RabbitMQ for .Net Developers – Part 1

Introduction

Michael Stephenson
@michael_stephen
Michael_stephensonuk@yahoo.co.uk

pluralsight
hardcore developer training

Agenda

- **Messaging**
- **AMQP**
- **Intro to RabbitMQ**
- **Features**
- **Installing RabbitMQ**
- **Management Plugin**
- **.net API**

Before we jump in!
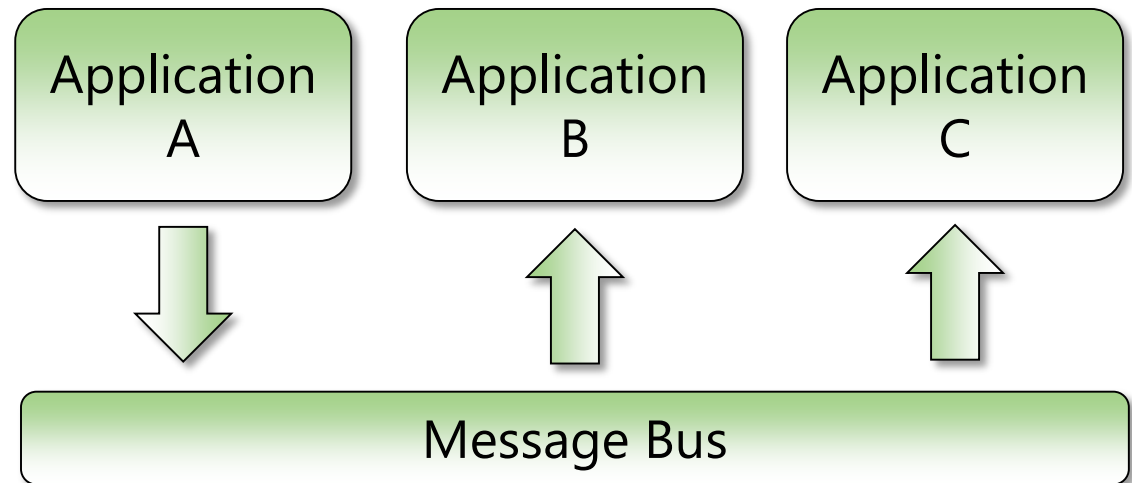
Messaging → AMQP → RabbitMQ

Terms

- **AMQP – Advanced Message Queueing Protocol**

- **EAI – Enterprise Application Integration**

- **BPM – Business Process Management**

- **ESB – Enterprise Service Bus**

- **SOA – Service Orientated Architecture**

- **MOM – Message Orientated Middleware**

- **WCF – Windows Communication Foundation**

Introduction to Messaging

What is messaging?

- **Enterprise Integration Patterns (Hohpe & Woolf)**

  "How can I integrate multiple applications so that they work together and can exchange information"?
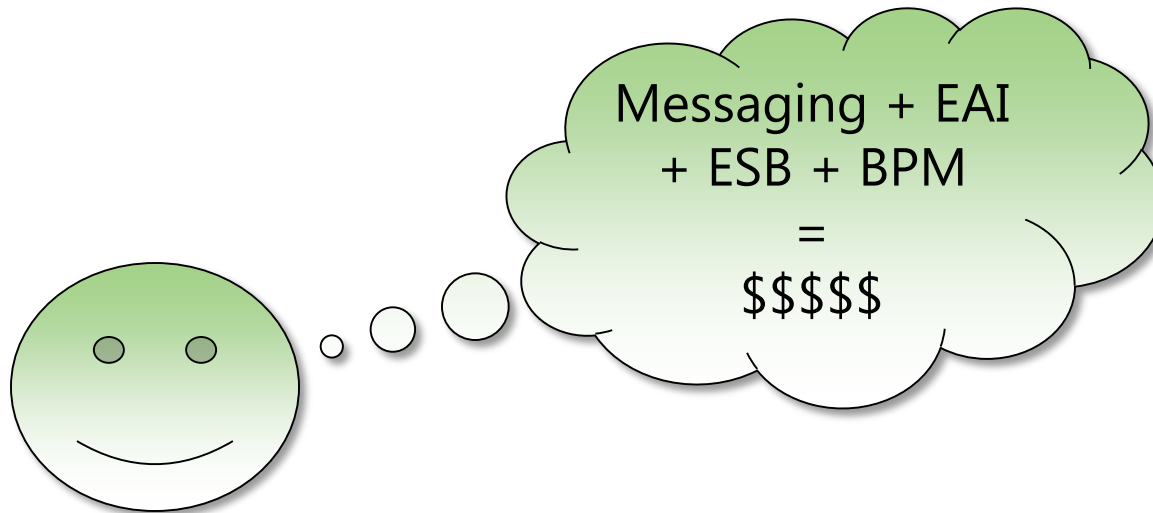
Characteristics of Messaging

