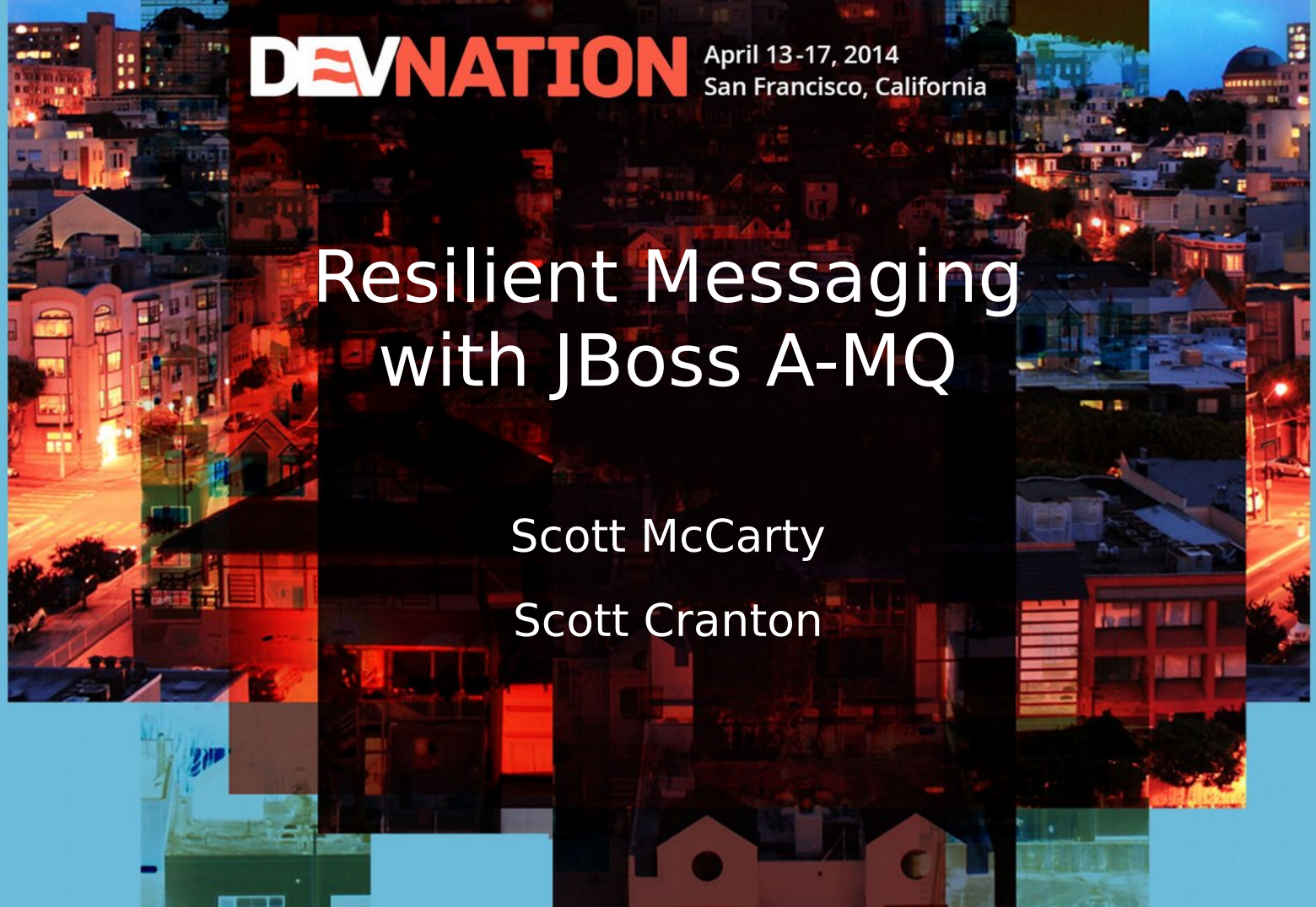

DEVNATION
April 13-17, 2014 San Francisco, California



Resilient Messaging with JBoss A-MQ

Scott McCarty

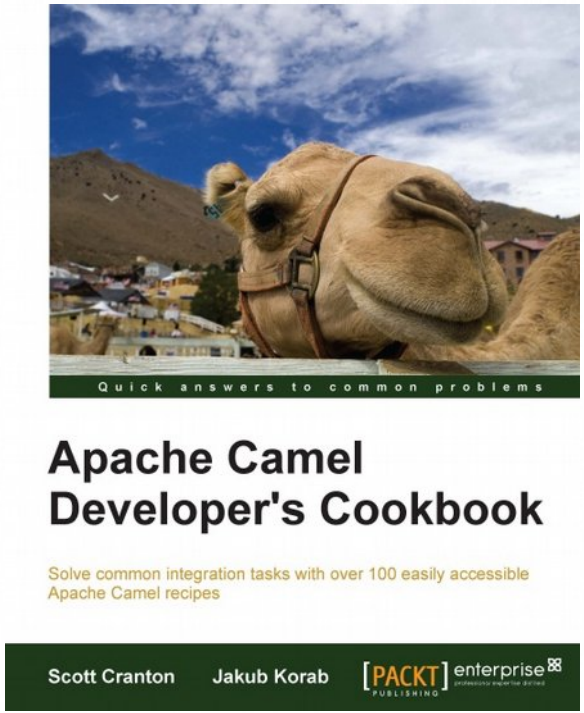
Scott Cranton

Agenda

- Quick Overview of JBoss A-MQ
- JBoss A-MQ HA with Fabric8
- Quick Overview of Red Hat High Availability
