Introduction to RabbitMQ

An open source message broker that just works

Alexis Richardson
Matthias Radestock
Tony Garnock-Jones
CohesiveFT, LShift and RabbitMQ

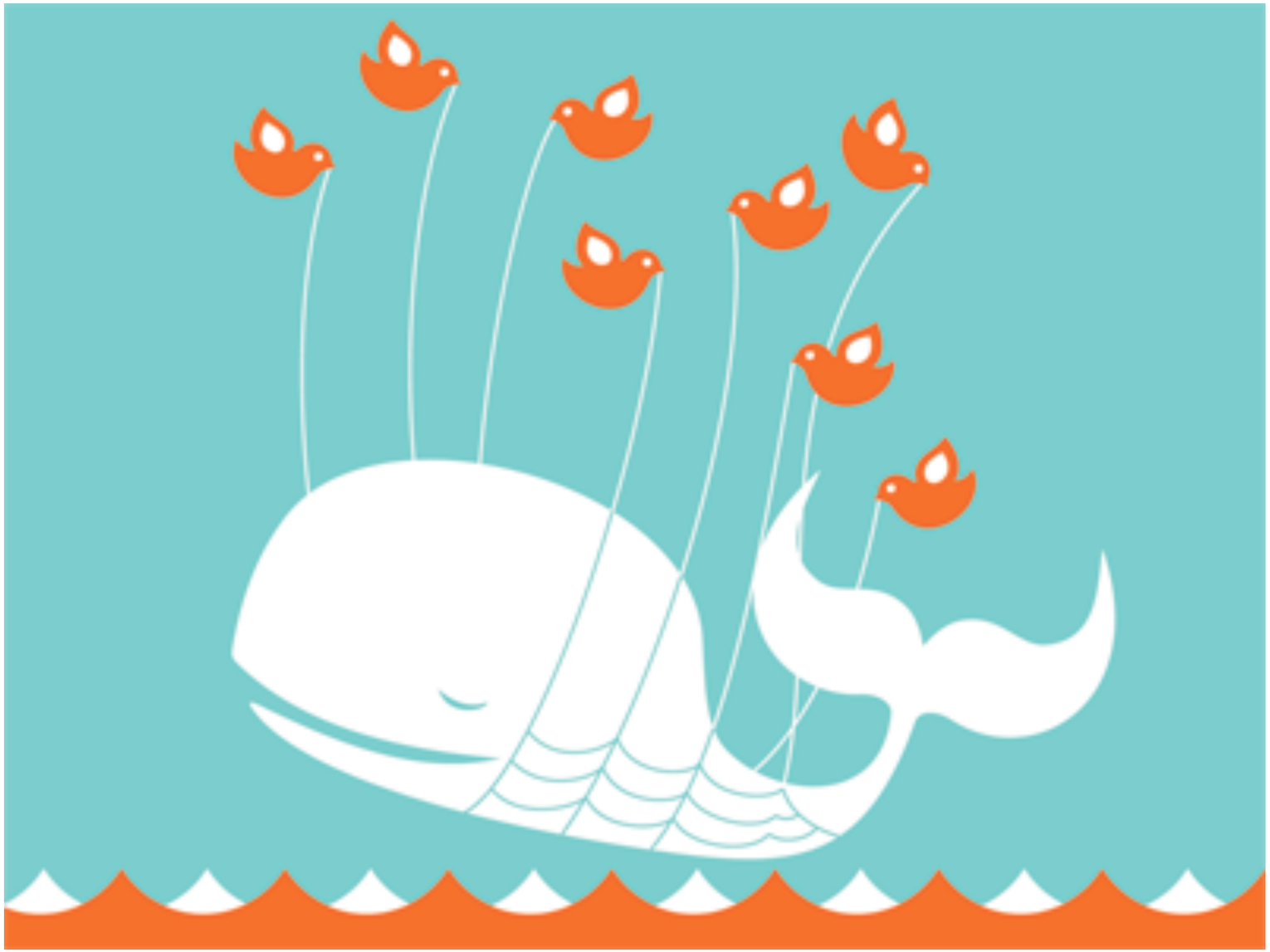
Google UK
25 September 2008

RabbitMQ
Open Source Enterprise Messaging

RabbitMQ is a messaging server that just works!

