

## Connect

Virtual Application Network: interconnettere applicazioni e servizi in ambienti ibridi

*Abilitare e semplificare l'interazione tra applicazioni e servizi distribuiti su infrastrutture eterogenee con Red Hat Service Interconnect*

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# Organizations today rely on Distributed Applications

Each application resides in different environments



# Applications reside in a diverse mix of environments

Either On-Premises, in the Public Cloud, or at the Edge



## Multiple versions

OpenShift 4.x,  
ARO, ROSA



## Other Kubernetes Offerings

Kubernetes from hypervisors  
(AWS EKS, AzurAKE, EKE)  
Vanilla Kubernetes



## Bare metal and VMs

Variety of bare metal and VM  
environments running existing  
existing services



## Legacy Systems

Old unixes, Mainframes



# Drivers for Hybrid Cloud

## Security & Compliance

Regional regulations, internal company wide policy enforcement. Industry specific rules. National supervisory requirements.

## IT Agility

Choose right cloud for your workload. Keep options open. Better when cross-cloud resilience applied.

## Flexibility

Avoid vendor lock-in, deploy close to development center. Backup and contingency plan. Exit strategy. Optimize limited budgets.

## GeoLocation

Closer to business. Closer to Help-center establishment. Map workload. Expand geographical coverage.

## Data Gravity

Data close to where it's heavily used. Less ingress/egress traffic. Data Lake access offering choices.

## Better Solution Offerings

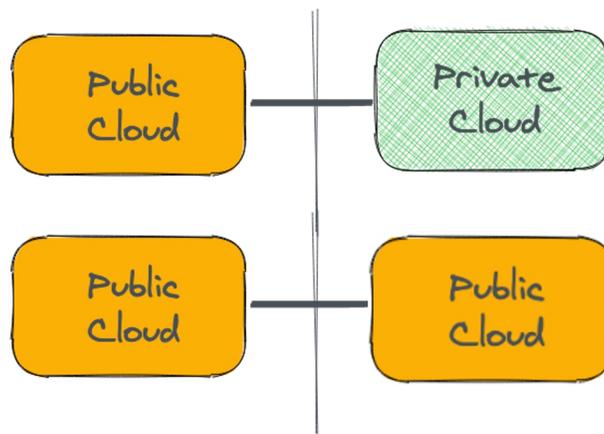
Cloud vendors offer better service on certain areas.

Distributed applications across the hybrid cloud are artificially converted into independent applications because of topology restrictions

## Connectivity Challenges

Distributed applications need connectivity

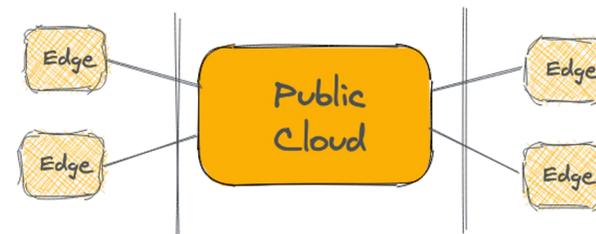
Hybrid Cloud Connectivity



### Hybrid Cloud Connectivity

Services running on the cloud need to access on premise resources

Edge-to-Edge Connectivity



### Edge-to-edge Connectivity

Traffic between edge applications needs to access other edge sites

## Connectivity Options/Choices



### Public IP Networks

- No network isolation
- No connectivity to sites behind NAT or Firewalls
- Each IP is a co\$t



### Set up your own VPN network

- Network isolation
- Complexity (iptables and firewall rules)
- Hub-n-spoke topology
- Requires administrator privileges



### Larger Provider Networks (Eg: Azure/AWS PrivateLink)

- Network isolation
- Vendor lock in
- Requires cluster privileges
- Each connection is a co\$t

