

# Isovalent Enterprise Load Balancer

## Splunk v datovém centru

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# Many years ago...

Cisco CSS 11000



Cisco CSS 11500



CISCO WS-X6066-SLB-APC

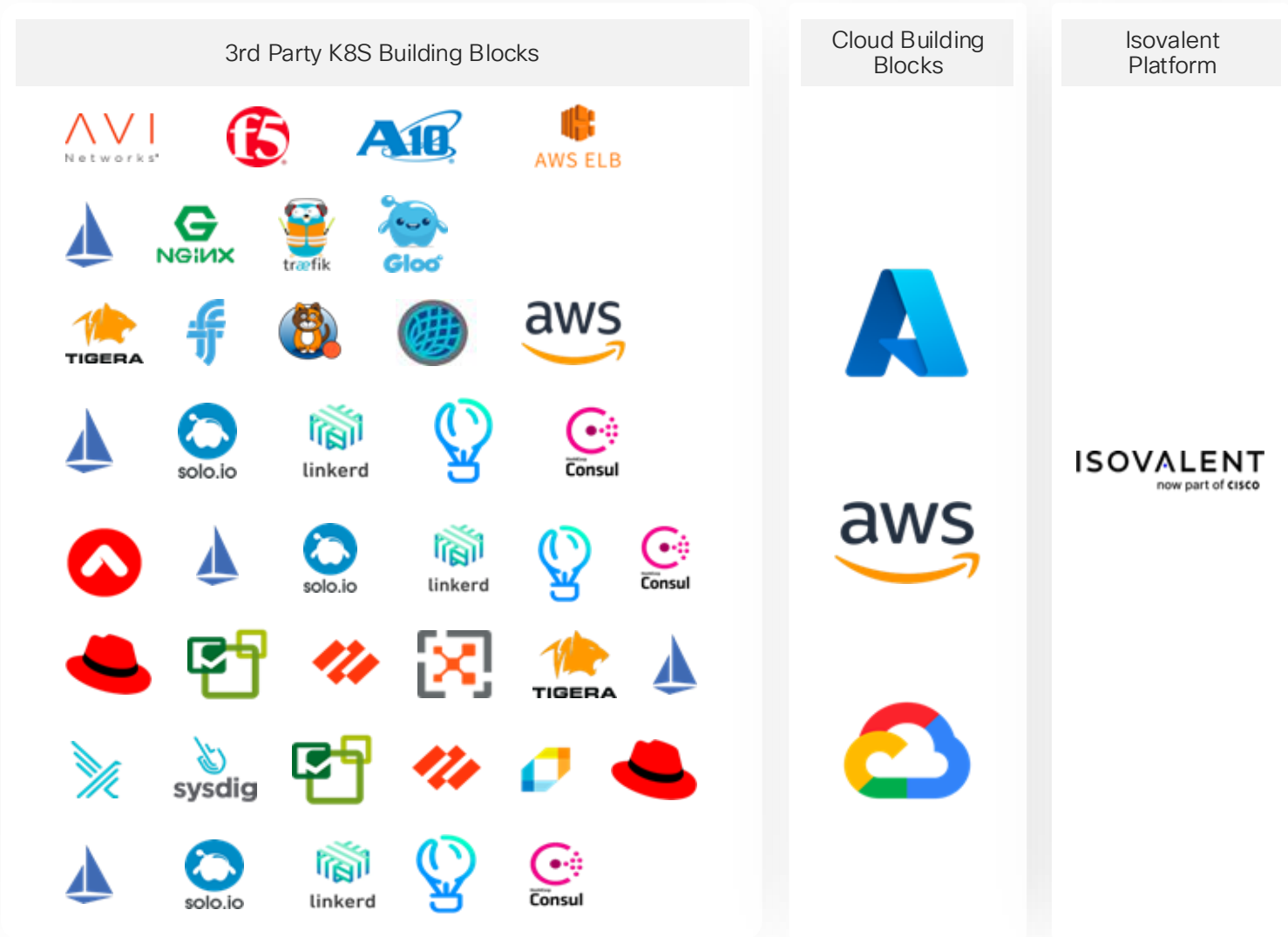
CATALYST 6500 CONTENT SWITCHING MODULE



# Isovalent Enterprise Platform – full network-related stack for K8S

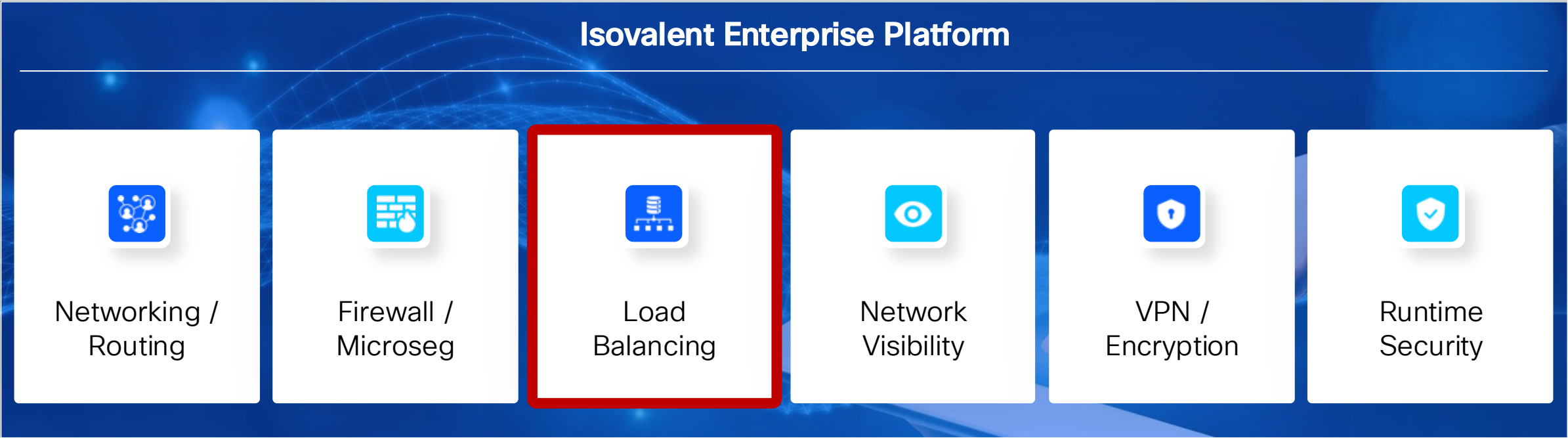
Reliable connectivity, rich observability, and security & compliance, without the complexity.

- Load Balancer
- Ingress
- Container Networking Interface (CNI)
- Service Mesh
- Legacy Workload & Multi-Cloud Connectivity
- Network Security
- Runtime Security & Observability
- Network Observability



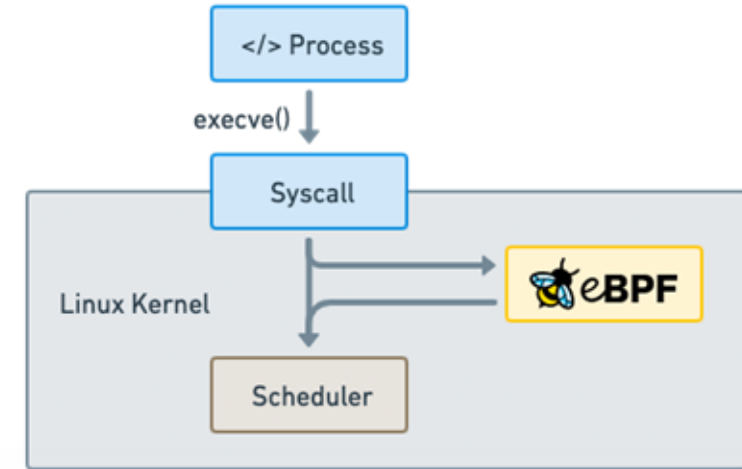
# How does Isovalent Load Balancer fit into our platform?

## Isovalent Enterprise Platform



# eBPF: The Kernel Innovation Powering the Cloud-Native Era

Programmable infrastructure for networking, security, and observability.



