

一、Consumer 批量消费（推模式）

可以通过

```
consumer.setConsumeMessageBatchMaxSize(10); //每次拉取10条
```

这里需要分为2种情况

- Consumer端先启动
- Consumer端后启动. 正常情况下：应该是Consumer需要先启动

注意：如果broker采用推模式的话，consumer先启动，会一条一条消息的消费，consumer后启动会才用批量消费

Consumer端先启动

1、Consumer.java

```
package quickstart;
import java.util.List;
import com.alibaba.rocketmq.client.consumer.DefaultMQPushConsumer;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyContext;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyStatus;
import com.alibaba.rocketmq.client.consumer.listener.MessageListenerConcurrently;
import com.alibaba.rocketmq.client.exception.MQClientException;
import com.alibaba.rocketmq.common.consumer.ConsumeFromWhere;
import com.alibaba.rocketmq.common.message.MessageExt;
/**
 * Consumer，订阅消息
 */
public class Consumer {
    public static void main(String[] args) throws InterruptedException, MQClientException {
        DefaultMQPushConsumer consumer = new DefaultMQPushConsumer("please_rename_unique_group_name_4");
        consumer.setNamesrvAddr("192.168.100.145:9876;192.168.100.146:9876");
        consumer.setConsumeMessageBatchMaxSize(10);
        /**
         * 设置Consumer第一次启动是从队列头部开始消费还是队列尾部开始消费<br>
         * 如果非第一次启动，那么按照上次消费的位置继续消费，（消费顺序消息的时候设置）
         */
        consumer.setConsumeFromWhere(ConsumeFromWhere.CONSUME_FROM_FIRST_OFFSET);
        consumer.subscribe("TopicTest", "*");
        consumer.registerMessageListener(new MessageListenerConcurrently() {
            public ConsumeConcurrentlyStatus consumeMessage(List<MessageExt> msgs, ConsumeConcurrentlyContext context) {

                try {
                    System.out.println("msgs的长度" + msgs.size());
                    System.out.println(Thread.currentThread().getName() + " Receive New Messages: " + msgs);
                } catch (Exception e) {
                    e.printStackTrace();
                    return ConsumeConcurrentlyStatus.RECONSUME_LATER;
                }

                return ConsumeConcurrentlyStatus.CONSUME_SUCCESS;
            }
        });

        consumer.start();

        System.out.println("Consumer Started.");
    }
}
```

由于这里是Consumer先启动，所以他回去轮询MQ上是否有订阅队列的消息，由于每次producer插入一条，Consumer就拿一条所以测试结果如下（每次size都是1）

```
msgs的长度1
ConsumeMessageThread_4 Receive New Messages: [MessageExt [queueId=0, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278750, bornHost=,
msgs的长度1
ConsumeMessageThread_3 Receive New Messages: [MessageExt [queueId=1, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278777, bornHost=,
msgs的长度1
ConsumeMessageThread_1 Receive New Messages: [MessageExt [queueId=2, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278789, bornHost=,
msgs的长度1
ConsumeMessageThread_5 Receive New Messages: [MessageExt [queueId=3, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278817, bornHost=,
msgs的长度1
ConsumeMessageThread_6 Receive New Messages: [MessageExt [queueId=0, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278835, bornHost=,
msgs的长度1
ConsumeMessageThread_7 Receive New Messages: [MessageExt [queueId=1, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278847, bornHost=,
msgs的长度1
ConsumeMessageThread_8 Receive New Messages: [MessageExt [queueId=2, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278866, bornHost=,
msgs的长度1
ConsumeMessageThread_10 Receive New Messages: [MessageExt [queueId=3, storeSize=138, queueOffset=248, sysFlag=0, bornTimestamp=1487682278880, bornHost=,
msgs的长度1
ConsumeMessageThread_9 Receive New Messages: [MessageExt [queueId=0, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278895, bornHost=,
msgs的长度1
ConsumeMessageThread_12 Receive New Messages: [MessageExt [queueId=1, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278908, bornHost=,
msgs的长度1
ConsumeMessageThread_13 Receive New Messages: [MessageExt [queueId=2, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278925, bornHost=,
msgs的长度1
ConsumeMessageThread_11 Receive New Messages: [MessageExt [queueId=3, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278949, bornHost=,
msgs的长度1
ConsumeMessageThread_16 Receive New Messages: [MessageExt [queueId=0, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278959, bornHost=,
msgs的长度1
ConsumeMessageThread_15 Receive New Messages: [MessageExt [queueId=1, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278969, bornHost=,
msgs的长度1
ConsumeMessageThread_14 Receive New Messages: [MessageExt [queueId=2, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682278986, bornHost=,
msgs的长度1
ConsumeMessageThread_17 Receive New Messages: [MessageExt [queueId=3, storeSize=138, queueOffset=249, sysFlag=0, bornTimestamp=1487682279003, bornHost=,
```

