

REPORT REPRINT

F5's Aspen Mesh-managed Istio targets microservices complexity and cost

WILLIAM FELLOWS

04 SEP 2018

Aspen Mesh is an F5 Networks incubation business with a packaged and supported SaaS offering for managing and securing microservices code. The company believes a supported service mesh adds key functionality and supports companies that want to use Istio in production deployments.

THIS REPORT, LICENSED TO ASPEN MESH, DEVELOPED AND AS PROVIDED BY 451 RESEARCH, LLC, WAS PUBLISHED AS PART OF OUR SYNDICATED MARKET INSIGHT SUBSCRIPTION SERVICE. IT SHALL BE OWNED IN ITS ENTIRETY BY 451 RESEARCH, LLC. THIS REPORT IS SOLELY INTENDED FOR USE BY THE RECIPIENT AND MAY NOT BE REPRODUCED OR RE-POSTED, IN WHOLE OR IN PART, BY THE RECIPIENT WITHOUT EXPRESS PERMISSION FROM 451 RESEARCH.



©2018 451 Research, LLC | WWW.451RESEARCH.COM

Aspen Mesh is an F5 Networks incubation business with a packaged and supported SaaS offering for managing and securing microservice architectures. The company believes a supported service mesh, such as the one it offers, adds key functionality and supports companies that want to use Istio in production deployments. Developers get to focus on writing code rather than managing infrastructure, while operators get visibility into changes in the performance of services and the ability to monitor and encrypt service communications.

THE 451 TAKE

The key benefits of using a service mesh to manage microservices are: application availability and resilience (aka uptime and a better customer experience), the speed separation of concerns it brings to large organizations with distributed development teams, and cost. Enterprises currently use a range of different technologies and multiple engineers to manage microservices. A service mesh brings this all into a single place for uniformity in a polyglot world, and can replace the effort of multiple engineers. This is Aspen Mesh's key go-to-market message. The challenge with microservices is that they are multitudinous, and therefore offer a bigger surface/attack area than other software constructs, and they are often written in many languages (polyglot challenges), meaning more complexity to be monitored and controlled. However, a service mesh manages the infrastructure so DevOps teams can focus on feature delivery and building new applications, and as such is a key component of the 'infrastructure as code' trend. Aspen Mesh is delivering this as a managed service - managed services are where a key opportunity resides, providing value on top of infrastructure and effectively rendering it invisible to the technology consumer.

CONTEXT

Containers facilitated the shift from monolithic architectures to microservices, delivering independence between applications and infrastructure (Aspen Mesh argues that Docker has effectively won the day here). While container orchestration tools solved build and deploy issues (and where Kubernetes has the major market motion), there are many unsolved runtime challenges, and therefore opportunities. Data plane proxies (in this case, Envoy) provide a set of capabilities that address runtime issues including service discovery, load balancing, routing and observability. A service mesh (Istio) provides policy and configuration for all of the running data planes, turning them into a distributed system. Aspen Mesh believes a supported service mesh such as the one it offers adds key functionality and supports companies that want to use Istio in production deployments.

ISTIO

Istio is an open source platform for integrating microservices, managing traffic flow across microservices, enforcing policies and aggregating telemetry data (for observability). Istio has a control plane that provides an abstraction layer over the underlying cluster management platform, such as Kubernetes or Mesos. It pairs automatically with Envoy 'sidecar' proxies that are inserted into each pod and feed telemetry data into the Istio control plane. Traffic encryption achieved through Istio's certificate authority, Citadel, which provides mTLS. The 'mesh' aspect resides here - the proxies form a secure microservice mesh that provides functions such as discovery, layer 7 routing, circuit breakers, policy enforcement and telemetry recording/reporting functions.

Istio is not like other 'mesh' approaches in that it is not an overlay network. Instead it enables microservices in an application to talk to each other over the network provided by the underlying platform. Unlike, for example, messaging-oriented middleware, an enterprise service bus, enterprise application integration or API gateways, a service mesh is implemented as infrastructure that lives outside of applications. A sidecar proxy is not the only architectural option for a service mesh. However, per-node proxies share resources and memory space, and require whole nodes to be rebooted for upgrades. Sidecar approaches provide a proxy for each microservice instance or Kubernetes pod, Aspen Mesh notes.

Other Istio components include:

- Mixer: A central component that is leveraged by the proxies and microservices to enforce policies such as authorization, rate limits, quotas, authentication, request tracing and telemetry collection.
- Pilot: A component responsible for configuring the proxies at runtime.
- Citadel: A centralized component responsible for certificate issuance and rotation.

