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CloudNativeCon

Europe 2026

#KubeCon #CloudNativeCon

10 Years of Cilium: Connecting, Securing, and Simplifying the Cloud Native Stack

Bill Mulligan & Paul Arah, Isovalent at Cisco
Marcelo Mello, Celonis
Neha Aggarwal, Microsoft





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Cilium

Scalable, Secure, Efficient
Networking L3-L7



Hubble

Network
Observability



Tetragon

Security Observability &
Runtime Enforcement



Happy 10th Birthday Cilium!



Commit 7fa3c60

tgraf committed on Dec 16, 2015

Initial commit

main · v1.19.0-pre.3 ... 0.10.1

0 parents commit 7fa3c60



2 files
changed

+226 -0 lines changed

Search within



.gitignore

```
... @@ -0,0 +1,24 @@  
1 + # Compiled Object files, Static and Dynamic  
  libs (Shared Objects)  
2 + *.o  
3 + *.a  
4 + *.so
```

One Decade in Where Are We?



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2025

Annual Report

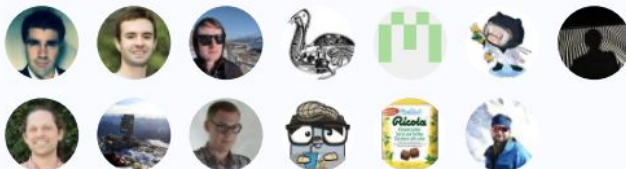
A Decade of
Cloud Native
Networking



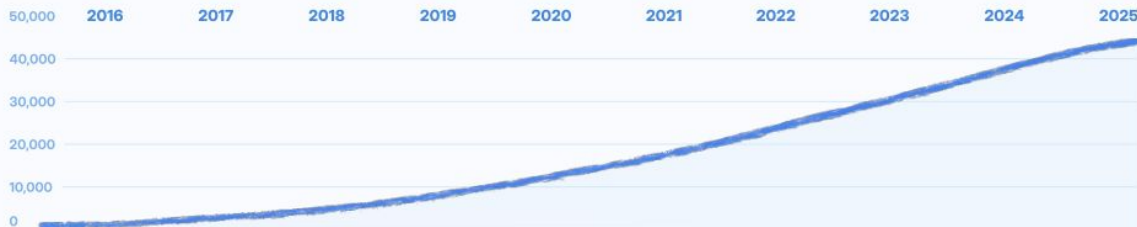
Milestone: In October 2025, the project surpassed **1,000** individual contributors to the main Cilium repository.



Contributors 1,012



[+ 1001 contributors](#)



YEARLY STARS GROWTH

Stars: **45,348**

One Decade in Where Are We?

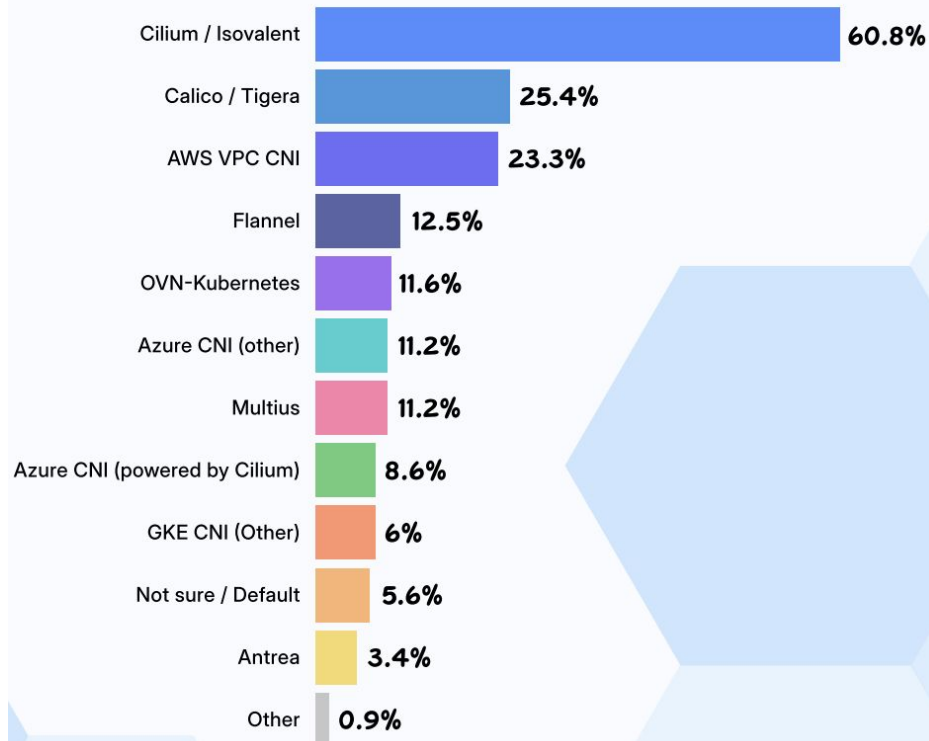
STATE OF KUBERNETES NETWORKING REPORT 2025

Findings from a global survey of Kubernetes professionals, conducted online by Isovalent between July and September 2025 to explore real-world networking and security practices.

Authors: Roland Wolters & Nico Vibert | Isovalent at Cisco

ISOVALENT
now part of cisco

Which CNI(s) are in use in your environment?



One Decade in Where Are We?



