

IBM Event Streams Overview

- Describe what IBM Event Streams is and what it does
- Learn the benefits of using IBM Event Streams
- Describe the underlying technologies and core components of IBM Event Streams
- Describe product packaging and list supported platforms
- Describe some key use cases

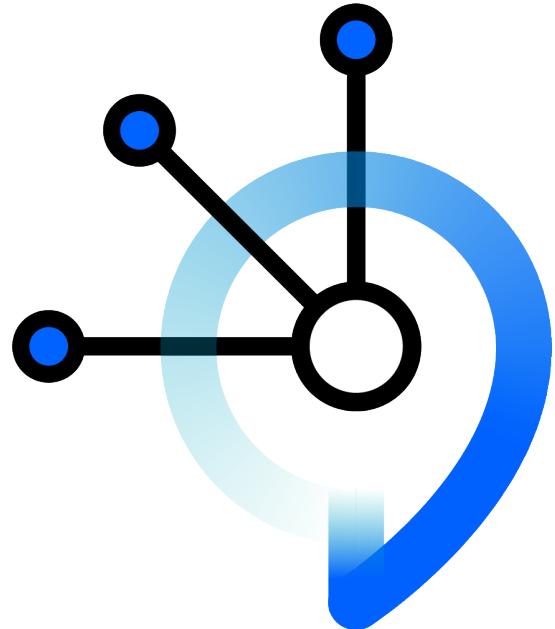
What is IBM Event Streams?



IBM Event Streams is fully supported Apache Kafka® with value-add capabilities

- ✓ ***Intuitive to use***
- ✓ ***Enterprise-ready***
- ✓ ***Unlocks core data***
- ✓ ***Trusted support***

What does IBM Event Streams provide?



Fast and simple deployment of a production-ready Kafka cluster

Container management with IBM Cloud Private

Intuitive graphical user interfaces and tools to speed deployment and minimize skill requirements

Integration with IBM Cloud Private metering, security, and monitoring features

Zero downtime with rolling upgrades

Geo-replication for disaster recovery

Integration with IBM MQ

Benefits of using IBM Event Streams

Why use IBM Event Streams?

IBM has **years of operational expertise** running Apache Kafka for Enterprises

Event Streams makes Kafka easy to run, manage & consume; **reduces skill requirements** and increases speed of deployment **for faster time to value**

Integration with IBM Cloud Private security **simplifies Kafka access control** by using roles and policies

IBM's experience in enterprise-critical software shaped features like geo-replication for disaster recovery, and integration with IBM MQ, to give **confidence in deploying mission-critical workloads**

Support you can trust – IBM has decades of experience supporting the World's toughest environments

Benefit from IBM's Kafka Expertise

IBM has years of experience running Apache Kafka across the globe



- Public Multi Tenant service
- Dedicated Single Tenant service



In 2015 IBM was the **first vendor** to offer a fully managed, Apache Kafka cloud service

IBM Event Streams | Making Apache Kafka Intuitive and Easy

Easy to deploy

The screenshot shows the IBM Cloud Private interface with the title "Configure ibm-eventstreams-dev V 0.1.1". Below this, there's a section titled "Kafka broker configuration" with two sets of input fields. The first set is for "CPU limit for Kafka brokers" and "Memory limit for Kafka brokers", both currently set to "1000m" and "1Gi" respectively. The second set is for "GPU request for Kafka brokers" and "Memory request for Kafka brokers", also both set to "1000m" and "1Gi". At the bottom right of this configuration panel are "Cancel" and "Install" buttons.