RabbitMQ
Open Source Enterprise Messaging

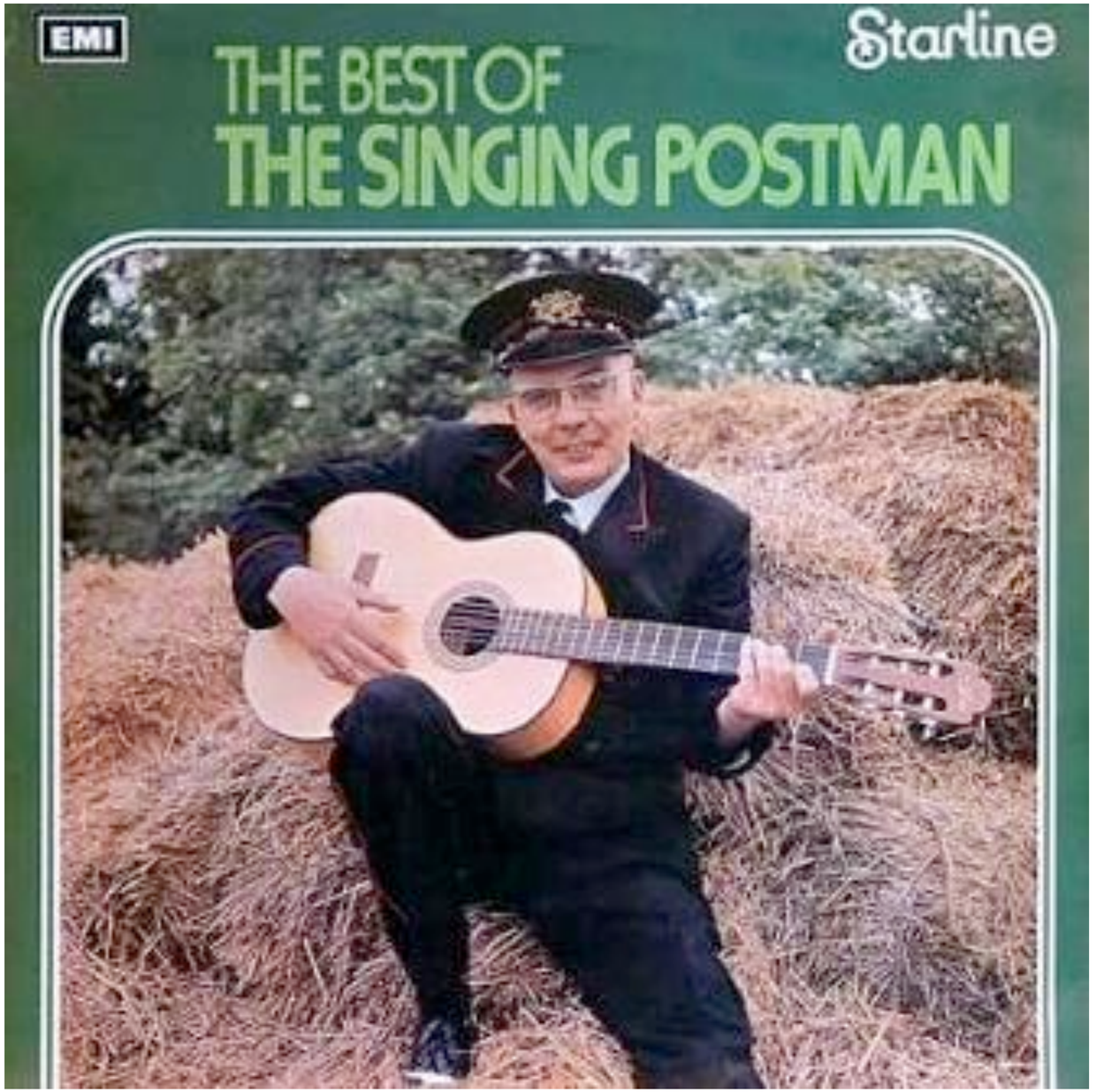
You might need messaging if ... you need to scale