- 01 | Makes the Linux kernel programmable in a secure and efficient way.
- 02 | “What JavaScript is to the browser, eBPF is to the Linux Kernel”

```
int syscall__ret_execve(struct pt_regs *ctx)
{
    struct comm_event event = {
        .pid = bpf_get_current_pid_tgid() >> 32,
        .type = TYPE_RETURN,
    };

    bpf_get_current_comm(&event.comm, sizeof(event.comm));
    comm_events.perf_submit(ctx, &event, sizeof(event));

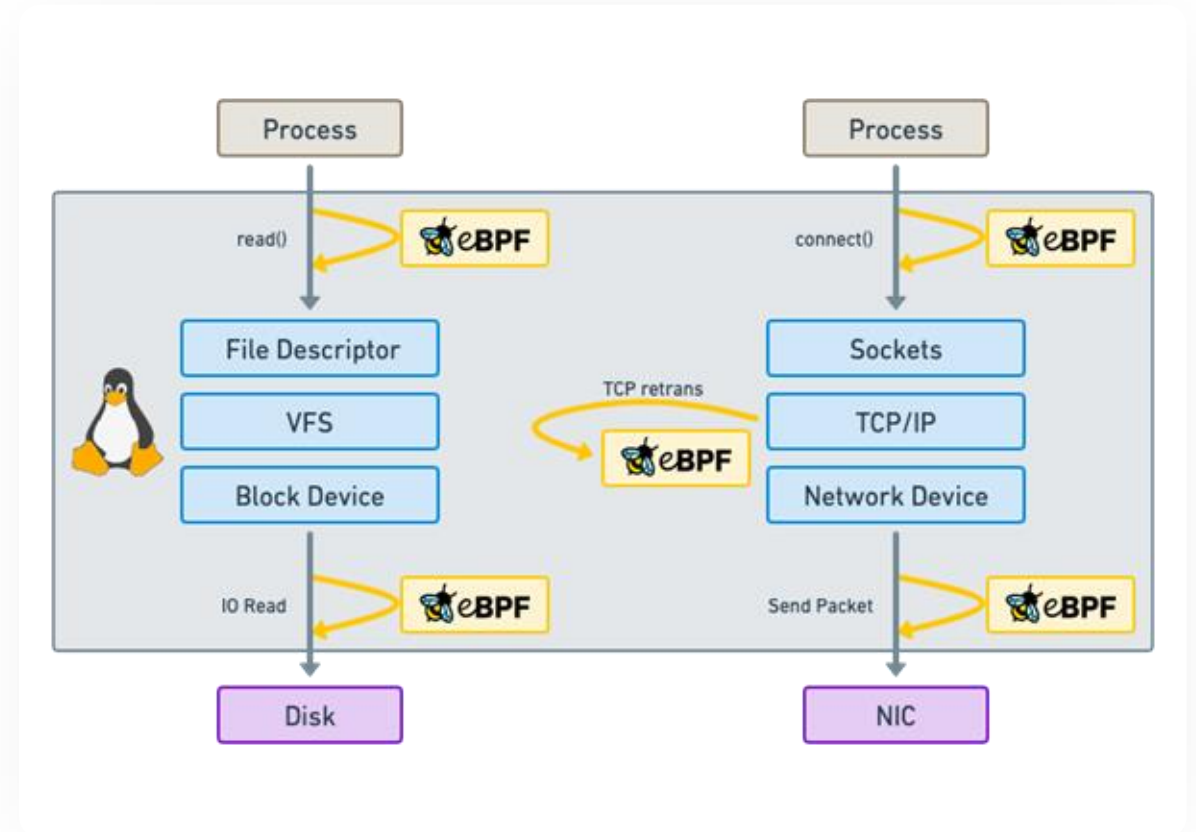
    return 0;
}
```

# Run eBPF programs on events




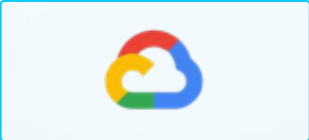
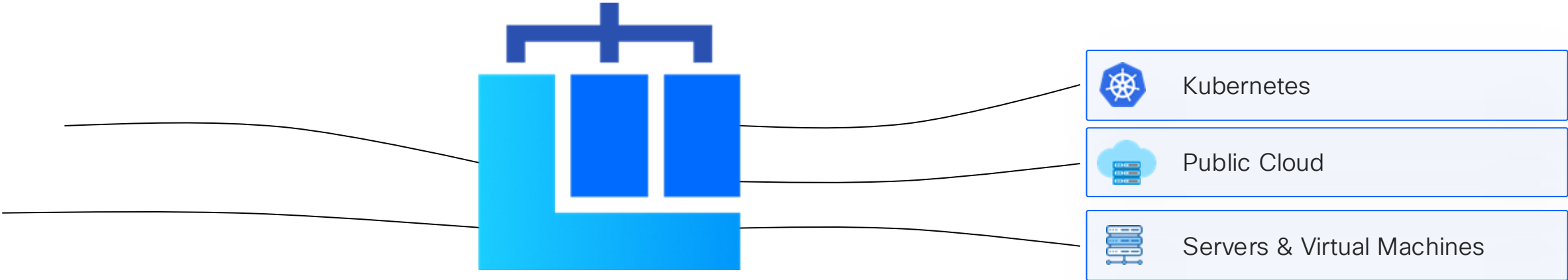
## Attachment points

- Kernel functions (kprobes)
- Userspace functions (uprobes)
- System calls
- Tracepoints
- Sockets (data level)
- Network devices (packet level)
- Network device (DMA level) [XDP]
- ...




# One Load Balancer


For all your environments



For Data center,  
Multi Cloud, and  
Kubernetes



Streamline  
Operations &  
Security



Reduce Complexity  
& Costs

# Run Anywhere - Natively



## Run Anywhere - Data center, Multi Cloud, and Edge

- ▶ Power load balancing in large data centers, seamlessly across any cloud, and efficiently at distributed edges. Variable footprint based on your needs.



