

Red Hat  
**Summit**

**Connect**

# Simplifying App Connectivity

In Open Hybrid Cloud

Gökhan Göksu

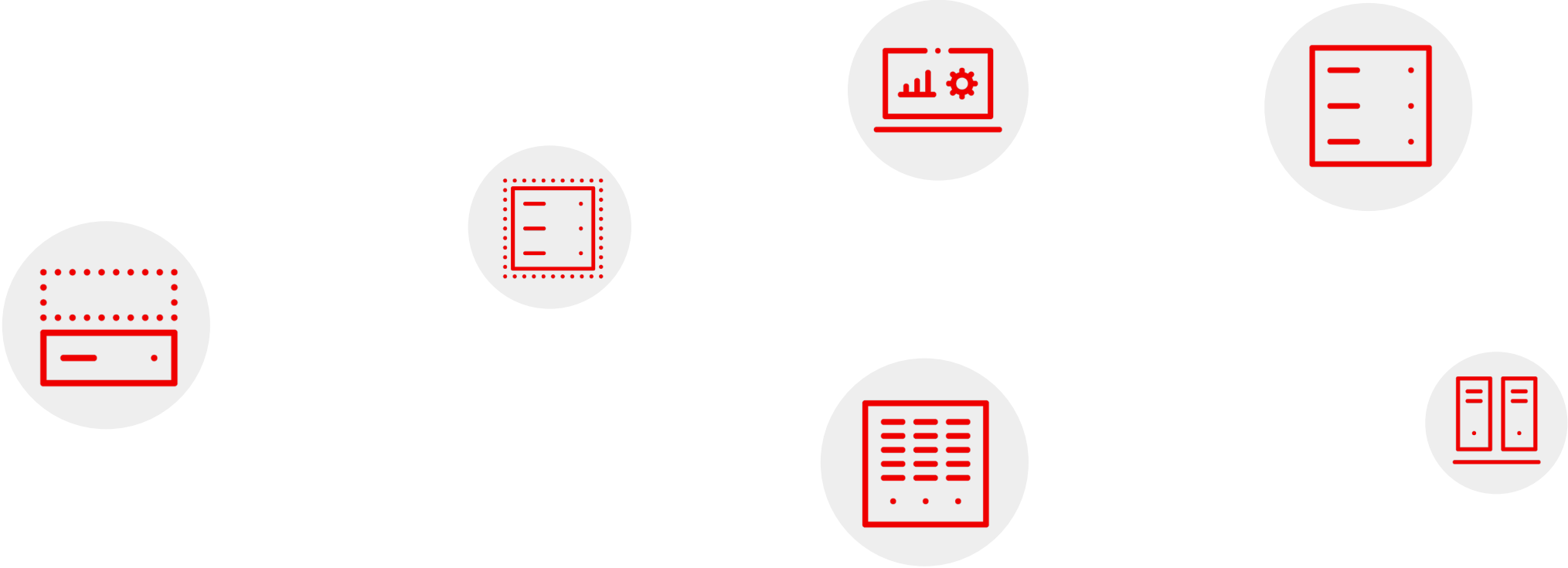
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# Organizations today rely on Distributed Applications

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



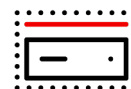
## Multiple versions of OpenShift

OpenShift 3.x, OpenShift 4.x,  
ARO, ROSA



## Other Kubernetes Offerings

Kubernetes from hyperscalers  
(Amazon EKS, Azure AKS,  
Google GKE) Vanilla  
Kubernetes



## Bare metal and VMs

Variety of bare metal and VM  
environments running existing  
existing services



## Legacy Systems

Old unixes, Mainframes

# Some elements in software are still not portable

Portability allows to decouple elements in software



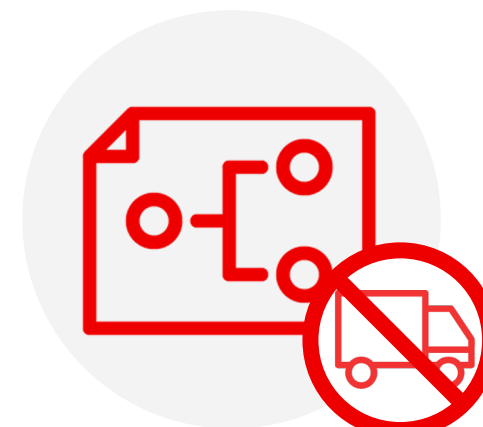
Containers  
turned computing  
**PORTABLE**