Kafka has many distinct components to deploy, configure and coordinate for secure connectivity

Container placement critical to ensure production-level availability

Event Streams secures network traffic ingress

Ensures consistent and repeatable deployment

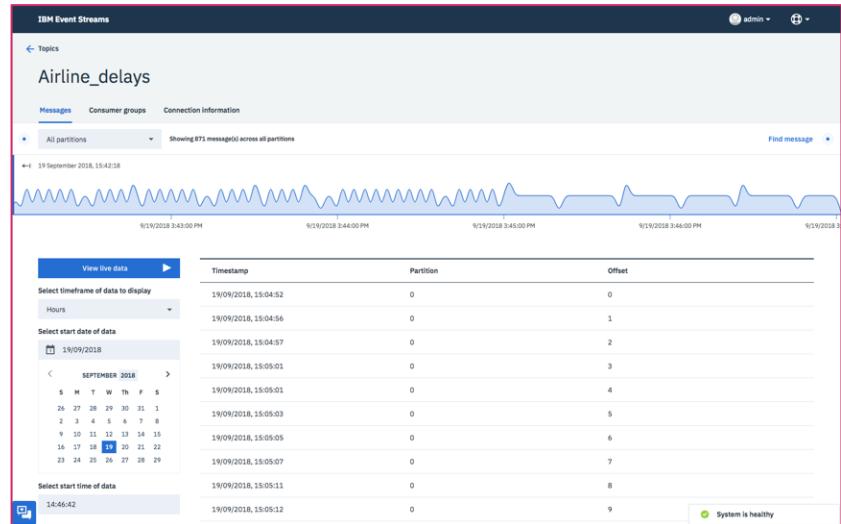
IBM Event Streams | Making Apache Kafka Intuitive and Easy

The screenshot shows the 'Toolbox' section of the IBM Event Streams interface. It contains four cards:

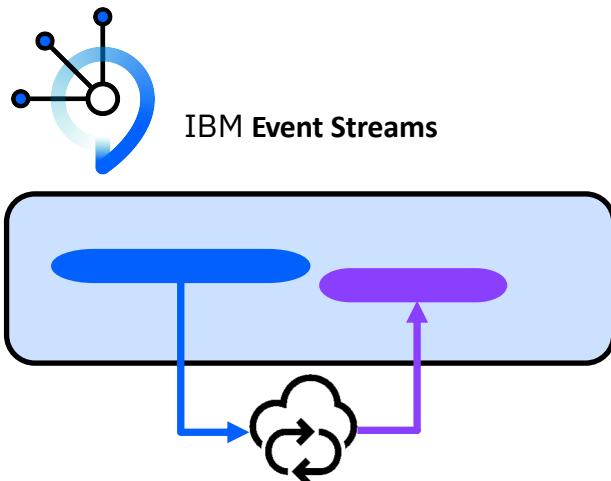
- Starter application**: Download and install this application which you can connect to a topic. This application is a full project containing a Kafka producer and consumer for you to try out.
[Generate application](#)
- Workload generation application**: Want to quickly validate your IBM Event Streams instance? Download and run a pre-built tool to generate messages at a configurable rate, or download and modify the source to simulate your own workload.
[View in GitHub](#)
- IBM Event Streams command-line interface**: Use the CLI to manage your IBM Event Streams
- Apache Kafka Java client**: Download the Apache Kafka Java client. A green status indicator says "System is healthy".

