

Future of cloud infrastructure?

How to address challenges of hybrid multi-cloud IT environments

Martin

Filo

March 2022



About me



Martin Filo

Cloud, DevOps & Infrastructure Unit Manager

- I had a chance to work:
 - Within various positions in enterprise software development
 - In leadership of global I&O teams
- Currently supporting enterprise companies adopting hybrid multi-cloud approach

■ Contact

- martin.filo@unicorn.com
- +420 607 713 713

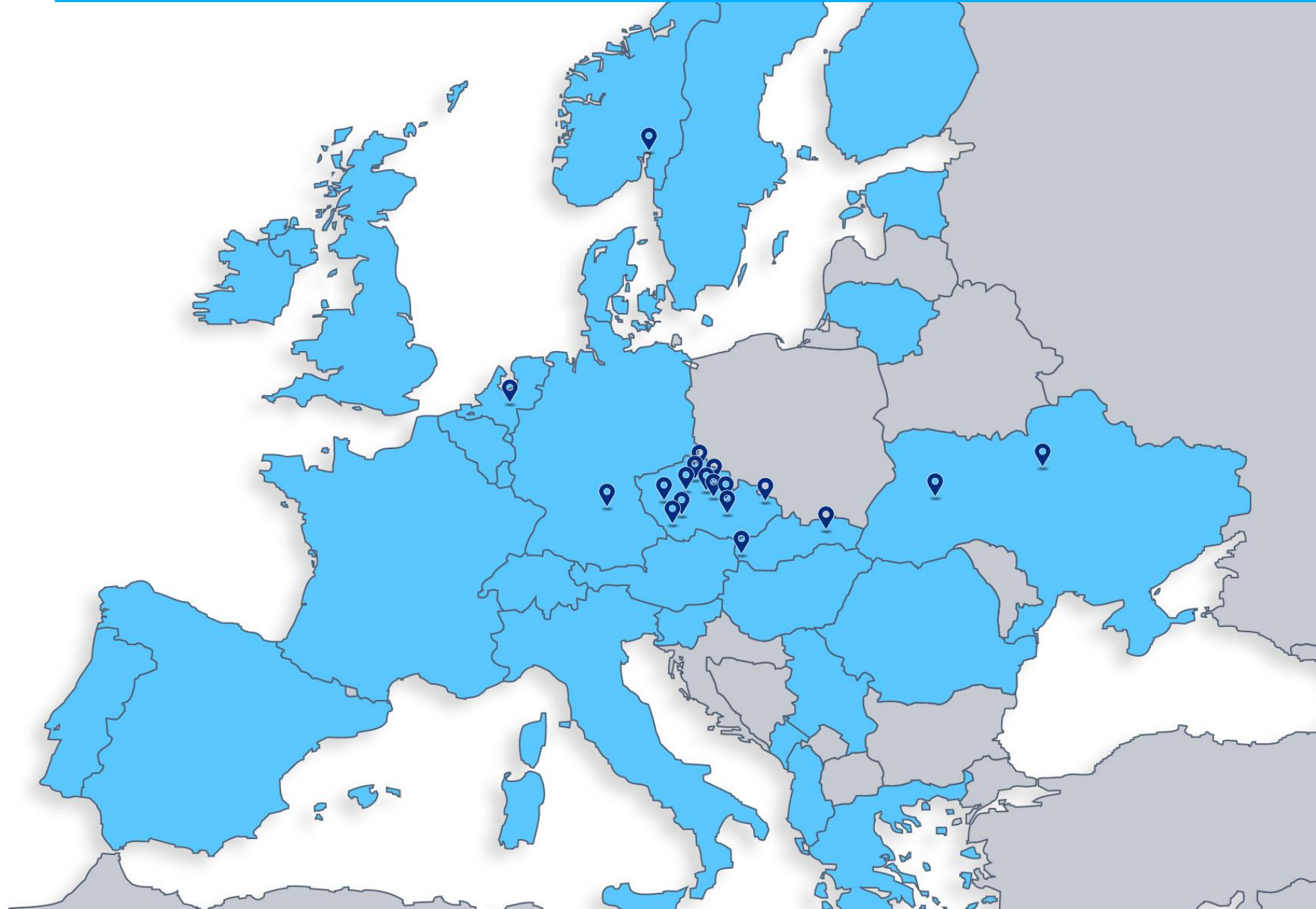
Agenda

- Unicorn & HashiCorp introduction
- Current challenges in enterprise IT
- Where?
- HashiCorp products highlights
 - Consul Service Mesh as a modern, flexible integration platform
 - Nomad as flexible orchestration platform
 - HashiCorp tools in modern container world with focus on observability and security
- Zero Trust Security with HashiCorp
- Effect of Digital Transformation
- New technologies require new processes
- Multi Cloud Security in a Zero Trust world

Unicorn – European Company

■ <https://unicorn.com>

■ info@unicorn.com



- Praha (CZ)
- Bratislava (SK)
- Kyjev (UA)
- Arnhem (NL)
- Oslo (NO)
- Norimberk (DE)
- Hradec Králové (CZ)
- Plzeň (CZ)
- Písek (CZ)
- Mladá Boleslav (CZ)
- Liberec (CZ)
- Pardubice (CZ)
- Brno (CZ)
- Chrudim (CZ)
- Ostrava (CZ)
- Česká Třebová (CZ)
- Prachatice (CZ)
- Prešov (SK)
- Ternopil (UA)

Unicorn Clients



1 More than **1 100 industry leading companies** in 28 countries trust Unicorn as their reliable IT partner.

2 Proven track record of more than **550 information systems**.

3 Delivery of IT solutions and services with **extensive emphasis on quality**.

4 Combining **IT experience with vertical expertise** in finance, energy, manufacturing & trade.

5 **Significant investment into employees training** to gain expertise and boost their added value.

6 We employ more than **2 500 IT professionals** in **25 development centres** across Europe.



Leading Cloud Infrastructure Automation

Our software stack enables the provisioning, securing, connecting, and running of apps and the infrastructure to support them.

We unlock the cloud operating model for every business and enable their digital transformation strategies to succeed.

