Building Real-Time Pulsar Apps on K8

Tim Spann | Developer Advocate

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Tim Spann, Developer Advocate at StreamNative

- FLiP(N) Stack = Flink, Pulsar and NiFi Stack
- Streaming Systems & Data Architecture Expert
- Experience:
  - 15+ years of experience with streaming technologies including Pulsar, Flink, Spark, NiFi, Big Data, Cloud, MXNet, IoT, Python and more.
  - Today, he helps to grow the Pulsar community sharing rich technical knowledge and experience at both global conferences and through individual conversations.

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FLiP Stack Weekly

https://bit.ly/32dAJft

This week in Apache Flink, Apache Pulsar, Apache NiFi, Apache Spark and open source friends.

Stream Native

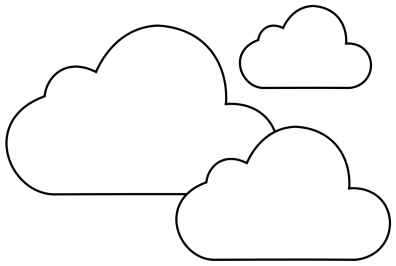
Founded by the original developers of Apache Pulsar.

Passionate and dedicated team.

StreamNative helps teams to **capture**, **manage**, and **leverage data** using Pulsar's unified messaging and streaming platform.

streamnative.io

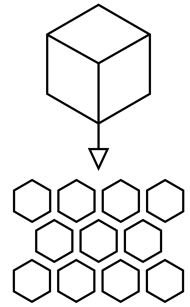
Apache Pulsar - Built for Containers / Modern Cloud



