Serverless Event Streaming Applications as Functions on K8

16 May 2022 I Valencia, Spain

Timothy Spann

Developer Advocate

Stream Native

Timothy Spann
Developer Advocate

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, Kafka, Big Data, Cloud, MXNet, IoT and more.

Today, he helps to grow the Pulsar community sharing rich technical knowledge and experience at both global conferences and through individual conversations.

CLOUDERA HORTONWORKS Pivotal Hewlett Packard Enterprise pwc

Stream Native

When is Messaging and Streaming used?

Accessing **historical** as well as **real-time data**

Pub/sub model enables event streams to be sent from multiple producers, and consumed by multiple consumers

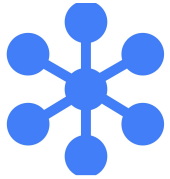
To process large amounts of **data in a highly scalable way**

Pulsar Benefits

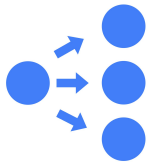
Building Microservices

Building Real Time Applications

Tiered storage

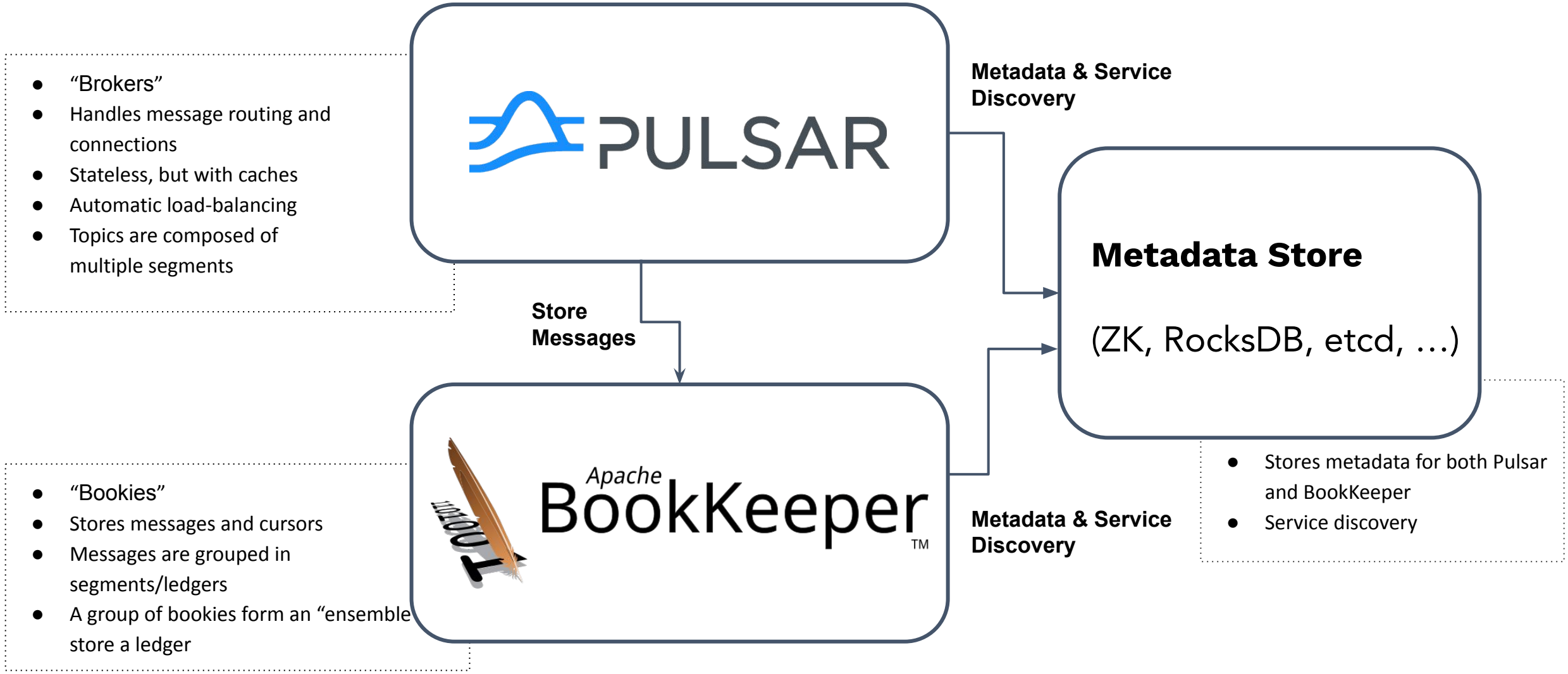


Asynchronous Communication



Highly Resilient

Pulsar Cluster

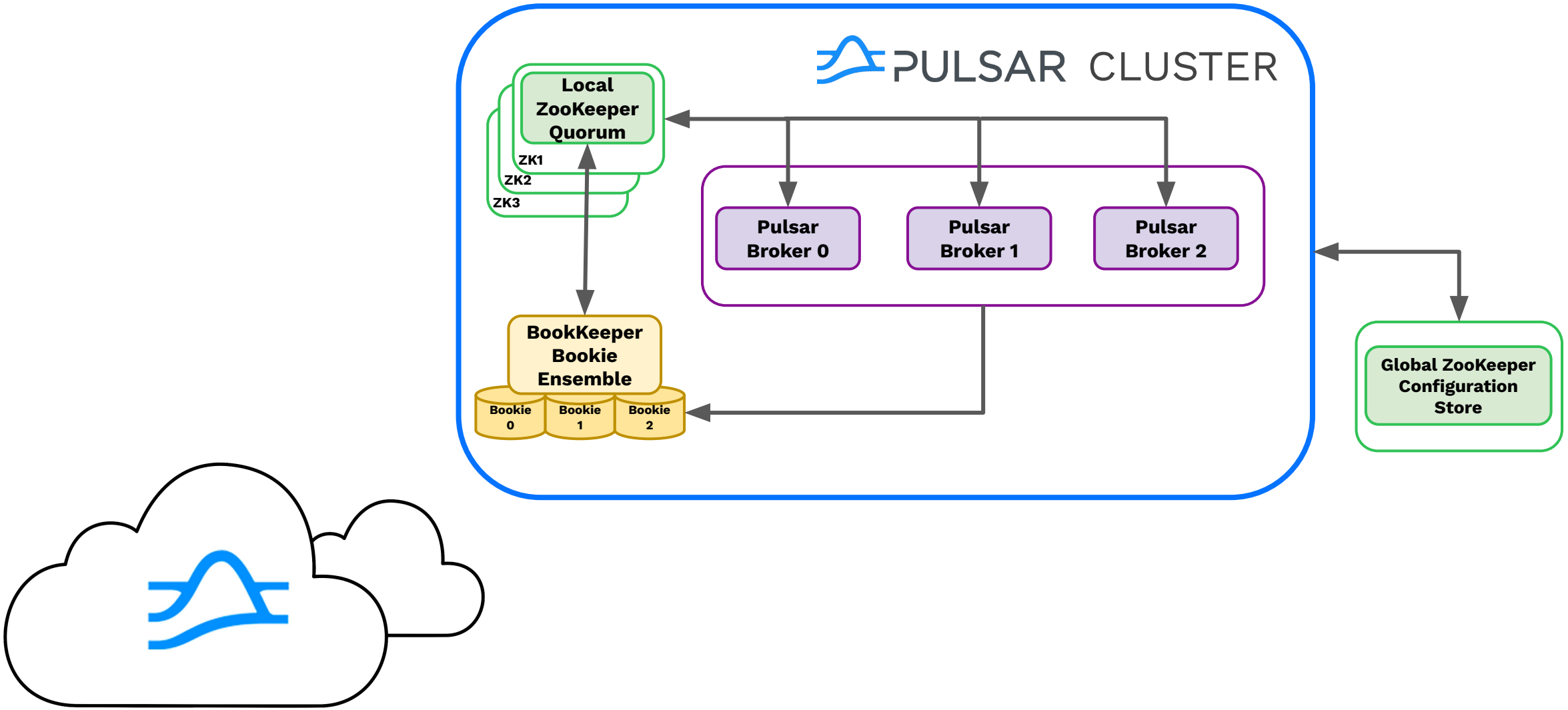


- "Brokers"
- Handles message routing and connections
- Stateless, but with caches
- Automatic load-balancing
- Topics are composed of multiple segments

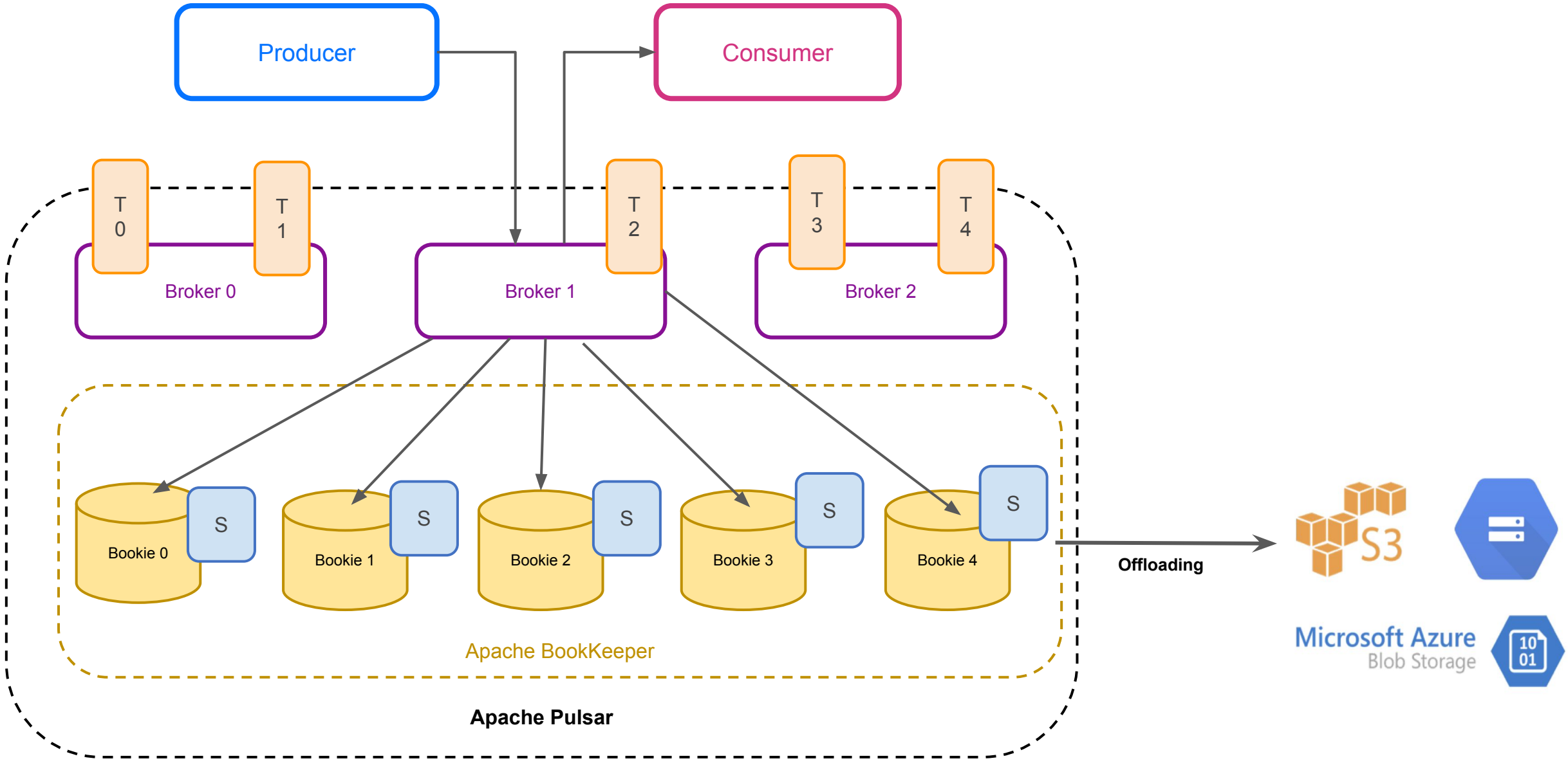
- "Bookies"
- Stores messages and cursors
- Messages are grouped in segments/ledgers
- A group of bookies form an "ensemble" store a ledger

