



HOW TO MONITOR AND WHAT'S NEW IN APACHE KAFKA 2.4

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Jobs

Research & Data:

- Fraud Prevention Specialist (Ad & Traffic Quality)
- Data Scientist (Ad & Traffic Quality)

Dev&IT

- Team Manager/Scrum Master
- Software Engineer .NET (Services Group)
- Software Engineer (Services Group)
- Software Engineer (Java/Scala) (Serving Group)

Project Management

- Portfolio Analyst (PMO)

<https://site.adform.com/careers/open-positions>

Agenda

- Monitoring
 - How?
 - What?
 - Where?
- What's new in 2.4

How ?

Our Monitoring technologies and services



APACHE
kafka®

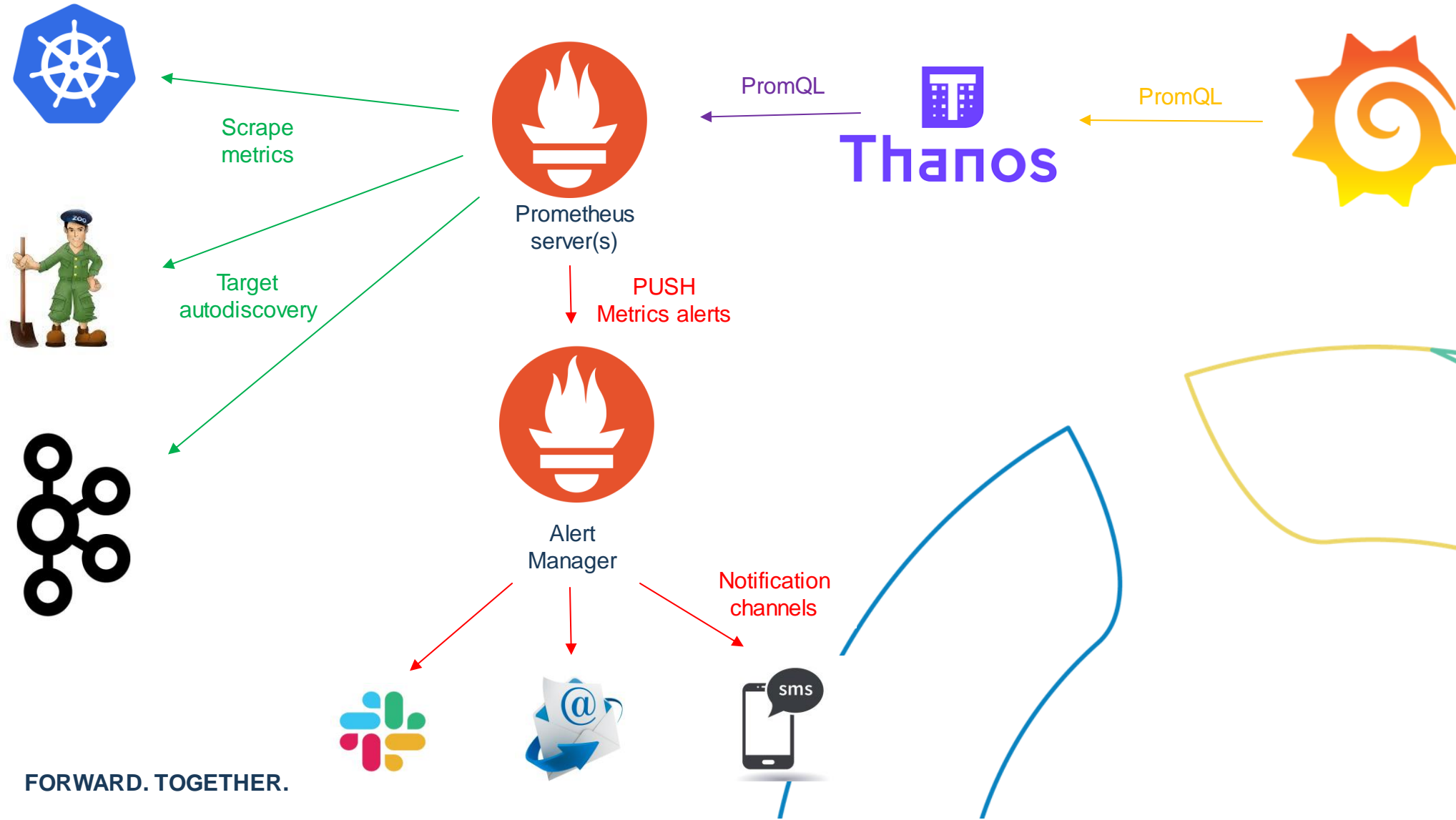



Thanos



How ?