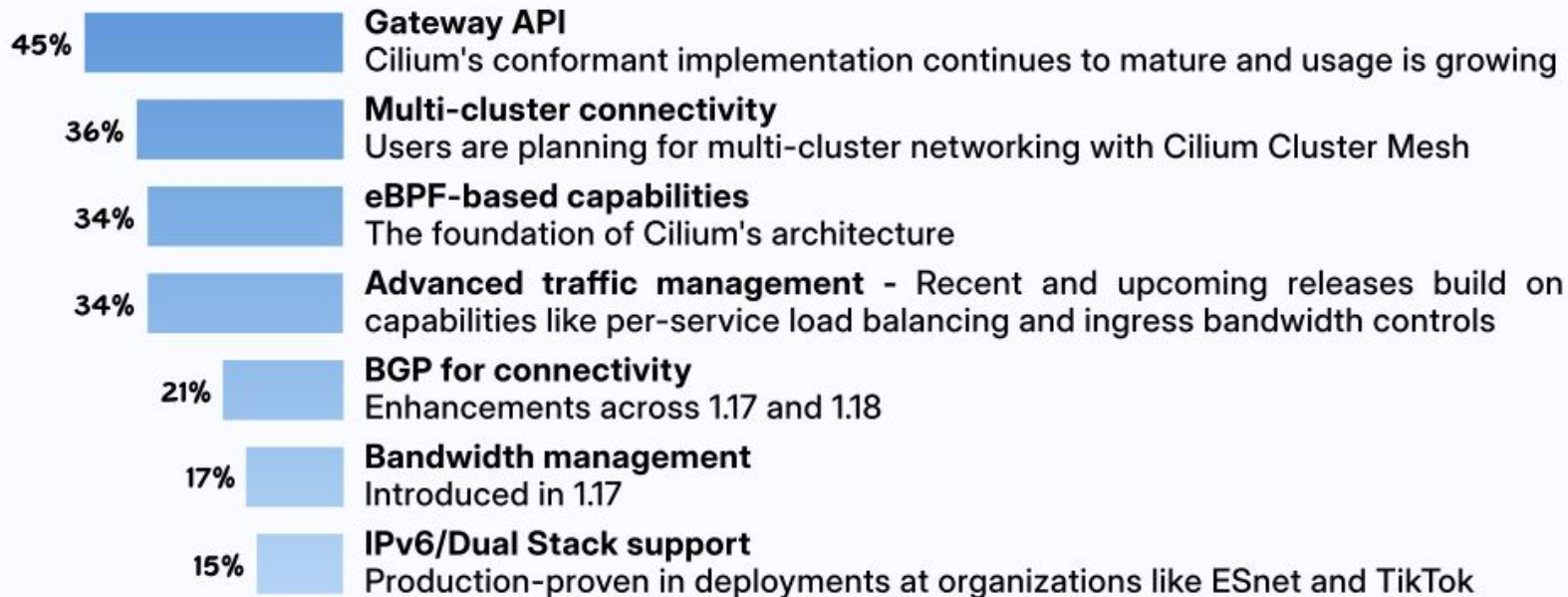
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Looking forward, the report identifies the capabilities organizations plan to add in the next 12 months —and they well aligned with Cilium's roadmap:



One Decade in Where Are We?



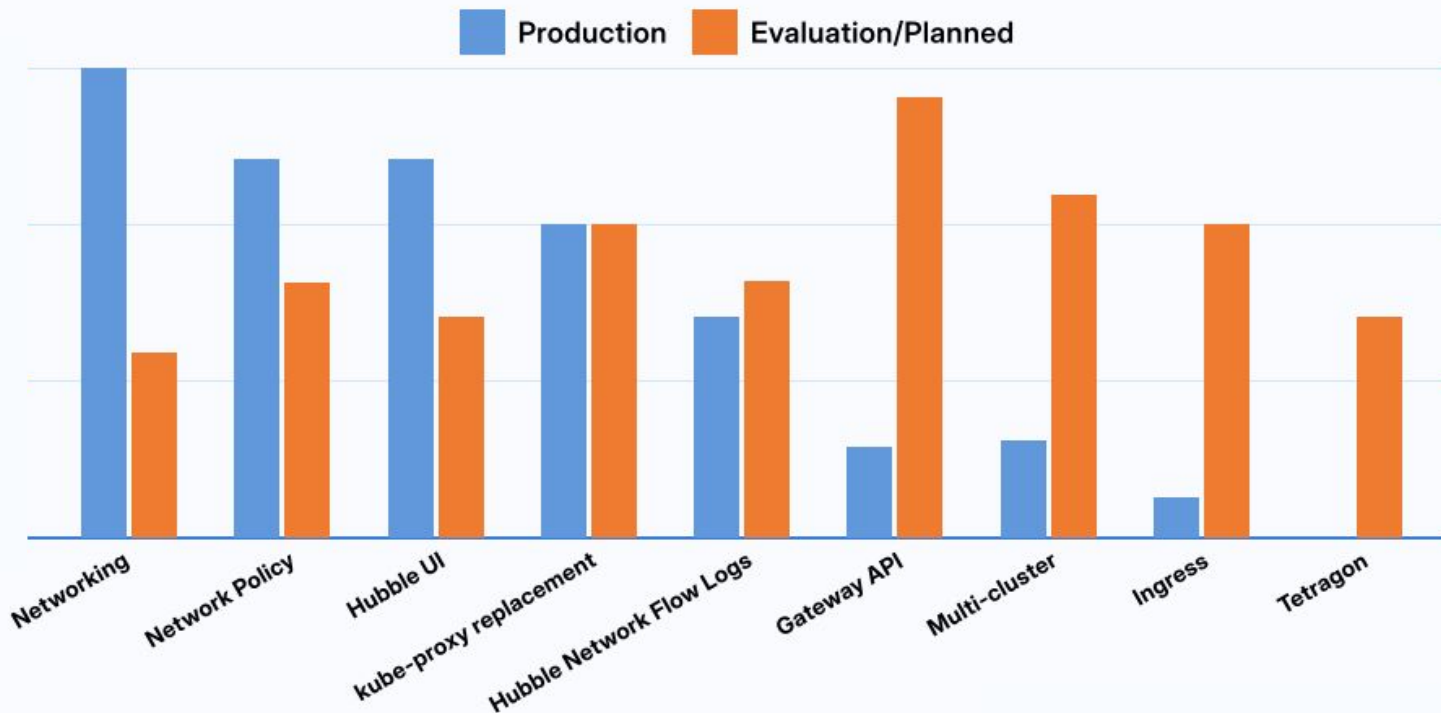
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Production and Evaluation/Planned