- JBoss A-MQ HA with Red Hat High Availability

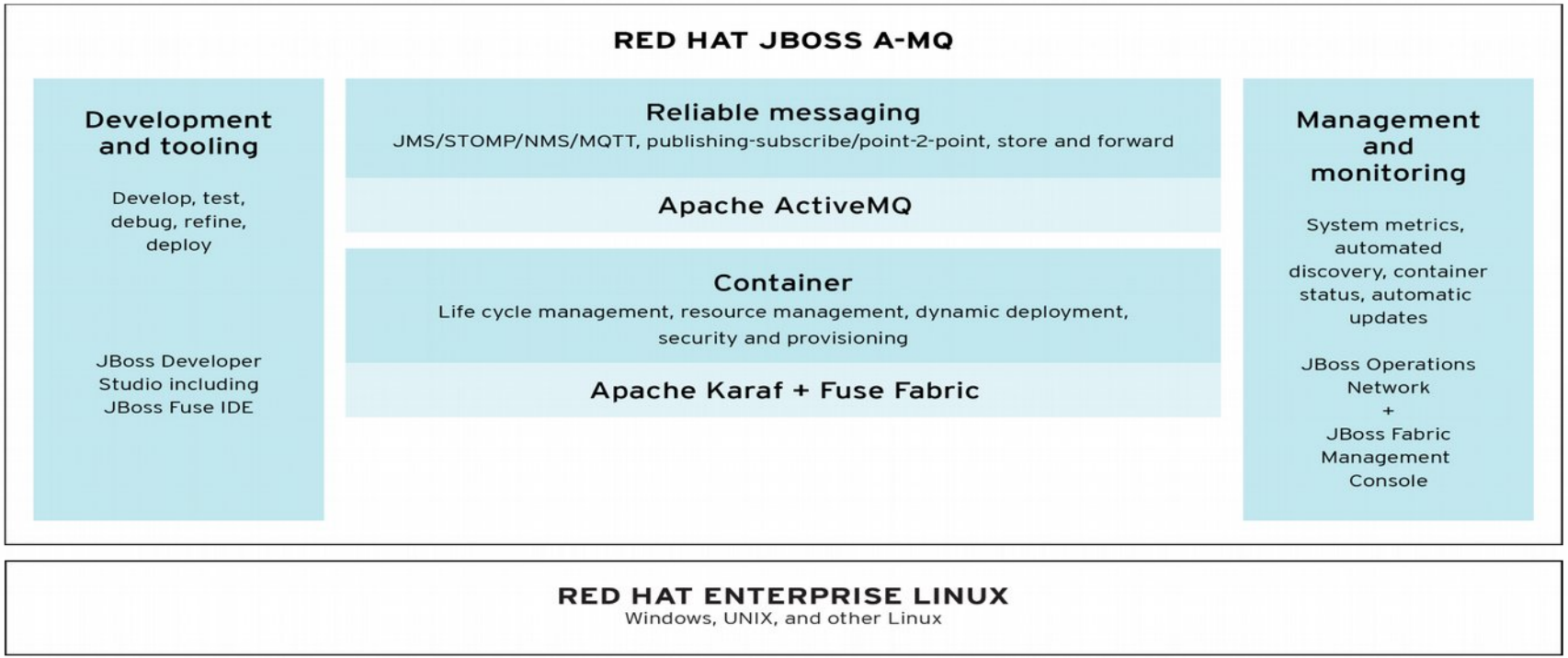
@scottcranton

- 20+ years in Middleware software coding and sales
- Apache Camel Developer's Cookbook – Dec 2013
- FuseSource World Wide Solution Architect manager; joined FuseSource in 2009
- 5+ years helping companies use Fuse and A-MQ

