ActiveMQ

版本

ActiveMQ 5.11.3

官网下载

第一节 简介与安装

1.1 JMS简介

1.1.1 JMS

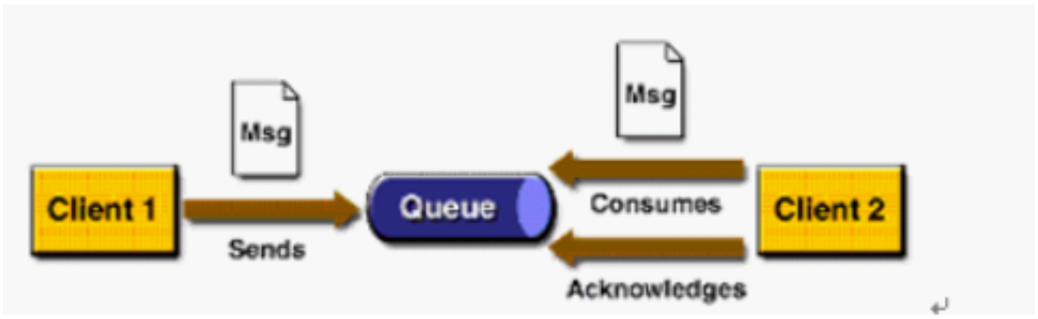
```
JMS（JAVA Message Service,java消息服务）API是一个消息服务的标准或者说是规范，允许应用程
序组件基于JavaEE平台创建、发送、接收和读取消息。它使分布式通信耦合度更低，消息服务更加可靠
以及异步性。
```

```
JMS是java的消息服务，JMS的客户端之间可以通过JMS服务进行异步的消息传输。
```

消息模型：

```
Point-to-Point(P2P) 点对点
Publish/Subscribe(Pub/Sub) 发布订阅
```

1.1.2 P2P



涉及角色

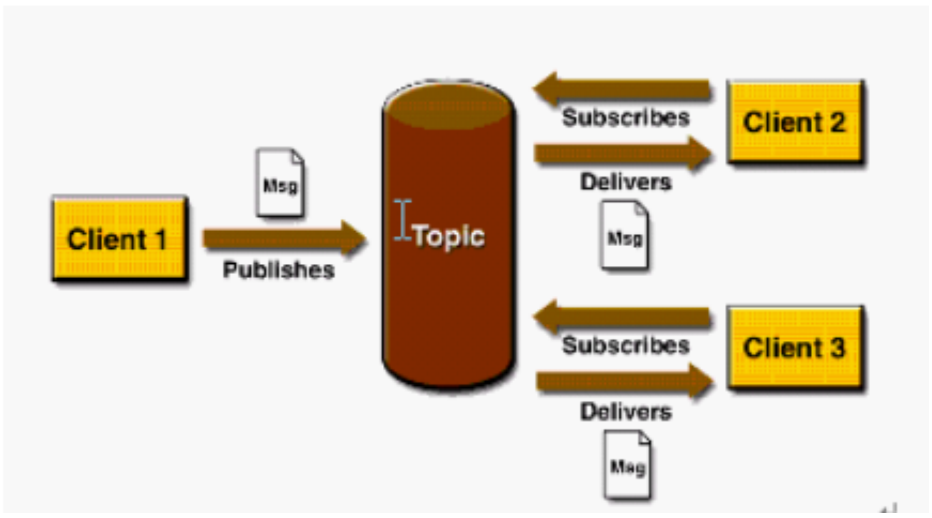
```
消息队列（Queue）
发送者(Sender)
接收者(Receiver)
每个消息都被发送到一个特定的队列，接收者从队列中获取消息。队列保留着消息，直到他们被消费或
超时。
```

P2P的特点

```
每个消息只有一个消费者（Consumer）(即一旦被消费，消息就不再在消息队列中)
发送者和接收者之间在时间上没有依赖性，也就是说当发送者发送了消息之后，不管接收者有没有正在运行，它不会影响到消息被发送到队列
接收者在成功接收消息之后需向队列应答成功
```

```
如果希望发送的每个消息都应该被成功处理的话，那么你需要P2P模式
```

1.1.3 Pub/Sub



涉及角色

```
主题（Topic）
发布者（Publisher）
订阅者（Subscriber）
客户端将消息发送到主题。多个发布者将消息发送到Topic,系统将这些消息传递给多个订阅者
```

Pub/Sub的特点

```
每个消息可以有多个消费者
发布者和订阅者之间有时间上的依赖性。针对某个主题（Topic）的订阅者，它必须创建一个订阅者之后，才能消费发布者的消息，而且为了消费消息，订阅者必须保持运行的状态。
为了缓和这样严格的时间相关性，JMS允许订阅者创建一个可持久化的订阅。这样，即使订阅者没有被激活（运行），它也能接收到发布者的消息。
```

```
如果希望发送的消息可以不被做任何处理、或者被一个消息者处理、或者可以被多个消费者处理的话，那么可以采用Pub/Sub模型
```

1.1.4 消息的消费

```
在JMS中，消息的产生和消息是异步的。对于消费来说，JMS的消息者可以通过两种方式来消费消息。
同步
订阅者或接收者调用receive方法来接收消息，receive方法在能够接收到消息之前（或超时之前）将
一直阻塞
异步
订阅者或接收者可以注册为一个消息监听器。当消息到达之后，系统自动调用监听器的onMessage方法
```

1.1.5 JMS编程模型

ConnectionFactory

```
创建Connection对象的工厂，针对两种不同的jms消息模型，分别有QueueConnectionFactory和
TopicConnectionFactory两种。可以通过JNDI来查找ConnectionFactory对象。
```

Destination

```
Destination的意思是消息生产者的消息发送目标或者说消息消费者的消息来源。对于消息生产者来
说，它的Destination是某个队列（Queue）或某个主题（Topic）;对于消息消费者来说，它的
Destination也是某个队列或主题（即消息来源）。
```

```
Destination实际上就是两种类型的对象：Queue、Topic可以通过JNDI来查找Destination
```

Connection

```
Connection表示在客户端和JMS系统之间建立的链接（对TCP/IP socket的包装）。Connection可以
产生一个或多个Session。跟ConnectionFactory一样，Connection也有两种类型：
QueueConnection和TopicConnection。
```

Session

```
Session是我们操作消息的接口。可以通过session创建生产者、消费者、消息等。Session提供了事
务的功能。当我们需要使用session发送/接收多个消息时，可以将这些发送/接收动作放到一个事务
中。同样，也分QueueSession和TopicSession。
```

消息的生产者

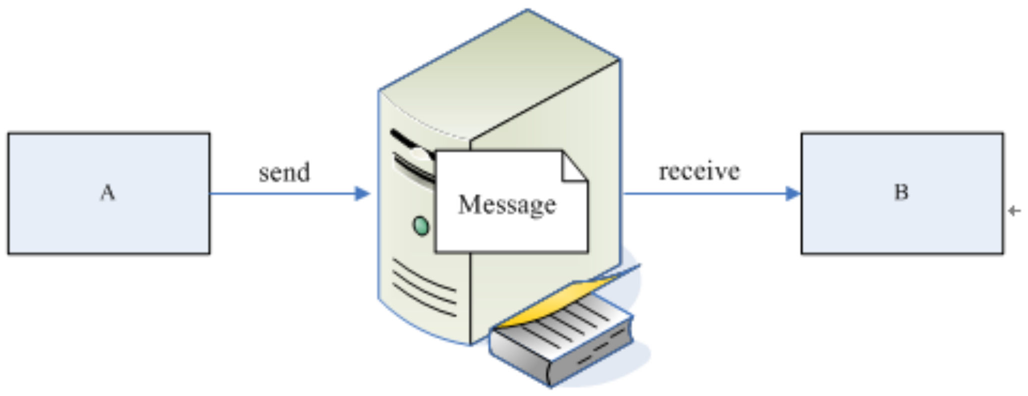
```
消息生产者由Session创建，并用于将消息发送到Destination。同样，消息生产者分两种类型：
QueueSender和TopicPublisher。可以调用消息生产者的方法（send或publish方法）发送消息。
```

消息消费者

```
消息消费者由Session创建，用于接收被发送到Destination的消息。两种类型：QueueReceiver和TopicSubscriber。可分别通过session的createReceiver(Queue)或createSubscriber(Topic)来创建。当然，也可以session的creatDurableSubscriber方法来创建持久化的订阅者。
```

MessageListener

```
消息监听器。如果注册了消息监听器，一旦消息到达，将自动调用监听器的onMessage方法。EJB中的MDB（Message-Driven Bean）就是一种MessageListener
```



1.2 MQ

1.2.1 消息中间件

```
消息中间件（MOM：Message Orient middleware）
```

```
消息中间件有很多的用途和优点：
1. 将数据从一个应用程序传送到另一个应用程序，或者从软件的一个模块传送到另外一个模块；
2. 负责建立网络通信的通道，进行数据的可靠传送。
3. 保证数据不重发，不丢失
4. 能够实现跨平台操作，能够为不同操作系统上的软件集成技工数据传送服务
```

1.2.2 ActiveMQ

```
MQ英文名MessageQueue，中文名也就是大家用的消息队列，就是一个消息的接受和转发的容器，可用于消息推送。
```

```
ActiveMQ是由Apache出品的，一款最流行的，能力强劲的开源消息总线。ActiveMQ是一个完全支持JMS1.1和J2EE 1.4规范的 JMS Provider实现，它非常快速，支持多种语言的客户端和协议，而且可以非常容易的嵌入到企业的应用环境中，并有许多高级功能
```

1.2.3 特性

```
1、多种语言和协议编写客户端。语言： Java, C, C++, C#, Ruby, Perl, Python, PHP。应用协议: OpenWire,Stomp REST,WS Notification,XMPP,AMQP
2、完全支持JMS1.1和J2EE 1.4规范 (持久化,XA消息,事务)
3、对Spring的支持,ActiveMQ可以很容易内嵌到使用Spring的系统里面去
4、通过了常见J2EE服务器(如 Geronimo,JBoss 4, GlassFish,WebLogic,Tomcat)的测试,其中通过JCA 1.5 resource adaptors的配置,可以让ActiveMQ可以自动的部署到任何兼容J2EE 1.4 商业服务器上
5、支持多种传送协议:in-VM,TCP,SSL,NIO,UDP,JGroups,JXTA
6、支持通过JDBC和journal提供高速的消息持久化
7、从设计上保证了高性能的集群,客户端-服务器,点对点
8、支持Ajax
9、支持与Axis的整合
10、可以很容易得调用内嵌JMS provider,进行测试
```

1.2.4 使用场景

```
1、多个项目之间集成
  (1) 跨平台
  (2) 多语言
  (3) 多项目
2、降低系统间模块的耦合度, 解耦
    (1) 软件扩展性
3、系统前后端隔离
(    1) 前后端隔离, 屏蔽高安全区
```

