VENDOR EVALUATION GUIDE FOR ENTERPRISE ISTIO

Explore why you should choose enterprise Istio for production usage and see a detailed comparison of enterprise Istio providers.

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Introduction

Istio service mesh is not only meant for large enterprises where hundreds of microservices are deployed into hybrid environments, including multiple clouds, Kubernetes, and VMs. Istio has become the de facto infrastructure for mid and small enterprises catering to end customers through web services. Irrespective of the size of the organization and their technical maturity, they all come to a junction where they have to decide if they want to continue to use OSS Istio in a do-it-yourself (DIY) fashion or consider an enterprise Istio and, more importantly, to select the best Istio provider.

We have discussed five reasons enterprises move out of DIY mode and opt for enterprise Istio in our blog. A glance at them below.

5 reasons to choose enterprise Istio

Learning curve

The deep learning curve of Istio can make your already burdened team giddy and overwhelmed.

Ownership

Baby-sitting Istio often derails developer and DevOps from their core activities.

Customization

Experimentation on integrating Istio with other tools can waste many productive days.

Version upgrades

Upgrading to a new Istio version will always introduce unseen compatibility issues, often in the Envoy data plane, or with infrastructure, leading to unexpected downtime.

Documentation

Not all Istio use cases or technical features will have a step-by-step guide in the community documentation.

Once organizations are convinced to improve productivity of their team and adopt Istio at faster rate they need to indentify the right vendor their requirement and budget.

Vendors offering enterprise Istio

Our experience while participating in the service mesh market for the last two years includes interaction with 100+ Istio users in the United States, India, Israel, Germany, and the middle-east.

We understand that there are two capabilities under which Istio providers can be categorized: Enterprise Istio & Managed Istio.

Enterprise Istio- A licensed version of the open-source Istio where critical vulnerabilities (if any) are fixed and may include a few OOTB capabilities like FIPS compliant or native integration with some software. Enterprise Istio is like any commercial software where vendors will be less focused on professional services or actual software implementation. Another limitation is that enterprise Istio will be built on a particular version of Istio, and it is less likely to see an enterprise Istio getting updated as frequently as open-source Istio. So, you will surely miss out on essential features or upgrades in enterprise Istio released by the community. (The Istio community has thousands of developers contributing and engaging in the Slack channel.)

Managed Istio- The capability to support implementing open-source Istio in production and professional services for lifecycle management activities. Managed Istio includes installing open-source Istio in any infra such as cloud or on-prem Kubernetes, then implementing all the network, security, and observability use-cases using Istio. This would also include developing 3rd party integrations with existing applications in a production landscape. Once the Istio is in production, a vendor will be expected to manage the lifecycle operations such as monitoring performance, troubleshooting, tuning, patching, upgrading, etc.

Although there are many consultants and service player around Istio ecosystem, we have refered to the list of Istio providers, and based on our interaction with clients and market study, we have figured out the top 7 vendors.

Top 7 Istio providers worldwide

	Istio Vendors	Managed Istio	Enterprise Istio
	Google Cloud	No	Anthos Service Mesh
	IBM Cloud	No	Istio on IBM Cloud Kubernetes Service
	VMware	No	Tanzu Service Mesh
	Red Hat	No	OpenShift Service Mesh
	SOLO	YES	Gloo Mesh
	Tetrate	YES	Tetrate Istio Distro
	IMESH	YES	IMESH Istio Platform

Note: we have only included those vendors if they are customers or have made any significant contributions to the Istio community. Also, we did not consider any vendors who provide their alternate control plane to manage the Envoy data plane, such as Kong's KUMA or Hashicorp Consul.

6 Criteria for Istio vendor evaluation

We have evaluated all 9 Istio vendors based on the following criteria, which are deemed necessary for the end customers (including buyers and users). The criteria include:

1. **Multicloud and multicluster implementation**
2. **Advance security implementation**
   - a. Authn/z with 3rd party players
3. **Advanced network management**
   - a. Canary, failover, rate limiting, fault injection
4. **Dedicated Istio implementation partners**
5. **Cost of offering**
6. **Delivery model and enterprise adoption**

Google Anthos Service Mesh

Enterprise Istio

Anthos Service Mesh (ASM) is an enterprise Istio by Google built on open-source Istio. You can use ASM for multicluster in Google Anthos (i.e., GKE enterprise), but configuring multicloud is difficult. Imagine having workloads hosted in AWS or Azure or bare-metal VMs; it is difficult for architects and DevOps to bring those workloads under ASM. Check out the detailed limitations of ASM here.

