Kafka vs RabbitMQ

Tomasz Gintowt
10.04.2019 Warszawa

Agenda

- Kafka vs RabbitMQ
  - Smart Broker
  - Dumb Broker
  - Pull vs Push
  - FIFO vs LOG
  - HA

Tomasz Gintowt

IT Systems Engineer

tomasz.gintowt@adform.com

- Język Erlang
- Advanced Message Queuing Protocol (AMQP) 0.9.1
- Streaming Text Oriented Messaging Protocol (STOMP)
- Message Queuing Telemetry Transport (MQTT)
- Wersja 3.7.14 - 29.03.2019

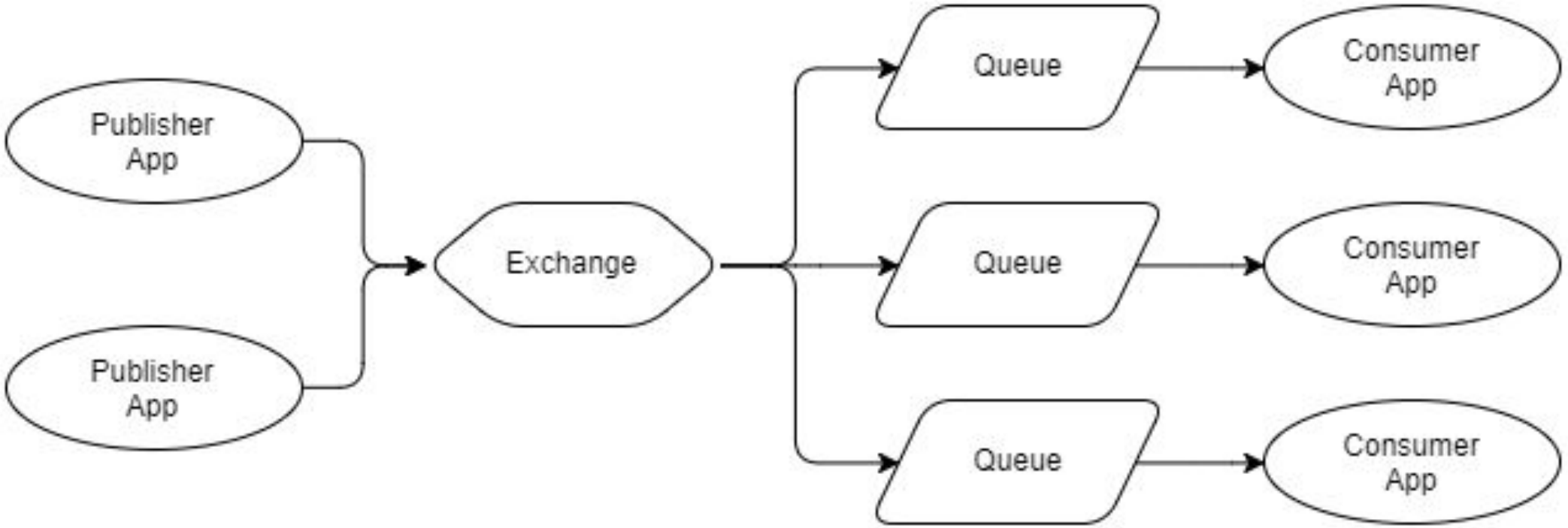
- Język Scala
- Linkedin, Confluent
- Apache Software Foundation
- Wersja 2.2.0 - 22.03.2019

RabbitMQ

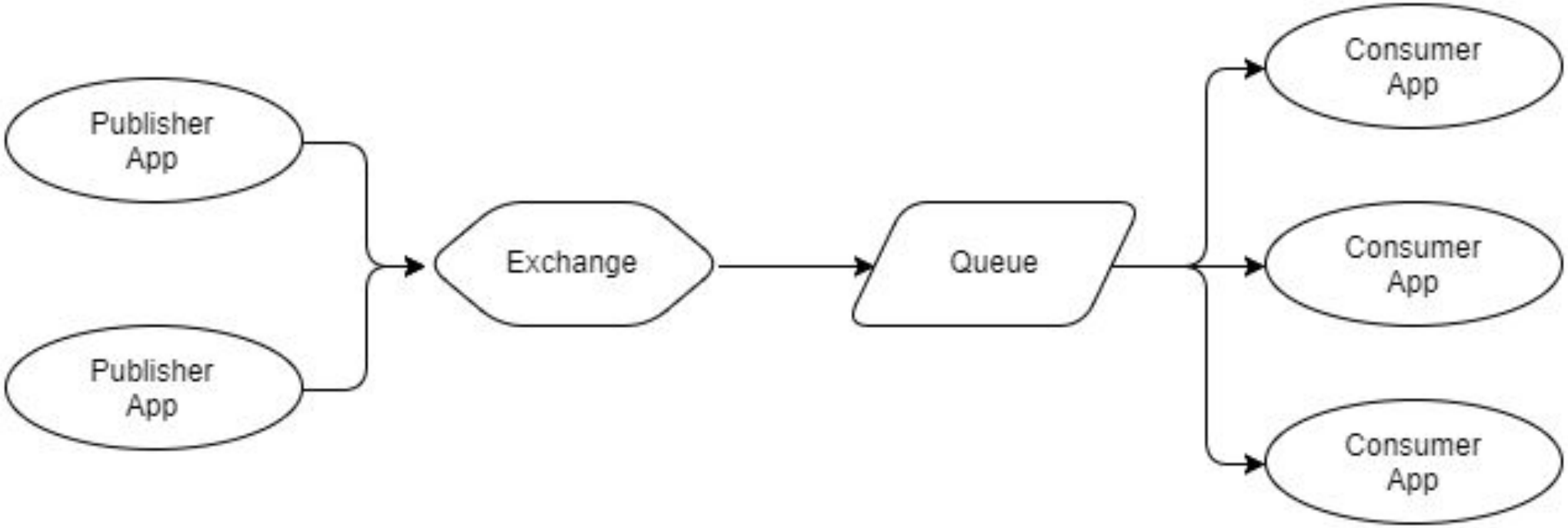
“SMART BROKER”