Founded

2012

Employees

1200+

Funding

349M

 Vagrant Packer Terraform Vault Boundary Consul Nomad Waypoint

HashiCorp in numbers



PROGRESSIVE

UCSF



Mercedes-Benz

vodafone



petco

NOVARTIS

criteo

SAP

Nasdaq

shopify

BARCLAYS

hulu

COSTCO
WHOLESALE

IBM



CISCO

splunk

1400+

Enterprise Customers

275+

of the Global 2000

145+

of the Fortune 500

H&R
BLOCK

jumptrading



mercari

deluxe

TOPGOLF

Transportation
Security
Administration

jet



SPACEFLIGHT



DOORDASH

WARE2GO

f5

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orange

TSC TRACTOR
SUPPLY CO

NAVI

Cigna

LOWE'S

NCA
National Crime Agency

HashiCorp-Unicorn partnership

Unicorn services incorporate key **HashiCorp experience** and **vertical market expertise** to help rapidly and successfully implement **excellent solutions**.

- HashiCorp partner since 2021
- Specialized partnership tier planned for 2022
- 15 HashiCorp certified IT specialists
- Practical detailed experience with HashiCorp products, especially with
 - Terraform
 - Consul
 - Vault
 - Nomad
- Close cooperation and support of technical experts from HashiCorp



The 5 challenges of enterprise we see in 2022

- **Operate from anywhere** → ■ Build once, operate anywhere
- **Migration from legacy into micro-services architecture** → ■ Modern integration platform
- **Lack of capacity** → ■ IAAS, Automation
- **Complexity of hybrid cloud** → ■ Cloud-agnostic technology stack
- **Just-In-Time Infrastructure** → ■ Shift-to-Cloud

What is your cloud destiny?



What defines a future of infrastructure?



What does it mean „hybrid multi-cloud“?

- **In hybrid multi-cloud we trust**
- Infrastructure-as-a-code
- Zero trust security
- Cloud-agnostic approach in software development
- Modern integration layer





The Future of Cloud Infrastructure

How to adopt a hybrid multi-cloud effectively?

Jiří
Schauer

March 2022



About me



Jiří Schauer

Global Cloud Architect

- Over 20 years in IT, like technological challenges
- Focus mainly on:
 - modern container technologies
 - cloud solutions
 - distributed patterns
 - up to DevOps and related technologies

■ Contact

- jiri.schauer@unicorn.com

Consul Service Mesh as a modern flexible integration platform

- **Do you have:**
 - a hybrid Cloud Architecture?
 - a multi-hybrid Cloud Architecture?
 - any Container Platform?
- **Do you manage:**
 - any Applications/Workloads?
- **Do you run** any Middleware?



Consul Service Mesh as a modern flexible integration platform

- **Do you want:**
 - to **have observability** over your Workload, Middleware?
 - to **integrate Database?**
 - to **integrate your on-prem** with any Cloud Provider?
 - all your **services to communicate** with mTLS?

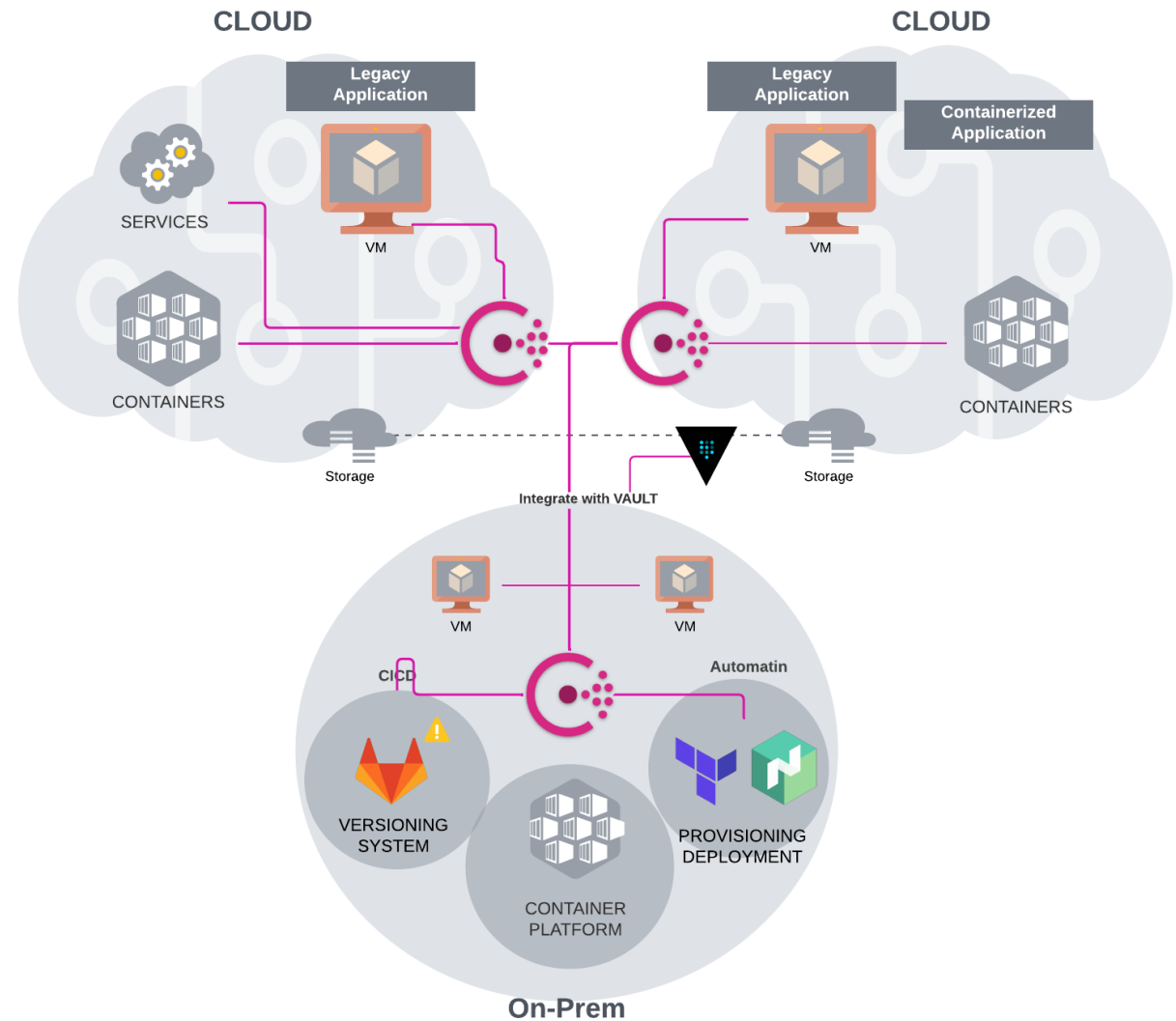


Consul Service Mesh as a modern flexible integration platform

If any of your answers to questions before is „**Yes**“...