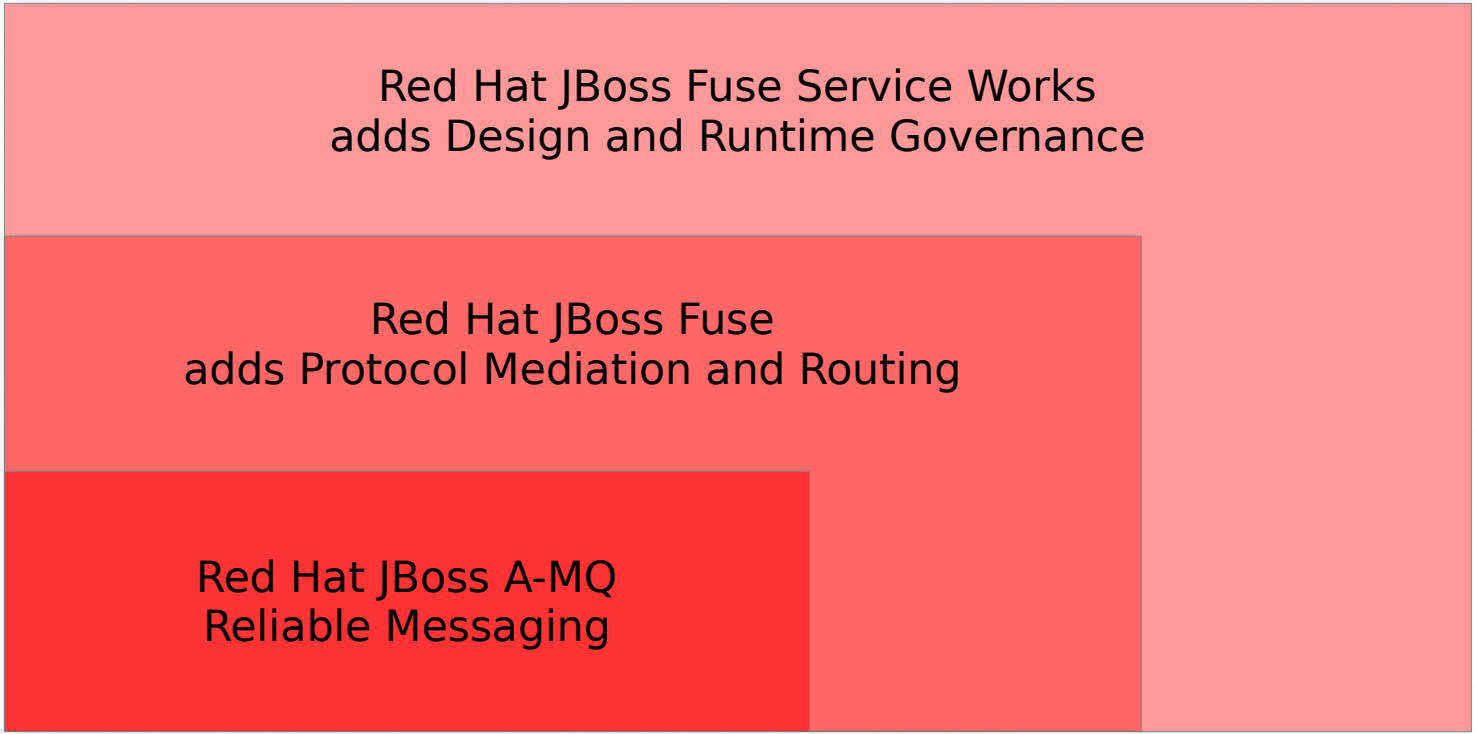


Red Hat JBoss A-MQ

Small-footprint, high-performance, open source **messaging platform**



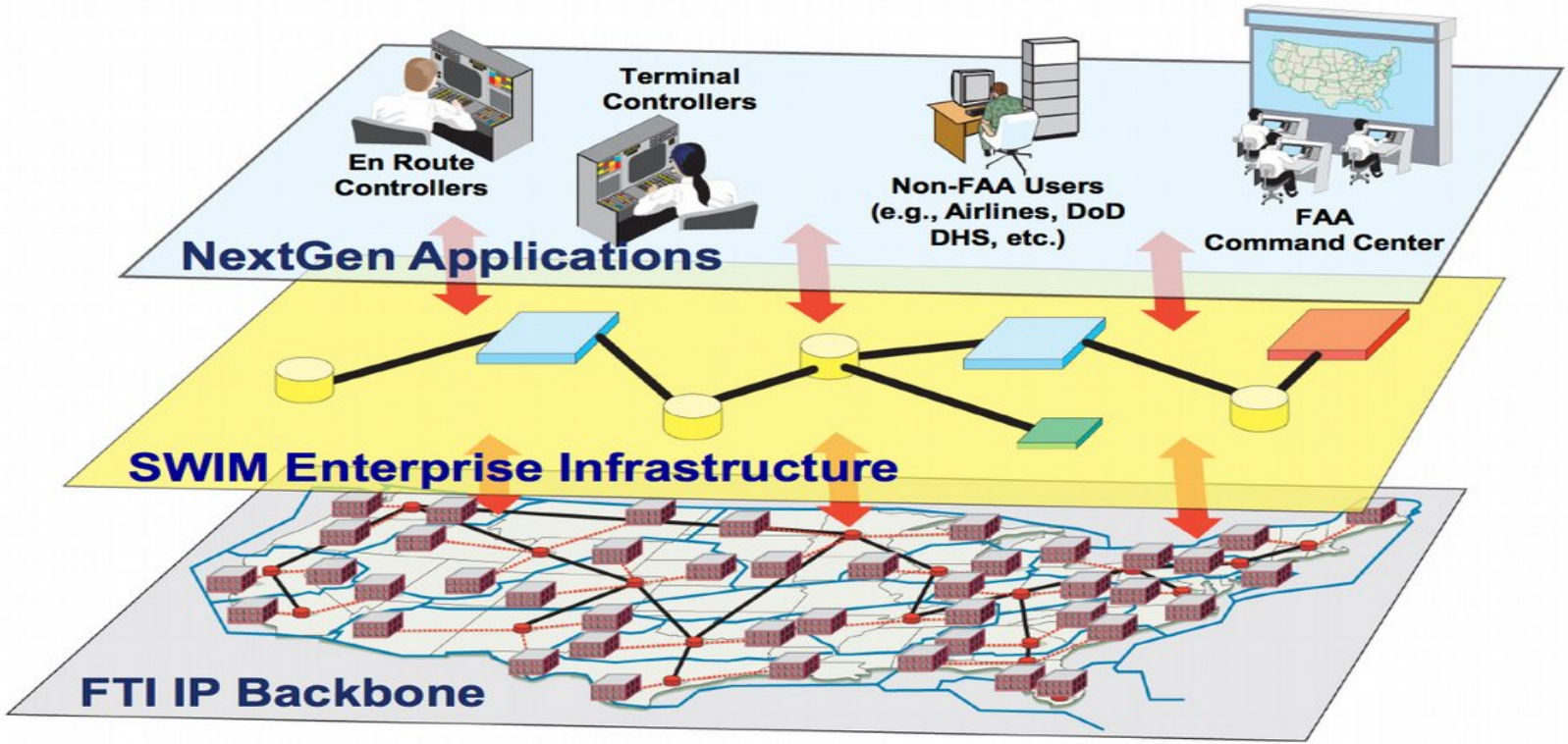
Red Hat JBoss Integration Portfolio



Federal Aviation Administration (FAA) uses JBoss A-MQ and Fuse

- *Did you fly to DevNation? JBoss A-MQ helped you get here...*
- 35,000 controllers managing 7,000 takeoffs and landings an hour, and responsible for 50,000 aircraft in national airspace every day
- SWIM Program (System Wide Information Management) streamlining data exchange between FAA, industry, and airline partners; facilitating next generation applications...
- In production across 20 data centers nationally distributing data like: Corridor and terminal weather systems, flight data, control tower events, and runway visual range

State of the System



What is JBoss A-MQ?