Secondly, to deploy ASM in on-prem servers, one must first be an Anthos customer. And for on-prem ASM, Google charges 3X of the price of the ASM cloud. Thirdly, their support cycles (EOL) can be less than 7 months for a version. Please consider updating your Istio version frequently in production.

Regarding security, ASM offers all the basic authentication features, such as mTLS, integration with certificate manager, firewall policies, and JWT-based authentication. ASM is a FIPS 140-2 validated encryption module. One can implement granular RBAC and multitenancy using AMS (Istio) Authorization Policy and GKE Roles.

ASM is suitable for load balancing and basic network policy implementation at the L7 layer. Still, it does not offer advanced traffic management use cases like Istio as an API gateway, rate limiting or failover, or anything that involves a customization to the Envoy filter.

Google has built ASM in such a way that users have always had to rely on the Google ecosystem to realize the value of the Istio service mesh. ASM has native integration with Google Cloud Trace and Google Cloud Monitoring apart from Kiali, Zipkin, and Jaeger.

Google Anthos Service Mesh

Managed Istio

Google does not provide dedicated Istio experts for Anthos service mesh implementation. You have to rely on your DevOps folks to perform experimentation and build solutions around ASM.

Capability ★★★☆☆

Pricing ★★★☆☆

IBM Istio

Enterprise Istio

Istio on IBM Cloud Kubernetes Service (IBM Istio) provides the installation and lifecycle management of open-source Istio. You can only implement IBM Istio if you have subscribed to IBM Cloud, and implementing multicloud operations is extremely difficult. Another problem is implementing multitenancy with IBM Istio. If you have multiple teams with various access to different namespaces and requirements, you cannot implement OSS Istio and IBM Istio in the same cluster. Very similar to Google Cloud, IBM Istio supports all the monitoring solutions offered in the IBM Cloud catalog.

Though IBM is the 2nd top contributor after Google, it only focuses a little on Istio implementation at the enterprise level.

Managed Istio

DevOps folks planning to use IBM Istio on IBM Kubernetes services will have to wait and delve into too many experiments with no dedicated support from IBM. Leave alone other lifecycle management activities like policy upgradation, patching, performance tuning, etc.

Capability ★★☆☆☆

Pricing ★★★★☆

VMware Tanzu Service Mesh

Enterprise Istio

A few advantages of using TSM are that it comes with a dashboard (UI) from the control plane and data plane to visualize the workload topology, metrics, traces, and logs. It also provides metrics with application-to-infrastructure metrics correlation ootb, which is more accessible for troubleshooting.

However, many customers discussed migrating from VMware Tanzu Service Mesh (TSM) to OSS Istio. The main reason for moving away from TSM was the lack of interoperability of TSM with 3rd party components such as CA manager and OSS observability tools. Like any other cloud, VMware wants its Kubernetes users to use TSM, which will be only of value when used with its logging and monitoring services, such as Tanzu Mission Control. And yes, TSM does not provide a multicloud solution, so getting your on-prem or cloud (non-Tanzu) workloads under the Tanzu service mesh is challenging.

Managed Istio

Like Google and IBM, VMware does not provide Istio experts to help you implement and adopt the Tanzu service mesh. They focus more on selling products, so you must find external professional vendors to support Istio.

Capability ★★☆☆☆

Pricing ★★★★☆

OpenShift Service Mesh

Enterprise Istio

Openshift Service Mesh uses an outdated version of Istio for enterprise usage. The service mesh is for Red Hat Openshift (widely used enterprise Kubernetes). Many features introduced in the recent version of Istio are simply unavailable to OpenShift Service Mesh (OSM) users. It does not support integrations with 3rd party authorization software, including certificate management or secret management platforms. In the last year of market participation, we have seen only a few customers evaluating OpenShift Service Mesh for their workloads.

Managed Istio

Red Hat does not provide Istio experts to help enterprise DevOps or Ops teams adopt the service mesh in their production environment. Architects considering OpenShift for their containerized application should consider OSS Istio service mesh over OSM.