Only Graduated Networking Project



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Cilium Graduates at the CNCF



Liz Rice | Published: October 11, 2023 | Updated: October 13, 2023



1.19 Networking & Service Mesh



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- Ztunnel integration for native mTLS
- Gateway API v1.4 support and GRPCRoute
- IPv6 support for L2 announcements and dual stack tunneling
- Move to the v2 BGP APIs
- Multi Pool IPAM with IPsec and direct routing

1.19 Security & Observability



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- Ztunnel integration for native mTLS
- DNS policy wildcards for multi level subdomains
- Host firewall now supports VRRP and IGMP
- IP packet tracing
- Hubble flow log aggregation
- Helm charts available via OCI registries

Industry Standard CNI (97 case studies)



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What Makes a Good Multi-tenant Kubernetes Solution TALK 3 - CASE STUDY - TALK 1 - TALK 2	Airbnb uses Cilium as their one CNI across multiple cloud providers TALK	Alibaba Cloud uses Cilium as the CNI for their managed Kubernetes offering CASE STUDY - BLOG 1 - BLOG 2	Ascend uses Cilium as their one CNI across multiple cloud providers READ CASE STUDY	Datadog uses Cilium in AWS (self-hosted k8s) CASE STUDY - TALK 1 - TALK 2 - TALK 3 - TALK 4 - TALK 5	eBrain Cloud uses Cilium as a CNI in their Kubernetes platform READ BLOG	DB Schenker uses Cilium as the default CNI in self-managed Kubernetes clusters running in AWS READ BLOG - CASE STUDY - WATCH TALK	Deezer uses Cilium as their CNI for all on-prem Kubernetes clusters for its performance and security READ BLOG	Hetzner uses Cilium for ingress and as a CNI for Hetzner Cloud READ BLOG	Home furnishings retailer uses Cilium for their self-hosted bare-metal private cloud BLOG - TALK 1 - TALK 2	ICOS project uses Cilium and Tefagon to enhance its network security and visibility, and to create comprehensive audit reports READ BLOG POST	Iloom uses Cilium as their preferred networking, observability, and security solution CASE STUDY - WATCH TALK
AWS picks Cilium for Networking & Security on EKS Anywhere READ BLOG	Microsoft chooses Cilium for Azure networking TALK 1 - TALK 2 - TALK 3 - USER STORY	Bedrock uses Cilium for eBPF-powered networking and deeper Kubernetes network visibility READ BLOG	Bell uses Cilium and eBPF for telco networking TALK 1 - TALK 2	DigitalOcean uses Cilium as the preferred networking, security, and observability solution for their DOKS platform and internal Kubernetes clusters CASE STUDY - WATCH TALK	ebay uses Cilium and Hubble for networking, observability and security of their microservices TALK 1 - TALK 2	Ecco uses Cilium in their Kubernetes clusters for networking, observability and security WATCH TALK - READ CASE STUDY	ec2b8 uses Cilium as their CNI and for load balancing READ BLOG	Imagine Learning uses Cilium as CNI in their Kubernetes environments WATCH THE INTERVIEW	Jar uses Cilium as the default CNI plugin for their Kubernetes clusters READ BLOG	JYSK uses Cilium and Hubble in their Kubernetes edge Clusters for advanced networking, security and observability READ BLOG	kakao uses Cilium as a CNI to improve network performance and lower costs READ CASE STUDY
Bloomberg leverages Cilium to construct data sandboxes that restrict users from distributing data outside the sandbox WATCH TALK - CASE STUDY	BMC uses Cilium as a CNI option in their BMC Helix Innovation Suite and IT Operations Management On Premise READ BLOG	ByteDance uses Cilium as their CNI for self-hosted Kubernetes clusters WATCH TALK	Canopus integrates Tefagon's runtime telemetry with LLM-powered AI agents WATCH TALK	Edgeless Systems uses Cilium as the CNI for their Kubernetes Distribution READ BLOG - TALK	Eficode uses Cilium and Hubble as the default networking and observability solution for their customers WATCH TALK	ESnet uses Cilium for IPv6-first Kubernetes networking for scientific computing infrastructure CASE STUDY - TALK	FHWW uses Cilium for observing network traffic and creating network policies WATCH TALK	Koyeb uses Cilium to power a mesh between its microVMs hosted on its servers READ BLOG	Kubernatic uses Cilium as the CNI for its Kubernetes installer and platform READ BLOG	Scaling a Multi-Tenant Kubernetes Clusters in a Taiso WATCH TALK	Meltwater uses Cilium in AWS on self-hosted multi-tenant k8s clusters as the CNI plugin CASE STUDY - TALK
Building a Secure and Maintainable PaaS WATCH TALK	Cloud Native Networking with eBPF WATCH TALK	ClickHouse uses Cilium and Hubble across multiple clouds CASE STUDY - TALK	Clustera uses eBPF and Cilium to enhance network observability, security, and performance in its cloud-native data platform. READ CASE STUDY	Flipkart uses Cilium as the CNI for high scale Kubernetes networking WATCH TALK	Form3 uses Cilium in their production clusters (self-hosted, bare-metal, private cloud) CASE STUDY - WATCH TALK	Gcore uses Cilium as a CNI option in their Managed Kubernetes offering READ BLOG	G Data uses Cilium in their Kubernetes clusters for networking, security and observability READ CASE STUDY	Mobilabs uses Cilium as the CNI for their internal cloud READ BLOG	Nemlig uses Cilium in their Kubernetes clusters for networking, security, and observability READ CASE STUDY	Netbird uses Cilium to compile BPF to Go for cross-platform DNS management and NAT traversal READ BLOG	Nexiot uses Cilium as the CNI plugin on EKS for its IoT SaaS READ CASE STUDY
Confluent uses Cilium as the networking, observability and security layer for their multi-cloud data streaming platform WATCH TALK	Corner Banca SA uses Cilium as CNI for their on-prem Kubernetes clusters WATCH TALK	Cilium is the CNI for Cosmonic's Nomad based PaaS CASE STUDY - TALK 1 - TALK 2	Cybiozu uses Cilium as a CNI in their on-prem Kubernetes clusters READ CASE STUDY	Giant Swarm uses Cilium as the CNI in their Cluster API based managed Kubernetes service WATCH VIDEO	Kubernetes Network Policies in Action with Cilium WATCH TALK	Google chooses Cilium for Google Kubernetes Engine (GKE) networking READ BLOG - READ BLOG 2 - WATCH TALK - TALK 2	G-Research uses Cilium to provide high scale networking for their ML workloads WATCH TALK	Nutanix uses Cilium as the default CNI plugin for NKP (Nutanix Kubernetes Platform) CASE STUDY	OpenAI uses Cilium as the CNI for their Kubernetes clusters WATCH INTERVIEW	OVHcloud uses Cilium as the default CNI for their managed Kubernetes Service offering CASE STUDY	Palantir uses Cilium as their main CNI plugin in all major cloud providers (self-hosted k8s) READ BLOG - WATCH TALK