Service Mesh Integration

- Distributed model
- Decentralised model
- Container platforms are supported
- Zero Trust model
- Service Registry
 - Service Discovery
 - Service Segmentation
- Consul Service Mesh
 - Native mTLS security
 - All Services are secured with Intentions
 - All APIs are secured with ACL
 - Automatic Failure Detection
 - Monitoring and Alerting integrations
 - Health Checks
 - Routing path/headers...
- Cloud-agnostic
- Multi-platform Support



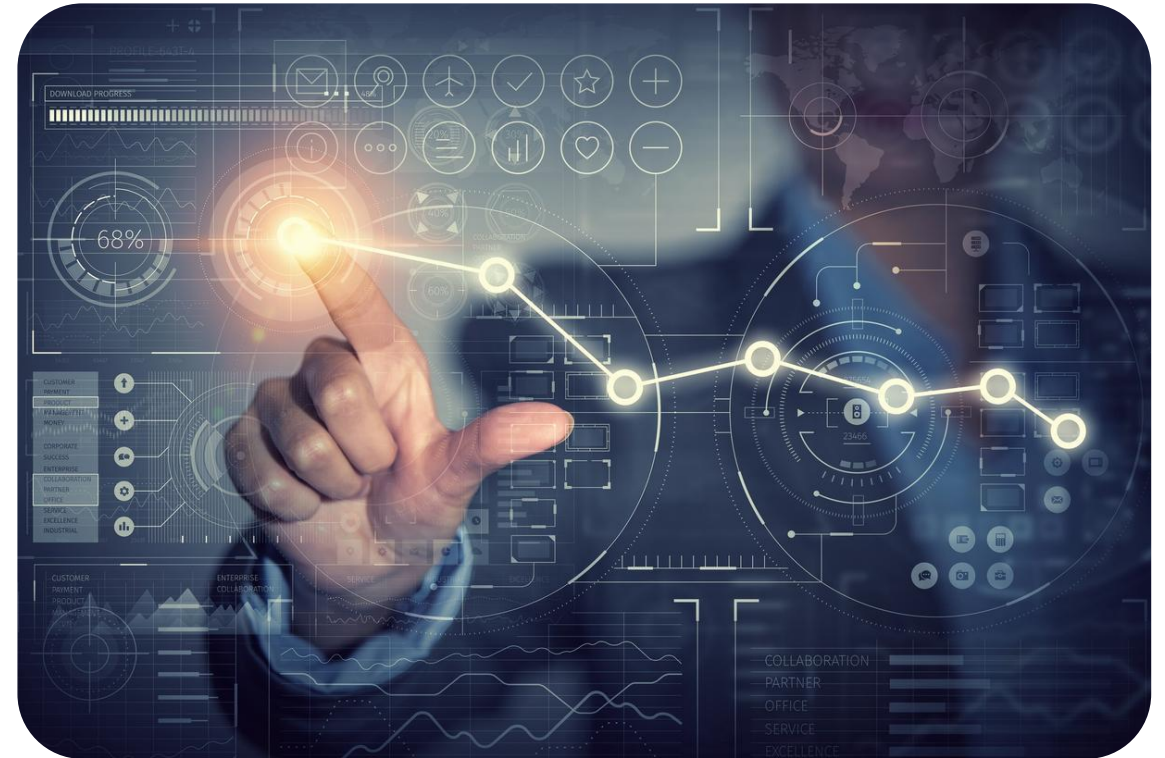
Nomad as a flexible orchestration platform

- **Aren't you ready** to use a full-fat container?
- **Don't you have** qualified staff to administrate the full-fat container platform?
- **Do you want** to quickly deploy over hybrid Cloud Architecture?
- **Do you deploy** your workload to containers and VM?



Nomad as a flexible orchestration platform

- **Do you want:**
 - to use a **flexible, durable platform** to deploy your workload?
 - your **deployment to be observable** through the service registry?
 - to **manage your legacy applications** without rewriting?
 - to **scale** your applications?
 - to **health check** your application?