Containers enable to move applications from different environments effortlessly



Object Storage  
turned storage  
**PORTABLE**

Object Storage enable to move data stored from one location to another easily

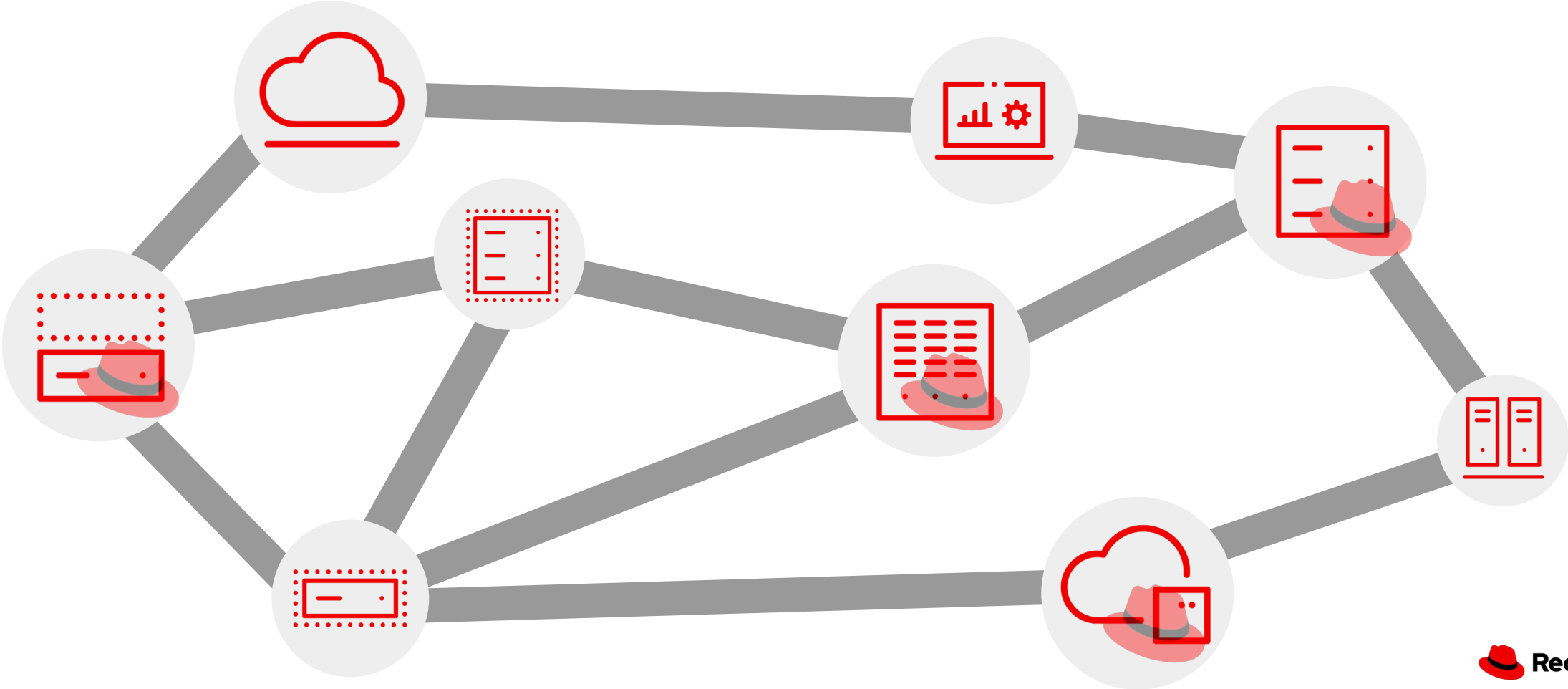


Networking is still  
**NOT PORTABLE**

Networking is still the only element in software that is still immutable. It requires a new configuration for a new environment

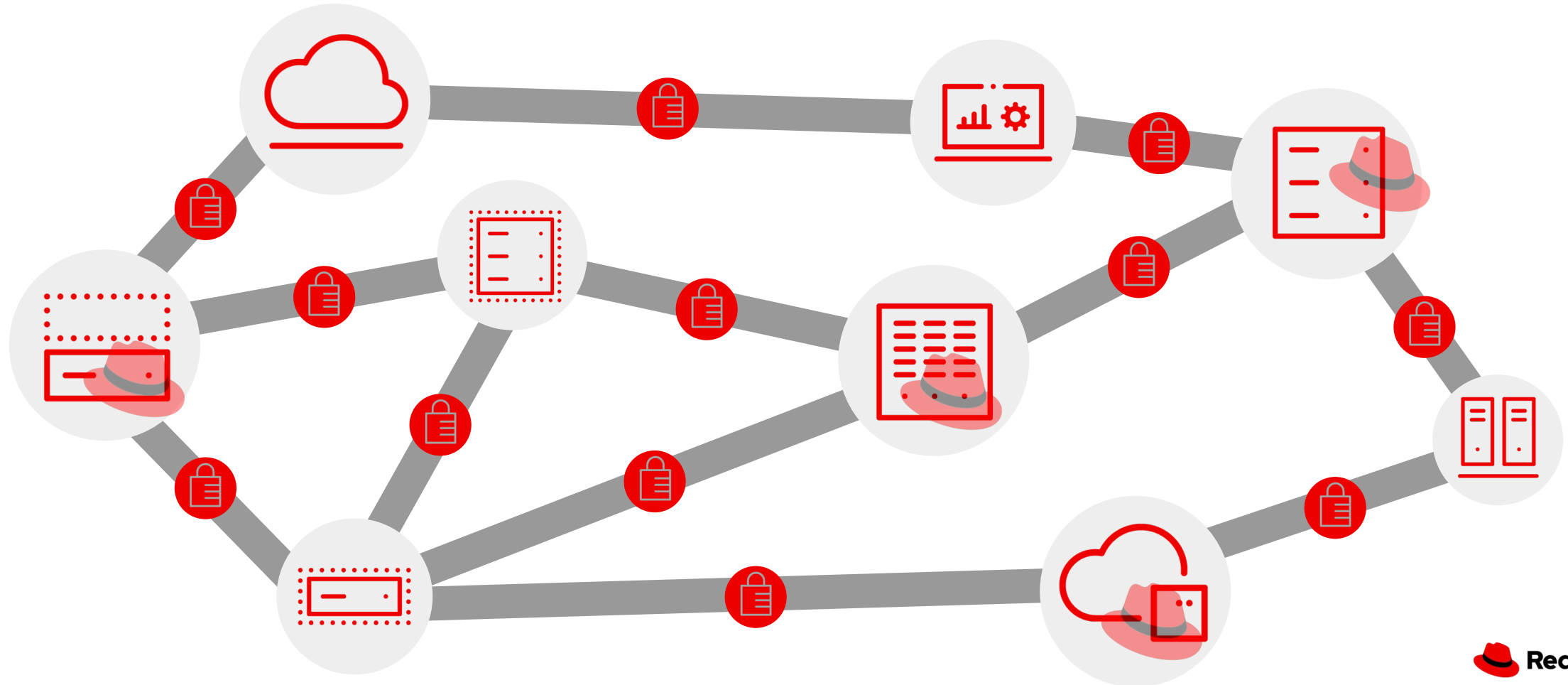
# Interconnectivity delivers value

Combining different capabilities helps organizations deliver products and services.