2、Consumer端后启动，也就是Producer先启动

由于这里是Consumer后启动，所以MQ上也就堆积了一堆数据，Consumer的

```
consumer.setConsumeMessageBatchMaxSize(10); //每次拉取10条
```

所以这段代码就生效了测试结果如下（每次size最多是10）：

```
msgs的长度10
ConsumeMessageThread_6 Receive New Messages: [MessageExt [queueId
msgs的长度10
ConsumeMessageThread_6 Receive New Messages: [MessageExt [queueId
msgs的长度1
ConsumeMessageThread_6 Receive New Messages: [MessageExt [queueId
msgs的长度1
ConsumeMessageThread_6 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_16 Receive New Messages: [MessageExt [queueI
msgs的长度10
ConsumeMessageThread_2 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_13 Receive New Messages: [MessageExt [queueI
msgs的长度1
ConsumeMessageThread_10 Receive New Messages: [MessageExt [queueI
ConsumeMessageThread_4 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_14 Receive New Messages: [MessageExt [queueI
ConsumeMessageThread_8 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_17 Receive New Messages: [MessageExt [queueI
msgs的长度1
ConsumeMessageThread_1 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_12 Receive New Messages: [MessageExt [queueI
msgs的长度1
ConsumeMessageThread_7 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_20 Receive New Messages: [MessageExt [queueI
msgs的长度10
ConsumeMessageThread_15 Receive New Messages: [MessageExt [queueI
ConsumeMessageThread_5 Receive New Messages: [MessageExt [queueId
ConsumeMessageThread_19 Receive New Messages: [MessageExt [queueI
msgs的长度10
msgs的长度10
ConsumeMessageThread_11 Receive New Messages: [MessageExt [queueI
ConsumeMessageThread_3 Receive New Messages: [MessageExt [queueId
```

二、消息重试机制：消息重试分为2种

- 1、Producer端重试
- 2、Consumer端重试

1、Producer端重试

也就是Producer往MQ上发消息没有发送成功，我们可以设置发送失败重试的次数,发送并触发回调函数



```
//设置重试的次数
producer.setRetryTimesWhenSendFailed(3);

//开启生产者
producer.start();
//创建一条消息
Message msg = new Message("PushTopic", "push", "1", "我是一条普通消息".getBytes());
//发送消息
SendResult result = producer.send(msg);
//发送，并触发回调函数
producer.send(msg, new SendCallback() {

    @Override
    //成功的回调函数
    public void onSuccess(SendResult sendResult) {
        System.out.println(sendResult.getSendStatus());
        System.out.println("成功了");
    }

    @Override
    //出现异常的回调函数
    public void onException(Throwable e) {
        System.out.println("失败了"+e.getMessage());
    }

});
```



```
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042C26, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042C26, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042C98, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042D22, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042DAC, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042E36, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042CB0, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042D3A, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042DC4, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042E4E, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042EC0, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042F4A, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000042FD4, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F0000000000004305E, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042ED8, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042F62, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000042FEC, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000043076, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F000000000000430E8, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000043172, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F000000000000431FC, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000043286, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000043100, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F0000000000004318A, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000043214, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F0000000000004329E, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000043310, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F0000000000004339A, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F00000000000043424, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=2], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649100002A9F000000000000434AE, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-a, queueId=3], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F00000000000043328, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=0], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F000000000000433B2, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=1], q
SendResult [sendStatus=SEND_OK, msgId=C0A8649200002A9F0000000000004343C, messageQueue=MessageQueue [topic=TopicTest, brokerName=broker-b, queueId=2], q
```