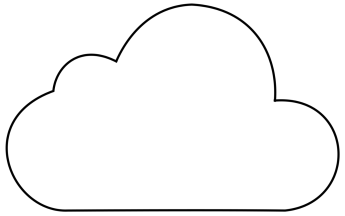
Hybrid & Multi-Cloud

kubernetes

Containers



Microservices



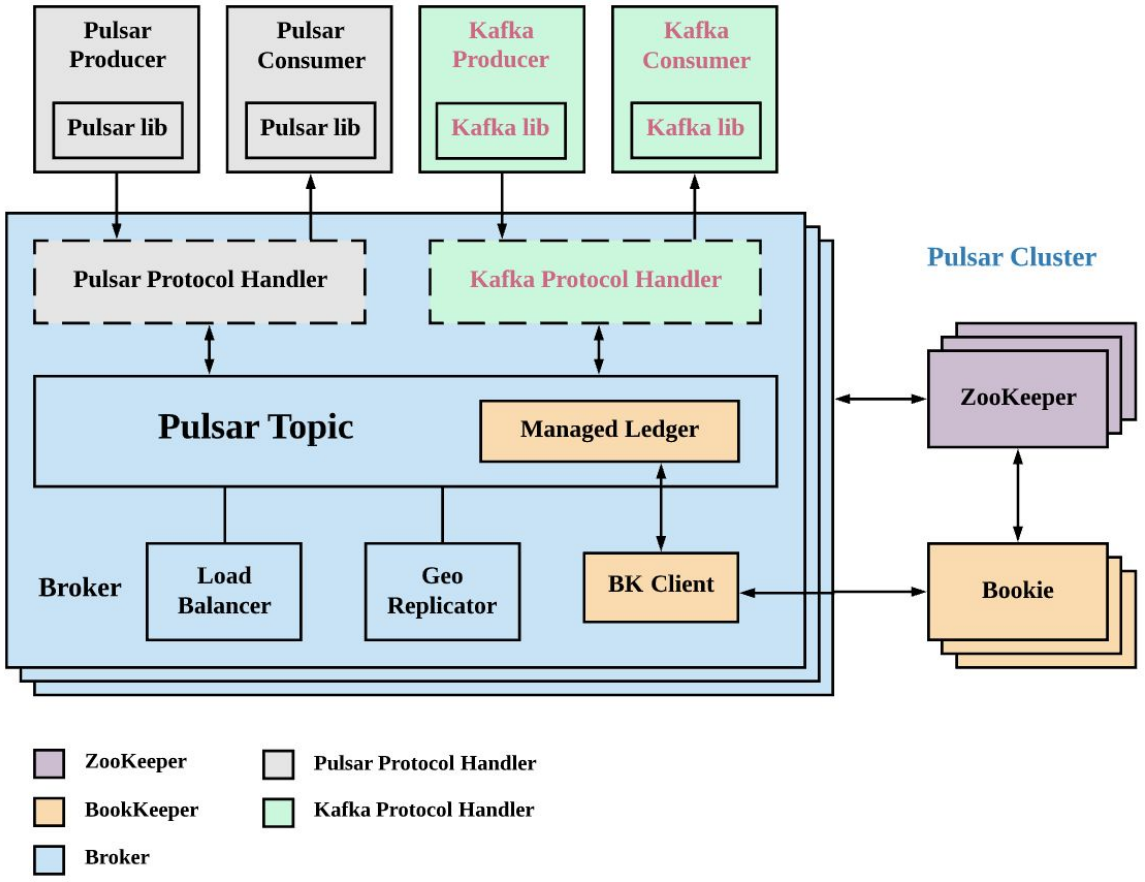
Cloud Native

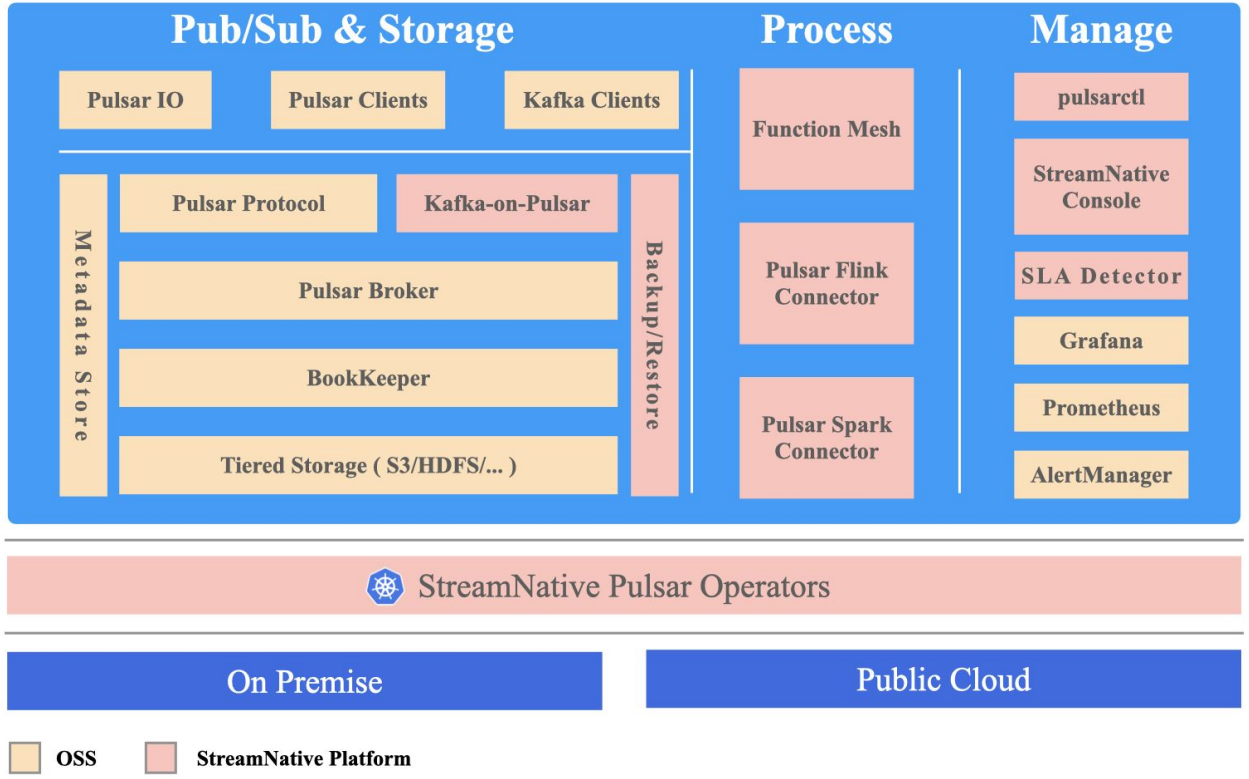
Apache Pulsar adoption is being driven by organizations seeking cloud-native architectures and new uses cases.