# Interconnections must be protected

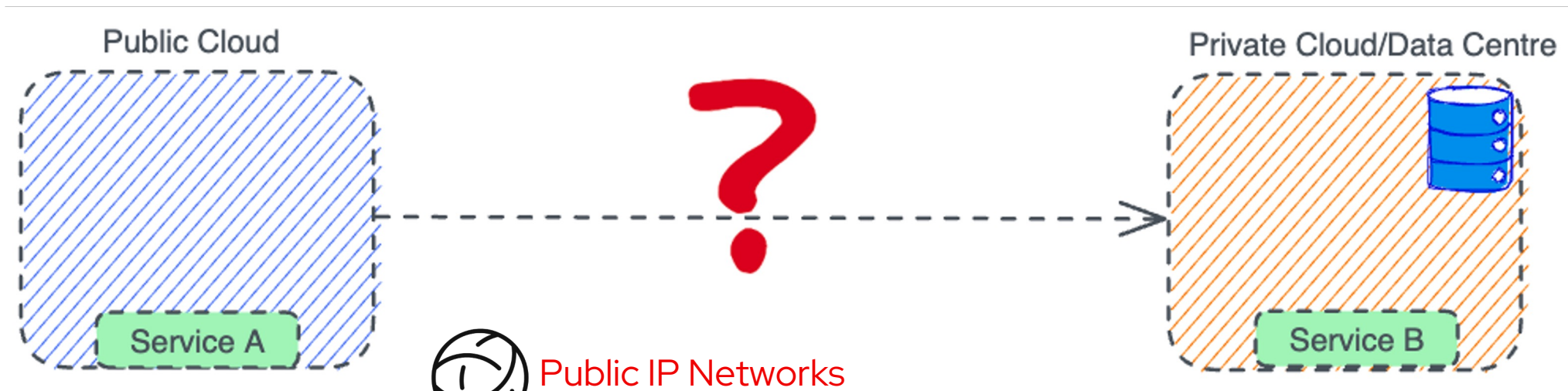
Interconnections should not compromise the infrastructure or data