RabbitMQ

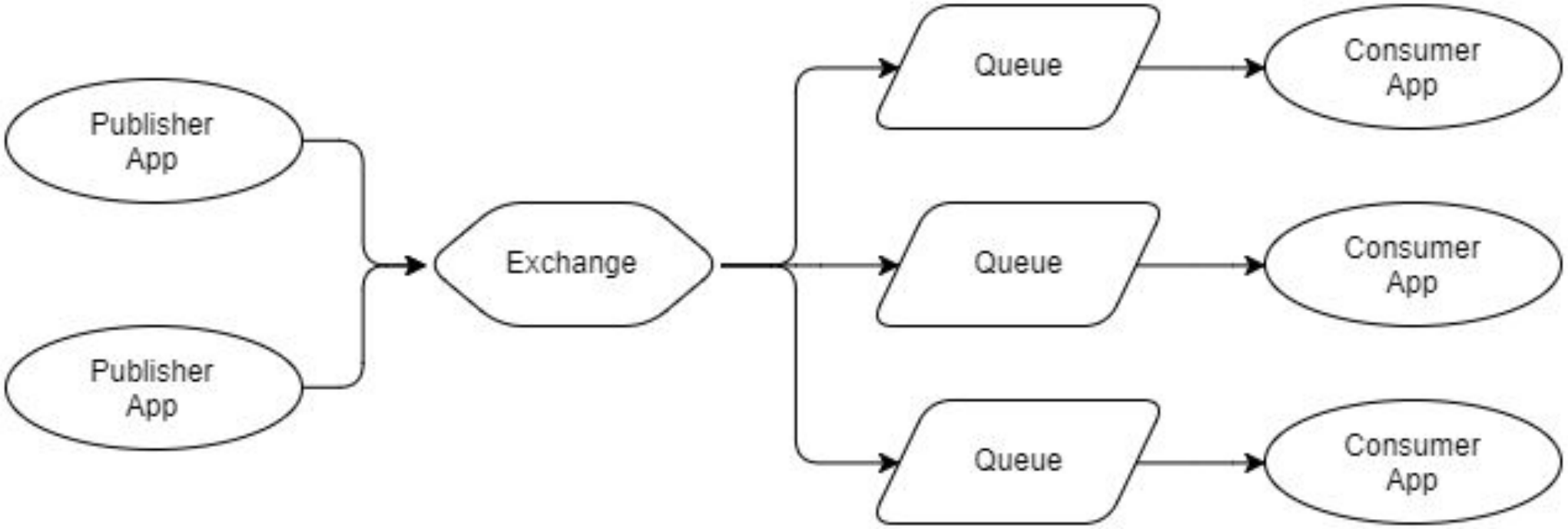
RabbitMQ


Publisher App
Publisher App
Exchange
Queue
Queue
Queue
Consumer App
Consumer App
Consumer App

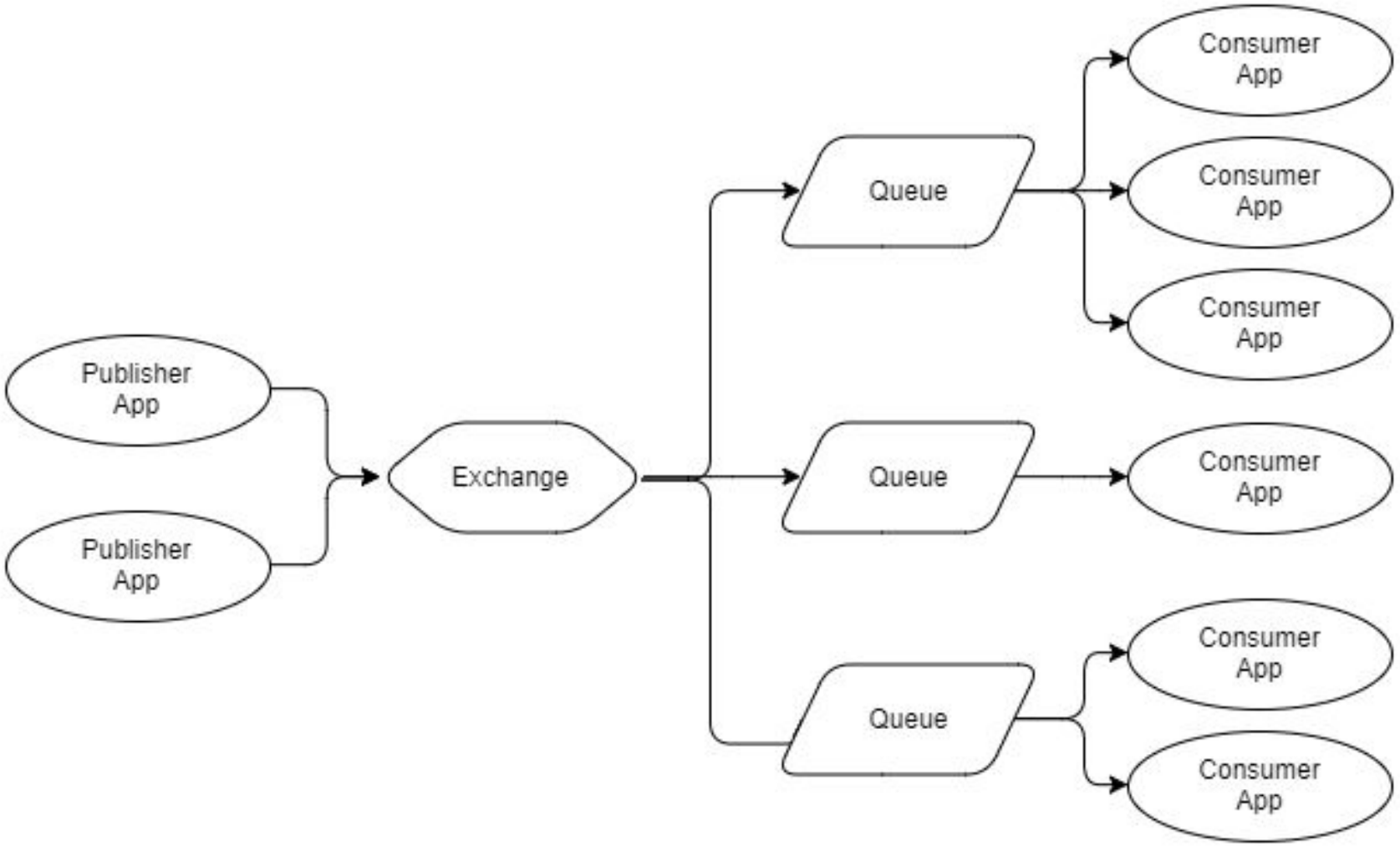
RabbitMQ


Publisher App
Publisher App
Exchange
Queue
Consumer App
Consumer App
Consumer App

RabbitMQ


Publisher App
Publisher App
Exchange
Queue
Queue
Queue
Consumer App
Consumer App
Consumer App