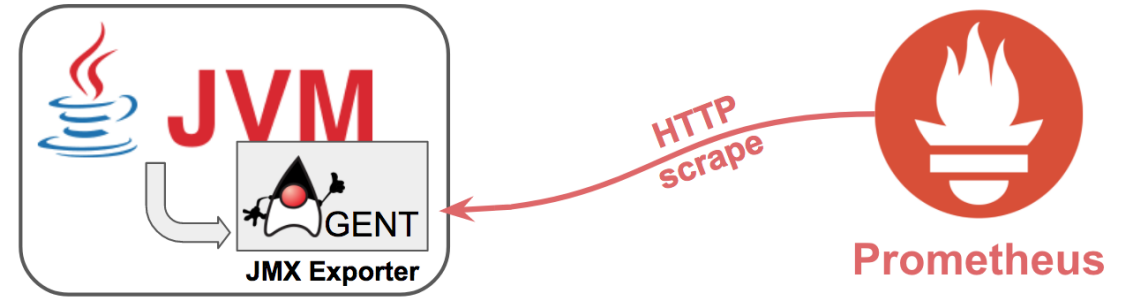
Our Monitoring architecture overview



How?

Prometheus exporters

- node_exporter
https://github.com/prometheus/node_exporter
- jmx_exporter
https://github.com/prometheus/jmx_exporter
- kafka-lag-exporter
<https://github.com/lightbend/kafka-lag-exporter>
- kafka-exporter
https://github.com/danielqsj/kafka_exporter
- custom implementations



How?

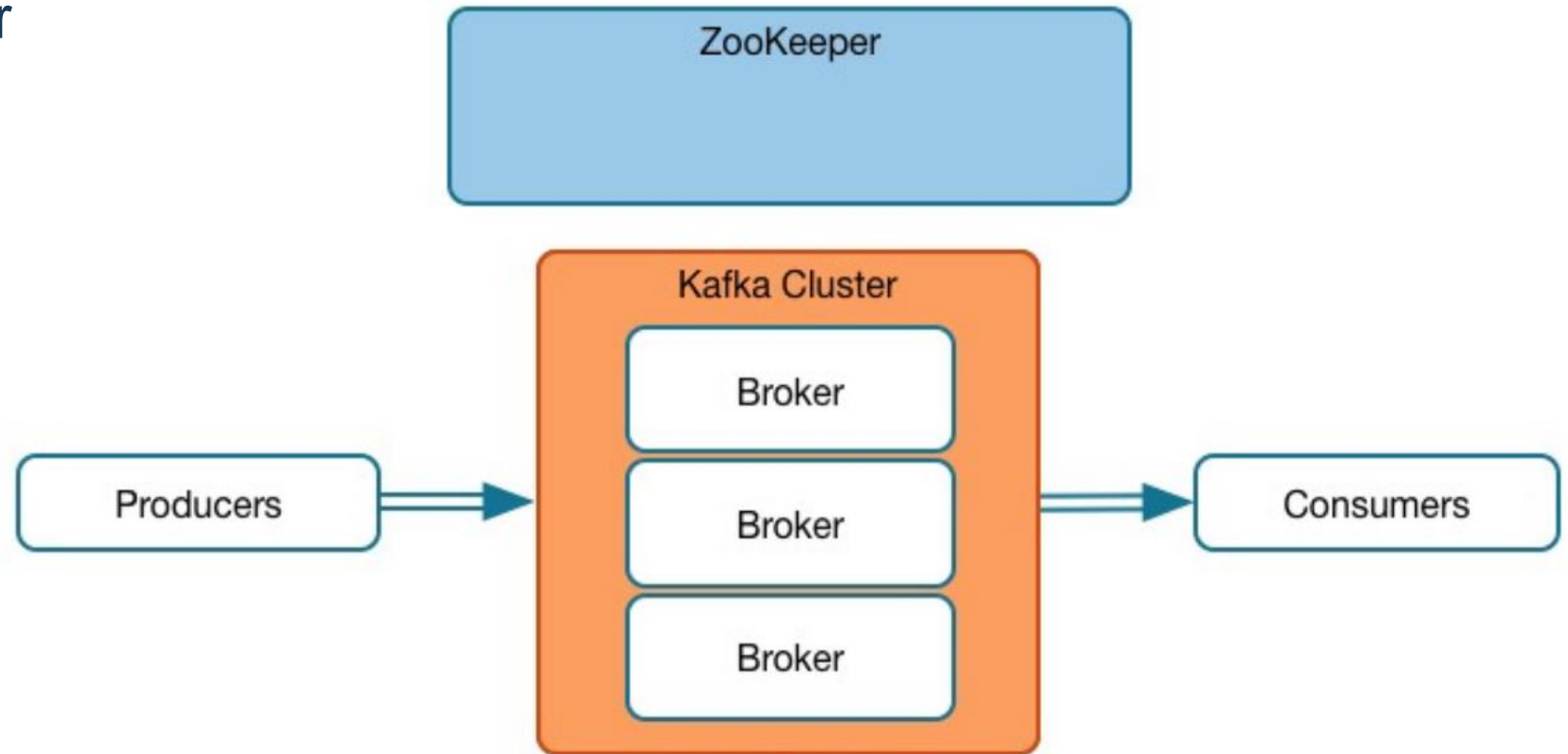
Exporters and metrics

```
[root@kafkan001d1vteo ~]# ps aux | egrep '(node|jmx)_'
root      842  42.5   8.2 5533908 675264 ?        Ssl   2019 129573:50 /bin/java -jar /opt/prometheus/jmx-exporter/jmx_exporter.jar 9404 /
tc/jmx-exporter/jmx_exporter.yml
root      850   0.3   0.1 115728 12612 ?        Ssl   2019  954:03 /usr/sbin/node_exporter --web.listen-address :9100 --collector.textfil
.directory=/opt/prometheus --collector.netdev.ignored-devices=^(veth|br-|docker).+$
[dev] [root@kafkan001d1vteo ~]#
[dev] [root@kafkan001d1vteo ~]# head /etc/jmx-exporter/jmx_exporter.yml
hostPort: localhost:9998
lowercaseOutputName: true
whitelistObjectNames:
  - "java.lang:type=ClassLoading"
  - "java.lang:type=Compilation"
  - "java.lang:type=GarbageCollector,*"
  - "java.lang:type=Memory"
  - "java.lang:type=OperatingSystem"
  - "java.lang:type=Threading"
  - "kafka.cluster:type=Partition,name=UnderReplicated,topic=*,partition=*"
[dev] [root@kafkan001d1vteo ~]#
[dev] [root@kafkan001d1vteo ~]# curl -s localhost:9404/metrics | grep LeaderCount
# HELP kafka_server_replicamanager_value Attribute exposed for management (kafka.server<type=ReplicaManager, name=LeaderCount><>Value)
kafka_server_replicamanager_value{name="LeaderCount",} 402.0
[dev] [root@kafkan001d1vteo ~]#
[dev] [root@kafkan001d1vteo ~]#
```