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Cilium @ Celonis

Marcelo Mello, Celonis



Who am I and What we DO?



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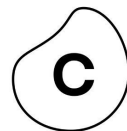
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Marcelo Mello, Platform Engineer @ **Celonis**

~ 30 Platform Engineers Globally

> 20 offices worldwide



We're Celonis



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We help companies find and capture business value in their processes, enabling them to perform at levels they never thought possible

Process Analysis

Process visualization, dashboarding

Process Improvement

Alerts & automation creation, orchestration, prebuilt apps

Process Monitoring

Model-based adherence checking, value reporting

Process Management

Process modeling, enablement, knowledge distribution

AI

Copilots, recommendations, prebuilt and custom algorithms

Process Intelligence Graph

Process Digital Twin

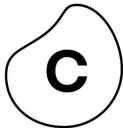
Business Context

API

External Platforms & Solutions

Any Data Source

ERP | Celonis Task Mining | Cloud System | Data Warehouse | Custom App | ...



Celonis Infrastructure



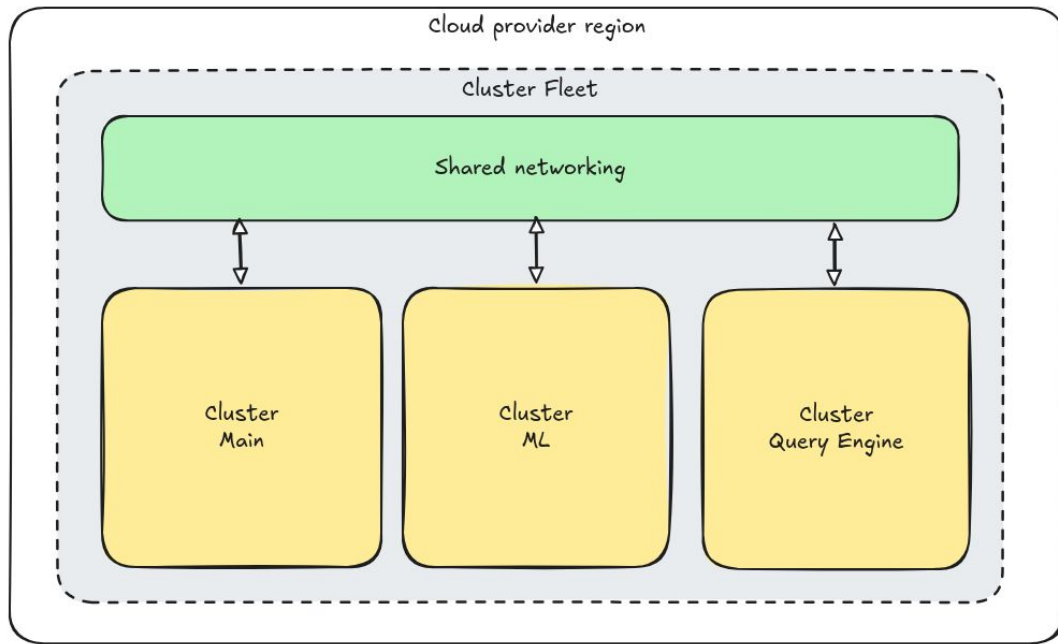
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- Multi-Cloud
- ~ 3.5 TB Daily Bandwidth
- ~ 360M Daily Requests
- > 160 clusters