# Connectivity Options/Choices



# Connectivity Options/Choices



Public IP Networks

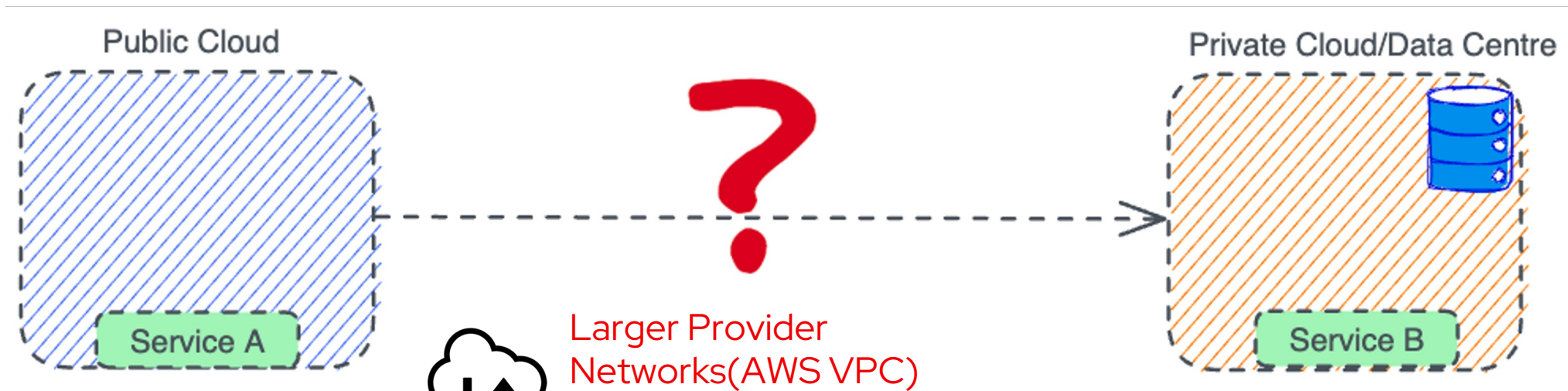
No network isolation

No connectivity to sites behind NAT or  
Firewalls

Each IP is a co\$t



# Connectivity Options/Choices



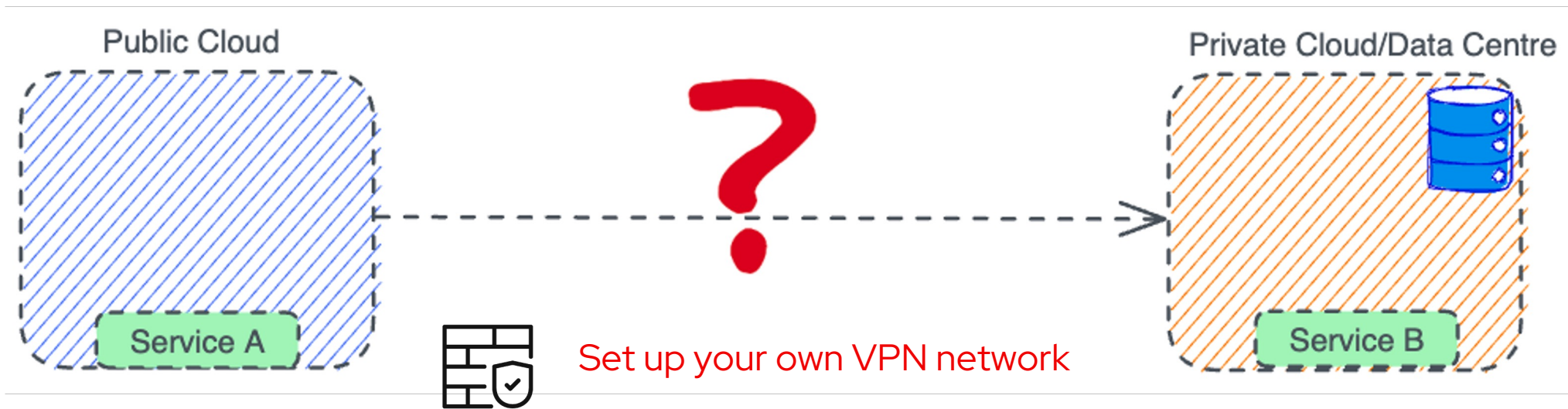
Network isolation

Vendor lock in

Requires cluster privileges

Each connection is a co\$t

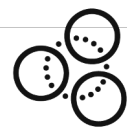
# Connectivity Options/Choices



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

# Connectivity Options/Choices

## Red Hat Service Interconnect

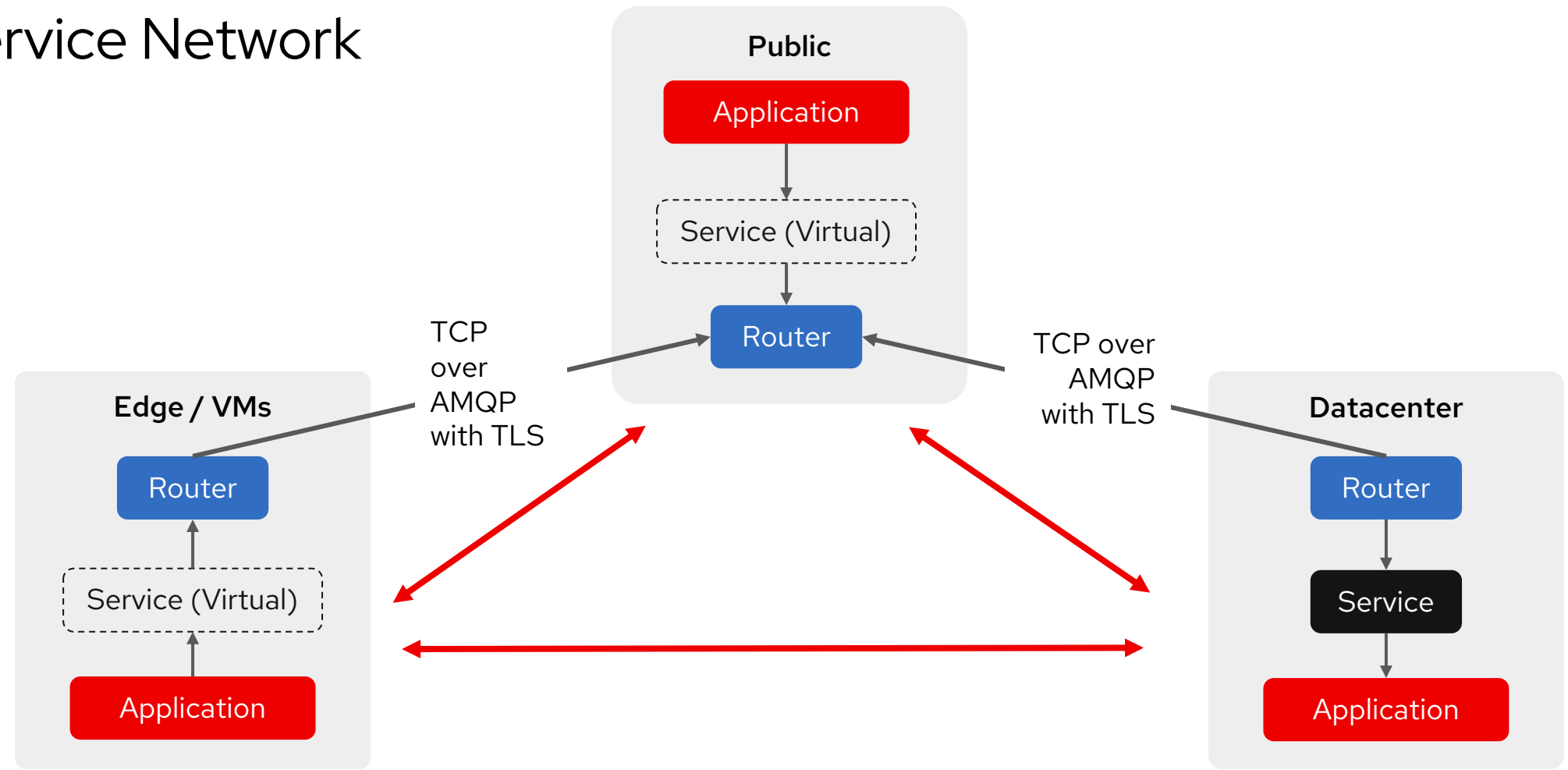


### Overlay Network (VAN)

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

→ Connection Direction  
→ Data Flow Direction

# Service Network



# Service Interconnect Operator

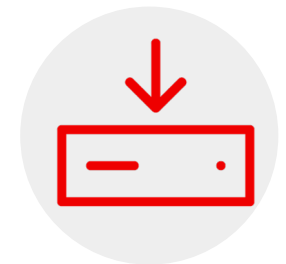
Supported on Red Hat OpenShift

The screenshot shows the OperatorHub interface for the Skupper operator. The page title is "Skupper 1.2.2 provided by Red Hat". There is an "Install" button. The "Latest version" is 1.2.2. The "Capability level" section has "Basic Install" and "Seamless Upgrades" selected. The "Source" is Red Hat. The "Provider" is Red Hat. The "Valid Subscriptions" is Red Hat Application Interconnect. The "Repository" is <https://github.com/skupperproject/skupper-operator>. The "Container Image" is `registry.redhat.io/application-interconnect/skupper-site-controller-rhel8@sha256:e6ee005b0090e2a9e931a5ce62e26fb53051d`. A code block shows the ConfigMap definition:

```
apiVersion: v1
kind: ConfigMap
metadata:
  name: skupper-site
```