What?

Key architecture components

- OS
- Kafka Broker
- Zookeeper
- Producer
- Consumer
- MirrorMaker



What?

Key metrics

OS

- Disk space and I/O
- Network bandwidth
- RAM (for page cache)
- CPU utilization

Producer

- record send rate
- record queue

Consumer

- consume rate
- lag

Kafka broker

- Messages in/out rate
- **Offline partitions**
- Broker up/down
- Partition Leader per broker
- Preferred replica imbalance
- URP
- LogCleaner

- **JVM**
- Heap Memory used
- GC Process time

Zookeeper

- Nodes
- Followers
- In-Sync Followers
- Pending Syncs

Where?

Metrics database



Thanos Graph Stores Status Help

☐ Enable query history

sum(rate(kafka_server_brokertopicmetrics_count{topic=~"clicks.+",name="MessagesInPerSec"}[10m])) by (topic)

Execute

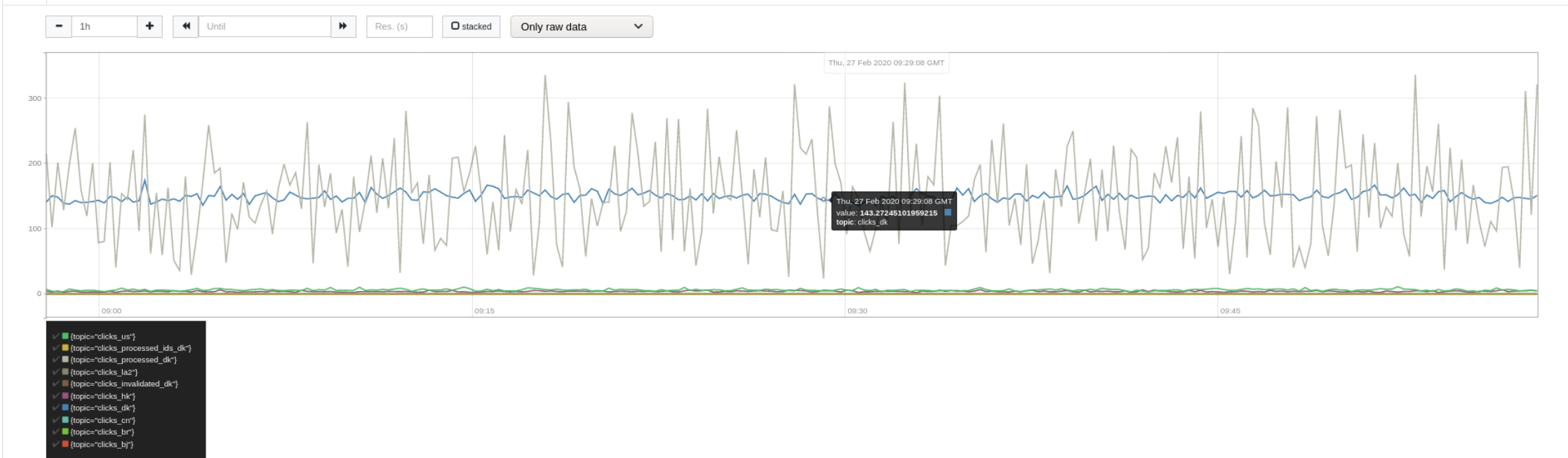
- insert metric at cursor -

☒ deduplication

☒ partial response

Graph

Console



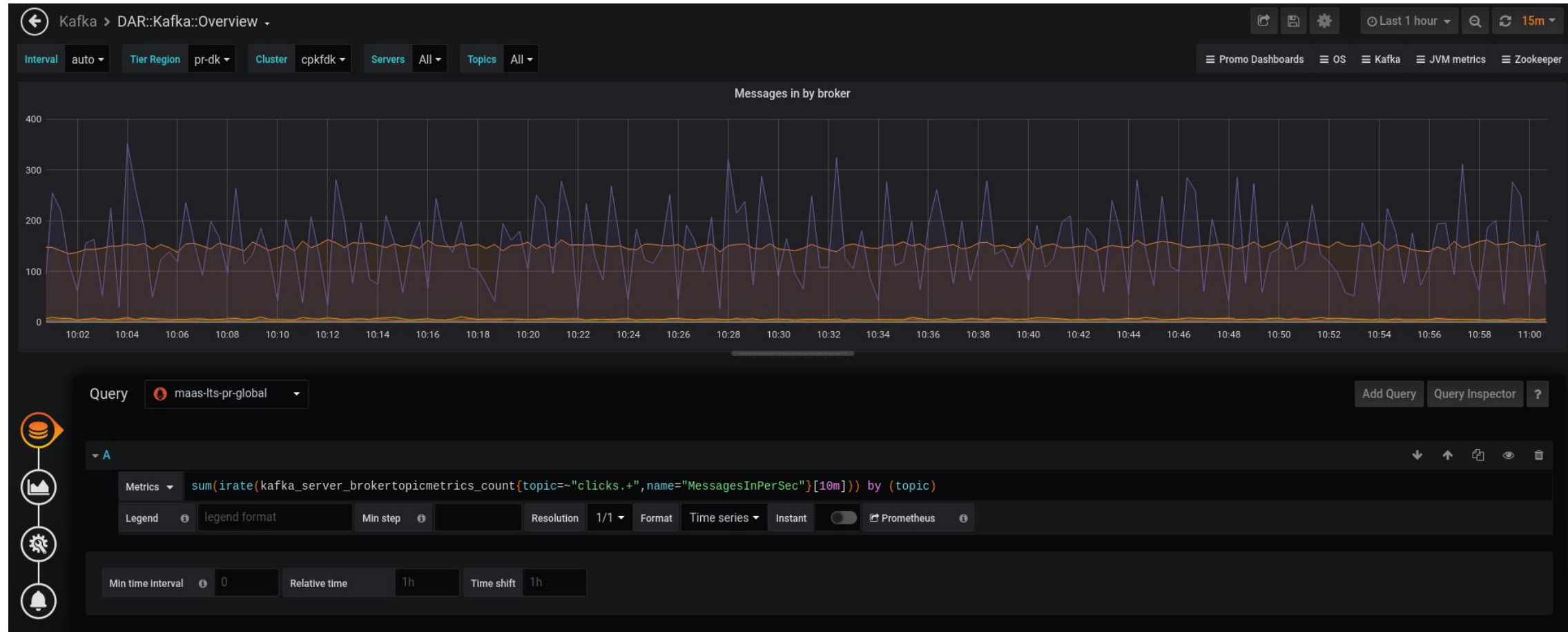
Load time: 1277ms
Resolution: 14s
Total time series: 10

Remove Graph



Where?

