

What Does Istio Ambient Mesh Mean For Your Wallet?

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Speaker



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Many Thanks!



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Many Thanks!

All of this research is thanks to Krisztian Fekete and Greg Hanson who completed testing and analysis for this talk. [Youtube Video](#), [Blog](#)



Thank you, dear community members!



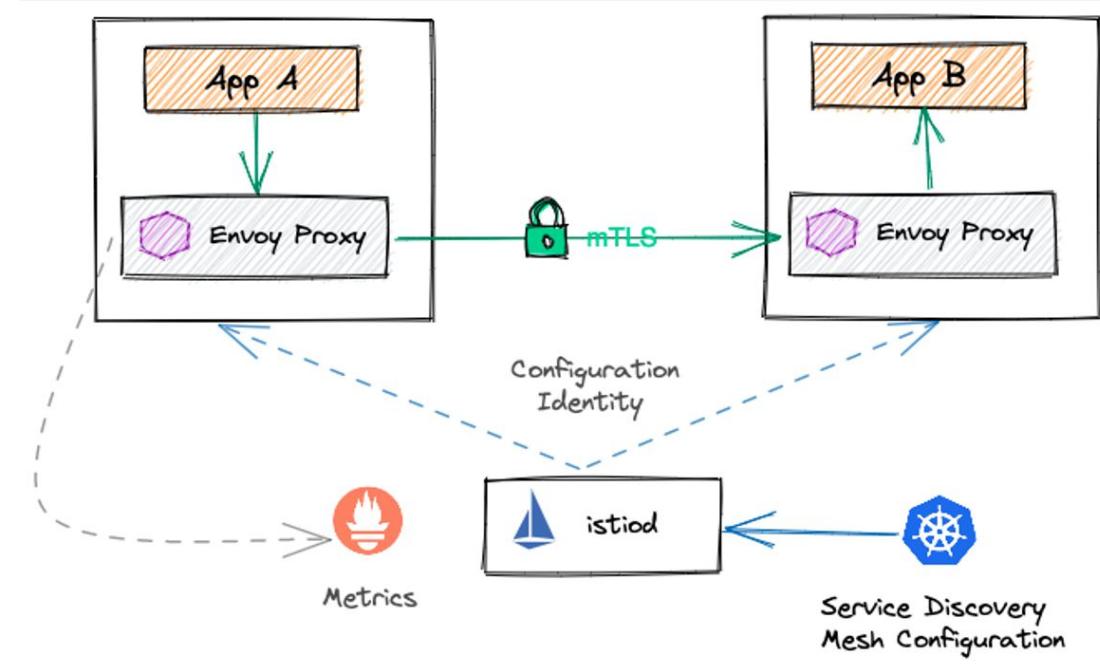
Source: <https://twitter.com/IstioMesh/status/1649352727023984641?s=20>