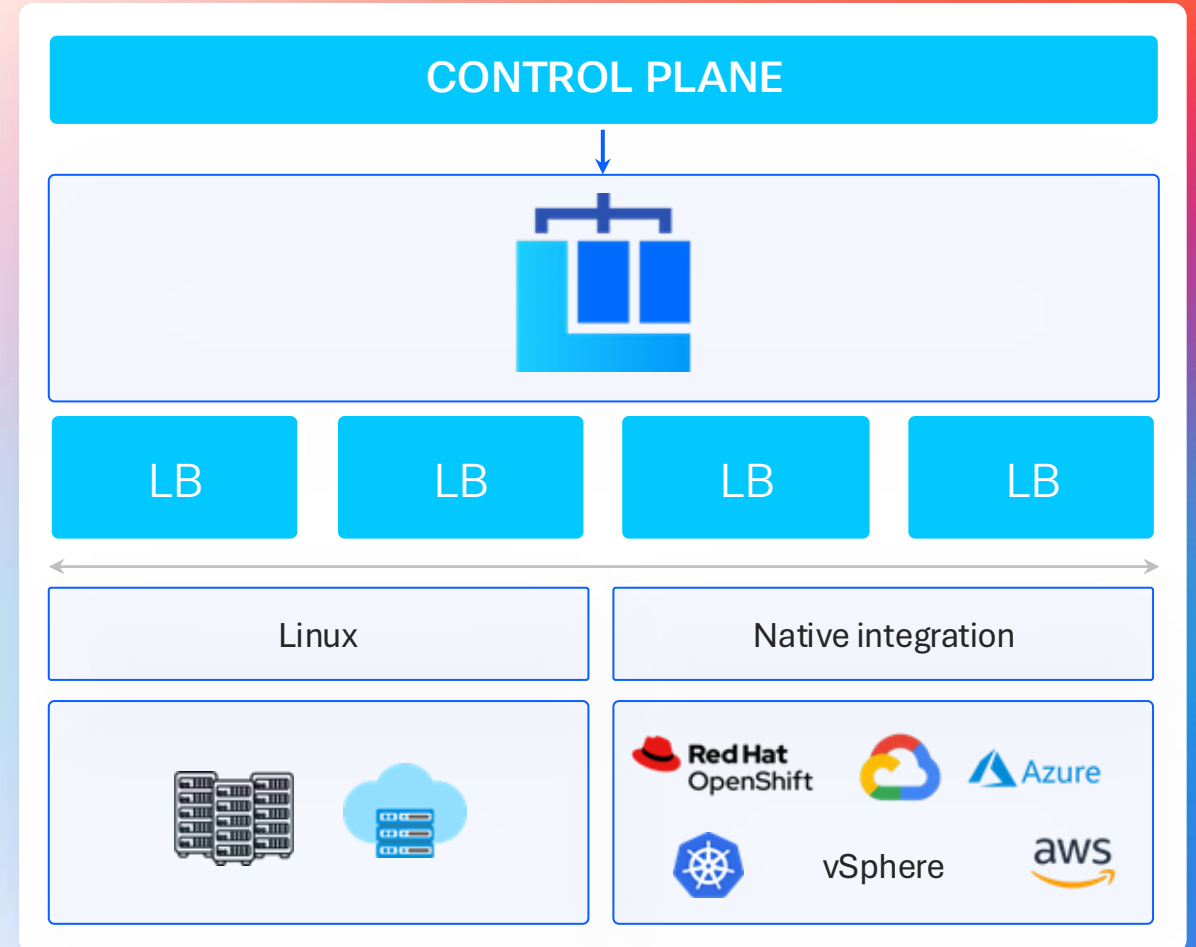
## Native Platform Integrations

- ▶ Runs on and integrates with any platform to provide a seamless operational experience:
  - Kubernetes: Kubernetes Ingress & Gateway API Controller
  - VMware vSphere
  - Red Hat OpenShift
  - Public Cloud: AWS, Google Cloud, Azure,..
  - Data Center: BGP



## Cost-Efficient Scaling

- ▶ Save costs by avoiding overprovisioning. Scale your application delivery infrastructure dynamically and provision what you need, when you need it.



# Level Setting

What It Is	What It's Not
Automation-friendly load balancer with declarative API	Product built around imperative, hard to automate APIs (CLI or UI)
Suitable for all types of workloads	Kubernetes-specific solution
Horizontally-scalable dataplane with consistent hashing	Monolithic vertically-integrated application with state replication
Native integration with cloud environments	Replacement for cloud NLB
A combination of eBPF (L4) and an application gateway (L7)	eBPF-only load balancer
Targeting 90% most common use cases	All-purpose load balancer
L7 header inspection and filtering	Complete feature parity with F5's iRules

# Features at a Glance

Category	Feature	Details
Traffic Management		
	L4 LB proxy	TCP, UDP, TLS offload, L4 fastpath
	L7 LB proxy	HTTP, HTTPs, HTTP/2, gRPC, Websockets, proxy protocol
	L7 LB routing	HTTP host header, URI path, SNI, cookie or source IP, weight
	LB algorithms	Round-robin, least connections, source IP hash, consistent hashing, WRR
	Health checks	HTTP, TCP, UDP (ICMP), automatic route health injection
	Client Traffic Policies	Connection filtering based on IPs, rate limiting
Security		
	Client authentication	Basic, JWT/OIDC, mTLS
	TLS policies	Configurable ciphers, ECDH curves, TLS versions, signature algorithms
	TLS protocol	Offload, re-encrypt, passthrough, SNI routing, TLS session tickets
	External integrations	ACME protocol, HSM support
	Authorization Policy	Backend access control by allowing traffic matching a set of conditions

**Reminder:** Remember to speak to the BU before selling this to anyone!

# Features at a Glance

Category	Feature	Details
Deployment options		
	Standalone	VMs via VMware vCenter, AWS, Azure, GCP APIs or Baremetal hosts
	In-cluster	A Kubernetes cluster add-on, utilizing the existing cluster control plane
Life cycle management		
	Installation & Upgrades	Automatic deployment and bootstrapping, centralized rolling upgrades
	Scale in/out and self-healing	Scripted scale in/out, self healing, minimal traffic disruptions
Operations		
	APIs	K8s-style APIs, with additional CLI and UI for troubleshooting and provisioning
	Logging	Flexible application, access and flow logs with configurable exporters
	Monitoring	Rich set of metrics with customizable dashboards
	RBAC	Configurable users, roles and tenants, LDAP integration
Network Integrations		
	On-premises	L2 (ARP) or feature-rich BGP stack (BFD, communities, LL interface)
	Cloud	Cloud-native L4 LB (e.g. NLB)
	IPv6	NAT64, NAT46 for L4 LB

**Reminder:** Remember to speak to the BU before selling this to anyone!

# Deployment Scenarios

## Standalone mode

- Customer provides a VM management platform
- ILB is deployed as a set of virtual appliances
- ILB manages the lifecycle of all its required components
- ILB includes built-in logging and monitoring support

## In-cluster mode

- Customer provides a Kubernetes cluster
- Isovalent Networking for Kubernetes (Cilium) is deployed as the underlying CNI to enable ILB
- ILB manages the lifecycle of its data plane components
- ILB relies on customer Kubernetes cluster for the persistent storage (for logging & monitoring) and control plane (API server access)

vmware®

aws

Azure

VM hypervisor manager / Public Cloud

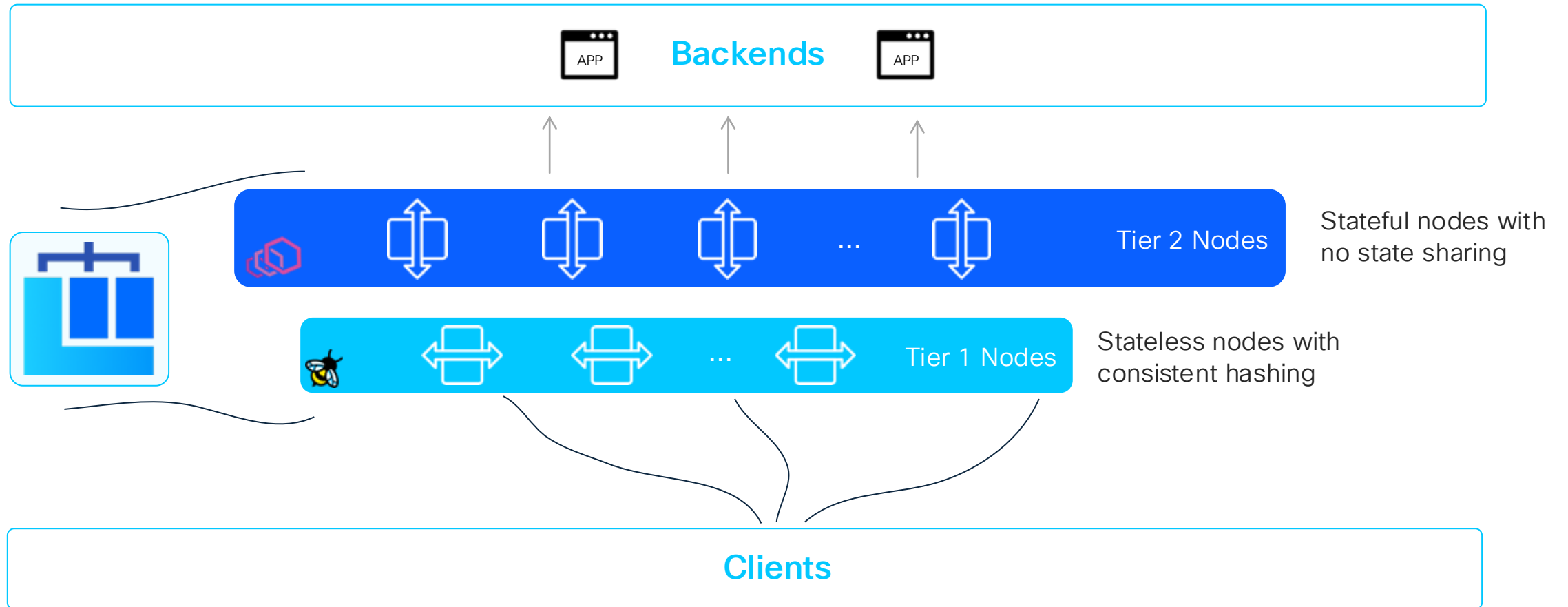


Red Hat  
OpenShift

RANCHER  
BY SUSE

Kubernetes distribution

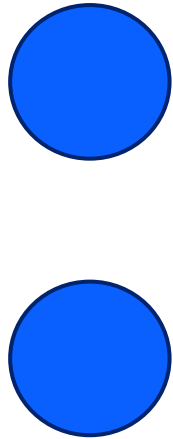
# Architecture Overview



**Note:** Two-tier architecture enables near-infinite horizontal scalability without impacting performance or convergence time