Tools to boost productivity

Visualisation of your topic data



IBM Event Streams | Integrated with Key Monitoring Tools



External monitoring tools
Datadog, Splunk

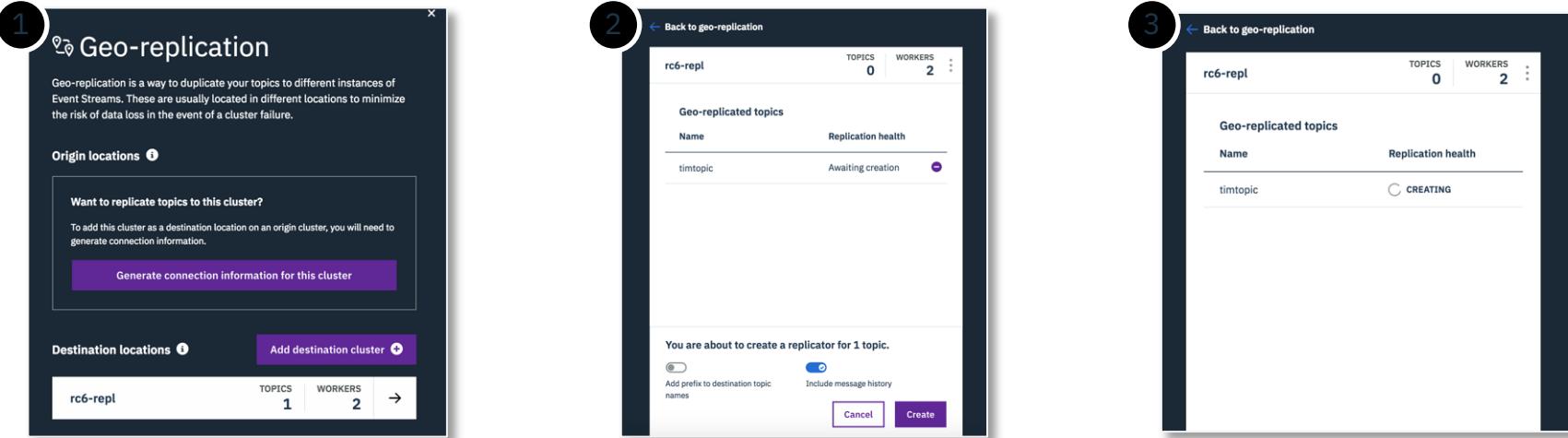
IBM Event Streams | Enterprise Grade Reliability