You might need messaging if ... you need to monitor data feeds

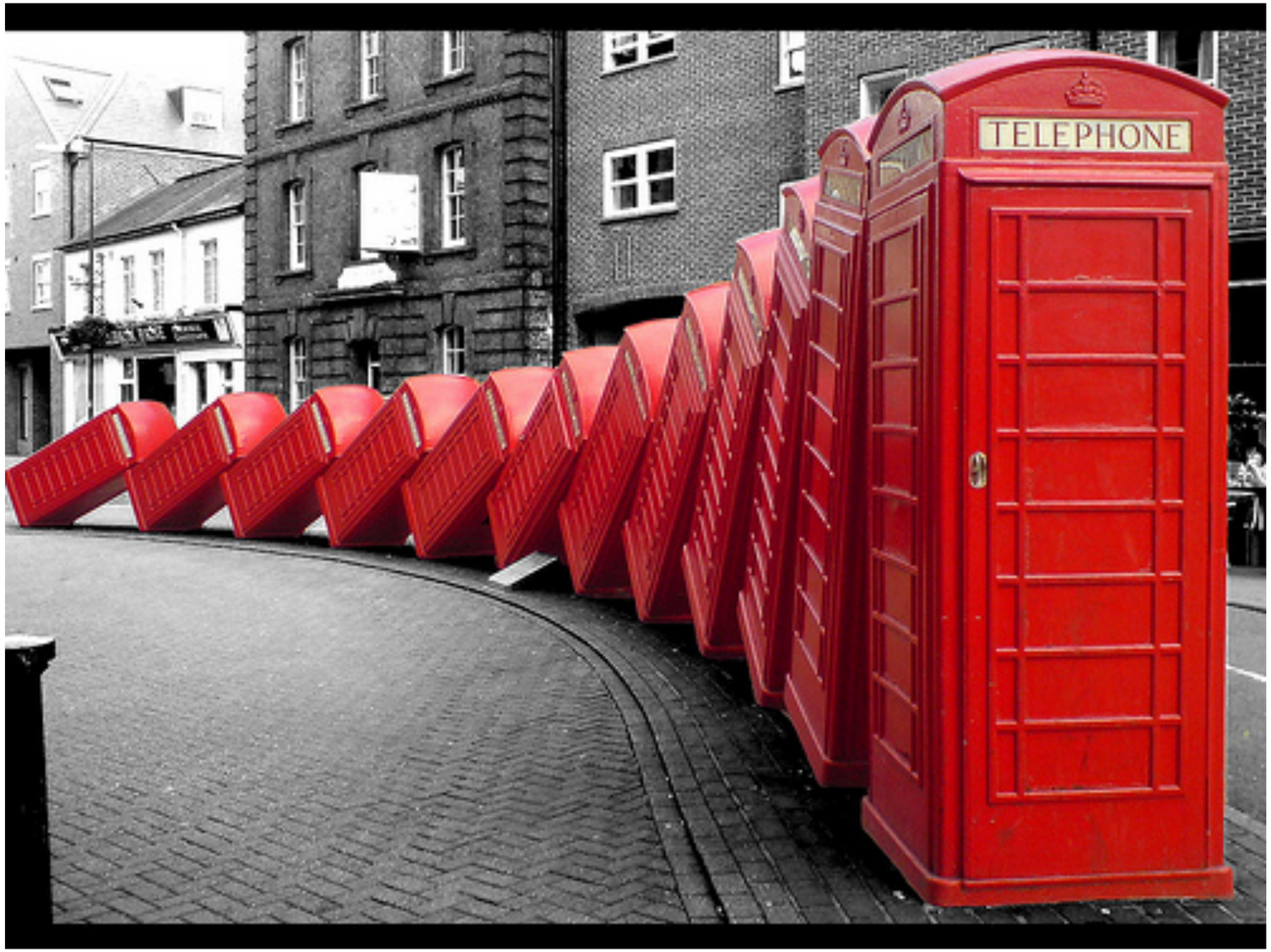
(CC) Kishore Nagarigari

You might need messaging if ... you need a message delivered responsibly



RabbitMQ
Open Source Enterprise Messaging

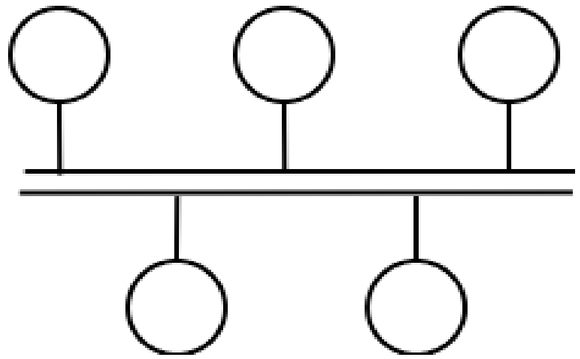
You might need messaging if ... you need things done in order