- Stores metadata for both Pulsar and BookKeeper
- Service discovery

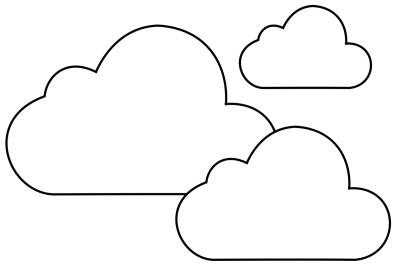
Pulsar Cluster



Offloader & Tiered Storage



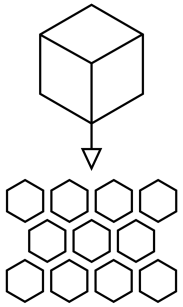
Apache Pulsar - Built for Containers / Modern Cloud



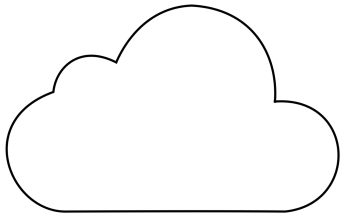
Hybrid & Multi-Cloud

kubernetes

Containers



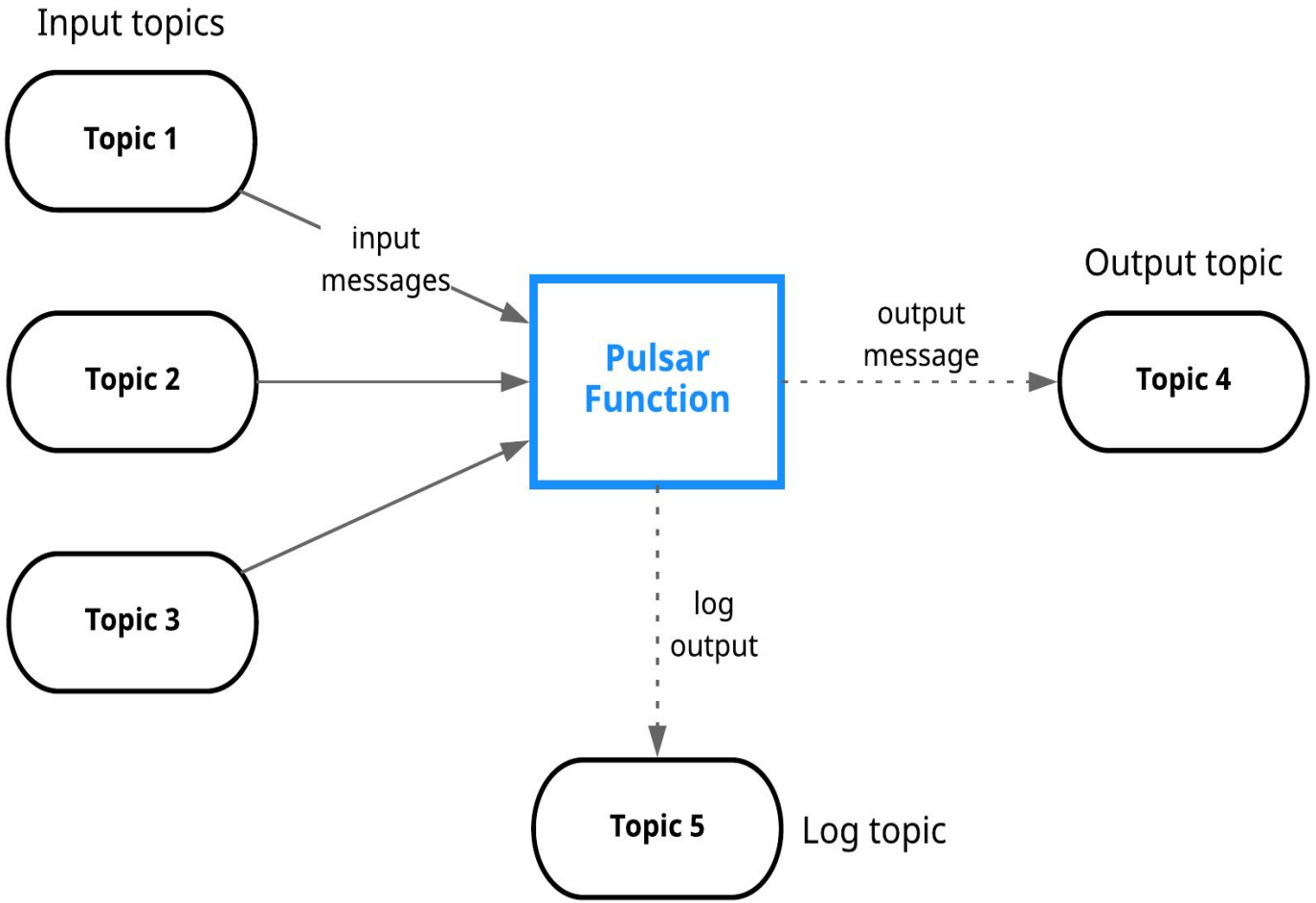
Microservices



Cloud Native