Google, IBM and Lyft announced Istio in 2017 (Lyft developed the Envoy proxy). Istio reached a 1.0 release in July. It currently supports Kubernetes and Consul-based environments. It plans to support additional platforms such as Cloud Foundry and Mesos.

PRODUCTS

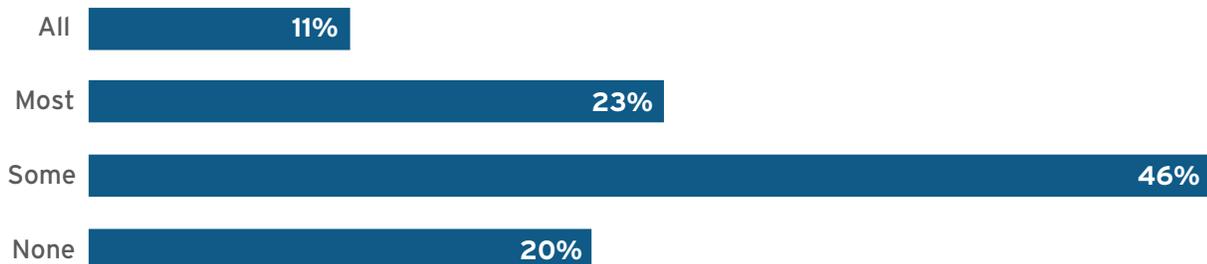
Aspen Mesh provides a dashboard to visualize and map microservices relationships, get insights and error reports, debug clusters, and set policies. This, it believes, differentiates it from other Istio or Linkerd service meshes. Aspen Mesh works as an agent running in a Kubernetes cluster, gathering data to send to its dashboard. It has a hosted SaaS offering. Aspen Mesh's offering can also be consumed piecemeal – if a customer only wants security, it can use the mTLS capability or just the observability capability.

Aspen Mesh says it is seeing much interest from highly regulated industries such as financial services. Its current users are primarily developers and engineers operating test clusters. It expects most buyers will be in highly regulated industries, and that the market will broaden beyond early testers in the next year and move to production environments in a couple of years. It's not clear what the predominant adoption motion will be – embedded in a PaaS or used independently as today. The 10-person startup is growing fast – F5 is effectively its VC (acts as a proxy venture capital investor).

Figure 1: Level of cloud-native or cloud-enabled software developed internally

Source: 451 Research, *Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects 2018*

Q. How much of the software developed internally at your organization is cloud-native or cloud-enabled?



% of respondents (n = 347)

Figure 2: Approaches to cloud-native software development

Source: 451 Research, *Voice of the Enterprise: Cloud, Hosting & Managed Services, Workloads and Key Projects 2018*

Q. When developing cloud-native software, which, if any, of the following approaches does your organization take to designing that software?



% of respondents (n = 266)

COMPETITION

Avi Networks, HashiCorp Consul, Linkerd with a claimed 50-plus production deployments (built by Buoyant), Banyan (security), Tufin Orca (security) and NGINX are competitors in this space. Google is now also offering Managed Istio to manage services within a Kubernetes Engine cluster, plus Apigee API Management for Istio. Google says Managed Istio delivers the key benefits of Istio for production environments plus integration with its Google Stackdriver suite of monitoring and management tools.

SWOT ANALYSIS

STRENGTHS

The use of service meshes is confined to testing and some early adopter production environments today. However, we expect the momentum around cloud-native approaches - containers, Kubernetes, microservices, serverless, etc. - will drive service meshes into use on a generalized basis as enterprises seek to reduce complexity and improve control, and deliver the benefits of microservices.

WEAKNESSES

Aspen Mesh is itself a sidecar to the F5 Networks enterprise. Success will depend not only on the rise of service mesh and third-party tools to manage these, but also on the willingness of F5 to fund its development, or to enable it to raise funds externally.

OPPORTUNITIES

In a multi-cloud hybrid architecture world, where application deployments are routed and operated as microservices, the use of a service mesh seems an inevitable requirement to remove complexity, cost and disruption, but also to unlock the benefits of agility and speed to market that microservices provide by abstracting applications from infrastructure. Cloud-native approaches are making infrastructure invisible.

THREATS

451 Research data shows that the majority of cloud-native or cloud-enabled software is developed internally, rather than purchased commercially. This suggests that enterprises are currently using the building blocks of cloud-native (containers, microservices, serverless, etc.) to create their own software. The opportunity for commercial cloud-native software appears to be mostly in front of us, and offerings that support multiple cloud environments are likely to be more successful than those that target only one.