2、Consumer端重试

2.1、exception的情况，一般重复16次 10s、30s、1分钟、2分钟、3分钟等等

上面的代码中消费异常的情况返回

```
return ConsumeConcurrentlyStatus.RECONSUME_LATER;//重试
```

正常则返回：

```
return ConsumeConcurrentlyStatus.CONSUME_SUCCESS;//成功
```



```
package quickstart;

import java.util.List;

import com.alibaba.rocketmq.client.consumer.DefaultMQPushConsumer;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyContext;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyStatus;
import com.alibaba.rocketmq.client.consumer.listener.MessageListenerConcurrently;
import com.alibaba.rocketmq.client.exception.MQClientException;
```

```

import com.alibaba.rocketmq.common.consumer.ConsumeFromWhere;
import com.alibaba.rocketmq.common.message.MessageExt;

/**
 * Consumer, 订阅消息
 */
public class Consumer {

    public static void main(String[] args) throws InterruptedException, MQClientException {
        DefaultMQPushConsumer consumer = new DefaultMQPushConsumer("please_rename_unique_group_name_4");
        consumer.setNamesrvAddr("192.168.100.145:9876;192.168.100.146:9876");
        consumer.setConsumeMessageBatchMaxSize(10);
        /**
         * 设置Consumer第一次启动是从队列头部开始消费还是队列尾部开始消费<br>
         * 如果非第一次启动, 那么按照上次消费的位置继续消费
         */
        consumer.setConsumeFromWhere(ConsumeFromWhere.CONSUME_FROM_FIRST_OFFSET);

        consumer.subscribe("TopicTest", "");

        consumer.registerMessageListener(new MessageListenerConcurrently() {

            public ConsumeConcurrentlyStatus consumeMessage(List<MessageExt> msgs, ConsumeConcurrentlyContext context) {

                try {
                    // System.out.println("msgs的长度" + msgs.size());
                    System.out.println(Thread.currentThread().getName() + " Receive New Messages: " + msgs);
                    for (MessageExt msg : msgs) {
                        String msgbody = new String(msg.getBody(), "utf-8");
                        if (msgbody.equals("Hello RocketMQ 4")) {
                            System.out.println("=====错误=====");
                            int a = 1 / 0;
                        }
                    }
                }

                catch (Exception e) {
                    e.printStackTrace();
                    if (msgs.get(0).getReconsumeTimes() == 3) {
                        //记录日志

                        return ConsumeConcurrentlyStatus.CONSUME_SUCCESS; // 成功
                    } else {

                        return ConsumeConcurrentlyStatus.RECONSUME_LATER; // 重试
                    }
                }

                return ConsumeConcurrentlyStatus.CONSUME_SUCCESS; // 成功
            }
        });

        consumer.start();

        System.out.println("Consumer Started.");
    }
}

