ISO 19464
Connecting Business for Value

by John O'Hara

Originator of AMQP / ISO 19464

Message-oriented middleware allows application modules to be distributed over **heterogeneous platforms** and reduces the complexity of developing applications that **span multiple operating systems** ...

-- Wikipedia entry for message-oriented middleware

Proprietary messaging protocols

Difficult to integrate business partners
Requirement to use named vendors

Restricted platform support
Limited to whatever a single vendor provides

Lock-in
No best of breed, loss of negotiating position

Move General Ledger to Cloud ?

Simplify 100 systems!

Solve intermittent freezes %#!
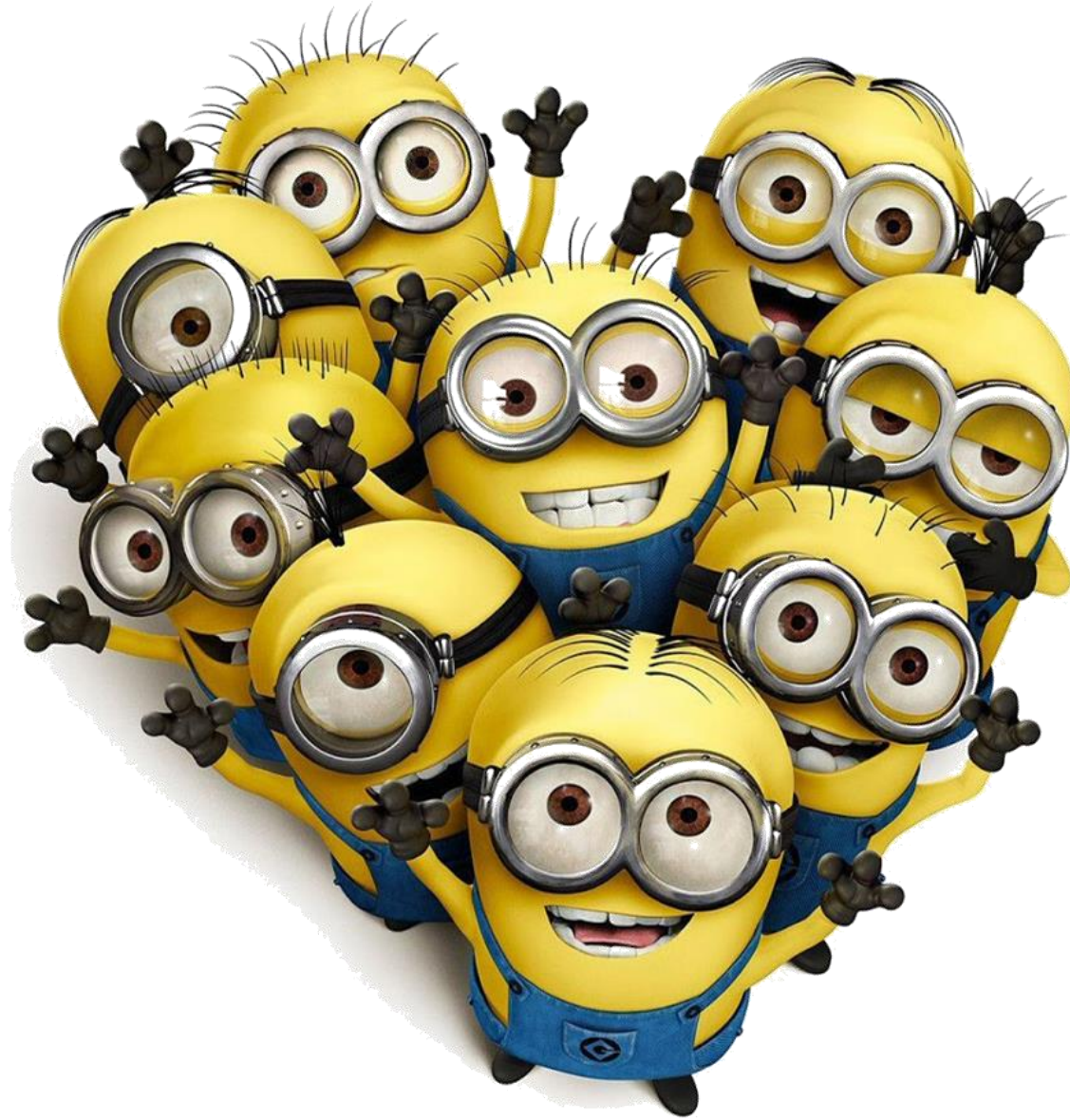
Make this cheaper$

Audit item on broken DR

Connect a new client next week ☹

In 2004 we made a plan…

- Commoditize messaging
- Enterprise strength
- Part of the Operating System
- Open source
- Leading vendors
- Multiple implementations
- International Standard
- Easy to use

We get together and work hard, time passes...