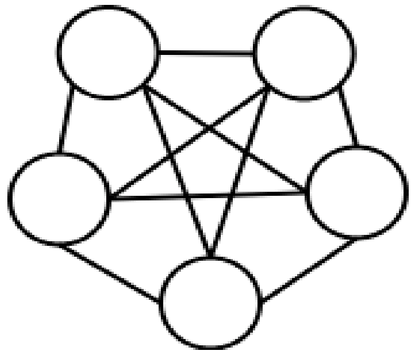
(CC) David Mach

You might need messaging if ... you are using the cloud

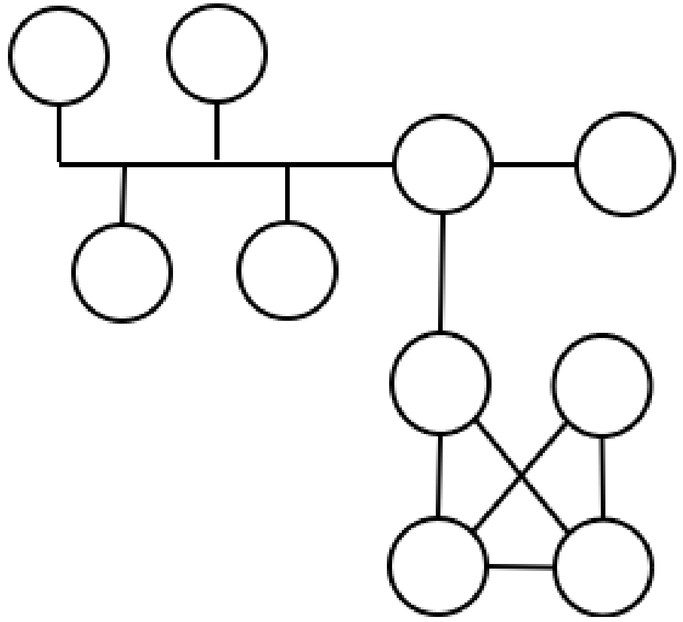
Messaging is everywhere



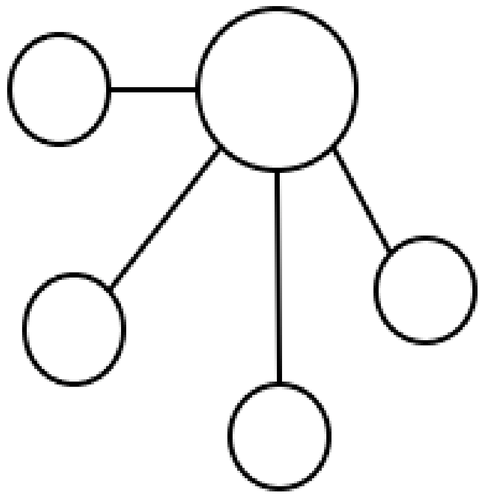
Service Bus



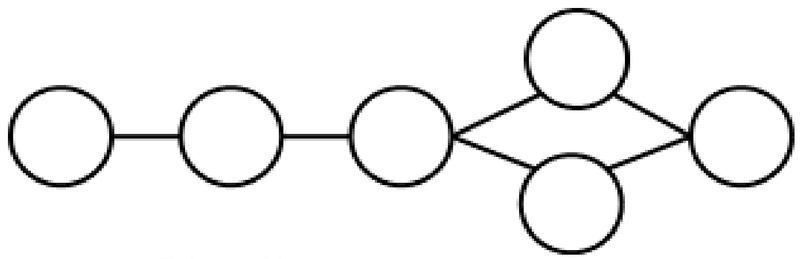
Peer Network



Federation and Cloud



Client - Server (hub)



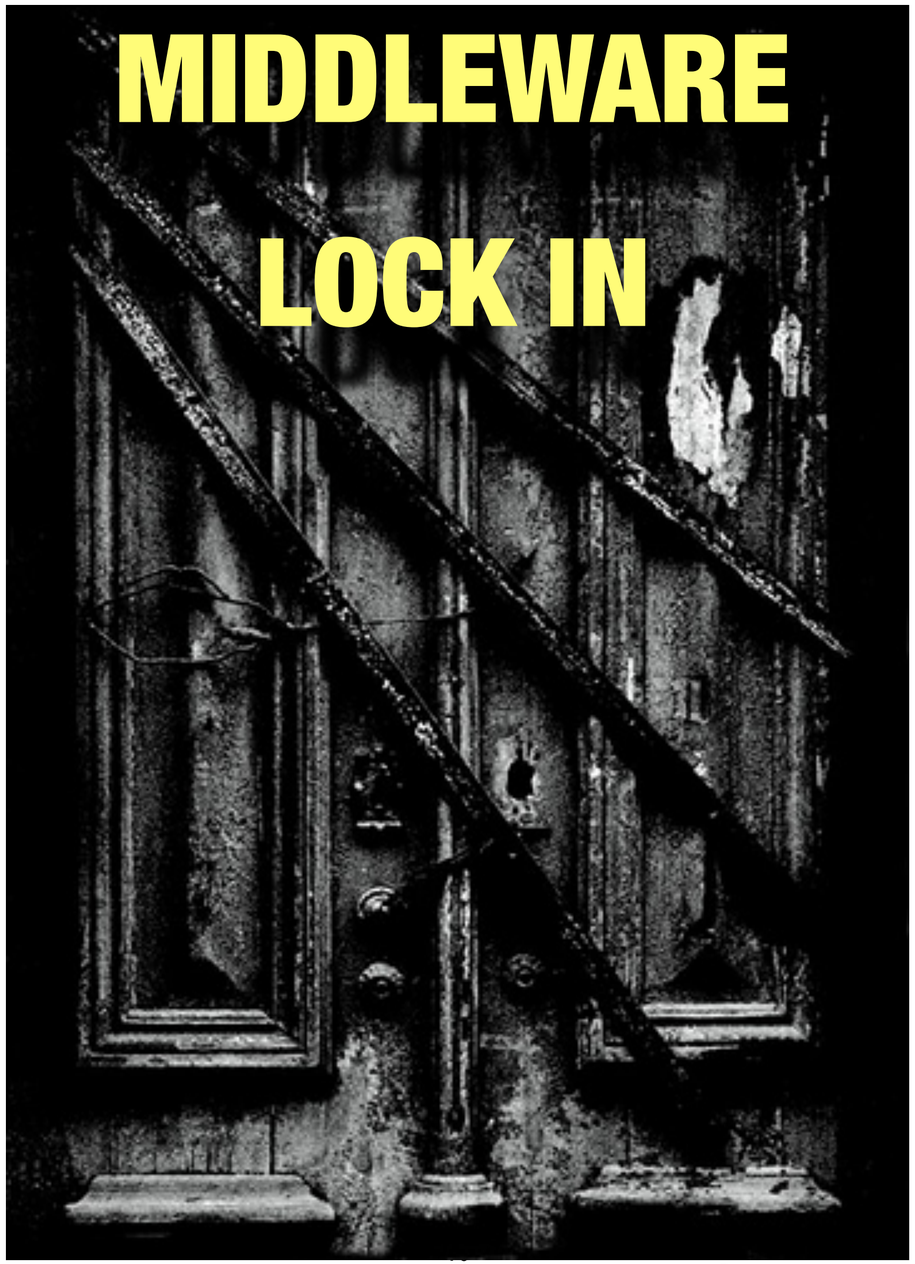
Pipeline

Messaging is your friend

- Route data from point A to point B (or “pubsub” push to many points C)
- Decouple publishers and consumers
- Queueing and buffering for later delivery
- Asynchronous “hand off”
- Load balancing and scalability
- Monitoring and management