```

打印结果：


```

import com.alibaba.rocketmq.common.consumer.ConsumeFromWhere;
import com.alibaba.rocketmq.common.message.MessageExt;

/**
 * Consumer, 订阅消息
 */
public class Consumer {

    public static void main(String[] args) throws InterruptedException, MQClientException {
        DefaultMQPushConsumer consumer = new DefaultMQPushConsumer("message_consumer");
        consumer.setNamesrvAddr("192.168.100.145:9876;192.168.100.146:9876");
        consumer.setConsumeMessageBatchMaxSize(10);
        /**
         * 设置Consumer第一次启动是从队列头部开始消费还是队列尾部开始消费<br>
         * 如果非第一次启动,那么按照上次消费的位置继续消费
         */
        consumer.setConsumeFromWhere(ConsumeFromWhere.CONSUME_FROM_FIRST_OFFSET);

        consumer.subscribe("TopicTest", "");

        consumer.registerMessageListener(new MessageListenerConcurrently() {

            public ConsumeConcurrentlyStatus consumeMessage(List<MessageExt> msgs, ConsumeConcurrentlyContext context) {

                try {

                    // 表示业务处理时间
                    System.out.println("=====开始暂停=====");
                    Thread.sleep(60000);

                    for (MessageExt msg : msgs) {
                        System.out.println(" Receive New Messages: " + msg);
                    }

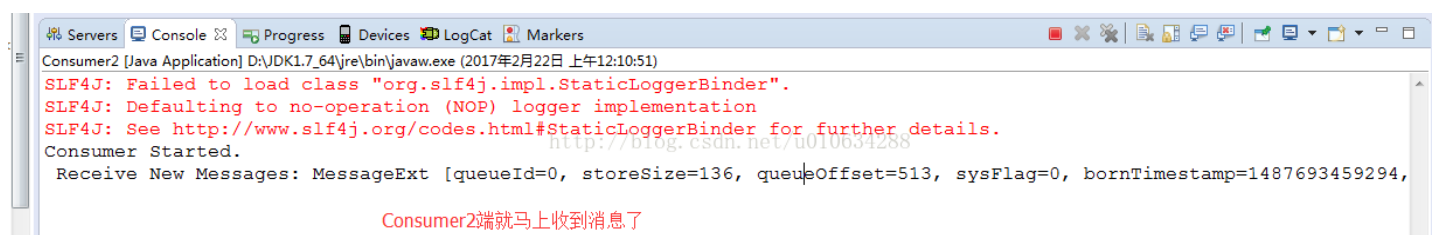
                } catch (Exception e) {
                    e.printStackTrace();
                    return ConsumeConcurrentlyStatus.RECONSUME_LATER; // 重试
                }

                return ConsumeConcurrentlyStatus.CONSUME_SUCCESS; // 成功
            }
        });

        consumer.start();

        System.out.println("Consumer Started.");
    }
}

```



三、消费模式

1、集群消费

2、广播消费

rocketMQ默认是集群消费,我们可以通过在Consumer来支持广播消费

```
consumer.setMessageModel(MessageModel.BROADCASTING); // 广播消费
```



```
package model;

import java.util.List;

import com.alibaba.rocketmq.client.consumer.DefaultMQPushConsumer;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyContext;
import com.alibaba.rocketmq.client.consumer.listener.ConsumeConcurrentlyStatus;
import com.alibaba.rocketmq.client.consumer.listener.MessageListenerConcurrently;
import com.alibaba.rocketmq.client.exception.MQClientException;
import com.alibaba.rocketmq.common.consumer.ConsumeFromWhere;
import com.alibaba.rocketmq.common.message.MessageExt;
import com.alibaba.rocketmq.common.protocol.heartbeat.MessageModel;

/**
 * Consumer, 订阅消息
 */
public class Consumer2 {

    public static void main(String[] args) throws InterruptedException, MQClientException {
        DefaultMQPushConsumer consumer = new DefaultMQPushConsumer("message_consumer");
        consumer.setNamesrvAddr("192.168.100.145:9876;192.168.100.146:9876");
        consumer.setConsumeMessageBatchMaxSize(10);
        consumer.setMessageModel(MessageModel.BROADCASTING); // 广播消费

        consumer.setConsumeFromWhere(ConsumeFromWhere.CONSUME_FROM_FIRST_OFFSET);

        consumer.subscribe("TopicTest", "*");

        consumer.registerMessageListener(new MessageListenerConcurrently() {

            public ConsumeConcurrentlyStatus consumeMessage(List<MessageExt> msgs, ConsumeConcurrentlyContext context) {

                try {

                    for (MessageExt msg : msgs) {
                        System.out.println(" Receive New Messages: " + msg);
                    }

                } catch (Exception e) {
                    e.printStackTrace();
                    return ConsumeConcurrentlyStatus.RECONSUME_LATER; // 重试
                }

                return ConsumeConcurrentlyStatus.CONSUME_SUCCESS; // 成功
            }
        });

        consumer.start();

        System.out.println("Consumer Started.");
    }
}
```



