Istio 2021 Roadmap

A heartwarming work of staggering predictability

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IstioCon

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Highlights of 2020

- Better life cycle management
  - Istioctl install & Operator support
- Architectural simplification
  - Monolith control plane
  - Mixerless telemetry
- New extension capabilities
  - WebAssembly (Wasm) support
- Secure by default
  - Secret Discovery Service (SDS)
  - Auto mTLS
- API and feature promotion
  - Networking/Security APIs
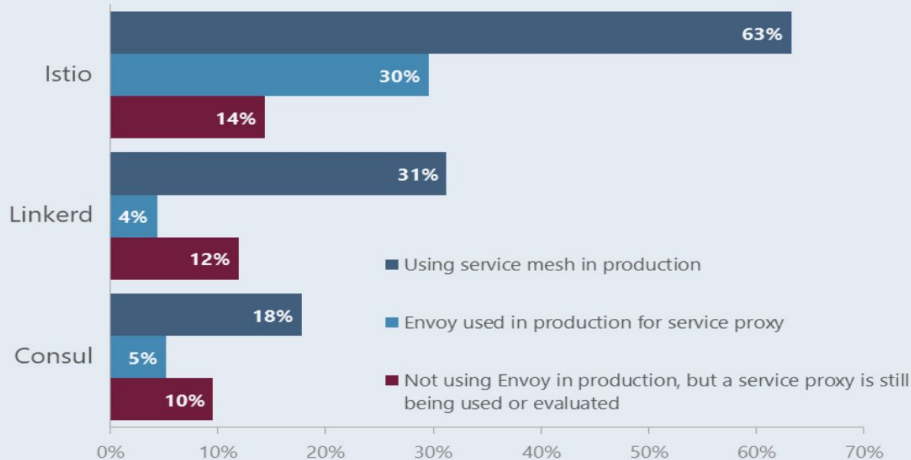 - Virtual Machine expansion/Multi cluster mesh

https://istio.io/latest/blog/2020/tradewinds-2020/

Impact on users

Production Use of Leading Service Mesh Technologies

Source: The New Stack Analysis of the CNCF Survey 2020. Q. Please indicate if your company/organization is evaluating, or currently using in production, any of these service mesh projects / products. Using service mesh in production, n=319; Envoy used in production for service proxy, n=230; Not using Envoy in production, but a service proxy is still being used or evaluated, n=293. Only the categories with the most responses are shown.
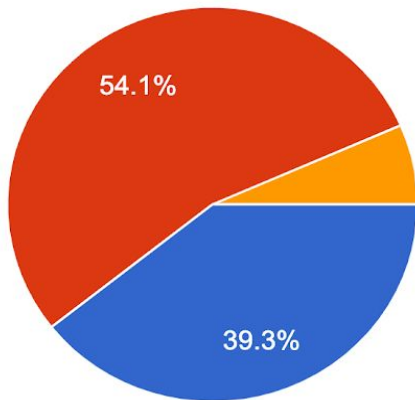
@ 2020 THENEWSTACK

https://thenewstack.io/when-service-meshes-can-emerge-from-envoy-istio-shadows/

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Listening to our users

Do you upgrade your mesh frequently enough?

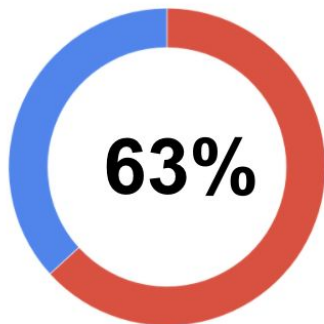61 responses

- 🔵 Yes
- 🔴 No
- 🟠 I don't know

54.1%
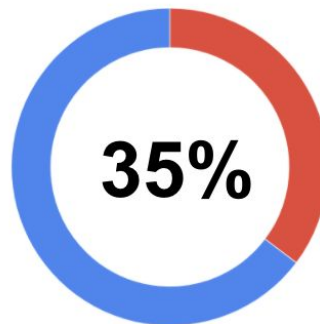
39.3%

Listening to our users ...

Do users on old versions understand their security and support posture?

Istio In Production

Critical Vulnerabilities

63%

Unsupported Versions

35%

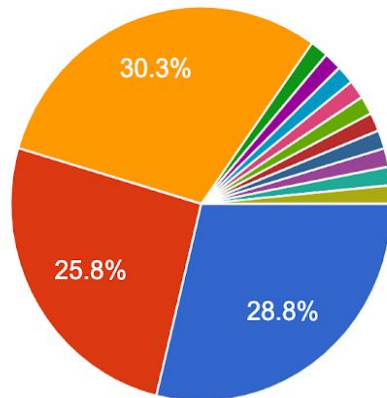UX Working Group - Upgrade Survey 2020

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Listening to our users ...

How do you upgrade your mesh?