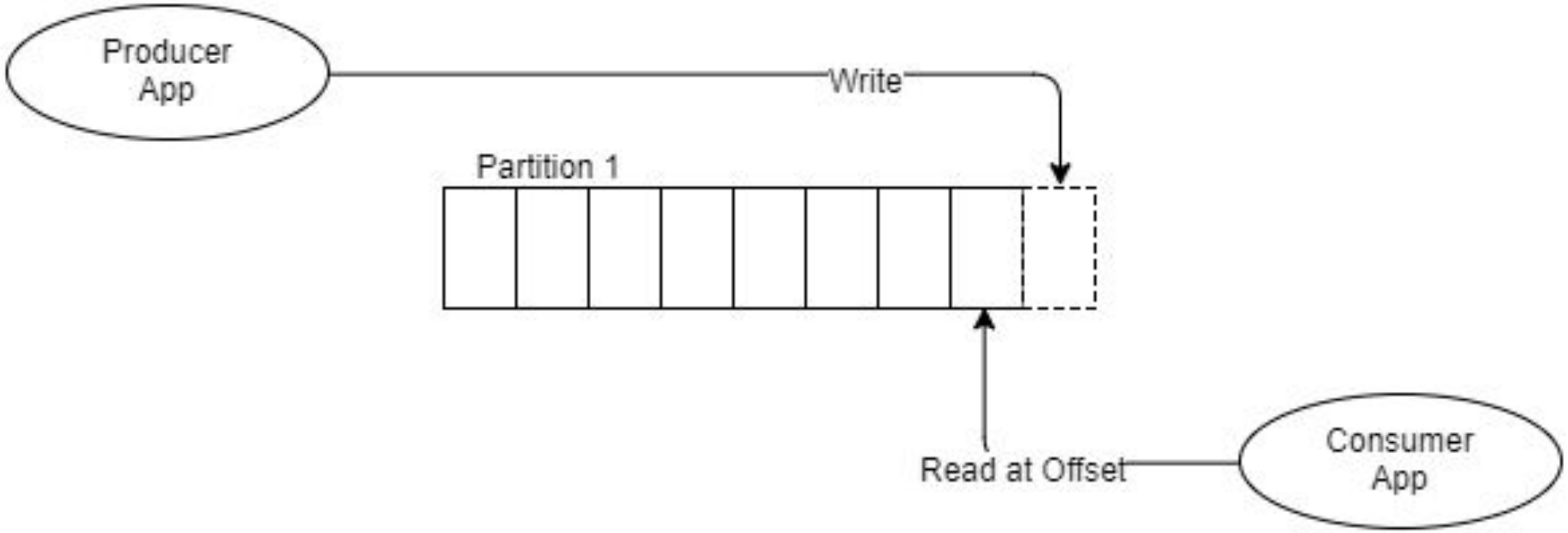
RabbitMQ


Publisher App
Publisher App
Exchange
Queue
Queue
Queue
Consumer App
Consumer App
Consumer App
Consumer App
Consumer App
Consumer App

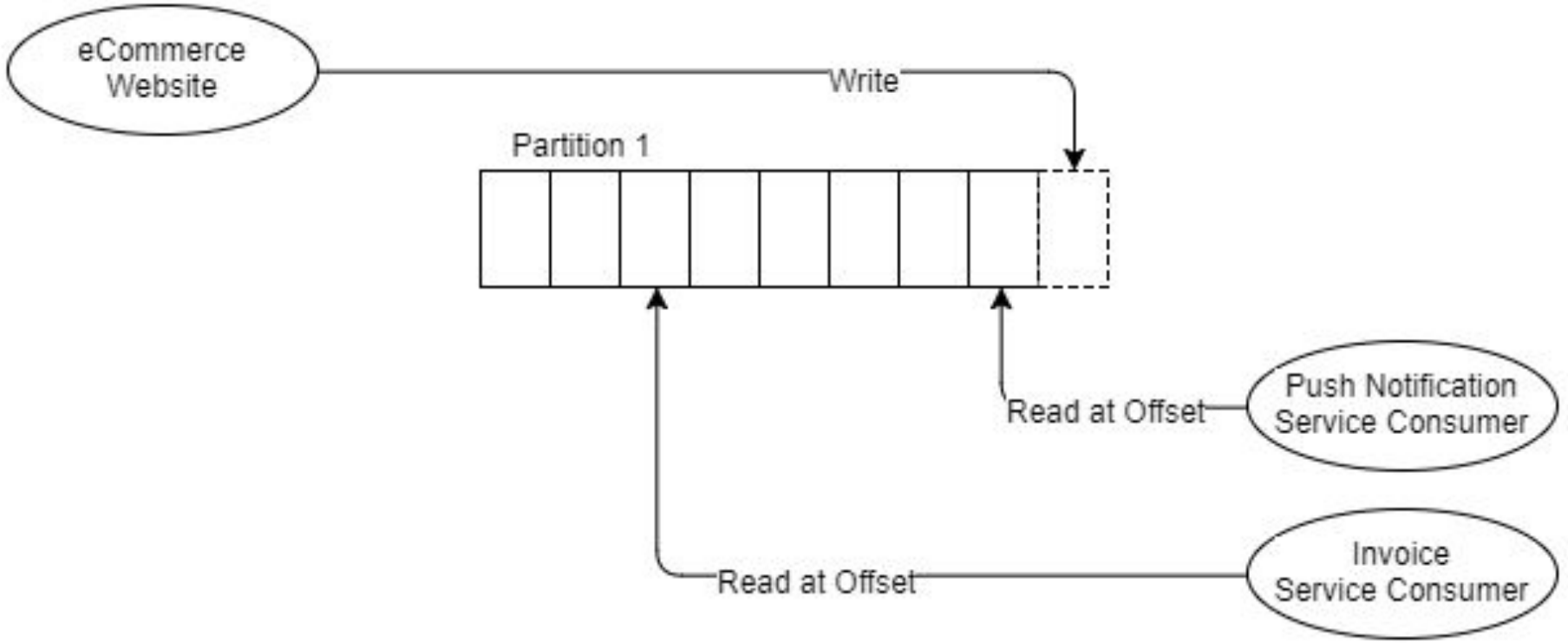
Kafka

“DUMB BROKER”

