Introductions

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RabbitMQ Offerings

Containerized environments

- VMware Tanzu RabbitMQ for Kubernetes
- VMware Tanzu RabbitMQ (container image)

Cloud Foundry

RabbitMQ

Open source

Commercial
RabbitMQ 3.9 RC is out now
Industry Themes

- Scalability
- Observability
- Stability and Resiliency
- Ease of use
RABBITMQ CORE UPDATES
### Scalability

- **Streams** (append-only logs)
  - Non-destructive consumer semantics
  - Enables message replay and massive fan-out
  - Much higher throughput with a new protocol but also compatible with AMQP 0.9.1
  - **Dedicated session at 12:50PM PST / 21:50 CEST today**

- Erlang 24 with JIT (25-50% performance improvement)
  - RabbitMQ 3.8.16+ required
STREAMS - UPCOMING

- Competing consumers
- More client libraries (eg. Go)
- Partitioned Streams - a way to scale Streams further by partitioning a single “virtual” Stream into multiple actual Streams
CLASSIC QUEUES
- WORK IN PROGRESS

- New classic queue index and message store
  - Memory usage reduced by 50%
  - Latency reduced by 50%
  - Double the throughput for classic queues
  - Predictable memory usage
  - Paves the way for simplified internal classic queue implementation
QUORUM QUEUES - WORK IN PROGRESS

- Per-message TTL
- Safe dead-letter exchange
- Lower memory usage
OBSERVABILITY

- **Seshat Counters Library**
  - Low overhead, high performance counters (increased on every message)
  - Addresses correctness of Prometheus metrics
  - Per-protocol and per-queue type metrics

- Logging (Lager -> Logger)
  - Structured logging with JSON
RESILIENCY

- Cluster formation no longer relies on random startup delays
  - Clusters should always be formed correctly (no more solo nodes)
  - Parallel node startup is safe (default in the Kubernetes Operator)
- Quorum Queues can now be federated
- Maintenance mode (more graceful shutdown)
RESILIENCY - WORK IN PROGRESS

- Khepri - RAFT-based metadata store to replace Mnesia
  - More resilient to network partitions
  - No more pause-minority/autoheal/ignore decisions
  - Dedicated session at 12:10PM PST / 21:10 CEST tomorrow
DEVELOPMENT EXPERIENCE

- RabbitMQ mono-repo ([github.com/rabbitmq/rabbitmq-server](https://github.com/rabbitmq/rabbitmq-server))
- Bazel for faster test feedback
- Now is great time to start contributing!
- In particular - Stream clients in additional languages
Tanzu RabbitMQ Overview

**Tanzu RabbitMQ for Kubernetes**
- Manages cluster lifecycle
- Creates messaging topologies
- Installs alerting rules

**RabbitMQ Cluster**
- Active Passive sync

**Tanzu RabbitMQ**

**Prometheus**
Tanzu RabbitMQ Resiliency - Upcoming

- Offsite Replication (aka OSR & Active / Passive)
  - New commercial plugin to be released in Aug
  - Replicates Quorum Queues & Streams based on OSR policies
  - Very efficient throughput with low CPU and RAM overhead
  - Syncs both data and metadata
  - Orchestrated using Tanzu RabbitMQ for Kubernetes
  - Minimizes data loss (RPO) & shortens recovery time (RTO)
Tanzu RabbitMQ Ease of Use

- RabbitMQ Cluster Operator automates day 1 & day 2 operations
  - Provisioning of any cluster size and configuration
  - Zero downtime configuration changes and upgrades
- Messaging Topology Operator makes it possible to define RabbitMQ resources as Kubernetes objects
  - Supports virtual hosts, users, permissions, queues, exchanges, policies, shovel & federation
  - See upcoming session How to RabbitMQ on kubernetes (10:50 AM - 11:30 AM PDT) for a demo
- Prometheus Alerts - a set of PromQL alerts definitions helps users to detect RabbitMQ and Kubernetes problems
  - See upcoming session RabbitMQ has a problem. Let us tell you about it (10:50 AM - 11:30 AM PDT) for a demo
Tanzu RabbitMQ Scalability - Coming Up

- Cross site stream replication for multiple active sites
- Support for very large number of MQTT connections
Tanzu RabbitMQ for VMs (for TAS)

- Version 2.0 released in May (Long Term Support version)
- Supports TLS 1.2 & 1.3
- Moved metrics to prometheus plugin
- Opened the config of RabbitMQ (similar to the operator)
- mTLS between nodes to be released soon with 2.0.4
TEAM UPDATE
Team Updates

- 🪄 Boomeranged back to VMware!
- Leavers - Jack Vanlightly, Jerry Kuch, Luke Bakken
- Joiners - Phil Kuryloski, Gabriele Santomaggio, Yaron Parasol, Loïc Hoguin, Alexey Lebedeff, Iliia Khaprov
In the media

What is a Stream?

- A durable, replicated log of messages
- Much simpler data structures than a queue
- With message replay / time-travelling
- Built for large fan-outs (many consumers)
Q&A

Thank you!

blog.rabbitmq.com

rabbitmq.com/tanzu

rabbitmq.com/kubernetes/operator/operator-overview.html