**Amazon Managed Streaming for Apache Kafka (Amazon MSK)**

Amazon MSK is a fully managed service that makes it easy for you to build and run applications that use Apache Kafka to process streaming data. Apache Kafka is an open-source platform for building real-time streaming data pipelines and applications. With Amazon MSK, you can use native Apache Kafka APIs to populate data lakes, stream changes to and from databases, and power machine learning and analytics applications.

Apache Kafka clusters are challenging to setup, scale, and manage in production. When you run Apache Kafka on your own, you need to provision servers, configure Apache Kafka manually, replace servers when they fail, orchestrate server patches and upgrades, architect the cluster for high availability, ensure data is durably stored and secured, setup monitoring and alarms, and carefully plan scaling events to support load changes. Amazon MSK makes it easy for you to build and run production applications on Apache Kafka without needing Apache Kafka infrastructure management expertise. That means you spend less time managing infrastructure and more time building applications.

With a few clicks in the Amazon MSK console you can create highly available Apache Kafka clusters with settings and configuration based on Apache Kafka’s deployment best practices. Amazon MSK automatically provisions and runs your Apache Kafka clusters. Amazon MSK continuously monitors cluster health and automatically replaces unhealthy nodes with no downtime to your application. In addition, Amazon MSK secures your Apache Kafka cluster by encrypting data at rest.

***Benefits***

**Fully compatible**

Amazon MSK runs and manages Apache Kafka for you. This makes it easy for you to migrate and run your existing Apache Kafka applications on AWS without changes to the application code. By using Amazon MSK, you maintain open source compatibility and can continue to use familiar custom and community-built tools such as MirrorMaker, Apache Flink, and Prometheus.

**Fully managed**

Amazon MSK lets you focus on creating your streaming applications without having to worry about the operational overhead of managing your Apache Kafka environment. Amazon MSK manages the provisioning, configuration, and maintenance of Apache Kafka clusters and Apache ZooKeeper nodes for you. Amazon MSK also shows key Apache Kafka performance metrics in the AWS console.

**Elastic stream processing**

Apache Flink is a powerful, open-source stream processing framework for stateful computations of streaming data. You can run fully managed Apache Flink applications written in SQL, Java, or Scala that elastically scale to process data streams within Amazon MSK.

**Highly available**

Amazon MSK creates an Apache Kafka cluster and offers multi-AZ replication within an AWS Region. Amazon MSK continuously monitors cluster health, and if a component fails, Amazon MSK will automatically replace it.

**Highly secure**

Amazon MSK provides multiple levels of security for your Apache Kafka clusters including VPC network isolation, AWS IAM for control-plane API authorization, encryption at rest, TLS encryption in-transit, TLS based certificate authentication, and supports Apache Kafka Access Control Lists (ACLs) for data-plane authorization.

**Way It Works.**

Apache Kafka is a streaming data store that decouples applications producing streaming data (producers) into its data store from applications consuming streaming data (consumers) from its data store. Organizations use Apache Kafka as a data source for applications that continuously analyze and react to streaming data.

With a few clicks in the Amazon MSK Console Amazon MSK provisions your Apache Kafka cluster and with support for version upgrades you can always be using the latest version of Apache Kafka that Amazon MSK supports. Once you configure your clusters, your applications can stream data from producers to a topic, where this data is read in real-time by consumers.