# BGP – Integral part of the Loadbalancer Setup

BGP Routers



VIP announcements



BGP peering between  
network routers and  
Cilium



Tier 1  
Nodes



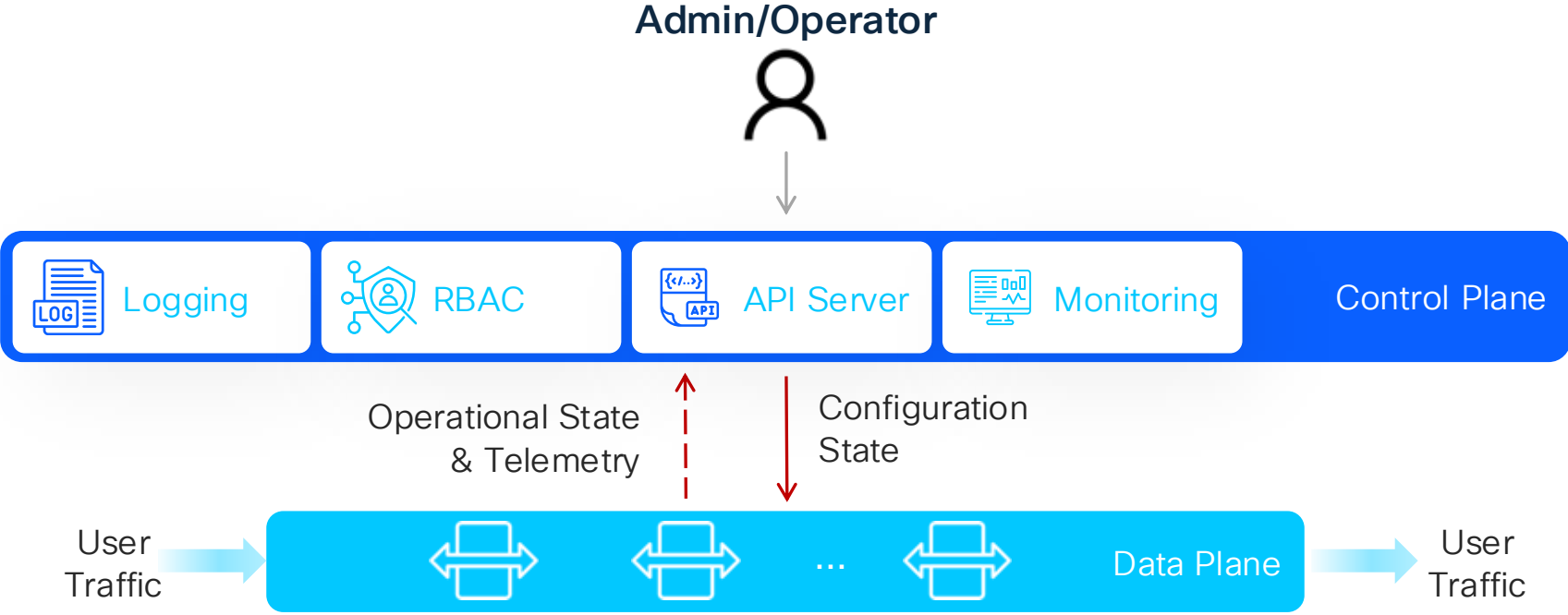
Tier 2  
Nodes



Backends

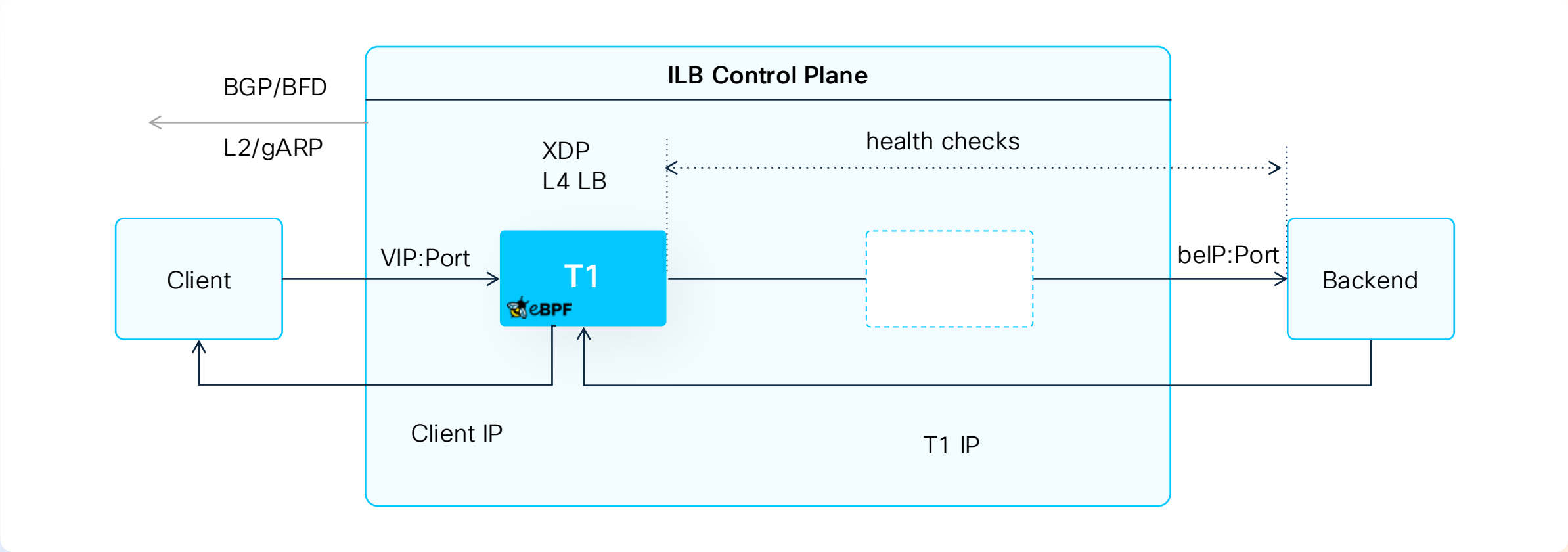


# Control Plane vs Data Plane



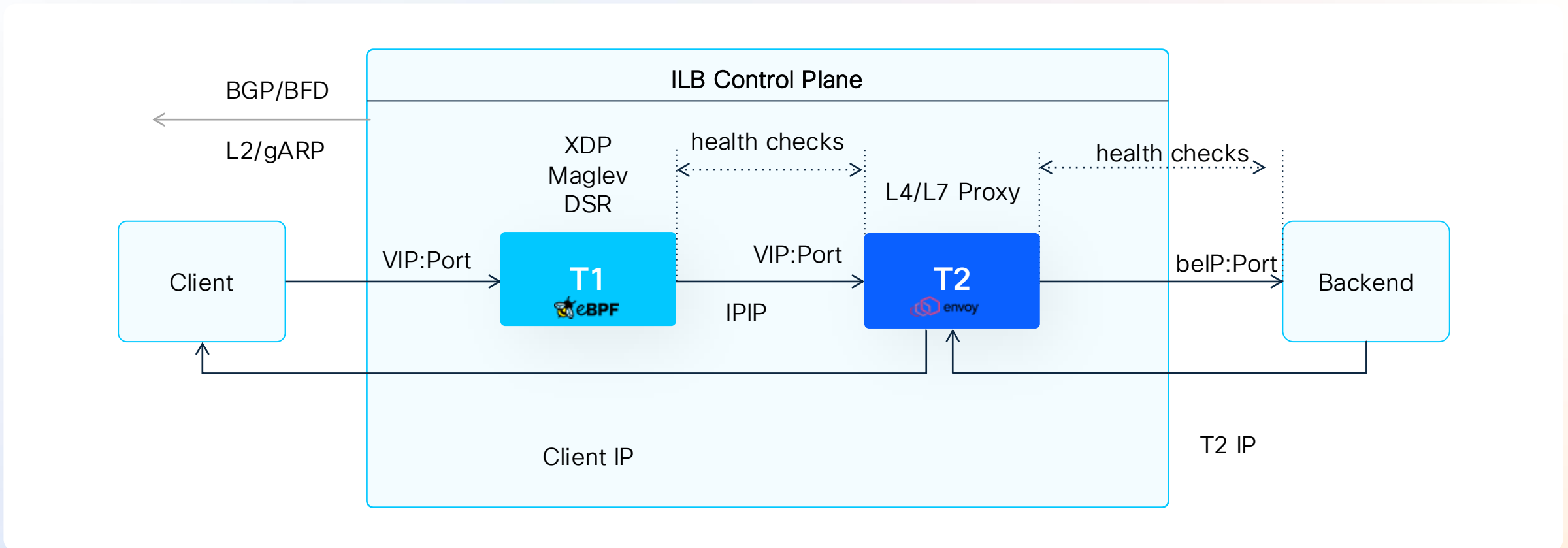
**Note:** A single node can perform both control and data plane functions

# Packet flow example | T1-only datapath



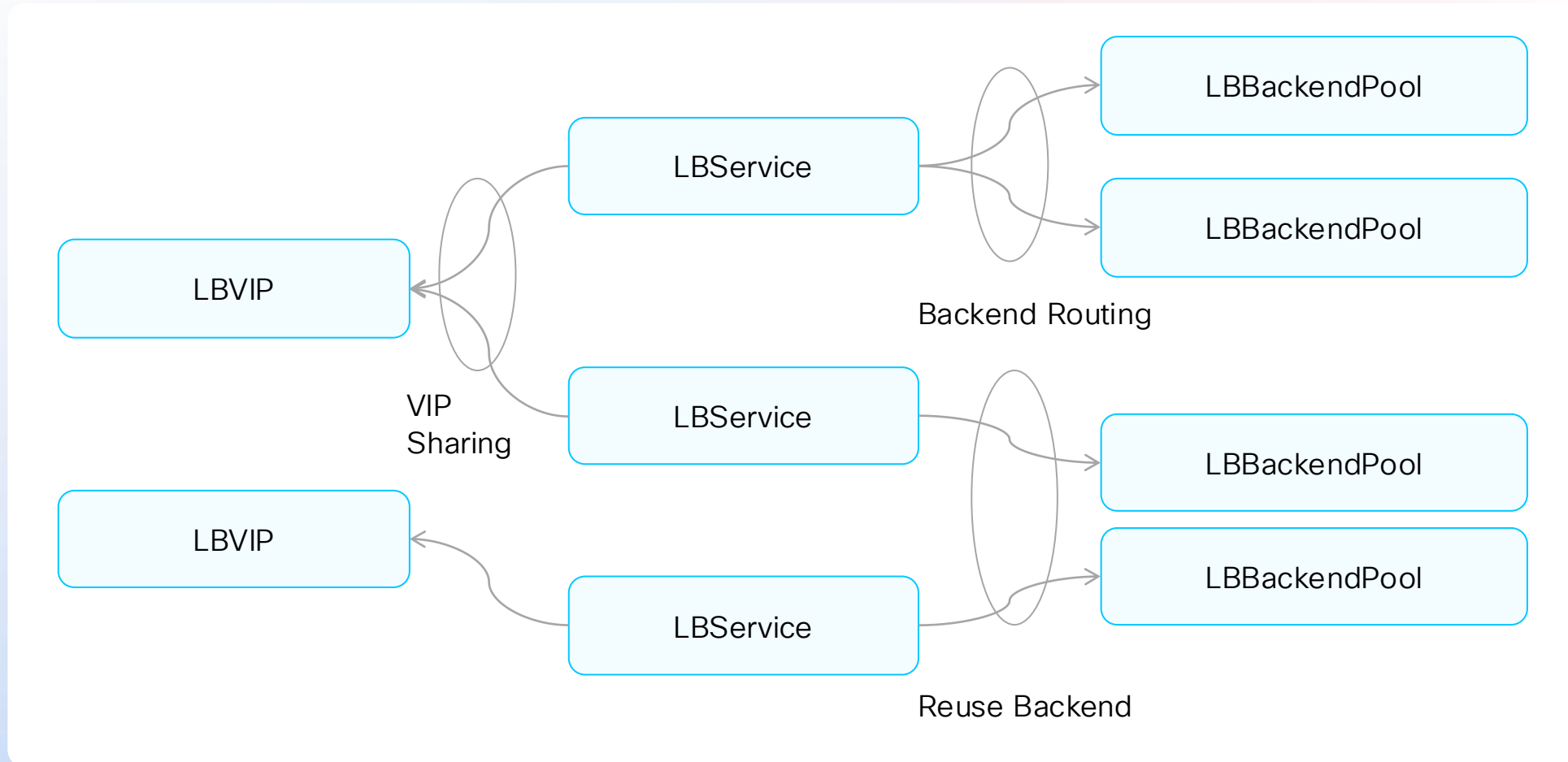
**Note:** T1-only datapath SNATs packets to ensure the replies are coming back via the same node

# Packet flow example | T1-T2 datapath



**Note:** DSR is only possible when T2 mode is in the forwarding path

# Data Model | Traffic Management CRDs



**Note:** The data model resembles the traditional load balancer (frontend, backends, VIP IPs)

# Traffic Management CRDs | Example

```
apiVersion: isovalent.com/v1alpha1
kind: LBVIP
metadata:
  namespace: default
  name: lb-1
spec:
  ipv4Request: "100.64.0.101"
```

```
apiVersion: isovalent.com/v1alpha1
kind: LBSERVICE