- **Asynchronous**
- **Can be reliable**
- **Can be durable**
- **Routing**
- **Many message formats**
- **Recipient pulls message from queue**

History of Messaging

Approx. Date	Event
1986	The Information Bus (TIB) developed
1993	IBM MQSeries released
1997	Microsoft MSMQ released
2001	Java Messaging Service released

Why wasn't it working?

- **Messaging has been around for decades**
- **Messaging solutions are the key to many systems**
- **But…….**
  - Difficult to build solutions with
  - Expensive to buy and run
  - Difficult to connect to applications
  - Vendors tried to build too complex products

Messaging + EAI
+ ESB + BPM
=
$$$$$

Introduction to AMQP

What is AMQP?

- **Advanced Message Queue Protocol**
- **Developed by JP Morgan Chase and iMatix**
- **Open standard protocol for messaging**
- **Wire level protocol like HTTP**
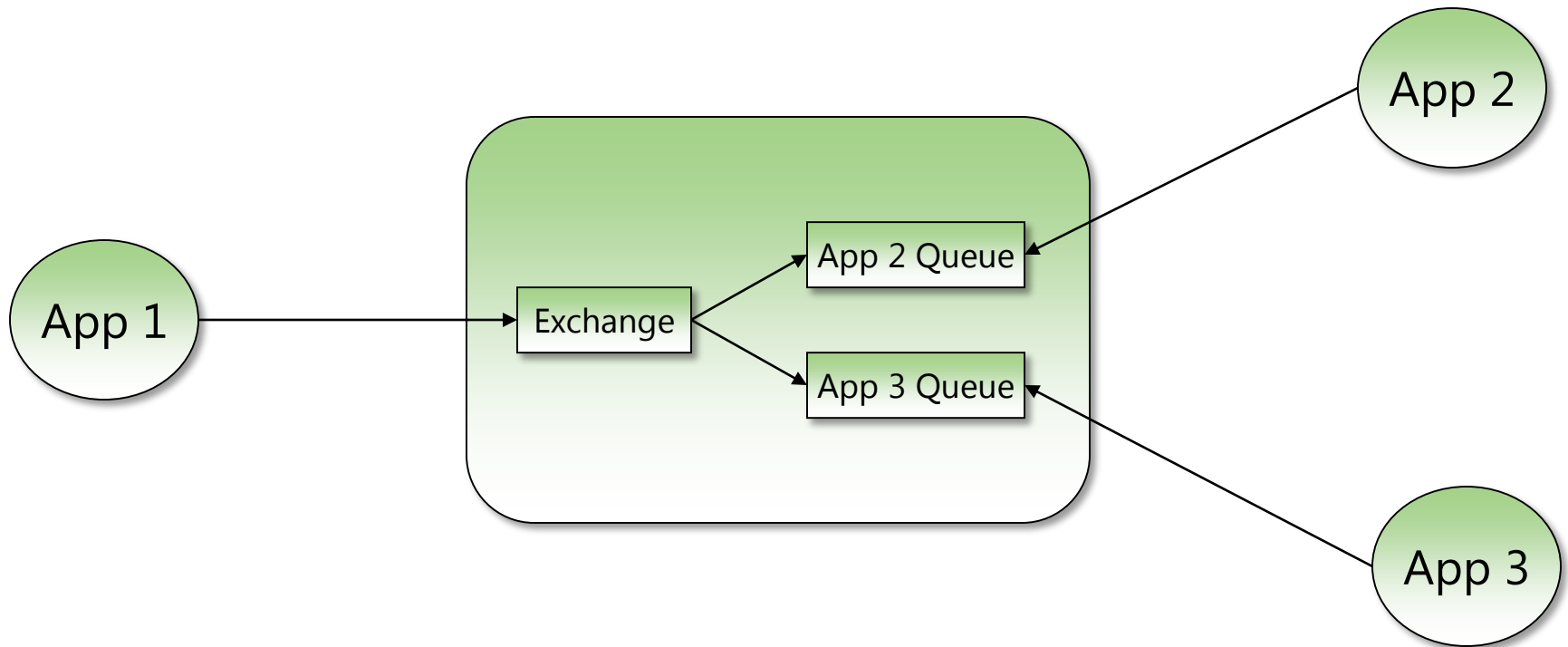- **Vendor agnostic protocol for messaging systems**