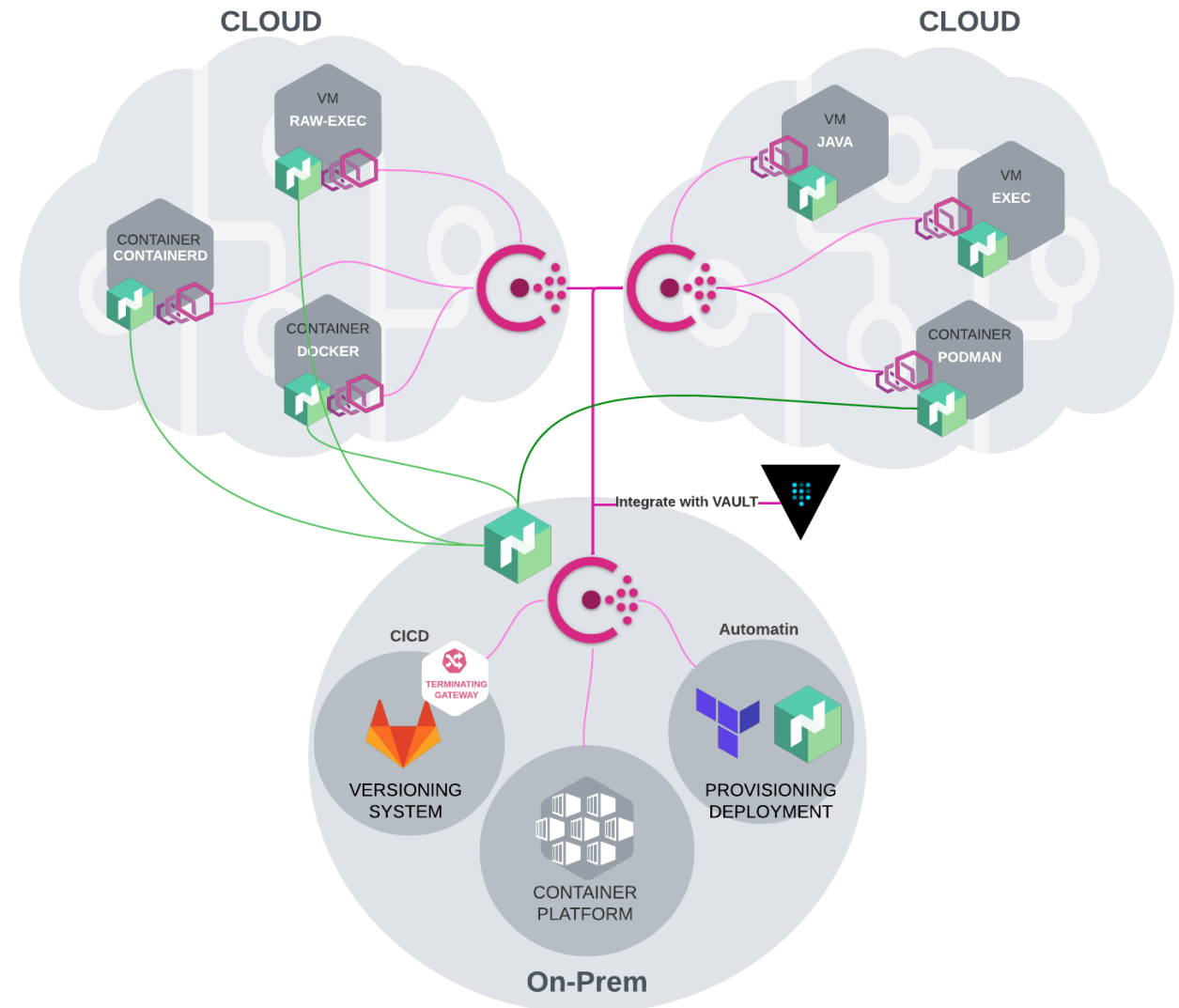


Nomad as a flexible orchestration platform

If any of your answers to questions before is „**Yes**“...

Nomad as a flexible orchestration platform

- **Deploy** over heterogeneous environments
- **Scale** your application
- **Use** deployment strategy to zero downtime deployment
- **Health care** and monitor your application
- **Prepare** declarative generic manifests to deploy easy way
- **Choose** between many Task Drivers and run your application in the proper runtime context
- **Deploy** middleware applications
- **Use** GitLab directly as an artefact source



HashiCorp tools ecosystems

- **Do you build** Images for your VM and containers?
- **Do you want:**
 - your infrastructure provisioning to Cloud?
 - to integrate „legacy“ and container world?
 - to secure the communication between workload and middleware?
- **Do you develop** locally for/on your images on your own?
- **Do you orchestrate** your deployments over small/large infrastructure?