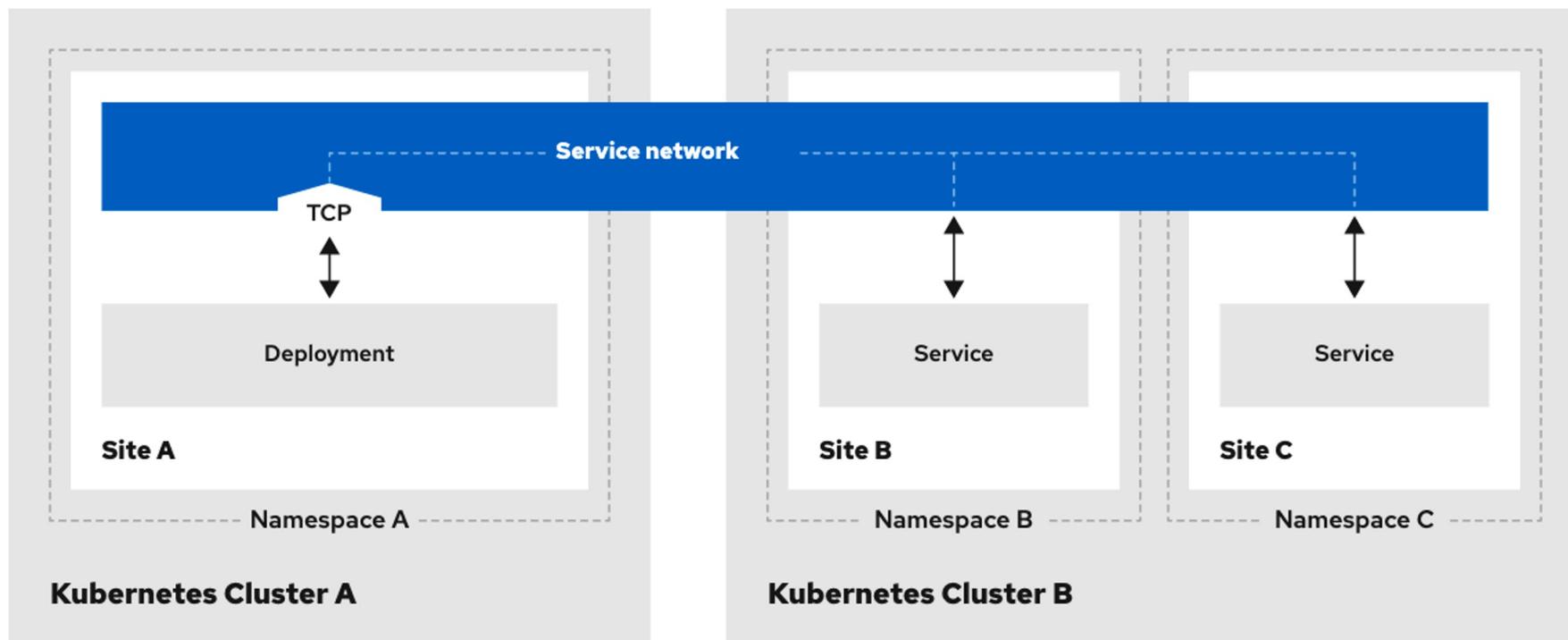


### Overlay Network (VAN)

- Fine-grained network isolation
- Low complexity
- Developer controlled
- Very low cost for additional resource

# Application Connectivity

Using Red Hat Service Interconnect to create a service network



# Red Hat Service Interconnect

Powered by open source

## Apache Qpid™

**Apache Qpid** develops tools for AMQP 1.0 messaging under the Apache Foundation

**Apache Qpid Dispatch** is an AMQP 1.0 message router for wide-area messaging

**Started:** 2014  
**Releases:** 27  
**Committers:** 51

[qpid.apache.org](http://qpid.apache.org)  
[github.com/apache/qpid-dispatch](https://github.com/apache/qpid-dispatch)