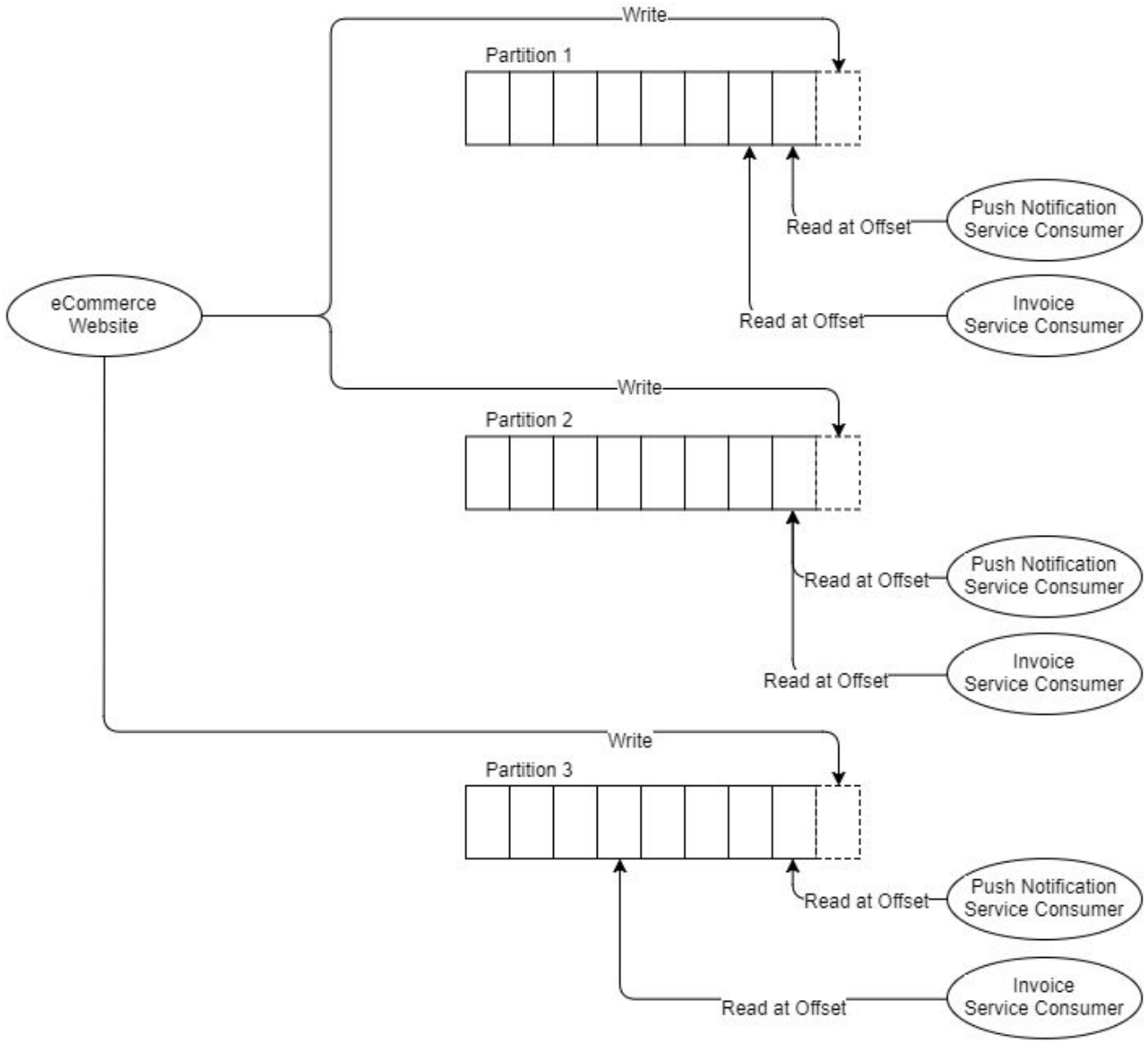
APACHE kafka®
A distributed streaming platform



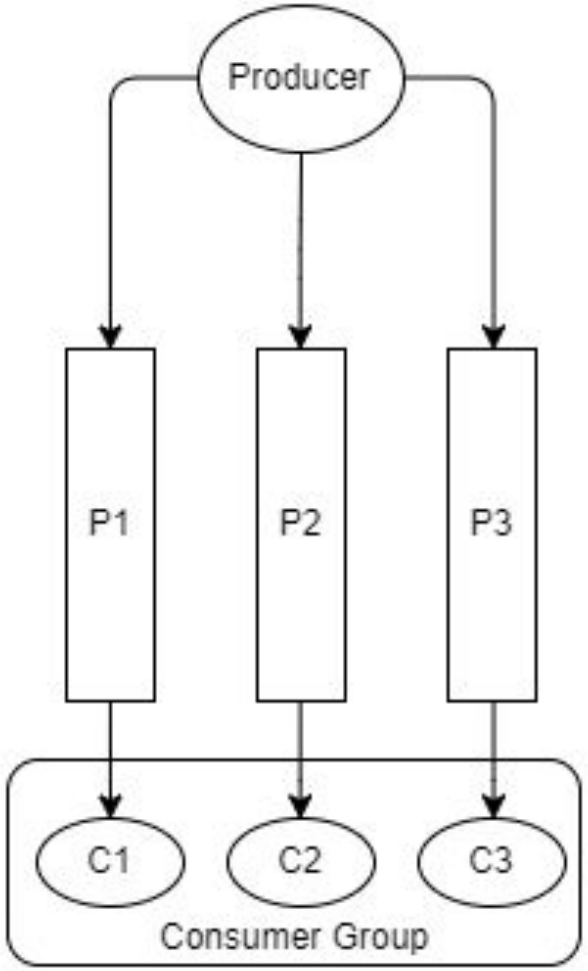
APACHE kafka®
A distributed streaming platform



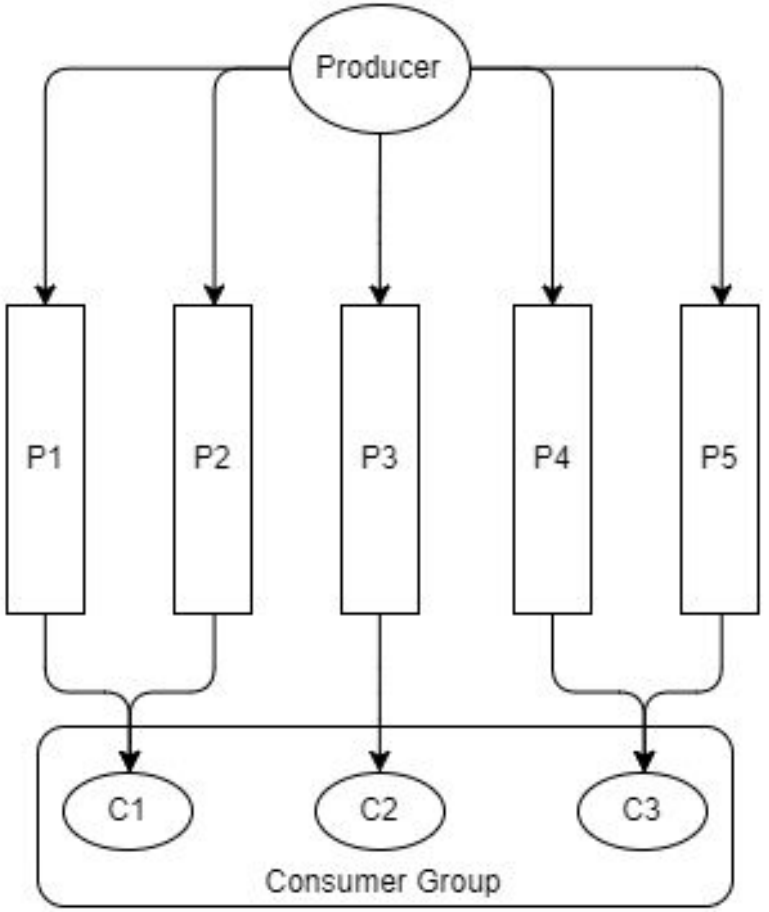
APACHE kafka®
A distributed streaming platform



