

- **Introduction – AMQP**
- **(Advanced Message Queuing Protocol)**
- **Protocol Working**
- **AMQP Features**
- **Message Delivery Guarantees**
- **AMQP frame types**
- **Components of AMQP**
- **AMQP exchanges types**
- **AMQP Features**
- **Applications**



AMQP



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Introduction

- ✓ **Advanced Message Queuing Protocol.**
- ✓ **Open standard for passing business messages** between applications or organizations.
- ✓ Connects between systems and business processes.
- ✓ It is a binary application layer protocol.
- ✓ Basic unit of data is a *frame*.
- ✓ ISO standard: **ISO/IEC 19464**

Source: [“Advanced Message Queuing Protocol”, Wikipedia \(Online\)](#)

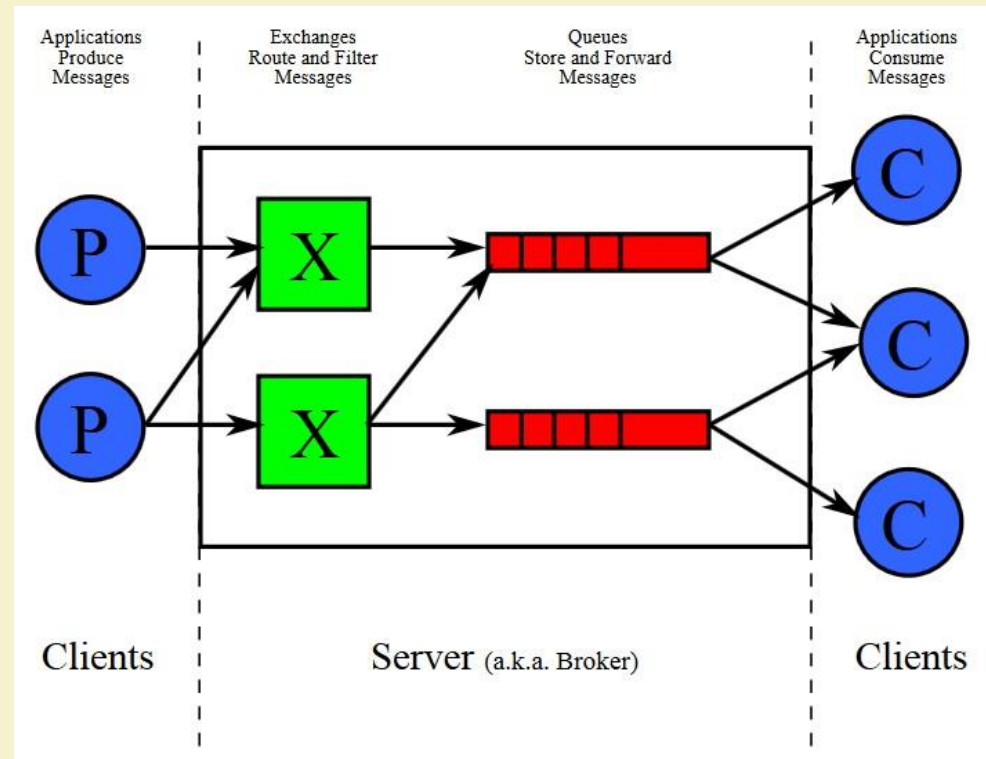


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Source: ["The-amqp-model-for-wikipedia.svg", Wikimedia Commons \(Online\)](#)



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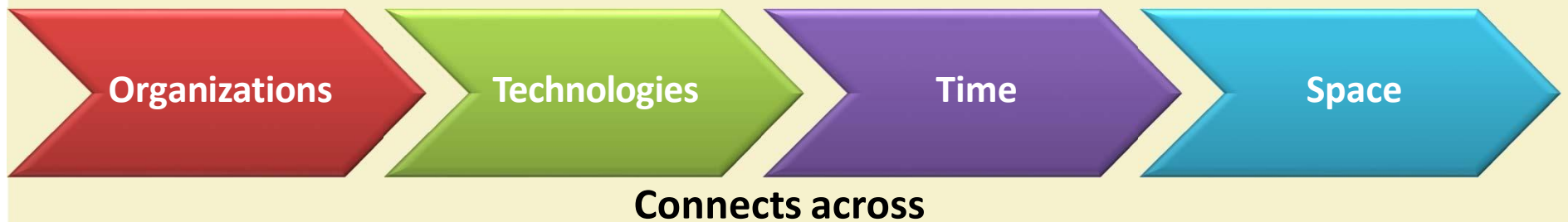


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AMQP Features



Features

Security

Reliability

Interoperability

Routing

Queuing

Open standard



Message Delivery Guarantees

- ✓ *At-most-once*
 - each message is delivered once or never
- ✓ *At-least-once*
 - each message is certain to be delivered, but may do so multiple times
- ✓ *Exactly-once*
 - message will always certainly arrive and do so only once

Reference: "OASIS AMQP version 1.0, sections 2.6.12-2.6.13". OASIS AMQP Technical Committee



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AMQP Frame Types

- ✓ Nine AMQP frame types are defined that are used to initiate, control and tear down the transfer of messages between two peers:
 - Open (connection open)
 - Begin (session open)
 - Attach (initiate new link)
 - Transfer (for sending actual messages)
 - Flow (controls message flow rate)
 - Disposition (Informs the changes in state of transfer)
 - Detach (terminate the link)
 - End (session close)
 - Close (connection close)

Source: [O.S. Tezer, "An advanced messaging queuing protocol walkthrough", DigitalOcean \(Online\), 2013](#)



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Components

Exchange

- Part of Broker
- Receives messages and routes them to Queues

Queue

- Separate queues for separate business processes
- Consumers receive messages from queues

Bindings

- Rules for distributing messages (who can access what message, destination of the message)

Source: [O.S. Tezer, "An advanced messaging queuing protocol walkthrough", DigitalOcean \(Online\), 2013](#)



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AMQP Exchanges

Direct

Fan-out

Topic

Header

Source: [O.S. Tezer, "An advanced messaging queuing protocol walkthrough", DigitalOcean \(Online\), 2013](#)



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AMQP Features

- ✓ Targeted QoS (Selectively offering QoS to links)
- ✓ Persistence (Message delivery guarantees)
- ✓ Delivery of messages to multiple consumers
- ✓ Possibility of ensuring multiple consumption
- ✓ Possibility of preventing multiple consumption
- ✓ High speed protocol

Source: [O.S. Tezer, "An advanced messaging queuing protocol walkthrough", DigitalOcean \(Online\), 2013](#)



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Applications

- ✓ Monitoring and global update sharing.
- ✓ Connecting different systems and processes to talk to each other.
- ✓ Allowing servers to respond to immediate requests quickly and delegate time consuming tasks for later processing.
- ✓ Distributing a message to multiple recipients for consumption.
- ✓ Enabling offline clients to fetch data at a later time.
- ✓ Introducing fully asynchronous functionality for systems.
- ✓ Increasing reliability and uptime of application deployments.

Source: [O.S. Tezer, "An advanced messaging queuing protocol walkthrough", DigitalOcean \(Online\), 2013](#)



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12