DYNAMIC TOPOLOGIES TO DELIVER MICRO SERVICES, MICRO BROKERS, AND MICRO FLOWS

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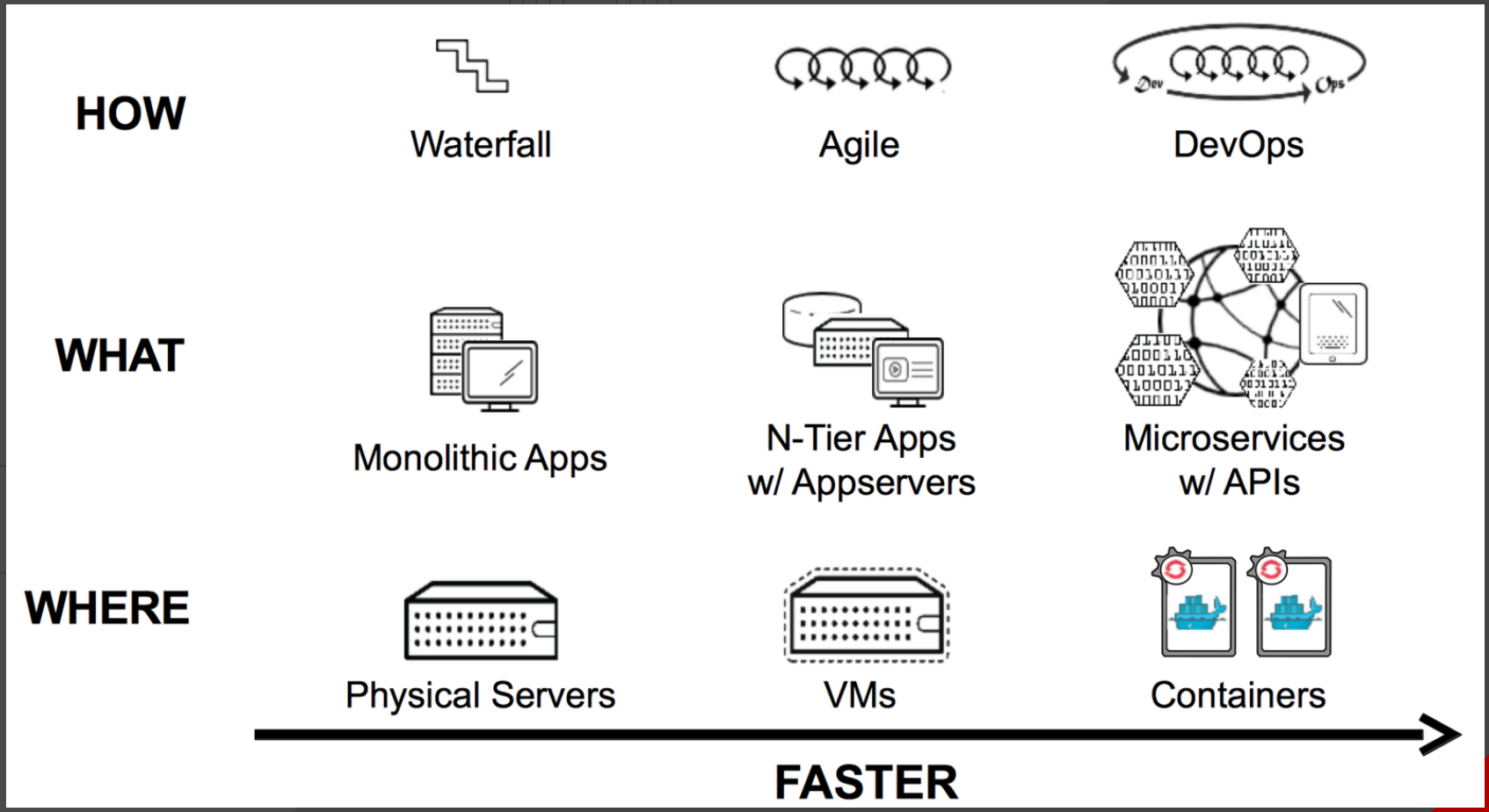
THE NEED FOR SPEED



MICROSERVICES ARCHITECTURE

AN ARCHITECTURAL PATTERN FOR DESIGNING APPLICATIONS AS

- a collection of capabilities, hosted in interesting ways
- designed to scale on demand with full location transparency
- capabilities organized around domains, namespaces and coordinates
- designed to discover and interact with integration endpoints and messaging systems
- identically provisioned, governed and managed using API's