metadata:
  namespace: default
  name: lb-1
spec:
  vipRef:
    name: lb-1
  port: 80
  applications:
    httpProxy:
      routes:
        - backendRef:
            name: lb-1
```

```
apiVersion: isovalent.com/v1alpha1
kind: LBBackendPool
metadata:
  namespace: default
  name: lb-1
spec:
  backendType: IP
  healthCheck:
    intervalSeconds: 2
    timeoutSeconds: 2
    http:
      path: "/health"
  backends:
    - ip: 9.9.9.9
      port: 8080
    - ip: 8.9.9.9
      port: 8080
```

**Note:** The data model resembles the traditional load balancer (frontend, backends, VIP IPs)

# Outcomes

Reduce Complexity & Cost: Turn commodity Linux servers into powerful load balancers. Save costs by automating the deployment, horizontal scaling, and centralizing the management of devices.



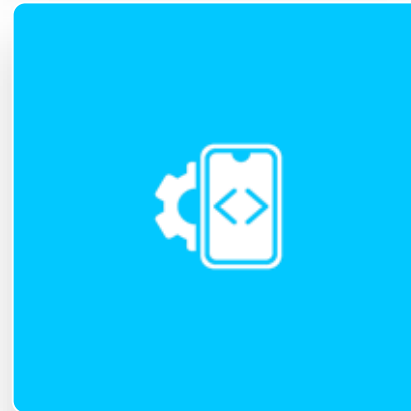
Future-Proof your Infra for Multi-Cloud & Kubernetes: Built on powerful open source technology, built for demanding Container, and hardened in hyperscale Kubernetes environments. Prepare for infrastructure for Multi-Cloud, Kubernetes, and AI.



