Day24_kafka 深入

大数据-张军锋 Day24 kafka 深入学习 java API

offset

kafka维护的消费组的offset上有：
1、所有的topic
2、所属的partition
3、consumer group名称
4、offset的当前值

配置sl4j日志

1. 导入sl4j依赖

```
<dependency>
    <groupId>org.slf4j</groupId>
    <artifactId>slf4j-log4j12</artifactId>
    <version>1.7.21</version>
</dependency>
```

2. 添加log4j文件

java API 创建Producer

1. 创建连接

```
/**
* 创建一个新的实例 ProducerClient.
* 构造方法
*/
public ProducerClient() {
    properties = new Properties();
    properties.put("bootstrap.servers", "master:9092,slaver1:909
2");
    properties.put("key.serializer", "org.apache.kafka.common.seria
lization.StringSerializer");
    properties.put("value.serializer", "org.apache.kafka.common.ser
ialization.StringSerializer");
    producer = new KafkaProducer<>(properties);
}
```

2. 发送数据

```
/**
* sendRecorder 发送数据
* @param @param key
* @param @param value 参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void sendRecorder(String key, String value) {
    ProducerRecord<String, String> record = new ProducerRecord<>("f
rom-java", key, value);
    producer.send(record);
}
```

3. 关闭连接

```
/**
* close 刷新数据，关闭连接
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void close() {
    producer.flush();
    producer.close();
}
```

4. 指定分区发送数据

```
/**
* assignPartitionSend 指定分区发送数据
* @param @param key
* @param @param value 参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void assignPartitionSend(String key, String value) {
    ProducerRecord<String, String> record = new ProducerRecord<>("f
rom-java", 0, key, value);
    producer.send(record);
}
```

5. 获取topic详细信息

```
/**
* getTopicPartition 获取topic的详细信息
* @param @param topic 参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void getTopicPartition(String topic) {

    List<PartitionInfo> partitionInfos = producer.partitionsFor(top
ic);
    for (PartitionInfo partitionInfo : partitionInfos) {
        System.out.println(partitionInfo);
    }
}
```

6. 获取集群状态信息

```
/**
* getMetrics 获取集群状态信息
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void getMetrics() {
    Map<MetricName, ? extends Metric> metrics = producer.metrics();
    for (MetricName name : metrics.keySet()) {
        System.out.println(name.name() + " : " + metrics.get(nam
e).value());
    }
}
```

7. 发送数据返回状态信息—回调函数

```
    /**
     * sendRecorderWithCallback 回调函数返回发送信息
     * @param @param key
     * @param @param value 参数
     * @return void 返回类型
     * @Exception 异常对象
     * @author Allen
     */
    public void sendRecorderWithCallback(String key, String value)
{

        Logger logger = LoggerFactory.getLogger(ProducerClient.clas
s);
        ProducerRecord<String, String> record = new ProducerRecor
d<>("from-java", key, value);
        producer.send(record, new Callback() {
            // 回调方法，在整个方法被调用之后，Record的接收和存储是由服务端来
完成
            // callback是服务端接收服务器存储完了，返回回调的一个函数
            @Override
            public void onCompletion(RecordMetadata metadata, Excep
tion exception) {
                if (exception == null) {
                    logger.info("存储位置:partition:" + metadata.part
ition() + ",offset:" + metadata.offset()
                            + ",timestrap:" + metadata.timestam
p());
                } else {
                    logger.warn("服务端出现异常: ");
                    exception.printStackTrace();
                }
            }
        });
    }
```

java API 创建Consumer

1. 创建连接

```
/**
* 创建一个新的实例 ConsumerClient.
* 构造方法
*/
public ConsumerClient() {
    properties = new Properties();
    properties.put("bootstrap.servers", "master:9092,slaver1:909
2");
    properties.put("group.id", "java_group");
    properties.put("key.deserializer", "org.apache.kafka.common.ser
ialization.StringDeserializer");
    properties.put("value.deserializer", "org.apache.kafka.common.s
erialization.StringDeserializer");
    consumer = new KafkaConsumer<>(properties);
}
```