PULSAR

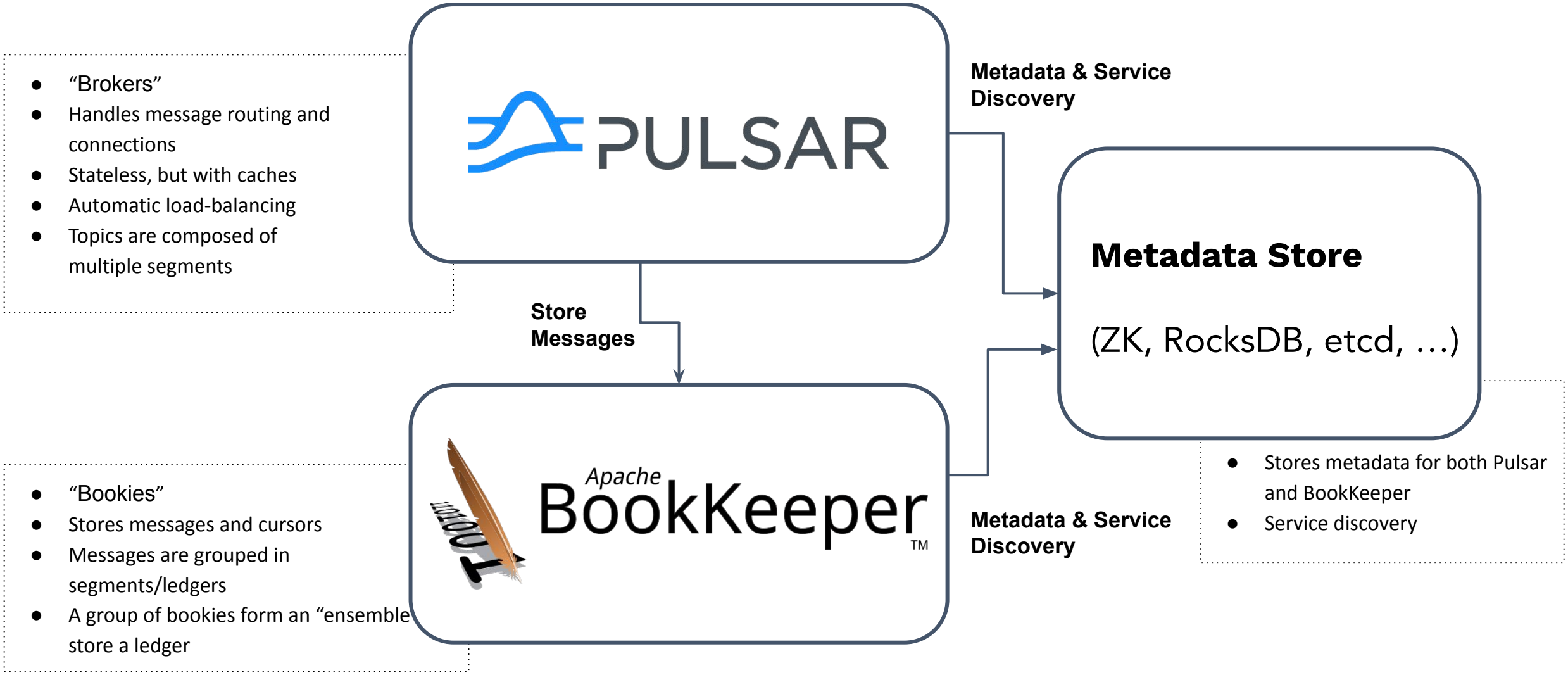
Apache Pulsar + Kafka K8

https://docs.streamnative.io/platform/v1.3.0/quickstart





Pulsar Cluster

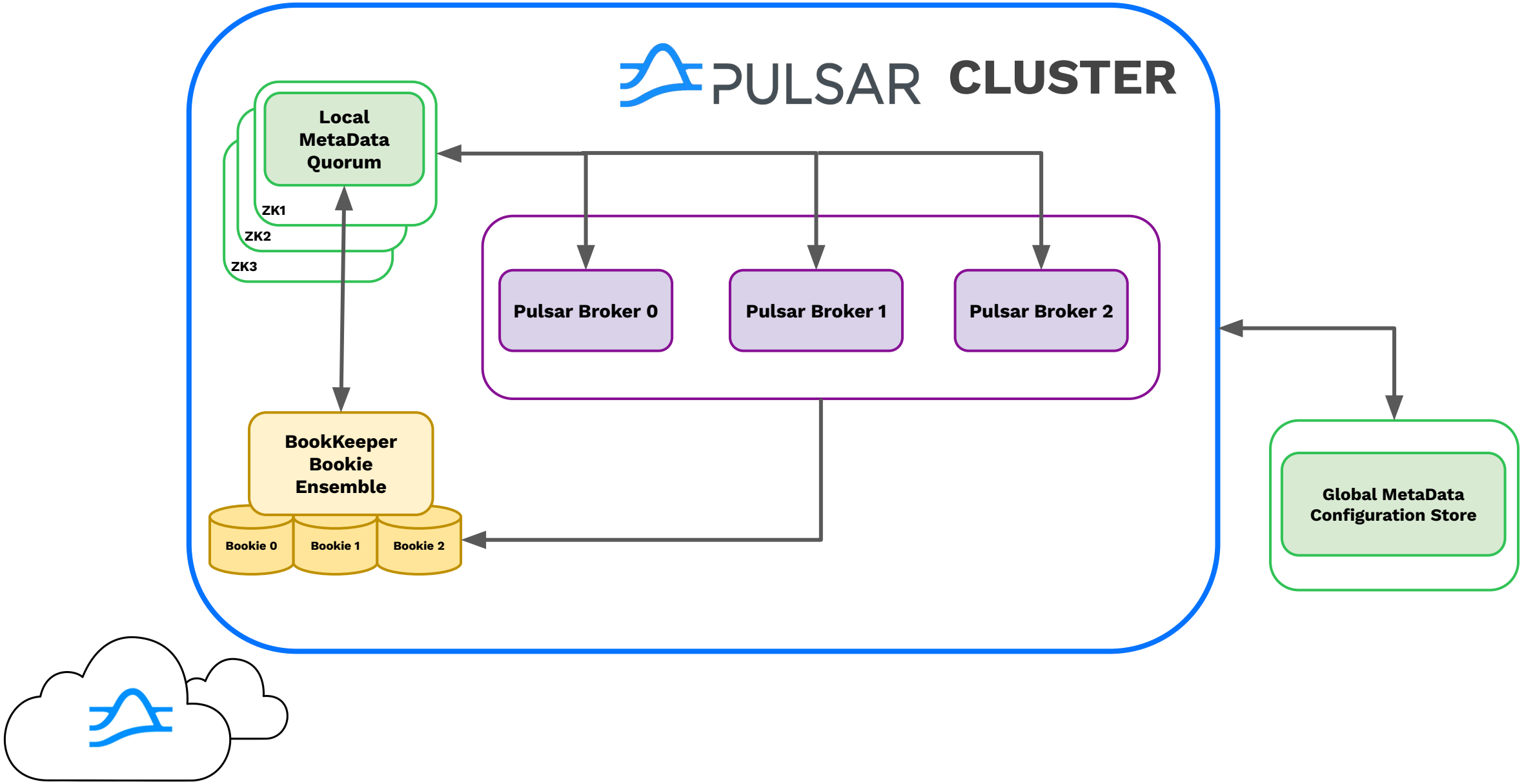


- "Brokers"
- Handles message routing and connections
- Stateless, but with caches
- Automatic load-balancing
- Topics are composed of multiple segments