Maximize Security & Observability: Elevate your security with zero-trust principles. Free application teams from handling SSL certificates. Gain valuable observability across your application delivery layer



Accelerate Application Delivery: Stop disrupting application development, start accelerating deployment workflows with API-driven CI/CD integration and native integrations into Kubernetes, OpenShift, and managed container platforms

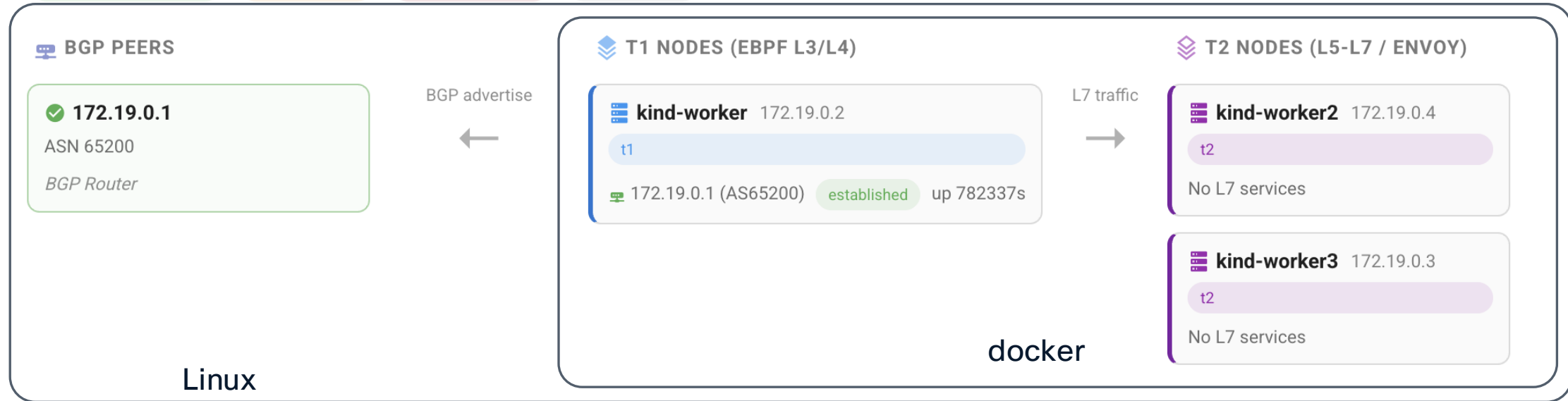


**Demo Time**

# Lab setup

## Network Topology

Established / OK   Degraded   Down / Error   Unknown



- Using Centos Stream 9 with docker and kind K8S cluster
  - 2 vCPUs, 4 GB RAM, 16GB disk will do
- FRR router deployed for BGP peering with ILB and lab network
- Using iptables fixes to allow traffic from external networks to docker bridge(s)

# Lab Guide

- Repository: <https://github.com/chrlic/isovalent-loadbalancer-labs>
- Lab Guide: <https://github.com/chrlic/isovalent-loadbalancer-labs/blob/main/doc/lab-guide.md>

If in doubts, get in touch

**HAVE FUN!**

- To see more examples and capabilities, visit Isovalent Labs at <https://isovalent.com/labs/ilb-getting-started/>

# Closing Thoughts

- Currently in very mode of introduction, always talk to Cisco/Isovalent when interested
- Sure, there are gaps, but there's also a roadmap and it's all software!
- Very friendly to the current direction to GitOps based management – native! Tools like ArgoCD...
- BGP peering and VIP announcements – aligns well with the security model of ACI with ExtEPG and VXLAN BGP EVPN with GPO
- GUI you have seen IS NOT part of the product, rather hobby development
- Pricing? Not finalized yet

# Learn more!

## ISOVALENT

### For the Enterprise



Hardened, enterprise-grade eBPF-powered networking, observability, and security.

[isovalent.com/product](https://isovalent.com/product)

### Get Started with the Lab



Step into the world of modern, high-performance load balancing with the Isovalent Load Balancer.

[isovalent.com/labs.com/product](https://isovalent.com/labs.com/product)

### Get the Brief

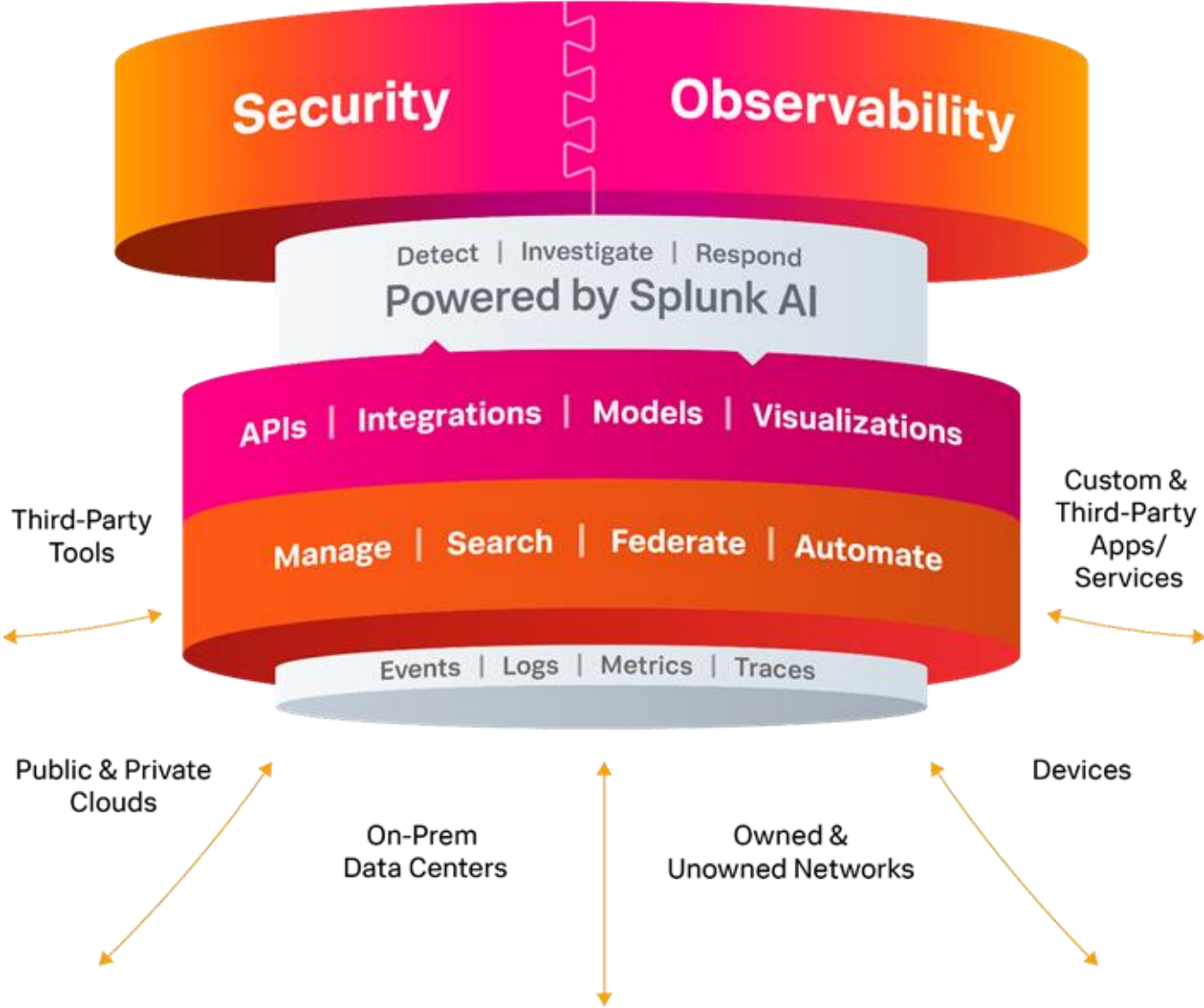


The revolution in the Linux kernel, safely and efficiently extending the capabilities of the kernel.