ISO 19464 is AMQP 1.0

OASIS

Advancing open standards for the information society

Aviation	**Government**	INETCO Systems Limited	Tervela Inc.
SITA	US Dept. of Homeland Security	Kaazing Corporation, N.A.	Thales e-Security
		Microsoft Corporation	TWIST Process Innovations
Financial Services	**Technology**	Mitre Corporation	VMware, Inc.
Bank of America, N.A.	Axway Software	Primeton Technologies	WS02 Inc.
Barclays Bank Plc	Cisco Systems	Progress Software	
Credit Suisse	Flame Computing Enterprises	Red Hat Inc.	
Deutsche Börse	HCL Technologies Ltd	Software AG	
Goldman Sachs	Huawei Technologies	Solace Systems Inc.	
JPMorgan Chase Bank, N.A.	IIT Software GmbH	StormMQ Ltd.	

US Customs and Border Patrol

'DHS CBP is enthusiastically supporting this standard '

ISO 19464 interface to and between government agencies

Starting with customs

Key providers support ISO 19464

'New AMQP 1.0 support in the Service Bus allows you to build cross-platform, hybrid applications'

Convergence on ISO 19464

Gartner Commentary

*"A core set of AMQP messaging capabilities could be bundled into the standard protocol stacks found on every computer, in the way that TCP/IP, SMTP and HTTP are today. **If that happened, the cost and difficulty of deploying SaaS, PaaS and certain enterprise applications would be substantially reduced**, fostering wider deployment of such applications and enabling additional Web-based business models."*

Gartner Hype Cycle for Application Infrastructure, 2013

Included in Linux

Trending world-wide on Google

About 1,200,000 results (0.12 seconds)

AMQP: Home

13
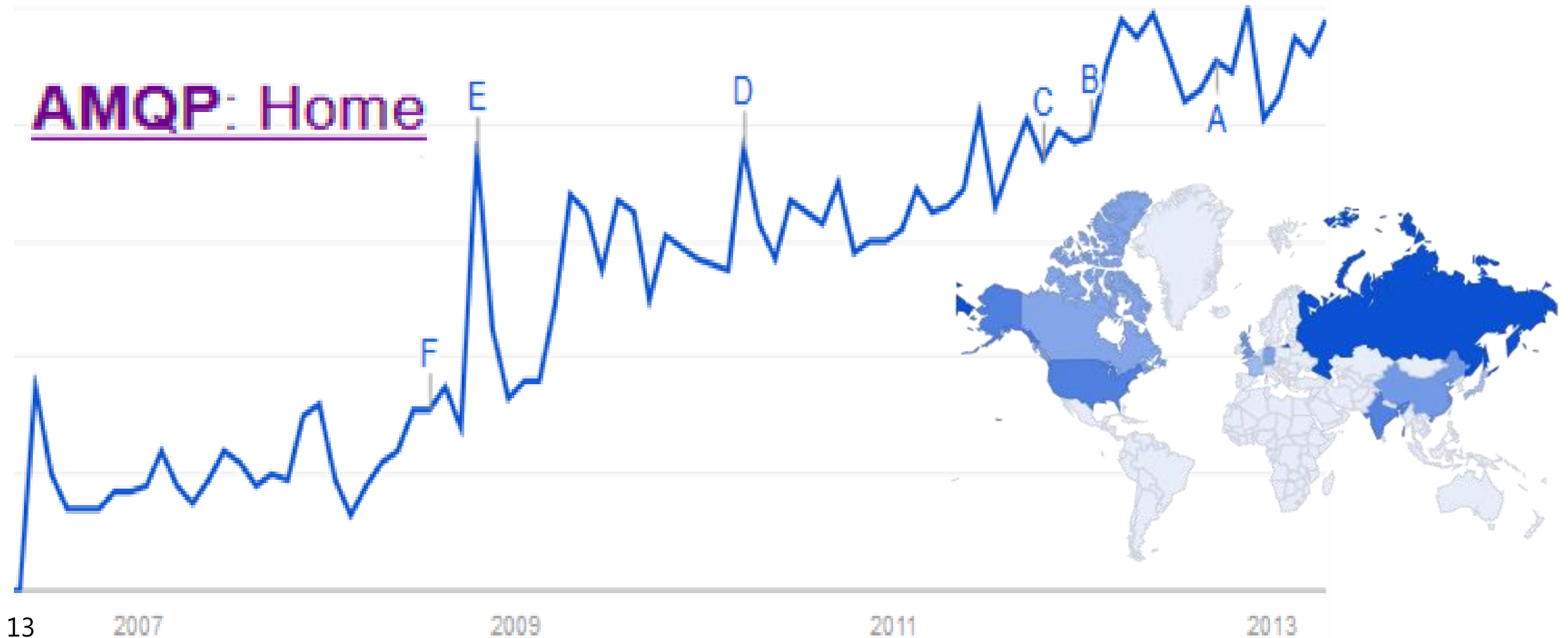
Big Vision

Every device can connect to ISO 19464 networks

Easily tap into data using any application

Securely connect businesses or government agencies to transact for value at Internet scale