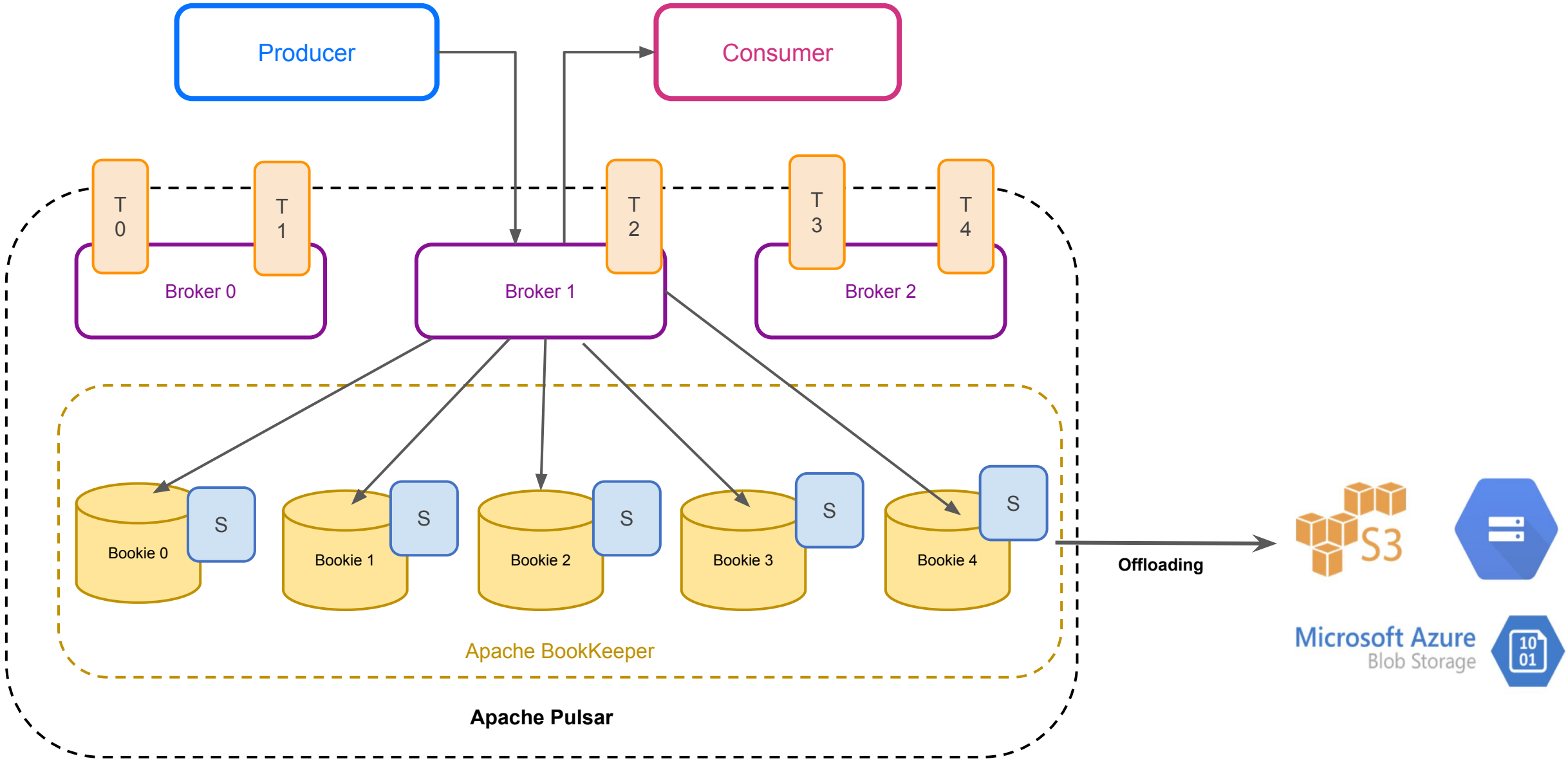
- Stores metadata for both Pulsar and BookKeeper
- Service discovery