**Simplified  
Deployment and  
Management**



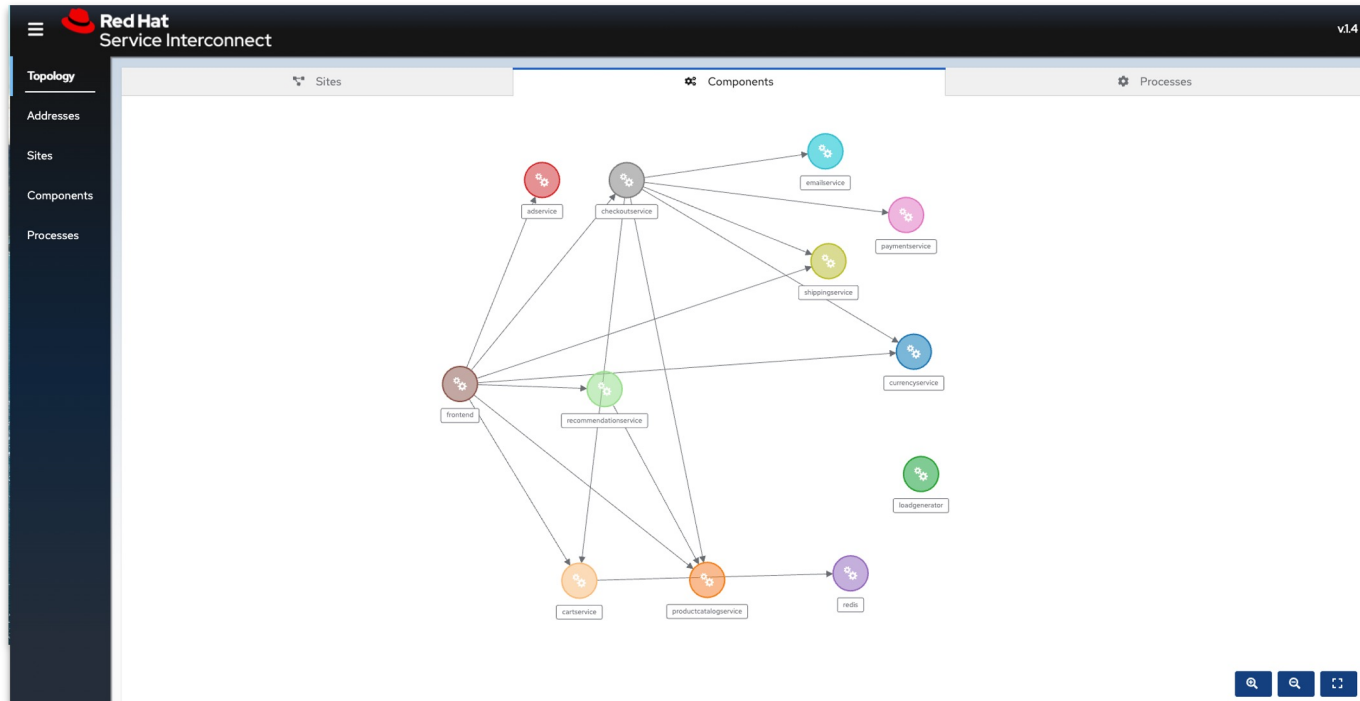
**Easy to install for  
the whole cluster**



**Configuration and  
tuning on Day #2**

# Console

Visualize your connections



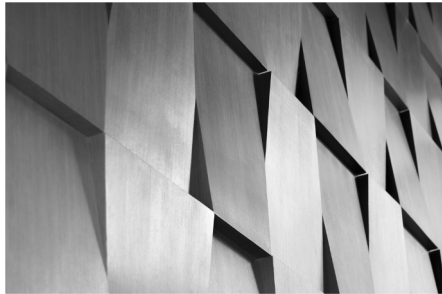
- **Topology:** Graphical representation of all the connections
- **Components:** Services that are exposed on the service network, both local and remote.
- **Sites:** Application Interconnect installations on the current service network.
- **Throughput Bytes:** Charts providing traffic related information





# 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

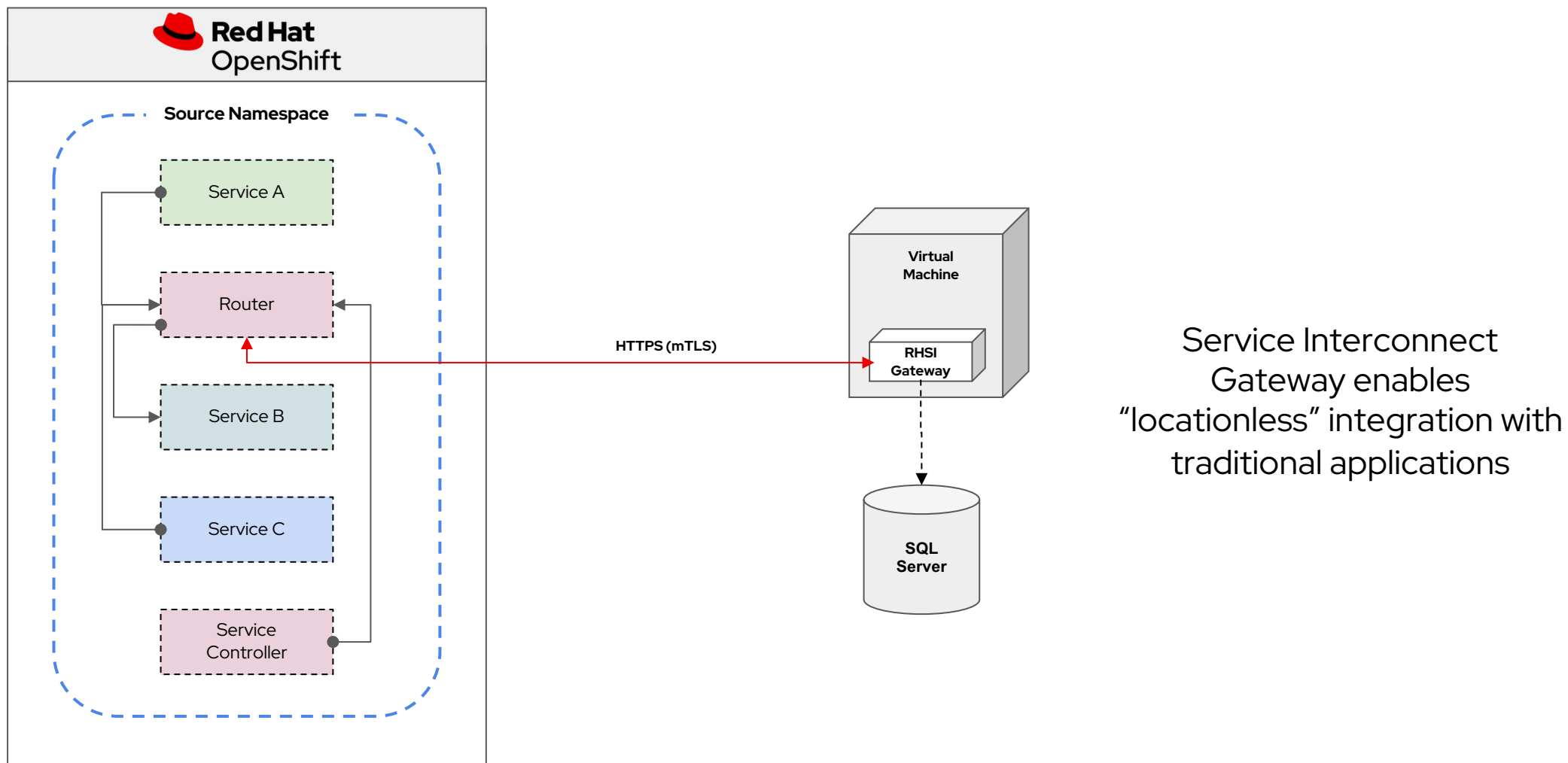
Interconnections use Mutual TLS in order to prevent unauthorized interconnections.