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

Pulsar 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

Why Pulsar Functions?

Entire Function

```
import java.util.function.Function;

public class MyFunction implements Function<String, String> {
    public String apply(String input) {
       return doBusinessLogic(input);
    }
}
```

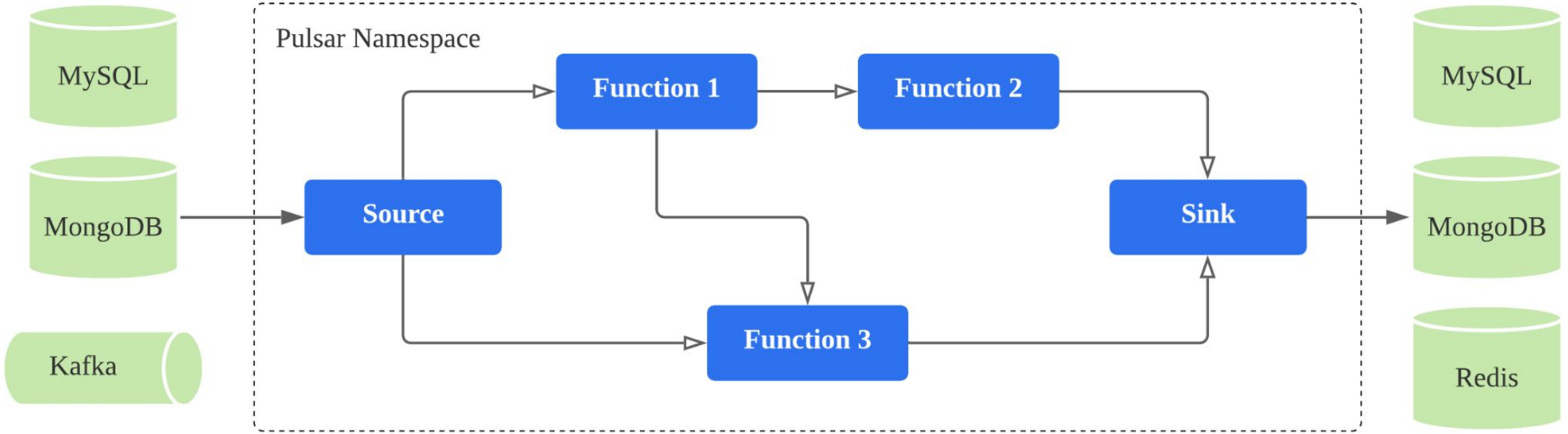
The incoming messages are passed into the function one-by-one