Istio sidecar proxy approach and the challenges

OPERATIONAL COMPLEXITY

OVERHEAD COST

PERFORMANCE



Istio Ambient Mesh

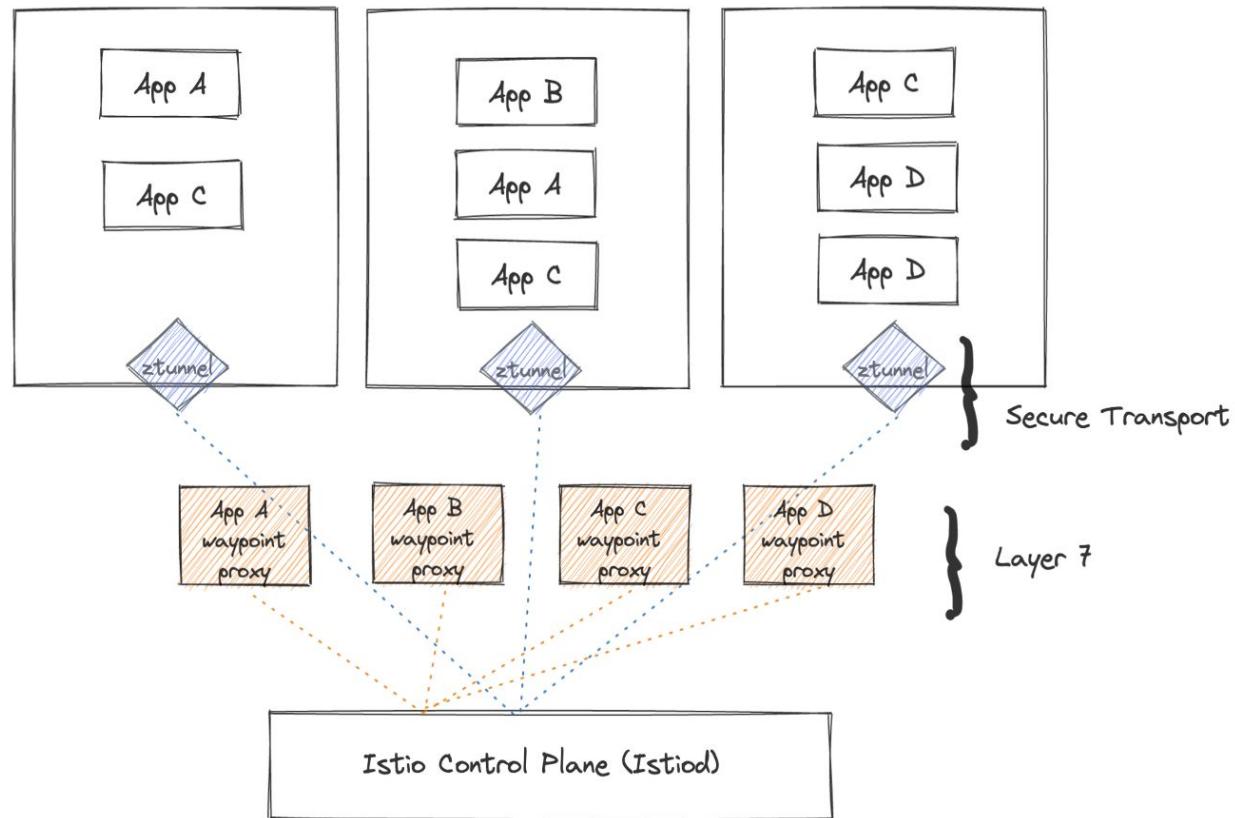