For more on messaging, see this great summary by Bob Pasker:
http://blog.pasker.net/2008/06/16/you-might-need-messaging-if/

Don’t be evil



(CC) Giara @flickr.com

RabbitMQ
Open Source Enterprise Messaging

When middleware goes bad

complex, proprietary, closed

requires installation and customisation

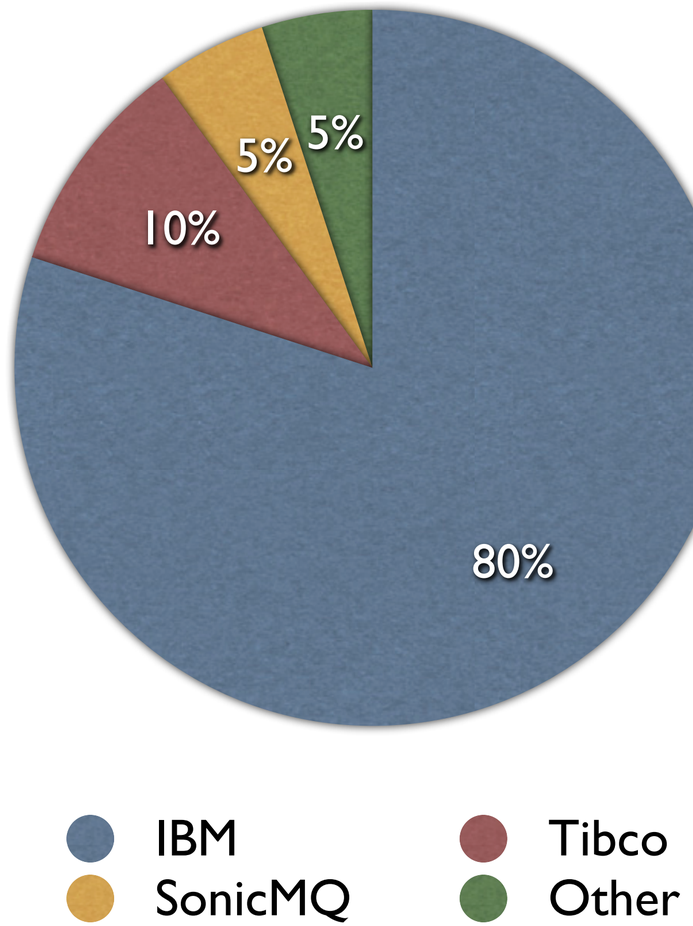
integration services from consultants with knowledge of many platforms or languages