Open

Scalable

Reliable

*assuming you already know it does reliable messaging

JBoss A-MQ :: Open

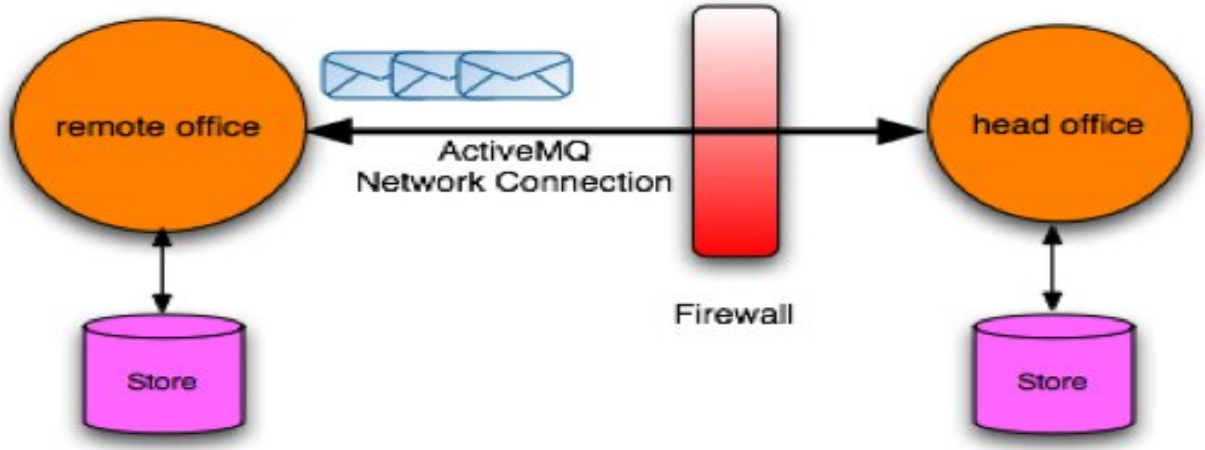
- Open Source
  - Apache Software License 2.0 licensed
  - Based on very popular Apache ActiveMQ
- Open Protocol
  - AMQP 1.0, MQTT, STOMP, OpenWire, ...
- Open Language (Polyglot)
  - Client native languages: Java (JMS), C/C++, .NET
  - STOMP clients: Ruby, JavaScript, Perl, Python, PHP, ActionScript, ...

JBoss A-MQ :: Scalable

- Vertical Scaling
  - Limited primarily by disk and network throughput
- Horizontal Scaling
  - Network of Brokers (Clustering / Federation)
  - Fabric8 (http://fabric8.io) for scale out management
    - Central configuration management and provisioning
    - Client-side discovery, load balancing, and failover

JBoss A-MQ :: Scalable

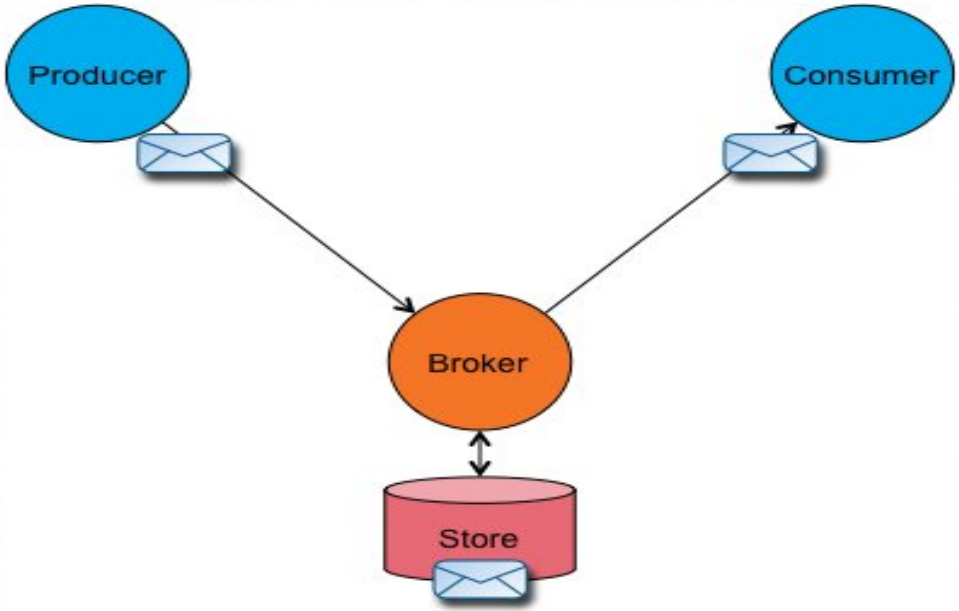
Network of Brokers



JBoss A-MQ :: Reliable

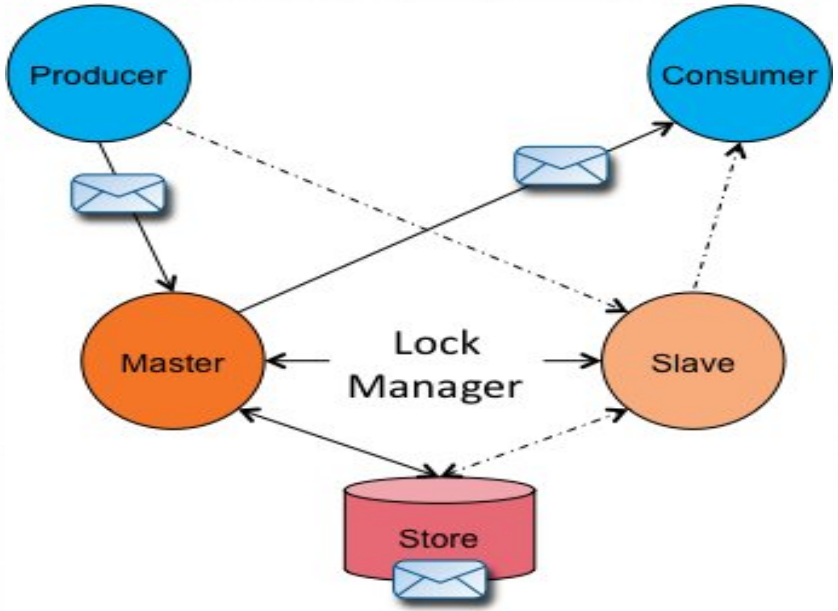
- Persistent Messaging (single node)
  - Store on File System or RDBMS
  - Survive restart, and process failure
- Master / Slave (Active / Passive)
  - Uses included or external Lock Manager
  - Shared Storage - SAN/GFS2 or NFS v4 or RDBMS
  - Replicated - Block or RDBMS replication
- Managed
  - Red Hat Cluster Suite
  - Fuse Fabric with Shared or Replicated storage

