

Capturas de Pantalla

1. Instalación de RabbitMQ

Descarga de la imagen oficial de RabbitMQ con plugin de administración:

`docker pull rabbitmq:3-management`

```
Terminal

6d3b37af4a9b: Pull complete
e62cfb71f12e: Pull complete
5ec6b6bb1d8f: Pull complete
57a0bbeef412: Pull complete
d9d352c11bbd: Pull complete
ebf88ec8072b: Pull complete
08d7fea163ec: Pull complete
d143c5cad553: Pull complete
9a4a8a3a7511: Pull complete
703333789470: Pull complete
Digest: sha256:ec7eba274b5c9daf28fde3890a69f147d20543382c938e94fff83208b6f28c0d
Status: Downloaded newer image for rabbitmq:3-management
docker.io/library/rabbitmq:3-management
PS C:\Users\Kevito>
```

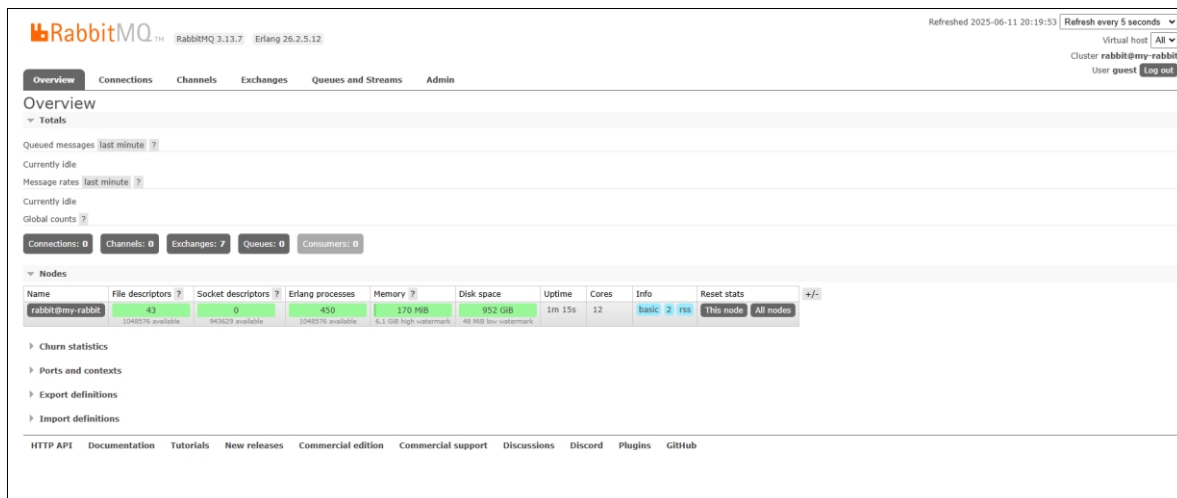
Levantar el contenedor exponiendo los puertos necesarios:

`docker run -d --hostname my-rabbit --name rabbitmq -p 5672:5672 -p 15672:15672 rabbitmq:3-management`

```
PS C:\Users\Kevito> docker run -d --hostname my-rabbit --name rabbitmq -p 5672:5672 -p 15672:15672 rabbitmq:3-management
b2f6cca911f86996db33696b40b751be4d7de6e1db6cb536c75e96d0e42d1965
```

Accedemos a la consola web de RabbitMQ:

Con el **Usuario:** guest y **Contraseña:** guest



RabbitMQ 3.13.7 Erlang 26.2.5.12

Refreshed 2025-06-11 20:19:53 Refresh every 5 seconds

virtual host: All

Cluster rabbit@my-rabbit

User: guest Log out

Overview

Totals

Queued messages last minute

Currently idle

Message rates last minute

Currently idle

Global counts

Connections: 0 Channels: 0 Exchanges: 7 Queues: 0 Consumers: 0

Nodes

Name	File descriptors	Socket descriptors	Erlang processes	Memory	Disk space	Uptime	Cores	Info	Reset stats
rabbit@my-rabbit	43	0	450	170 MB	952 GB	1m 15s	12	basic 2 fxa	This node All nodes

Churn statistics

Ports and contexts

Export definitions

Import definitions

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2. Creación de la cola para el taller

RabbitMQ

RabbitMQ 3.13.7

Erlang 26.2.5.12

Overview

Connections

Channels

Exchanges

Queues and Streams

Admin

Queues

All queues (0)

Pagination

Page of 0 - Filter: ☐ Regex

... no queues ...