TOPOLOGY BUILDING BLOCKS

MICROSERVICE

A fine-grained capability, containing everything from

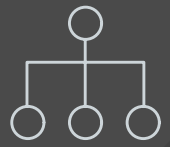
- *runtime and dependencies* *[JBoss Fuse]*
- *platform or framework* *[J2SE/JRE]*
- *software container* *[Docker, OpenShift]*

packaged as one unit of execution

MICROBROKER

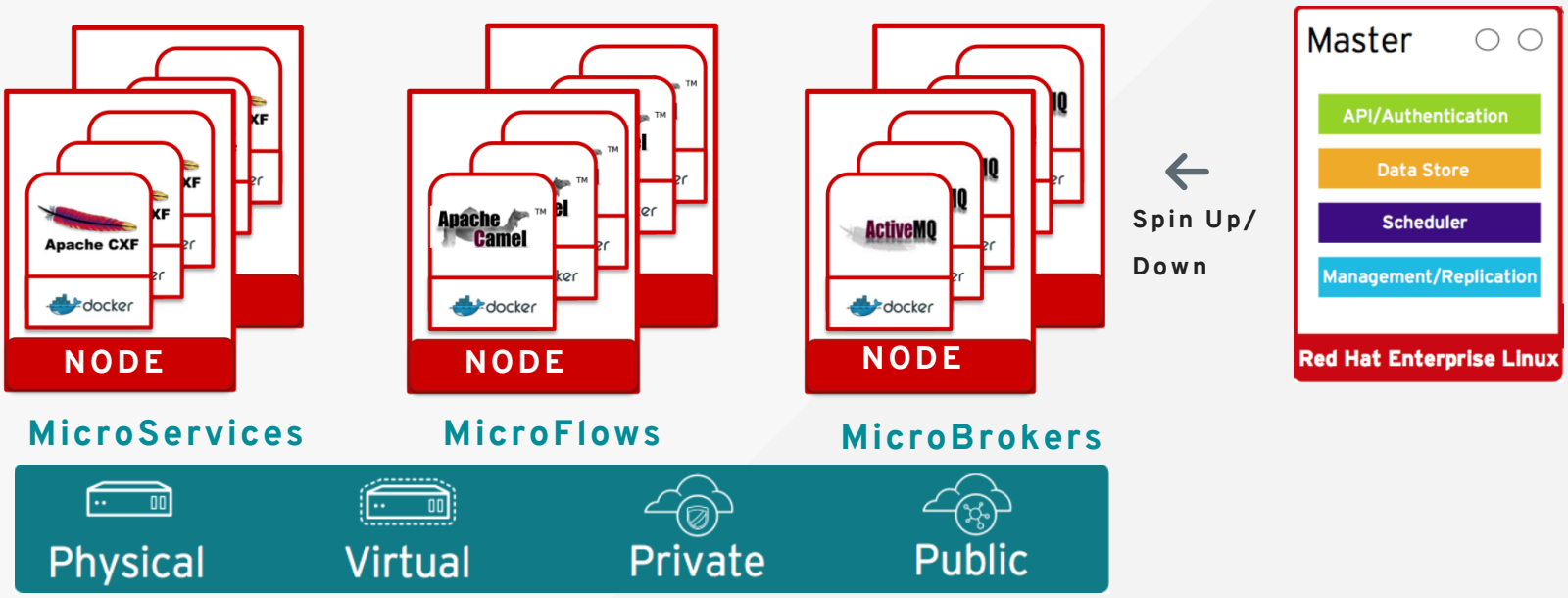
A Broker based Messaging Microservice deployed on demand to drive data between systems

MICROFLOW



An integration flow or route developed To implement Enterprise Integration Patterns as a Microservice

DEPLOYMENT



- SERVICES SPUN/DOWN AS DOCKER PODS USING KUBERNETES
- ON ALL MANNER OF ENVIRONMENTS
- AUTOMATICALLY ON DEMAND OR MANUALLY