## 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.

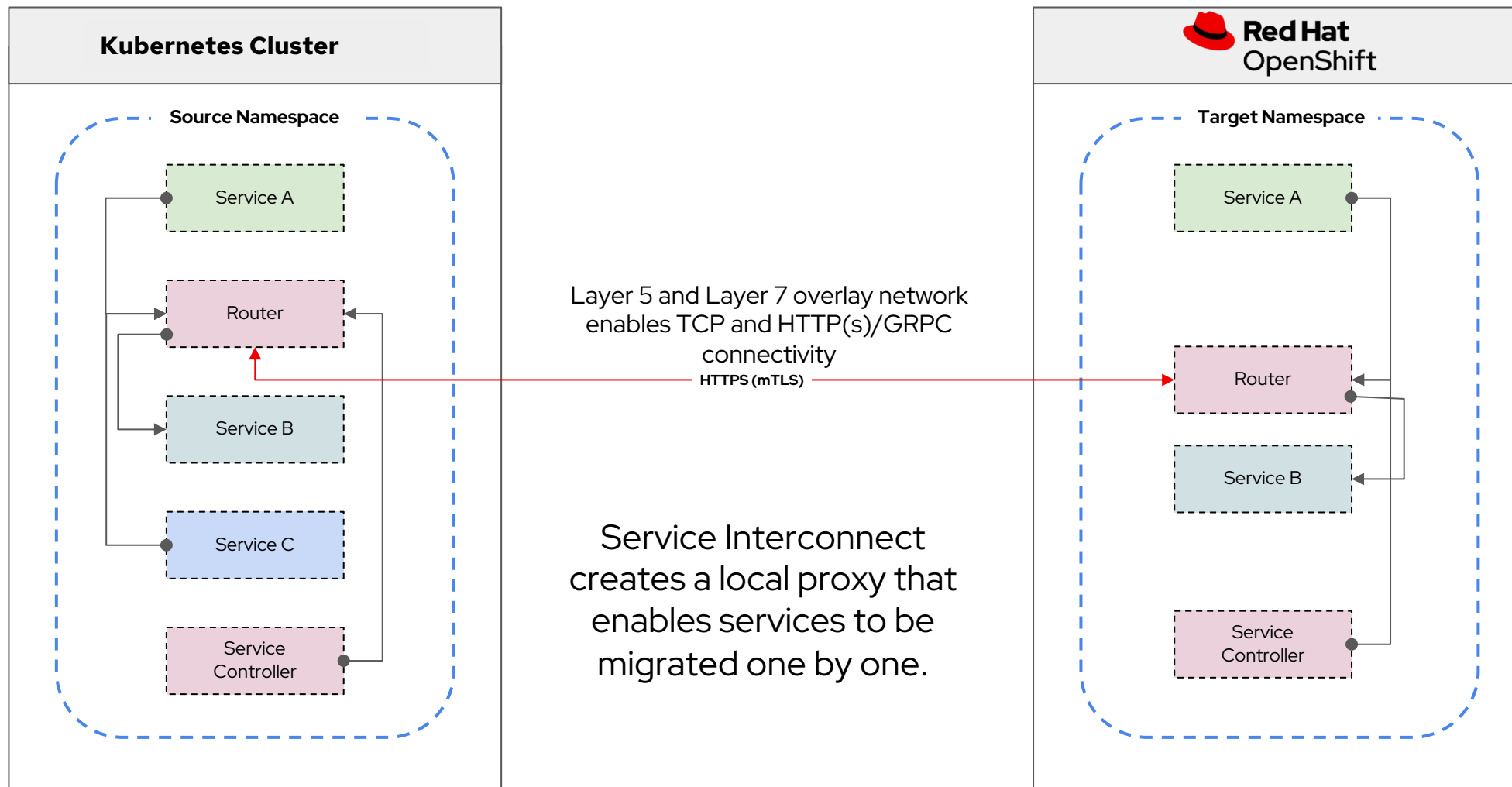
# Use Case: Integrate OpenShift with Traditional Applications & Infrastructure



Service Interconnect Gateway enables "locationless" integration with traditional applications