Capability ★☆☆☆☆

Pricing ★★★☆☆

SOLO

Enterprise Istio

SOLO is one of the pioneers of service mesh in general. Their Gloo mesh is built on top of the latest Istio service mesh, which is fit for enterprise needs. SOLO's Gloo mesh is suitable for large enterprises with multicloud or hybrid cloud strategies for their fleet of microservices. Another good part of their Gloo mesh is they have packaged the FIP-validated Istio with Cilium, which is handy for architects who want to use network policies using eBPF. SOLO also provides enterprise support for the new and faster version of Istio called Ambient Mesh. With Gloo mesh, pre-built integrations for Web Application Firewall (WAF), Data Loss Prevention (DLP), and request and Response Transition can be used. Gloo mesh also provides native integration with 3rd party security and observability platforms.

SOLO also offers enterprise Envoy Gateway, called Gloo Gateway, built on the top of their Gloo platform, to provide the API gateway functionalities for Kubernetes workloads.

Managed Istio

SOLO is a top contributor to the Istio project, and they provide enterprise Istio support. However, please remember that SOLO support their Gloo mesh, not the open-source Istio. Any company starting out their journey with Istio service mesh may not require/use a lot of bells and whistles (such as Cilium) provided in Gloo mesh. Also, Gloo mesh enterprise is a tad expensive product with an unseen vendor lock-in, which puts enterprises at risk of under-utilizing a costly resource.

Capability ★★★★★

Pricing ★☆☆☆☆

Tetrate

Enterprise Istio

Tetrate also provides enterprise Istio called Tetrate Istio Subscription built on their Tetrate Istio Distro (TID)- an open-source Istio distribution by Tetrate. They are a frequent contributor to Istio and Envoy projects. Tetrate Istio distribution is FIPS-validated, which is ideal for any organization that wants to comply with the data security standards established by the NIST. Apart from that, Tetrate also offers an enterprise Envoy gateway for organizations looking to implement a Kubernetes-based application gateway.

Tetrate Istio distro (TID), though is FIPS compliant, is built on the older Istio versions. Their enterprise platform (Tetrate Service Bridge) claims to provide management platform for enabling AuthN/Z and observability features such as topology, metrics, and traces. However, customers again run into the risk of vendor lock-in (with TID and TSB) for what they can achieve freely with open-source solutions from CNCF such as Kiali and Jaeger. Besides, they offers too many features such as attribute-based access controls which may not be relevant for most of use-cases.

Managed Istio

Tetrate provides managed services to implement and adopt Istio for enterprises along with deep expertise into security and performance optimization areas. But their services comes with a huge cost. They offer limited capability on Ambient mesh and Gateway API (Istio).

Capability ★★★★☆

Pricing ★★☆☆☆

IMESH

Enterprise Istio

IMESH provides enterprise Istio with built-in Kubernetes gateway API and native support for Open Telemetry. Enterprises starting their journey in service mesh find IMESH Enterprise Istio suitable for their basic and advanced use cases in security, network, and observability areas. IMESH Istio supports multicloud implementation for adding workloads deployed to the public cloud or on-prem data centers. Besides that, it also provides pre-built Envoy filter templates for granular networking capabilities, such as global/local rate limiting, to improve the productivity of DevOps and SREs.