DESIGN CONSIDERATIONS

MICROSERVICES *(example: Apache CXF Rest Services)*

- CLONEABLE AND VERSIONABLE
- LOCATION TRANSPARENT, AUTO SCALED AND EASILY RELOCATED

MICROBROKERS *(example: Apache ActiveMQ with Fabric8MQ)*

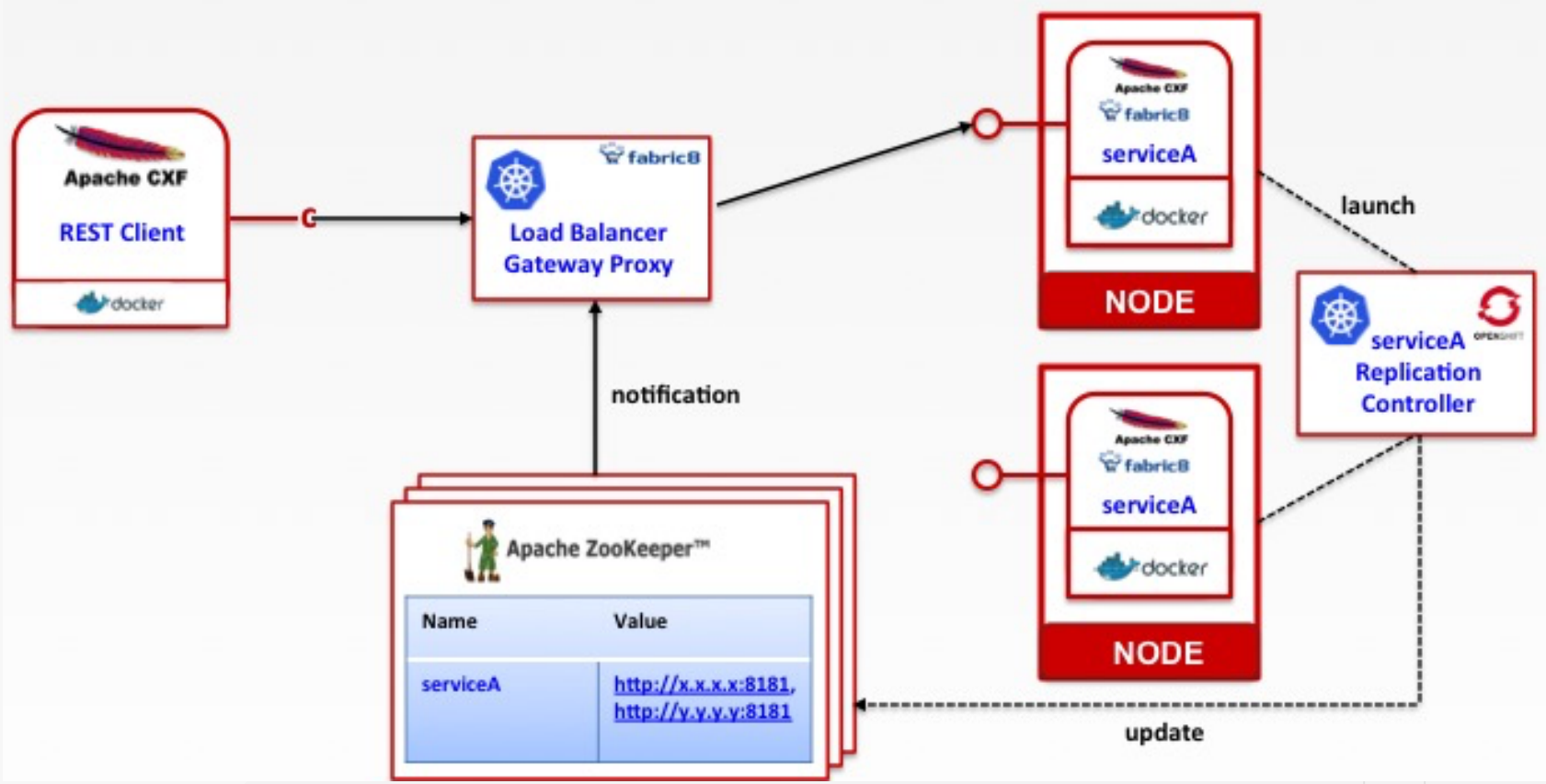
- TOPOLOGY AWARE, SMART AND AUTO SCALING VIA KUBERNETES
- EVENT AND NOTIFICATION AWARE VIA ZOOKEEPER/ETCD WATCHERS
- HIGHLY AVAILABLE, FAILOVER & DISASTER RECOVERY PROOFED

MICROFLOWS *(example: Apache Camel with Fabric8 & OpenShift)*

- TEMPLATE DRIVEN WITH NO BOILER PLATE LOGIC
- TEMPLATE AND ENDPOINTS APPLIED AT RUNTIME USING WATCHERS
- EVENT AND NOTIFICATION AWARE, AUTO SCALED VIA KUBERNETES