C

Cilium - Why



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- **Fragmented** K8s Landscape
- **Inconsistent** CNIs
- **Different** mTLS
- Visibility **Blind Spots**



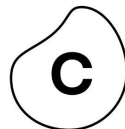
AKS



EKS



GKE



Cilium Journey - Zero Downtime

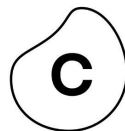
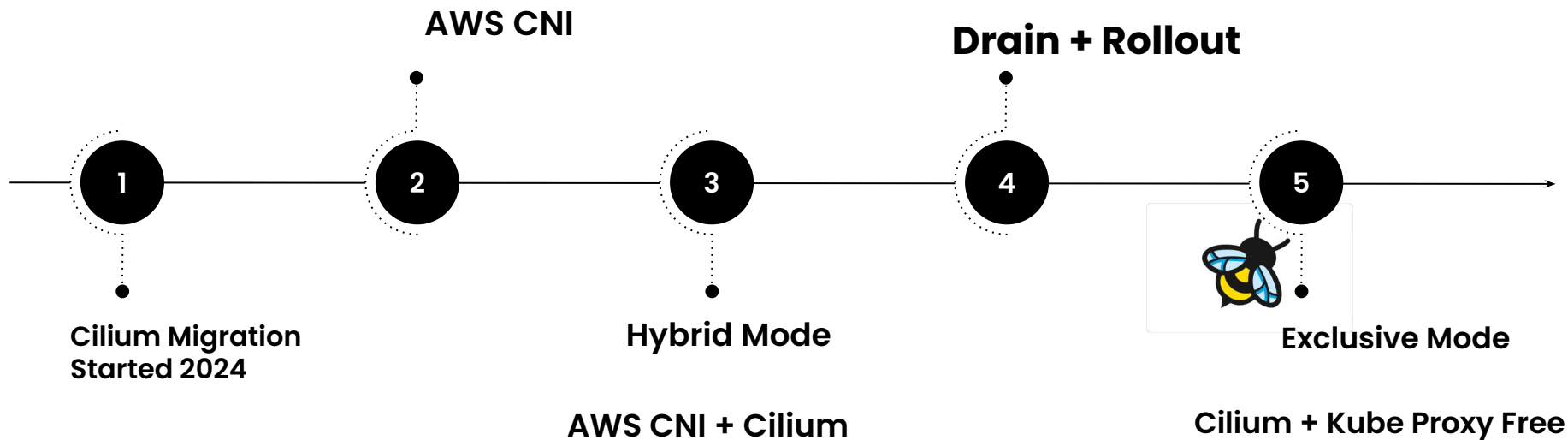


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Troubleshooting



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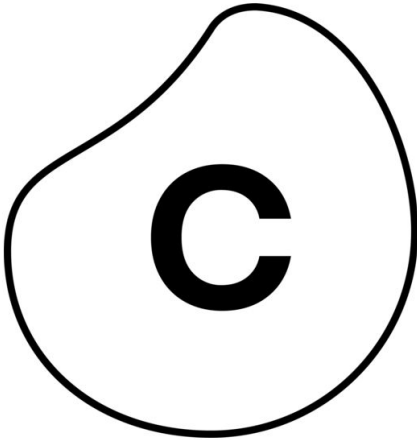
Network Policies
(ipBlock)



Monitor
eBPF maps



For more....



<https://www.celonis.com/blog>



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Cloud Native Runtime Security with Tetragon