Integrated geo-replication for Disaster Recovery

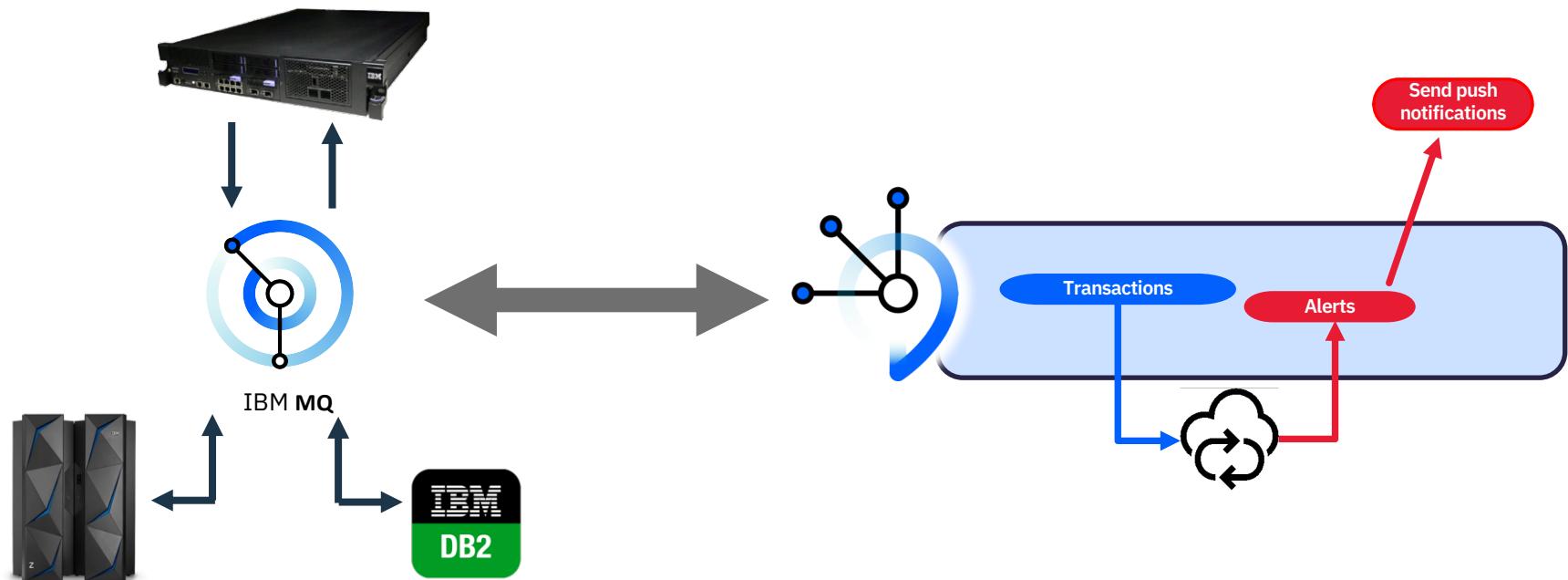


Geo-Replication is easy to configure



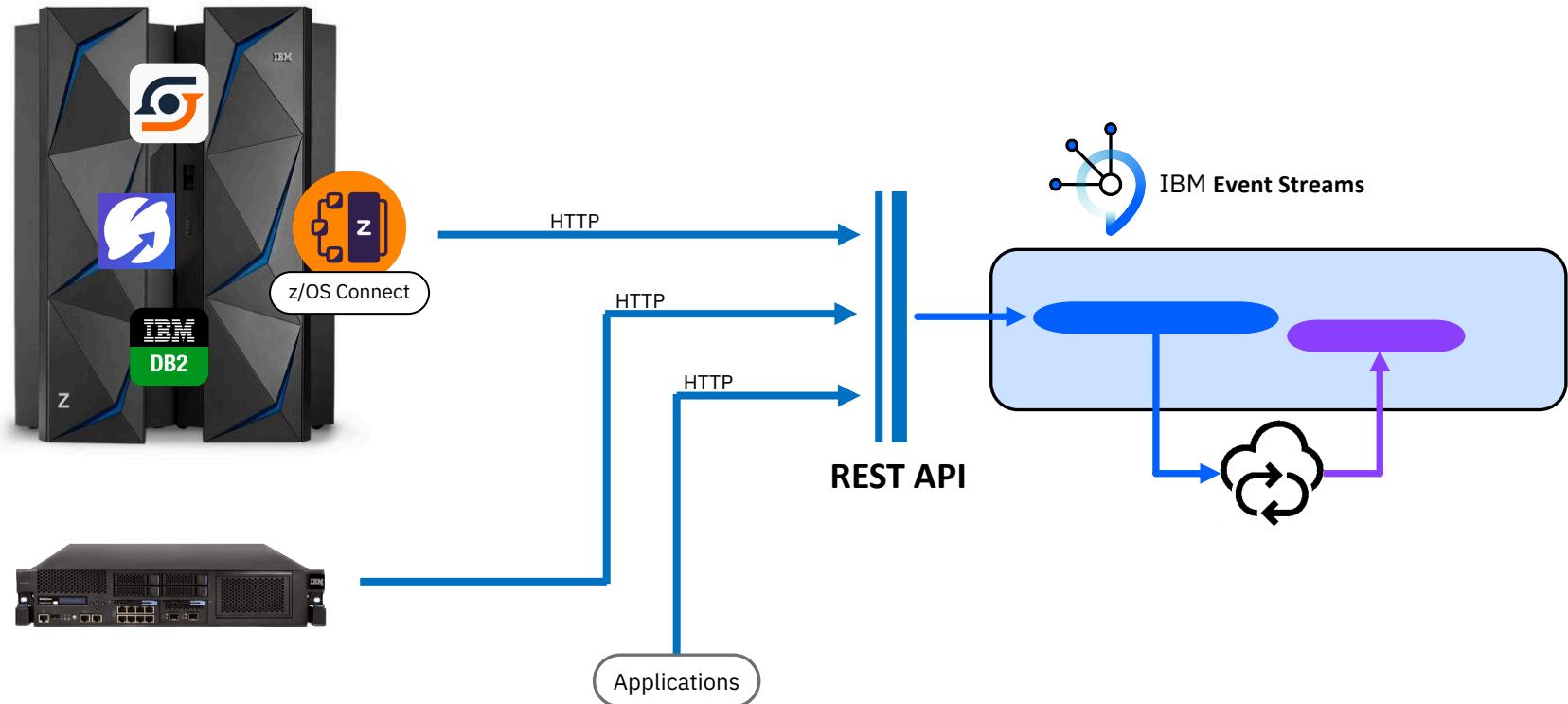
| Topics | | | |
|----------|----------|------------|-------------------------|
| Name | Replicas | Partitions | Actions |
| testfest | 3 | 3 | ⋮ |
| timtopic | 2 | 1 | Geo-replication ⚙ (1) ⋮ |