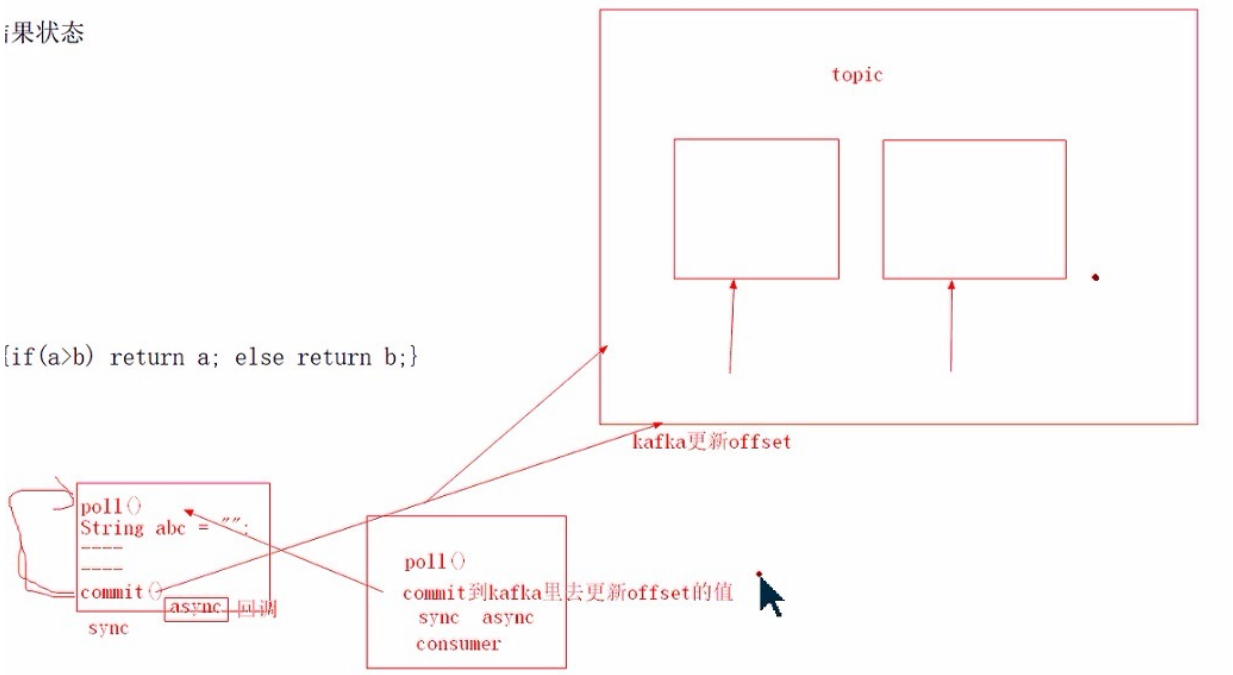
2. 订阅topic方法

```
/**
* subscribeTopic 订阅topic
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void subscribeTopic(){
    consumer.subscribe(Arrays.asList("from-java"));
    while(true){
        // 从kafka拉取数据
        ConsumerRecords<String,String> records = consumer.poll(100
0);

        for (ConsumerRecord<String, String> record : records) {
            System.out.printf("partition = %d, offset = %d, key =
%s, value = %s%n",
                    record.partition(), record.offset(), record.ke
y(), record.value());
        }
    }
}
```

同步异步

同步：提交请求—>等待服务器处理—>处理完毕返回 这个期间不能poll取其他的数据
异步: 请求通过事件触发—>服务器处理（这段时间还继续poll数据）—>处理完毕



消费者手动提交

1. 创建连接

```
public ManualCommitConsumer() {
        properties.setProperty("bootstrap.servers", "master:9092,sl
aver1:9092");
        properties.setProperty("key.deserializer", "org.apache.kafk
a.common.serialization.StringDeserializer");
        properties.setProperty("value.deserializer", "org.apache.ka
fka.common.serialization.StringDeserializer");
        properties.setProperty("group.id", "java_group");
        // 取消自动提交
        properties.setProperty("enable.auto.commit", "false");
        properties.setProperty("auto.offset.reset", "none");
        consumer = new KafkaConsumer<>(properties);
    }
```

