

Streaming 3

# Developing Kafka Producers and Consumers

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## Developing Kafka Producers and Consumers

The examples in this chapter contain code for a basic Kafka producer and consumer, and similar examples for an SSL-enabled cluster.

### Basic Producer Example

```
package com.hortonworks.example.kafka.producer;

import org.apache.kafka.clients.producer.Callback;
import org.apache.kafka.clients.producer.KafkaProducer;
import org.apache.kafka.clients.producer.Producer;
import org.apache.kafka.clients.producer.ProducerConfig;
import org.apache.kafka.clients.producer.ProducerRecord;
import org.apache.kafka.clients.producer.RecordMetadata;

import java.util.Properties;
import java.util.Random;

public class BasicProducerExample {

    public static void main(String[] args){

        Properties props = new Properties();
        props.put(ProducerConfig.BOOTSTRAP_SERVERS_CONFIG,
" kafka.example.com:6667");
        props.put(ProducerConfig.ACKS_CONFIG, "all");
        props.put(ProducerConfig.RETRIES_CONFIG, 0);
        props.put(ProducerConfig.VALUE_SERIALIZER_CLASS_CONFIG,
" org.apache.kafka.common.serialization.StringSerializer");
        props.put(ProducerConfig.KEY_SERIALIZER_CLASS_CONFIG,
" org.apache.kafka.common.serialization.StringSerializer");

        Producer<String, String> producer = new KafkaProducer<String,
String>(props);
        TestCallback callback = new TestCallback();
        Random rnd = new Random();
        for (long i = 0; i < 100 ; i++) {
            ProducerRecord<String, String> data = new ProducerRecord<String,
String>(
                "test-topic", "key-" + i, "message-"+i );
            producer.send(data, callback);
        }
        producer.close();
    }

    private static class TestCallback implements Callback {
        @Override
        public void onCompletion(RecordMetadata recordMetadata, Exception e)
        {
            if (e != null) {
                System.out.println("Error while producing message to topic :"+
recordMetadata);
                e.printStackTrace();
            } else {
                String message = String.format("sent message
to topic:%s partition:%s offset:%s", recordMetadata.topic(),
recordMetadata.partition(), recordMetadata.offset());
                System.out.println(message);
            }
        }
    }
}
```

```

    }
  }
}

```

To run the producer example, use the following command:

```
$ java com.hortonworks.example.kafka.producer.BasicProducerExample
```

#### Producer Example for an SSL-Enabled Cluster

The following example adds three important configuration settings for SSL encryption and three for SSL authentication. The two sets of configuration settings are prefaced by comments.

```

package com.hortonworks.example.kafka.producer;

import org.apache.kafka.clients.CommonClientConfigs;
import org.apache.kafka.clients.producer.Callback;
import org.apache.kafka.clients.producer.KafkaProducer;
import org.apache.kafka.clients.producer.Producer;
import org.apache.kafka.clients.producer.ProducerConfig;
import org.apache.kafka.clients.producer.ProducerRecord;
import org.apache.kafka.clients.producer.RecordMetadata;
import org.apache.kafka.common.config.SslConfigs;

import java.util.Properties;
import java.util.Random;

public class BasicProducerExample {

    public static void main(String[] args){

        Properties props = new Properties();
        props.put(ProducerConfig.BOOTSTRAP_SERVERS_CONFIG,
" kafka.example.com:6667");

        //configure the following three settings for SSL Encryption
        props.put(CommonClientConfigs.SECURITY_PROTOCOL_CONFIG, "SSL");
        props.put(SslConfigs.SSL_TRUSTSTORE_LOCATION_CONFIG, "/var/private/
ssl/kafka.client.truststore.jks");
        props.put(SslConfigs.SSL_TRUSTSTORE_PASSWORD_CONFIG, "test1234");

        // configure the following three settings for SSL Authentication
        props.put(SslConfigs.SSL_KEYSTORE_LOCATION_CONFIG, "/var/private/ssl/
kafka.client.keystore.jks");
        props.put(SslConfigs.SSL_KEYSTORE_PASSWORD_CONFIG, "test1234");
        props.put(SslConfigs.SSL_KEY_PASSWORD_CONFIG, "test1234");

        props.put(ProducerConfig.ACKS_CONFIG, "all");
        props.put(ProducerConfig.RETRIES_CONFIG, 0);
        props.put(ProducerConfig.VALUE_SERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringSerializer");
        props.put(ProducerConfig.KEY_SERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringSerializer");

        Producer<String, String> producer = new KafkaProducer<String,
String>(props);
        TestCallback callback = new TestCallback();
        Random rnd = new Random();
        for (long i = 0; i < 100; i++) {
            ProducerRecord<String, String> data = new ProducerRecord<String,
String>(
                "test-topic", "key-" + i, "message-" + i );

```

```

        producer.send(data, callback);
    }

    producer.close();
}

private static class TestCallback implements Callback {
    @Override
    public void onCompletion(RecordMetadata recordMetadata, Exception e)
    {
        if (e != null) {
            System.out.println("Error while producing message to topic : "
+ recordMetadata);
            e.printStackTrace();
        } else {
            String message = String.format("sent message
to topic:%s partition:%s offset:%s", recordMetadata.topic(),
recordMetadata.partition(), recordMetadata.offset());
            System.out.println(message);
        }
    }
}
}
}

```

To run the producer example, use the following command:

```
$ java com.hortonworks.example.kafka.producer.BasicProducerExample
```