IBM Event Streams | Integrates Seamlessly with IBM MQ



Unlock Events from Systems where Kafka Connectivity is a Problem

REST API for Inbound Data



IBM Event Streams | Ready for Mission Critical Workloads



All with IBM 24x7 worldwide support

Core technologies

IBM Event Streams Builds on Open Container Orchestration Technology



Executable package of software that includes everything needed to run it

Containers



kubernetes

Automate deployment, scaling, and management of containerized applications

Orchestration



Define, install, and upgrade Kubernetes applications

Management



Infrastructure as code to provision public cloud and on-premises environments

Provisioning

Benefits from the Core Services of IBM Cloud Private



Enterprise Content Catalog

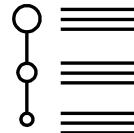
Open Source and IBM Middleware, Data, Analytics, and AI Software





Core Operational Services

Log Management, Monitoring, Metering, Security, Alerting





Kubernetes Container Orchestration Platform



Choose your infrastructure:



Self-service catalog

Agility, scalability, and elasticity

Self-healing

Enterprise security

No vendor lock-in

Apache Kafka Orchestrated with Kubernetes and Helm

IBM Event Streams is packaged as a Helm chart

Deploys a 3-node Kafka cluster, ZooKeeper, UI, network proxies, and more – 20+ containers

Kubernetes and Helm brings this all under control

The screenshot shows the IBM Cloud Private Catalog interface. At the top, there are navigation links: 'Create resource', 'Catalog' (which is highlighted in blue), 'Docs', and 'Support'. Below the header, the page title is 'Catalog' and there is a search bar with the placeholder 'Search items'. A sub-header says 'Deploy your applications and install software packages'. The catalog lists several Helm charts, each with a circular icon, the name, a brief description, and a 'ibm-charts' button. One specific entry, 'ibm-eventstreams-dev', is highlighted with a yellow rectangular border. This entry includes a detailed description: 'Kafka is an open source stream processing platform used...'. The other charts listed are: ibm-ace-dev (App Connect Enterprise Server), ibm-calico-bgp-peer (Helm chart for configuring a bgp peer to...), ibm-cam-prod (IBM Cloud Automation Manager), ibm-cem (A cloud based event management solution), ibm-csi-nfs (Helm chart for all csi nfs components), ibm-datapower-dev (IBM DataPower Gateway), ibm-db2oltp-dev (IBM Db2 Developer-C Edition 11.1.3.3), ibm-db2warehouse-dev (Db2 Warehouse Developer-C for Non-Production v2.5.0), ibm-dsm-dev (IBM Data Server Manager Developer C Edition. Note that...), ibm-dsx-dev (IBM Data Science Experience (DSX) Developer Edition brings together...), and ibm-eventstore-dev (IBM Di2 Event Store Developer Edition, which is powered...).

High Availability, Scaling and Configuration with Ease

Highly available by design

- Brokers are spread across ICP worker nodes using anti-affinity policies
- Minimizes the risk of down-time in the event of a node outage

Scale the Kafka cluster up with one command

- Safely grows the stateful set, reconfigures the network interfaces and gives you more capacity

Roll out Kafka cluster configuration changes easily

- Make a single configuration change and Event Streams rolls it out across the brokers in the cluster
- Broker availability is managed using health checks to ensure that availability is maintained

Safe, planned upgrade of Apache Kafka

Upgrade Kafka versions safely and without hassle

First, upgrade the Helm chart to a newer version of IBM Event Streams

- Rolling update of the Kafka brokers minimizes disruption

As a separate step, upgrade the broker data and protocol version to complete the upgrade

- Until this point, you can roll back

Security: Authentication and Access Control

User and group information controlled centrally

Control access to Event Streams resources by using role-based access control policies

Application access control uses service IDs

Example policy

Permit Bob to write to topic T

| | |
|----------|--------------------------|
| User | bob |
| Role | Editor |
| Service | Event Streams instance R |
| Resource | T |
| Type | topic |