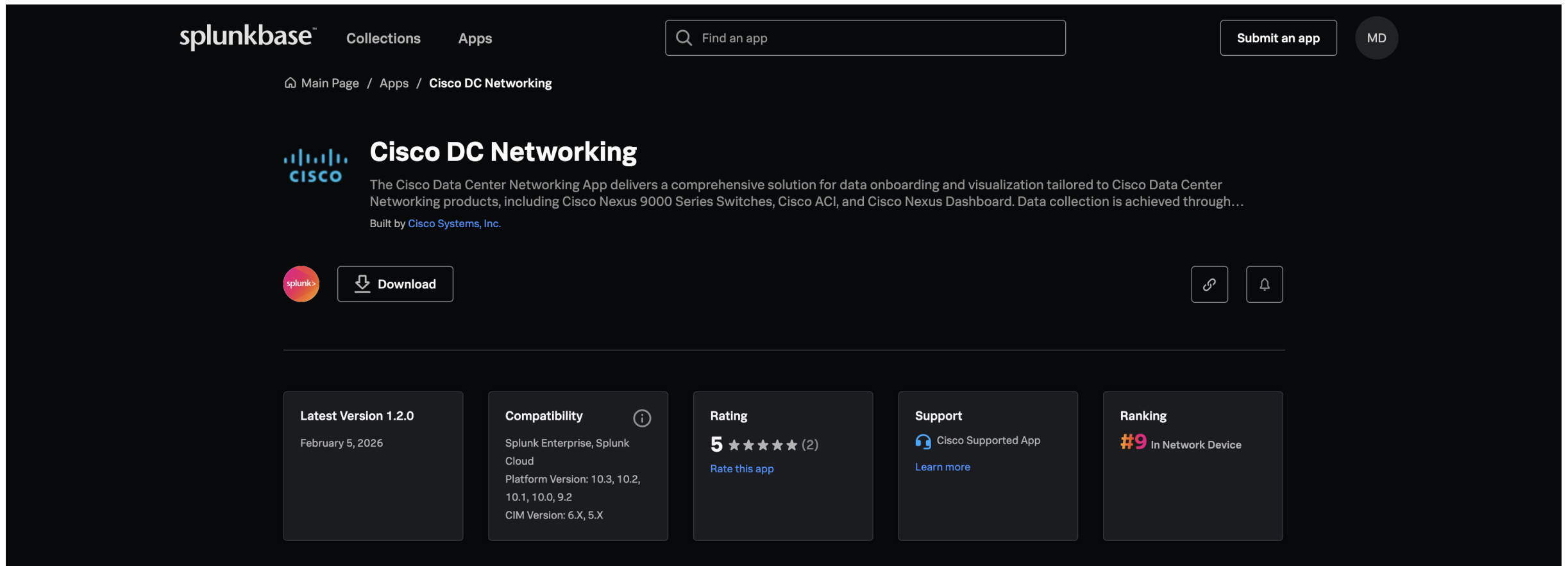
[isovalent.com/briefs](https://isovalent.com/briefs)

# Splunk - DC Observability

# The Unified Security and Observability Platform



# Download Cisco DC Networking App from Splunkbase



The screenshot shows the Splunkbase interface for the Cisco DC Networking app. At the top, there is a navigation bar with the Splunkbase logo, 'Collections', and 'Apps' tabs. A search bar contains the text 'Find an app'. To the right, there are buttons for 'Submit an app' and a user profile icon labeled 'MD'. Below the navigation, a breadcrumb trail reads 'Main Page / Apps / Cisco DC Networking'. The main content area features the Cisco logo and the app title 'Cisco DC Networking'. A descriptive paragraph states: 'The Cisco Data Center Networking App delivers a comprehensive solution for data onboarding and visualization tailored to Cisco Data Center Networking products, including Cisco Nexus 9000 Series Switches, Cisco ACI, and Cisco Nexus Dashboard. Data collection is achieved through...'. Below this, it says 'Built by Cisco Systems, Inc.'. A 'Download' button is prominently displayed, along with a 'splunk' logo icon. To the right of the download button are icons for a link and a notification bell. At the bottom, there are five informational cards: 'Latest Version 1.2.0' (February 5, 2026), 'Compatibility' (Splunk Enterprise, Splunk Cloud; Platform Version: 10.3, 10.2, 10.1, 10.0, 9.2; CIM Version: 6.X, 5.X), 'Rating' (5 stars, 2 reviews, 'Rate this app'), 'Support' (Cisco Supported App, 'Learn more'), and 'Ranking' (#9 in Network Device).

<https://splunkbase.splunk.com/app/7777>

# Don't Have Splunk, but Want to Try?

The screenshot shows the Splunk Developer Program website. At the top left is the logo "splunk>dev" with "a CISCO company" below it. On the top right, there are navigation menus for "Platform", "Observability", and "MD", along with a search bar and a "System" dropdown. Below the navigation is a section titled "Documentation and Tooling by Platform" with two tabs: "Splunk Platform" (selected) and "Splunk Observability". There are five main content cards: "Developer Guide" (Documentation), "API Reference" (Splunk Platform REST endpoints), "Tutorials" (Learn by doing), "Code examples" (Python, Javascript, Java), and "Downloads" (Free trials and more). Below these are two larger cards: "Splunk Cloud Developer Edition (Private Preview)" with a "Request Interest" button, and "Splunk Developer License" (Free 10 GB Splunk Enterprise license for app development) with a "Request Developer License" button. The "Splunk Developer License" card is highlighted with a red border.

<https://dev.splunk.com/developer-program/>

# Configure Accounts... Inputs...

## Configuration

Set up your add-on

ND Accounts **ACI Accounts** Nexus 9K Accounts Logging

1 Item

Search...

Account Name ▾	Hostname(s)/IP Address(es) ▾	Port ▾	Authentication Type ▾	Username ▾
PRGLAB_ACI	10.62.10.111,10.62.10.112,10.62.10.113	443	Password Based Authentication	admin

