

Get Specific

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Introduction

In this module, we'll look at instruction that addresses specific areas of Confluent and Kafka development. While these areas are called out in the certification exam, you'll find them to be critical for success in the Kafka and Confluent developer role. This isn't an exhaustive list, but it will give you an understanding of where to start and what to research for a further deep dive.

Conceptual Knowledge of Kafka



Topics, brokers, producers, consumers, schema, clusters... This is the foundation upon which everything else you learn will be built. Make sure that you fully understand the basics of Kafka before moving on to anything else.

One of the best places to start with this is this video from Confluent's Tim Berglund: <https://www.confluent.io/what-is-apache-kafka/>

More useful study materials can be found here:

- <https://www.confluent.io/blog/apache-kafka-intro-how-kafka-works/>
- <https://kafka.apache.org/intro>
- <https://dzone.com/articles/what-is-kafka>
- <https://www.confluent.io/resources/kafka-summit-2020/welcome-to-kafka-were-glad-youre-here/>
- <https://www.confluent.io/online-talks/fundamentals-for-apache-kafka/>
- https://kafka.apache.org/videos#kafka_internals_fundamentals
- <https://www.confluent.io/blog/event-streaming-platform-1/>

Conceptual Knowledge of Confluent Platform



Of course, the best source for this is Confluent.

- <https://docs.confluent.io/platform/current/platform.html>
- <https://docs.confluent.io/platform/current/kafka/kafka-basics.html>
- <https://www.youtube.com/watch?v=AMFiukoEys>

Conceptual Knowledge of Building Applications

Getting started with application development for Kafka and Confluent starts with understanding from a conceptual level how the applications connect, interact, and function within the Kafka and Confluent ecosystem.

- <https://www.confluent.io/blog/event-streaming-platform-1/>
 - This link appeared above but pay close attention to the application section, which discusses an overview of apps within the ecosystem.
- <https://developer.confluent.io/>
- <https://docs.confluent.io/platform/current/build-applications.html>
- <https://docs.confluent.io/platform/current/app-development/index.html>

- <https://developer.okta.com/blog/2019/11/19/java-kafka> — This is important because it also discusses security, which should be considered from the start.

Network Technologies Relating to Confluent and Kafka

Understanding the protocols and methods that data flows across the wire are an absolute necessity for developing applications. A great place to start is:

- <https://kafka.apache.org/0100/protocol.html>
- <https://confluent.buzzsprout.com/186154/2055213-securing-the-cloud-with-vpc-peering-ft-daniel-lamotte>
- <https://segment.com/blog/kafka-optimization/>
 - Discusses strategies to optimize a Kafka network and how doing so can lead to big savings.
- <https://blog.cloudflare.com/squeezing-the-firehose/>
 - Useful to understand what's going on under the hood and work through it for better performance.
- <https://docs.confluent.io/cloud/current/connectors/internet-resources.html>

Kafka Producer Applications

Creating a basic producer application is one of the most fundamental tasks for a Kafka developer.

- <https://kafka-tutorials.confluent.io/creating-first-apache-kafka-producer-application/kafka.html>
- <https://kafka.apache.org/0110/javadoc/index.html?org/apache/kafka/clients/producer/KafkaProducer.html>

- Here you'll find basic documentation for the `KafkaProducer` class
- <https://dzone.com/articles/how-to-implement-kafka-producer>
- <https://kafka-tutorials.confluent.io/creating-first-apache-kafka-producer-application/confluent.htm>
- <https://kafka-python.readthedocs.io/en/master/>
- If you're a Python programmer, you'll find helpful examples of both a producer and consumer written with the `kafka-python` framework. It's designed to be Java-like in its approach and will be helpful to understand how a typical producer is built. Many other languages are supported. A web search can provide guidance for your chosen development language.

Kafka Consumer Applications

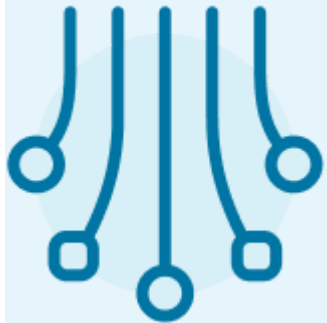
This is the other part of the equation for Kafka app development. Consumers and producers have to work efficiently together.

Here are some helpful resources for study:

- <https://docs.confluent.io/platform/current/clients/consumer.html>
- <https://kafka.apache.org/26/javadoc/index.html?org/apache/kafka/clients/consumer/KafkaConsumer.html>
- Here's the documentation for the basic `KafkaConsumer` class.
- <https://www.oreilly.com/library/view/kafka-the-definitive/9781491936153/ch04.html>
- <https://kafka-tutorials.confluent.io/creating-first-apache-kafka-consumer-application/confluent.html>
- <https://docs.confluent.io/3.0.0/clients/consumer.html>
- <https://docs.confluent.io/platform/current/installation/configuration/consumer-configs.html>

- Shows the various consumer configuration parameters available on Confluent Platform.
- <https://www.sohamkamani.com/golang/working-with-kafka/>
 - If you're working in Go/Golang, you'll find this example helpful. Again, other languages are available.

