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
So what’s the problem

- 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

Aviation
SITA

Financial Services
Bank of America, N.A.
Barclays Bank Plc
Credit Suisse
Deutsche Börse
Goldman Sachs
JPMorgan Chase Bank, N.A.

Government
US Dept. of Homeland Security
INETCO Systems Limited
Kaazing Corporation, N.A.
Microsoft Corporation
Mitre Corporation
Primeton Technologies
Progress Software
Red Hat Inc.
Software AG
Solace Systems Inc.
StormMQ Ltd.

Technology
Axway Software
Cisco Systems
Flame Computing Enterprises
HCL Technologies Ltd
Huawei Technologies
IIT Software GmbH

Tervela Inc.
Thales e-Security
TWIST Process Innovations
VMware, Inc.
WS02 Inc.
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

Apollo 1.6 AMQP Protocol

Windows Azure

SwiftMQ

RabbitMQ

Opid

ActiveMQ
“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

```
dev@ubuntu:~$ sudo apt-get install qpidd
[sudo] password for dev:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
db-util db5.1-util libboost-filesystem1.46.1 libboost-p
libboost-system1.46.1 libcmann3 libcoroipcc4 libcpg4 lib
libqpidbroker2 libqpidclient2 libqpidcommon2 libqpidtype
librmawrap2 libsslcommon2 libxerces-c3.1 libxqilla6 sql
The following NEW packages will be installed
db-util db5.1-util libboost-filesystem1.46.1 libboost-p
libboost-system1.46.1 libcmann3 libcoroipcc4 libcpg4 lib
libqpidbroker2 libqpidclient2 libqpidcommon2 libqpidtype
librmawrap2 libsslcommon2 libxerces-c3.1 libxqilla6 q
0 upgraded, 20 newly installed, 0 to remove and 18 not upda
Need to get 5,904 kB of archives.
After this operation, 20.0 MB of additional disk space w
Do you want to continue [Y/n]? y
```
Trending world-wide on Google
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
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
Companies move through four stages: ad-hoc solutions, digital business processes, cohesive digital platform, digital business model.

- 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.

Accenture. How to Transform the Business Model, 2012
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
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)
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

AMQP Network
ISO 19464 flexible topologies
ISO 19464 flexible topologies
ISO 19464 flexible topologies
Inter-op demo
‘PictureMagic’

Service Bus

Transform
Requests
Topic

SwiftMQ
Broker

Monitor

Transformer

Archiver

Twitter

Windows (on-prem)

Linux (Azure)

SwiftMQ

Java

.NET

Java

Spring
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