

# Confluent Certified Administrator for Apache Kafka Certification Examination

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## Introduction

This examination is based upon the most critical job activities that an Apache Kafka® Administrator performs. The skills and knowledge certified by this examination represent a level of expertise where a Certified Administrator can build, monitor, and manage Kafka clusters. The individual taking this exam should understand the role of Kafka in the modern data distribution pipeline and be able to discuss core Kafka architectural concepts.

The test specification is intended to address the knowledge and skill areas that demonstrate proficiency as a Kafka Administrator. The basic knowledge and skills required at this level should include all of the following areas and objective components below. The knowledge level can be defined as having:

### Product Knowledge:

- A minimum of 6-12 months hands-on experience using the Confluent Kafka distribution.
- Understanding of network technologies as they relate to Confluent products
- Understanding of what constitutes the essential components of the Confluent Platform
- Ability to install, monitor, and manage one or more Kafka clusters

### General IT Knowledge:

- Working knowledge of Linux/Unix
- Understanding of network technologies
- Knowledge of the principles of distributed systems technology, fault tolerance and high availability
- A high level understanding of enterprise application security mechanisms

These training courses or other equivalent methodologies may assist in exam preparation:

- Apache Kafka Administration (3-day Instructor led-training class)  
<https://www.confluent.io/training/confluent-administration-training>

The skills and knowledge measured by this examination are determined from an understanding of the jobs of current Confluent Administrators and from resources available at the web sites:

- <https://confluent.io>
- <https://kafka.apache.org>

**Note: This examination blueprint includes weighting, test objectives, and example content. Example topics and concepts are included to clarify the test objectives; they**

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**should not be construed as a comprehensive listing of all of the content of this examination.**

The table below lists the domains measured by this examination and the extent to which they are weighted in the scoring.

<b>Domain</b>	<b>% Weight</b>
1.0 Kafka fundamentals	<b>15 %</b>
2.0 Managing, configuring, and optimizing a cluster for performance	<b>30 %</b>
3.0 Kafka Security	<b>15 %</b>
4.0 Designing, troubleshooting, and integrating systems	<b>40%</b>
Total	<b>100.00%</b>

## **Response Limits**

The examinee selects, from four (4) or more response options, the option(s) that best complete(s) the statement or answers the question. Distracters or wrong answers are response options that examinees with incomplete knowledge or skill might choose based on being generally plausible, fitting into the content area defined by the test objective.

Test item formats used in this examination are (see sample question below):

**Multiple-choice:** The examinee selects one option that best answers the question or completes a statement. The option can be embedded in a graphic where the examinee “points and clicks” on their selection choice to complete the test item.

**Multiple-response:** The examinee selects more than one option that best answers the question or completes a statement.

**Sample Directions:** Read the statement or question and from the response options, select only the option(s) that represent the most correct or best answer(s) given the information.

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## Sample Question:

Changing a configuration parameter on a Kafka broker will:

- A. Always require a restart of the Kafka JVM
- B. Be ignored if the default value is greater
- C. Override any corresponding topic settings
- D. Be overridden by corresponding topic settings

## Content Guidelines

- **NOTE:** Confluent’s certification exam questions may cover:
  - Apache Kafka
  - Other Apache ecosystem projects that are either required, or likely to be used, within a production Kafka environment. Examples are:
    - Apache Zookeeper
  - Confluent Community License components. Examples are:
    - ksqlDB
    - Confluent Schema Registry
    - Kafka REST proxy
- Confluent’s certification exam questions will NOT cover features or components that are exclusively available under either Confluent Enterprise License, or exclusively part of Confluent Cloud

**In each of the exam knowledge domains, questions may cover:**

### Domain 1.0 Kafka fundamentals– 15% weight

- Apache Kafka architecture, design principles, and purposes
- Distributed Systems - Scalability, Fault Tolerance, High Availability
- Primary functions of: Producer, Consumer, Broker
- Meaning of “immutable” log
- Meaning of “committed”
- Topics, Partitions
- Essential services of Apache Zookeeper
- Replication, Leaders, Followers
- Kafka Messages, structure, make-up, metadata
- Kafka Controller
- Exactly Once Semantics

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## Domain 2.0 Managing, configuring, and optimizing a cluster for performance – 30% weight

- Startup sequence; component dependencies
- How many partitions? Tradeoffs
- Scalability factors
- Sources and tools for monitoring; Display of metrics
- InSyncReplicas (ISR); Fully and Under replicated, and offline
- Consumer lag, Under/Over Consumption
- Broker failure, detection, and recovery
- Batching and its impacts/consequences
- Determining and solving data imbalance across brokers
- Impacts of average and maximum message sizes
- Quotas

## Domain 3.0 Kafka Security – 15% weight

- Authentication and Authorization (meanings and methods)
- In-flight encryption - where and how
- At rest encryption - strategies
- SSL/TLS keystores and truststores
- Authentication and Authorization troubleshooting
- Access Control Lists (ACLs) - where and how used
  - Use of wildcards

## Domain 4.0 Designing, troubleshooting, and integrating systems – 40% weight

- Brokers and Zookeeper
  - CPU, RAM, network, storage considerations
  - Number of nodes
- Rack awareness
- Kafka Connect
  - Source and Sink Connectors
  - Scalability and High Availability
- Business Continuity / DR
- Data retention