- "Bookies"
- Stores messages and cursors
- Messages are grouped in segments/ledgers
- A group of bookies form an "ensemble" store a ledger

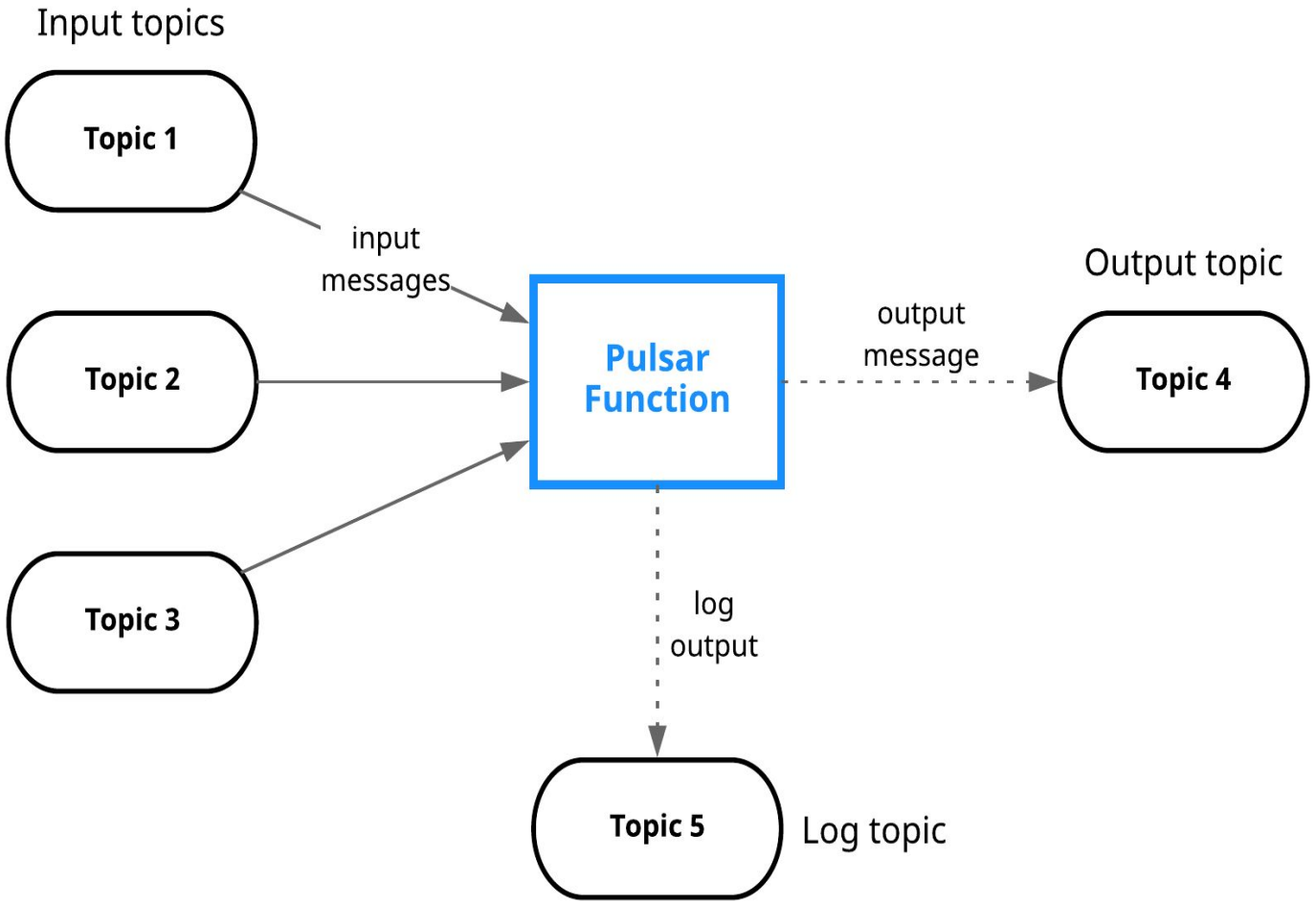
Pulsar Cluster



Offloader & Tiered Storage



Pulsar Functions



- Consume messages from one or more Pulsar topics.
- Apply user-supplied processing logic to each message.
- Publish the results of the computation to another topic.
- Support multiple programming languages (Java, Python, Go)
- Can leverage 3rd-party libraries

