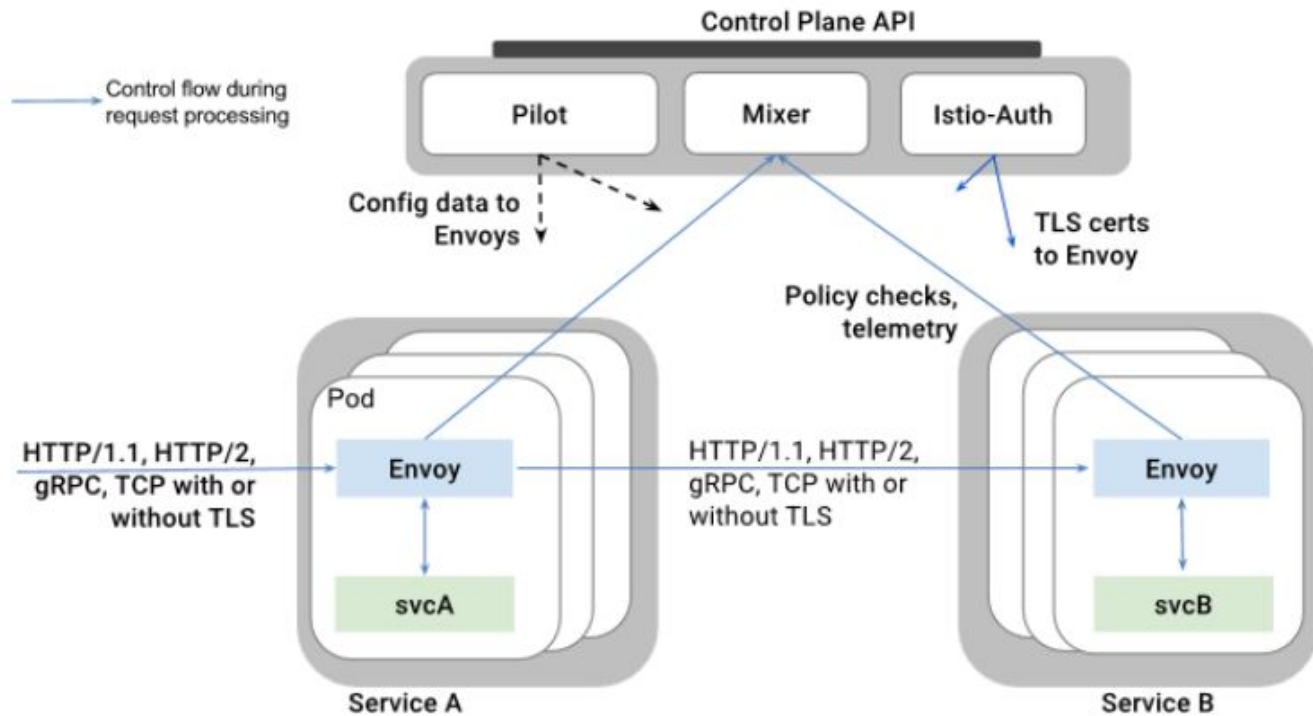


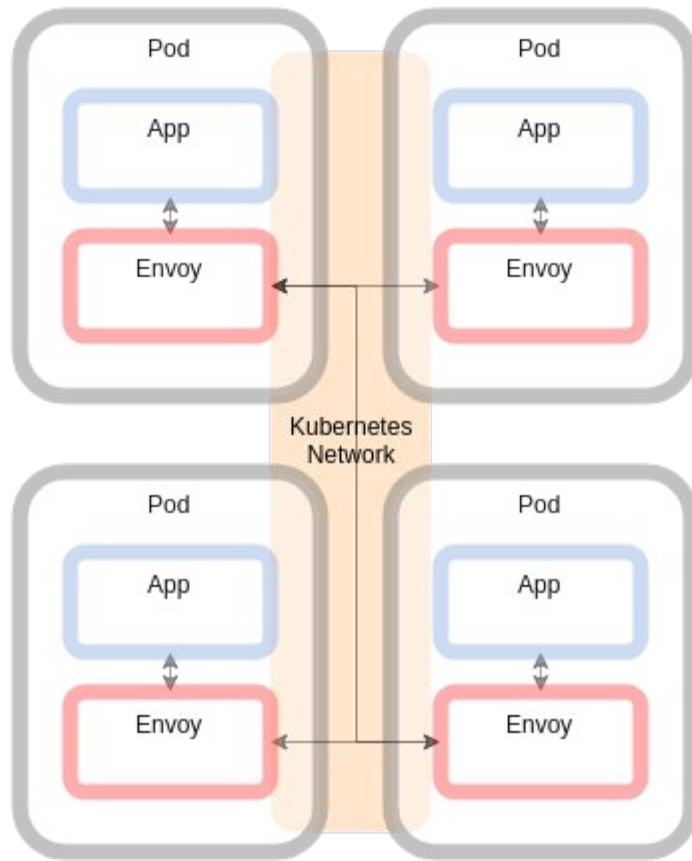


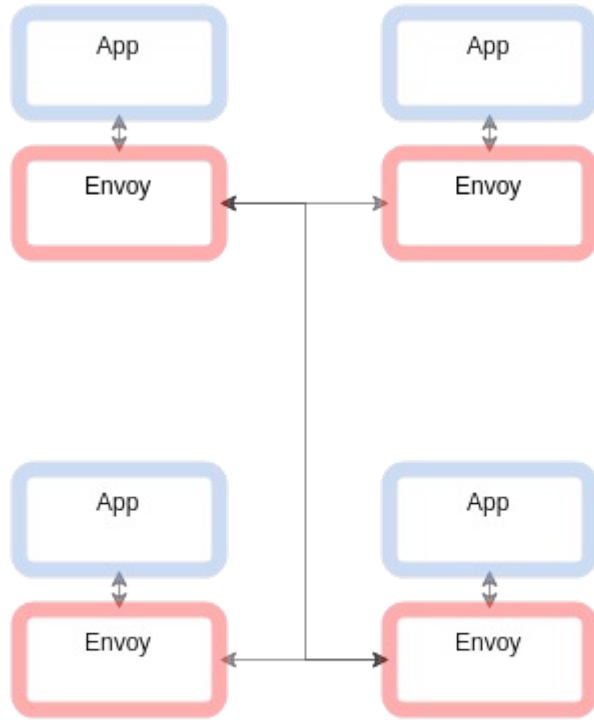




By Khtan66 - Own work, CC BY-SA 4.0, <https://commons.wikimedia.org/w/index.php?curid=53571935>

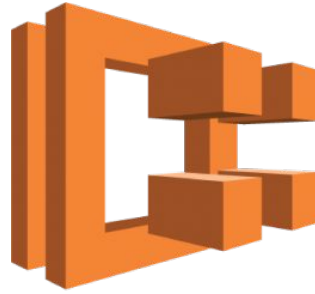








DC/OS



Amazon ECS



HashiCorp

Nomad

BEAR METAL



<http://fredrikdesigns.com>



Intelligence



operational

^ Intelligence





Operational intelligence (OI) is a category of **real-time dynamic, business analytics** that delivers **visibility** and **insight** into data, streaming events and business operations. provides organizations the ability to make decisions and immediately **act on these analytic insights, through manual or automated actions.**

https://en.wikipedia.org/wiki/Operational_intelligence

Operational Intelligence

O'REILLY



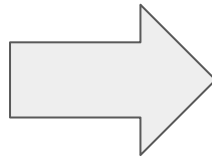
<https://landing.google.com/sre/book/>



**Operational
Intelligence**



Istio



Automatic:

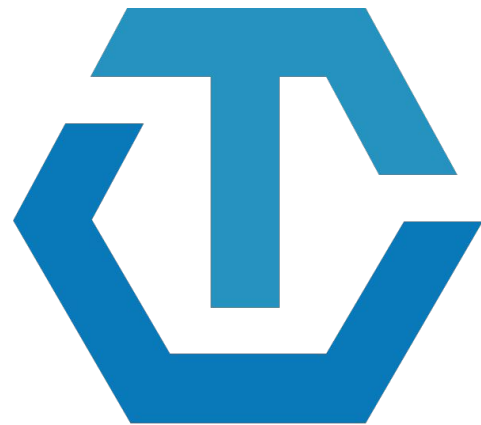
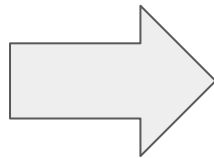
- Canary Deployments
- Provisioning New Resources
- Destruction of misbehaving services
- Traffic Shifting to another data center
- ...

AUTOMATE





Istio



OPENTRACING

Duration: 195.000ms

Services: 8

Depth: 2

Total Spans: 17

Expand All

Collapse All

Filter Service Search

cms-lookup-server x1

opdragserver x1

prod x1

search-management x3

smajobber-thrift-server x1

smajobberlookupservice x1

statistics x1

sybase: finnst x9

Services

39.000ms

78.000ms

prod

195.000ms : /finn/

cms-lookup-server

15.000ms : CmsLookupService

sybase: finnst

5.000ms : ... pagination_ordered

statistics

2.000ms : AdCountService

opdragserver

6.000ms : OppdragService

smajobberlookupservice

6.000ms : smajobberLookupService

search-management

2.000ms : SearchManagementService

search-management

3.000ms : SearchManagementService

search-management

9.000ms : SearchManagementService

c*:localhost

; Parsing select * from ; [SharedPool-Worker-1]

c*:localhost

; 1.000ms : Preparing statement [SharedPool-Worker-1]

c*:localhost

; 2.000ms : Computing ranges to query [SharedPool-Worker-1]

c*:127.0.0.2

; 292.000ms : Submitting range requests on 4 ranges with a co

c*:127.0.0.2

; 63.000ms : Message received from /127.0.0.1 [Messag

c*:127.0.0.2

; 3.000ms : Executing seq scan across 0 sstables for (mir

c*:127.0.0.2

; 2.000ms : Scanned 0 rows and matched 0 [SharedPool

Operational Intelligence

**Economic
Intelligence**

O'REILLY



Site Reliability Engineering

HOW GOOGLE RUNS PRODUCTION SYSTEMS

<https://landing.google.com/sre/book/>



Four Golden Signals

- Traffic
- Latency
- Errors
- Saturation

<https://landing.google.com/sre/book/chapters/monitoring-distributed-systems.html>



Tom Wilkie

RED Method

- [R]ate
- [E]rrors
- [D]uration

<https://www.weave.works/blog/the-red-method-key-metrics-for-microservices-architecture/>

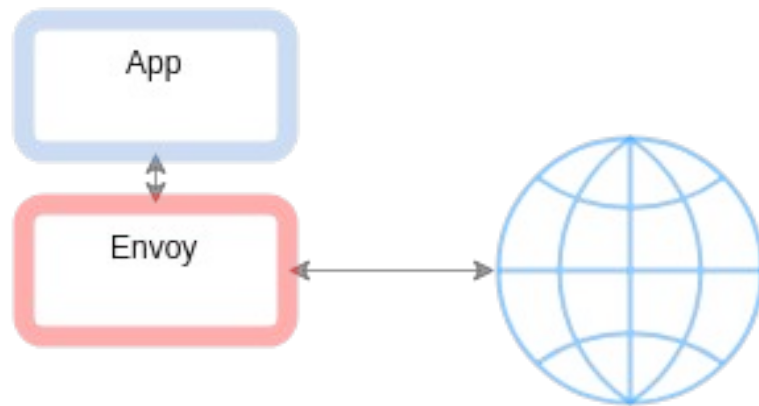




Istio

Circuit Breaking
Timeouts
Rate Limits
Health Checks








It looks like you
are sending a
TCP packet.
Can I help you
with that?