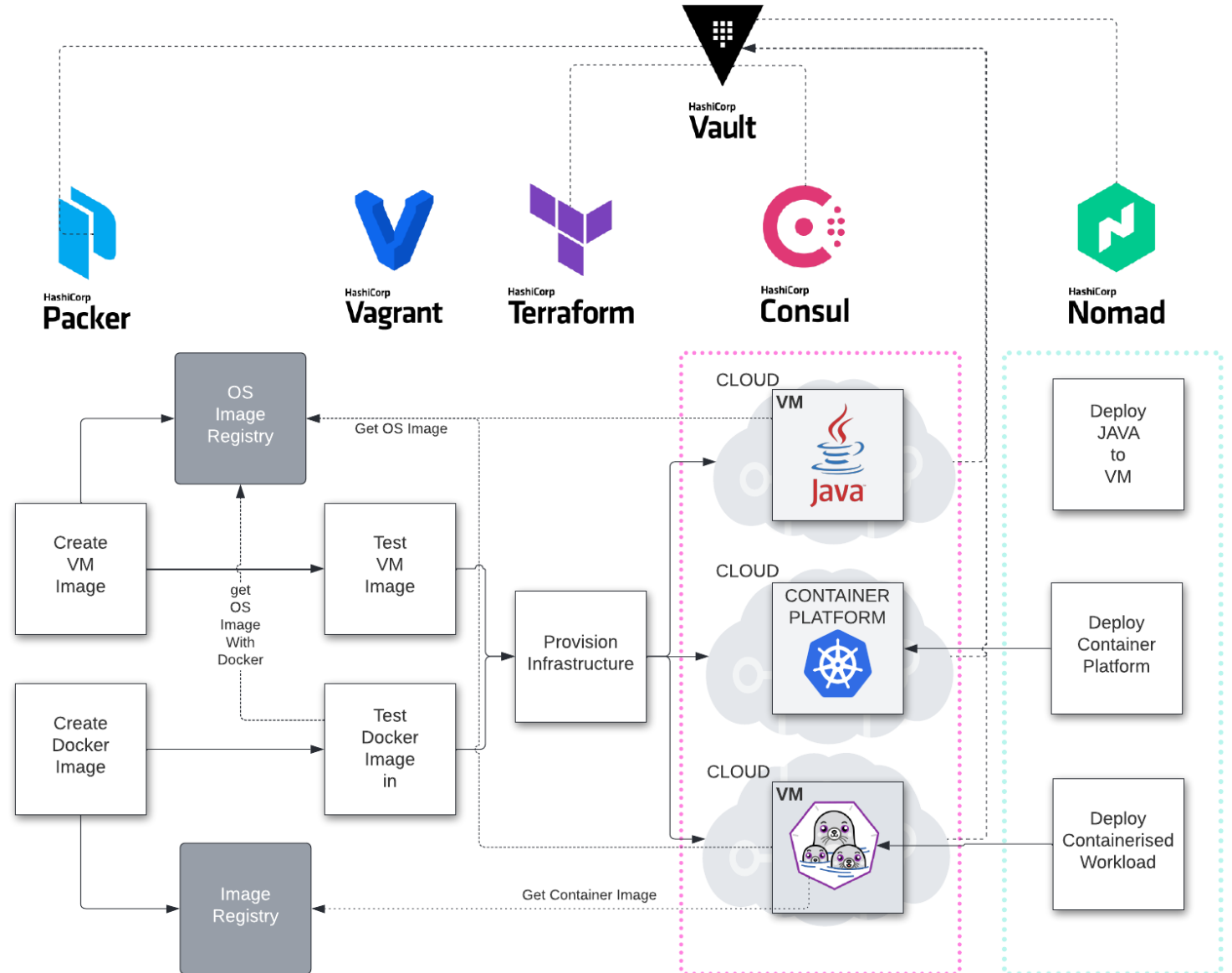


HashiCorp tools ecosystems

If any of your answers to questions before is „**Yes**“...

HashiCorp tools ecosystems

- **Build**
 - Container Image
 - VM Image
- **Locally run, test, develop:**
 - in VM Image
 - In VM Image with Docker
- **Provision** Infrastructure on
 - Google Cloud
 - AZURE Cloud
 - Open-Stack
 - ...
- **Deploy and orchestrate accross**
 - On-Prem
 - Public Cloud
- **Integrate** all together in Service Mesh
- **Secure** all with Vault





Zero Trust Security

Trust Nothing.
Authenticate and Authorize Everything.

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splunk

EQUIFAX

Loblaw Companies Limited

YOOX NET-A-PORTER GROUP

Citizens Financial Group, Inc.

CRUISE

BLACKROCK

athenahealth

CITADEL

ABN-AMRO

mailchimp



AirPlus INTERNATIONAL

TOKYO GAS

pandora

ripple

vsp

AMERICAN FAMILY INSURANCE



GlaxoSmithKline

ampleorganics

RICHEMONT

Adobe

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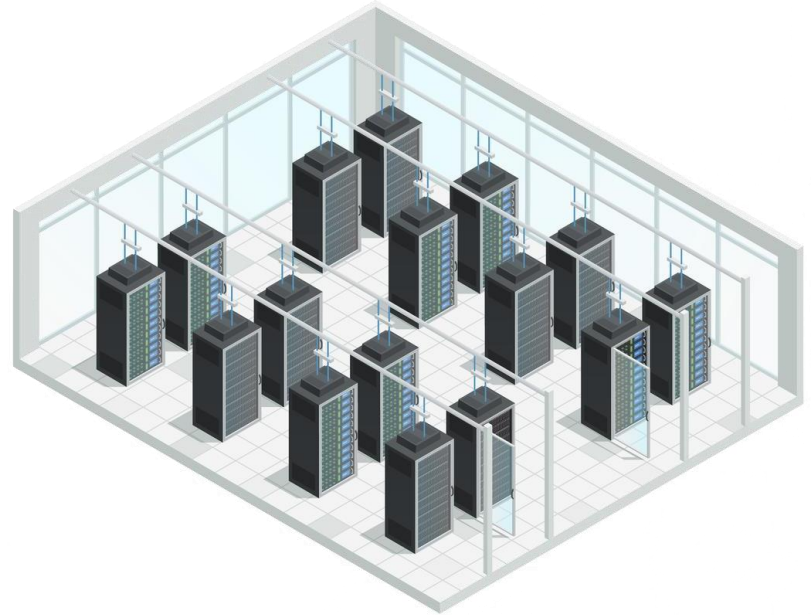


Implications of Digital Transformation

Securing a datacenter was easy...

- All unauthorized traffic or access could be restricted/blocked
- Networks were trusted and apps and databases can interconnect with ease
- Four walls and trusted network protected secrets and sensitive information

But what happens when your apps and infrastructure extend to the multiple datacenters, cloud, or all the above?



The effects of digital transformation



TRADITIONAL DATACENTER

"STATIC"



DEDICATED INFRASTRUCTURE



MODERN DATACENTER

"DYNAMIC"



PRIVATE CLOUD

+



AWS

+



AZURE

+



GCP

+



...

SYSTEMS OF RECORD



SYSTEMS OF ENGAGEMENT

The migration to cloud



Traditional Datacenter

Static

- Networks, Firewalls
- IP-based perimeter and security
- HSMs, SIEM software
- Physical access and restrictions

Modern Datacenter

Dynamic

- Dynamic access and networking
- Identity-based security
- Software defined access and controls

Multi-cloud security in a “Zero Trust” world



IDENTITY-DRIVEN CONTROLS

**Machine Authentication
& Authorization**

**Machine-to-
Machine Access**

**Human-to-
Machine Access**

**Human Authentication &
Authorization**

Multi-cloud security in a “Zero Trust” world



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Vault



Provides the foundation for cloud security that leverages trusted sources of identity to keep secrets and application data secure in the cloud operating model

- ✔ **Secrets management** to centrally store and protect secrets across clouds and applications
- ✔ **Data encryption** to keep application data secure across environments and workloads
- ✔ **Advanced Data Protection** to secure workloads and data across traditional systems, clouds, and infrastructure.