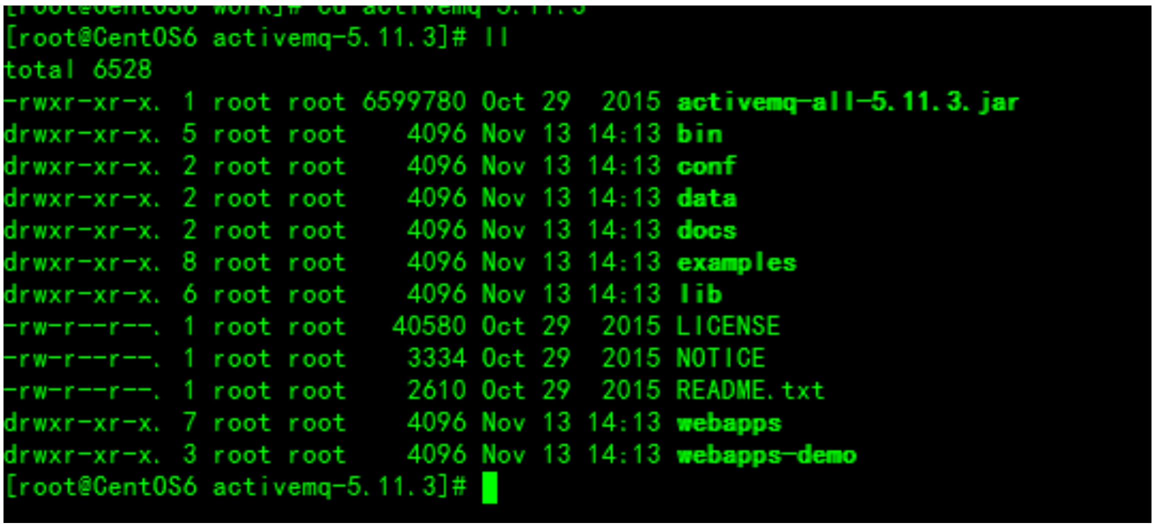
第二节 安装和使用

2.1 安装

2.1.1 上传并解压

命令

```
cd /opt/work
tar -zxvf apache-activemq-5.11.3-bin.tar.gz
```

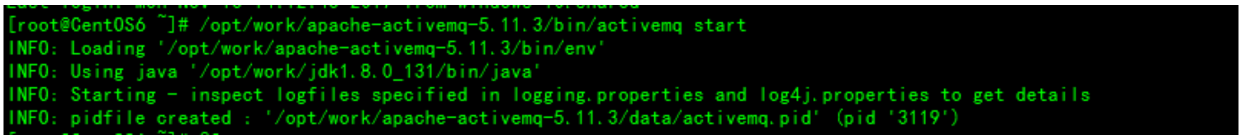


```
[root@CentOS6 activemq-5.11.3]# ll
total 6528
-rwxr-xr-x. 1 root root 6599780 Oct 29  2015 activemq-all-5.11.3.jar
drwxr-xr-x. 5 root root    4096 Nov 13 14:13 bin
drwxr-xr-x. 2 root root    4096 Nov 13 14:13 conf
drwxr-xr-x. 2 root root    4096 Nov 13 14:13 data
drwxr-xr-x. 2 root root    4096 Nov 13 14:13 docs
drwxr-xr-x. 8 root root    4096 Nov 13 14:13 examples
drwxr-xr-x. 6 root root    4096 Nov 13 14:13 lib
-rw-r--r--. 1 root root   40580 Oct 29  2015 LICENSE
-rw-r--r--. 1 root root    3334 Oct 29  2015 NOTICE
-rw-r--r--. 1 root root    2610 Oct 29  2015 README.txt
drwxr-xr-x. 7 root root    4096 Nov 13 14:13 webapps
drwxr-xr-x. 3 root root    4096 Nov 13 14:13 webapps-demo
[root@CentOS6 activemq-5.11.3]#
```

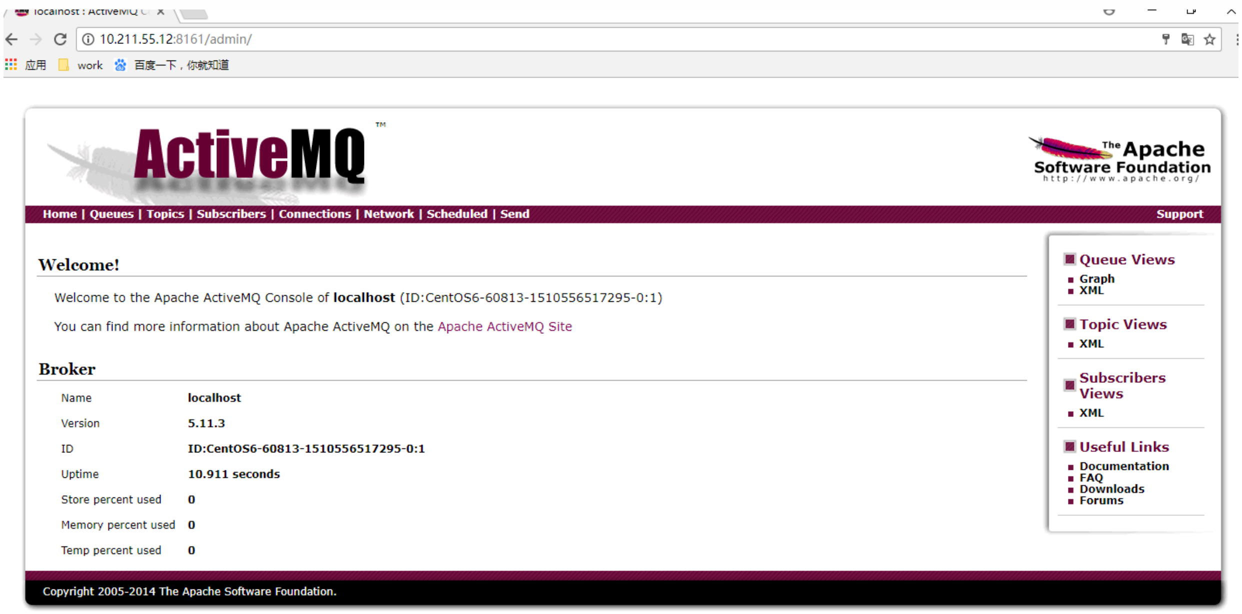
```
bin存放的是脚本文件
conf存放的是基本配置文件
data存放的是日志文件
docs存放的是说明文档
examples存放的是简单的实例
lib存放的是activemq所需jar包
webapps用于存放项目的目录
```

2.1.2 启动

```
 /opt/work/apache-activemq-5.11.3/bin/activemq start  启动
 /opt/work/apache-activemq-5.11.3/bin/activemq stop   停止
 在浏览器访问
 http://10.211.55.12:8161/admin/
 账号和密码都是admin
```



```
[root@CentOS6 ~]# /opt/work/apache-activemq-5.11.3/bin/activemq start
INFO: Loading '/opt/work/apache-activemq-5.11.3/bin/env'
INFO: Using java '/opt/work/jdk1.8.0_131/bin/java'
INFO: Starting - inspect logfiles specified in logging.properties and log4j.properties to get details
INFO: pidfile created : '/opt/work/apache-activemq-5.11.3/data/activemq.pid' (pid '3119')
```



10.211.55.12:8161/admin/

Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send   Support

Welcome!

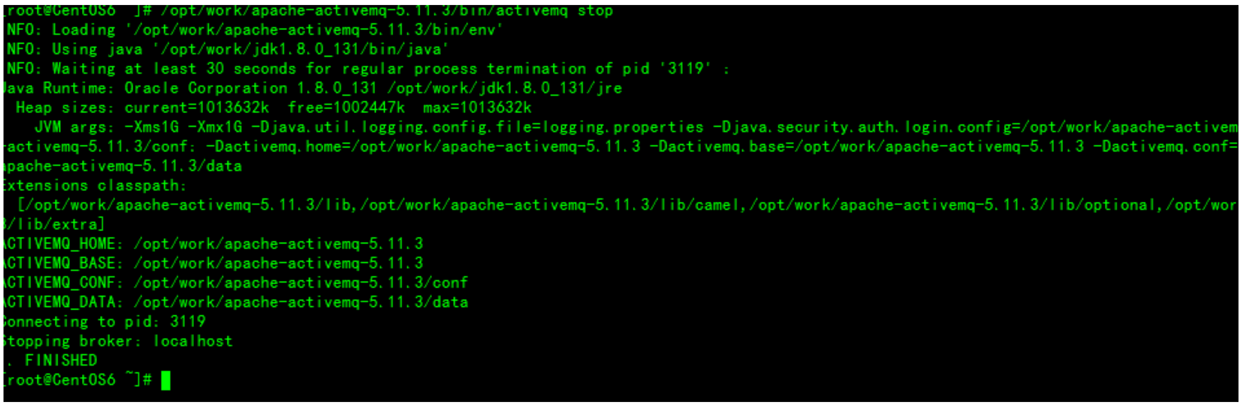
Welcome to the Apache ActiveMQ Console of **localhost** (ID:CentOS6-60813-1510556517295-0:1)

You can find more information about Apache ActiveMQ on the Apache ActiveMQ Site

Broker

Name	localhost
Version	5.11.3
ID	ID:CentOS6-60813-1510556517295-0:1
Uptime	10.911 seconds
Store percent used	0
Memory percent used	0
Temp percent used	0

Copyright 2005-2014 The Apache Software Foundation.



```
root@CentOS6 ~]# /opt/work/apache-activemq-5.11.3/bin/activemq stop
NFO: Loading '/opt/work/apache-activemq-5.11.3/bin/env'
NFO: Using java '/opt/work/jdk1.8.0_131/bin/java'
NFO: Waiting at least 30 seconds for regular process termination of pid '3119' :
ava Runtime: Oracle Corporation 1.8.0_131 /opt/work/jdk1.8.0_131/jre
 Heap sizes: current=1013632k  free=1002447k  max=1013632k
   JVM args: -Xms1G -Xmx1G -Djava.util.logging.config.file=logging.properties -Djava.security.auth.login.config=/opt/work/apache-activem
activemq-5.11.3/conf: -Dactivemq.home=/opt/work/apache-activemq-5.11.3 -Dactivemq.base=/opt/work/apache-activemq-5.11.3 -Dactivemq.conf=
pache-activemq-5.11.3/data
xtensions classpath:
  [/opt/work/apache-activemq-5.11.3/lib,/opt/work/apache-activemq-5.11.3/lib/camel,/opt/work/apache-activemq-5.11.3/lib/optional,/opt/wor
/lib/extra]
CTIVEMQ_HOME: /opt/work/apache-activemq-5.11.3
CTIVEMQ_BASE: /opt/work/apache-activemq-5.11.3
CTIVEMQ_CONF: /opt/work/apache-activemq-5.11.3/conf
CTIVEMQ_DATA: /opt/work/apache-activemq-5.11.3/data
onnecting to pid: 3119
topping broker: localhost
. FINISHED
root@CentOS6 ~]#
```

> 注意：如果主机名称包含下划线、小数点等特殊字符时。启动会失败

2.1.3 无法启动

> 如果无法启动,查看 data 目录下的 activemq.log 文件查看日志,可能会是因为缺少 commons-dbcp 和 commons-pool 依赖包,我们需要复制依赖包到 lib 目录,注意 lib 下的optional目录有 dbcp2 和 pool2依赖包,但是这两个不行,我们需要不带2的包

2.2 基本使用

基于Maven+Idea进行代码编写

2.2.1 pom.xml

```
<project xmlns="http://maven.apache.org/POM/4.0.0"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/maven-v4_0_0.xsd">
```

```
    <modelVersion>4.0.0</modelVersion>
    <groupId>xph</groupId>
    <artifactId>My_ActiveMQ</artifactId>
    <packaging>war</packaging>
    <version>1.0</version>
    <!-- TODO project name  -->
    <name>quickstart</name>
    <description></description>

    <dependencies>

        <!-- https://mvnrepository.com/artifact/org.apache.activemq/activemq-
client -->
        <dependency>
            <groupId>org.apache.activemq</groupId>
            <artifactId>activemq-client</artifactId>
            <version>5.11.3</version>
        </dependency>

    </dependencies>

    <build>
        <plugins>
            <!-- java编译插件 -->
            <plugin>
                <groupId>org.apache.maven.plugins</groupId>
                <artifactId>maven-compiler-plugin</artifactId>
                <version>3.6.0</version>
                <configuration>
                    <source>1.8</source>
                    <target>1.8</target>
                    <encoding>UTF-8</encoding>
                </configuration>
            </plugin>

        </plugins>

    </build>


</project>
```

2.2.2 消息生产者

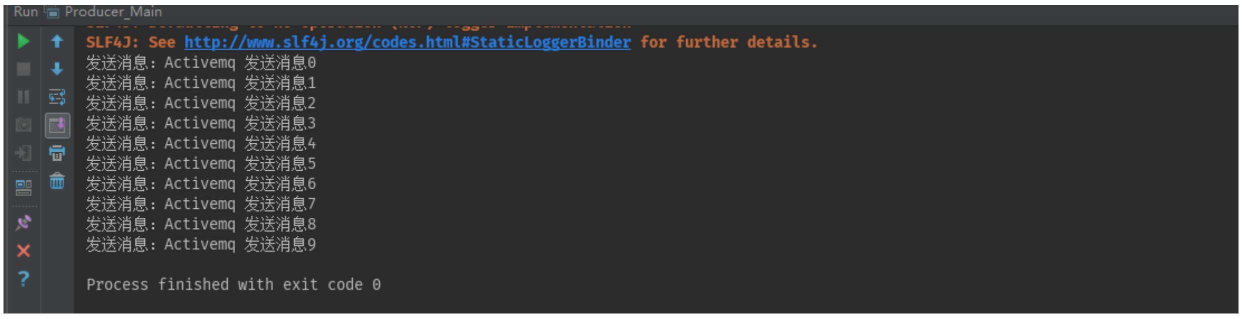
MQProducer 消息生产者

```
public class MQProducer {
    //默认连接用户名
    private static final String USERNAME = ActiveMQConnection.DEFAULT_USER;
    //默认连接密码
    private static final String PASSWORD = ActiveMQConnection.DEFAULT_PASSWORD;
    //默认连接地址
    private static final String BROKEURL = "tcp://10.211.55.12:61616";
    //发送的消息数量
    private static final int SENDNUM = 10;

    //发送消息
    public static void sendMsg(){
        //连接工厂
        ConnectionFactory connectionFactory;
        //连接
        Connection connection = null;
        //会话 接受或者发送消息的线程
        Session session;
        //消息的目的地
        Destination destination;
        //消息生产者
        MessageProducer messageProducer;
        //实例化连接工厂
        connectionFactory = new ActiveMQConnectionFactory(USERNAME, PASSWORD,
BROKEURL);

        try {
            //通过连接工厂获取连接
            connection = connectionFactory.createConnection();
            //启动连接
            connection.start();
            //创建session, 用于接收消息, 参数配置1: 是否启用事务, 蚕食配置2: 签收模式,
一般我们设置为自动签收
            session = connection.createSession(true, Session.AUTO_ACKNOWLEDGE);
            //创建一个名称为HelloWorld的消息队列
            destination = session.createQueue("HelloWorld");
            //创建消息生产者
            messageProducer = session.createProducer(destination);
            //发送消息
            for (int i = 0; i < SENDNUM; i++) {
                //创建一条文本消息
                TextMessage message = session.createTextMessage("ActiveMQ 发送消息"
+i);
                System.out.println("发送消息: Activemq 发送消息" + i);
                //通过消息生产者发出消息
                messageProducer.send(message);
            }

            session.commit();
        } catch (Exception e) {
            e.printStackTrace();
        }finally{
            if(connection != null){
                try {
                    connection.close();
                } catch (JMSException e) {
                    e.printStackTrace();
                }
            }
        }

    }
}
```