Visualize metrics






Where?

Alerting and thresholds

Prometheus Alerts Graph Status ▾ Help

Kafka service down (0 active)

```
alert: Kafka
  service down
expr: up{cluster="kafka-dar", job="jmx"}
    == 0
for: 2m
labels:
  service: kafka_dar
  severity: critical
  tenant: Team Data Services DAR
annotations:
  description: Kafka service is not running
  source_url: https://gitz.adform.com/MaaS/alerts/edit/master/alerts/Team%20Data%20Services%20DAR/Kafka/kafka.yml
```

 **MaaS** APP 10:27

[FIRING:1] Kafka service down

Kafka service down

Kafka service is not running.

- Instance: **DDPKFK003D1VTE0.LIN.D1.ADFORM.ZONE**
- Severity: **CRITICAL**
- Tier: **D1**

[Show more](#)

Configured via <https://gitz.adform.com/maas/alerts/>.

Query 🔍

Silence 🔔

Edit ✎

10:28

[RESOLVED:1] Kafka service down

Kafka service down

DURATION: **30s**

Kafka service is not running.

- Instance: **DDPKFK003D1VTE0.LIN.D1.ADFORM.ZONE**
- Severity: **CRITICAL**

[Show more](#)

Configured via <https://gitz.adform.com/maas/alerts/>.