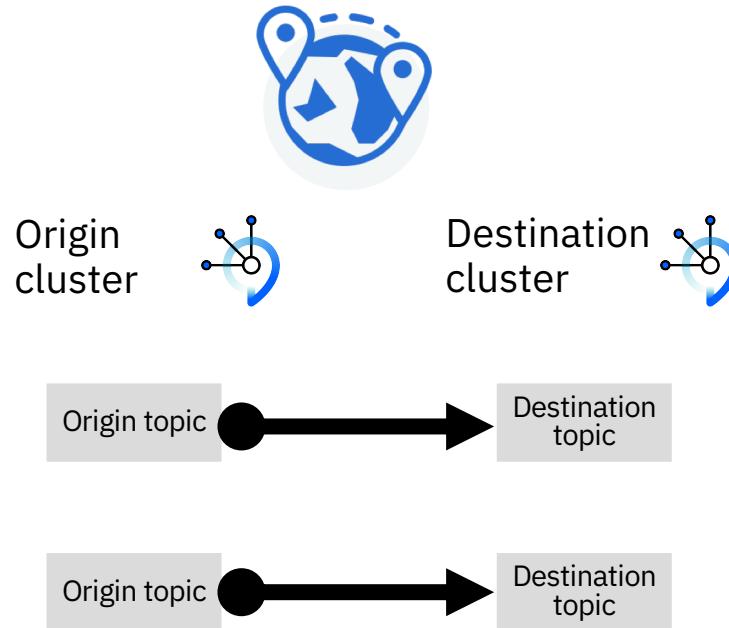
| Service action | Roles | Permissions |
|----------------|----------------------------|-------------------------|
| topic.read | Viewer and above | Read messages or config |
| topic.write | Editor and above | Write messages |
| topic.manage | Operator and Administrator | Delete or change config |

Geo-Replication Makes Disaster Recovery Simple

Target is take-over of workload on the destination cluster by business applications within 15 minutes

Easy configuration using the Event Streams UI from the origin cluster sets up the replicator and security credentials

At-least-once reliability so messages are not lost



Connect IBM MQ to Apache Kafka

IBM created a pair of connectors, available as source code or as part of IBM Event Streams

Source Connector

From MQ queue to Kafka topic

<https://github.com/ibm-messaging/kafka-connect-mq-source>

Sink Connector

From Kafka topic to MQ queue

<https://github.com/ibm-messaging/kafka-connect-mq-sink>

- Copies messages from MQ queues to Event Streams topics and vice versa
- Supports all current MQ versions (MQ v8 or later, all platforms)
- Extend the connector to support any business-specific message format
- Fully supported by IBM for customers with support entitlement for IBM Event Streams

Publish Events from Anywhere with the REST Producer API

IBM created an easy-to-use REST Producer API

```
POST /topics/{topic_name}/records
```