Kafka Streams Applications



Kafka Streams is a cross-platform client library for building elastic, secure, and fault-tolerant applications and microservices.

- <https://kafka.apache.org/documentation/streams/>
- <https://www.confluent.io/blog/introducing-kafka-streams-stream-processing-made-simple/>
- <https://www.youtube.com/watch?v=UbNoL5tJEjc>
 - Tim Berglund breaks down what Kafka Streams are and why they're important.
- <https://docs.confluent.io/platform/current/streams/index.html>
 - Here, you'll find a number of helpful links, including podcasts, recommended reading, and screencasts.

ksqlDB Queries

ksqlDB is one of the most important tools in your toolbox for getting work done. Here are a few resources to help you understand and apply its powerful abilities.

- <https://www.confluent.io/kafka-summit-lon19/ksql-in-practice/>
- <https://www.confluent.io/kafka-summit-london18/ksql-201-a-deep-dive-into-query-processing/>
- <https://www.confluent.io/blog/intro-to-ksqldb-sql-database-streaming/>
- <https://www.confluent.io/blog/kafka-streams-vs-ksqldb-compared/>
 - This is a helpful blog post about the differences between ksqlDB and Kafka Streams and how to choose the best fit for your use case.
- <https://ksqldb.io/>
 - Here's the main site for ksqlDB

Apache Avro and the Schema Registry



Understanding Apache Avro and how to use it will be important as you work with data and the Schema Registry. Here are several resources to dive into:

- <https://www.confluent.io/blog/avro-kafka-data/>
 - This talks about the importance of Avro and provides context for using it with Kafka data.
- <http://avro.apache.org/docs/current/spec.html>
- <https://docs.confluent.io/platform/current/schema-registry/index.html>
 - Confluent Platform provides some additional features for working with Avro
- https://docs.confluent.io/platform/current/schema-registry/schema_registry_tutorial.html
 - This link provides some great tutorials for working with the Schema Registry.
- <https://medium.com/@stephane.maarek/introduction-to-schemas-in-apache-kafka-with-the-confluent-schema-registry-3bf55e401321>
 - Here you can find some great context for working with the Schema Registry.
- <https://docs.confluent.io/platform/current/schema-registry/develop/api.html>
 - Here's the reference for the Schema Registry API

Integrating Kafka with External Systems with Kafka Connect



One of the strengths of Kafka is its ability to integrate with a variety of external resources. Here are several links to help you understand the concepts and practical application of Kafka Connect and working with connectors.

- <https://docs.confluent.io/platform/current/connect/index.html>
 - This is a great resource for understanding what Kafka Connect is and how to use it.
- <https://docs.confluent.io/5.5.0/connect/index.html>
 - This will help get you started
- <https://confluent.buzzsprout.com/186154/1265780-why-kafka-connect-ft-robin-moffatt>
 - This podcast provides a case for using Kafka Connect. The discussion covers a variety of use cases as well as some of the lesser-known features.
- <https://docs.confluent.io/home/connect/overview.html>
 - This page provides a description of different types of connectors as well as how to install and use them.

Security



Security is of paramount importance and keeping your Kafka data secure should be a consideration from the moment you start to develop an application. Implementing security from the beginning is much easier than refactoring your code later.

Here are a few resources to help you understand the security considerations and implications:

- <https://kafka.apache.org/documentation/#security>
- <https://docs.confluent.io/platform/current/security/index.html>
 - Here's the documentation for the Confluent-specific implementations of security, as well as a basic overview and tutorial.
- <https://medium.com/@stephane.maarek/introduction-to-apache-kafka-security-c8951d410adf>
 - This is a great blog post that discusses why you should care about security for Kafka and talks through some of the standard security protocols and countermeasures for the platform.
- <https://developer.ibm.com/components/kafka/tutorials/kafka-authn-authz/>
 - This is a handy guide that talks through encryption and ACLs.

Testing

Testing is one of the best ways to ensure that your applications function as expected.

Here are a number of resources to help get you started:

- <https://docs.confluent.io/cloud/current/client-apps/testing.html>
 - This covers unit, integration, performance, chaos, and other forms of testing.
- <https://kafka.apache.org/21/documentation/streams/developer-guide/testing.html>
 - This discusses testing for Kafka Streams
- <https://www.confluent.io/blog/testing-kafka-streams/>
- <https://dzone.com/articles/a-quick-and-practical-example-of-kafka-testing>

Tutorials

Along the way you'll find tutorials for many of the topics listed above. Here's a great collection of them, all in one place:

- <https://kafka-tutorials.confluent.io/>

In the Next Module

In the next module, we'll look at curated instruction to address various parts of the Confluent Certified Developer exam.
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