JBoss A-MQ :: Reliable

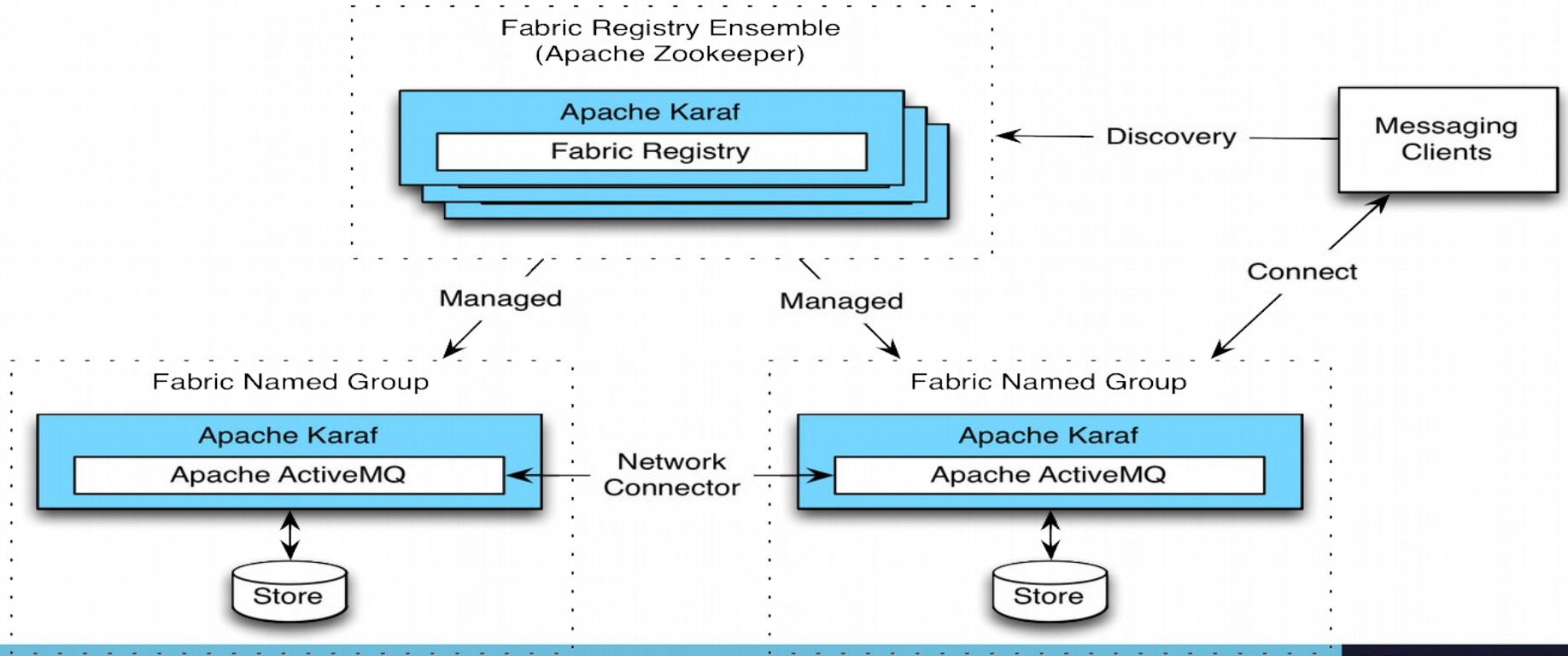


JBoss A-MQ :: Reliable

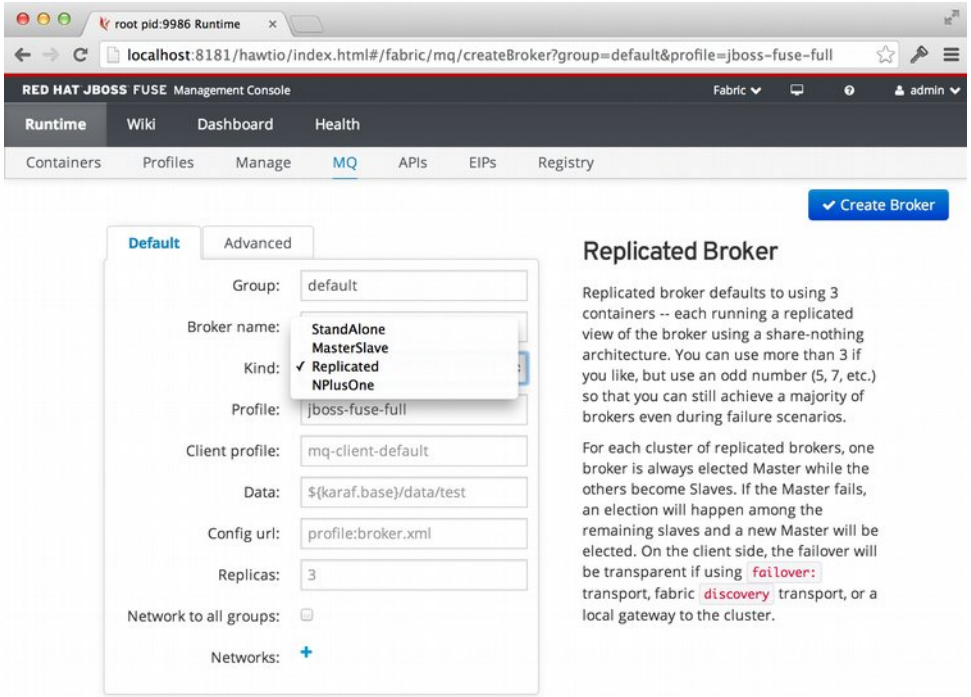
Master / Slave – Shared Storage



Fuse Fabric


Fabric Registry Ensemble
(Apache Zookeeper)
Apache Karaf
Fabric Registry
Discovery
Messaging
Clients
Connect
Managed
Managed
Fabric Named Group
Apache Karaf
Apache ActiveMQ
Store
Network
Connector
Fabric Named Group
Apache Karaf
Apache ActiveMQ
Store

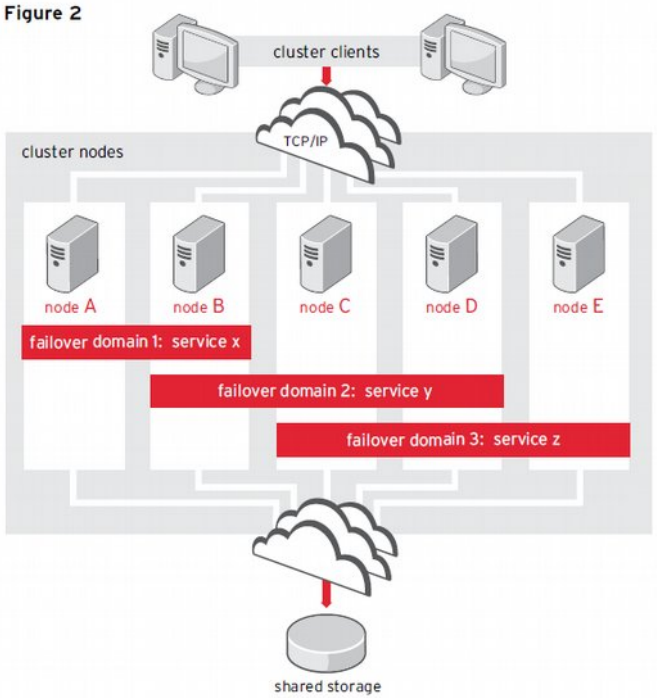
Fuse Fabric Management Console



Scott McCarty

- Senior Cloud-Infrastructure Solutions Architect
- Systems Automation, Log Analysis
- Python, Bash, etc
- Clustering, Switching, Routing, Firewall, Load Balancing
- Background in large online properties, and research
- Blog: crunchtools.com

Red Hat High Availability / Clustering



Key Benefits

- General purpose clustering solution: processes, mount points, network addresses
- General purpose management interface
- Failover logic is stored in a technology that manages other high availability resources
- Greater availability of storage choices: EXT3/EXT4, BTRFS, GFS2, NFS
- Deeper availability of health checks: JMX, TCP, custom checks, looking glass services