2. 订阅topic

```
public void substituteTopic() {
    List<String> topics = new ArrayList<>();
    topics.add("from-java");
    consumer.subscribe(topics);
    while (true) {
        ConsumerRecords<String, String> records = consumer.poll(100
0);
        for (ConsumerRecord<String, String> record : records) {
            System.out.println("partiton = " + record.partition() +
" ,offset = " + record.offset() + ",key = "
                    + record.key() + ",value = " + record.value());
        }
        consumer.commitSync();
    }
}
```

3. 获取topic指定分区上的offset

```
/**
* getOffsets 获取topic指定分区上的offset
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void getOffsets() {
    OffsetAndMetadata offsets = consumer.committed(new TopicPartiti
on("from-java", 1));
    System.out.println("offsets = " + offsets.offset());
}
```

4. 指定分区消费，指定从offset的值出开始消费

```
/**
* consumerAssigned 指定分区消费，指定从offset的值出开始消费
* 消费者对topic的消费有两种方式
* 1. consumer.subscribe(topics)
* 2.consumer.assign(topicPartitions);
* 两种方式互斥，任选其一
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void consumerAssigned() {
    /*
     * List<String> topics = new ArrayList<>(); topics.add("from-ja
va");
     * consumer.subscribe(topics);
     */
    // 指定分区
    List<TopicPartition> topicPartitions = new ArrayList<TopicParti
tion>();
    topicPartitions.add(new TopicPartition("from-java", 1));
    consumer.assign(topicPartitions);
    // 指定分区的offset位置
    TopicPartition partition = new TopicPartition("from-java", 1);
    consumer.seekToEnd(Arrays.asList(partition));
    while (true) {
        ConsumerRecords<String, String> records = consumer.poll(100
0);
        for (ConsumerRecord<String, String> record : records) {
            System.out.println("partition = " + record.partition()
+ ",offset = " + record.offset() + ",key = "
                    + record.key() + ",value = " + record.value());
        }
    }
}
```

5. 设置offset

```
/**
* setCommitoffset 设置offset
* @param  参数
* @return void 返回类型
* @Exception 异常对象
* @author Allen
*/
public void setCommitoffset() {
    Map<TopicPartition, OffsetAndMetadata> offsets = new HashMap<>
();
    offsets.put(new TopicPartition("from-java", 1), new OffsetAndMe
tadata(830));
    List<String> topics = new ArrayList<>();
    topics.add("from-java");
    consumer.subscribe(topics);
    // 指定位置提交某个分区的offset的值，这个会在下一次拉取数据之前生效

    while (true) {
        ConsumerRecords<String, String> records = consumer.poll(100
0);
        for (ConsumerRecord<String, String> record : records) {
            if(record.partition() == 1){
                System.out.println("offset = " + record.offset() +
" ,partition = " + record.partition() + "  ,key = "
                        + record.key() + " ,value = " + record.valu
e());
            }
            consumer.commitSync(offsets);
        }

    }
}
```

flume 发送数据，kafka消费

需求：写一个flume客户端，发送数据给avro的flume，然后sink给kafka
写一个kafka的consumer从kafka中消费 flume客户端发送过来的数据