Content-Type: text/plain

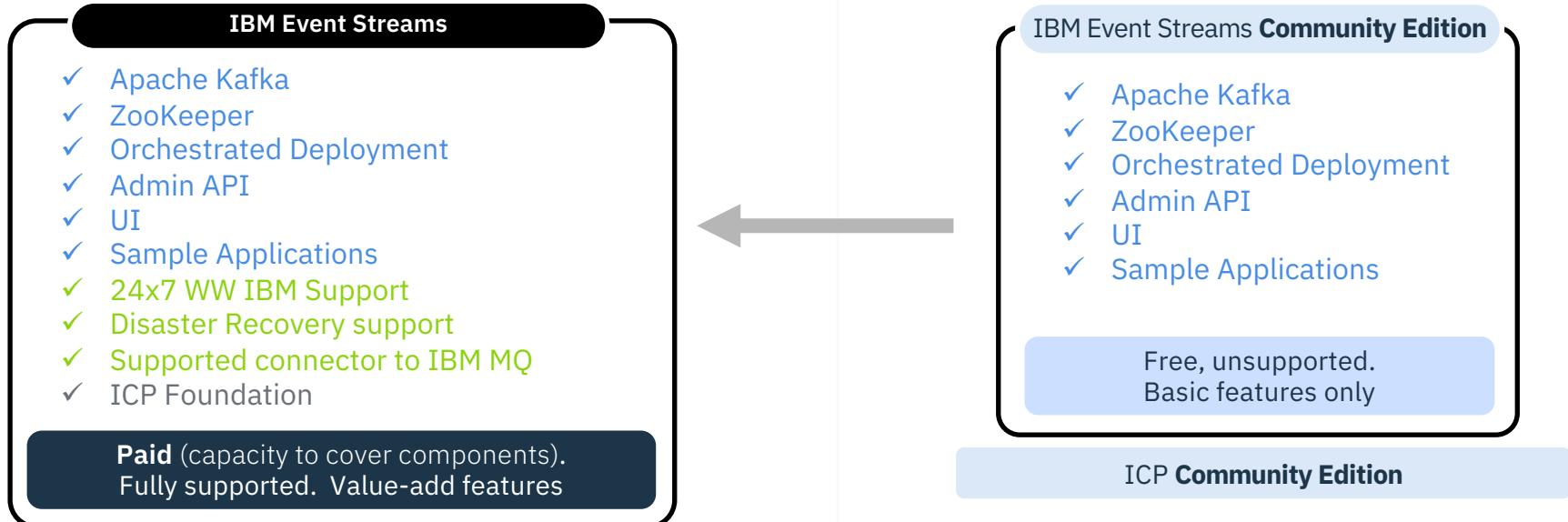
Authorization: Bearer {bearer_token}

Hello Event Streams

- Use it wherever it's difficult to use a real Kafka client (for example, DataPower, z/OS)
- Straightforward design makes it easy to use from the command line and developer tools
- Supports partitioning keys and headers
- You can use it from the command line with cURL

Product packaging and support

IBM Event Streams Packages



Delivers value-add features for enterprises to run Apache Kafka, fully supported, in production

- VPC metric (perpetual and subscription)
- IBM's 24x7 WW support commitment
- Geo-replication for multi-site DR deployments
- Supported integration with existing MQ systems

Available for users to try and explore Event Streams

- Available in the public ICP catalogue
- Community supported through public Slack channel

Supported platforms

IBM Event Streams
2019.1.1 is supported
on these platforms
and systems

Includes Kafka version
2.1.1

| Container platforms | Systems |
|--|---|
| IBM Cloud Private 3.1.1 and 3.1.2 | - Linux® 64-bit (x86_64) systems - Linux on IBM® Z systems |
| Red Hat OpenShift Container Platform 3.9 and 3.10 with IBM Cloud Private 3.1.2 | Linux® 64-bit (x86_64) systems |
| Amazon Web Services (AWS) with IBM Cloud Private 3.1.2 | Linux® 64-bit (x86_64) systems |
| Microsoft Azure with IBM Cloud Private 3.1.2 | Linux® 64-bit (x86_64) systems |

Example Event Streams Deployments

1

Stand-alone Event Streams

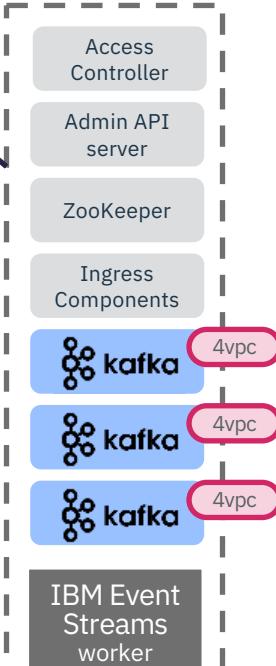
using orchestration & admin services from ICPF

12 VPCs of IBM Event Streams deployed onto ICP Foundation (**included as a supporting program in the Event Streams package**)

ICP Foundation included with Event Streams provides ICP admin functions, but **cannot be used for other workloads** without additional ICP Cloud Native licences