The returned value is automatically published to the output topic

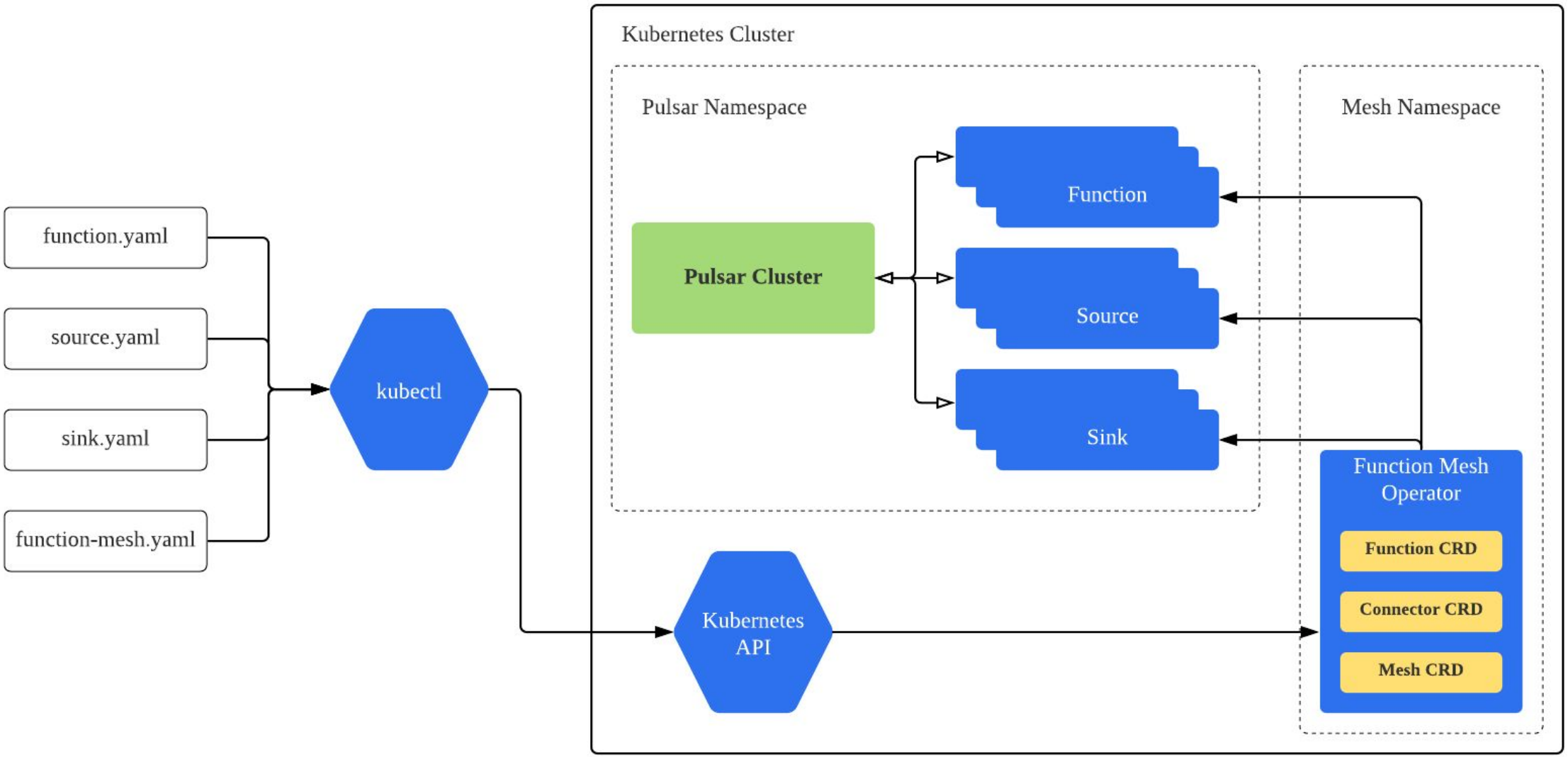
Function Mesh

Pulsar Functions, along with Pulsar IO/Connectors, provide a powerful API for ingesting, transforming, and outputting data.

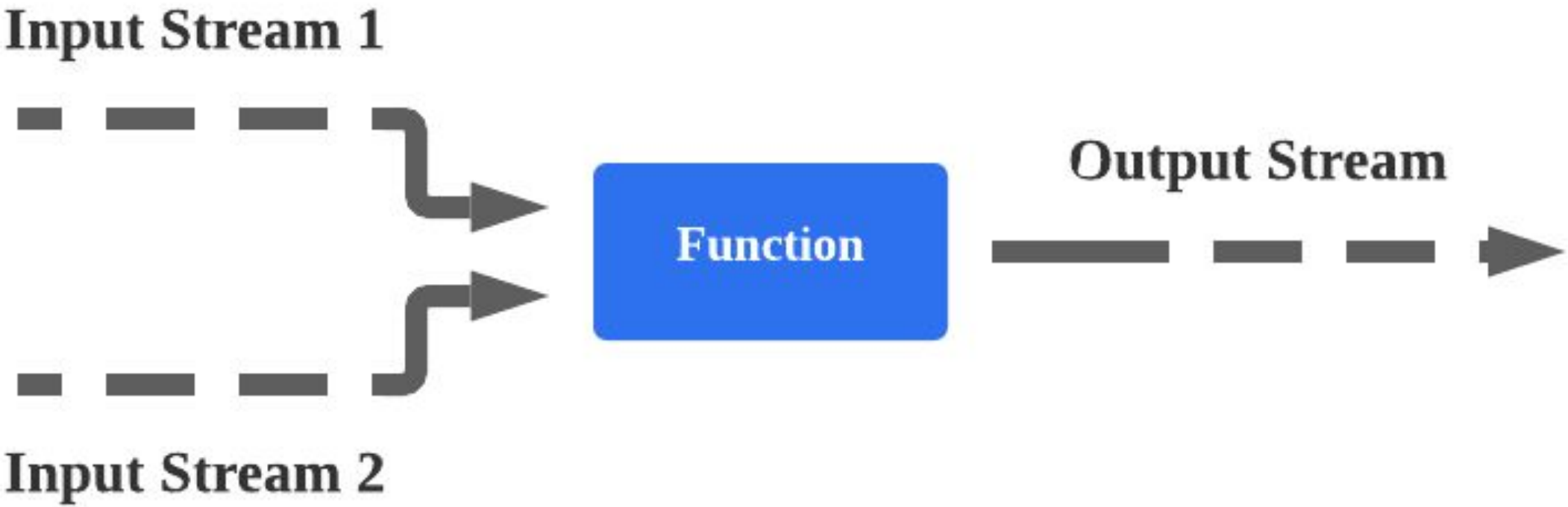
Function Mesh, another StreamNative project, makes it easier for developers to create entire applications built from sources, functions, and sinks all through a declarative API.