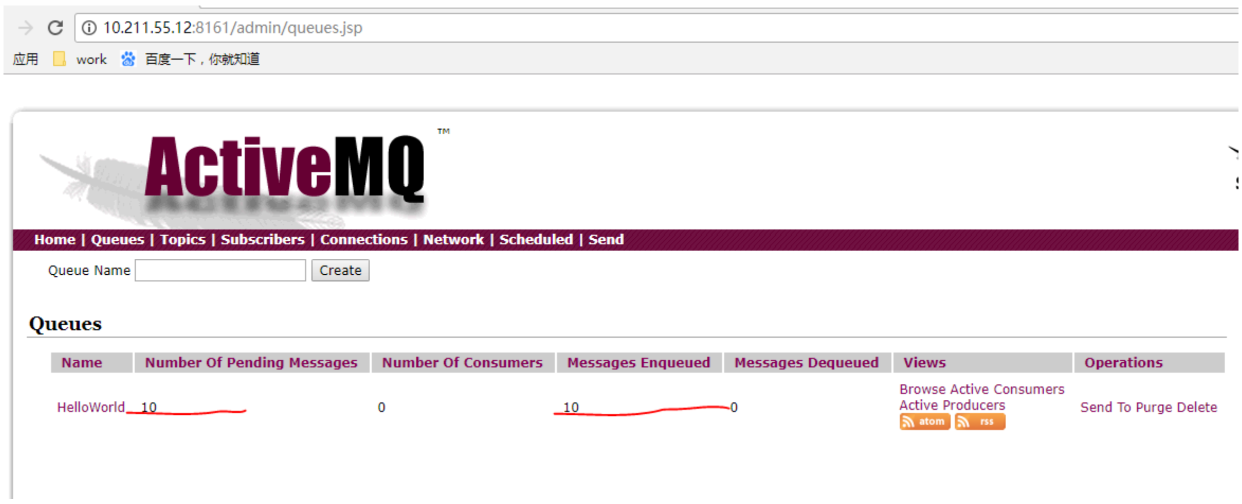
```
send(Destination destination,Message message,int deliveryMode,int priority,long timeToLive);
参数说明:
1、destination: 通过session创建Destination对象, 指的是一个客户端用来指定生产的消息目标或消息来源的对象。在PTP模式中, Destination被称作Queue队列, 在Pub/Sub模式中Destination被称作topic主题。在程序中可以使用多个Queue或topic
2、message: 消息
3、deliveryMode:传送模式, PERSISTENT (默认) 和NON_PERSISTENT, 如果容忍消息丢失, 可以使用NON_PERSISTENT。
4、priority: 消息优先级, 从0-9十个级别, 0-4是普通消息, 5-9是加急消息, 默认是4。
5、timeToLive: 消息过期时间, 默认情况下消息永不过期。
```

Producer_Main 主函数 启动生产者发布消息

```
public class Producer_Main {
    public static void main(String[] args) {
        //启动生产者进行消息的发送
        MQProducer.sendMsg();
    }
}
```



```
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
发送消息: Activemq 发送消息0
发送消息: Activemq 发送消息1
发送消息: Activemq 发送消息2
发送消息: Activemq 发送消息3
发送消息: Activemq 发送消息4
发送消息: Activemq 发送消息5
发送消息: Activemq 发送消息6
发送消息: Activemq 发送消息7
发送消息: Activemq 发送消息8
发送消息: Activemq 发送消息9

Process finished with exit code 0
```


10.211.55.12:8161/admin/queues.jsp
应用
work
百度一下，你就知道
ActiveMQ
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Queue Name
Create

Queues

Name	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
HelloWorld	10	0	10	0	Browse Active Consumers Active Producers atom rss	Send To Purge Delete

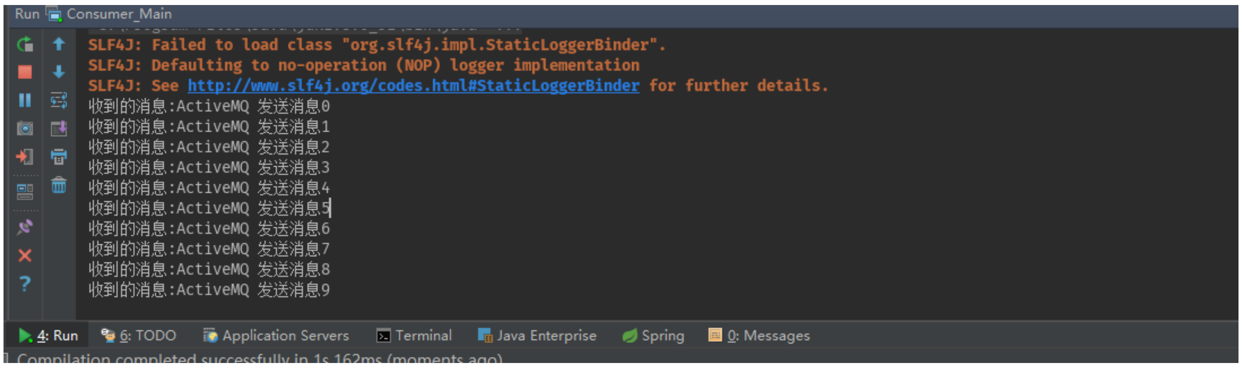
2.2.3 消息消费者

MQConsumer 消息消费者

```
public class MQConsumer {
    private static final String USERNAME = ActiveMQConnection.DEFAULT_USER;//默认连
接用户名
    private static final String PASSWORD = ActiveMQConnection.DEFAULT_PASSWORD;//
默认连接密码
    private static final String BROKEURL = "tcp://10.211.55.12:61616";//默认连接地
址

    //接受消息
    public static void receiveMsg() {
        ConnectionFactory connectionFactory;//连接工厂
        Connection connection = null;//连接

        Session session;//会话 接受或者发送消息的线程
        Destination destination;//消息的目的地

        MessageConsumer messageConsumer;//消息的消费者

        //实例化连接工厂
        connectionFactory = new ActiveMQConnectionFactory(MQConsumer.USERNAME,
MQConsumer.PASSWORD, MQConsumer.BROKEURL);

        try {
            //通过连接工厂获取连接
            connection = connectionFactory.createConnection();
            //启动连接
            connection.start();
            //创建session
            session = connection.createSession(false, Session.AUTO_ACKNOWLEDGE);
            //创建一个连接HelloWorld的消息队列
            destination = session.createQueue("HelloWorld");
            //创建消息消费者
            messageConsumer = session.createConsumer(destination);

            while (true) {
                TextMessage textMessage = (TextMessage)
messageConsumer.receive(100000);
                if(textMessage != null){
                    System.out.println("收到的消息:" + textMessage.getText());
                }else {
                    break;
                }
            }

        } catch (JMSException e) {
            e.printStackTrace();
        }

    }
}
```

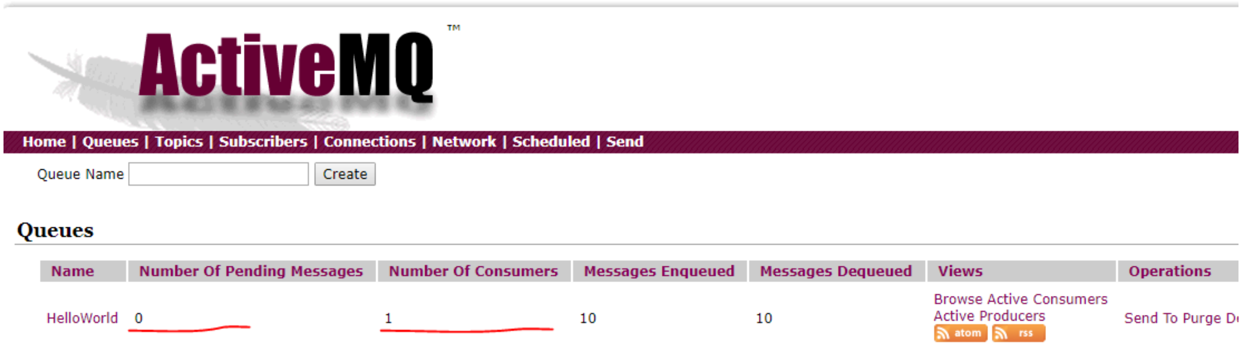
Consumer_Main 主函数 启动消费消息

```
public class Consumer_Main {
    public static void main(String[] args) {
        //启动消费者进行消息的读取
        MQConsumer.receiveMsg();
    }
}
```



```
Run  Consumer_Main
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
收到的消息:ActiveMQ 发送消息0
收到的消息:ActiveMQ 发送消息1
收到的消息:ActiveMQ 发送消息2
收到的消息:ActiveMQ 发送消息3
收到的消息:ActiveMQ 发送消息4
收到的消息:ActiveMQ 发送消息5
收到的消息:ActiveMQ 发送消息6
收到的消息:ActiveMQ 发送消息7
收到的消息:ActiveMQ 发送消息8
收到的消息:ActiveMQ 发送消息9
```

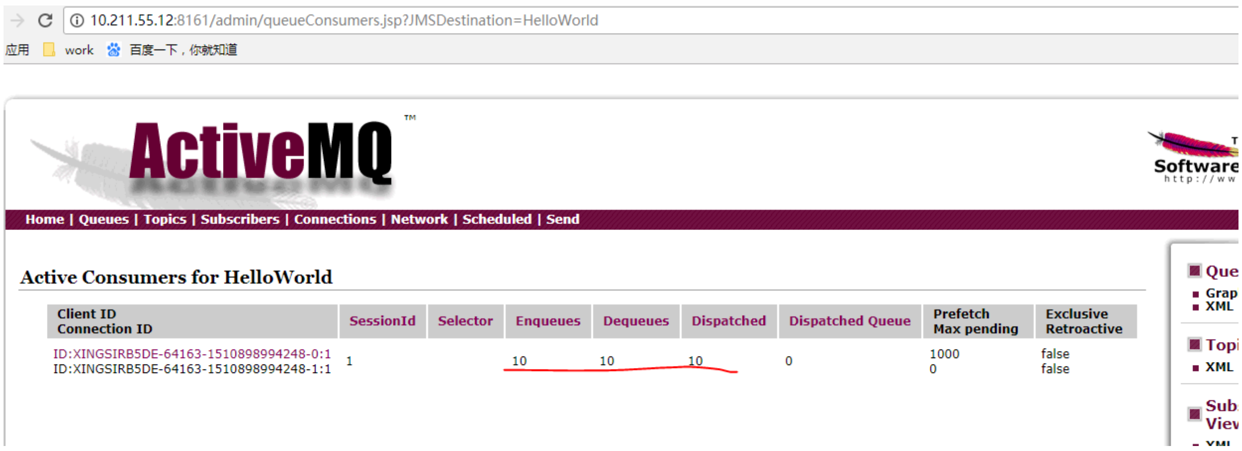
Compilation completed successfully in 1s 162ms (moments ago)



ActiveMQ™
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Queue Name
Create

Queues

Name	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
HelloWorld	0	1	10	10	Browse Active Consumers Active Producers atom rss	Send To Purge D


10.211.55.12:8161/admin/queueConsumers.jsp?JMSDestination=HelloWorld
应用
work
百度一下，你就知道
ActiveMQ™
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Software
Que
Grap
XML
Topi
XML
Sub
Viev