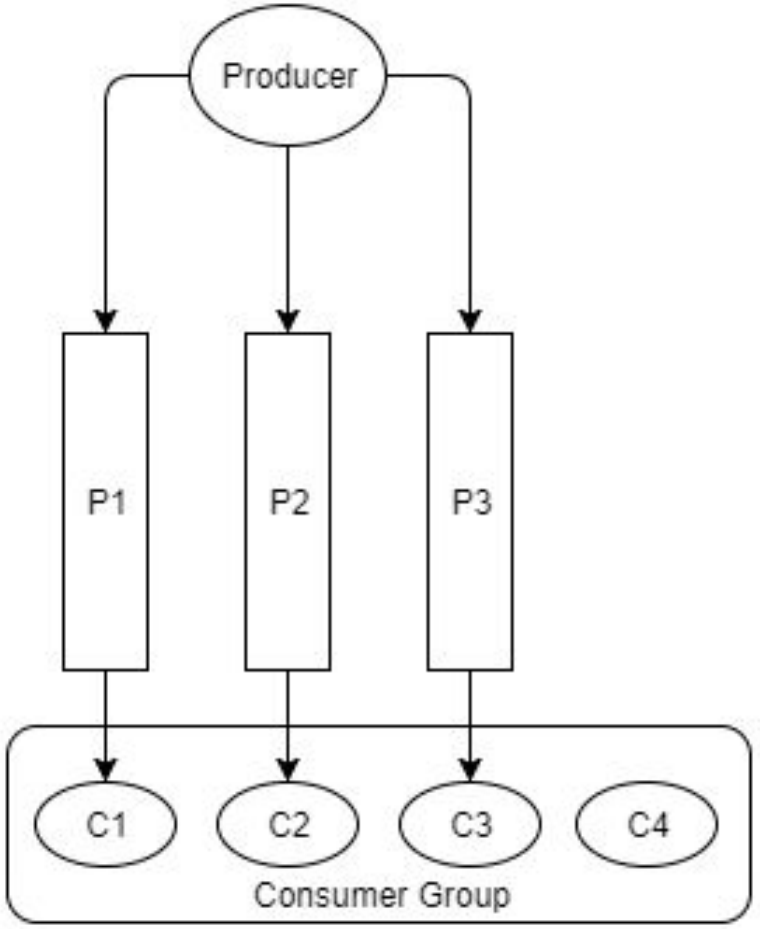
APACHE kafka®
A distributed streaming platform



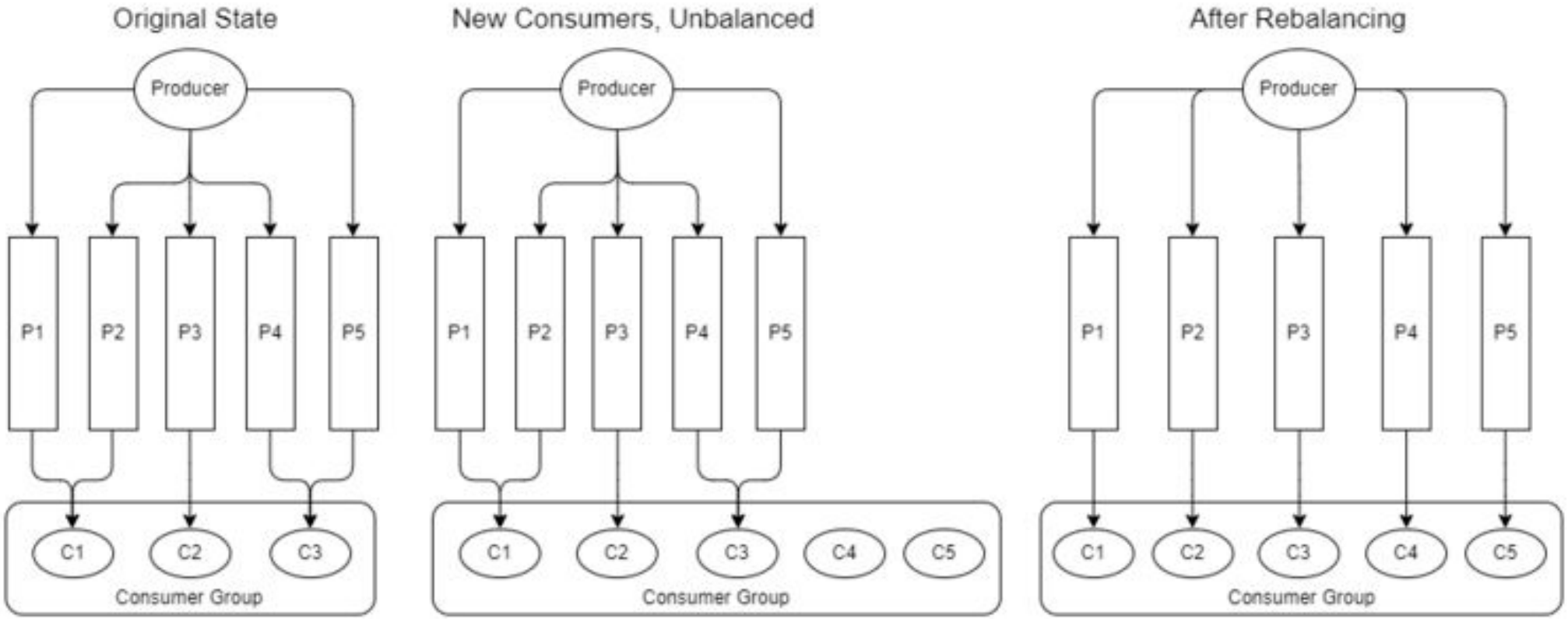
APACHE kafka®
A distributed streaming platform