K8 Deploy

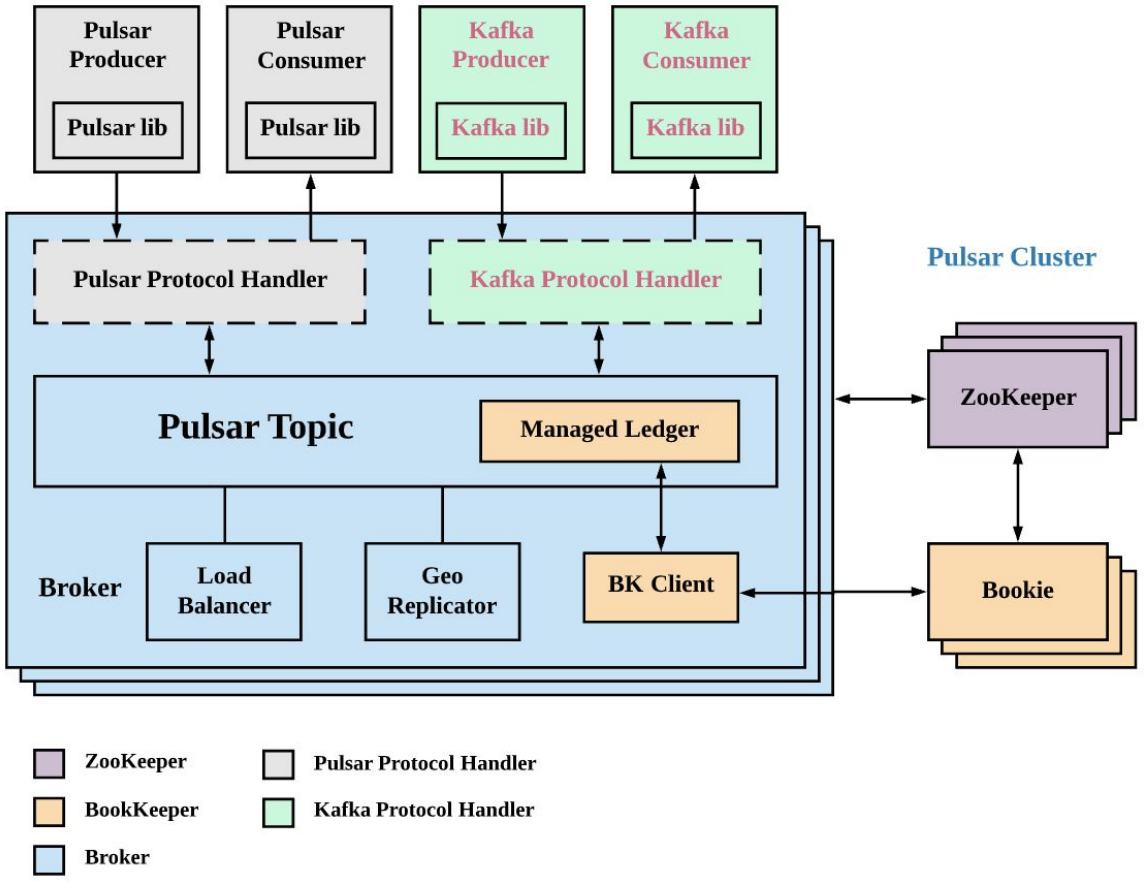

Kubernetes Cluster
Pulsar Namespace
Mesh Namespace
function.yaml
source.yaml
sink.yaml
function-mesh.yaml
kubectl
Pulsar Cluster
Function
Source
Sink
Kubernetes API
Function Mesh Operator
Function CRD
Connector CRD
Mesh CRD