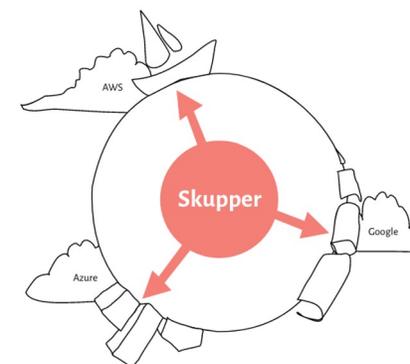


**Skupper** is a cloud service interconnect. It enables secure communication across clusters.

Skupper uses Apache Qpid Dispatch for its communication backbone

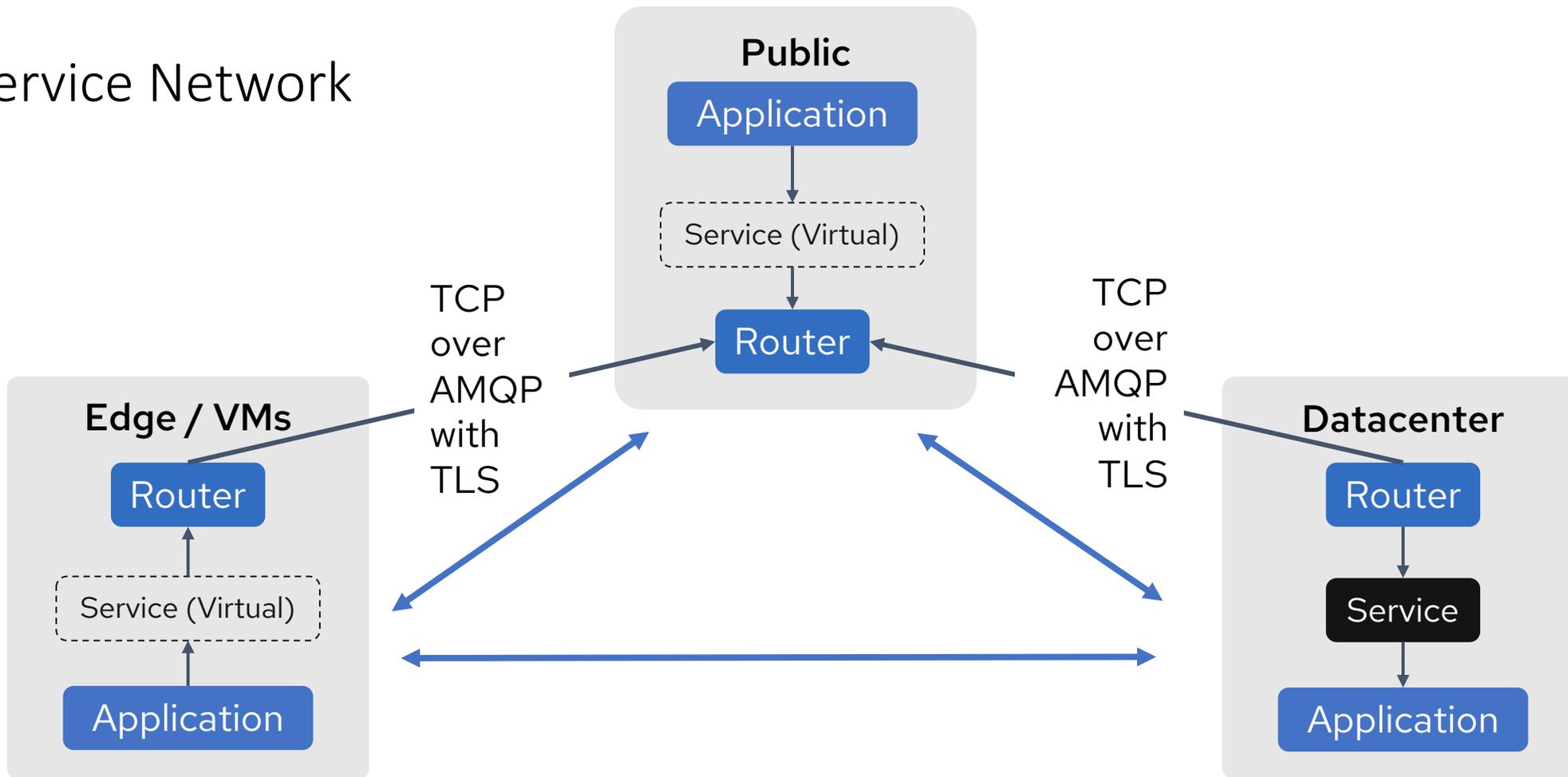
**Started:** June 2019  
**Releases:** 13  
**Committers:** 17

[skupper.io](http://skupper.io)  
[github.com/skupperproject](https://github.com/skupperproject)