AMQP Aware Clients
Devices & workstations

Your Enterprise

AMQP Aware Services
C/C++, Java JMS, MS WCF,
Cloud Applications

AMQP INFRASTRUCTURE

Business Partners & Services

ISO 19464 capabilities

Open, standard messaging protocol
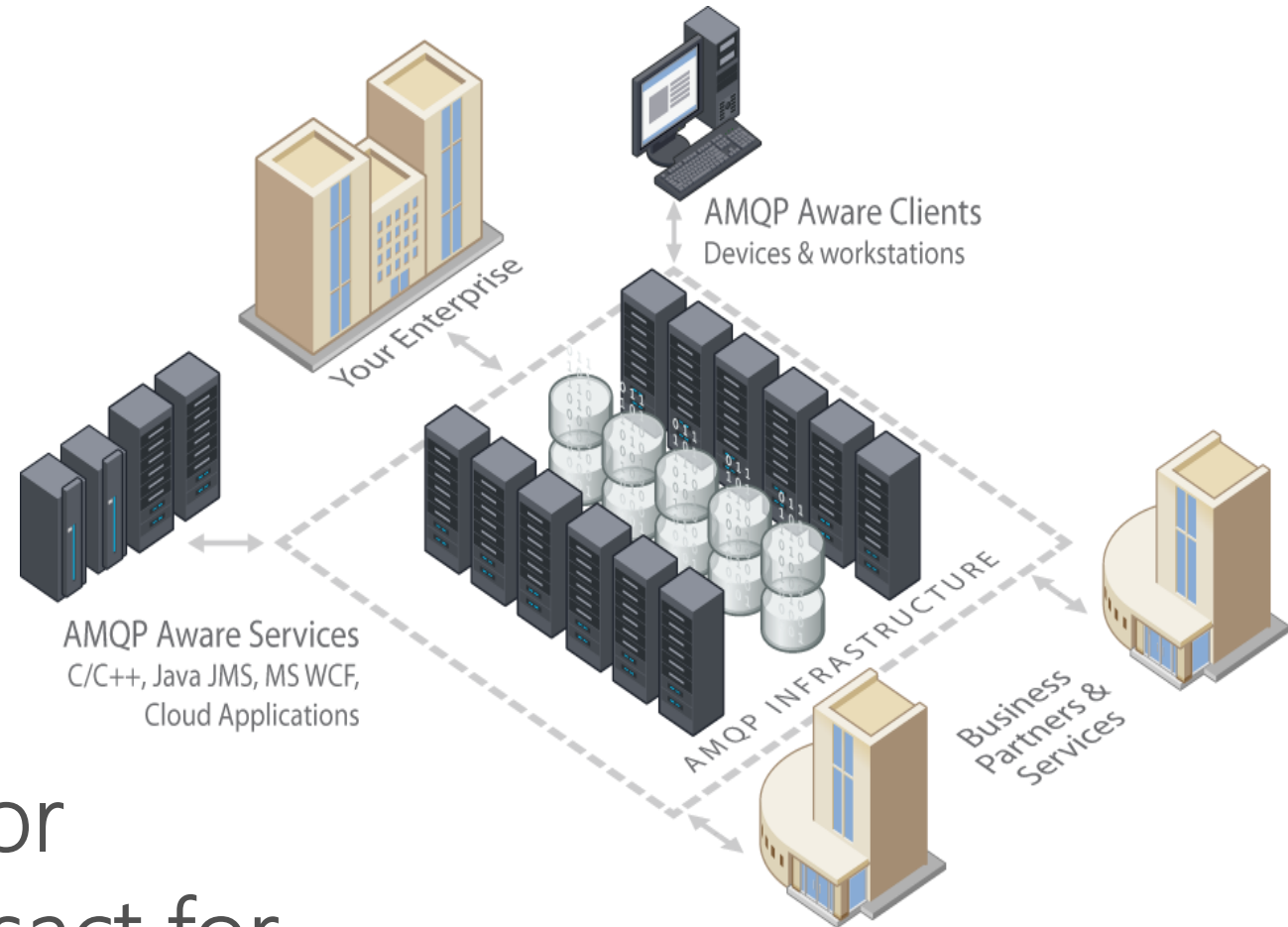
Enables cross-platform apps to be built using brokers, libraries and frameworks from different vendors