Basic Consumer Example

```

package com.hortonworks.example.kafka.consumer;

import org.apache.kafka.clients.consumer.ConsumerConfig;
import org.apache.kafka.clients.consumer.ConsumerRebalanceListener;
import org.apache.kafka.clients.consumer.ConsumerRecord;
import org.apache.kafka.clients.consumer.ConsumerRecords;
import org.apache.kafka.clients.consumer.KafkaConsumer;
import org.apache.kafka.common.TopicPartition;

import java.util.Collection;
import java.util.Collections;
import java.util.Properties;

public class BasicConsumerExample {

    public static void main(String[] args) {

        Properties consumerConfig = new Properties();
        consumerConfig.put(ConsumerConfig.BOOTSTRAP_SERVERS_CONFIG,
"kafka.example.com:6667");
        consumerConfig.put(ConsumerConfig.GROUP_ID_CONFIG, "my-group");
        consumerConfig.put(ConsumerConfig.AUTO_OFFSET_RESET_CONFIG,
"earliest");
        consumerConfig.put(ConsumerConfig.VALUE_DESERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringDeserializer");
        consumerConfig.put(ConsumerConfig.KEY_DESERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringDeserializer");
        KafkaConsumer<byte[], byte[]> consumer = new
KafkaConsumer<>(consumerConfig);
        TestConsumerRebalanceListener rebalanceListener = new
TestConsumerRebalanceListener();
    }
}

```

```

        consumer.subscribe(Collections.singletonList("test-topic"),
rebalanceListener);

        while (true) {
            ConsumerRecords<byte[], byte[]> records = consumer.poll(1000);
            for (ConsumerRecord<byte[], byte[]> record : records) {
                System.out.printf("Received Message topic =%s, partition =%s,
offset = %d, key = %s, value = %s\n", record.topic(), record.partition(),
record.offset(), record.key(), record.value());
            }

            consumer.commitSync();
        }
    }

    private static class TestConsumerRebalanceListener implements
ConsumerRebalanceListener {
        @Override
        public void onPartitionsRevoked(Collection<TopicPartition>
partitions) {
            System.out.println("Called onPartitionsRevoked with partitions:"
+ partitions);
        }

        @Override
        public void onPartitionsAssigned(Collection<TopicPartition>
partitions) {
            System.out.println("Called onPartitionsAssigned with partitions:"
+ partitions);
        }
    }
}

```

To run the consumer example, use the following command:

```
# java com.hortonworks.example.kafka.consumer.BasicConsumerExample
```

Consumer Example for an SSL-Enabled Cluster

The following example adds three important configuration settings for SSL encryption and three for SSL authentication. The two sets of configuration settings are prefaced by comments.

```

package com.hortonworks.example.kafka.consumer;

import org.apache.kafka.clients.CommonClientConfigs;
import org.apache.kafka.clients.consumer.ConsumerConfig;
import org.apache.kafka.clients.consumer.ConsumerRebalanceListener;
import org.apache.kafka.clients.consumer.ConsumerRecord;
import org.apache.kafka.clients.consumer.ConsumerRecords;
import org.apache.kafka.clients.consumer.KafkaConsumer;
import org.apache.kafka.common.TopicPartition;
import org.apache.kafka.common.config.SslConfigs;

import java.util.Collection;
import java.util.Collections;
import java.util.Properties;

public class BasicConsumerExample {

    public static void main(String[] args) {

        Properties props = new Properties();

```

```

    props.put(ConsumerConfig.BOOTSTRAP_SERVERS_CONFIG,
" kafka.example.com:6667");

    //configure the following three settings for SSL Encryption
    props.put(CommonClientConfigs.SECURITY_PROTOCOL_CONFIG, "SSL");
    props.put(SslConfigs.SSL_TRUSTSTORE_LOCATION_CONFIG, "/var/private/
ssl/kafka.client.truststore.jks");
    props.put(SslConfigs.SSL_TRUSTSTORE_PASSWORD_CONFIG, "test1234");

    //configure the following three settings for SSL Authentication
    props.put(SslConfigs.SSL_KEYSTORE_LOCATION_CONFIG, "/var/private/ssl/
kafka.client.keystore.jks");
    props.put(SslConfigs.SSL_KEYSTORE_PASSWORD_CONFIG, "test1234");
    props.put(SslConfigs.SSL_KEY_PASSWORD_CONFIG, "test1234");

    props.put(ConsumerConfig.GROUP_ID_CONFIG, "my-group");
    props.put(ConsumerConfig.AUTO_OFFSET_RESET_CONFIG, "earliest");
    props.put(ConsumerConfig.VALUE_DESERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringDeserializer");
    props.put(ConsumerConfig.KEY_DESERIALIZER_CLASS_CONFIG,
"org.apache.kafka.common.serialization.StringDeserializer");
    KafkaConsumer<byte[], byte[]> consumer = new KafkaConsumer<>(props);
    TestConsumerRebalanceListener rebalanceListener = new
TestConsumerRebalanceListener();
    consumer.subscribe(Collections.singletonList("test-topic"),
rebalanceListener);

    while (true) {
        ConsumerRecords<byte[], byte[]> records = consumer.poll(1000);
        for (ConsumerRecord<byte[], byte[]> record : records) {
            System.out.printf("Received Message topic =%s, partition =%s,
offset = %d, key = %s, value = %s\n", record.topic(), record.partition(),
record.offset(), record.key(), record.value());
        }

        consumer.commitSync();
    }

}

private static class TestConsumerRebalanceListener implements
ConsumerRebalanceListener {
    @Override
    public void onPartitionsRevoked(Collection<TopicPartition>
partitions) {
        System.out.println("Called onPartitionsRevoked with partitions:"
+ partitions);
    }

    @Override
    public void onPartitionsAssigned(Collection<TopicPartition>
partitions) {
        System.out.println("Called onPartitionsAssigned with partitions:"
+ partitions);
    }
}
}

```

To run the consumer example, use the following command:

```
$ java com.hortonworks.example.kafka.producer.BasicProducerExample
```