66 responses

- ● cli/istioctl
- ● Istio Operator
- ● Helm
- ● ibm managed istio
- ● dont know, offered as a service
- ● Rancher UI
- ● ArgoCD
- ● deploy new k8s with new version and…

▲ 1/2 ▼

UX Working Group - Upgrade Survey 2020

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Theme for Istio 2021

Day 2 operations

- Requirements
- Architecture
- Design

Day 0

Day 1

- Installation
- Setup
- Configuration

- Lights-on
- Maintenance
- Housekeeping
- Optimize

Day 2

End

- Delete
- Clean up

https://dzone.com/articles/defining-day-2-operations
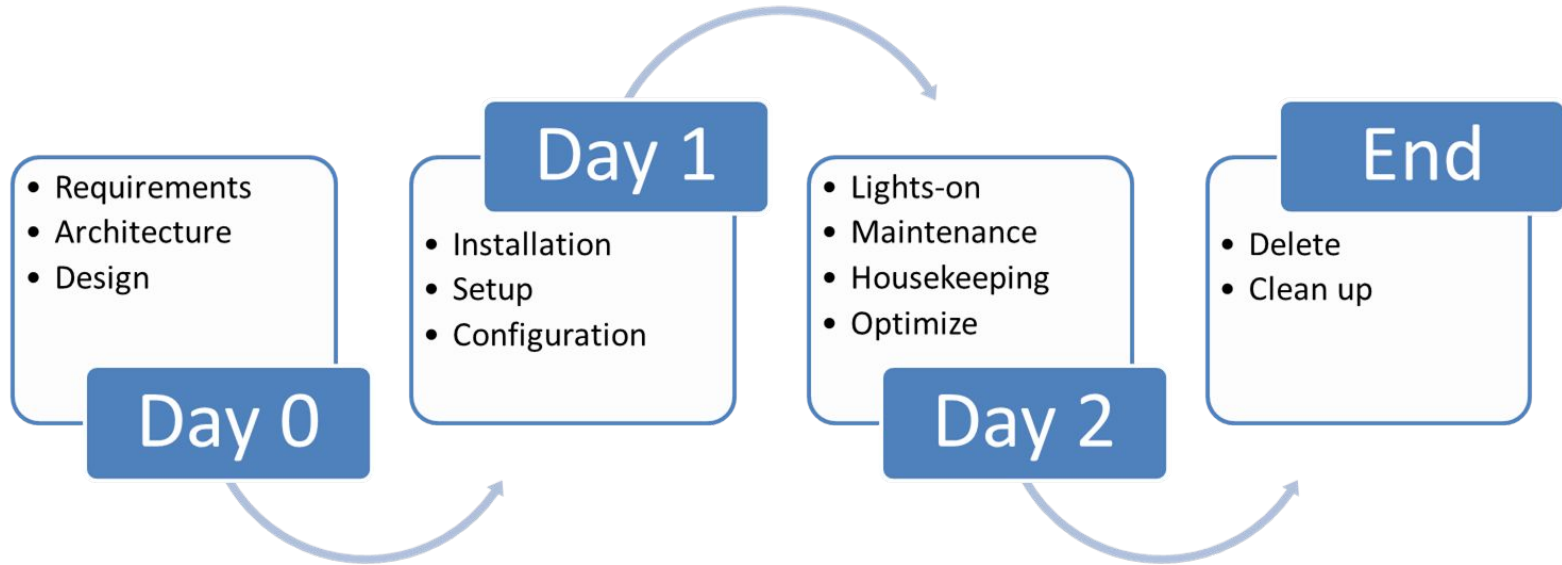
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What does it mean for our users?

- Project maturity
  - Move **"slowly and fix things"**
  - Sustain the tremendous production adoption of Istio
- Stable core
  - Current Istio functionality meets user needs
  - Measured feature introduction
- Reducing operational overhead
  - Maintenance
  - Upgrades
  - Debugging

https://istio.io/latest/blog/2020/tradewinds-2020/

Early adopter vs Maintainer

- Consumes latest & greatest Istio
- Utilize new capabilities
- Desire tooling to ensure frictionless upgrade

- Fixed budget for infrastructure maintenance
- Desire predictability
- Longer support windows
- Skip releases for upgrades

https://istio.io/latest/blog/2020/tradewinds-2020/

Focus areas for 'Day 2 Operations'

Stability & Maintainability

- Improved upgrade experience
  - Upgrade Working Group
  - Promoting revision based upgrades
  - Support skip-level upgrades
  - Pre & Post Upgrade checks
  - Better testing mirroring production use cases

- Enhanced troubleshooting

- Aligning APIs with Istio user roles and responsibilities

https://istio.io/latest/blog/2020/tradewinds-2020/

Feature Graduation

- [Enhancement workflow](#)
  - CNI
  - IPv6
  - Dual-stack (IPv6/IPv6)
  - Virtual Machine Expansion
  - Multi cluster mesh
  - Helm v3 life-cycle management
- Evaluate current feature status and fix gaps

https://istio.io/latest/blog/2020/tradewinds-2020/

Extension Ecosystem

- WebAssembly (Wasm) enhancements
    - APIs for adding custom Wasm extensions
    - Focus on Developer workflow
    - Discovery of Wasm extensions
- External AuthZ extensions
- Telemetry provider extension APIs

https://istio.io/latest/blog/2020/tradewinds-2020/

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Operational Excellence

- Detecting backwards incompatible changes
- Measuring developer efficiency
  - Test flakes
  - Feature and code coverage
- Feature promotion efficacy
- Improving overall developer experience

https://istio.io/latest/blog/2020/tradewinds-2020/

Other improvement areas

- Native Kubernetes API integration
  - Kubernetes Service APIs
  - Kubernetes Multi-cluster APIs
- Adopt & drive innovation in Envoy community
  - Delta xDS
  - HTTP2 tunnels

https://istio.io/latest/blog/2020/tradewinds-2020/

Thank you!

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https://aspenmesh.io