Features

Efficient – binary connection-oriented protocol

Reliable – fire-and-forget to reliable, exactly-once delivery

Portable data representation – cross-platform, full-fidelity exchange

Flexible **–** peer-peer, client-broker, and broker-broker topologies

Broker-model independent **–** no requirements on broker internals

Designed for Internet scale deployment

Technology opportunity

ISO 19464 standardises the *core messaging capabilities*
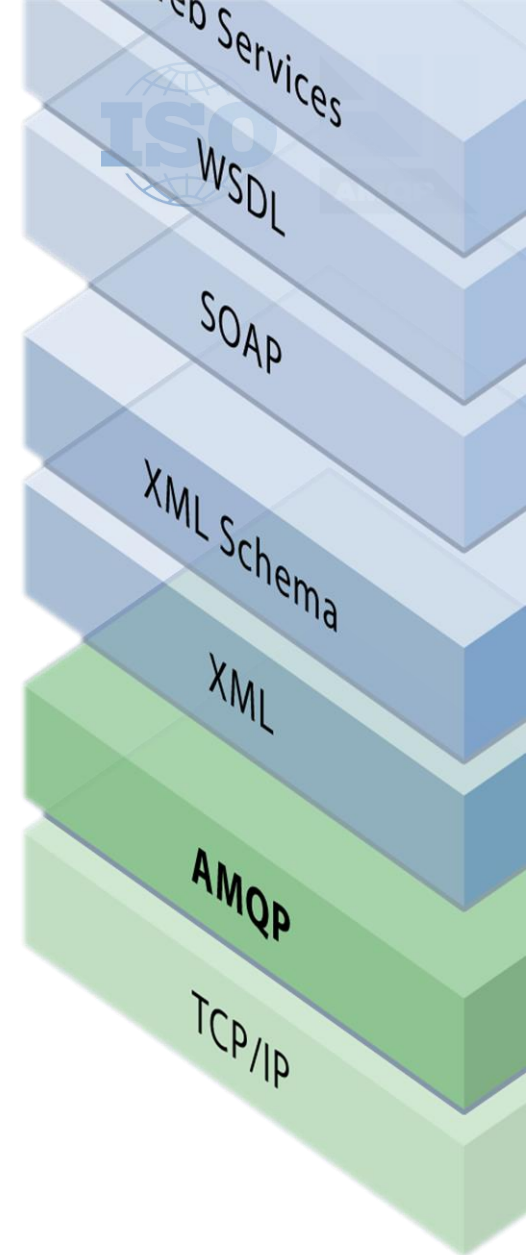- A key building block for layered services

Basis for more effective business models on the Internet
- ISO 19464 + ISO 20022 = VALUE ADD

Foundation for *innovation*
- Autonomous computing
- Cloud portability
- Secure Internet of Things

ISO 19464 Business opportunity

'Companies move through four stages: ad-hoc solutions, digital business processes, cohesive digital platform, digital business model'

Accenture.
How to Transform the Business Model, 2012

- Businesses need to efficiently exchange information within and **between enterprises**
- What is needed is a data exchange protocol that directly **addresses business requirements**
- This capability must be **ubiquitous** and unencumbered to encourage sustained investment
- A protocol that is based around **units-of-work** (messages) allows business interactions to be elevated above technical details

ISO 19464 Government opportunity

ISO 19464 status will accelerate adoption of standardized messaging

Positioning as the base for other ISO standards; especially ISO 20022 for financial transactions

ISO 19464 is an enabler of **Modular Government**

- Effective and flexible sourcing of government services requires long-lived information processing standards
- Interfaces based on AMQP enable a competitive market for these services
- AMQP already in government

Governments are among the largest consumers of IT products and services

- Citizens demand these are sourced efficiently

Relationship to HTTP

Complimentary technologies

Aim to have ISO 19464 alongside HTTP on the Internet

- HTTP for request/response

- ISO 19464 for pub/sub and transactions

Desire for native support in browsers, with transition via Javascript clients

	HTTP	AMQP
Get	Y	Y
Caching Read	Y	N
Put	Y	N
Post	Y	Y
Delete	Y	N
Content filtering	N	Y
Typed headers	N	Y
Resumeable transfers	Y	Y
Transactions	N	Y
SSL/TLS	Y	Y
Kerberos	Y	Y
SASL	N	Y
Symetric Protocol	N	Y
Socket Multiplexing	N	Y
Out-of-order messaging	N	Y
Server initiated transfers	N	Y
Single packet send	Y	Y
Store-and-forward	N	Y
Publish-and-subscribe	N	Y
Defined Error Recovery	N	Y
Well defined addresses	Y	Y
Content based routing	N	Y
Credit-based flow control	N	Y

Relationship to MQTT

Sometimes compared but different motivations:

- ISO 19464 is the result of collaboration by a dozen core firms; **user driven**
- MQTT is mainly from IBM yet does not compete with popular IBM MQ functionality

MQTT is a light protocol which does less, leaving you to make up the gap with code!