2T+

Transactions



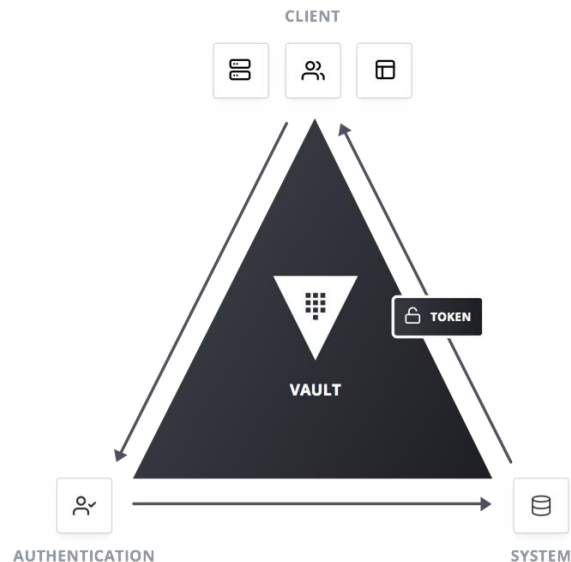
1M+

Monthly D/Ls



475+

Enterprise
Customers



Trusted by:



Multi-cloud security in a “Zero Trust” world



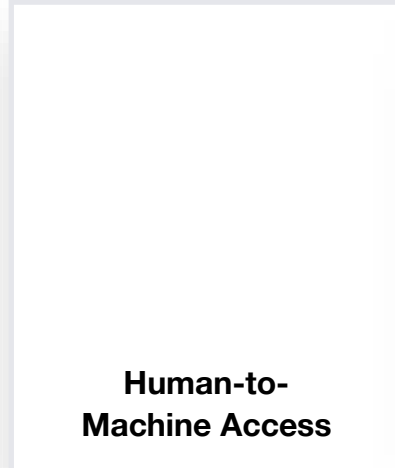
IDENTITY-DRIVEN CONTROLS



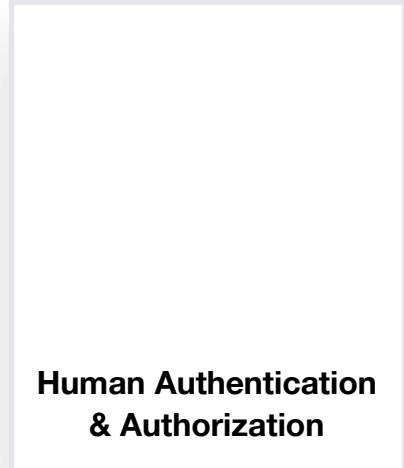
**Machine Authentication
& Authorization**



**Machine-to-
Machine Access**



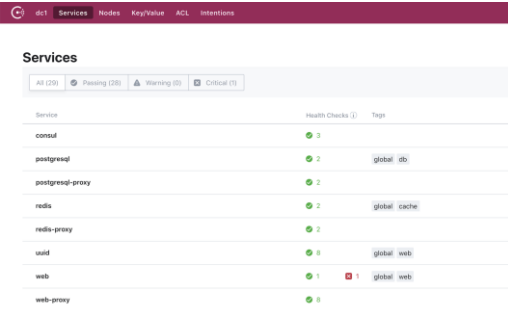
**Human-to-
Machine Access**



**Human Authentication
& Authorization**

What is Consul

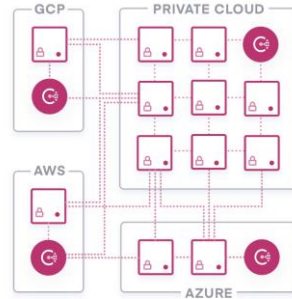
Service Discovery & Health Monitoring



Service	Health Checks (1)	Type
consul	3	
postgres	2	global db
postgres-proxy	2	
redis	2	global cache
redis-proxy	2	
uid	0	global web
web	1	global web
web-proxy	0	

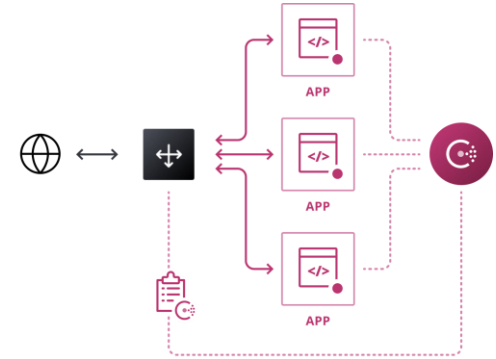
Real-time network location and health status of all applications, across legacy and ephemeral services

Multi-Platform Service Mesh



Secure service-to-service traffic with Mutual-TLS and enable progressive application delivery practices.

Network Infrastructure Automation



Accelerate application delivery by automating networking related tasks.

Multi-cloud security in a “Zero Trust” world



IDENTITY-DRIVEN CONTROLS



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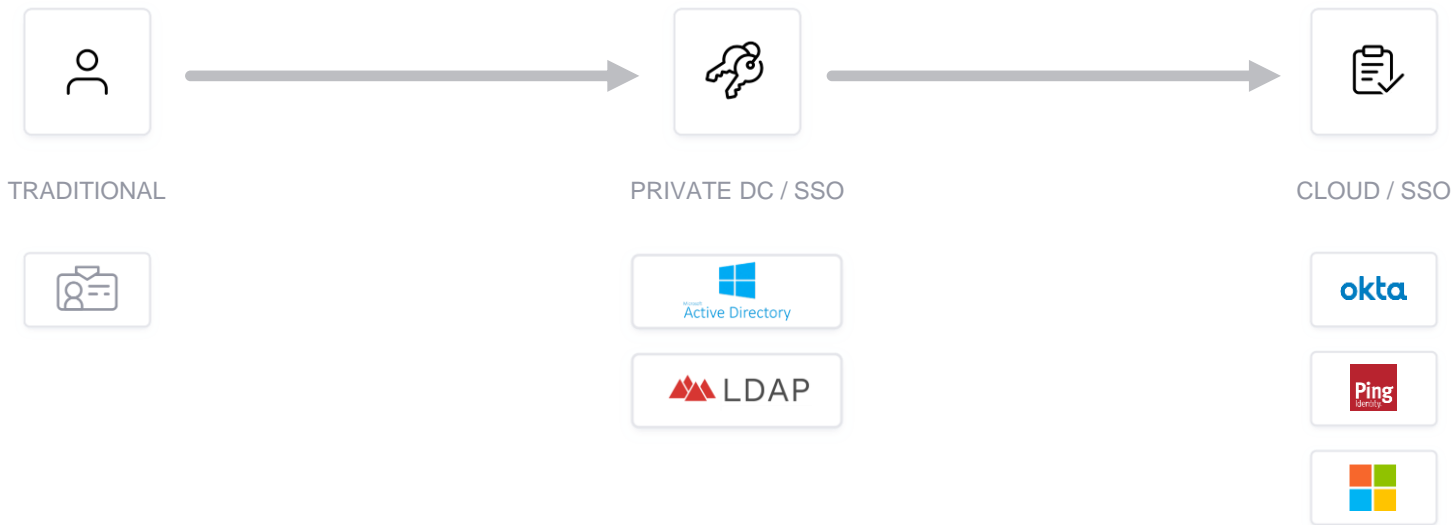