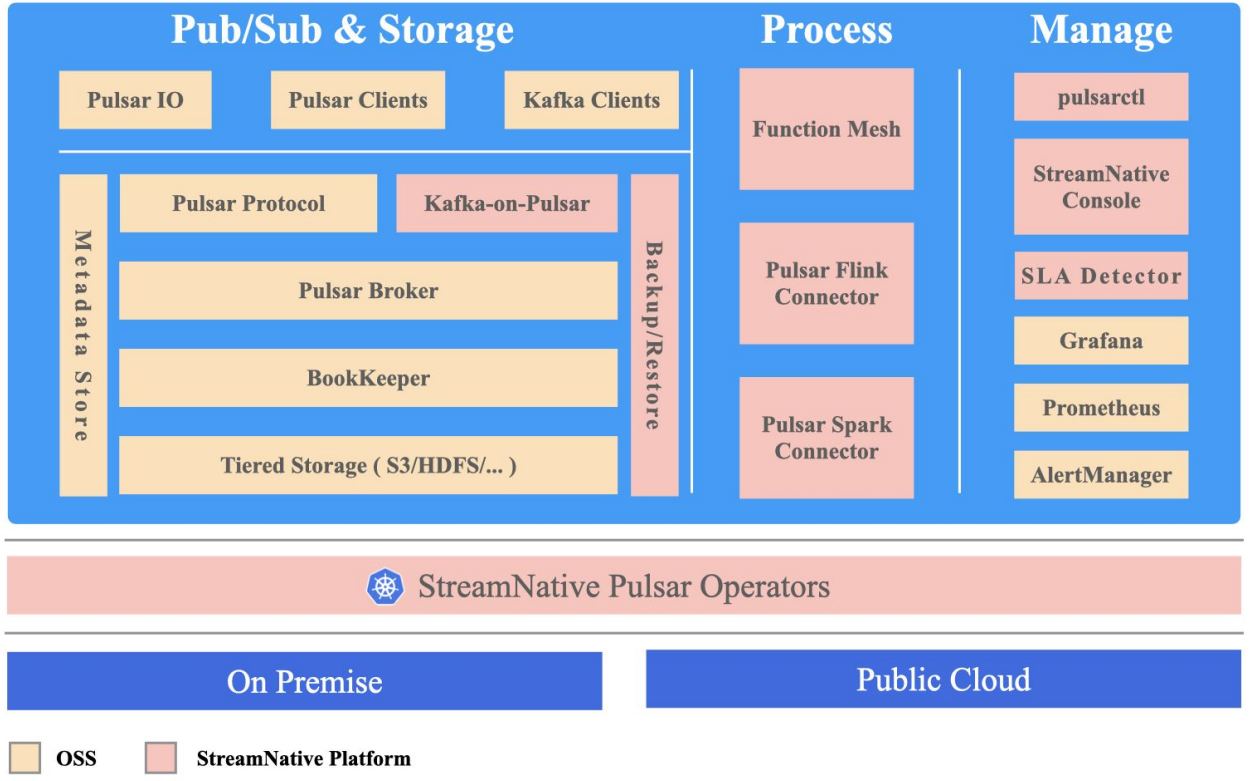
Function Execution



Apache Pulsar Kafka K8

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



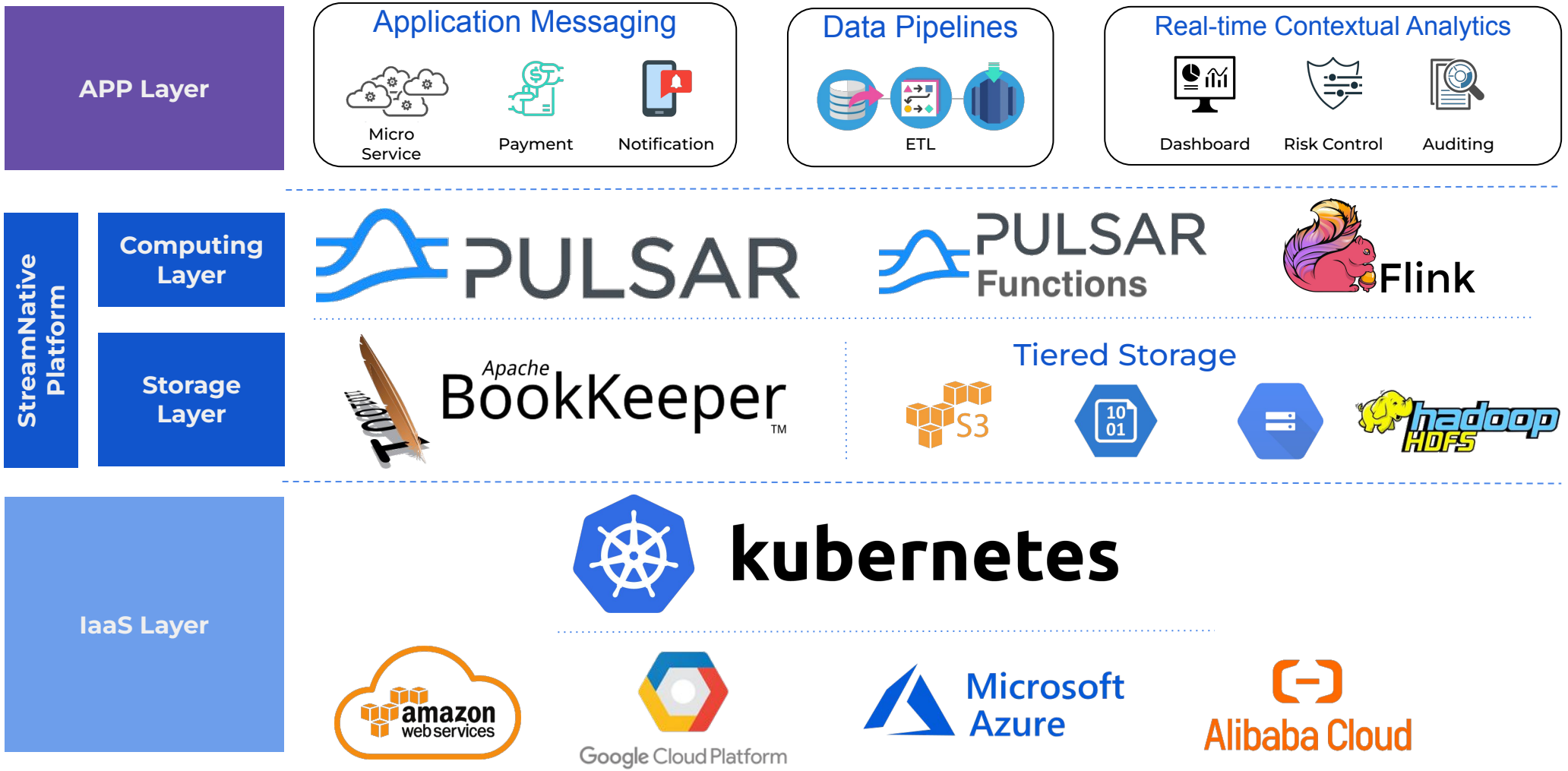


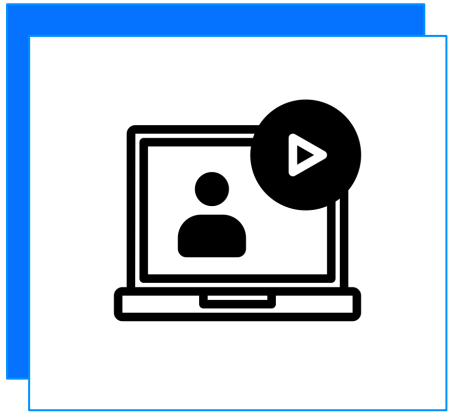
FLiP Stack Weekly

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

https://bit.ly/32dAJft

StreamNative Solution





Webinar Series:
Building Microservices with Pulsar

Watch now

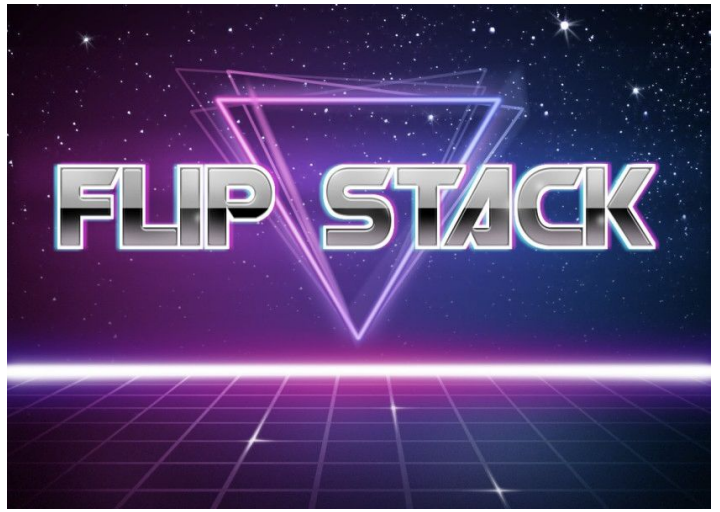
Learn how Pulsar Functions, can be leveraged to build a message bus for event-driven microservices