DYNAMIC MICROSERVICES

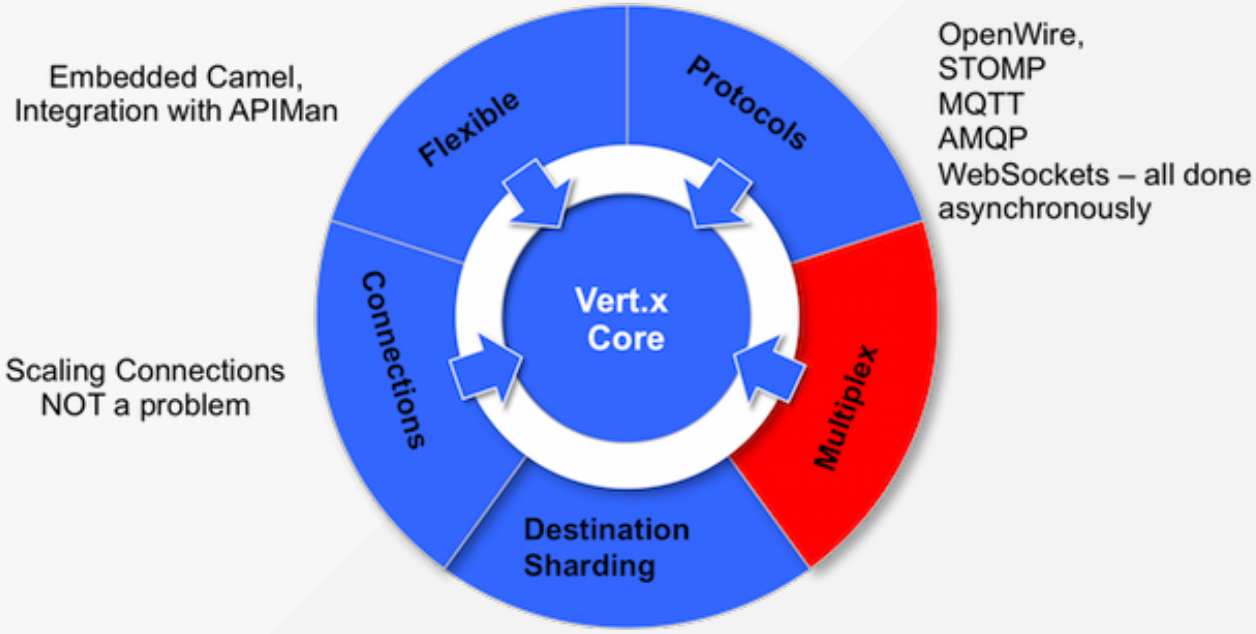
MICROSERVICE AUTO DETECTION AND TRANSPARENT LOAD BALANCING



DYNAMIC MICROBROKERS

SMART, SCALABLE MICROBROKERS OFFERING MESSAGING AS A SERVICE

- Messaging as a Service using a smart kubernetes based messaging proxy and auto-sharded ActiveMQ Brokers



- Uses **Vert.x** core to provide highly scalable asynchronous connection handling

