Pass the message with RabbitMQ

Anders Ljusberg
## EmailSender

<table>
<thead>
<tr>
<th>JobId</th>
<th>Address</th>
<th>Message</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><a href="mailto:anders@ljusberg.se">anders@ljusberg.se</a></td>
<td>Hello Anders, Lorem Ipsum</td>
<td>Sent</td>
</tr>
<tr>
<td>2</td>
<td><a href="mailto:CodingInsomnia@outlook.com">CodingInsomnia@outlook.com</a></td>
<td>Hello Anders, Lorem Ipsum</td>
<td>Processing</td>
</tr>
<tr>
<td>3</td>
<td><a href="mailto:andlju@gmail.com">andlju@gmail.com</a></td>
<td>Hello Anders, Lorem Ipsum</td>
<td>Waiting</td>
</tr>
</tbody>
</table>

```sql
SELECT TOP 1 * FROM EmailSender WHERE Status = 'Waiting'
```

```sql
UPDATE EmailSender SET Status = 'Processing' WHERE JobId = 3
```
OR THIS?

Prices

<table>
<thead>
<tr>
<th>ProductId</th>
<th>Amount</th>
<th>LastUpdate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4711.50</td>
<td>2015-05-26T13:37:42.4711</td>
</tr>
<tr>
<td>2</td>
<td>1337.40</td>
<td>2015-05-26T13:37:43.1234</td>
</tr>
<tr>
<td>3</td>
<td>42.50</td>
<td>2015-05-26T13:38:05.4561</td>
</tr>
</tbody>
</table>

SELECT * FROM Prices
WHERE LastUpdate > '2015-05-20T04:40:09.123'
ME, ME, ME

Solution Designer at Thomas Cook
Organizer of Swenug
Co-founder of Swetugg
Tweeter at @CodingInsomnia
TOPICS

Queues and Messages
RabbitMQ
Messaging Patterns
Samples
MESSAGE QUEUE

FIFO - First In - First Out
Producers creates a message
Consumers process messages
Asynchronous communication
MESSAGE QUEUE

Producer -> [message queue] -> Consumer
RABBITMQ

Message Broker
Erlang runtime
Cross-Platform
MESSAGES IN RABBITMQ

Byte Arrays
Usually JSON or XML
Size limited by server memory
Headers
SETTING UP RABBITMQ

C:\>choco install RabbitMQ

C:\>rabbitmq-plugins enable rabbitmq_management
USING RABBITMQ FROM .NET

PS C:\> Install-Package RabbitMQ.Client
CODE

Hello World
MESSAGING PATTERNS

Work queues
Publish-Subscribe
Request-Reply
Message Routing
WORK QUEUES

One or more Producers
One or more Consumers
A single, shared queue
WORK QUEUES

Producer

Producer

Consumer

Consumer
CODE

Work Queues
PUBLISH-SUBSCRIBE

One or more Publishers
Any number of Subscribers
Copy of the message to each Subscriber
EXCHANGES

Messages are always published to an Exchange
Queues bind to Exchanges
Routing

More control over what message ends up where

Direct Exchange
Topic Exchange
Headers Exchange
Bind to a Direct Exchange with a RoutingKey

Messages published to the exchange are routed to queues with a matching key
DIRECT EXCHANGE

Publisher

Direct Exchange

Subscriber

Subscriber

Subscriber
TOPIC EXCHANGE

Bind to a Topic Exchange with a RoutingKey pattern
- "order.book", "order.dvd", "order.dvd.payment"

List of words delimited by dots

Wildcards
- A * matches any single word ("order.*")
- A # matches zero or more words ("order.#")
TOPIC EXCHANGE
MICROSERVICES

Tiny building blocks
Message-oriented
Need new functionality? Build a new service.
Need to refactor? Throw the old service away.
MICRO SERVICES

Web

query: anders @ljusberg.se

Message Bus (Topic E)

response:

Anders Ljusberg

Email handler

contact: 1

Contact handler
MICRO SERVICES

Message Bus (Topic Exchange)

Web

query:
@CodingIns

Twitter handler
response:
Anders Ljusberg
contact: 1

Email handler

Contact handler
MESSAGE TTL

How long is this message valid?

Per queue
  ▪ Removed immediately

Per message
  ▪ Removed when at front of queue
DEAD LETTER EXCHANGE

Failed messages can be routed to a Dead Letter Exchange
Any type of Exchange

rejected messages
Messages that have timed out
Queue length exceeded
DEAD LETTER EXCHANGE
THINGS I SKIPPED

Request-Reply
Headers Exchange
SUMMARY

Message Queuing is good

Microservices is.. well.. interesting..
THERE’S MUCH MORE...

Frameworks
- MassTransit
- EasyNetQ

High Availability
- Federation
- Clustering
- Load Balancing

Priority Queues
Message Scheduling
QUESTIONS?

@CodingInsomnia
anders@ljusberg.se

http://coding-insomnia.com
https://github.com/andlju

http://www.swenug.se
http://swetugg.se

Other stuff:
http://rabbitmq.com
http://erlang.org
https://chocolatey.org
http://masstransit-project.com
http://easynetq.com