数据流向
flume客户端java程序发送数据—->flume（flume.conf程序）—->kafka——>kafkaconsumer的java程序消费

- flume客户端程序

```
package top.xiesen.flume;

import java.nio.charset.Charset;

import org.apache.flume.Event;
import org.apache.flume.EventDeliveryException;
import org.apache.flume.api.RpcClient;
import org.apache.flume.api.RpcClientFactory;
import org.apache.flume.event.EventBuilder;


/**
* 项目名称：kafkaclient
* 类名称：FlumeAvroClient
* 类描述：发送avro文件到flume source
* @author Allen
*/
public class FlumeAvroClient {

    private RpcClient flumeClient;
    private String hostname;
    private int port;

    public FlumeAvroClient() {
        super();
    }


    /**
    * 创建一个新的实例 FlumeAvroClient.
    * 实例化 flumeClient
    * @param hostname
    * @param port
    */
    public FlumeAvroClient(String hostname, int port) {
        this.hostname = hostname;
        this.port = port;
        flumeClient = RpcClientFactory.getDefaultInstance(hostname,
port);
    }


    /**
    * sendEvent 发送数据
    * @param @param msg 参数
    * @return void 返回类型
    * @Exception 异常对象
    * @author Allen
```

```
     */
    public void sendEvent(String msg) {
        Event event = EventBuilder.withBody(msg, Charset.forName("U
TF-8"));
        try {
            flumeClient.append(event);
        } catch (EventDeliveryException e) {
            e.printStackTrace();
            flumeClient.close();
            flumeClient = null;
            flumeClient = RpcClientFactory.getDefaultInstance(hostn
ame, port);
        }
    }


    /**
    * close 关闭连接
    * @param  参数
    * @return void 返回类型
    * @Exception 异常对象
    * @author Allen
    */
    public void close(){
        flumeClient.close();
    }


    /**
    * main 测试用例
    * @param @param args 参数
    * @return void 返回类型
    * @Exception 异常对象
    * @author Allen
    */
    public static void main(String[] args) {
        FlumeAvroClient fac = new FlumeAvroClient("master",9999);
        String msg = "flume_avro_kafka_";

        for(int i = 0; i < 100; i++){
            fac.sendEvent(msg + i);
        }

        fac.close();
    }
}
```

- flume.conf程序

```
a1.sources = r1
a1.sinks=s1
a1.channels=c1

a1.sources.r1.type = avro
a1.sources.r1.bind = master
a1.sources.r1.port = 9999

a1.channels.c1.type= memory
a1.channels.c1.capacity = 1000
a1.channels.c1.transactionCapacity = 100

a1.sinks.s1.type = org.apache.flume.sink.kafka.KafkaSink
a1.sinks.s1.kafka.bootstrap.servers=master:9092
a1.sinks.s1.kafka.topic=flume_kafka
a1.sinks.s1.kafka.flumeBatchSize = 20

a1.sources.r1.channels = c1
a1.sinks.s1.channel = c1
```

- kafkaConsumer消费程序

```
package top.xiesen.bd14;

import java.util.Arrays;
import java.util.Properties;

import org.apache.kafka.clients.consumer.ConsumerRecord;
import org.apache.kafka.clients.consumer.ConsumerRecords;
import org.apache.kafka.clients.consumer.KafkaConsumer;

public class FlumeConsumer {

    private KafkaConsumer<String, String> consumer;
    private Properties properties;

    /**
    * 创建一个新的实例 ConsumerClient.
    * 构造方法
    */
    public FlumeConsumer() {
        properties = new Properties();
        properties.put("bootstrap.servers", "master:9092,slaver1:90
92");
        properties.put("group.id", "java_group");
        properties.put("key.deserializer", "org.apache.kafka.commo
n.serialization.StringDeserializer");
        properties.put("value.deserializer", "org.apache.kafka.comm
on.serialization.StringDeserializer");
        consumer = new KafkaConsumer<>(properties);
    }


    /**
    * subscribeTopicFromFlume 订阅flume topic
    * @param  参数
    * @return void 返回类型
    * @Exception 异常对象
    * @author Allen
    */
    public void subscribeTopicFromFlume(){
        consumer.subscribe(Arrays.asList("flume_kafka"));

        while(true){
            ConsumerRecords<String,String> records = consumer.pol
l(1000);
            for (ConsumerRecord<String, String> record : records) {
                System.out.println("key = " + record.key() + " ,val
ue = " + record.value());
            }
```

```
            }
        }


        /**
        * main 测试用例
        * @param @param args 参数
        * @return void 返回类型
        * @Exception 异常对象
        * @author Allen
        */
        public static void main(String[] args) {
            FlumeConsumer fc = new FlumeConsumer();
            fc.subscribeTopicFromFlume();
        }
    }
```