A new, open source contribution to the Istio project, that defines a new sidecar-less data plane.

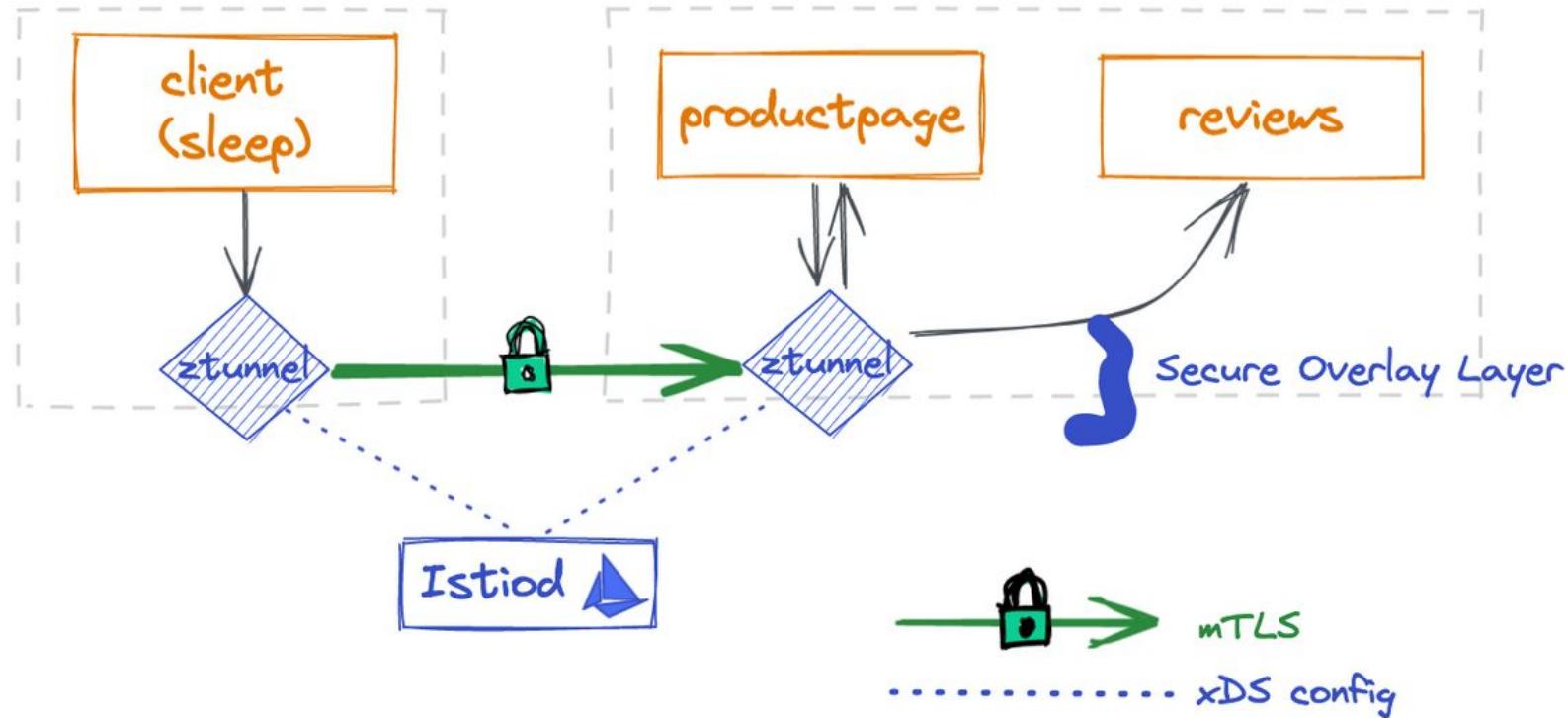
Solo.io and Google are the lead contributors to Istio Ambient Mesh.