Query 🔍

Silence 🔔

Edit ✎

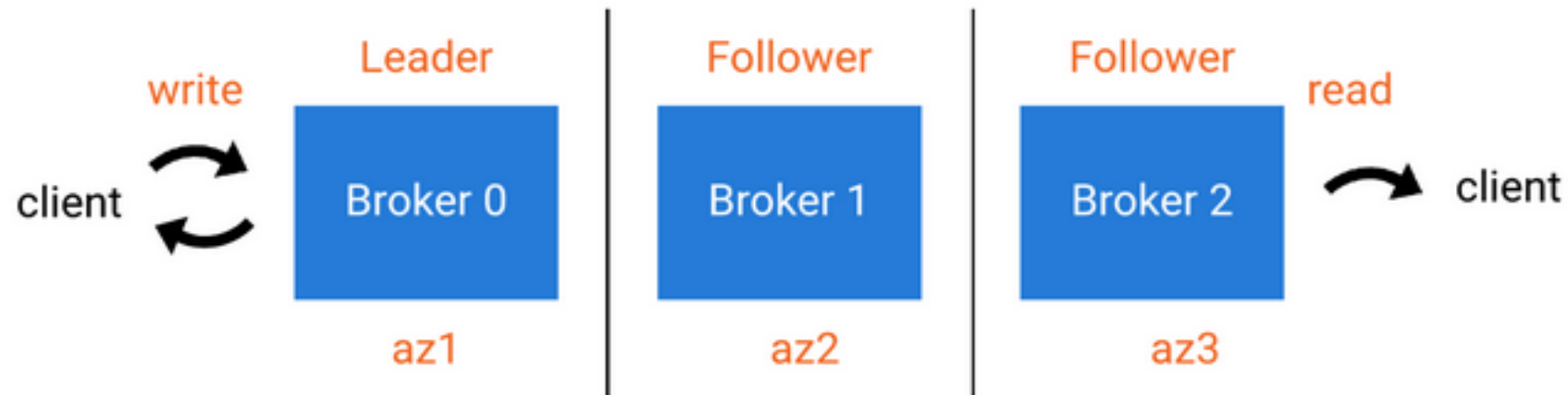
Demo



What's new in Apache Kafka 2.4

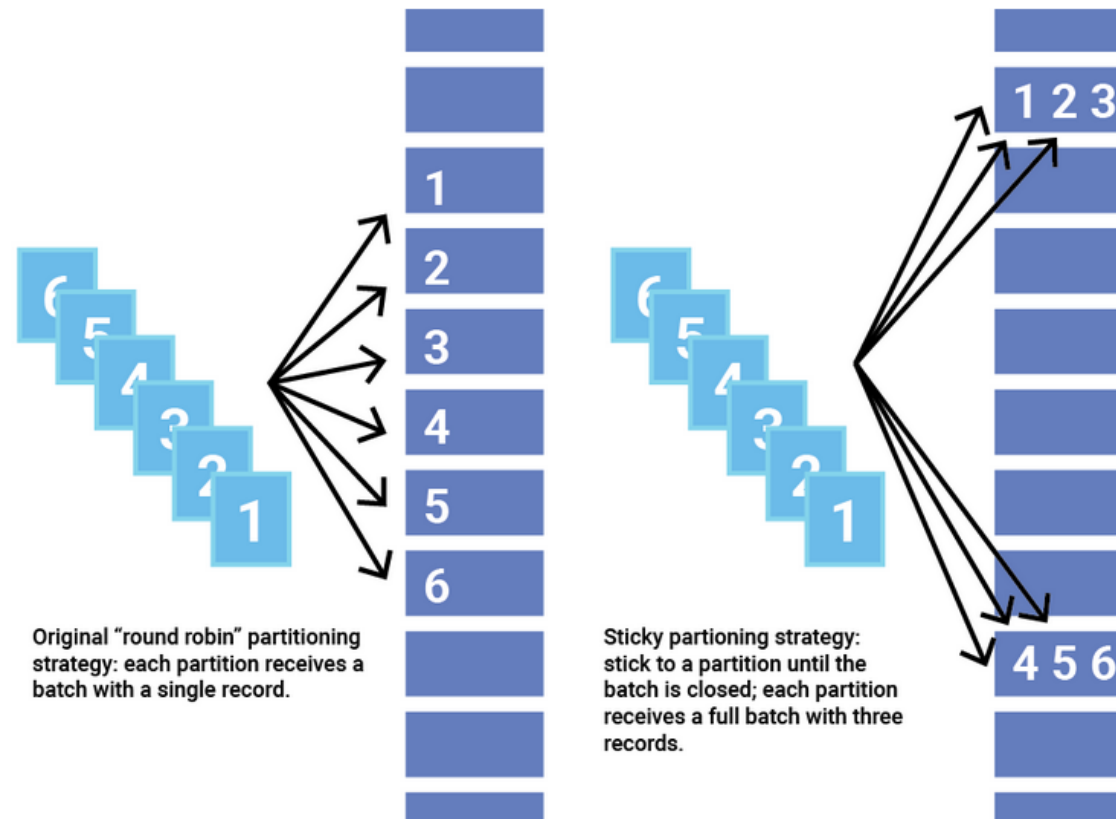
What's new in Apache Kafka 2.4

KIP-392: Allow consumers to fetch from closest replica



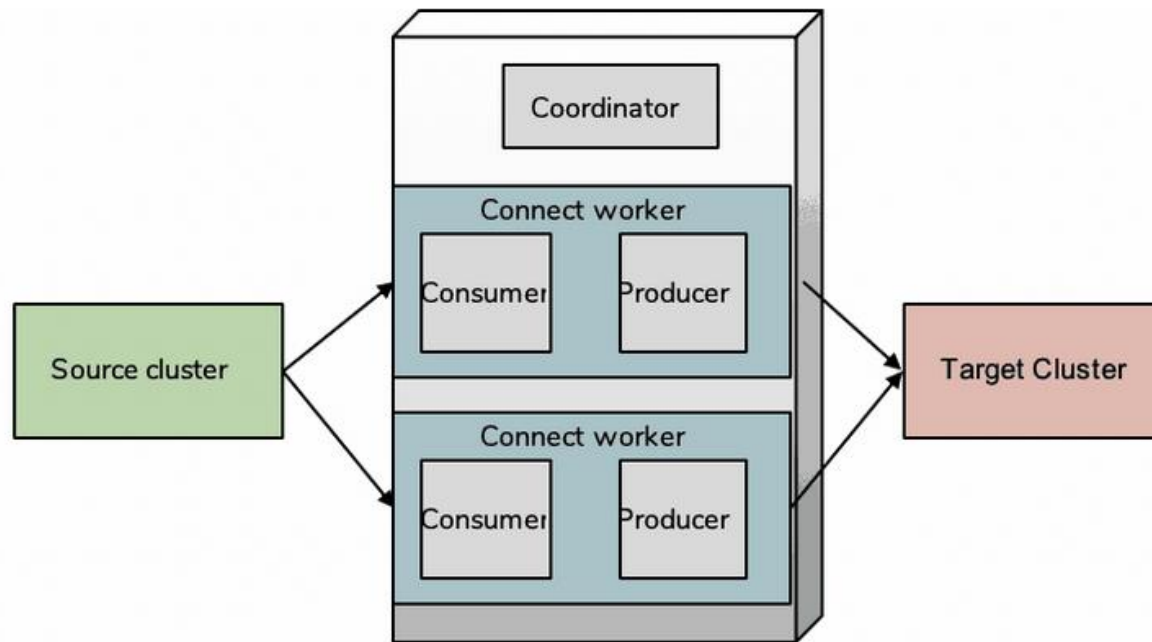
What's new in Apache Kafka 2.4

KIP-480: Sticky Partitioner



What's new in Apache Kafka 2.4

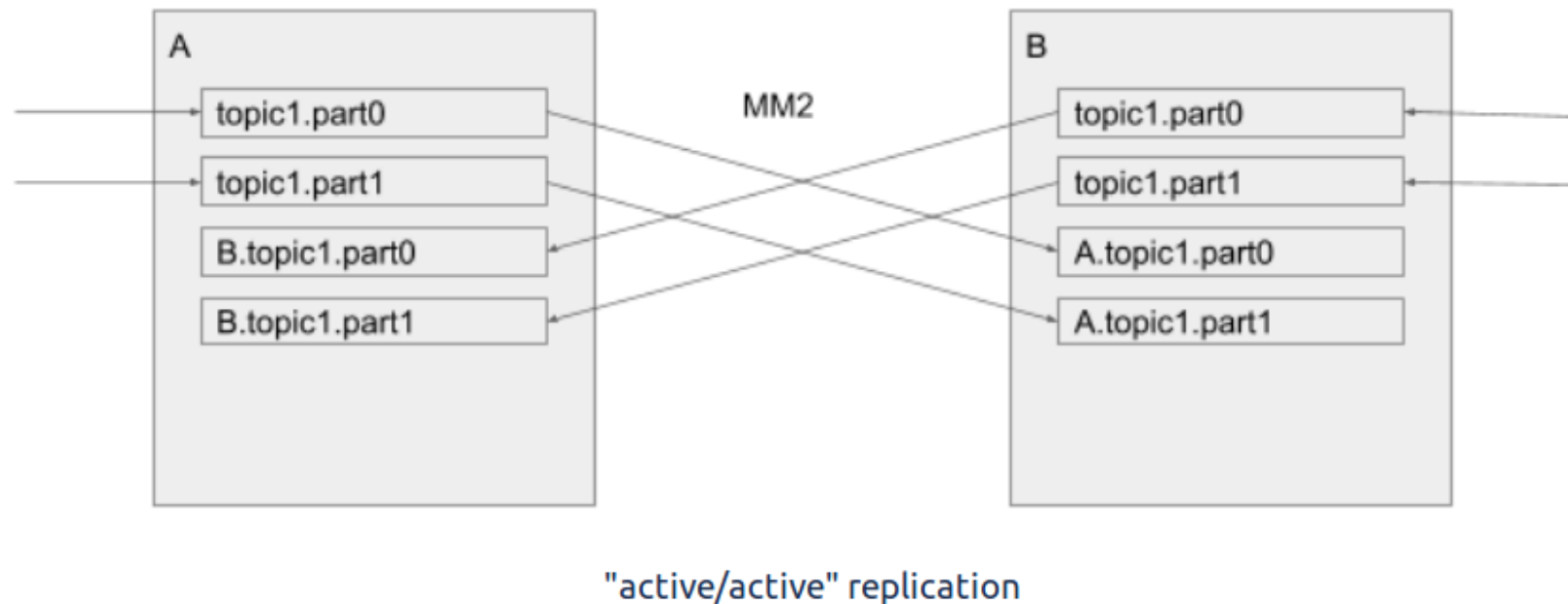
KIP-382: MirrorMaker 2.0



The MM2 architecture based on the Connect framework

What's new in Apache Kafka 2.4