**Machine-to-
Machine Access**

**Human-to-
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**Human Authentication
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Establishing user identity



Multi-cloud security in a “Zero Trust” world



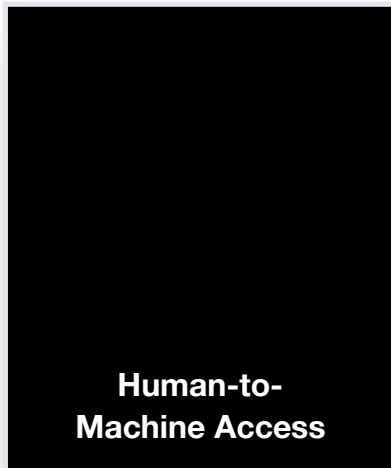
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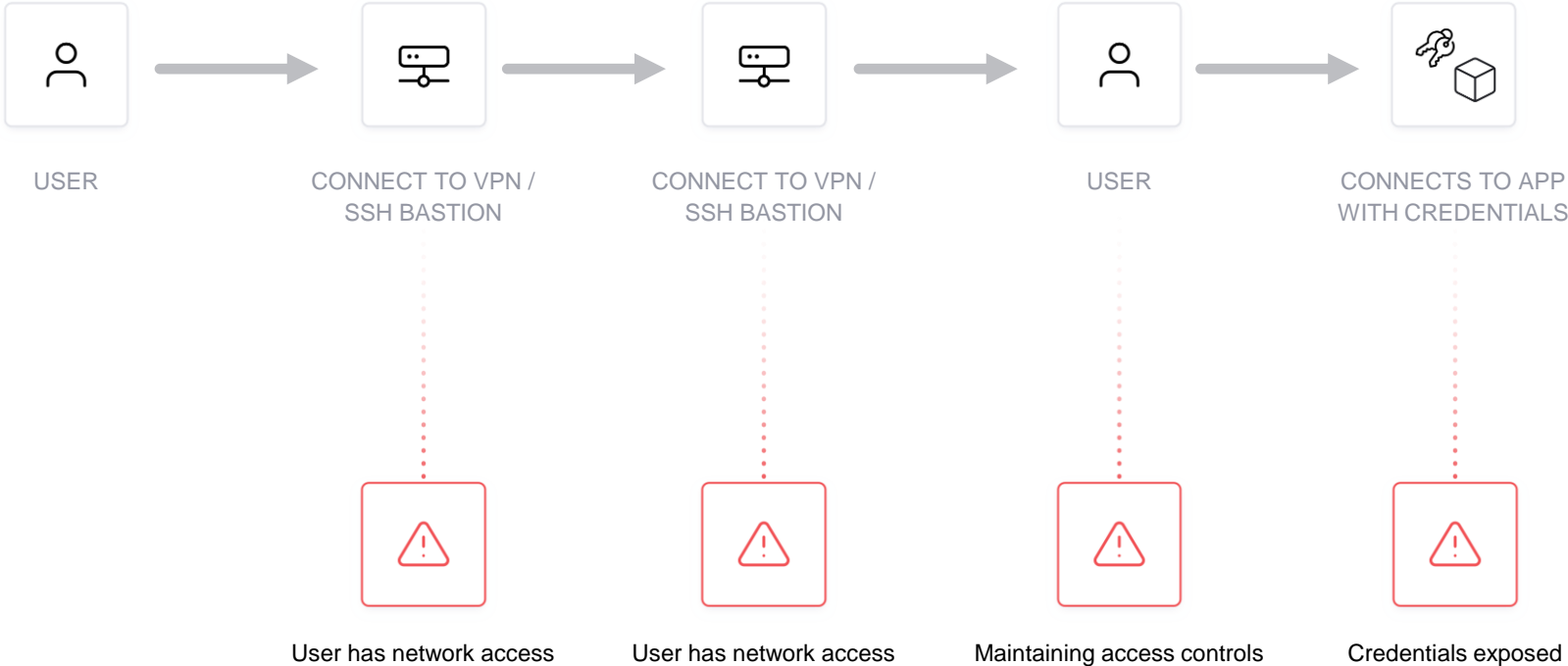