Ambient Mesh Architecture

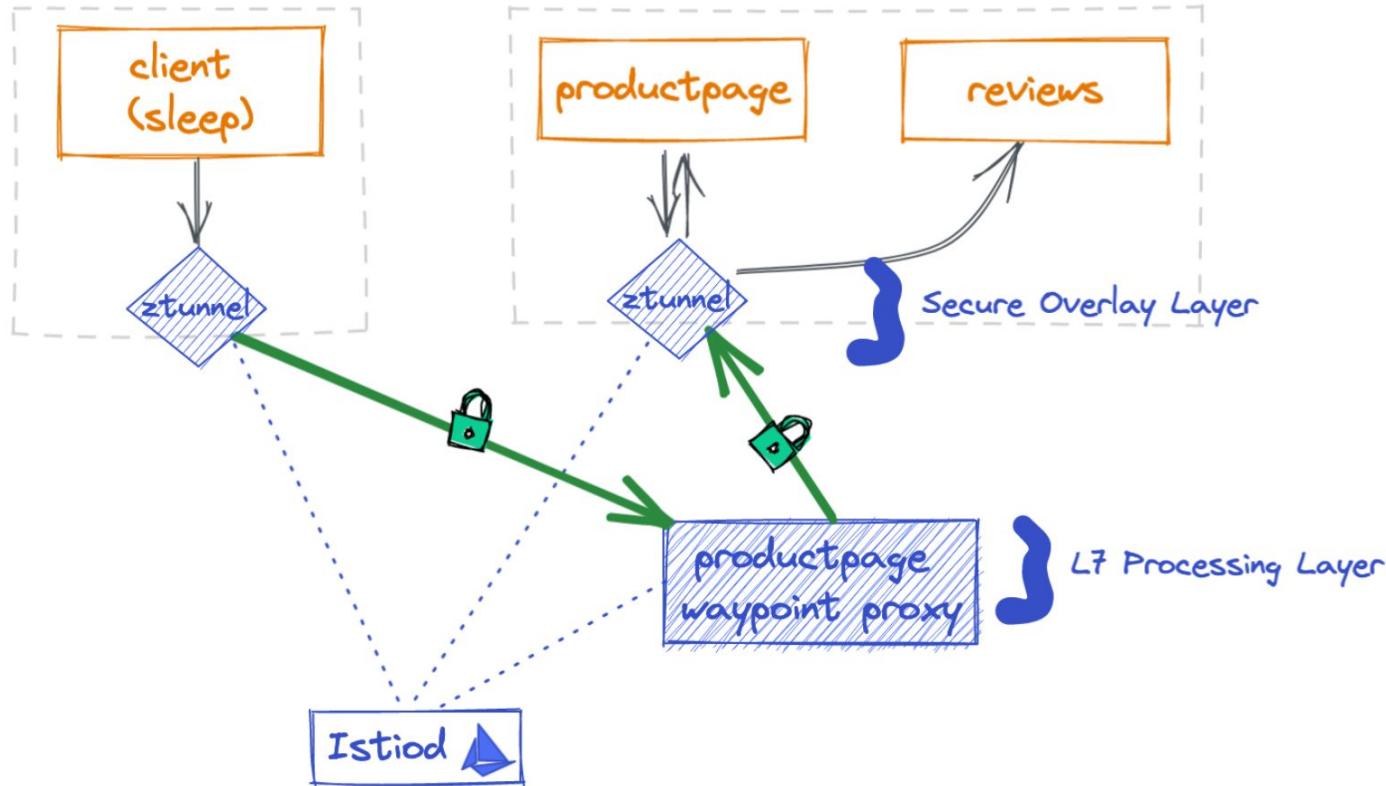


Ambient Mesh & the ztunnel - zero trust tunnel (Layer 4)



Source: <https://istio.io/latest/blog/2022/get-started-ambient>

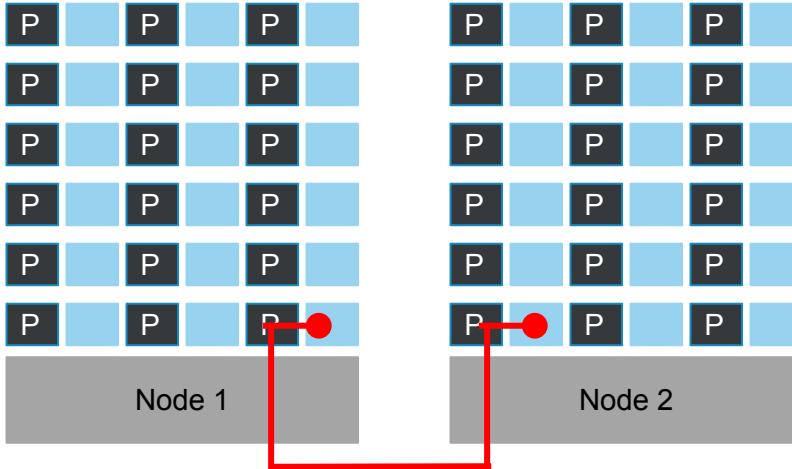
Ambient Mesh & the waypoint proxy (Layer 7)