then maintenance is done by the customer

which is then followed by system aging, bloat, and eventual heat death

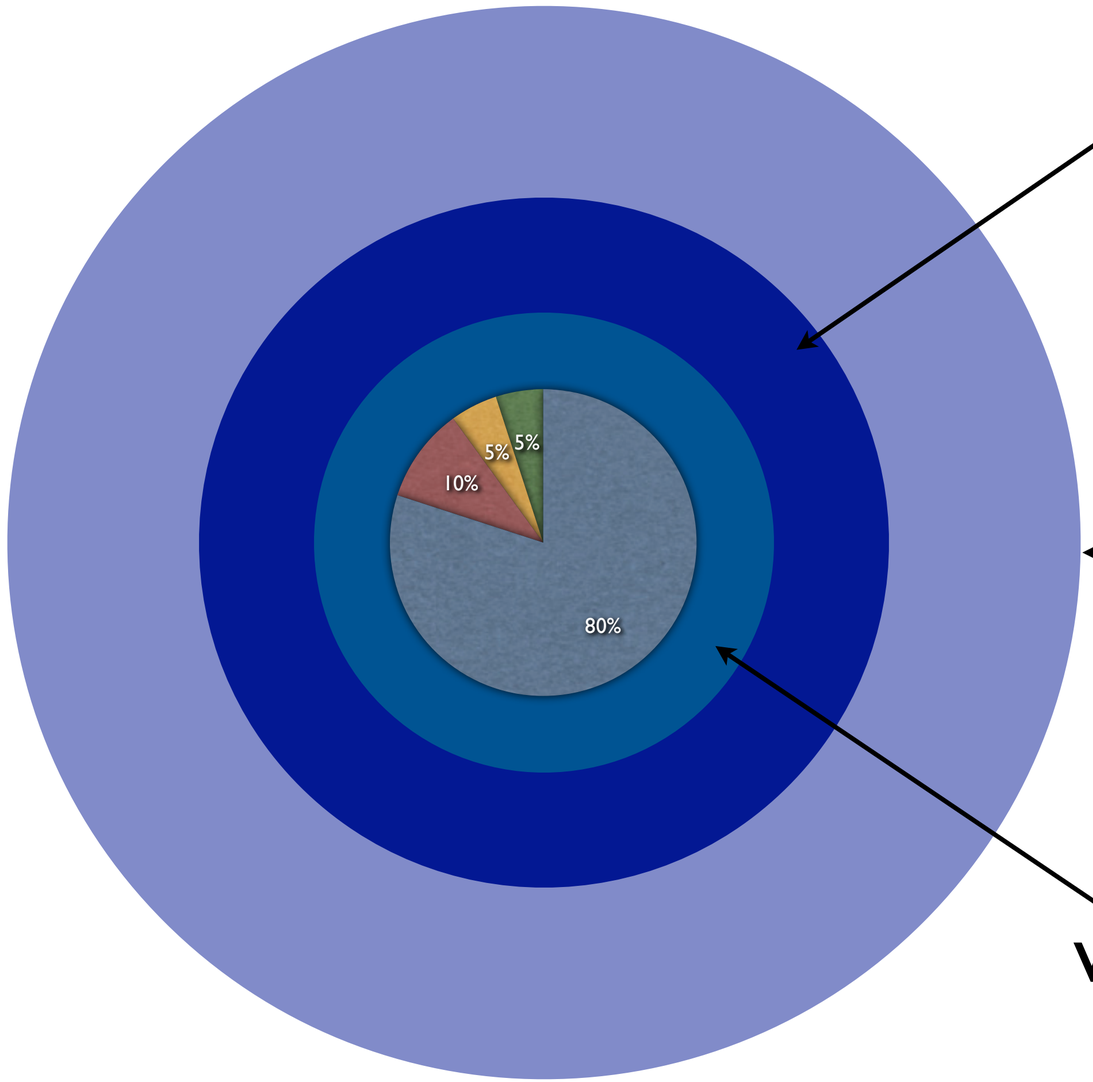
Beware of lock in

Messaging middleware market is stuck, stuck, stuck



RabbitMQ
Open Source Enterprise Messaging

What about everyone else's needs?



integration

cloud and virtualization

web applications and services

Meet the good guys

OPEN INTERNET PROTOCOLS - TCP, SCTP, HTTP, SMTP - EPIC WIN

- simple
- standard
- ubiquitous substrate
- no customisation needed
- no integration required from consultants
- maintenance is done by the vendor
- proven to outlast the lifetime of the average software company
- (and many banks)
- scales

The world is getting more open every day

- <u>Then:</u>
- Imagine if we had no TCP and had to use ‘IBM NetSphere’
- Imagine if we had no HTTP and had to use ‘Microsoft Home Network’
- Imagine if we had no SMTP email and had to pay per message like SWIFT

- <u>Now:</u>
- Imagine if we had no XMPP chat and had to use .. oh, wait a minute :-(
- AMQP - business messaging - like email but you can send money over it

	unreliable	reliable
async	SMTP	?
sync	HTTP	IIOP

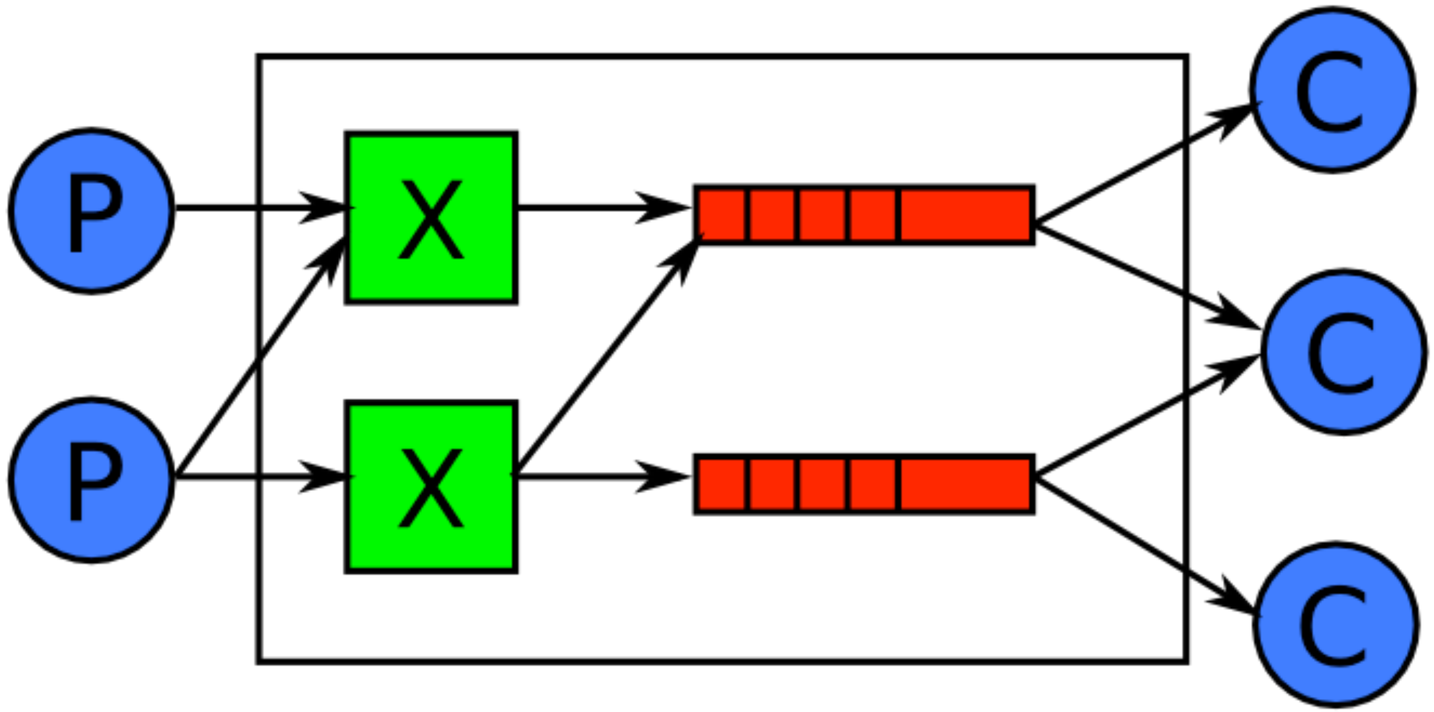
What goes in here will clean up if it is OPEN, UBIQUITOUS, & ADAPTABLE