Add a new queue

Virtual host:

Type:

Default for virtual host

Name:

test.camel.queue

Durability:

Durable

Arguments: =

String

Add Auto expire | Message TTL | Overflow behaviour

Single active consumer | Dead letter exchange | Dead letter routing key

Max length | Max length bytes

Leader locator

Add queue

HTTP API

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RabbitMQ

RabbitMQ 3.13.7

Erlang 26.2.5.12

Overview

Connections

Channels

Exchanges

Queues and Streams

Admin

Queues

All queues (1)

Pagination

Page

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 of 1 - Filter: ☐ Regex

Overview

Messages

Message rates

+/-

Virtual host	Name	Type	Features	State	Ready	Unacked	Total	incoming	deliver / get	ack
/	test.camel.queue	classic	<div>D</div>	<div>running</div>	<div>?</div>	<div>?</div>	<div>?</div>			

Add a new queue

Virtual host:

Type:

Default for virtual host

Name:

Durability:

Durable

Arguments: =

String

Add Auto expire | Message TTL | Overflow behaviour

Single active consumer | Dead letter exchange | Dead letter routing key

Max length | Max length bytes

Leader locator

Add queue

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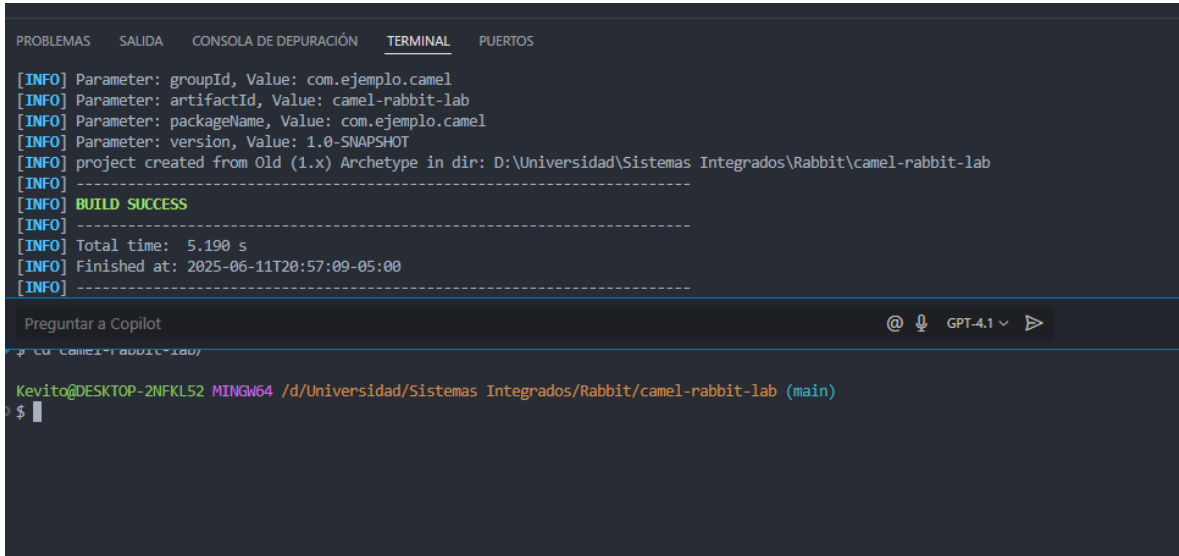
Plugins