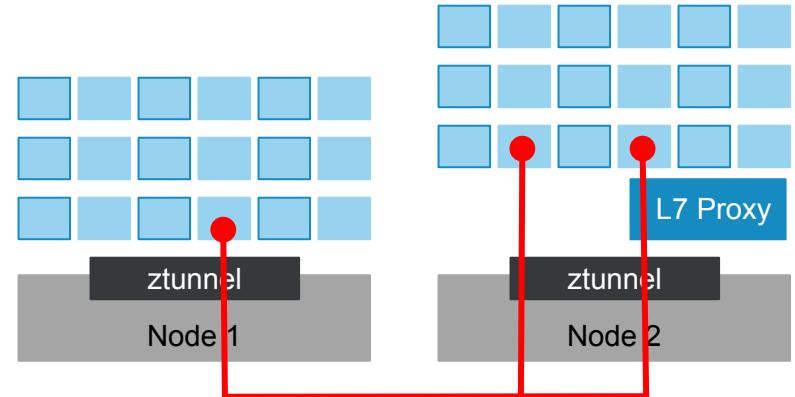
Source: <https://istio.io/latest/blog/2022/get-started-ambient>

Istio Ambient Mesh = Sidecar-less Mode

Traditional Istio - Sidecar Proxy



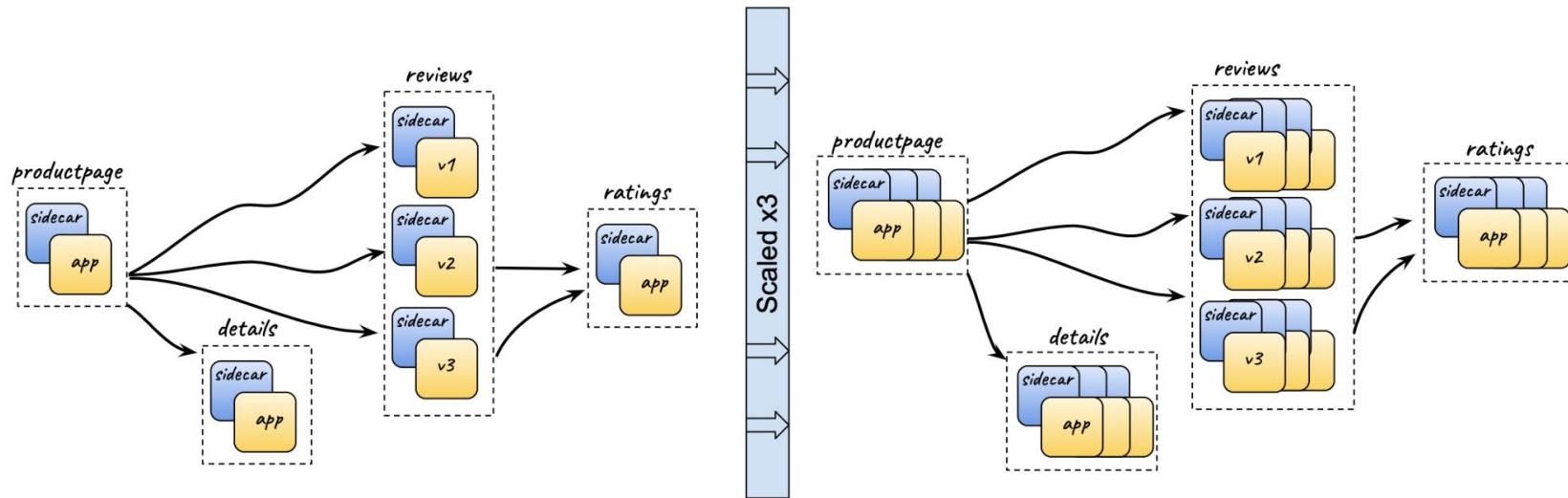
Istio - Ambient



- All traffic goes through Proxy
- Proxy manages mTLS, Identity
- Proxy manages L7 Application Filters | Policies

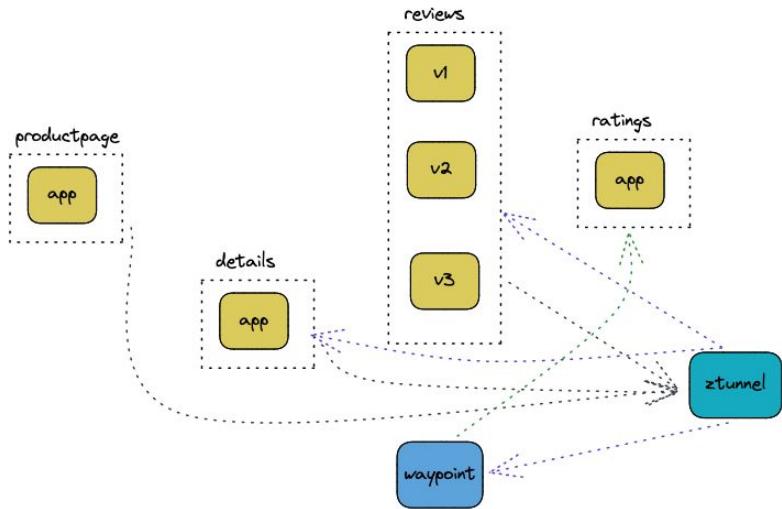
- All traffic goes through ztunnel
- ztunnel manages mTLS, Identity
- L7 Waypoint Proxy manages L7 Application Filters, Policies