**Human-to-
Machine Access**

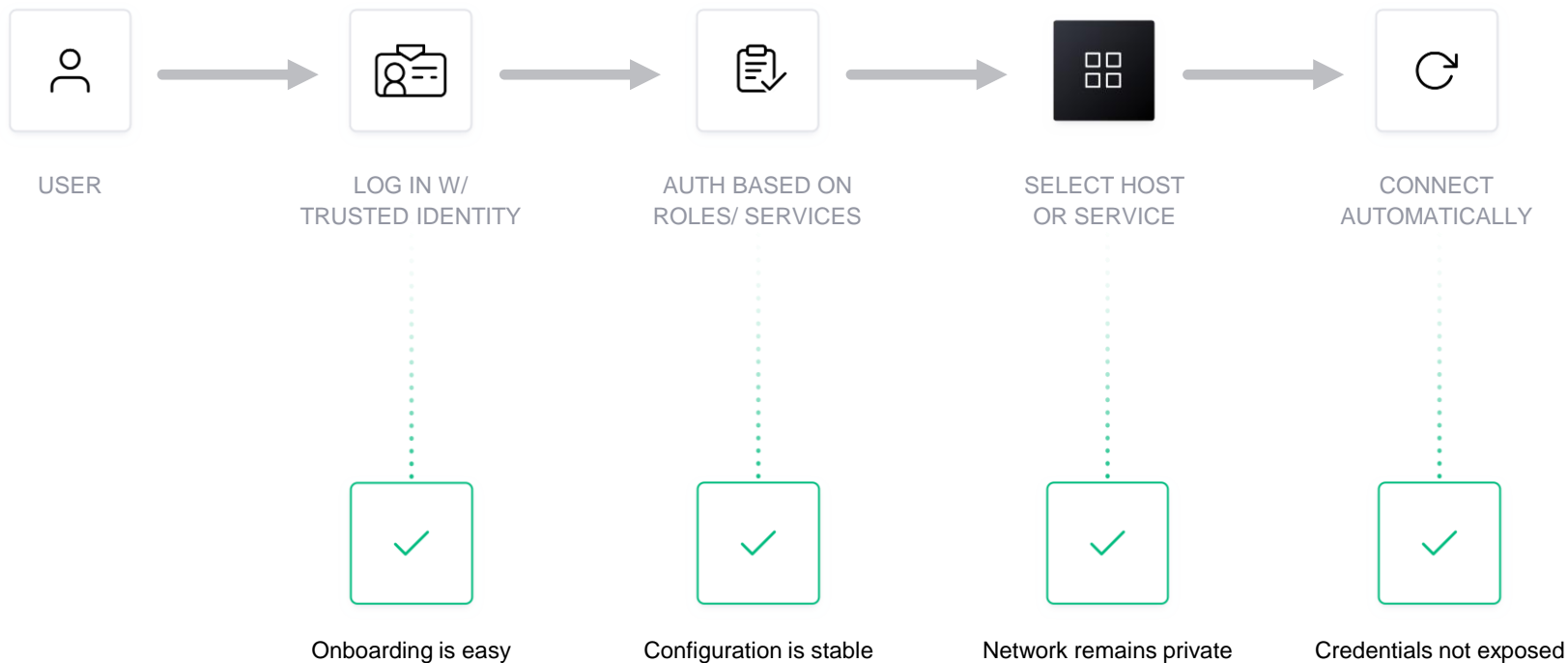


**Human Authentication
& Authorization**

Traditional workflow for access

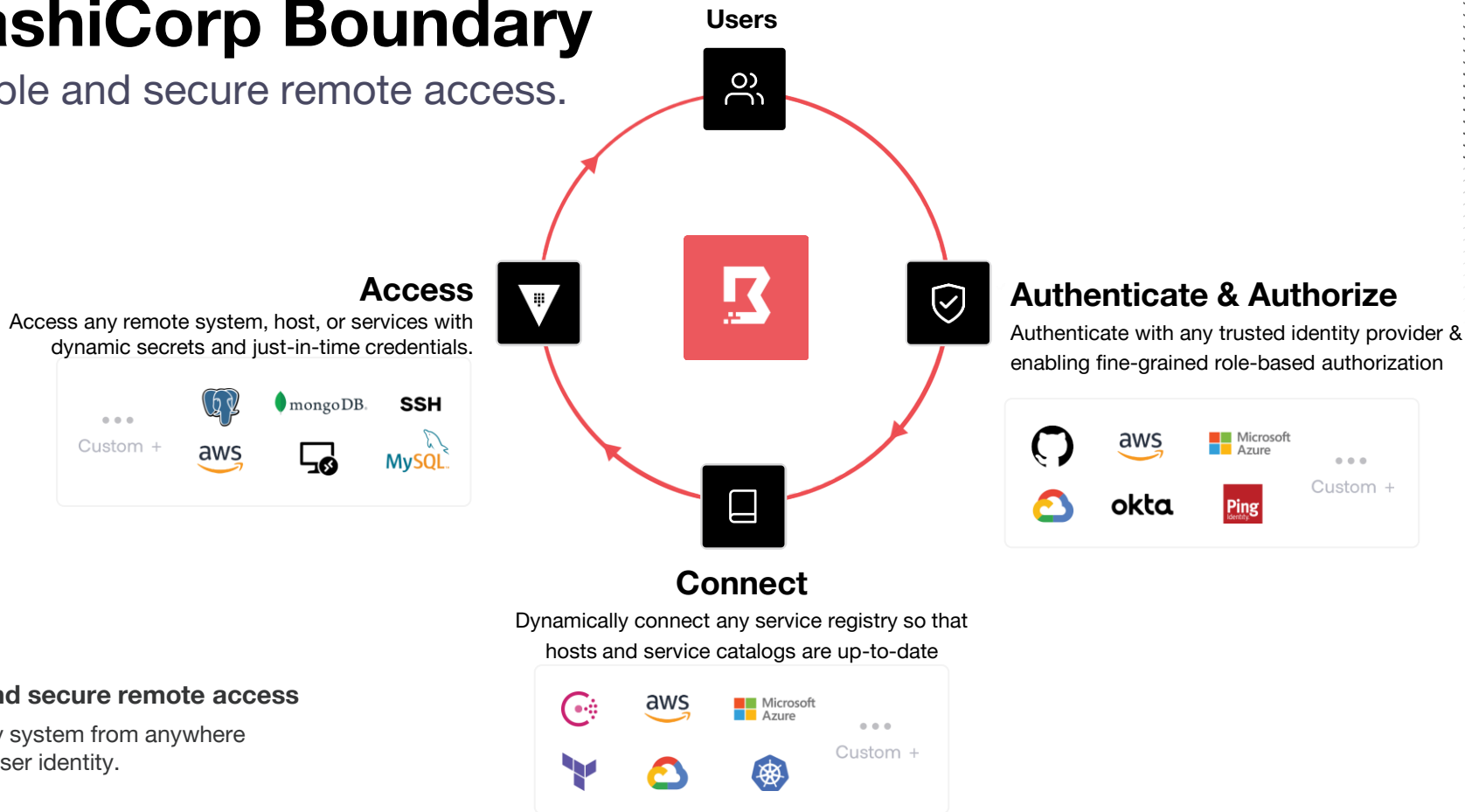


Dynamic workflow for access



HashiCorp Boundary

Simple and secure remote access.



Multi-cloud security in a “Zero Trust” world



IDENTITY-DRIVEN CONTROLS



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**Machine-to-
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HashiConf Europe

20-22 June 2022 (CEST)
Amsterdam & Virtual

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[Recap HashiConf 2019](#)



Thank you



hello@hashicorp.com

www.hashicorp.com