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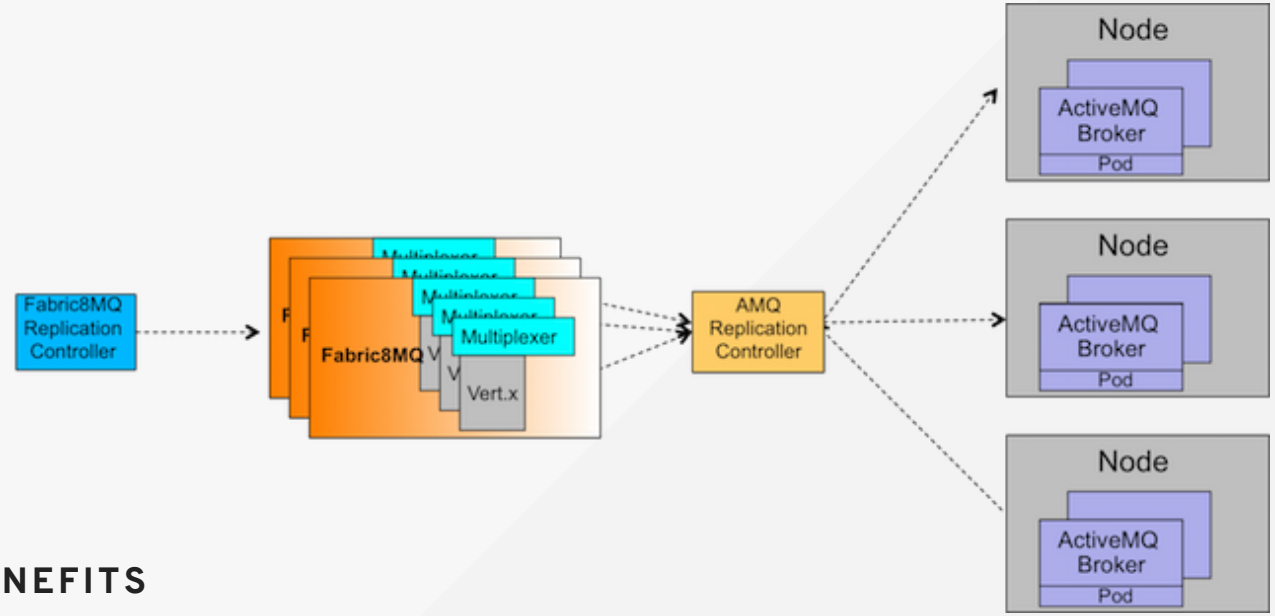

BENEFITS

- **Protocol Conversion:** MQTT, STOMP, AMQP protocol conversion outside of the ActiveMQ broker
- **Co-located Camel Router**: convert on the fly between Topics and Queues
- **API Management:** apply security and rate limiting policies to destinations