Paul Arah, Isovalent@Cisco



The Backstory - Tetragon

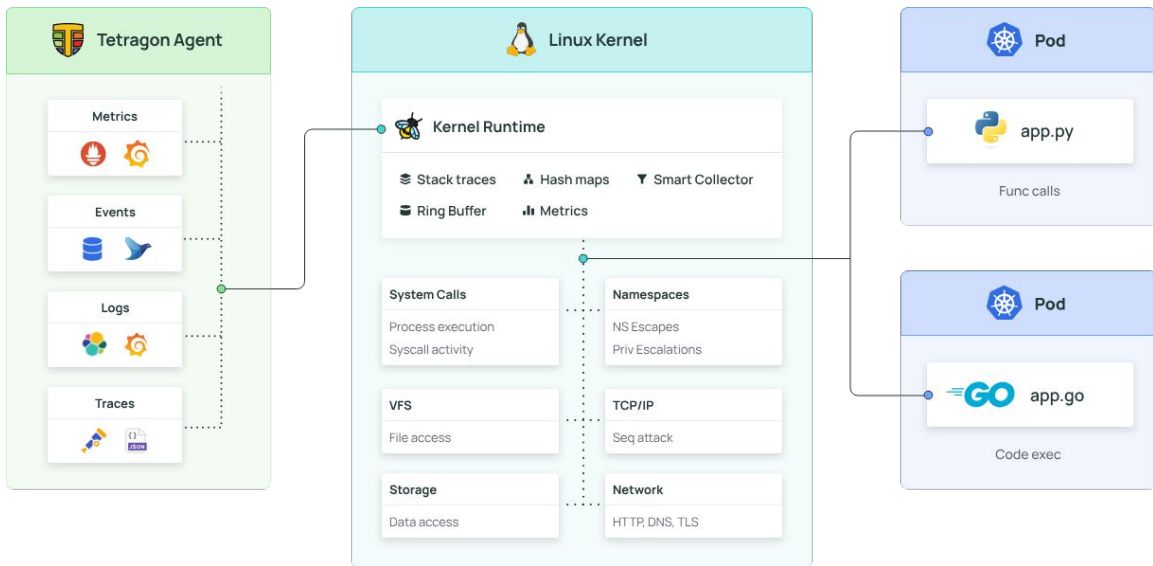


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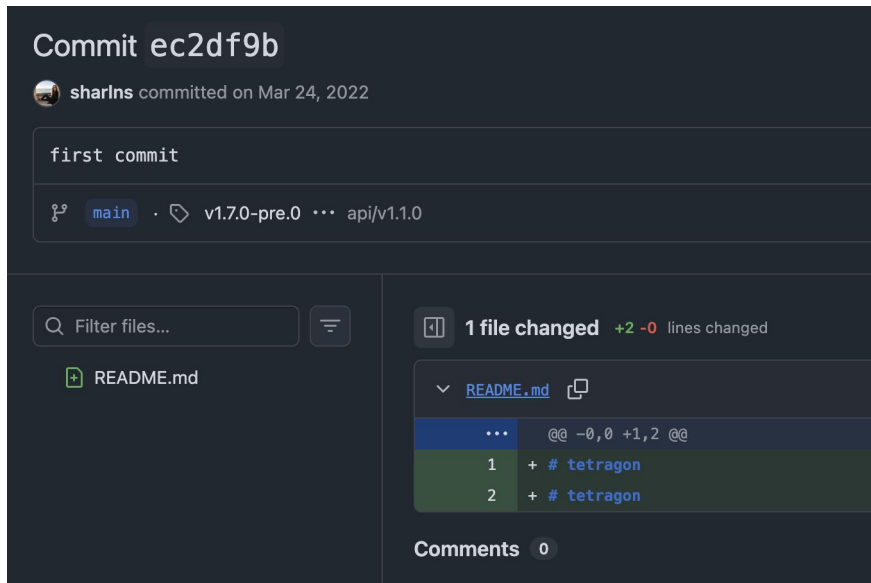
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- **Synchronous eBPF monitoring, filtering & enforcement** completely with eBPF
- **Overall efficiency of eBPF** (comparison to existing user space tools & kernel modules)
- **Kubernetes Identity Aware** in eBPF Runtime Security Policies
- **eBPF-based Observability** to monitor everything on the Linux kernel.
- **eBPF-based inline Enforcement**

The Birth



- 6145k commits
- 4.5k Github Stars
- 159 Contributors
- v1.0 release in Oct 2023

Setting the Standard for Cloud Native Runtime Security

- Full process lifecycle execution monitoring
- Filename access monitoring
- Network Observability
- OS integrity monitoring
- Capabilities and Privileges monitoring



The Journey So Far



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- Kubernetes identity-aware policies
- Redaction filters
- CRI-O runtime hooks support
- Persistent enforcement
- Improved child process visibility
- Containerd support
- Attribute resolution
- Event throttling
- Wider support for userspace hooks (Uprobes & USDTs)

Where Are We Headed To?



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“Just as Kubernetes brought standardization to application orchestration, Cilium brought standardization to container networking, and Tetragon brings a new standard to Kubernetes runtime security: one that is Kubernetes-native, highly performant, and built on the powerful foundation of eBPF”.



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Cilium @ Microsoft

Neha Aggarwal, Microsoft



Journey so far



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- Microsoft has been **collaborating with cilium since 2023**.
- Few notable upstream contributions.
 - Delegated IPAM support
 - Disk based network policies allow user to place network policy in host filesystem
 - HA DNS Proxy
 - Hubble Dynamic Metrics
 - CES creation directly from pods, eliminating CEPs
- Co-chairing #sig-scalability.



As Kubernetes' defacto CNI, Cilium's investments must double down on what the AI era demands, **scale without compromise, security without negotiation.**

Scale - Multi Cluster Enhancements



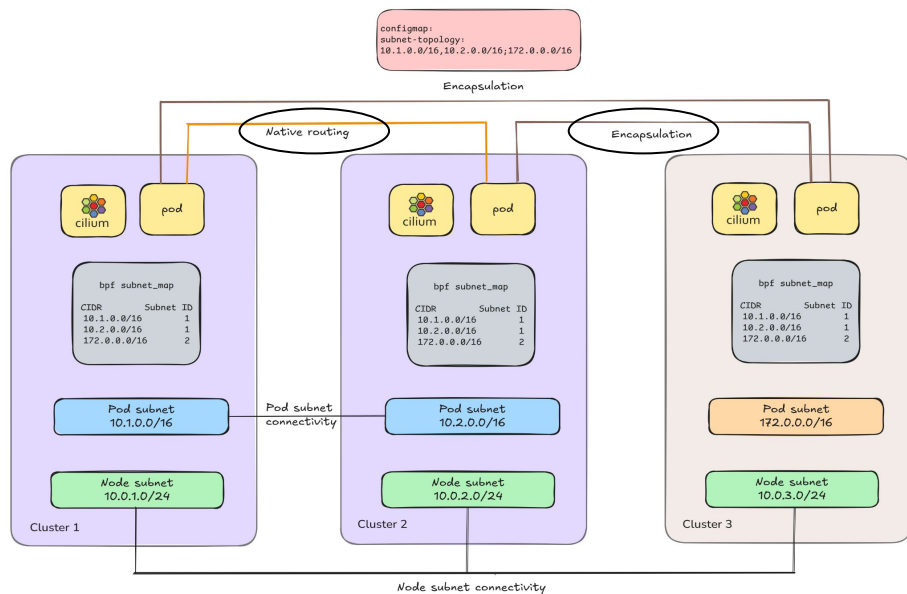
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- No single cluster is enough — Cilium ClusterMesh federates networks across clusters without sacrificing performance or scale
- **Hybrid Routing Mode** ([CFP-32810](#))
 - One-mode of routing lowers throughput.
 - Hybrid route provisions native-route when subnets are directly connected, encapsulate otherwise.
- **Global Namespace — Filtered Export** ([CFP-39876](#))
 - ClusterMesh exports **all** endpoints and identities to every peer cluster, causing ~15 GB agent memory at scale (200 clusters, 15K endpoints each)
 - Selective export of cross-cluster service identities.
 - Namespace-level annotation