GitHub

3. Preparar el proyecto con Apache Camel

Creación del proyecto

mvn archetype:generate -DgroupId=com.ejemplo.camel -DartifactId=camel-rabbit-lab -DarchetypeArtifactId=maven-archetype-quickstart -DinteractiveMode=false



```
[INFO] Parameter: groupId, Value: com.ejemplo.camel
[INFO] Parameter: artifactId, Value: camel-rabbit-lab
[INFO] Parameter: packageName, Value: com.ejemplo.camel
[INFO] Parameter: version, Value: 1.0-SNAPSHOT
[INFO] project created from Old (1.x) Archetype in dir: D:\Universidad\Sistemas Integrados\Rabbit\camel-rabbit-lab
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 5.190 s
[INFO] Finished at: 2025-06-11T20:57:09-05:00
[INFO] -----

Preguntar a Copilot @ GPT-4.1 v

C:\Camel-Rabbit-Lab>
Kevido@DESKTOP-2NFKL52 MINGW64 /d/Universidad/Sistemas Integrados/Rabbit/camel-rabbit-lab (main)
$
```

Remplazo del 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/xsd/maven-
4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>
  <groupId>com.ejemplo.camel</groupId>
  <artifactId>camel-rabbit-lab</artifactId>
  <version>1.0-SNAPSHOT</version>
  <packaging>jar</packaging>
  <name>camel-rabbit-lab</name>
  <description>Ejemplo de integración Apache Camel + RabbitMQ</description>
  <properties>
    <java.version>11</java.version>
    <spring-boot.version>2.7.18</spring-boot.version>
    <camel.version>3.20.2</camel.version>
  </properties>
  <dependencyManagement>
    <dependencies>
      <dependency>
```

```
<groupId>org.springframework.boot</groupId>
<artifactId>spring-boot-dependencies</artifactId>
<version>${spring-boot.version}</version>
<type>pom</type>
<scope>import</scope>
</dependency>
</dependencies>
</dependencyManagement>
<dependencies>
  <dependency>
    <groupId>org.apache.camel.springboot</groupId>
    <artifactId>camel-spring-boot-starter</artifactId>
    <version>${camel.version}</version>
  </dependency>
  <dependency>
    <groupId>org.apache.camel.springboot</groupId>
    <artifactId>camel-rabbitmq-starter</artifactId>
    <version>${camel.version}</version>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter</artifactId>
  </dependency>
  <dependency>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-starter-test</artifactId>
    <scope>test</scope>
  </dependency>
  <dependency>
    <groupId>org.junit.jupiter</groupId>
    <artifactId>junit-jupiter</artifactId>
    <version>5.10.0</version>
    <scope>test</scope>
  </dependency>
</dependencies>
<build>
  <plugins>
```

```

<plugin>
    <groupId>org.springframework.boot</groupId>
    <artifactId>spring-boot-maven-plugin</artifactId>
</plugin>
</plugins>
</build>
</project>

```

Estructura de las carpetas

```

camel-rabbit-lab/
├── src/
│   ├── main/
│   │   ├── java/
│   │   │   ├── com/
│   │   │   │   ├── ejemplo/
│   │   │   │   │   ├── camel/
│   │   │   │   │   │   ├── MainApp.java
│   │   │   │   │   │   ├── ProducerRoute.java
│   │   │   │   │   │   └── ConsumerRoute.java

```

4. Desarrollar el productor Camel

ProducerRoute.java

```

package com.ejemplo.camel;

import org.apache.camel.builder.RouteBuilder;
import org.springframework.stereotype.Component;

@Component
public class ProducerRoute extends RouteBuilder {

    @Override
    public void configure() throws Exception {
        from("timer:generate?period=5000")
            .setBody().simple("Mensaje generado en ${date:now:yyyy-MM-dd HH:mm:ss}")
            .log("Enviando: ${body}")
            .to("rabbitmq://localhost/test.camel.queue?username=guest&password=guest");
    }
}

```

```
}
```

5. Desarrollar el consumidor Camel

ConsumerRoute.java

```
package com.ejemplo.camel;

import org.apache.camel.builder.RouteBuilder;
import org.springframework.stereotype.Component;

@Component
public class ConsumerRoute extends RouteBuilder {

    @Override
    public void configure() throws Exception {
        from("rabbitmq://localhost/test.camel.queue?username=guest&password=guest")
            .log("Mensaje recibido: ${body}");
    }
}
```

6. Configurar la clase principal de Spring Boot

MainApp.java