Operational Intelligence



Layer	
Host layers	7. Application
	6. Presentation
	5. Session
	4. Transport
Media layers	3. Network
	2. Data link
	1. Physical



Targeted Request Routing
Weighted Load Balancing
Canary Deployments
Traffic Shifting
Mirroring
Authentication
Access Management



Extendability



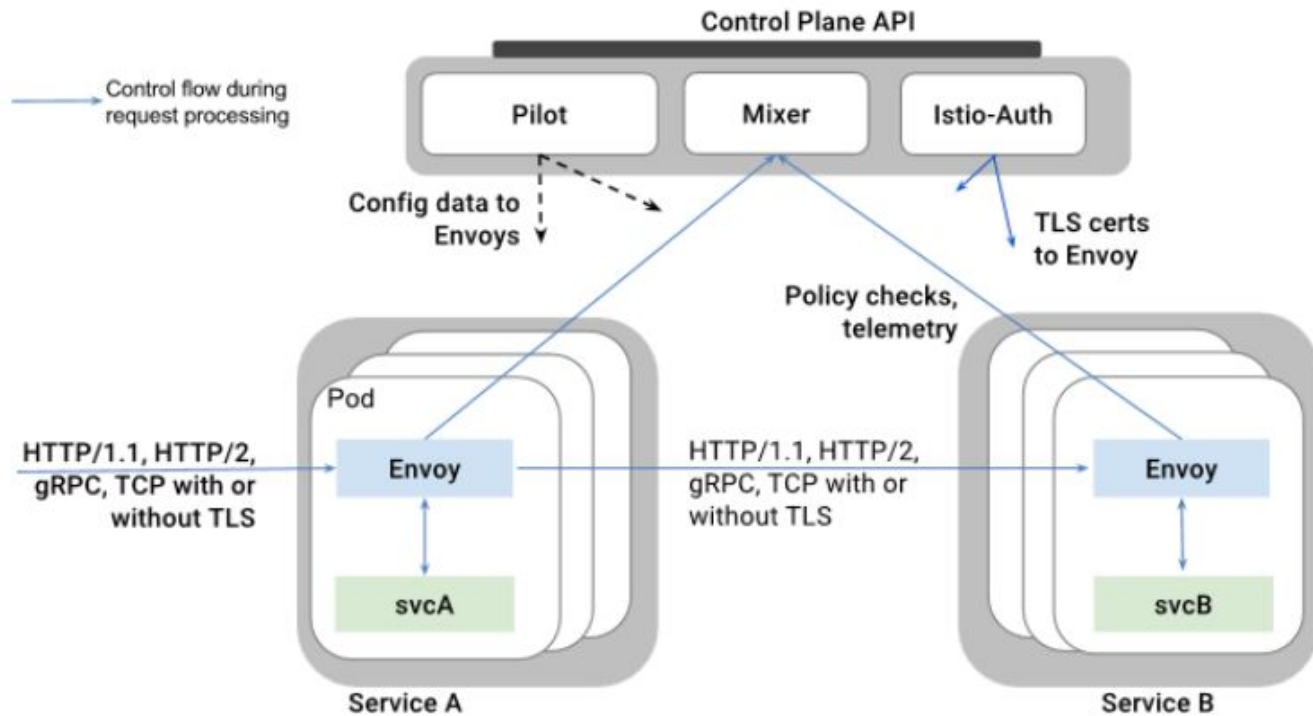
Application


^ Extendability



Mixer



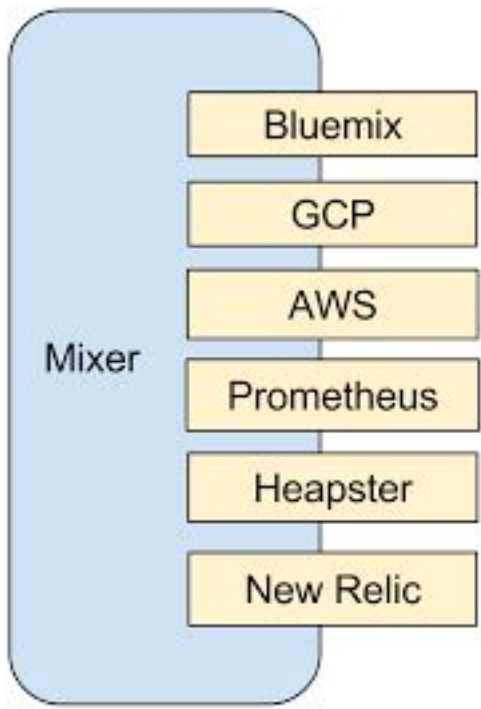




“its key functions is to
abstract away the details of
different policy and telemetry
backend systems, allowing the