Active Consumers for HelloWorld

Client ID Connection ID	SessionId	Selector	Enqueues	Dequeues	Dispatched	Dispatched Queue	Prefetch Max pending	Exclusive Retroactive
ID:XINGSIRB5DE-64163-1510898994248-0:1 ID:XINGSIRB5DE-64163-1510898994248-1:1	1		10	10	10	0	1000 0	false false

2.3 消息过滤

2.3.1 消息的同步和异步

消息的同步接收是指：客户端主动去接收消息，客户端课采用MessageConsume的receive方法去接收下一个消息。

消息的异步接收是指：当消息到达MQ服务器时，MQ服务器主动通知客户端，客户点通过注册一个实现MessageListener接口的对象到MessageConsumer。MessageListener只有一个必须实现的方法：onMessage,它只接受一个参数Message。在为每个发送到Destination的消息实现onMessage时，调用该方法。

2.3.2 消息过滤

MessageConsumer是一个由Session创建的对象，用来从Destination接收消息。
其中messageSelector为消息选择器，noLocal标志默认为false，设置为true时，限制消费者只能接受和自己相同连接（connection）所发布的消息，此标志只适用于topic主题模式，不适用于queue队列模式；name标识订阅topic主题所对应的订阅名称，持久订阅时需要设置此参数

选择器检查了传入消息的“JMS_TYPE”属性，并确定了这个属性的值是否等于某个值。如果相等，则消息被消费，如果不相等，那么消息会被忽略。

2.3.3 代码演示

消息生产者

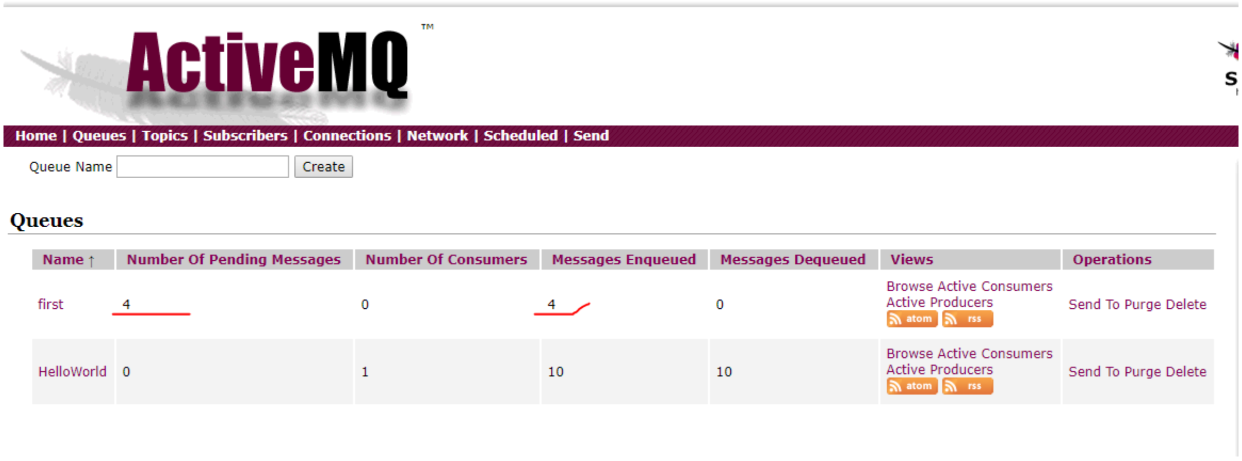
MsgFilterSender 消息生产者

```
public class MsgFilterSender {
    private ConnectionFactory connectionFactory;
    private Connection connection;
    private Session session;
    private MessageProducer messageProducer;

    public MsgFilterSender() {
        try{
            this.connectionFactory = new ActiveMQConnectionFactory("admin",
                    "admin",
                    "tcp://10.211.55.12:61616");
            this.connection = this.connectionFactory.createConnection();
            this.connection.start();
            this.session =
this.connection.createSession(Boolean.FALSE,Session.AUTO_ACKNOWLEDGE);
            this.messageProducer=this.session.createProducer(null);
        }catch (JMSException e){
            e.printStackTrace();
        }
    }


    //发送消息
    public void send() {
        try{
            //消息队列
            Destination destination = this.session.createQueue("first");
            //创建消息
            MapMessage msg1 = this.session.createMapMessage();
            msg1.setString("name","Jack");
            msg1.setString("address","Bei Jing");
            msg1.setIntProperty("age",23);
            msg1.setStringProperty("sex","m");

            MapMessage msg2 = this.session.createMapMessage();
            msg2.setString("name","rose");
            msg2.setString("address","Nan Jing");
            msg2.setIntProperty("age",22);
            msg2.setStringProperty("sex","f");

            MapMessage msg3 = this.session.createMapMessage();
            msg3.setString("name","Tom");
            msg3.setString("address","Tian Jin");
            msg3.setIntProperty("age",23);
            msg3.setStringProperty("sex","m");

            MapMessage msg4 = this.session.createMapMessage();
            msg4.setString("name","Lily");
            msg4.setString("address","Qing dao");
            msg4.setIntProperty("age",21);
            msg4.setStringProperty("sex","f");

            //发送消息
this.messageProducer.send(destination,msg1,DeliveryMode.NON_PERSISTENT,1,1000*60*6
0);
```

```
 this.messageProducer.send(destination,msg2,DeliveryMode.NON_PERSISTENT,3,1000*60*
60);

 this.messageProducer.send(destination,msg3,DeliveryMode.NON_PERSISTENT,5,1000*60*
60);

 this.messageProducer.send(destination,msg4,DeliveryMode.NON_PERSISTENT,7,1000*60*
60);
            //断开连接
            this.connection.close();
        }catch (JMSException e){
            e.printStackTrace();
        }
    }
}
```

Producer_Main 启动生产者发送消息

```
public class Producer_Main {
    public static void main(String[] args) {
        //启动生产者进行消息的发送
        //MQProducer.sendMsg();
        MsgFilterSender sender=new MsgFilterSender();
        sender.send();
    }
}
```


ActiveMQ™
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Queue Name
Create

Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
first	4	0	4	0	Browse Active Consumers Active Producers atom rss	Send To Purge Delete
HelloWorld	0	1	10	10	Browse Active Consumers Active Producers atom rss	Send To Purge Delete

消息监听者

Listener 监听消息

```
public class Listener implements MessageListener {
    public void onMessage(Message message) {
        try {
```

```java
            if(message instanceof MapMessage){
                MapMessage msg = (MapMessage) message;
                System.out.println(msg.toString());
                System.out.println(msg.getString("name"));
                System.out.println(msg.getString("address"));
                System.out.println(msg.getIntProperty("age"));
                System.out.println(msg.getStringProperty("sex"));

            }else{
                System.out.println("消息源类型错误!");
            }
        } catch (JMSException e) {
            e.printStackTrace();
        }
    }
}
```

消息消费者

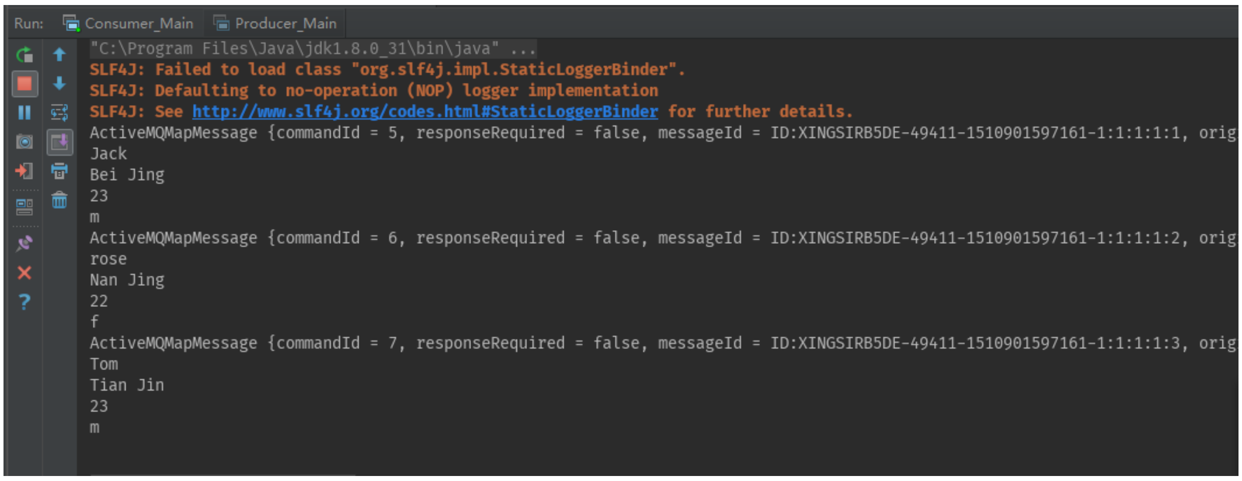
MsgFilterConsumer 消息消费者

```java
public class MsgFilterConsumer {
    //使用selector的属性,必须是由setXXXProperty()方法定义的属性.
    public final String SELECTOR_1 = "name LIKE 'T%'";//无效
    public final String SELECTOR_2 = "age >= 22";
    public final String SELECTOR_3 = "sex='f'";

    private ConnectionFactory connectionFactory;
    private Connection connection;
    private Session session;
    private Destination destination;
    private MessageConsumer messageConsumer;


    public MsgFilterConsumer() {
        try{
            this.connectionFactory = new ActiveMQConnectionFactory("admin",
                    "admin",
                    "tcp://10.211.55.12:61616");
            this.connection = this.connectionFactory.createConnection();
            this.connection.start();
            this.session =
this.connection.createSession(Boolean.FALSE,Session.AUTO_ACKNOWLEDGE);
            //定义destination
            this.destination=this.session.createQueue("first");
            //创建消费者的时候发生了变化
```

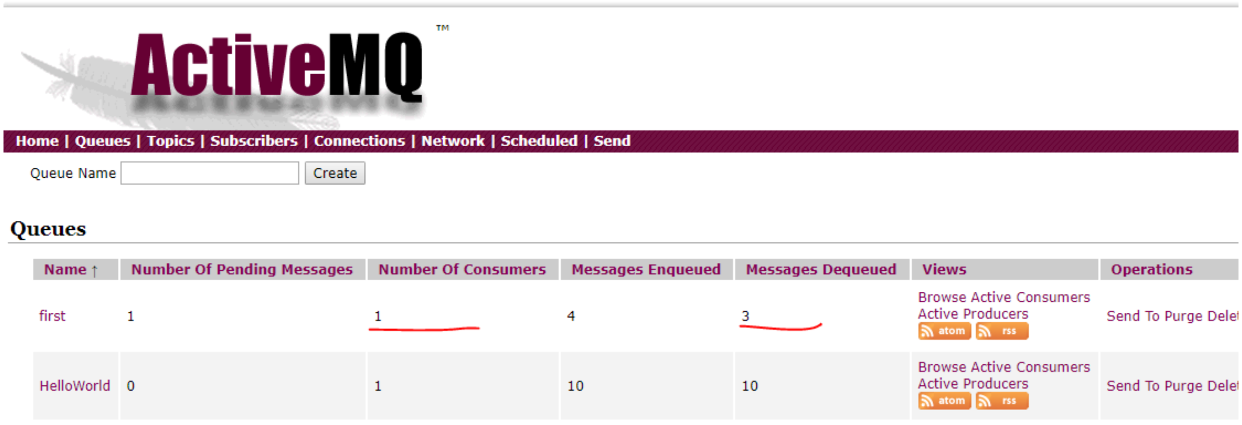
```
 this.messageConsumer=this.session.createConsumer(this.destination,SELECTOR_2);
        }catch (JMSException e){
            e.printStackTrace();
        }
    }

    public void receiver(){
        try{
            this.messageConsumer.setMessageListener(new Listener());
        }catch (JMSException e){
            e.printStackTrace();
        }
    }
}
```

Consumer_Main 启动消息消费

```
public class Consumer_Main {
    public static void main(String[] args) {
        //启动消费者进行消息的读取
        //MQConsumer.receiveMsg();
        MsgFilterConsumer consumer=new MsgFilterConsumer();
        consumer.receiver();
    }
}
```