```
package com.ejemplo.camel;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication
public class MainApp {

    public static void main(String[] args) {
        SpringApplication.run(MainApp.class, args);
    }
}
```

7. Pruebas funcionales

Compila el proyecto:

mvn clean package

```
PROBLEMAS  SALIDA  CONSOLA DE DEPURACIÓN  TERMINAL  PUERTOS

[WARNING] bootstrap class path not set in conjunction with -source 8
[INFO]
[INFO] --- surefire:3.2.5:test (default-test) @ camel-rabbit-lab ---
[INFO] Using auto detected provider org.apache.maven.surefire.junitplatform.JUnitPlatformProvider
[INFO]
[INFO] -----
[INFO] T E S T S
[INFO] -----
[INFO] Running com.ejemplo.camel.AppTest
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.024 s -- in com.ejemplo.camel.AppTest
[INFO] Results:
[INFO]
[INFO] Tests run: 1, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- jar:3.4.1:jar (default-jar) @ camel-rabbit-lab ---
[INFO] Building jar: D:\Universidad\Sistemas Integrados\Rabbit\camel-rabbit-lab\target\camel-rabbit-lab-1.0.0-SNAPSHOT.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 2.850 s
[INFO] Finished at: 2025-06-11T21:09:44-05:00
[INFO] -----
```

Ejecución del Proyecto y envío de mensajes

mvn spring-boot:run

```
<build>
<plugins>
<plugin>
</plugin>
</plugins>
</build>

PROBLEMAS  SALIDA  CONSOLA DE DEPURACIÓN  TERMINAL  PUERTOS

Downloaded from central: https://repo.maven.apache.org/maven2/com/google/j2objc/j2objc-annotations/1.3/j2objc-annotations-1.3-jar (8.8 kB at 25 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/errorprone/error-prone-annotations/2.3.4/error-prone-annotations-2.3.4-jar (14 kB at 39 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-lang3/3.7/commons-lang3-3.7-jar (580 kB at 1.3 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/google/guava/guava/28.2-android/guava-28.2-android-jar (2.6 MB at 6.0 MB/s)
[INFO] Attaching agents: []

:: Spring Boot ::
(v2.7.18)

2025-06-11 21:09:54.813 INFO 26240 --- [main] com.ejemplo.camel.MainApp : Starting MainApp using Java 11.0.27 on DESKTOP-2NFKL52 with PID 26240 (D:\Universidad\Sistemas Integrados\Rabbit\camel-rabbit-lab\target\classes started by Kevin in D:\Universidad\Sistemas Integrados\Rabbit\camel-rabbit-lab)
2025-06-11 21:09:54.815 INFO 26240 --- [main] com.ejemplo.camel.MainApp : No active profile set, falling back to 1 default profile: "default"
2025-06-11 21:09:55.304 WARN 26240 --- [main] o.a.c.c.rabbitmq.RabbitMQComponent : The old syntax rabbitmq://hostname:port/exchangeName is deprecated. You should configure the hostname on the component or ConnectionFactory
2025-06-11 21:09:55.499 INFO 26240 --- [main] o.a.c.impl.engine.AbstractCamelContext : Apache Camel 3.20.2 (camel-1) is starting
2025-06-11 21:09:55.578 INFO 26240 --- [main] o.a.c.impl.engine.AbstractCamelContext : Routes startup (started:2)
2025-06-11 21:09:55.578 INFO 26240 --- [main] o.a.c.impl.engine.AbstractCamelContext : Started route1 (rabbitmq://localhost/test.camel.queue)
2025-06-11 21:09:55.578 INFO 26240 --- [main] o.a.c.impl.engine.AbstractCamelContext : Started route2 (timer://generate)
2025-06-11 21:09:55.578 INFO 26240 --- [main] o.a.c.impl.engine.AbstractCamelContext : Apache Camel 3.20.2 (camel-1) started in 318ms (build:13ms init:137ms start:168ms)
2025-06-11 21:09:55.580 INFO 26240 --- [main] com.ejemplo.camel.MainApp : Started MainApp in 0.919 seconds (JVM running for 1.114)
2025-06-11 21:09:56.593 INFO 26240 --- [limer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:09:56
2025-06-11 21:09:56.605 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:09:56
2025-06-11 21:10:01.590 INFO 26240 --- [limer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:01
2025-06-11 21:10:01.592 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:01