rest of Istio to be agnostic of
those backends”

<https://istio.io/docs/concepts/policies-and-telemetry/overview/>

Adapters



Sidecar

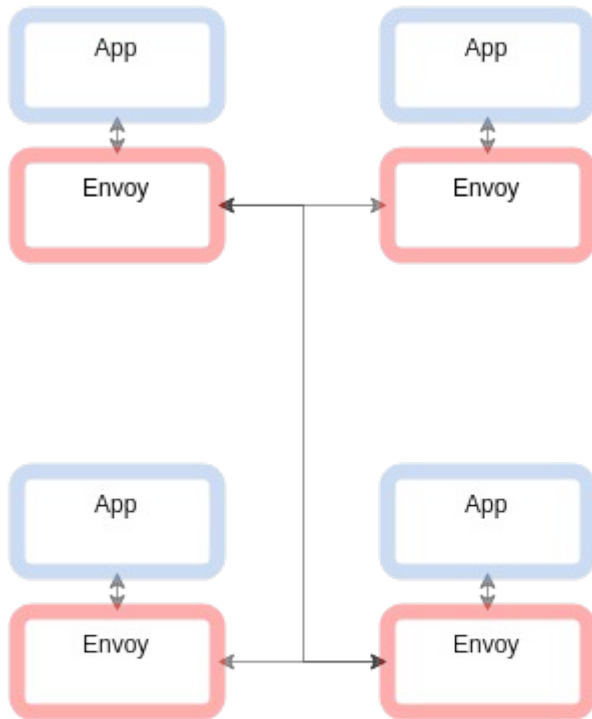
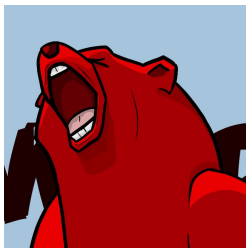




Service Mesh

^ Extensibility





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Container
Solutions

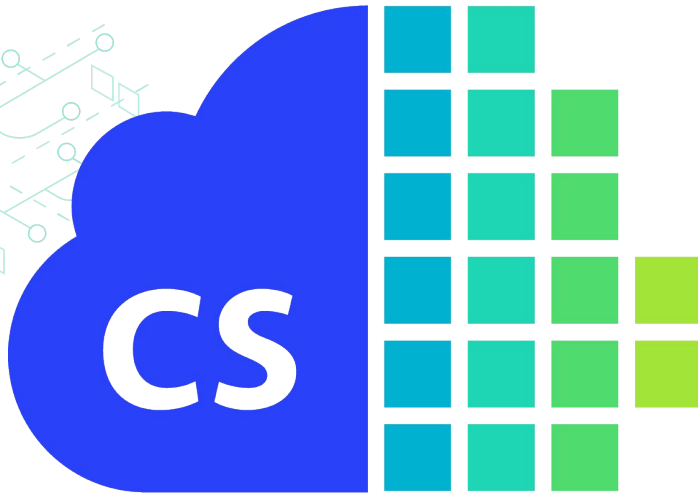
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Thank You!





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Performance and Scalability

<https://istio.io/docs/performance-and-scalability/>