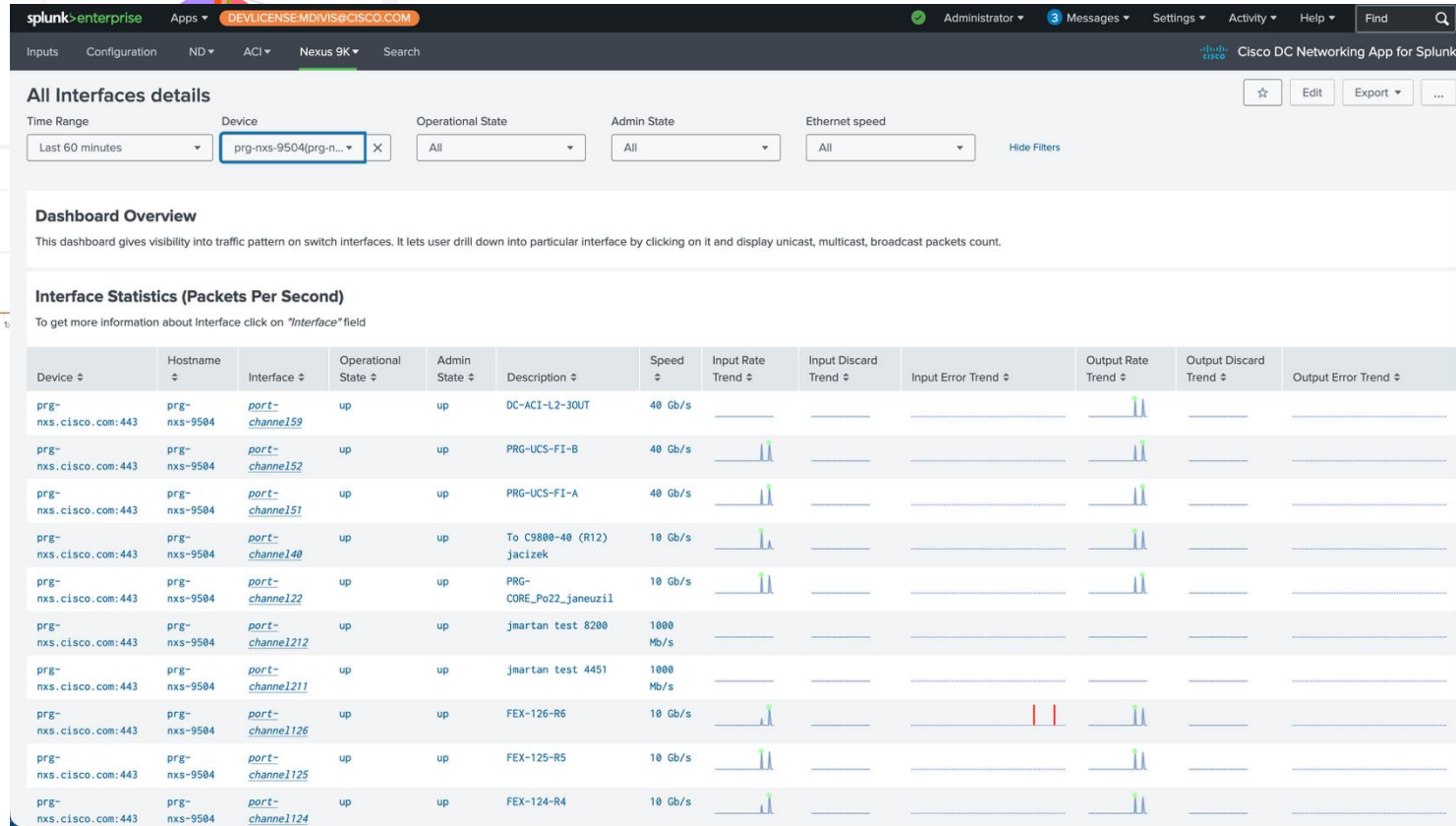
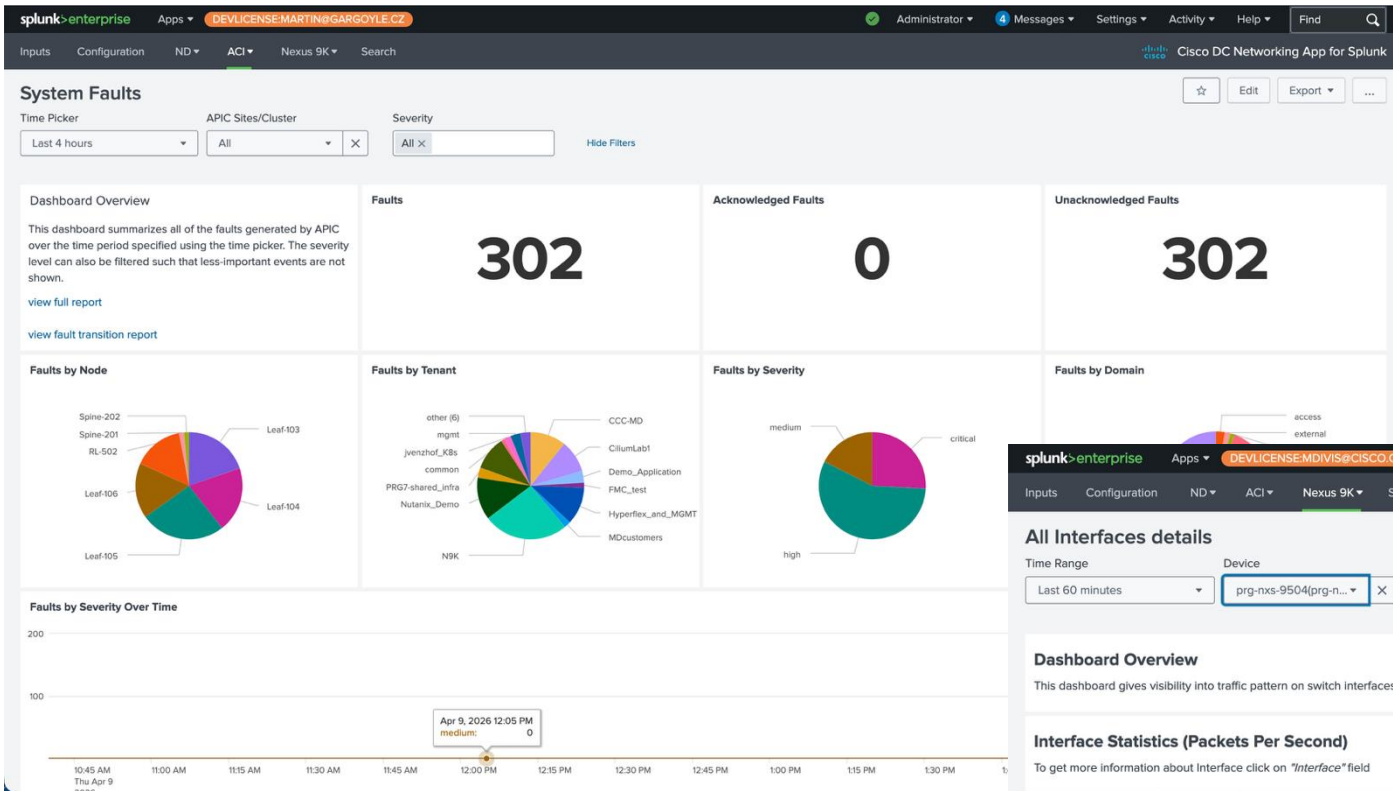
## Inputs

Manage your data inputs

9 Inputs 10 Per Page ▾ ACI ▾ Search...

i	Name ▾	Account Name ▾	Interval ▾	Index ▾	Status ▾
>	authentication	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	classInfo_aaaModLR	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	classInfo_faultInst	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	classInfo_fvRsCEpToPathEp	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	fex	PRGLAB_ACI	300	default	<input type="checkbox"/> Inactive
>	health_fabricHealthTotal	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	health_fvTenant	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	microsegment	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active
>	stats	PRGLAB_ACI	300	default	<input checked="" type="checkbox"/> Active

# View the Dashboards!



# Wait, I Have all this in Nexus Dashboard, too!

The screenshot displays a grid of Cisco add-ons for Splunk. Each add-on card includes the Cisco logo, the add-on name, the developer (Cisco Systems, Inc.), a brief description, the supported platform (Splunk Enterprise, Splunk Cloud), and a user rating. The add-ons shown are:

- Cisco Security Cloud**: The Cisco Security Cloud application offers seamless integration for connecting your Cisco devices with... (Rating: 4.5/5, 13 reviews)
- Cisco Meraki Add-on for Splunk**: The Splunk Add-on for Cisco Meraki provides comprehensive network observability and security monitoring... (Rating: 4.5/5, 5 reviews)
- Cisco Catalyst Add-on for Splunk**: Technical Add-on that collects Syslog, Netflow and API information from various Cisco products. The data parsed by th... (Rating: 4.0/5, 4 reviews)
- Cisco Secure Access App for Splunk**: The Cisco Secure Access App for Splunk integrates cloud security data with event data from Splunk to drive improved... (Rating: 4.5/5, 3 reviews)
- Cisco Secure Access Add-on for Splunk**: The Cisco Secure Access Add-on for Splunk gives you the ability to get your Cisco Secure Access or Cisco Umbrella... (Rating: 4.5/5, 1 review)
- Cisco Enterprise Networking for Splunk ...**: This application provides a dashboard component to visualize data collected by the 2 Technical Add-ons: Cisco Cataly... (Rating: 4.5/5, 1 review)
- Cisco ThousandEyes App for Splunk**: The ThousandEyes App For Splunk enables organizations to collect and analyze CEA (Cloud and Enterprise... (Rating: 4.5/5, 5 reviews)
- Cisco DC Networking**: The Cisco Data Center Networking App delivers a comprehensive solution for data onboarding and visualization... (Rating: 4.5/5, 2 reviews)
- DEPRECATED - Cisco Catalyst SD-WAN App for ...**: DEPRECATION NOTICE - THE VISUALIZATION DASHBOARD IN THIS APPLICATION IS NOW INCORPORATED... (Rating: 4.5/5, 1 review)
- Cisco Catalyst Enhanced Netflow Add-on for Splunk**: Technical Add-on that collects Netflow v9 and Netflow v10 information from Cisco Catalyst SD-WAN devices. The... (Rating: 4.5/5, 1 review)
- Cisco Intersight Add-on for Splunk**: Cisco Intersight Add-on for Splunk is a Cisco supported extension to Splunk platform designed to integrate Cisco... (Rating: 4.5/5, 1 review)

- DC Networking application is only one from many from Cisco
- There are many other vendors providing applications for different parts of IT stack
- Splunk enables monitoring of all domains in one place and using AI to evaluate and correlate data