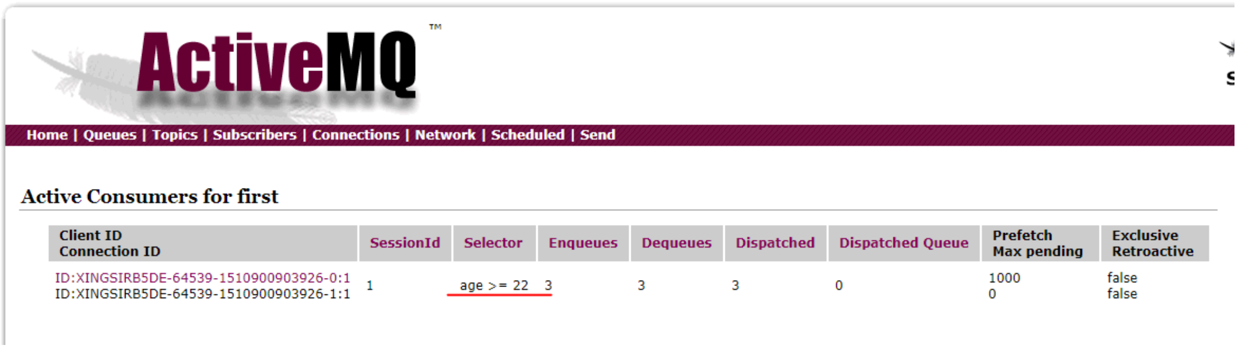


```
"C:\Program Files\Java\jdk1.8.0_31\bin\java" ...
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
ActiveMQMapMessage {commandId = 5, responseRequired = false, messageId = ID:XINGSIRB5DE-49411-1510901597161-1:1:1:1:1, orig
Jack
Bei Jing
23
m
ActiveMQMapMessage {commandId = 6, responseRequired = false, messageId = ID:XINGSIRB5DE-49411-1510901597161-1:1:1:1:2, orig
rose
Nan Jing
22
f
ActiveMQMapMessage {commandId = 7, responseRequired = false, messageId = ID:XINGSIRB5DE-49411-1510901597161-1:1:1:1:3, orig
Tom
Tian Jin
23
m
```


ActiveMQ™
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Queue Name
Create

Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
first	1	1	4	3	Browse Active Consumers Active Producers atom rss	Send To Purge Delet
HelloWorld	0	1	10	10	Browse Active Consumers Active Producers atom rss	Send To Purge Delet


ActiveMQ™
Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send

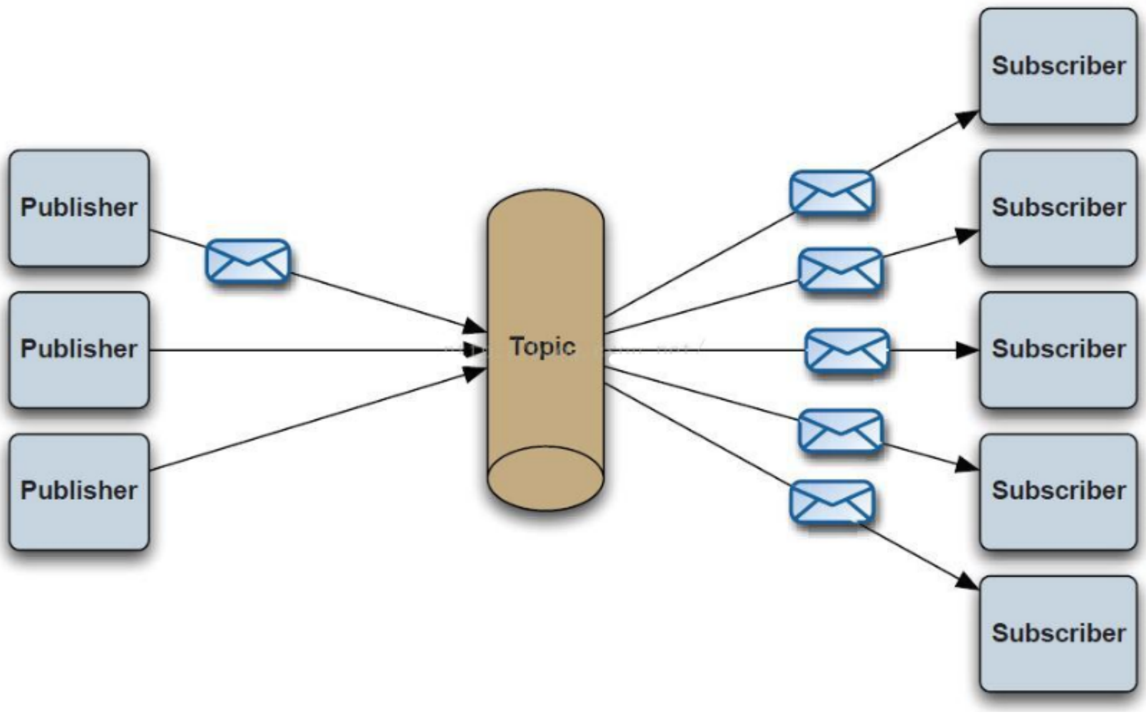
Active Consumers for first

Client ID Connection ID	SessionId	Selector	Enqueues	Dequeues	Dispatched	Dispatched Queue	Prefetch Max pending	Exclusive Retroactive
ID:XINGSIRB5DE-64539-1510900903926-0:1 ID:XINGSIRB5DE-64539-1510900903926-1:1	1	age >= 22	3	3	3	0	1000 0	false false

2.4 Pub/Sub模式

2.4.1 概述

> 发布订阅模式有点类似于我们日常生活中订阅报纸。每年到年尾的时候，邮局就会发一本报纸集合让我们来选择订阅哪一个，在这个表里头列了所有出版发行的报纸，那么对于我们每一个订阅者来说，我们可以选择一份或者多份报纸。比如北京日报、潇湘晨报等。那么这些个我们订阅的报纸就相当于发布订阅模式里的topic。有很多个人订阅报纸，也有人可能订阅了和我相同的报纸。那么在这里相当于我们在同一个topic里面注册了。对于一份报纸发行来说，它和所有的订阅者就构成了一个1对多的关系，这种关系如下所示：



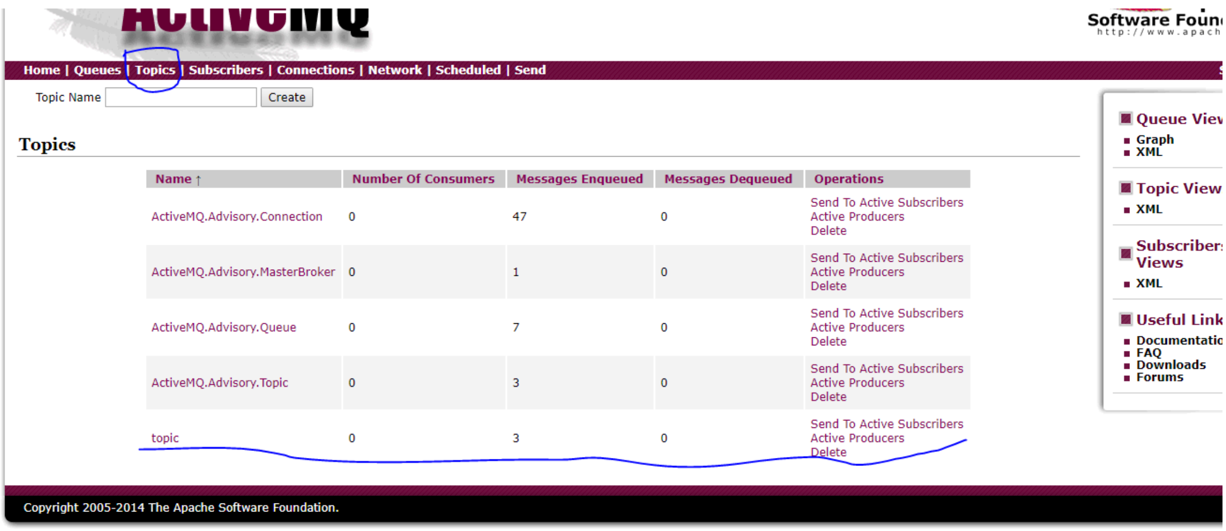
2.4.2 示例代码

PubSender 消息生产者

```
public class PubSender {
    private ConnectionFactory connectionFactory;
    private Connection connection;
    private Session session;
    private MessageProducer messageProducer;

    public PubSender() {
        try{
            this.connectionFactory = new ActiveMQConnectionFactory("admin",
                    "admin",
                    "tcp://10.211.55.12:61616");
            this.connection = this.connectionFactory.createConnection();
            this.connection.start();
            this.session =
this.connection.createSession(Boolean.FALSE,Session.AUTO_ACKNOWLEDGE);
            this.messageProducer=this.session.createProducer(null);
        }catch (JMSException e){
            e.printStackTrace();
        }
    }


    public void sendMessage() {
        try{
            Destination destination = this.session.createTopic("topic");

            TextMessage msg1 = this.session.createTextMessage("消息1");
            TextMessage msg2 = this.session.createTextMessage("消息2");
            TextMessage msg3 = this.session.createTextMessage("消息3");
            this.messageProducer.send(destination,msg1);
            this.messageProducer.send(destination,msg2);
            this.messageProducer.send(destination,msg3);

            this.connection.close();
        }catch (JMSException e){
            e.printStackTrace();
        }
    }
}
```

Producer_Main

```
public class Producer_Main {
    public static void main(String[] args) {
        //启动生产者进行消息的发送
        //基本使用
        //MQProducer.sendMsg();
        //消息过滤
//          MsgFilterSender sender=new MsgFilterSender();
//          sender.send();
        //发布与订阅pub/sub
        PubSender sender=new PubSender();
        sender.sendMessage();
    }
}
```



Topics

Name ↑	Number Of Consumers	Messages Enqueued	Messages Dequeued	Operations
ActiveMQ.Advisory.Connection	0	47	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.MasterBroker	0	1	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.Queue	0	7	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.Topic	0	3	0	Send To Active Subscribers Active Producers Delete
topic	0	3	0	Send To Active Subscribers Active Producers Delete

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SubListener 消息监听器

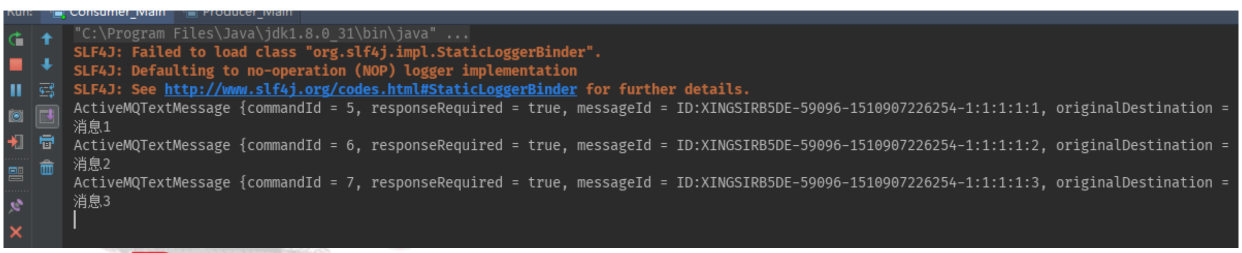
```
public class SubListener implements MessageListener {
    public void onMessage(Message message) {
        try {

            if(message instanceof TextMessage){
                TextMessage msg = (TextMessage) message;
                System.out.println(msg.toString());
                System.out.println(msg.getText());
            }else{
                System.out.println("消息源类型错误!");
            }
        } catch (JMSException e) {
            e.printStackTrace();
        }
    }
}
```