APACHE kafka®
A distributed streaming platform



APACHE kafka®
A distributed streaming platform

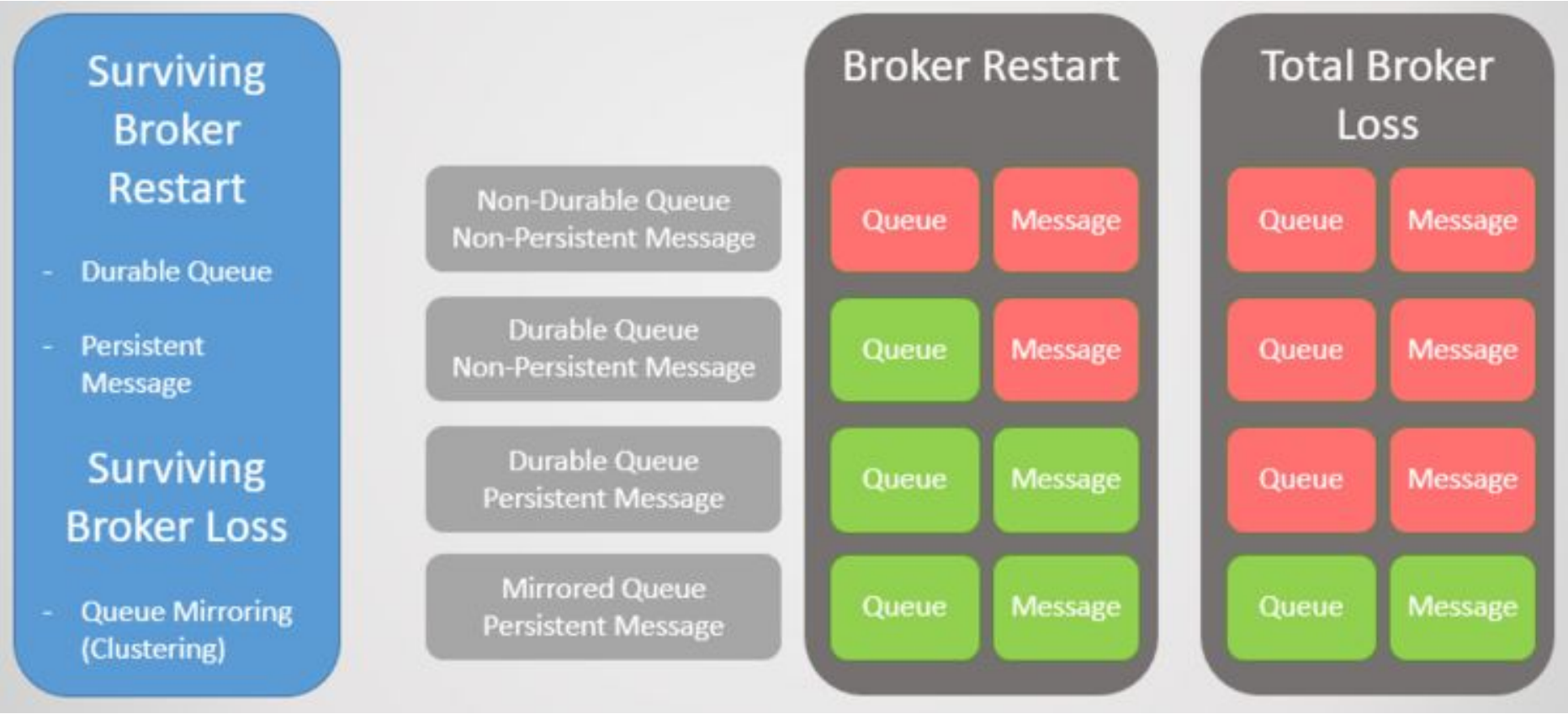


PUSH
FIFO

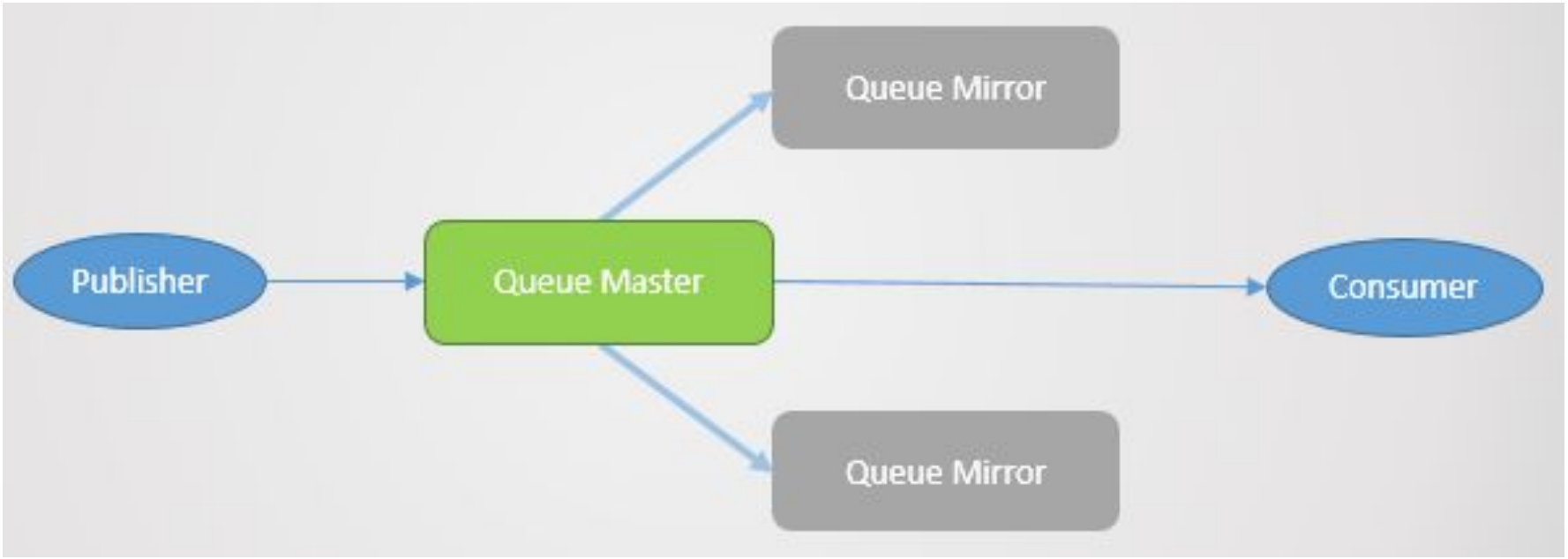
PULL
LOG

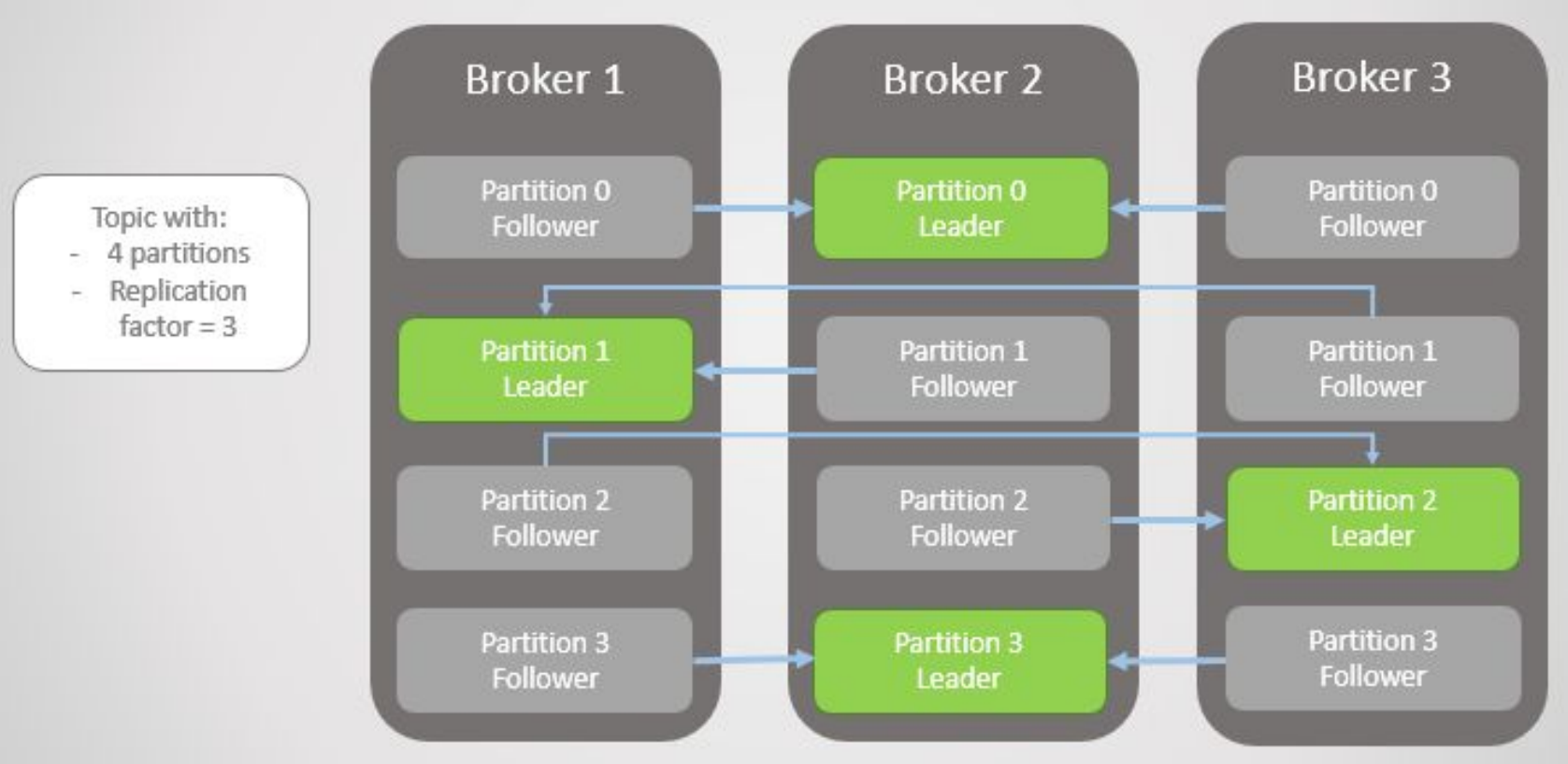
Fault Tolerance and High Availability

RabbitMQ

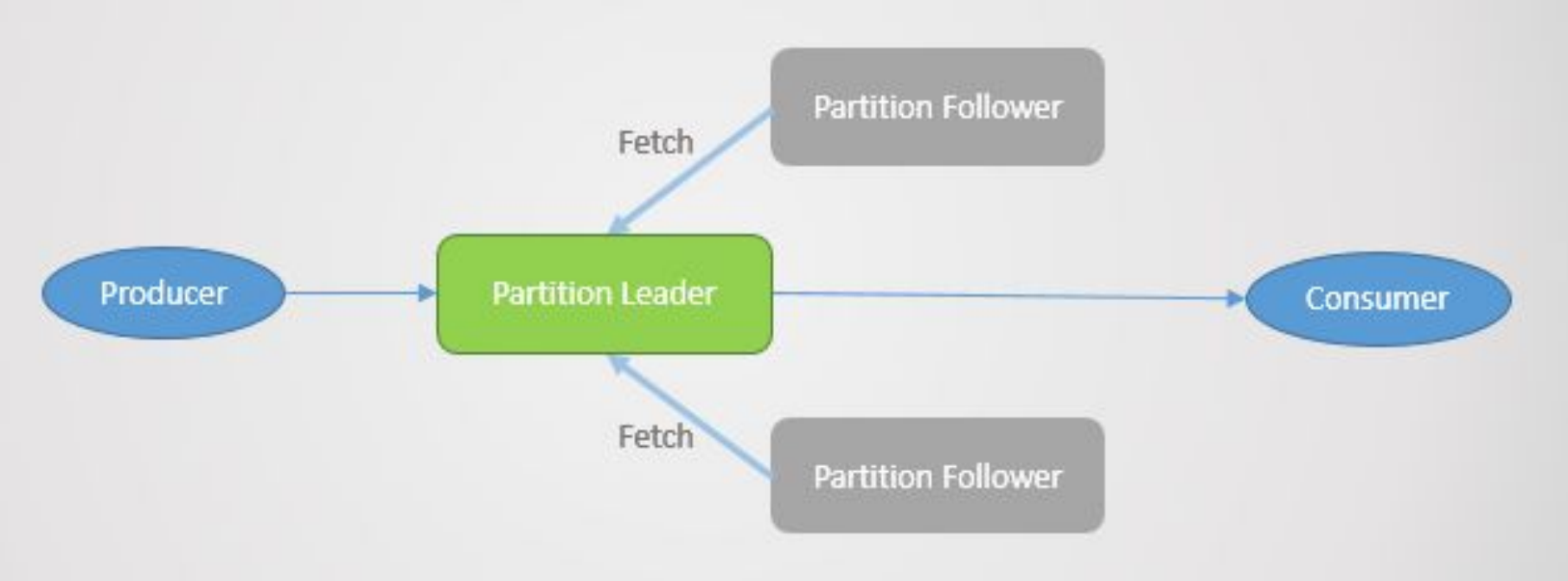

Surviving Broker Restart
- Durable Queue
- Persistent Message
Surviving Broker Loss
- Queue Mirroring (Clustering)
Non-Durable Queue Non-Persistent Message
Durable Queue Non-Persistent Message
Durable Queue Persistent Message
Mirrored Queue Persistent Message
Broker Restart
Queue
Message
Queue
Message
Queue
Message
Queue
Message
Total Broker Loss
Queue
Message
Queue
Message
Queue
Message
Queue
Message