四、conf下的配置文件说明

Remote Name	Size	Type	Modified	Attributes
2m-2s-async		Folder	2017/01/30 20:4...	drwxr-xr...
2m-2s-sync		Folder	2017/01/30 20:4...	drwxr-xr...
2m-noslave		Folder	2017/01/30 20:5...	drwxr-xr...
logback_broker.xml	7,898	XML 文件	2017/01/30 20:5...	-rw-r--r--
logback_filtersrv.xml	2,359	XML 文件	2017/01/30 20:5...	-rw-r--r--
logback_namesrv.xml	2,341	XML 文件	2017/01/30 20:5...	-rw-r--r--
logback_tools.xml	2,463	XML 文件	2017/01/30 20:5...	-rw-r--r--

2主2从-异步复制
2主2从-同步双写
双主机

异步复制和同步双写主要是主和从的关系。消息需要实时消费的，就需要采用主从模式部署

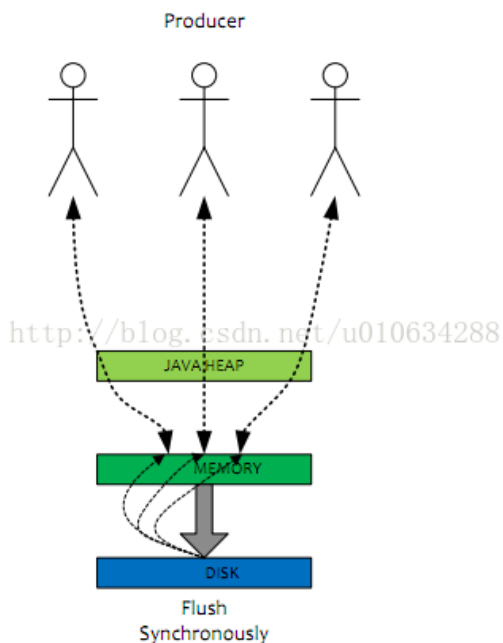
异步复制:比如这里有一主一从，我们发送一条消息到主节点之后，这样消息就算从producer端发送成功了，然后通过异步复制的方法将数据复制到从节点

同步双写:比如这里有一主一从，我们发送一条消息到主节点之后，这样消息就不算从producer端发送成功了，需要通过同步双写的方法将数据同步到从节点后，才算数据发送成功。

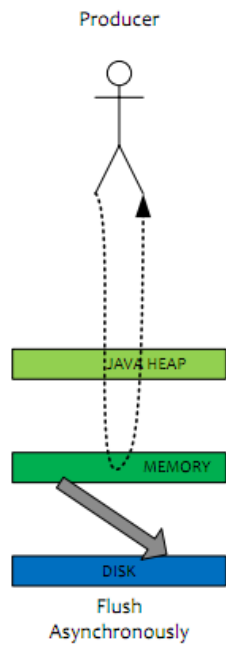
如果rocketMq才用双master部署，Producer往MQ上写入20条数据 其中Master1中拉取了12条。Master2中拉取了8条，这种情况下，Master1宕机，那么我们消费数据的时候，只能消费到Master2中的8条，Master1中的12条默认持久化，不会丢失消息，需要Master1恢复之后这12条数据才能继续被消费，如果想保证消息实时消费，就才用双Master双Slave的模式

五、刷盘方式

同步刷盘：在消息到达MQ后，RocketMQ需要将数据持久化，同步刷盘是指数据到达内存之后，必须刷到commitlog日志之后才算成功，然后返回producer数据已经发送成功。



异步刷盘：，同步刷盘是指数据到达内存之后,返回producer说数据已经发送成功。，然后再写入commitlog日志。



commitlog :

commitlog就是来存储所有的元信息，包含消息体，类似于MySQL、Oracle的redolog,所以主要有CommitLog在，Consume Queue即使数据丢失，仍然可以恢复出来。

consumequeue：记录数据的位置,以便Consume快速通过consumequeue找到commitlog中的数据