- No queues! (sender and receiver must be up simultaneously)
- No persistence / durability / archival or recovery
- No JMS or WCF compatibility
- No transactions for application server or XA integration
- No flow-control or selective ACK to prevent application lock-ups
- No multiplexing for easy firewall traversal
- No Kerberos (Active Directory)

Relationship to Proprietary Middleware

ISO 19464 is designed for commercial messaging use cases:

- Implementations may perform the capabilities of proprietary middleware

- ISO 19464 implementations have been successfully used to displace proprietary connectivity at scale in mission-critical applications

- Proprietary middleware vendors may elect to support ISO 19464

- Notable examples of proprietary middleware providers include IBM and TIBCO
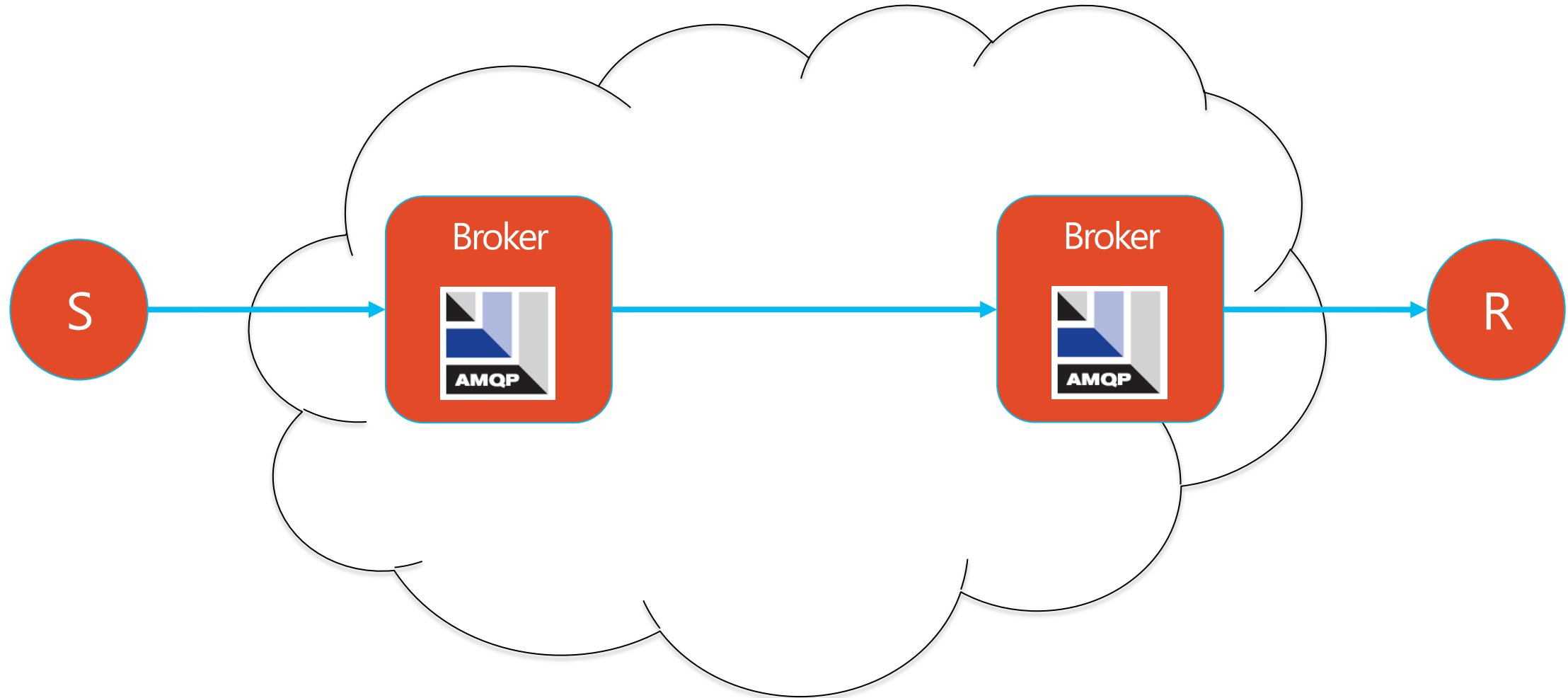
ISO 19464 flexible topologies