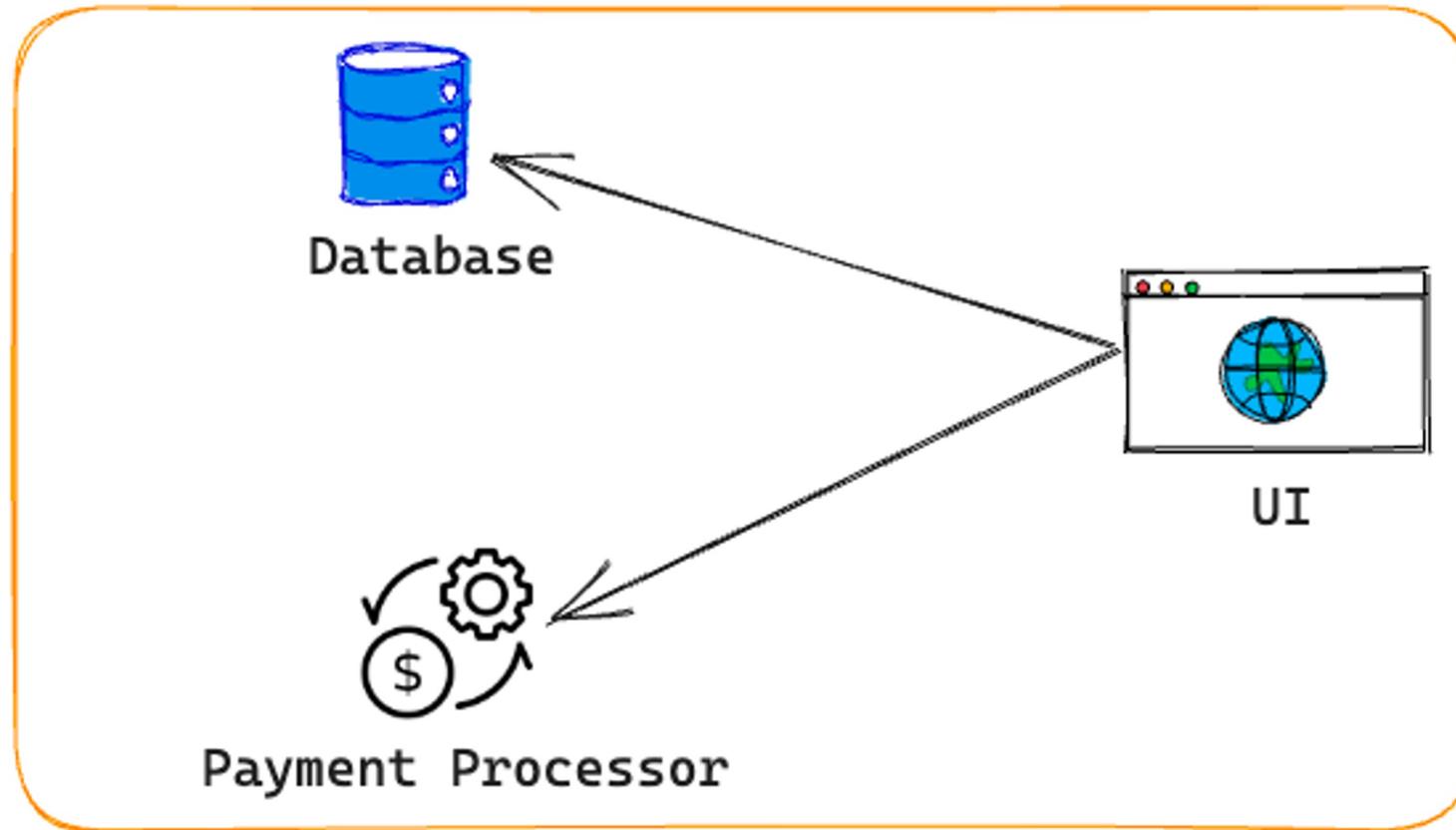
→ Connection Direction  
→ Data Flow Direction