Pulsar Python NLP Function

Entire Function

```
from pulsar import Function
from vaderSentiment.vaderSentiment import SentimentIntensityAnalyzer
import json

class Chat(Function):
    def __init__(self):
        pass

    def process(self, input, context):
        fields = json.loads(input)
        sid = SentimentIntensityAnalyzer()
        ss = sid.polarity_scores(fields["comment"])
        row = { }
        row['id'] = str(msg_id)
        if ss['compound'] < 0.00:
            row['sentiment'] = 'Negative'
        else:
            row['sentiment'] = 'Positive'
        row['comment'] = str(fields["comment"])
        json_string = json.dumps(row)
        return json_string
```

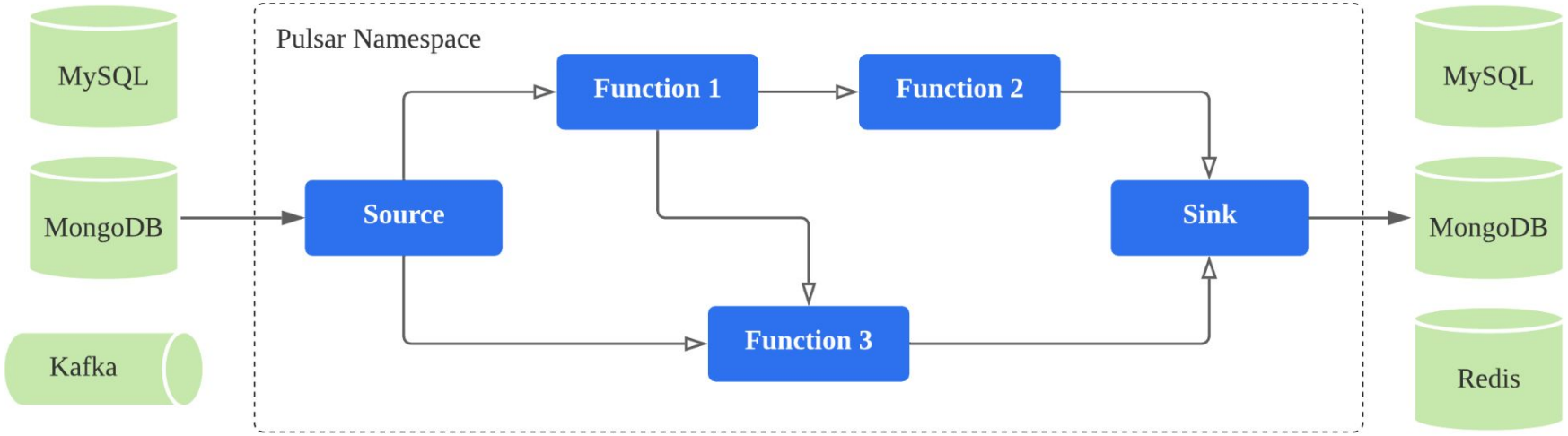
https://github.com/tspannhw/pulsar-pychat-function