Preguntar a Copilot
```

```
2025-06-11 21:10:01.592 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:01
2025-06-11 21:10:06.595 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:06
2025-06-11 21:10:06.597 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:06
2025-06-11 21:10:11.601 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:11
2025-06-11 21:10:11.603 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:11
2025-06-11 21:10:16.616 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:16
2025-06-11 21:10:16.618 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:16
2025-06-11 21:10:21.631 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:21
2025-06-11 21:10:21.633 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:21
2025-06-11 21:10:26.644 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:26
2025-06-11 21:10:26.646 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:26
2025-06-11 21:10:31.649 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:31
2025-06-11 21:10:31.653 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:31
2025-06-11 21:10:36.650 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:36
2025-06-11 21:10:36.652 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:36
2025-06-11 21:10:41.660 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:41
2025-06-11 21:10:41.662 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:41
2025-06-11 21:10:46.668 INFO 26240 --- [imer://generate] route2 : Enviando: Mensaje generado en 2025-06-11 21:10:46
2025-06-11 21:10:46.670 INFO 26240 --- [est.camel.queue] route1 : Mensaje recibido: Mensaje generado en 2025-06-11 21:10:46
```

8. Validaciones finales


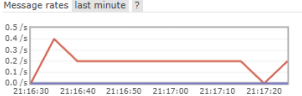
La cola `test.camel.queue` reciba y procese mensajes (número de mensajes debería mantenerse bajo).

Logs en la aplicación muestran el flujo completo productor → cola → consumidor.

Overview	Connections	Channels	Exchanges	Queues and Streams	Admin
Exchanges					
All exchanges (8)					
Virtual host	Name	Type	Features	Message rate in	Message rate out
/	(AMQP default)	direct	D		
/	amq.direct	direct	D		
/	amq.fanout	fanout	D		
/	amq.headers	headers	D		
/	amq.match	headers	D		
/	amq.rabbitmq.trace	topic	D I		
/	amq.topic	topic	D		
/	test.camel.queue	direct	D AD	0.20/s	0.20/s

Add a new exchange

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Overview	Connections	Channels	Exchanges	Queues and Streams	Admin
Queue 1099235105					
Overview					
Queued messages last minute ?					
					
Ready 0 Unacked 0 Total 0					
Message rates last minute ?					
					
Publish 0.20/s Consumer ack 0.00/s Get (auto ack) 0.00/s Deliver (manual ack) 0.00/s Redelivered 0.00/s Get (empty) 0.00/s Deliver (auto ack) 0.20/s Get (manual ack) 0.00/s					
Details					
Features durable: true auto-delete: true queue storage version: 1					
State running					
Consumers 1					
Consumer capacity 100%					
Messages 0 Total 0 Ready 0 Unacked 0 In memory 0 Persistent 0 Transient, Paged Out 0					
Message body bytes 0 B Process memory 87 KiB					
Consumers (1)					
Channel ?	Consumer tag	Ack required	Exclusive	Prefetch count	Active ?
172.17.0.1:38656 (1)	amq.ctag-HqmNmFpx17N7E1wYHKUdA	=	=	0	*
Activity status up					
Consumer Timeout 1800000					
Arguments					
Bindings (2)					
Publish message					
Get messages					
Warning: getting messages from a queue is a destructive action. ?					
Ack Mode: Nack message requeue true					
Encoding: Auto string / base64 ?					

Overview

Connections

Channels

Exchanges

Queues and Streams

Admin

Exchange: test.camel.queue

Overview

Message rates last minute ?

0.5 / s

0.4 / s

0.3 / s

0.2 / s

0.1 / s

0.0 / s

21:16:30

21:17:00

21:17:10

21:17:20

21:17:30

21:17:40

Publish (In)

0.20/s

Publish (Out)

0.20/s

Details

Type

direct

Features

durable: true

auto-delete: true

Policy

Bindings

This exchange

↓

To	Routing key	Arguments	
1099235105			<div>Unbind</div>

Add binding from this exchange

To queue

:

*

Routing key:

Arguments:

=

String

Bind