http://www.amqp.org/

History of AMQP

Approx. Date	Event
2003	AMQP starts development at JP Morgan
2005	AMQP working group formed
2006	June AMQP 0-8 released December AMQP 0-9 released
2006	Rabbit technologies formed RabbitMQ first release
2011	AMQP 1.0 released by AMQP working group
October 2012	AMQP 1.0 approved as an OASIS standard

Key Concepts

- **Message Broker**
- **Exchanges**
  - Direct
  - Fan-out
  - Topic
  - Headers
- **Queues**
- **Bindings**

Let's Take a Look

AMQP Message Brokers

- **RabbitMQ**
- **Windows Azure Service Bus**
- **Apache Qpid**
- **Apache ActiveMQ**
- **SwiftMQ**
- **StormMQ**
- **WSO2 message broker**
- **OpenAMQ**

Note some vendors support different versions of the AMQP Protocol

There are some significant changes between 0-9 and 1.0

Introduction to RabbitMQ

What is RabbitMQ?

- **RabbitMQ is an AMQP message broker**

- **Open source built upon Erlang**

- **AMQP Support**

  - 0-8

  - 0-9

  - 1.0 via a beta plugin

Features

- **Message Broker**
  - AMQP 0.8 & 0.9
- **Client Libraries & Community Libraries**
  - .net/WCF
  - Java
  - Python
  - Ruby
  - Spring
- **Protocol Gateways**
  - XMPP
  - Stomp
  - Smtp
  - Http

Operational Features

- **High Availability**
- **Clustering**
- **Management**
  - Management Plugin for HTTP API
  - Web UI
  - Command line tool
- **Security**
  - Virtual Hosts
  - Authentication & Permissions

Erlang

- **RabbitMQ is build on Erlang**
- **Erlang comes from a history in telecoms systems**
- **Offers super fast performance and reliability**

As a .net developer you wont really know its there

Demo's

Demo Machine Setup

- Windows 2012 Virtual Machine
- Visual Studio 2012
- Nuget

Demo - Installing RabbitMQ

Demo – Administration Plugin

Command Line Tools

- **RabbitMqCtl**
  - Stop
  - Reset
  - Stop_app
  - Start_app
  - Various User Management
- **RabbitMQ-Service**
  - Stop
  - Start
  - Install

Demo – Console Tools

RabbitMQ .net API

API Types

- **.net Library**

- **WCF Binding**

Key API Classes

- **IConnection**
- **IModel**
- **ConnectionFactory**
- **QueueingBasicConsumer**
- **Protocols**

Summary

- **History of**
  - Messaging
  - AMQP
  - RabbitMQ
- **Basic Overview of RabbitMQ**
- **RabbitMQ API**