SubConsumer 消息消费

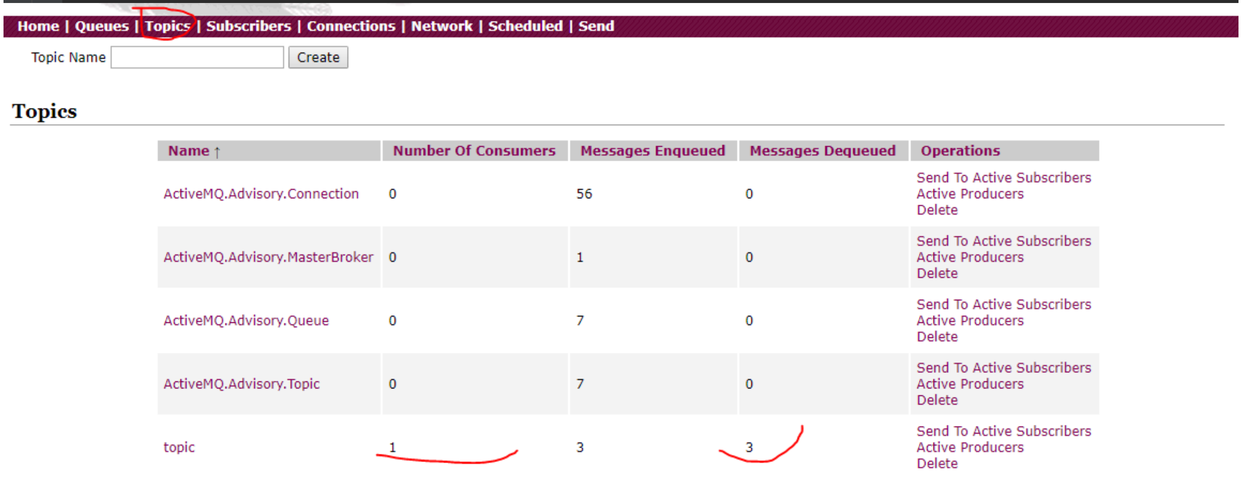
```
public class SubConsumer {
    private ConnectionFactory connectionFactory;
    private Connection connection;
    private Session session;
    private Destination destination;
    private MessageConsumer messageConsumer;


    public SubConsumer() {
        try{
            this.connectionFactory = new ActiveMQConnectionFactory("admin",
                    "admin",
                    "tcp://10.211.55.12:61616");
            this.connection = this.connectionFactory.createConnection();
            this.connection.start();
            this.session =
this.connection.createSession(Boolean.FALSE,Session.AUTO_ACKNOWLEDGE);
            //定义destination
            this.destination=this.session.createTopic("topic");
            //创建消费者的时候发生了变化
            this.messageConsumer=this.session.createConsumer(this.destination);
        }catch (JMSException e){
            e.printStackTrace();
        }
    }

    public void receiver(){
        try{
            this.messageConsumer.setMessageListener(new SubListener());
        }catch (JMSException e){
            e.printStackTrace();
        }
    }
}
```

Consumer_Main 启动

```
public class Consumer_Main {
    public static void main(String[] args) {
        //启动消费者进行消息的读取
        //基本使用
        //MQConsumer.receiveMsg();
        //消息过滤
//          MsgFilterConsumer consumer=new MsgFilterConsumer();
//          consumer.receiver();
        //发布与订阅
        SubConsumer consumer=new SubConsumer();
        consumer.receiver();
    }
}
```



```
"C:\Program Files\Java\jdk1.8.0_31\bin\java" ...
SLF4J: Failed to load class "org.slf4j.impl.StaticLoggerBinder".
SLF4J: Defaulting to no-operation (NOP) logger implementation
SLF4J: See http://www.slf4j.org/codes.html#StaticLoggerBinder for further details.
ActiveMQTextMessage {commandId = 5, responseRequired = true, messageId = ID:XINGSIRB5DE-59096-1510907226254-1:1:1:1:1, originalDestination =
消息1
ActiveMQTextMessage {commandId = 6, responseRequired = true, messageId = ID:XINGSIRB5DE-59096-1510907226254-1:1:1:1:2, originalDestination =
消息2
ActiveMQTextMessage {commandId = 7, responseRequired = true, messageId = ID:XINGSIRB5DE-59096-1510907226254-1:1:1:1:3, originalDestination =
消息3
```


Home | Queues | Topics | Subscribers | Connections | Network | Scheduled | Send
Topic Name
Create

Topics

Name ↑	Number Of Consumers	Messages Enqueued	Messages Dequeued	Operations
ActiveMQ.Advisory.Connection	0	56	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.MasterBroker	0	1	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.Queue	0	7	0	Send To Active Subscribers Active Producers Delete
ActiveMQ.Advisory.Topic	0	7	0	Send To Active Subscribers Active Producers Delete
topic	1	3	3	Send To Active Subscribers Active Producers Delete

2.5 消息持久化

ActiveMQ消息持久化到Mysql

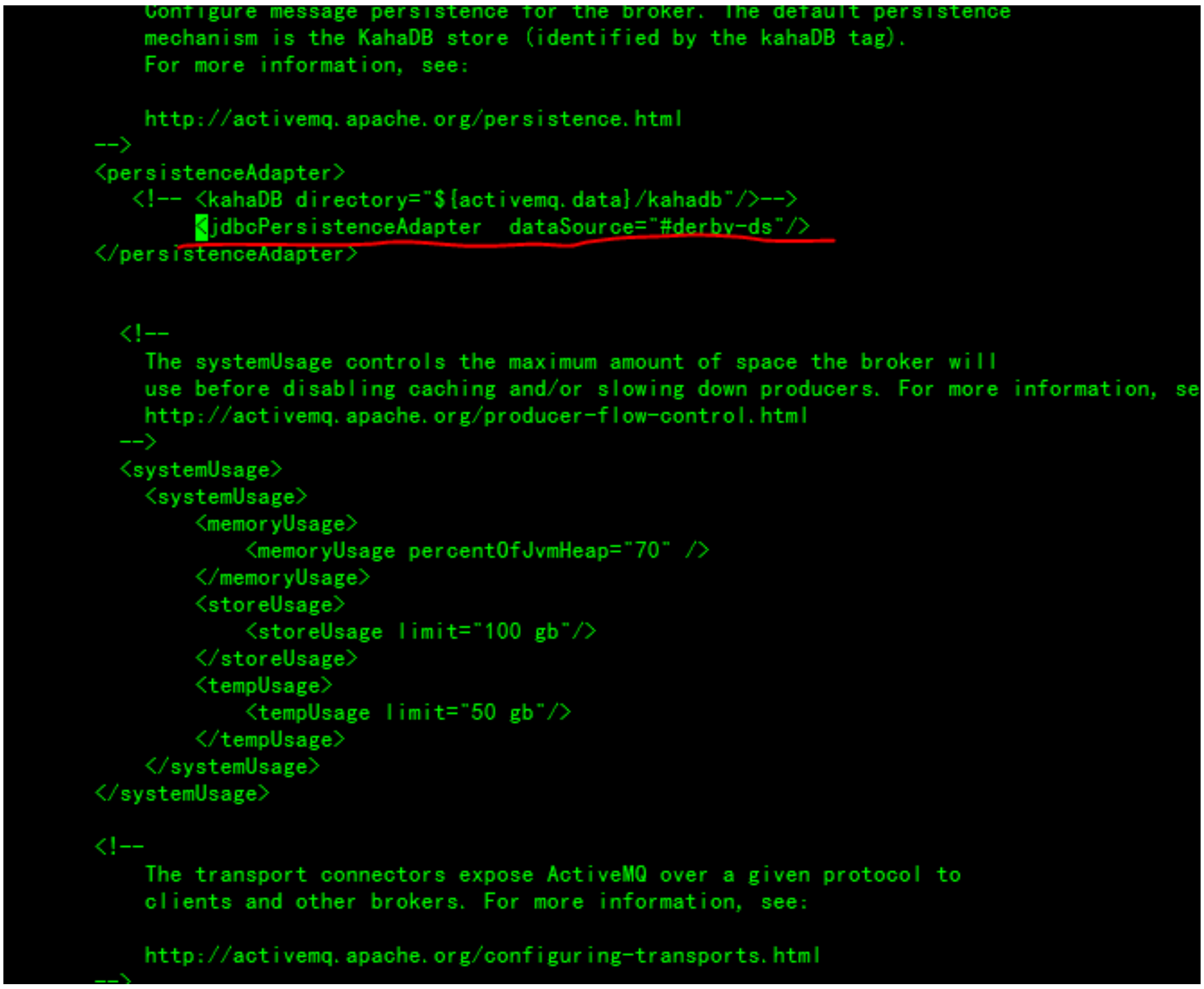
```
ActiveMQ提供多种数据持久化方式：可以持久化到文件，也可以持久化到数据库，其中数据库可以支持
MySQL、Oracle等。
```

2.5.1 上传数据库驱动jar包

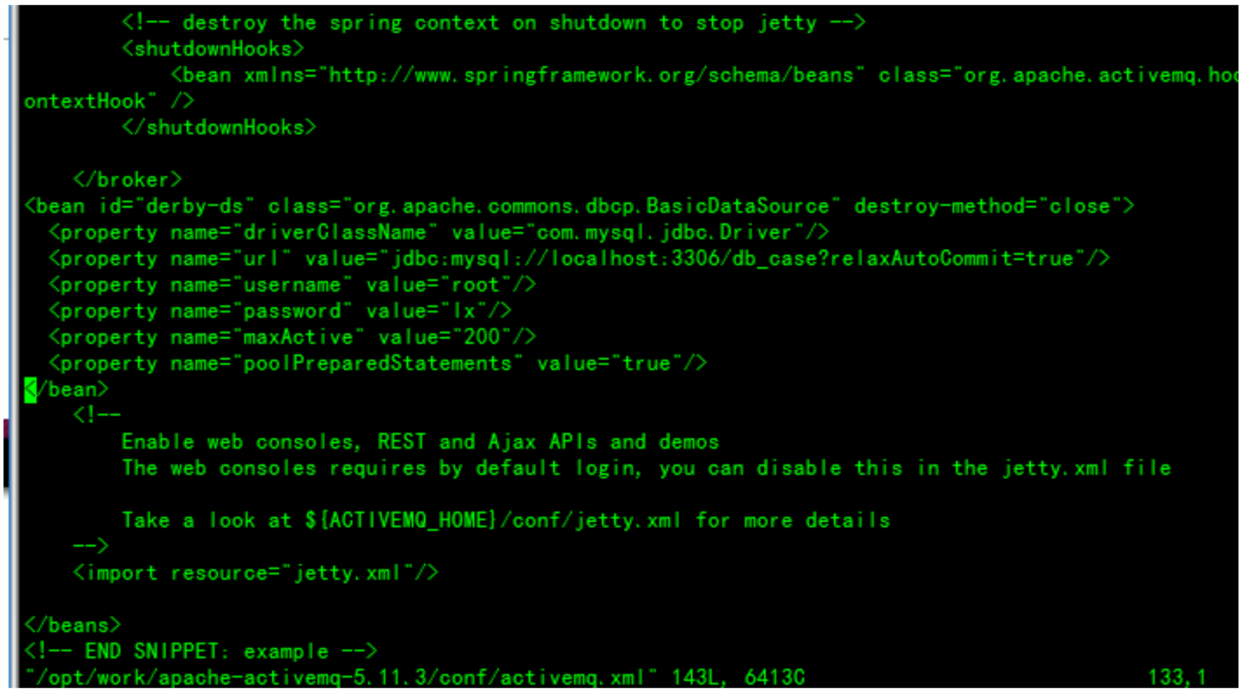
```
首先需要把MySql的驱动放到ActiveMQ的Lib目录下
如果前面没有添加 dbcp 和 pool, 现在无法启动,参考上面安装时候的错误方式,查看日志,可能是缺少依赖包
```

2.5.2 修改配置文件activemq.xml

```
vim /opt/work/apache-activemq-5.11.3/conf/activemq.xml  编辑配置文件

需要将其中的这段配置:
<persistenceAdapter>
    <kahaDB directory="${activemq.base}/data/kahadb"/>
</persistenceAdapter>
修改为:
<persistenceAdapter>
    <jdbcPersistenceAdapter  dataSource="#derby-ds" useDatabaseLock="false"/>
</persistenceAdapter>
还需要在broker节点结束的后面定义id为derby-ds的bean,bean 节点是在根节点内部的
<bean id="derby-ds" class="org.apache.commons.dbcp.BasicDataSource" destroy-method="close">
  <property name="driverClassName" value="com.mysql.jdbc.Driver"/>
  <property name="url" value="jdbc:mysql://localhost:3306/db_case?relaxAutoCommit=true"/>
  <property name="username" value="root"/>
  <property name="password" value="lx"/>
  <property name="maxActive" value="200"/>
  <property name="poolPreparedStatements" value="true"/>
</bean>
```