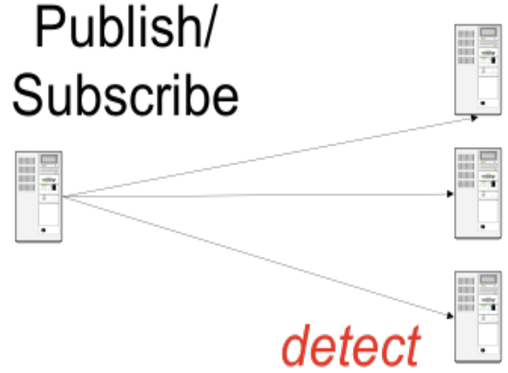
Some key AMQP messaging protocol requirements

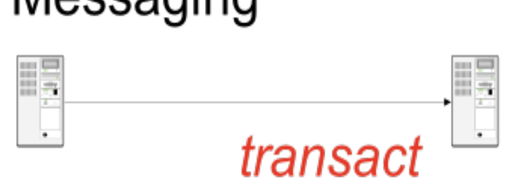
- Internet protocol - like HTTP, TCP - but ASYNCHRONOUS

- WHERE TO SEND MESSAGES (Routing)
- HOW TO GET THERE (Delivery)
- WHAT GOES IN MUST COME OUT (Fidelity)