Read more

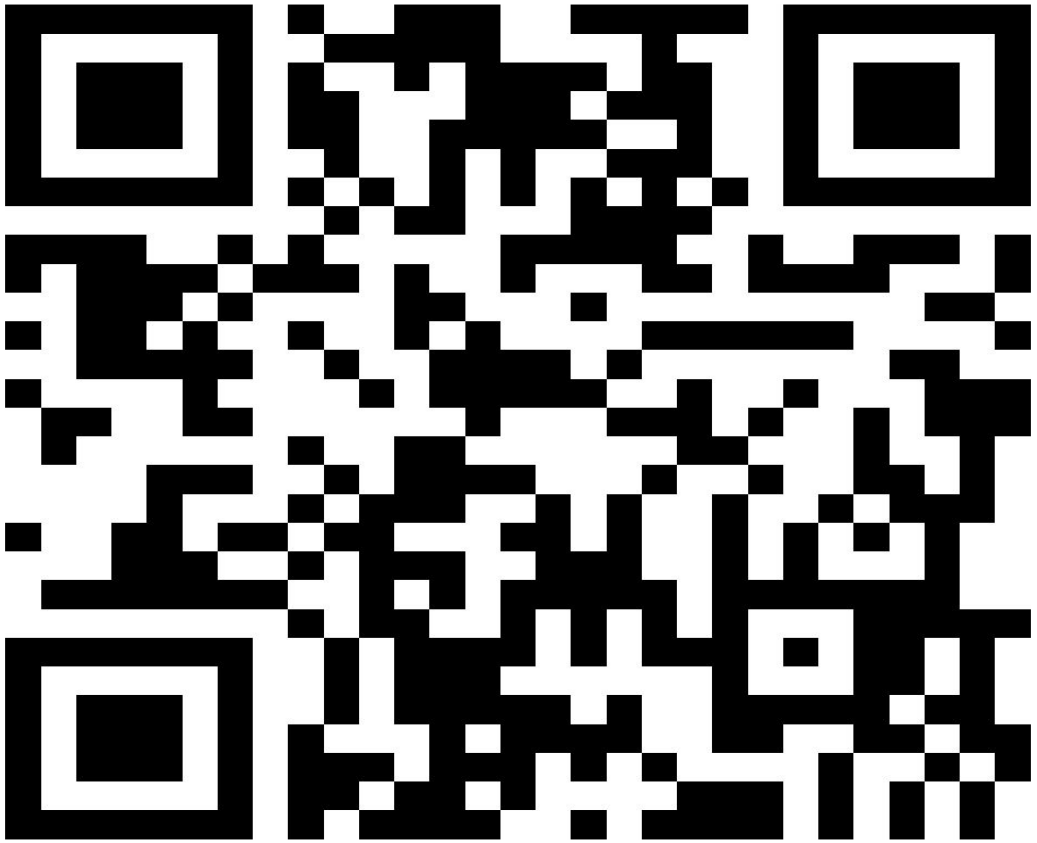
Apache Pulsar Resources

- https://pulsar.apache.org/docs/en/kubernetes-helm/
- https://pulsar.apache.org/charts
- https://streamnative.io/streamnativecloud/
- https://medium.com/@_oleksii_/how-to-deploy-apache-pulsar-cluster-in-kubernetes-808ecdfd87

Academy.StreamNative.io



Visit My Booth #S91



StreamNative

Stop By

Scan the QR Code to learn more about StreamNative and our exclusive booth offerings.