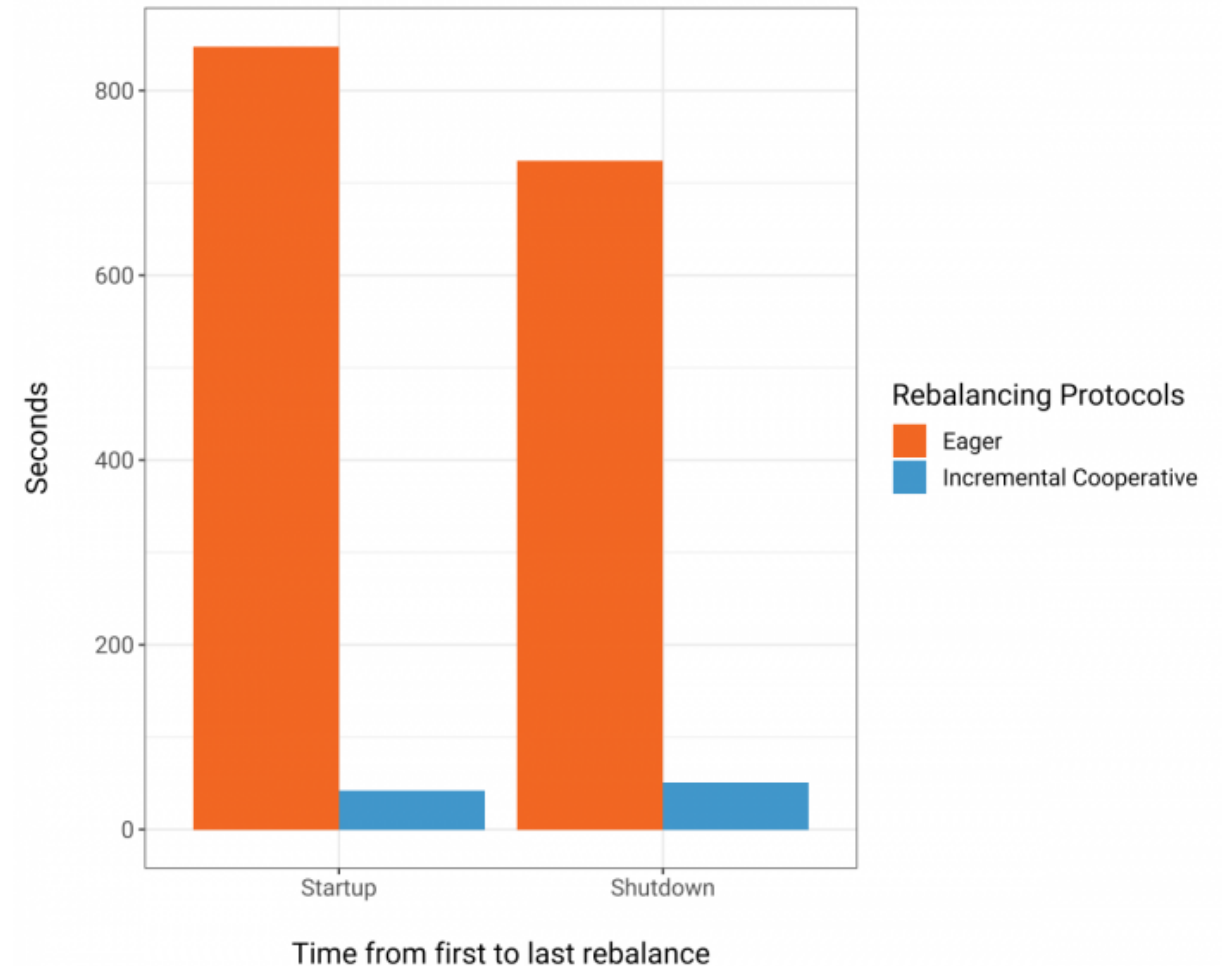
KIP-382: MirrorMaker 2.0



What's new in Apache Kafka 2.4

KIP-429: Kafka Consumer Incremental Rebalance Protocol

Rebalancing 90 S3 Connectors and 900 Tasks



What's new in Apache Kafka 2.4

KIP-412 adds support to dynamically alter a broker's log levels using the Admin API.

```
bin/kafka-configs.sh --bootstrap-server localhost:9092 --describe --entity-type broker-loggers --entity-name 0 // show all the log levels for broker 0
```

```
bin/kafka-configs.sh --bootstrap-server localhost:9092 --alter --add-config "kafka.server.ReplicaManager=WARN,kafka.server.KafkaApis=DEBUG" --entity-type broker-loggers --entity-name 0 // set some log levels for broker 0
```

```
bin/kafka-configs.sh --bootstrap-server localhost:9092 --alter --delete-config kafka.server.ReplicaManager --entity-type broker-loggers --entity-name 0 // will set the log level to the ROOT logger level
```

What's new in Apache Kafka 2.4

KIP-525: Return topic metadata and configs in CreateTopics response

KIP-503 adds metrics to monitor the number of topics/replicas marked for deletion.

KIP-460 modifies the PreferredLeaderElection RPC to support unclean leader election in addition to preferred leader election.

What's new in Apache Kafka 2.4

ZooKeeper upgrade to 3.5.x

ZooKeeper has been upgraded to 3.5.x. support for TLS encryption added in ZooKeeper 3.5.x. This enables us to configure TLS encryption between Kafka brokers and ZooKeeper.

Scala 2.13 support

Apache Kafka 2.4.0 now supports Scala 2.13 while also remaining compatible with Scala 2.12 and 2.11.

adform

THANK YOU!

FORWARD. TOGETHER.