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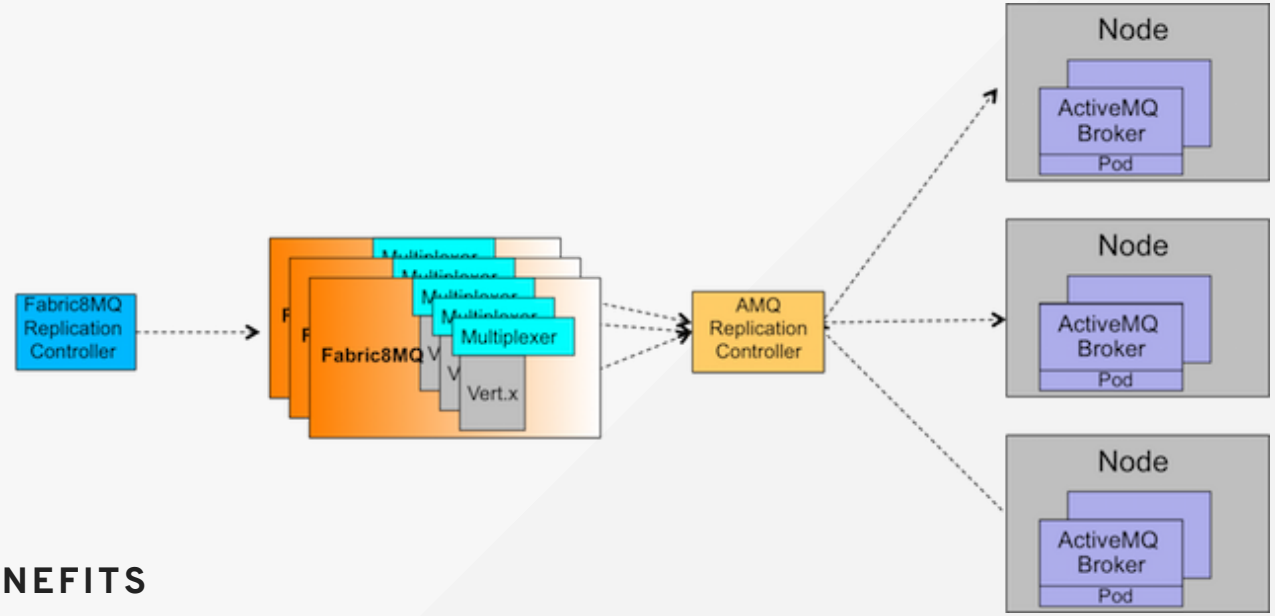
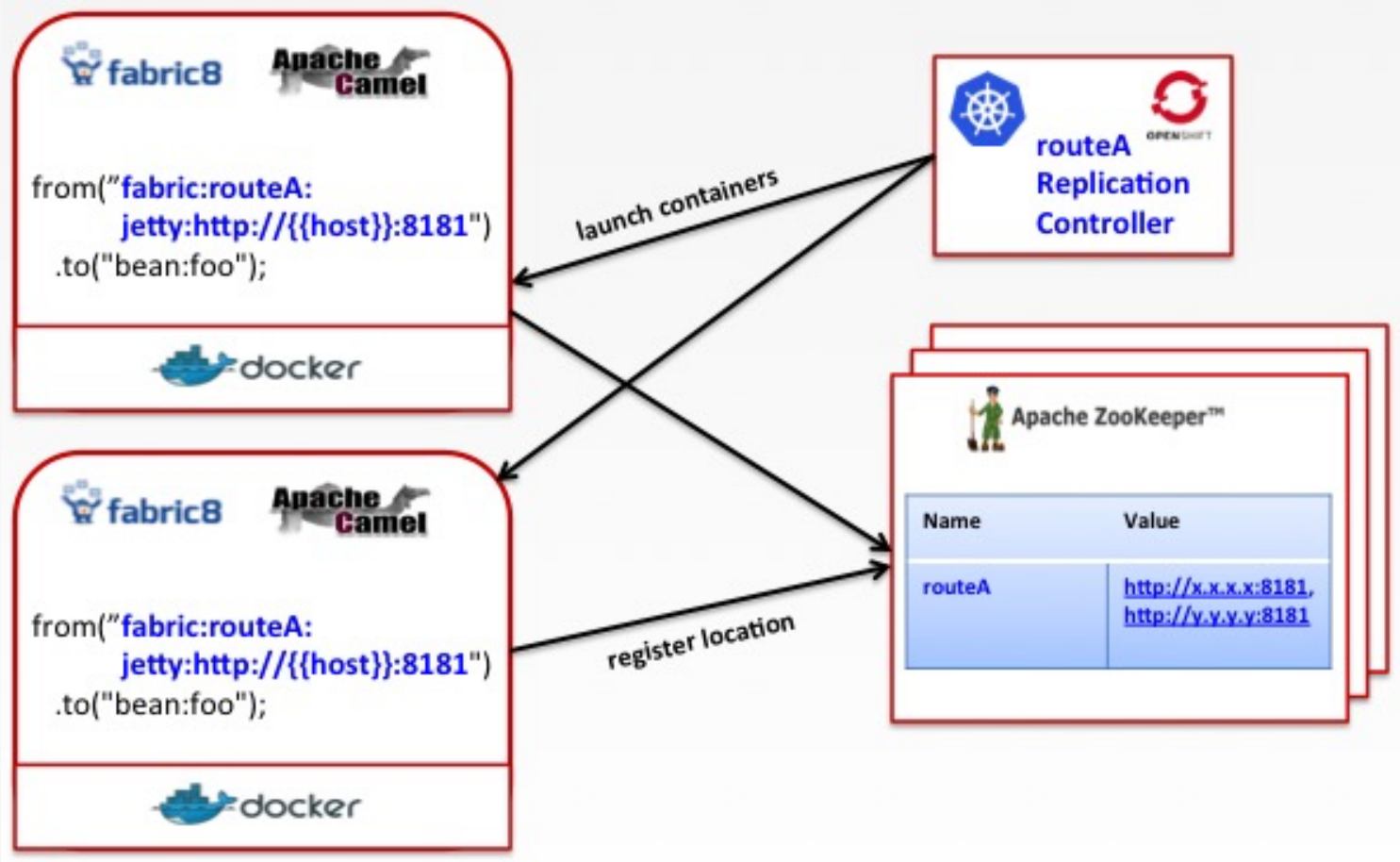


BENEFITS

- **Multiplexer :** lowers the amount of physical connections an ActiveMQ broker and improves throughput
- **Destination Sharding:** Destination based broker sharding, transparent message migration as brokers spin up or down
- **Broker Control:** demand based broker scaling, control and health monitoring