Scaling in non-ambient mode

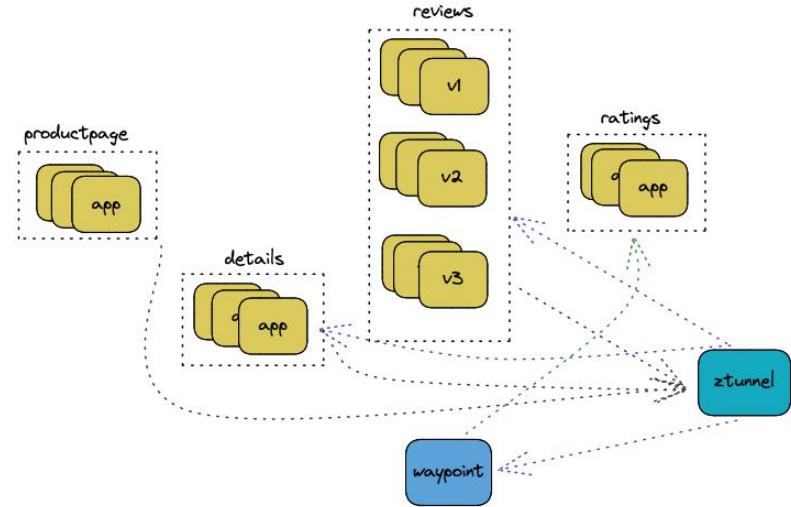


Source: <https://solo.io/blog/what-istio-ambient-mesh-means-for-your-wallet>

Scaling in ambient mode



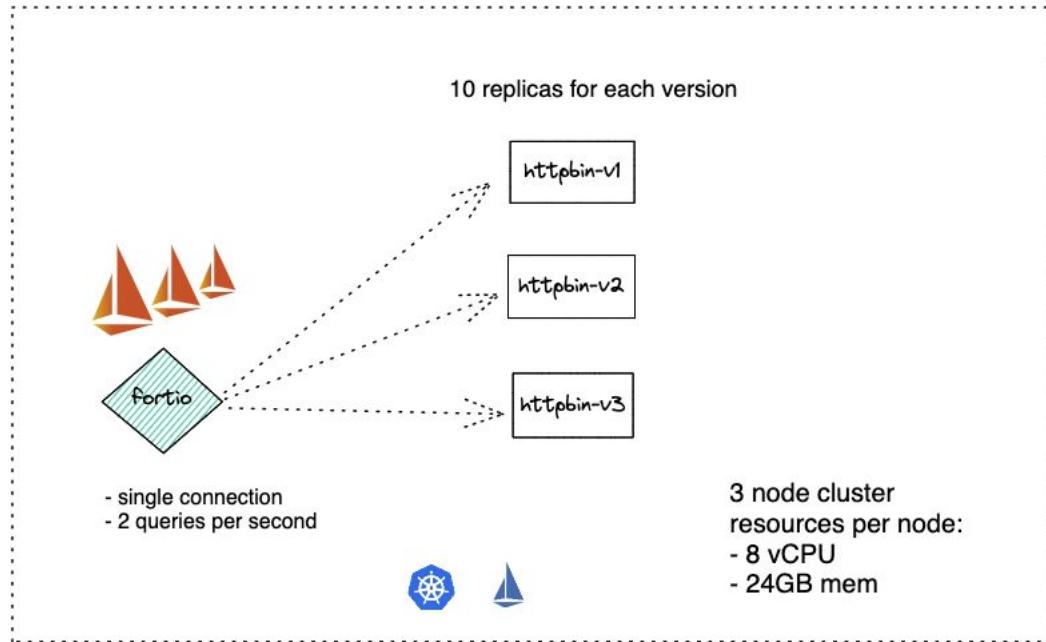
Scaled x3



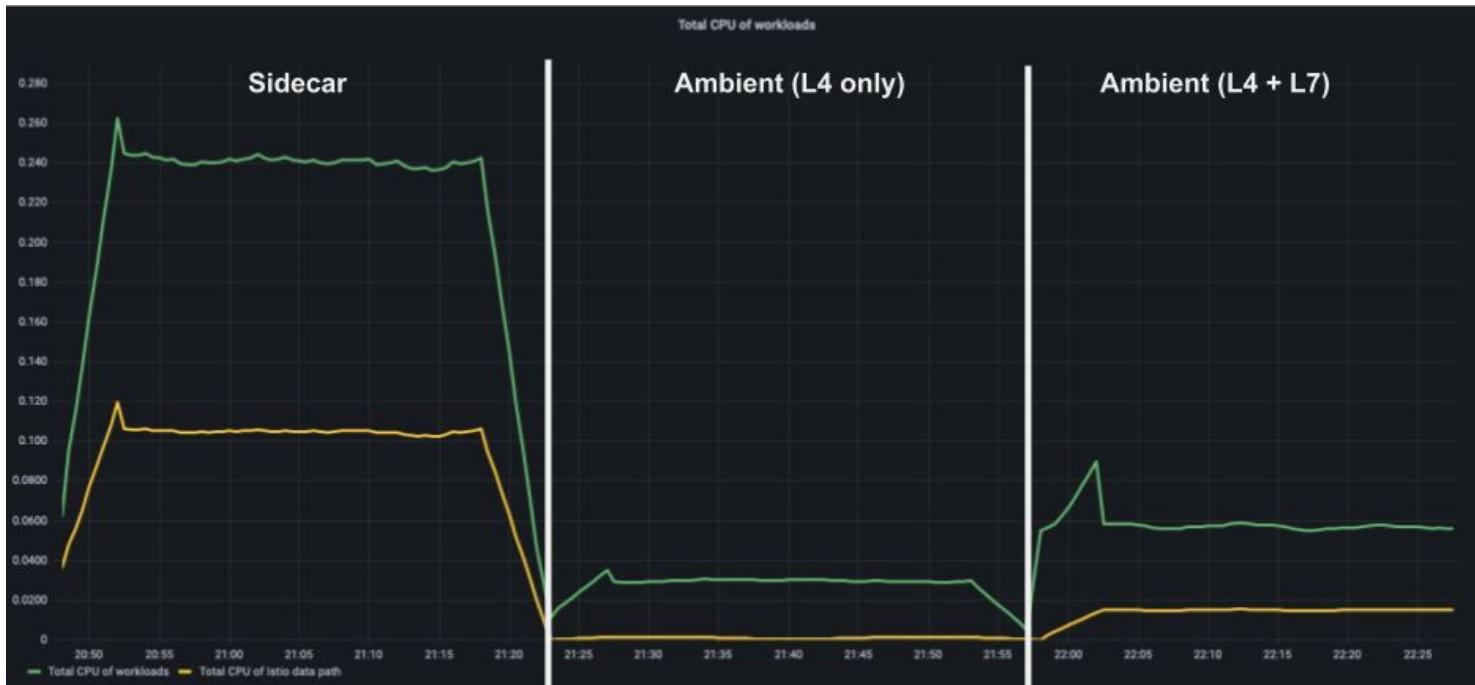
Test Setup

Tests run in 3 modes:

1. Traditional Sidecar model
2. Ambient with L4 ztunnel only
3. Ambient with L4 ztunnel and L7 waypoint proxies

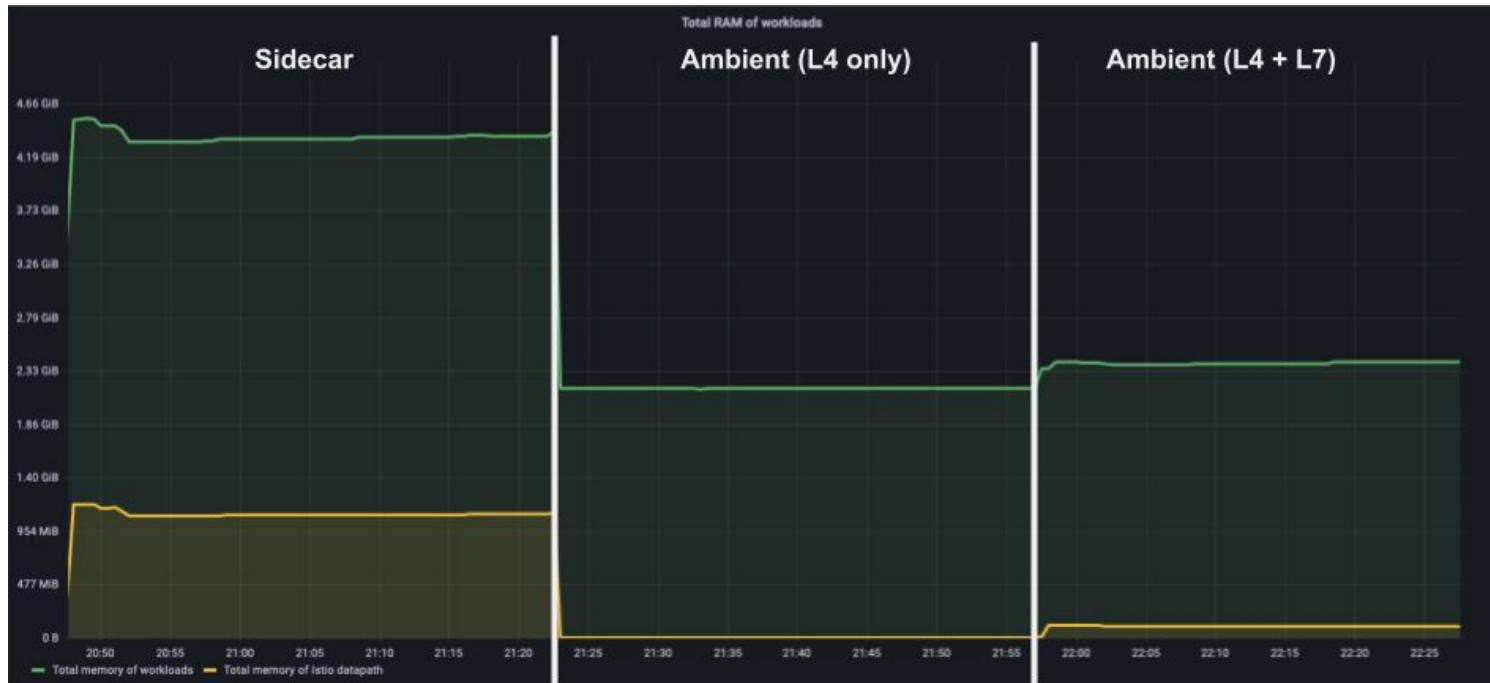


Total CPU Analysis



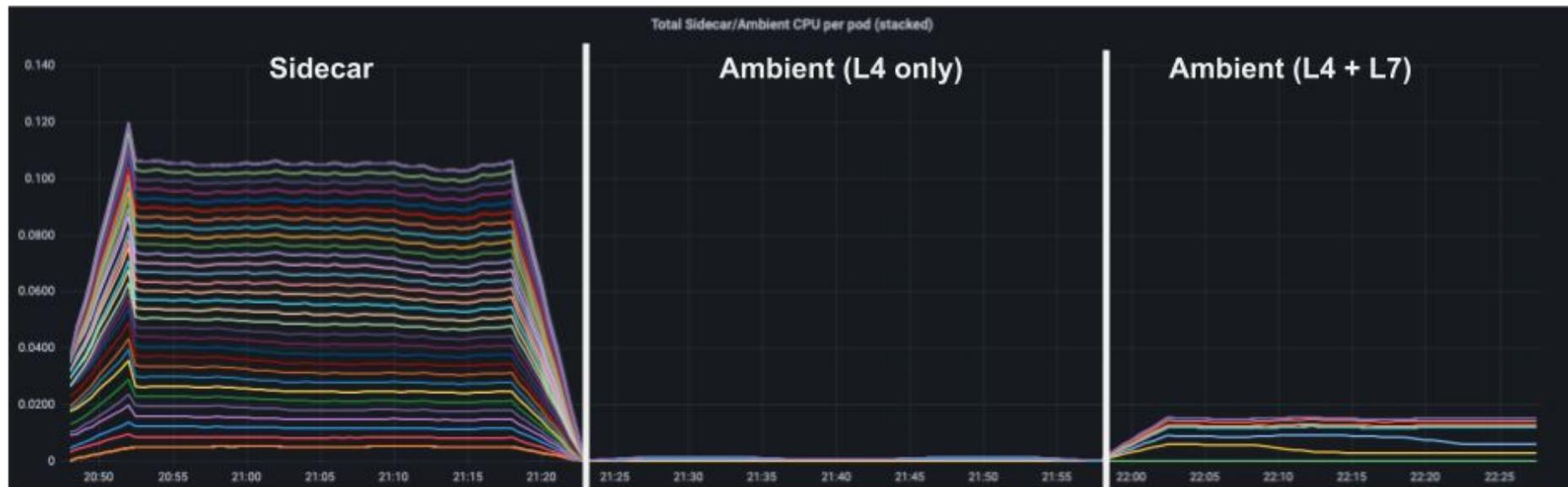
Source: <https://www.solo.io/blog/reduce-cloud-cost-istio-ambient-mesh/>