Function Mesh

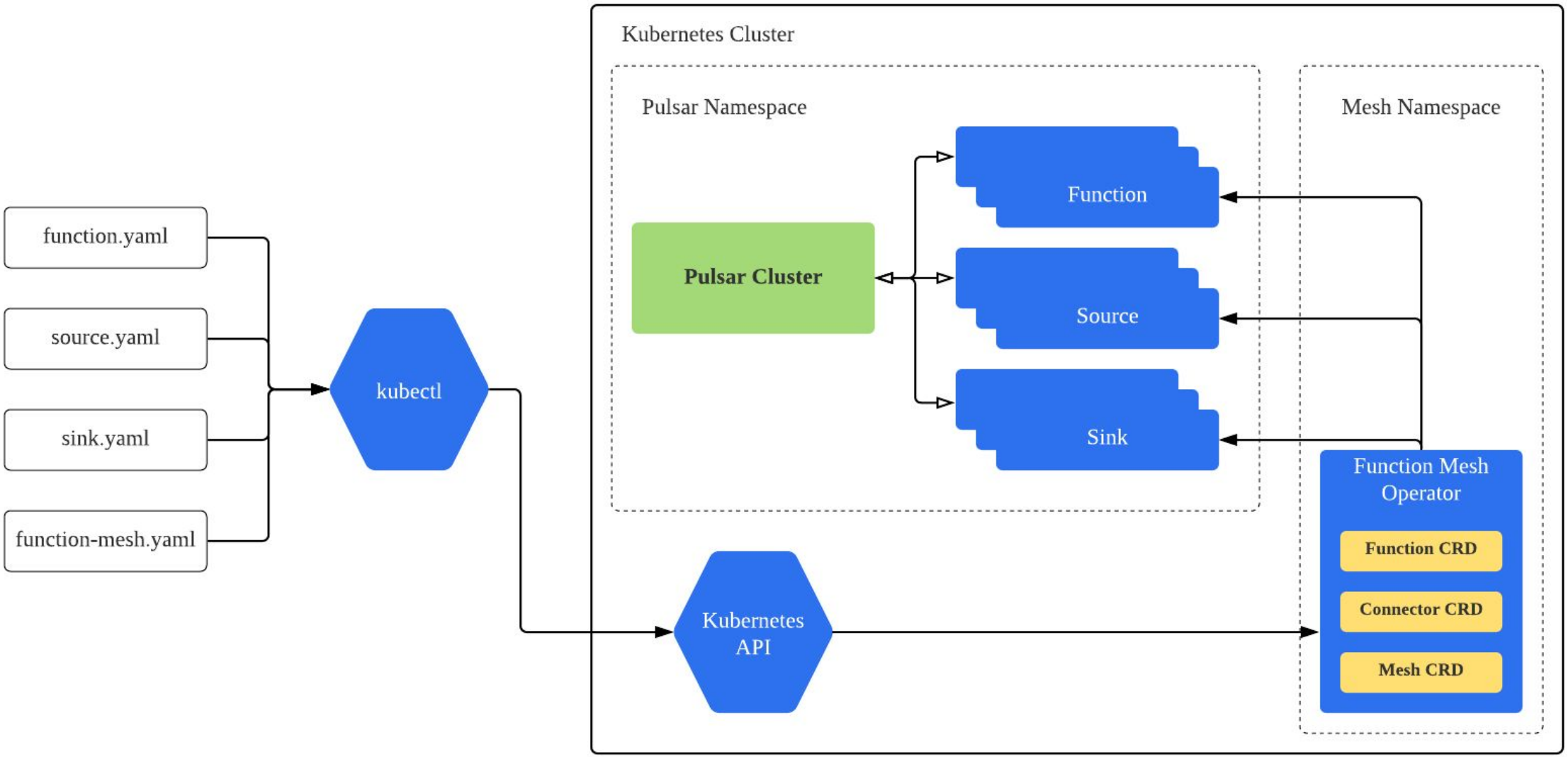
for Pulsar Functions

OPEN SOURCED BY StreamNative

BUILT FOR kubernetes



K8 Deploy


function.yaml
source.yaml
sink.yaml
function-mesh.yaml
kubectl
Kubernetes Cluster
Pulsar Namespace
Pulsar Cluster
Function
Source
Sink
Mesh Namespace
Function Mesh Operator
Function CRD
Connector CRD
Mesh CRD
Kubernetes API

Apache Pulsar Resources

https://github.com/tspannhw/FLiPN-Conf42-KubeNative-2022