DYNAMIC MICROFLOWS

SCALABLE TEMPLATED MICROFLOWS WITH LOAD BALANCING AND DYNAMIC ENDPOINT INJECTION



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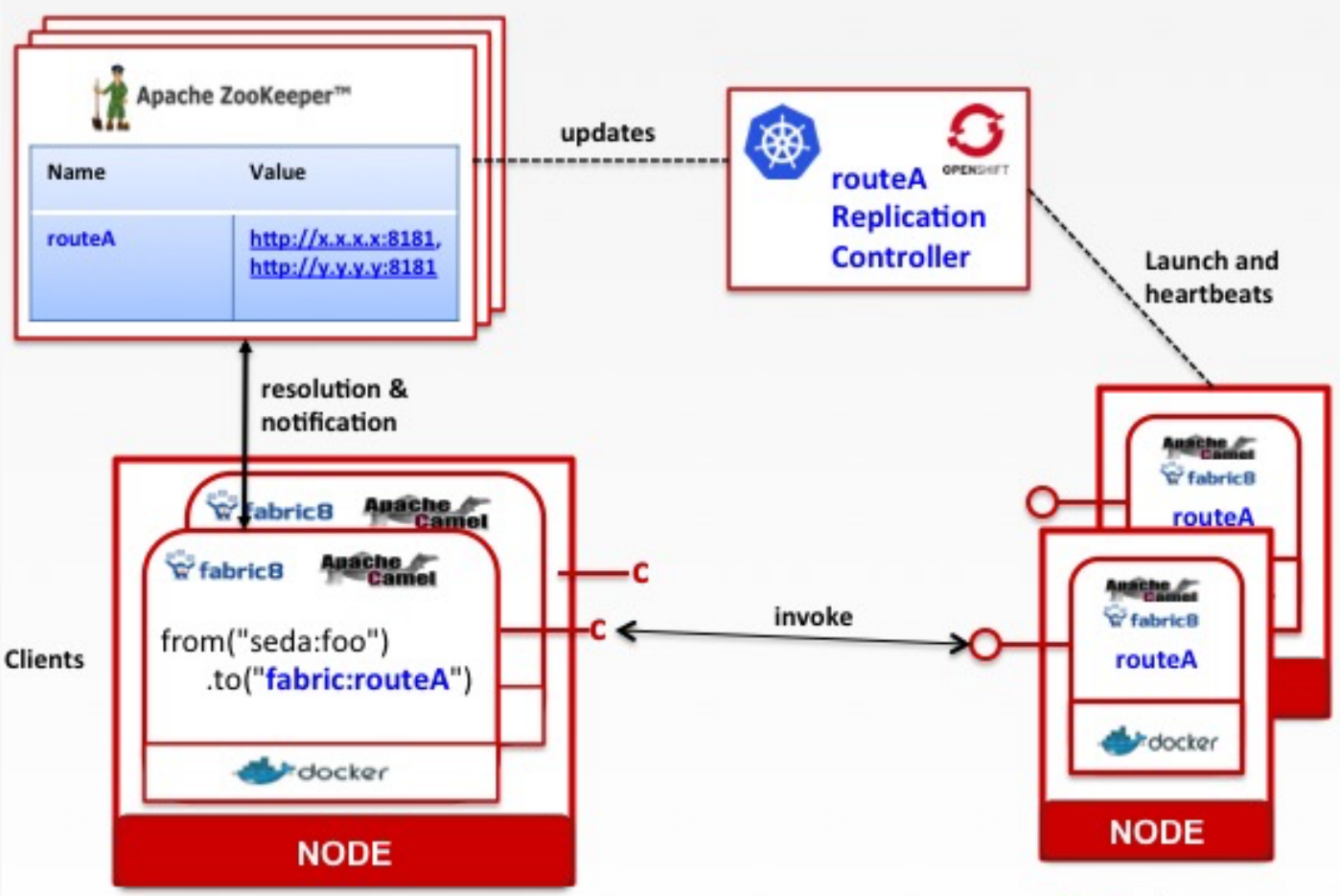

SUMMARY

- MICROSERVICES ARCHITECTURE CONSISTS OF KEY BUILDING BLOCKS SUCH AS
  - MICROSERVICES
  - MICROBROKERS
  - MICROFLOWS
- MICROSERVICES CAN BE LAUNCHED USING REDHAT OPENSHIFT IN DOCKER PODS AND MANAGED BY KUBERNETES REPLICATION CONTROLLERS
- SMART AND DYNAMIC TOPOLOGIES CAN BE BUILT AROUND FABRIC8 AND SERVICE REGISTRIES SUCH AS APACHE ZOOKEEPER OR ETCD.
- TEMPLATED AND CLONEABLE SERVICES CAN DRIVE STANDARDIZED AND HIGHLY EFFICIENT AND SCALABLE ENVIRONMENTS

redhat.

THANK YOU!