Cilium today gives you identity or encryption — but not both, end-to-end. Closing this gap at the CNI layer is essential. Why run two control planes when the platform can own it?

*Joint effort by Microsoft and Isovalent

Cilium - ztunnel integration



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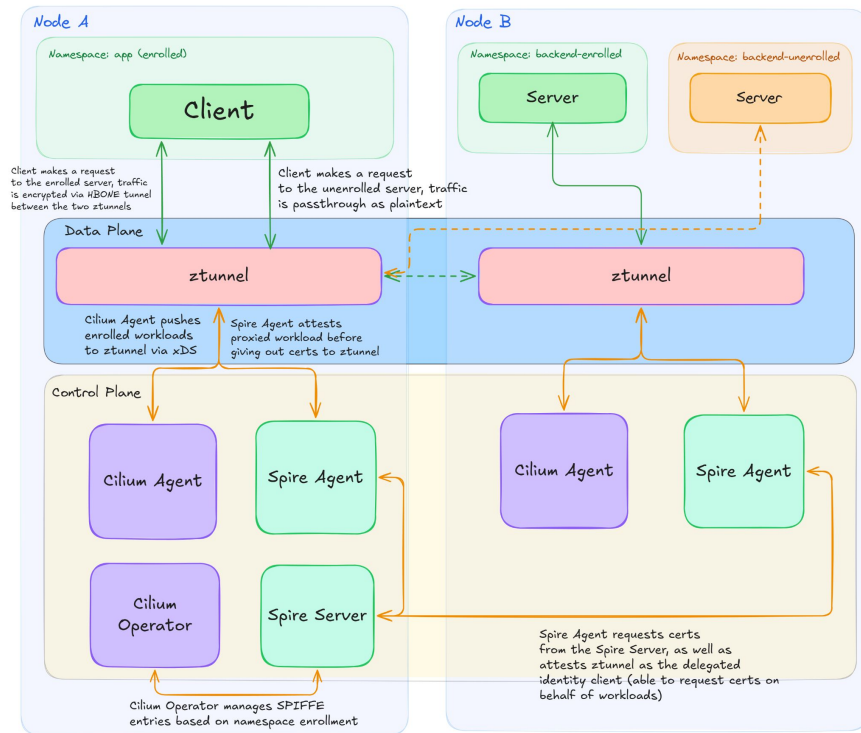
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- **ztunnel** is a Rust-based Layer 4 proxy, purpose-built by the Istio community to enable mutual TLS (mTLS).
- Cilium leverages ztunnel to introduce transparent mTLS into its existing datapath without disrupting workloads.
- This approach extends mTLS to deliver **full pod-to-pod encryption**, along with authentication (AuthN).
- It integrates with **SPIRE**, a SPIFFE-compliant runtime, to handle workload identity and act as the certificate authority.
- The solution is **FIPS-compliant**, ensuring adherence to stringent security standards.

Blog: [Native mTLS for Cilium: Transparent Encryption Meets Cloud Native Identity with ztunnel](#)

How Transparent mTLS Works

Cilium + ztunnel + Spire — Permissive Mode



Cilium mTLS encryption in Azure Kubernetes Service

Extending Further

- Enhancing security with Identity based policies
- Bring mTLS encryption onto Cilium Cluster Mesh
- And more...

Your contribution is required!