S → R
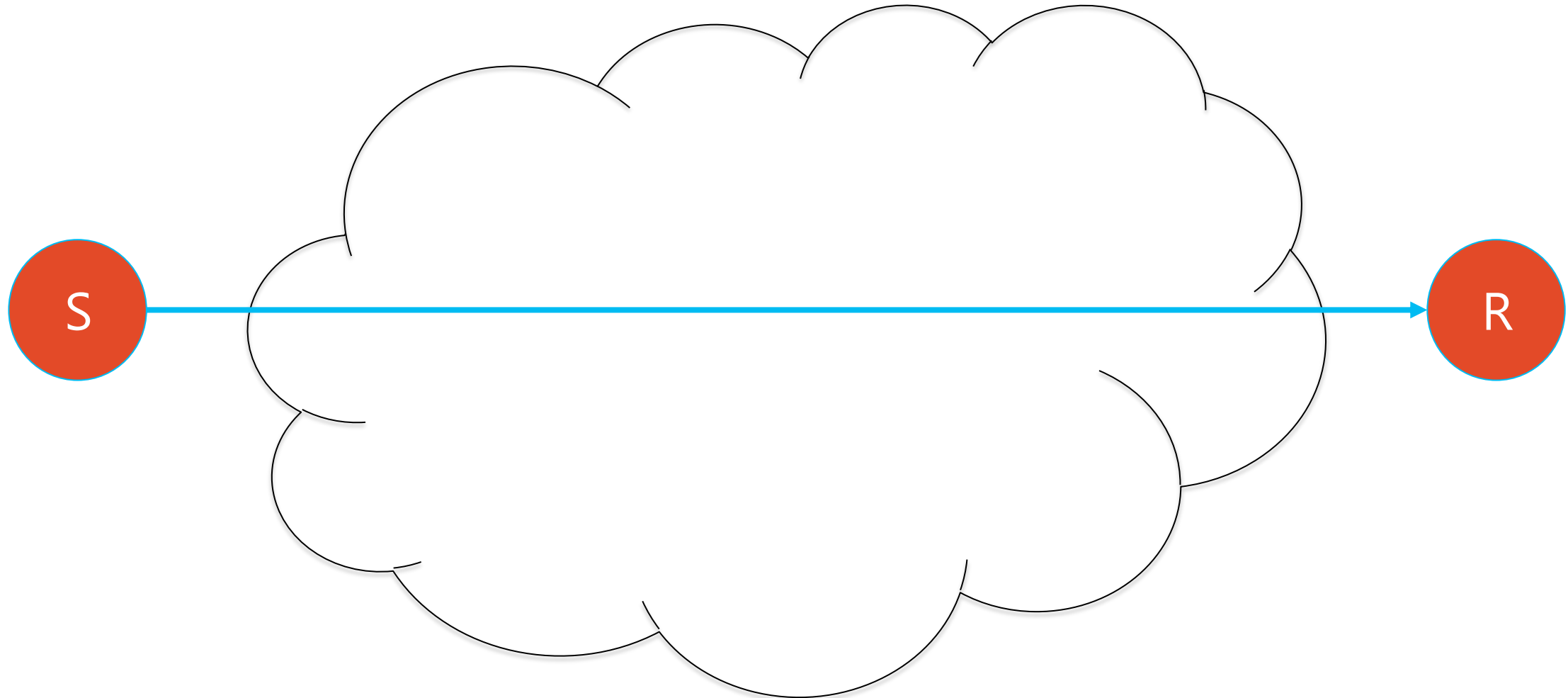
AMQP Network
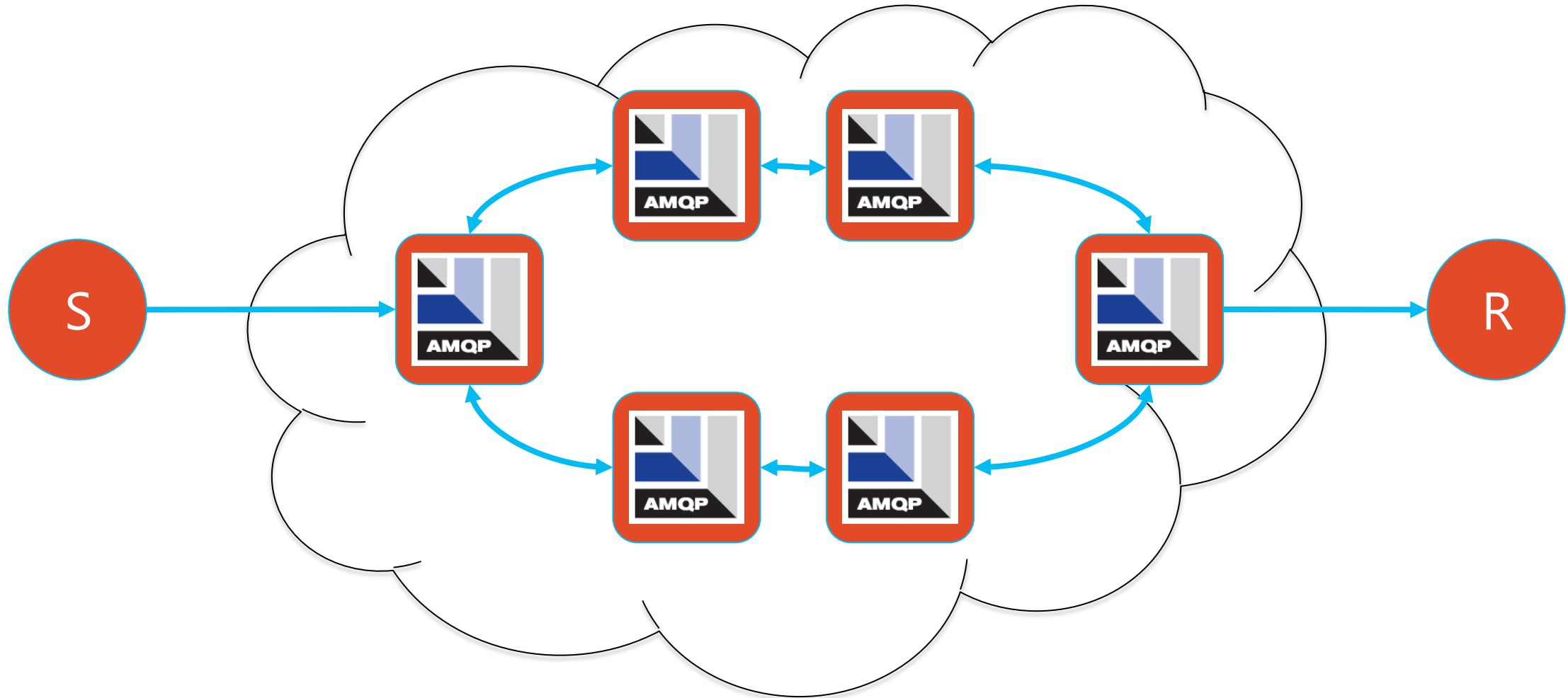
ISO 19464 flexible topologies
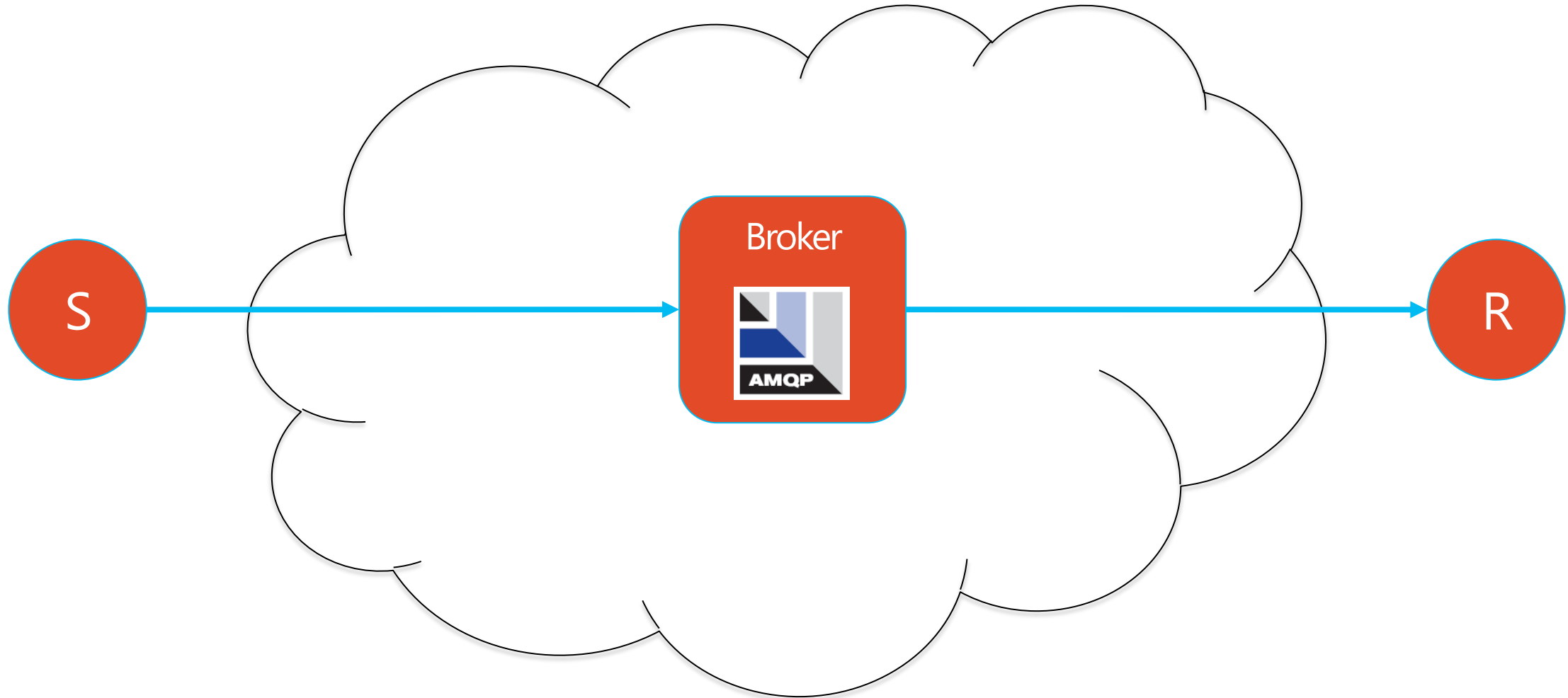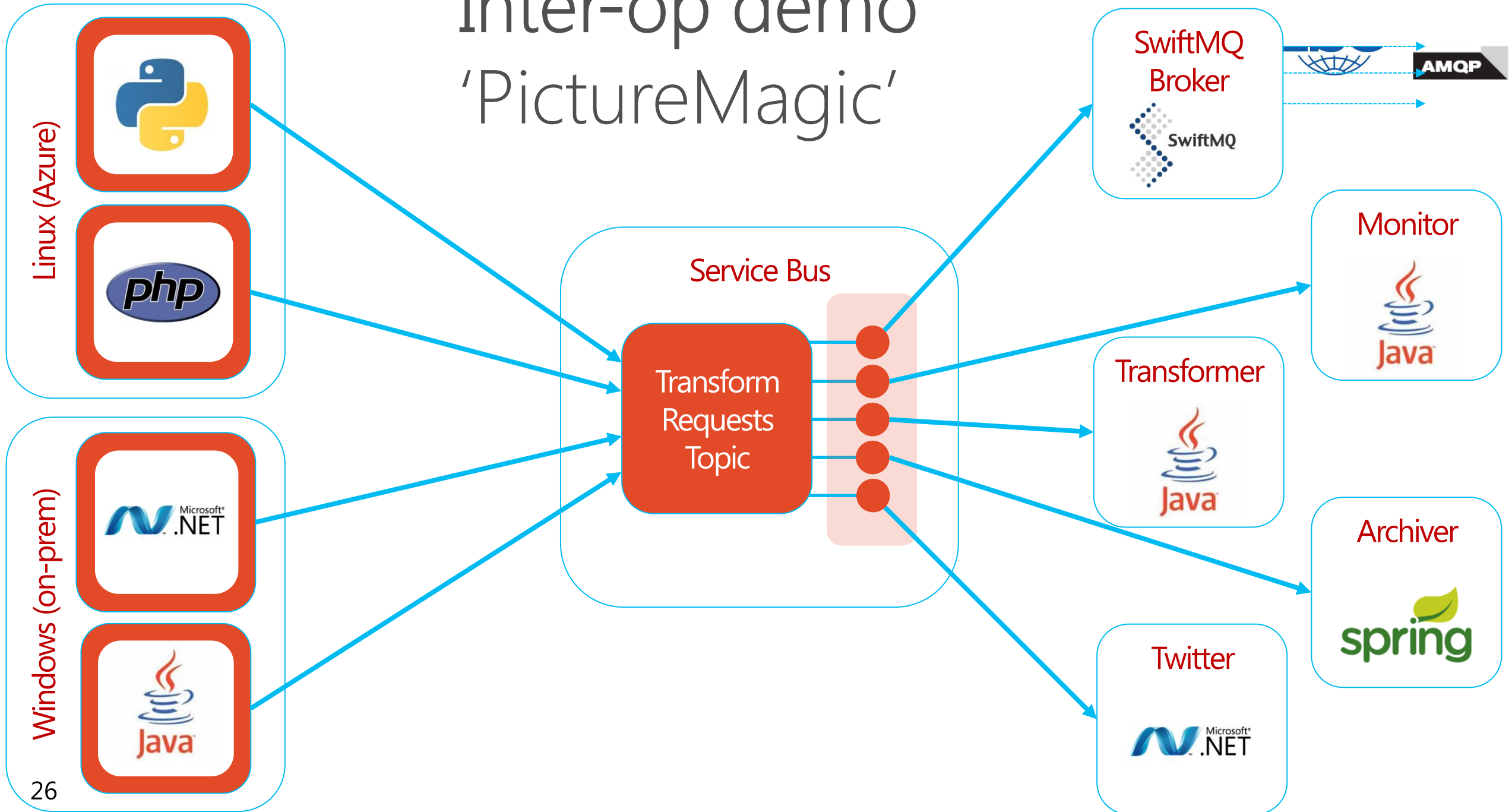
ISO 19464 flexible topologies

ISO 19464 flexible topologies

Inter-op demo
'PictureMagic'

ISO 19464 - the future of integration

- DNS for service resolution
- TCP and SCTP for connectivity
- TLS for confidentiality
- Kerberos for authentication
- LDAP for directory and authorization
- ISO 19464 for reliable messaging and content routing
- XML as the data interchange format
- ISO 20022 / FPML / FIXML / XBRL as the commercial languages
- Works equally well both within and between firms

Result: Enhanced business agility at reduced cost

Questions?

AMQP at OASIS
http://www.amqp.org

Apache Qpid
http://qpid.apache.org/

Apache ActiveMQ / Red Hat
http://activemq.apache.org

Windows Azure Service Bus / Microsoft
https://www.windowsazure.com/

RabbitMQ / VMware
http://www.rabbitmq.com/

SwiftMQ
http://www.swiftmq.com