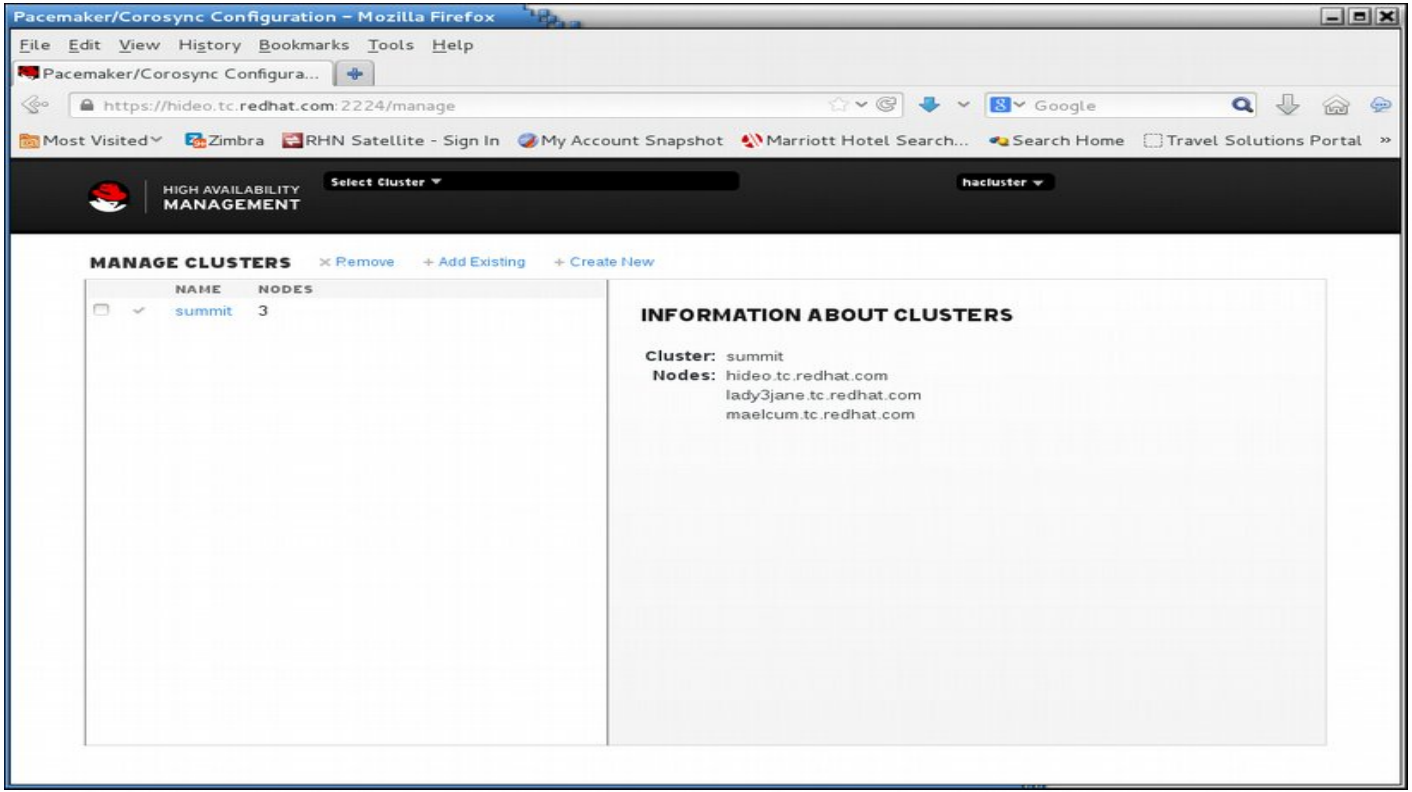
Concepts

- Nodes: Separate operating system instances in the cluster
- Resources: IP address, process, storage mount
- Failover Domains: Groups of nodes unto which Service Groups can be assigned
- Fence Devices: Integrated Lights Out (ILO), Dell Remote Access Card (DRAC), IPMI

High Availability Components

- Cluster Manager: Ties it all together, calculates quorum, communicates with other cluster components
- Resources: Resource Manager controls starting/stopping of processes, storage mounts, IP addresses, etc
- Fencing: The act of ensuring that broken nodes are removed from the cluster
- Conga Web Interface

Management Interface



Links

- Technical Solution:
  http://crunchtools.com/resilient-messaging/
- Cluster Knowledge Base Articles:
  https://access.redhat.com/knowledge/articles/47987
- Best Practices:
  https://access.redhat.com/knowledge/articles/40051
- Architecture Review Process:
  https://access.redhat.com/site/solutions/125153
- Stretch Clustering:
  https://access.redhat.com/knowledge/articles/27136