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Community Updates

Bill Mulligan, Isovalent at Cisco



Cilium Developer Summit

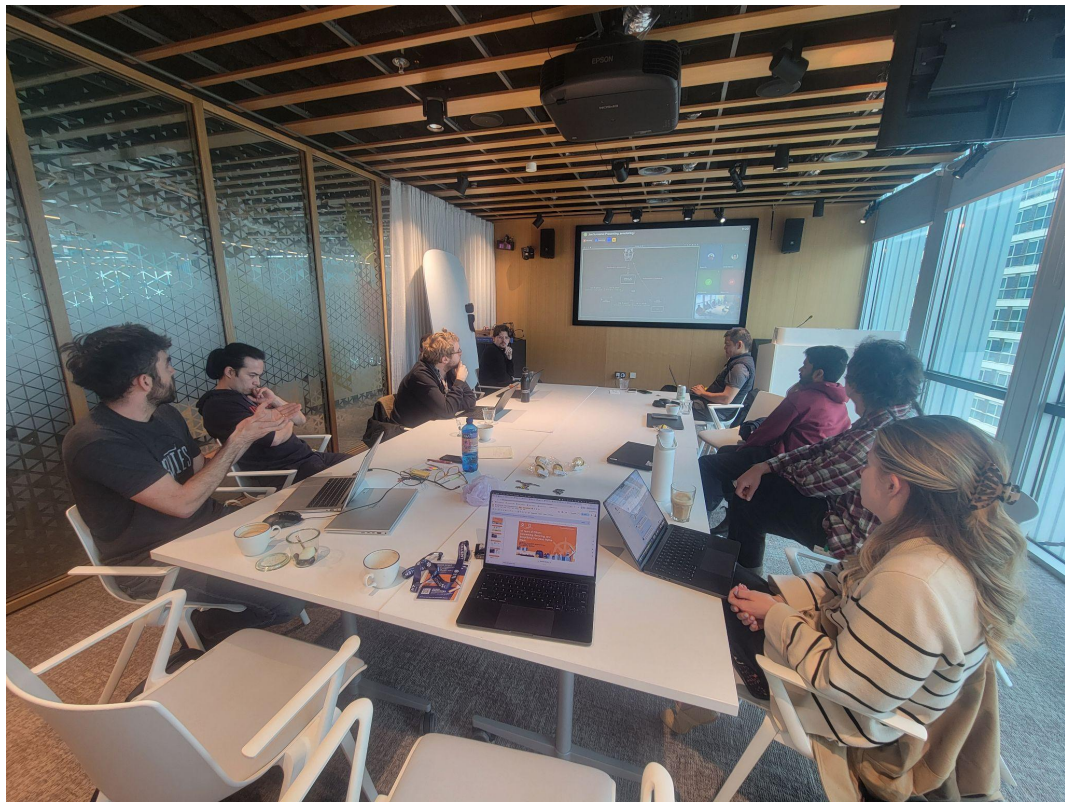


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New Books Out Now!

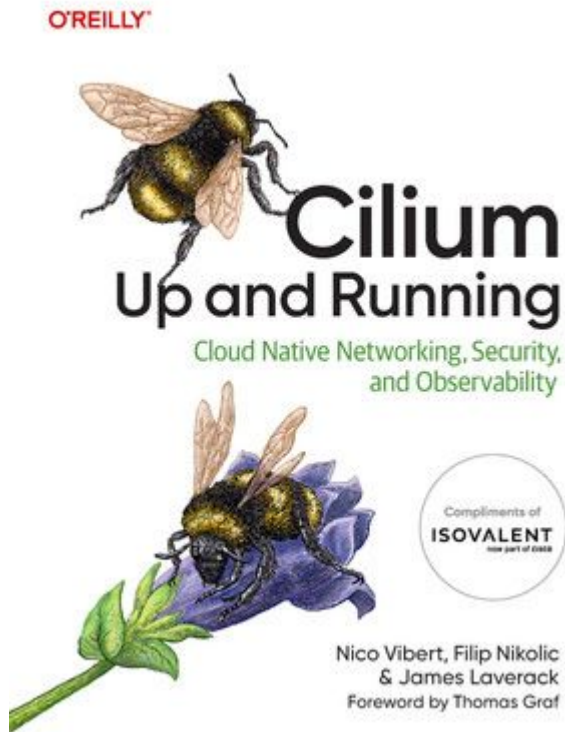


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Case Studies



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Zynga

Zynga Scales Gaming Infrastructure by Eliminating Networking Bottlenecks with Cilium

March 2, 2026

[READ CASE STUDY](#)

OVHcloud

Scaling Managed Kubernetes Service with Cilium and eBPF at OVHcloud

1000s

production clusters running on OVHcloud's infrastructure

February 25, 2026

[READ CASE STUDY](#)

ESnet (Energy Sciences Network)

Transforming Scientific Computing Infrastructure for IPv6 with Cilium at ESnet

100s

of VM deployments consolidated into 2 multi-tenant clusters

October 30, 2025

[READ CASE STUDY](#)

Cloudchirp client

How a Cloudchirp's client reduced Cloud costs by 45%

45%

AWS cloud savings

February 16, 2026

[READ CASE STUDY](#)

University of Wisconsin-Madison

University of Wisconsin-Madison enhances multi-cluster visibility and control with Cilium

25+

Kubernetes clusters managed across research and academic environments

December 9, 2025

[READ CASE STUDY](#)

Cybozu

Delivering High Performance Workflows with Cybozu and Cilium

4+ Years

Running Cilium in production

October 23, 2025

[READ CASE STUDY](#)

eBPF Whitepapers



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eBPF In Production

An Overview of Compelling Enterprise
Outcomes Using eBPF

by Bill Doerrfeld

February 2026



eBPF for the Infrastructure Platform

How Modern Applications Leverage
Kernel-Level Programmability

by Andrew Green

November 2025



Introducing the eBPF Meetup Program

By eBPF | February 25, 2026 | 2 min read

The eBPF ecosystem is growing, and so is the demand for strong local communities where developers can meet, share ideas, and create the next generations of eBPF projects, products, and companies.

The eBPF Foundation is excited to launch the eBPF Meetup Program, a new initiative designed to support and grow local eBPF communities around the world. This program empowers community members to organize local events focused on eBPF use cases and real-world production experience.

As eBPF continues to grow, knowledge sharing is becoming just as important as code, and local meetups play a critical role in that evolution.

Developer Meetings



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Cilium Weekly Developer Meeting
Every Wednesday, 08:00 US-Pacific

SIG Scalability Meeting
Fourth Thursday of the month, 08:00 PT

SIG Policy Meeting
Second Tuesday of every month, 08:00 PT

SIG Community Meeting
Monthly on the first Thursday at 8am PT



Monthly Tetragon community meetings, 2nd Mondays,
6:00 pm Europe/Paris time



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