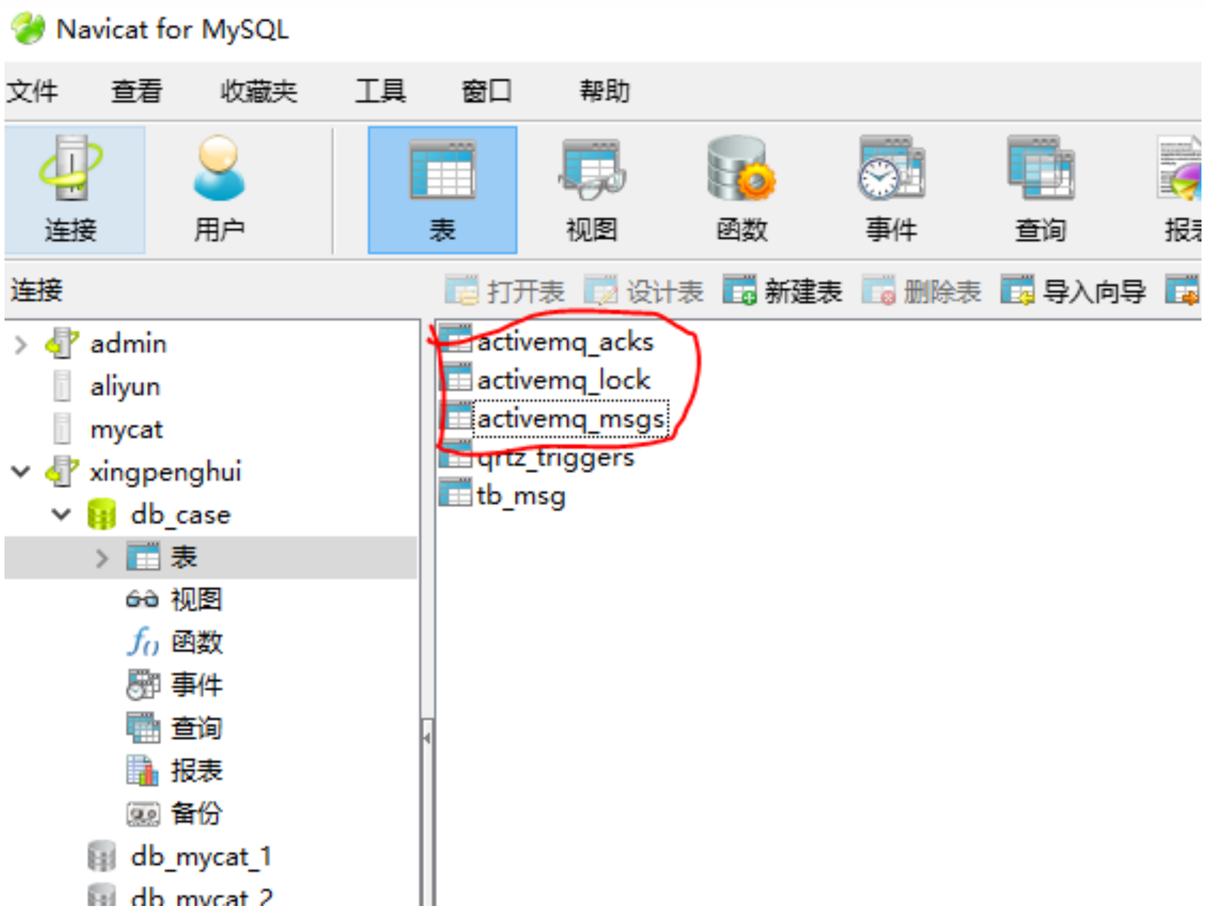
```
        Configure message persistence for the broker. The default persistence
        mechanism is the KahaDB store (identified by the kahaDB tag).
        For more information, see:

        http://activemq.apache.org/persistence.html
    -->
    <persistenceAdapter>
      <!-- <kahaDB directory="${activemq.data}/kahadb"/>-->
           <jdbcPersistenceAdapter  dataSource="#derby-ds"/>
    </persistenceAdapter>


      <!--
        The systemUsage controls the maximum amount of space the broker will
        use before disabling caching and/or slowing down producers. For more information, se
        http://activemq.apache.org/producer-flow-control.html
      -->
      <systemUsage>
        <systemUsage>
            <memoryUsage>
                <memoryUsage percentOfJvmHeap="70" />
            </memoryUsage>
            <storeUsage>
                <storeUsage limit="100 gb"/>
            </storeUsage>
            <tempUsage>
                <tempUsage limit="50 gb"/>
            </tempUsage>
        </systemUsage>
    </systemUsage>

    <!--
        The transport connectors expose ActiveMQ over a given protocol to
        clients and other brokers. For more information, see:

        http://activemq.apache.org/configuring-transports.html
```



```
        <!-- destroy the spring context on shutdown to stop jetty -->
        <shutdownHooks>
            <bean xmlns="http://www.springframework.org/schema/beans" class="org.apache.activemq.hoo
ontextHook" />
        </shutdownHooks>

    </broker>
<bean id="derby-ds" class="org.apache.commons.dbcp.BasicDataSource" destroy-method="close">
  <property name="driverClassName" value="com.mysql.jdbc.Driver"/>
  <property name="url" value="jdbc:mysql://localhost:3306/db_case?relaxAutoCommit=true"/>
  <property name="username" value="root"/>
  <property name="password" value="lx"/>
  <property name="maxActive" value="200"/>
  <property name="poolPreparedStatements" value="true"/>
</bean>
    <!--
        Enable web consoles, REST and Ajax APIs and demos
        The web consoles requires by default login, you can disable this in the jetty.xml file

        Take a look at ${ACTIVEMQ_HOME}/conf/jetty.xml for more details
    -->
    <import resource="jetty.xml"/>

</beans>
<!-- END SNIPPET: example -->
"/opt/work/apache-activemq-5.11.3/conf/activemq.xml" 143L, 6413C                     133,1
```

2.5.3 测试

```
重新启动MQ，就会发现db_case库中多了三张表：activemq_acks，activemq_lock，
activemq_msgs，OK,说明已经持久化成功了
```



2.6 ActiveMQ与Spring整合

准备三个queckstart工程：mq-parent，mq-producer，mq-consumer

2.6.1 mq-parent

根项目，打包方式为pom

pom.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0"
         xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
         xsi:schemaLocation="http://maven.apache.org/POM/4.0.0
http://maven.apache.org/xsd/maven-4.0.0.xsd">
    <modelVersion>4.0.0</modelVersion>
    <groupId>xph</groupId>
    <artifactId>mq-parent</artifactId>
    <version>1.0-SNAPSHOT</version>
    <packaging>pom</packaging>
    <properties>
        <springframework.version>4.3.11.RELEASE</springframework.version>
        <activemq.version>5.11.3</activemq.version>
    </properties>
    <dependencies>
        <dependency>
            <groupId>org.springframework</groupId>
            <artifactId>spring-web</artifactId>
            <version>${springframework.version}</version>
        </dependency>
        <dependency>
            <groupId>log4j</groupId>
            <artifactId>log4j</artifactId>
            <version>1.2.17</version>
        </dependency>
        <dependency>
            <groupId>org.apache.activemq</groupId>
            <artifactId>activemq-client</artifactId>
            <version>${activemq.version}</version>
        </dependency>
        <dependency>
            <groupId>javax.mail</groupId>
            <artifactId>mail</artifactId>
            <version>1.4.7</version>
        </dependency>
    </dependencies>
</project>
```

2.6.2 mq-produce

log4j.xml 日志配置文件

```
log4j.rootLogger=INFO,A1,DRF
log4j.appender.A1=org.apache.log4j.ConsoleAppender
log4j.appender.A1.layout=org.apache.log4j.PatternLayout
# log4j.appender.A1.layout.ConversionPattern=%d %5p [%t] (%F:%L) - %m%n
log4j.appender.A1.layout.ConversionPattern=%d %5p [%F:%L] : %m%n

log4j.appender.DRF=org.apache.log4j.DailyRollingFileAppender
log4j.appender.DRF.Threshold=INFO
log4j.appender.DRF.DatePattern='.'yyyy-MM-dd
log4j.appender.DRF.File=logs/edu-demo-mqproducer.log
log4j.appender.DRF.Append=true
log4j.appender.DRF.layout=org.apache.log4j.PatternLayout
log4j.appender.DRF.layout.ConversionPattern=[%-5p][%d{yyyyMMdd HH:mm:ss,SSS}]
[%C{1}:%L] %m%n
```

mq属性文件 mq.properties

```
## MQ
mq.brokerURL=tcp\://10.211.55.12\:61616
mq.userName=admin
mq.password=admin
mq.pool.maxConnections=10
#queueName
queueName=chen.edu.mqtest.mail
```

spring核心配置 sping.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.springframework.org/schema/p"
xmlns:context="http://www.springframework.org/schema/context"
xmlns:aop="http://www.springframework.org/schema/aop"
    xmlns:tx="http://www.springframework.org/schema/tx"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
           http://www.springframework.org/schema/beans/spring-beans.xsd
           http://www.springframework.org/schema/aop
           http://www.springframework.org/schema/aop/spring-aop.xsd
           http://www.springframework.org/schema/tx
           http://www.springframework.org/schema/tx/spring-tx.xsd
           http://www.springframework.org/schema/context
           http://www.springframework.org/schema/context/spring-context.xsd"
    default-autowire="byName" default-lazy-init="false">


    <!-- 采用注释的方式配置bean -->
    <context:annotation-config />

    <!-- 配置要扫描的包 -->
    <context:component-scan base-package="com.qfedu.mqtest" />

    <!-- 读入配置属性文件 -->
    <context:property-placeholder location="classpath:mq.properties" />

    <import resource="spring-mq.xml" />
</beans>
```

spring整合activemq配置 spring-mq.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.springframework.org/schema/p"
    xmlns:context="http://www.springframework.org/schema/context"
    xmlns:aop="http://www.springframework.org/schema/aop"
xmlns:tx="http://www.springframework.org/schema/tx"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
            http://www.springframework.org/schema/beans/spring-beans-3.2.xsd
            http://www.springframework.org/schema/aop
            http://www.springframework.org/schema/aop/spring-aop-3.2.xsd
            http://www.springframework.org/schema/tx
            http://www.springframework.org/schema/tx/spring-tx-3.2.xsd
            http://www.springframework.org/schema/context
            http://www.springframework.org/schema/context/spring-context-3.2.xsd"
    default-autowire="byName" default-lazy-init="false">


    <!-- 真正可以产生Connection的ConnectionFactory，由对应的 JMS服务厂商提供 -->
    <bean id="targetConnectionFactory"
class="org.apache.activemq.ActiveMQConnectionFactory">
        <!-- ActiveMQ服务地址 -->
        <property name="brokerURL" value="${mq.brokerURL}" />
        <property name="userName" value="${mq.userName}"></property>
        <property name="password" value="${mq.password}"></property>
    </bean>

    <!--
        ActiveMQ为我们提供了一个PooledConnectionFactory，通过往里面注入一个
ActiveMQConnectionFactory
        可以用来将Connection、Session和MessageProducer池化，这样可以大大的减少我们的资
源消耗。
        要依赖于 activemq-pool包
     -->
    <bean id="pooledConnectionFactory"
class="org.apache.activemq.pool.PooledConnectionFactory">
        <property name="connectionFactory" ref="targetConnectionFactory" />
        <property name="maxConnections" value="${mq.pool.maxConnections}" />
    </bean>

    <!-- Spring用于管理真正的ConnectionFactory的ConnectionFactory -->
    <bean id="connectionFactory"
class="org.springframework.jms.connection.SingleConnectionFactory">
        <!-- 目标ConnectionFactory对应真实的可以产生JMS Connection的
ConnectionFactory -->
        <property name="targetConnectionFactory" ref="pooledConnectionFactory" />
    </bean>

    <!-- Spring提供的JMS工具类，它可以进行消息发送、接收等 -->

    <!-- 队列模板 -->
    <bean id="activeMqJmsTemplate"
class="org.springframework.jms.core.JmsTemplate">
```

```
        <!-- 这个connectionFactory对应的是我们定义的Spring提供的那个ConnectionFactory
对象 -->
        <property name="connectionFactory" ref="connectionFactory"/>
        <property name="defaultDestinationName" value="${queueName}"></property>
    </bean>

</beans>
```

MailParam.java 邮件消息模板类

```
public class MailParam {

    /** 发件人 **/
    private String from;
    /** 收件人 **/
    private String to;
    /** 主题 **/
    private String subject;
    /** 邮件内容 **/
    private String content;

    public MailParam() {
    }

    public MailParam(String to, String subject, String content) {
        this.to = to;
        this.subject = subject;
        this.content = content;
    }

    public String getFrom() {
        return from;
    }

    public void setFrom(String from) {
        this.from = from;
    }

    public String getTo() {
        return to;
    }

    public void setTo(String to) {
        this.to = to;
    }

    public String getSubject() {
        return subject;
```

```java
    }

    public void setSubject(String subject) {
        this.subject = subject;
    }

    public String getContent() {
        return content;
    }

    public void setContent(String content) {
        this.content = content;
    }
}
```

MQProducer.java 邮件消息生产者

```java
@Service("mqProducer")
public class MQProducer {

    @Autowired
    private JmsTemplate activeMqJmsTemplate;

    /**
     * 发送消息.
     * @param mailparam
     */
    public void sendMessage(final MailParam mailparam) {
        activeMqJmsTemplate.send(new MessageCreator() {
            public Message createMessage(Session session) throws JMSException {
                return
session.createTextMessage(JSONObject.toJSONString(mailparam));
            }
        });

    }
}
```

MQProducerTest.java 邮件消息生产测试类

```java
public class MQProducerTest {
    private static final Log log = LogFactory.getLog(MQProducerTest.class);

    public static void main(String[] args) {
        try {
            ClassPathXmlApplicationContext context = new
ClassPathXmlApplicationContext("classpath:spring-context.xml");
```