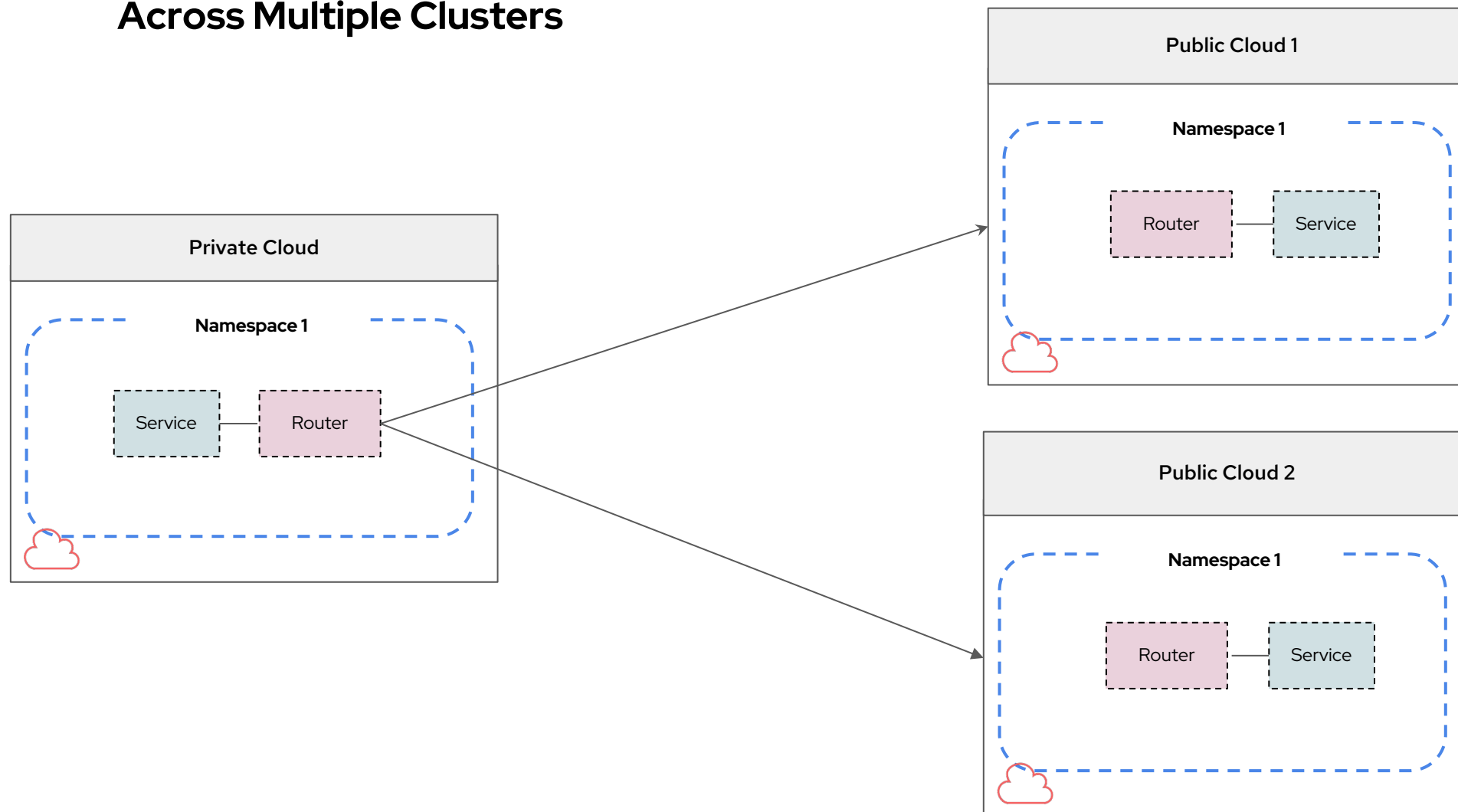


# Use Case : xKs to OpenShift

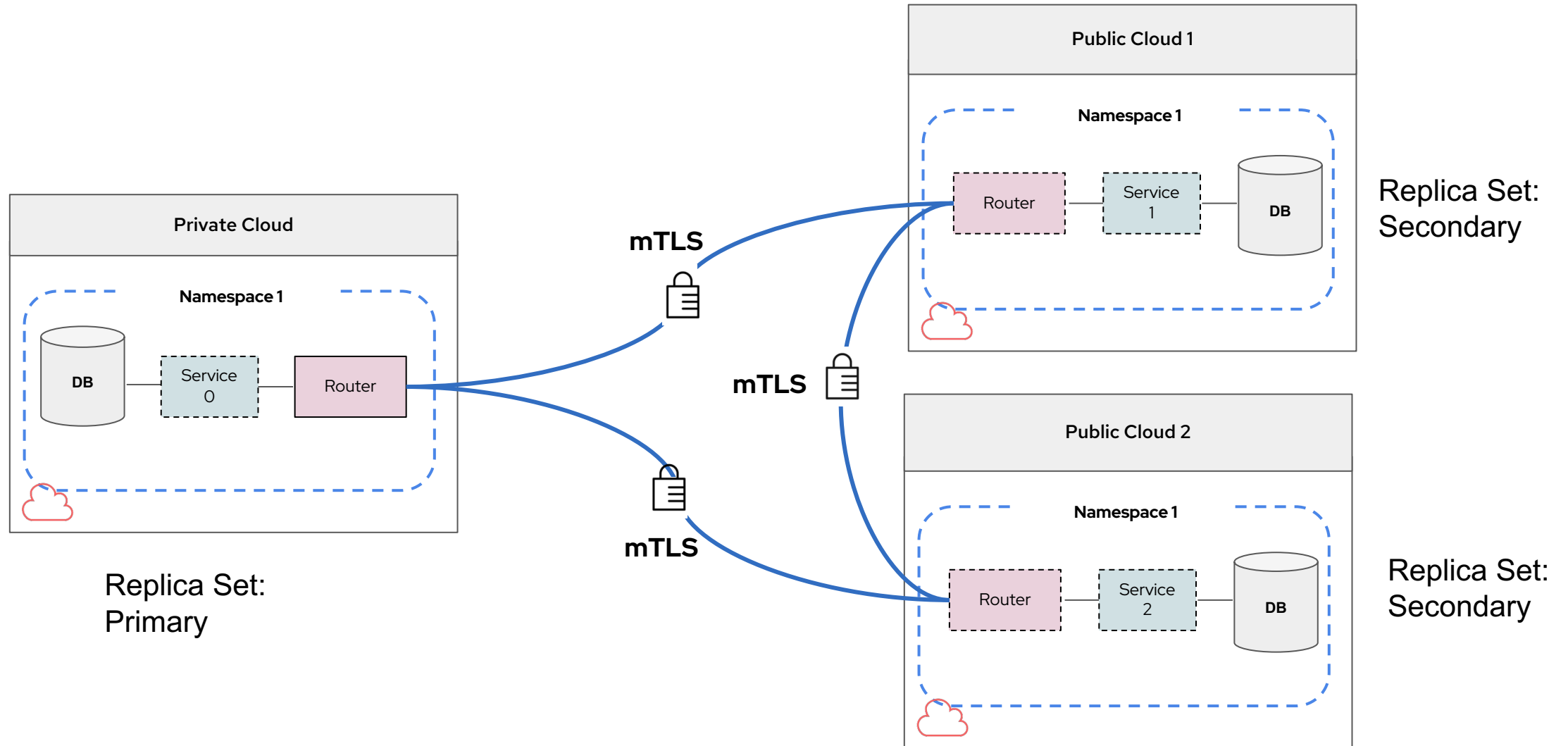


**Note:** This is a logical network flow. All RHSI network flows ride on top of already endorsed network flows and ingress/egress the cluster via routes on the RHSI Router.

## Use Case: High Availability of Services Across Multiple Clusters



# Use Case: Distributed Data Replication



Powered by open source

Apache Qpid™



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