RabbitMQ


Queue Mirror
Publisher
Queue Master
Consumer
Queue Mirror


Topic with:
- 4 partitions
- Replication factor = 3
Broker 1
Broker 2
Broker 3
Partition 0 Follower
Partition 0 Leader
Partition 0 Follower
Partition 1 Leader
Partition 1 Follower
Partition 1 Follower
Partition 2 Follower
Partition 2 Follower
Partition 2 Leader
Partition 3 Follower
Partition 3 Leader
Partition 3 Follower

APACHE kafka®
A distributed streaming platform



Producer

- Fire and forget
- Publisher Confirms
  - *basic.ack*
  - *basic.nack*

- Fire and forget *Acks=0*
- Leader *Acks=1*
- Leader and all In Sync Replicas *Acks=All*

Consumer

- No ack mode
- Manual Acknowledgment mode.
  - *basic.ack*
  - *basic.nack*
  - *basic.reject*

- Auto-commit on an interval
- Manual commit on receipt
- Manual commit at the end
- Manual commit one-by-one

Performance

- 3 nodes
- 8G RAM, 8 cores

400K msg/s

- 51 nodes
- 256G RAM, 56 cores

2 mln msg/s

Overview | Connections | Channels | Exchanges | Queues | Admin

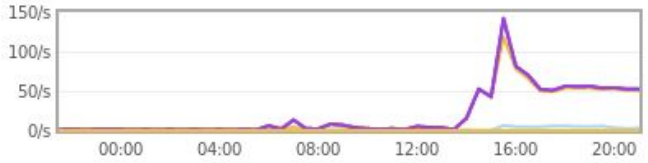
Overview

Totals

Queued messages (chart: last day) (?)

Ready	9,914
Unacked	108
Total	10,022

Message rates (chart: last day) (?)



Publish	44/s	Redelivered	0.00/s	Get (noack)	0.00/s
Confirm	6.0/s	Acknowledge	30/s	Return	0.00/s
Deliver	29/s	Get	0.00/s		

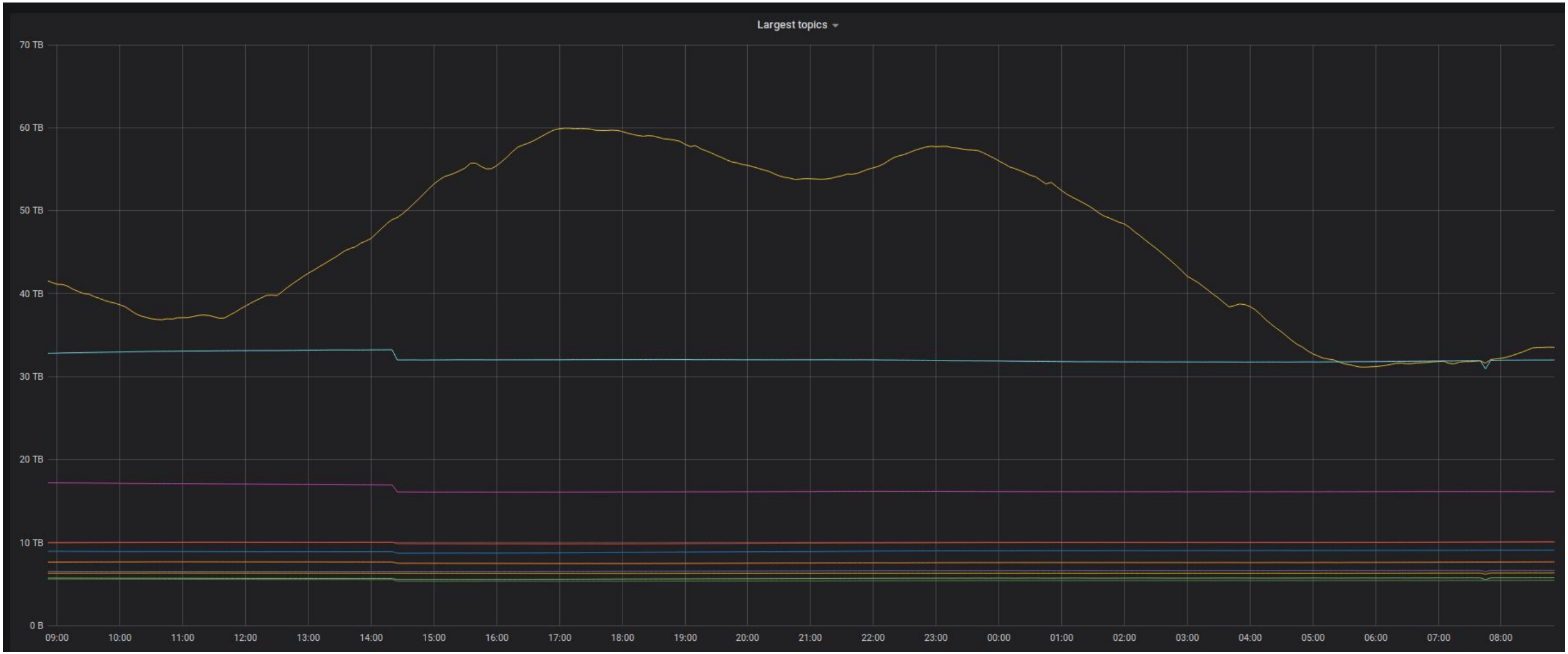
Global counts (?)

Connections: 638 | Channels: 5665 | Exchanges: 2441 | Queues: 2678 | Consumers: 5318

Nodes

Name	File descriptors (?)	Socket descriptors (?)	Erlang processes	Memory	Disk space	Info
rabbit@rabbit001[redacted]	2425 16384 available	230 14653 available	17782 1048576 available	348MB 5.5GB high watermark	9.9GB 48MB low watermark	Disc 3
rabbit@rabbit002[redacted]	2511 16384 available	205 14653 available	21327 1048576 available	441MB 5.5GB high watermark	9.9GB 48MB low watermark	Disc 4 Stats
rabbit@rabbit003[redacted]	2404 16384 available	206 14653 available	15360 1048576 available	326MB 5.5GB high watermark	9.9GB 48MB low watermark	Disc 3

+/-


Largest topics
70 TB
60 TB
50 TB
40 TB
30 TB
20 TB
10 TB
0 B
09:00
10:00
11:00
12:00
13:00
14:00
15:00
16:00
17:00
18:00
19:00
20:00
21:00
22:00
23:00
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00

adform

Questions?

tomasz.gintowt@adform.com

https://www.rabbitmq.com/
https://kafka.apache.org/
https://jack-vanlightly.com/blog/