# Istio Then and Now

Istio simplifies service connectivity across cloud-native environments. Originally a sidecar-based service mesh for securing, connecting, observing, and managing workloads, Istio's production-ready *ambient mode* introduces a sidecarless approach that addresses the complexities of traditional sidecars, offering a simpler, more efficient, and scalable way to deploy service mesh.
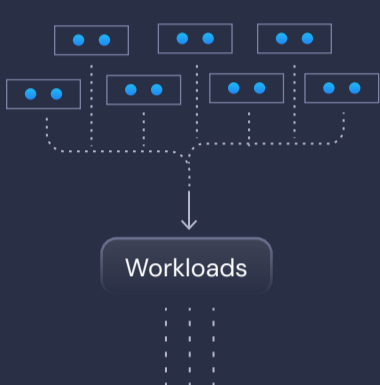
Istio Sidecar Mode

Istio Ambient Mode

A combined L4 and L7 sidecar offers strong security and a robust feature set, though with high resource overhead.
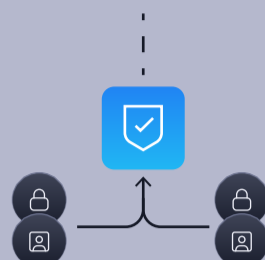
Ambient mode features are split between a shared L4 proxy (ztunnel) and optional L7 proxies (waypoints), enabling users who only require mTLS security to avoid L7 latency overhead.

Workloads

In Istio, each service has a dedicated sidecar proxy with CPU and memory provisioned for "worst-case" usage.

The new, efficient, and secure ztunnel proxy can be shared across all workloads on a node.

Waypoints can be shared among multiple replicas of a service or even across different services managed by the same team, and, as separate infrastructure, they can be auto-scaled.

Installing or upgrading Istio can be inconvenient, requiring each application pod to restart, which hinders scalability for large workloads.
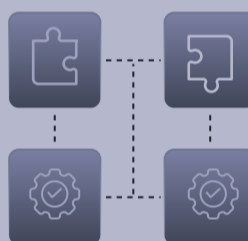
Installation and upgrades are simplified without sidecars in ambient mode. Eliminating the need to restart or modify running workloads to onboard them onto the mesh or perform upgrades. Existing users can also adopt ambient mode gradually and with ease.

App ←---→ **Process 1** ←---→ **App**
Process 1
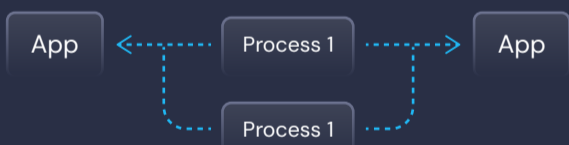
Istio introduces latency overhead with two L7 processing steps – at the source and destination sidecars.

Zero (ztunnel only) or one (waypoint) L7 step. ztunnel only offers the fastest mTLS in any mesh platform.

GLOO
AMBIENT MESH

Solo.io's Gloo Mesh adds enterprise features to Istio, such as multi-cluster lifecycle management, centralized observability, and enterprise support.

Upstream ambient supports only single-cluster deployments without mixing sidecar and ambient modes.

Solo.io is the co-creator of Ambient mesh, has added enterprise features to Gloo Mesh, including L7 metrics without waypoints, multi-cluster support, sidecar-ambient integration, SPIRE identity management, and more.

About Solo.io

Solo.io, the leading application networking company, delivers a service mesh and API platform for Kubernetes, zero trust, and microservices. The components of Gloo Gateway and Gloo Mesh enable enterprise companies to rapidly adopt microservice applications as part of their cloud journey and digital transformation. Solo.io delivers open source solutions, and is a community leader in building the technologies of the future.

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