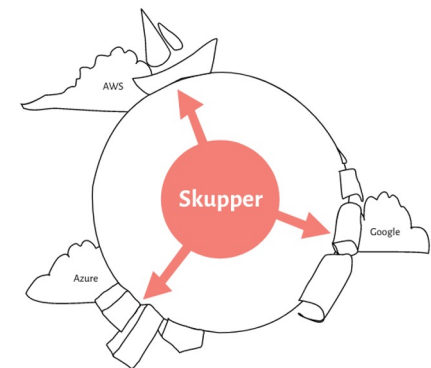
**Apache Qpid Dispatch** is an AMQP 1.0 message router for wide-area messaging

[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.

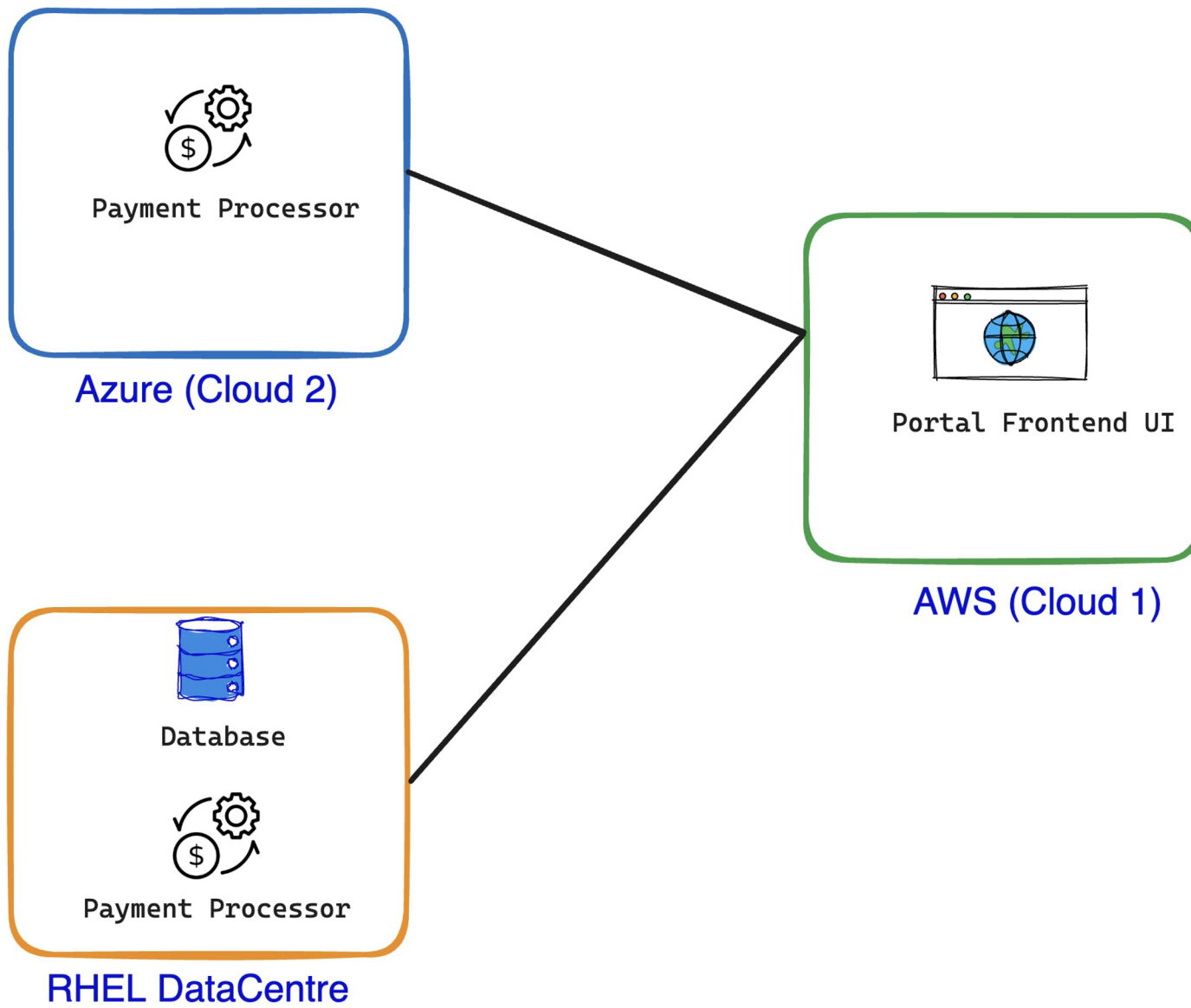
Skupper uses Apache Qpid Dispatch for its communication backbone

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



# Demo Time!





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Thank you



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