```
            context.start();

            MQProducer mqProducer = (MQProducer) context.getBean("mqProducer");
            // 邮件发送
            MailParam mail = new MailParam();
            mail.setTo("chensizheng@163.com");
            mail.setSubject("ActiveMQ消息邮件测试");
            mail.setContent("这是内容balbala! ");

            mqProducer.sendMessage(mail);

            context.stop();
        } catch (Exception e) {
            log.error("==>MQ context start error:", e);
            System.exit(0);
        } finally {
            log.info("===>System.exit");
            System.exit(0);
        }
    }
}
```

运行MQProducerTest，观察MQ服务器

2.6.3 mq-consumer

log4j.xml

```
log4j.rootLogger=INFO,A1,DRF
log4j.appender.A1=org.apache.log4j.ConsoleAppender
log4j.appender.A1.layout=org.apache.log4j.PatternLayout
# log4j.appender.A1.layout.ConversionPattern=%d %5p [%t] (%F:%L) - %m%n
log4j.appender.A1.layout.ConversionPattern=%d %5p [%F:%L] : %m%n

log4j.appender.DRF=org.apache.log4j.DailyRollingFileAppender
log4j.appender.DRF.Threshold=INFO
log4j.appender.DRF.DatePattern='.'yyyy-MM-dd
log4j.appender.DRF.File=logs/edu-demo-mqproducer.log
log4j.appender.DRF.Append=true
log4j.appender.DRF.layout=org.apache.log4j.PatternLayout
log4j.appender.DRF.layout.ConversionPattern=[%-5p][%d{yyyyMMdd HH:mm:ss,SSS}]
[%C{1}:%L] %m%n
```

mq属性文件 mq.properties

```
## MQ
mq.brokerURL=tcp\://10.211.55.12\:61616
mq.userName=admin
mq.password=admin
mq.pool.maxConnections=10
#queueName
queueName=chen.edu.mqtest.mail
```

mail.properties

```
#配置邮件发送者的信息
#SMTP服务配置  设置一个开启STMP服务的发件箱
mail.host=smtp.126.com
mail.port=25
mail.username=你的邮箱地址
mail.password=你的邮箱密码
mail.smtp.auth=true
mail.smtp.timeout=30000
mail.default.from=你的邮箱地址
```

spring.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.springframework.org/schema/p"
xmlns:context="http://www.springframework.org/schema/context"
xmlns:aop="http://www.springframework.org/schema/aop"
    xmlns:tx="http://www.springframework.org/schema/tx"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
           http://www.springframework.org/schema/beans/spring-beans.xsd
           http://www.springframework.org/schema/aop
           http://www.springframework.org/schema/aop/spring-aop.xsd
           http://www.springframework.org/schema/tx
           http://www.springframework.org/schema/tx/spring-tx.xsd
           http://www.springframework.org/schema/context
           http://www.springframework.org/schema/context/spring-context.xsd"
    default-autowire="byName" default-lazy-init="false">


    <!-- 采用注释的方式配置bean -->
    <context:annotation-config />

    <!-- 配置要扫描的包 -->
    <context:component-scan base-package="com.qfedu.mqtest" />

    <!-- 读入配置属性文件 -->
    <context:property-placeholder
location="classpath:mq.properties,classpath:mail.properties" />

    <!-- proxy-target-class默认"false",更改为"ture"使用CGLib动态代理 -->
    <aop:aspectj-autoproxy proxy-target-class="true" />

    <import resource="spring-mq.xml" />
    <import resource="spring-mail.xml" />

</beans>
```

spring-mail.xml

```
<?xml version="1.0" encoding="UTF-8" ?>
<beans xmlns="http://www.springframework.org/schema/beans"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.springframework.org/schema/p"
    xmlns:context="http://www.springframework.org/schema/context"
xmlns:aop="http://www.springframework.org/schema/aop"
xmlns:tx="http://www.springframework.org/schema/tx"
    xmlns:cache="http://www.springframework.org/schema/cache"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
http://www.springframework.org/schema/beans/spring-beans.xsd
       http://www.springframework.org/schema/context
http://www.springframework.org/schema/context/spring-context.xsd
       http://www.springframework.org/schema/tx
http://www.springframework.org/schema/tx/spring-tx.xsd
       http://www.springframework.org/schema/aop
http://www.springframework.org/schema/aop/spring-aop.xsd
       http://www.springframework.org/schema/cache
http://www.springframework.org/schema/cache/spring-cache.xsd">


    <!-- Spring提供的发送电子邮件的高级抽象类 -->
    <bean id="mailSender"
class="org.springframework.mail.javamail.JavaMailSenderImpl">
        <property name="host" value="${mail.host}" />
        <property name="username" value="${mail.username}" />
        <property name="password" value="${mail.password}" />
        <property name="defaultEncoding" value="UTF-8"></property>
        <property name="javaMailProperties">
            <props>
                <prop key="mail.smtp.auth">${mail.smtp.auth}</prop>
                <prop key="mail.smtp.timeout">${mail.smtp.timeout}</prop>
            </props>
        </property>
    </bean>
    <bean id="simpleMailMessage"
class="org.springframework.mail.SimpleMailMessage">
        <property name="from">
            <value>${mail.default.from}</value>
        </property>
    </bean>

    <!-- 配置线程池 -->
    <bean id="threadPool"
class="org.springframework.scheduling.concurrent.ThreadPoolTaskExecutor">
        <!-- 线程池维护线程的最少数量 -->
        <property name="corePoolSize" value="5" />
        <!-- 线程池维护线程所允许的空闲时间 -->
        <property name="keepAliveSeconds" value="30000" />
        <!-- 线程池维护线程的最大数量 -->
        <property name="maxPoolSize" value="50" />
        <!-- 线程池所使用的缓冲队列 -->
        <property name="queueCapacity" value="100" />
    </bean>

</beans>
```

spring-mq.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<beans xmlns="http://www.springframework.org/schema/beans"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:p="http://www.springframework.org/schema/p"
    xmlns:context="http://www.springframework.org/schema/context"
    xmlns:aop="http://www.springframework.org/schema/aop"
xmlns:tx="http://www.springframework.org/schema/tx"
    xsi:schemaLocation="http://www.springframework.org/schema/beans
           http://www.springframework.org/schema/beans/spring-beans.xsd
           http://www.springframework.org/schema/aop
           http://www.springframework.org/schema/aop/spring-aop.xsd
           http://www.springframework.org/schema/tx
           http://www.springframework.org/schema/tx/spring-tx.xsd
           http://www.springframework.org/schema/context
           http://www.springframework.org/schema/context/spring-context.xsd"
    default-autowire="byName" default-lazy-init="false">


    <!-- 真正可以产生Connection的ConnectionFactory，由对应的 JMS服务厂商提供 -->
    <bean id="targetConnectionFactory"
class="org.apache.activemq.ActiveMQConnectionFactory">
        <!-- ActiveMQ服务地址 -->
        <property name="brokerURL" value="${mq.brokerURL}" />
        <property name="userName" value="${mq.userName}"></property>
        <property name="password" value="${mq.password}"></property>
    </bean>

    <!--
        ActiveMQ为我们提供了一个PooledConnectionFactory，通过往里面注入一个
ActiveMQConnectionFactory
        可以用来将Connection、Session和MessageProducer池化，这样可以大大的减少我们的资
源消耗。
        要依赖于 activemq-pool包
     -->
    <bean id="pooledConnectionFactory"
class="org.apache.activemq.pool.PooledConnectionFactory">
        <property name="connectionFactory" ref="targetConnectionFactory" />
        <property name="maxConnections" value="${mq.pool.maxConnections}" />
    </bean>

    <!-- Spring用于管理真正的ConnectionFactory的ConnectionFactory -->
    <bean id="connectionFactory"
class="org.springframework.jms.connection.SingleConnectionFactory">
        <!-- 目标ConnectionFactory对应真实的可以产生JMS Connection的
ConnectionFactory -->
        <property name="targetConnectionFactory" ref="pooledConnectionFactory" />
    </bean>

    <!-- Spring提供的JMS工具类，它可以进行消息发送、接收等 -->

    <!-- 队列模板 -->
    <bean id="activeMqJmsTemplate"
class="org.springframework.jms.core.JmsTemplate">
        <!-- 这个connectionFactory对应的是我们定义的Spring提供的那个ConnectionFactory
对象 -->
        <property name="connectionFactory" ref="connectionFactory"/>
        <property name="defaultDestinationName" value="${queueName}"></property>
    </bean>

    <!--这个是sessionAwareQueue目的地 -->
    <bean id="sessionAwareQueue"
class="org.apache.activemq.command.ActiveMQQueue">
        <constructor-arg>
            <value>${queueName}</value>
        </constructor-arg>
    </bean>

    <!-- 可以获取session的MessageListener -->
    <bean id="consumerSessionAwareMessageListener"
class="com.qfedu.mqtest.ConsumerSessionAwareMessageListener"></bean>

    <bean id="sessionAwareListenerContainer"
class="org.springframework.jms.listener.DefaultMessageListenerContainer">
```

```
        <property name="connectionFactory" ref="connectionFactory" />
        <property name="destination" ref="sessionAwareQueue" />
        <property name="messageListener" ref="consumerSessionAwareMessageListener"
/>
    </bean>
```

队列监听器

```
@Component
public class ConsumerSessionAwareMessageListener implements
SessionAwareMessageListener<Message> {

    private static final Log log =
LogFactory.getLog(ConsumerSessionAwareMessageListener.class);

    @Autowired
    private JmsTemplate activeMqJmsTemplate;
    @Autowired
    private Destination sessionAwareQueue;
    @Autowired
    private MailBiz bailBiz;

    public synchronized void onMessage(Message message, Session session) {
        try {
            TextMessage msg = (TextMessage) message;
            final String ms = msg.getText();
            log.info("==>receive message:" + ms);
            MailParam mailParam = JSONObject.parseObject(ms, MailParam.class);//
转换成相应的对象
            if (mailParam == null) {
                return;
            }

            try {
                bailBiz.mailSend(mailParam);
            } catch (Exception e) {
                // 发送异常，重新放回队列
                activeMqJmsTemplate.send(sessionAwareQueue, new MessageCreator() {
                    public Message createMessage(Session session) throws
JMSException {
                        return session.createTextMessage(ms);
                    }
                });
                log.error("==>MailException:", e);
            }
        } catch (Exception e) {
            log.error("==>", e);
        }
    }
}
```

邮件发送处理逻辑

```
@Component("mailBiz")
public class MailBiz {

    @Autowired
    private JavaMailSender mailSender;// spring配置中定义
    @Autowired
    private SimpleMailMessage simpleMailMessage;// spring配置中定义
    @Autowired
    private ThreadPoolTaskExecutor threadPool;

    /**
     * 发送模板邮件
     *
     * @throws Exception
     *
     */
    public void mailSend(final MailParam mailParam) {
        threadPool.execute(new Runnable() {
            public void run() {
                try {
                    simpleMailMessage.setFrom(simpleMailMessage.getFrom()); // 发
送人,从配置文件中取得
                    simpleMailMessage.setTo(mailParam.getTo()); // 接收人
                    simpleMailMessage.setSubject(mailParam.getSubject());
                    simpleMailMessage.setText(mailParam.getContent());
                    mailSender.send(simpleMailMessage);
                } catch (MailException e) {
                    throw e;
                }
            }
        });
    }
}
```

邮件发送模板

```
public class MailParam {

    /** 发件人 **/
    private String from;
    /** 收件人 **/
    private String to;
    /** 主题 **/
    private String subject;
    /** 邮件内容 **/
    private String content;

    public MailParam() {
    }

    public MailParam(String to, String subject, String content) {
        this.to = to;
        this.subject = subject;
        this.content = content;
    }

    public String getFrom() {
        return from;
    }

    public void setFrom(String from) {
        this.from = from;
    }

    public String getTo() {
        return to;
    }

    public void setTo(String to) {
        this.to = to;
    }

    public String getSubject() {
        return subject;
    }

    public void setSubject(String subject) {
        this.subject = subject;
    }

    public String getContent() {
        return content;
    }

    public void setContent(String content) {
        this.content = content;
    }
}
```

测试运行

```java
public class MQConsumer {
    private static final Log log = LogFactory.getLog(MQConsumer.class);

    public static void main(String[] args) {
        try {
            ClassPathXmlApplicationContext context = new
ClassPathXmlApplicationContext("classpath:spring-context.xml");
            context.start();
        } catch (Exception e) {s
            log.error("==>MQ context start error:", e);
            System.exit(0);
        }
    }
}
```