Orchestration services

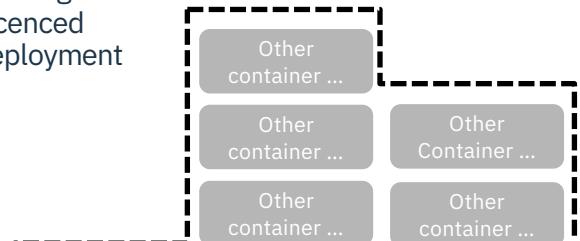


2

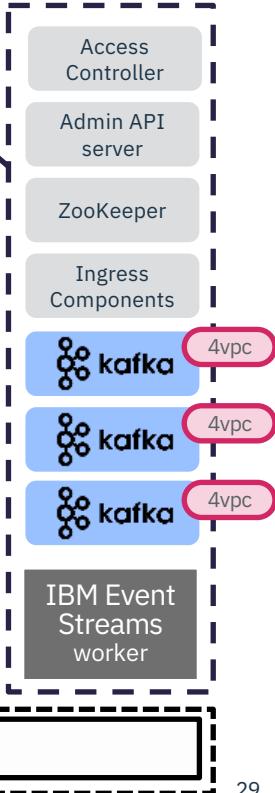
Event Streams into existing ICP

12 VPCs of IBM Event Streams is deployed into an existing ICP cluster. **No additional ICP licenses are required** to deploy Event Streams.

Existing ICP
Licenced deployment

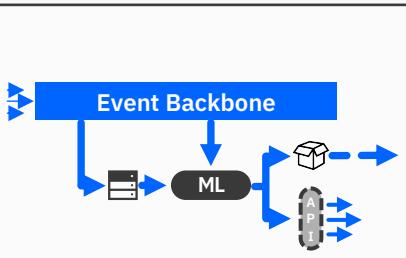


ICP orchestration services



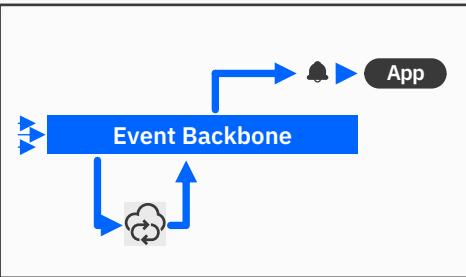
Use cases

IBM Event Streams | Key Use Cases



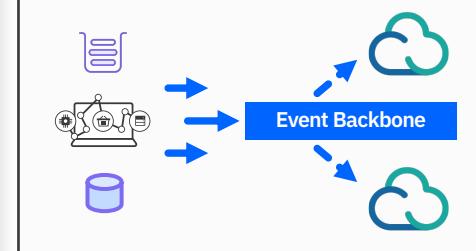
Event input buffer for data analytics

Collect massive volumes of events from IoT, website tracking or backend systems, to feed into big data analytics



Event-driven microservices

Create agile, cloud-native applications build around a central even-bus using event-sourced patterns or reactive frameworks



Bridge to cloud-native apps

Extract events from existing systems to power next generation of responsive, cloud-native applications

More resources

IBM Event Streams documentation

<https://ibm.github.io/event-streams/>

Product page

<https://www.ibm.com/cloud/event-streams>



Practice quiz (1 of 2)

1. What container orchestration technology is included with IBM Event Streams?
 - a. Helm
 - b. Docker
 - c. Terraform
 - d. Kubernetes

2. If using a Kafka client in your environment is difficult (for example, DataPower, z/OS), what can you use instead?
 - a. Zookeeper
 - b. Geo-replication
 - c. REST Producer API
 - d. Kafka Connect connectors for IBM MQ

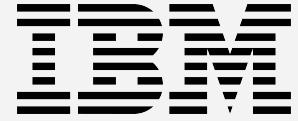
Practice quiz (2 of 2)

3. What feature of IBM Event Streams is NOT included in the Community Edition?

- a. Zookeeper
- b. Geo-replication
- c. REST Producer API
- d. Sample applications

4. If you need to create agile cloud-native applications, built around a central event bus that uses event-sourced patterns or a reactive framework, which use case fits best?

- a. Event-driven microservices
- b. Bridge to cloud-native applications
- c. Event input buffer for data analytics



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