Managed Istio

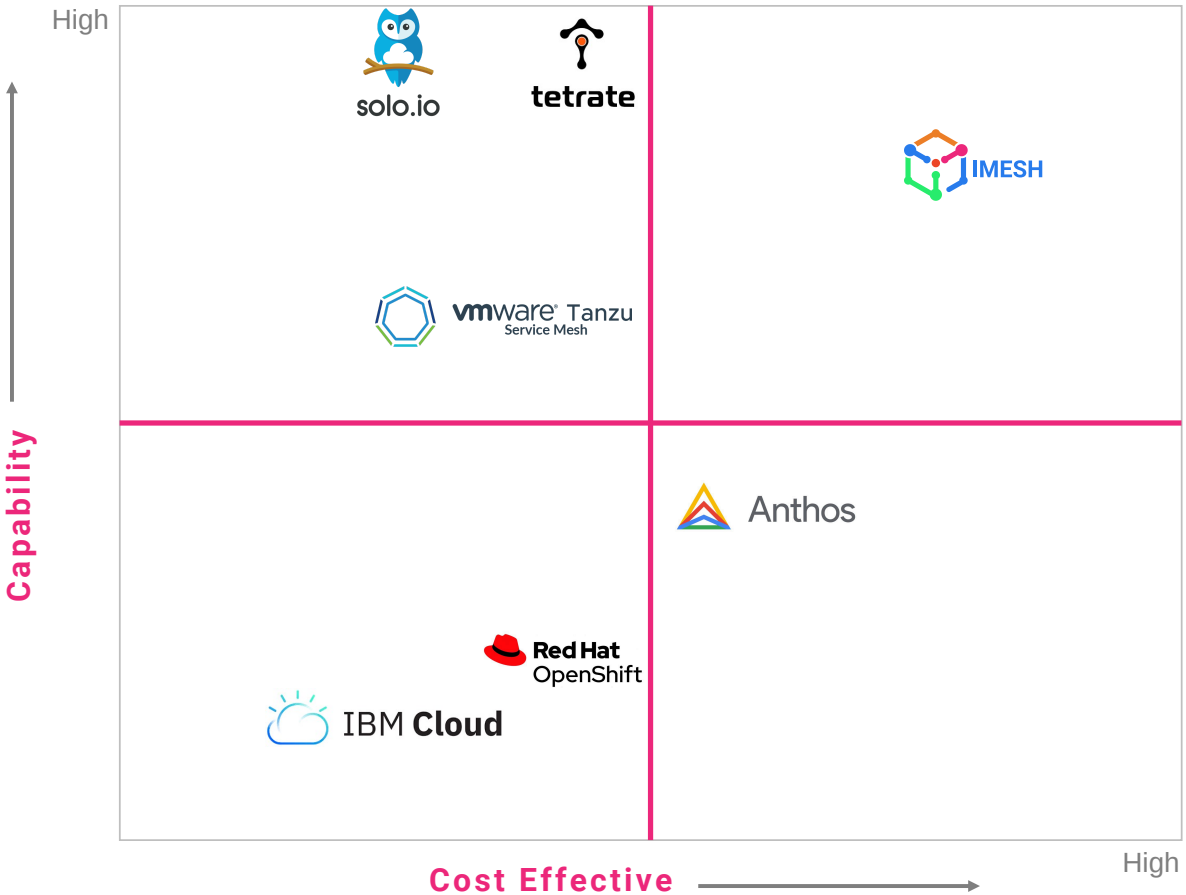
IMESH provides best-in-class managed services for Istio implementation and maintenance with guaranteed SLA. Customers have realized the best RoI from our managed Istio in less than 3 months. We have implemented and configured various networking use cases such as Istio as API gateway, rate limiting, multicloud failover, etc., as part of infrastructure modernization projects for multiple clients.

IMESH also provides API gateway platform built on top of Istio and Envoy Gateway for creation and management of APIs for Kubernetes workloads. DevOps team can also see the performance of APIs and Routes across applications and clusters.

Capability ★★★★★

Pricing ★★★★★

Summary



Vendors like Google, IBM, and Red Hat that may provide cost-effective solutions by bundling them with their Kubernetes services. However, their Istio service mesh solution needs to be more competent for enterprises. Other expert vendors, such as SOLO, charge a huge premium for their expertise and enterprise Istio (leading to vendor lock-in). On the other hand, IMESH provides cost-effective Istio expertise that suits enterprises across all the stages of service mesh adoption.

Summary

If you want to get the best RoI for your Istio service mesh implementation and lifecycle maintenance, then you can try IMESH Istio solutions. As you progress, IMESH will help you to implement a multicloud service mesh solution and develop networking for all the Kubernetes workloads. IMESH managed solution provides the capability to use open-source Istio for production **without vendor lock-in**.

Apart from Istio implementation, our experts offer consulting and best practices for Istio integration, performance optimization, and adoption of Istio in an enterprise setup. All of those are affordable, which other vendors can't offer.

Many Istio users gradually engage with IMESH to focus on their core work rather than invest time in Istio adoption or maintenance. If you are interested, contact us today.