Total Memory Analysis



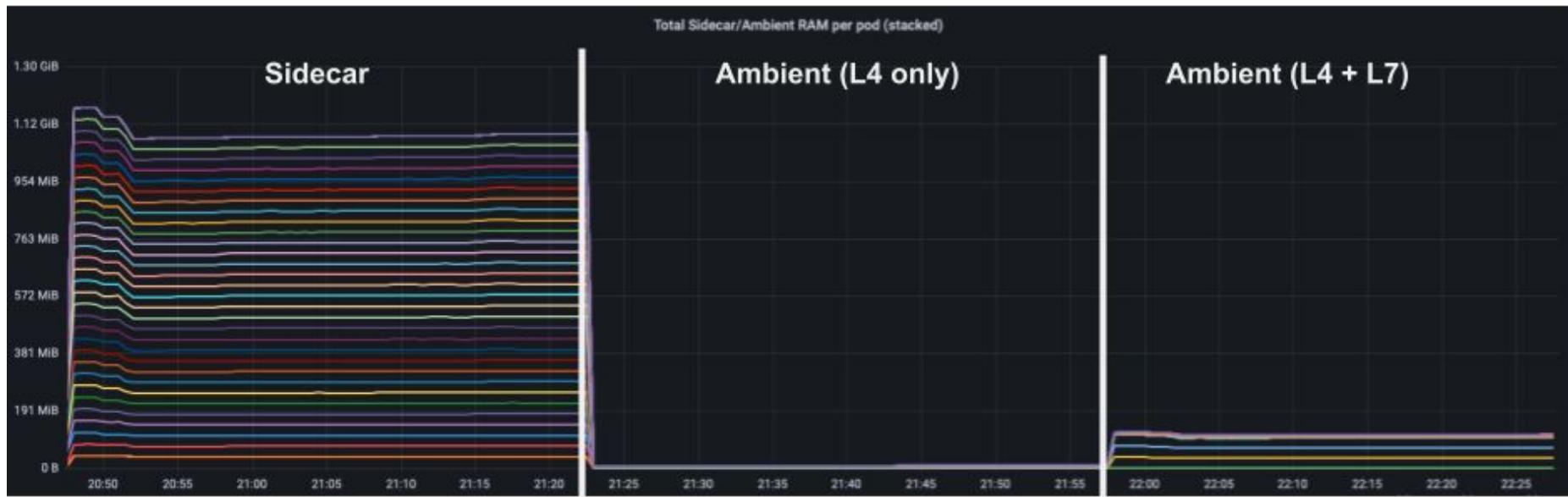
Source: <https://www.solo.io/blog/reduce-cloud-cost-istio-ambient-mesh/>

CPU Stacked Pod View



Source: <https://www.solo.io/blog/reduce-cloud-cost-istio-ambient-mesh/>

Memory Stacked Pod View



Source: <https://www.solo.io/blog/reduce-cloud-cost-istio-ambient-mesh/>

Resource Utilization and Allocation comparison

	Max Memory Used	Total CPU Used	Memory Allocated	CPU Allocated
Sidecar	1080 Mi	0.106 vCPU	3968 Mi	3.1 vCPU
Ambient (L4 only)	1%	1%	10%	10%
Ambient (L4 + L7)	9%	15%	20%	20%

Source: <https://www.solo.io/blog/reduce-cloud-cost-istio-ambient-mesh/>

Key Takeaways



Reduced Cost

A reduction in resource utilization provides a path to reduced utilization



Increased Flexibility

Separation of concerns leads to smarter approaches to resource allocation



Reduced Complexity

Observability and tuning becomes more deterministic

Ambient Mesh Workshop

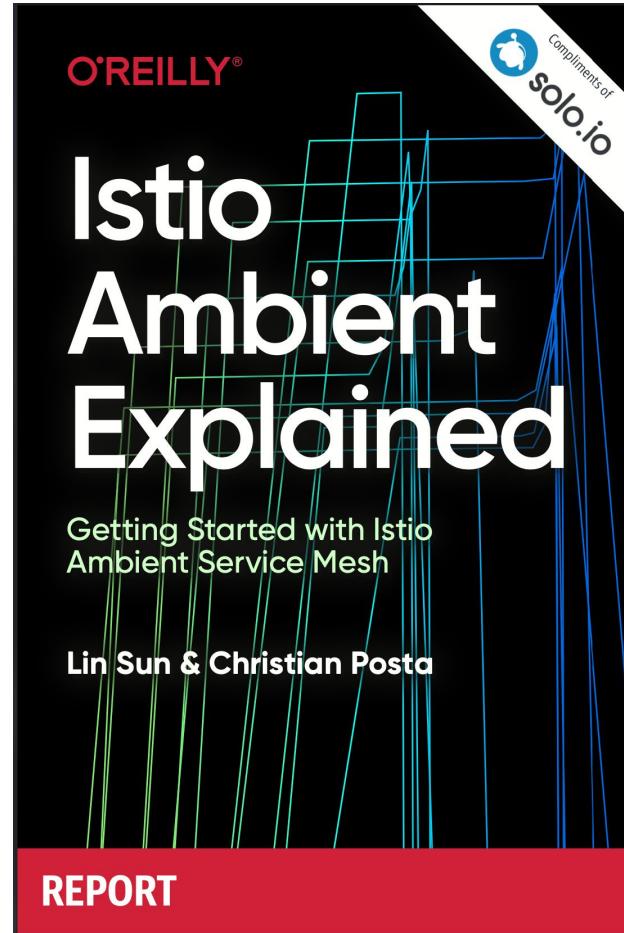
bit.ly/ambient-workshop

- Part of Solo.io certification program.
- Fundamentals for Ambient Mesh Exam is available now.
- Requires >=80% correct on tests.
- Retake is allowed.
- Badge will be issued within an hour after completion.



Want to learn more?

bit.ly/ambient-book



solo.io

Additional information

[Istio Ambient Mesh Launch Blog](#)

[Cut Service Mesh Overhead by 90% or More with Istio Ambient Mesh](#)

[Understanding Istio Ambient Ztunnel and Secure Overlay](#)

[Traffic in Ambient Explained](#)

Thank You!