# Service Network



# Demo Scenario

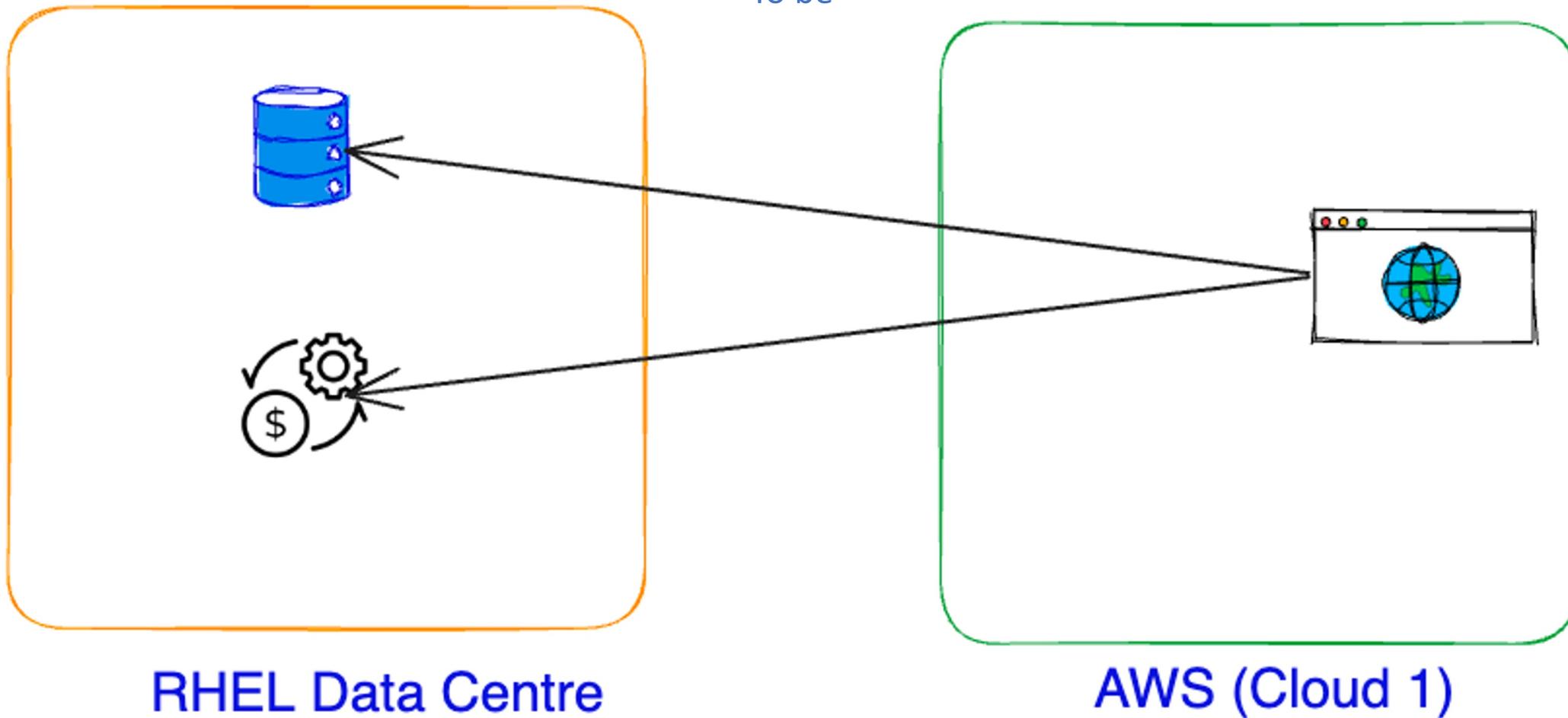
As-is



**RHEL Data Centre**

# Demo Scenario

To be





# Red Hat Service Interconnect

Simple and secure application connectivity across platforms, clusters, and clouds



## Application Focused Integration

Individual Apps running on virtually any platform can make native TCP calls locally to any other app running on any other platform securely without special VPNs.



## Mutual TLS Encryption

Interconnections use Mutual TLS in order to prevent unauthorized interconnections.



## Application Layer Abstraction

Agnostic of the environment and IP versions (such as IPv4 and IPv6) Enables portability for both applications and its associated networking. Migrations can be easily done without recreating the networking.



## Layer 7 Addressing

Instead of routing IP packets between network endpoints, Layer 7 application routers route messages between application addresses

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Thank you



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