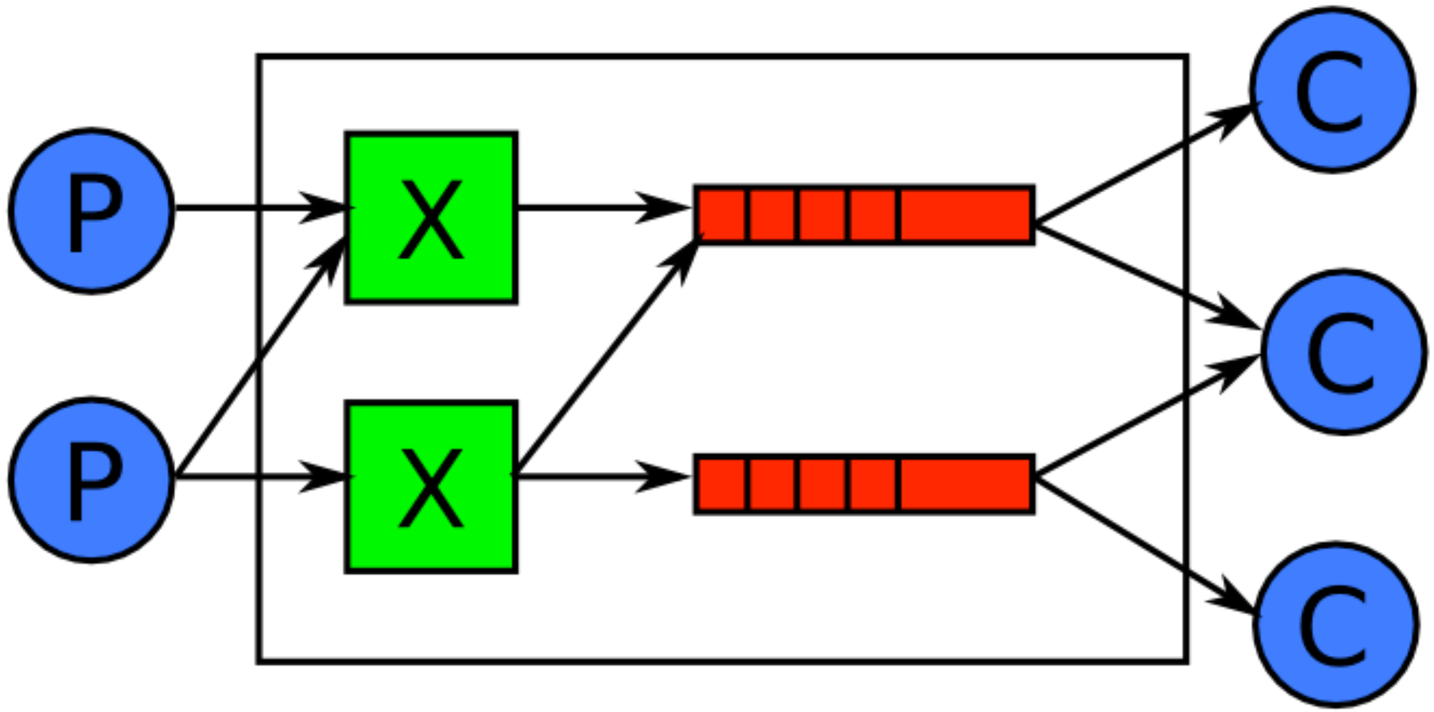
AMQP in a nutshell







AMQP lets you program message flows dynamically



Each message is stateless

Consumers create queues; these buffer messages for push to consumers

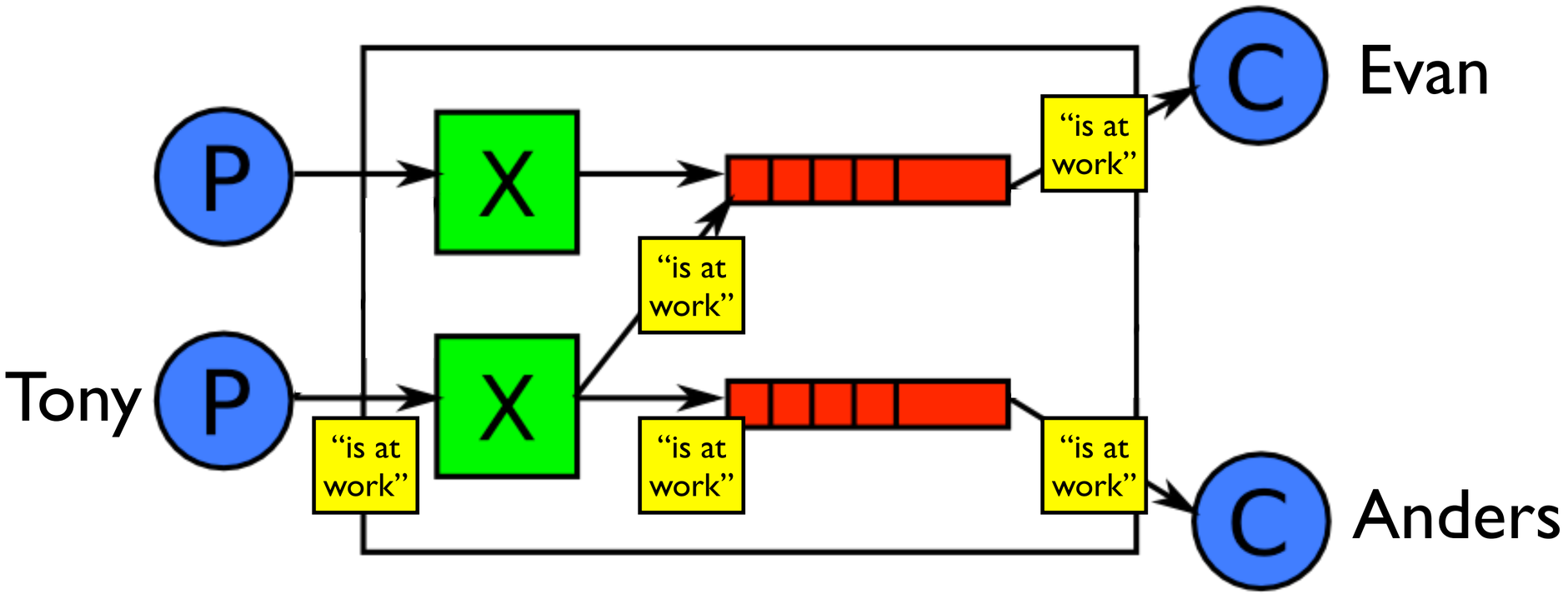
Queues are stateful, ordered, and can be persistent, transient, private, shared. Exchanges are stateless routing tables.

Consumers tell queues to bind to named exchanges; each binding has a pattern e.g. “tony” or “*.ibm.*”

Producers send messages to exchanges with a routing key e.g. “tony”, or ordered set of keys e.g. “buy.ibm.nyse”

Exchanges route messages to queues whose binding pattern matches the message routing key or keys

Example: using bindings for twitter style pubsub message flow



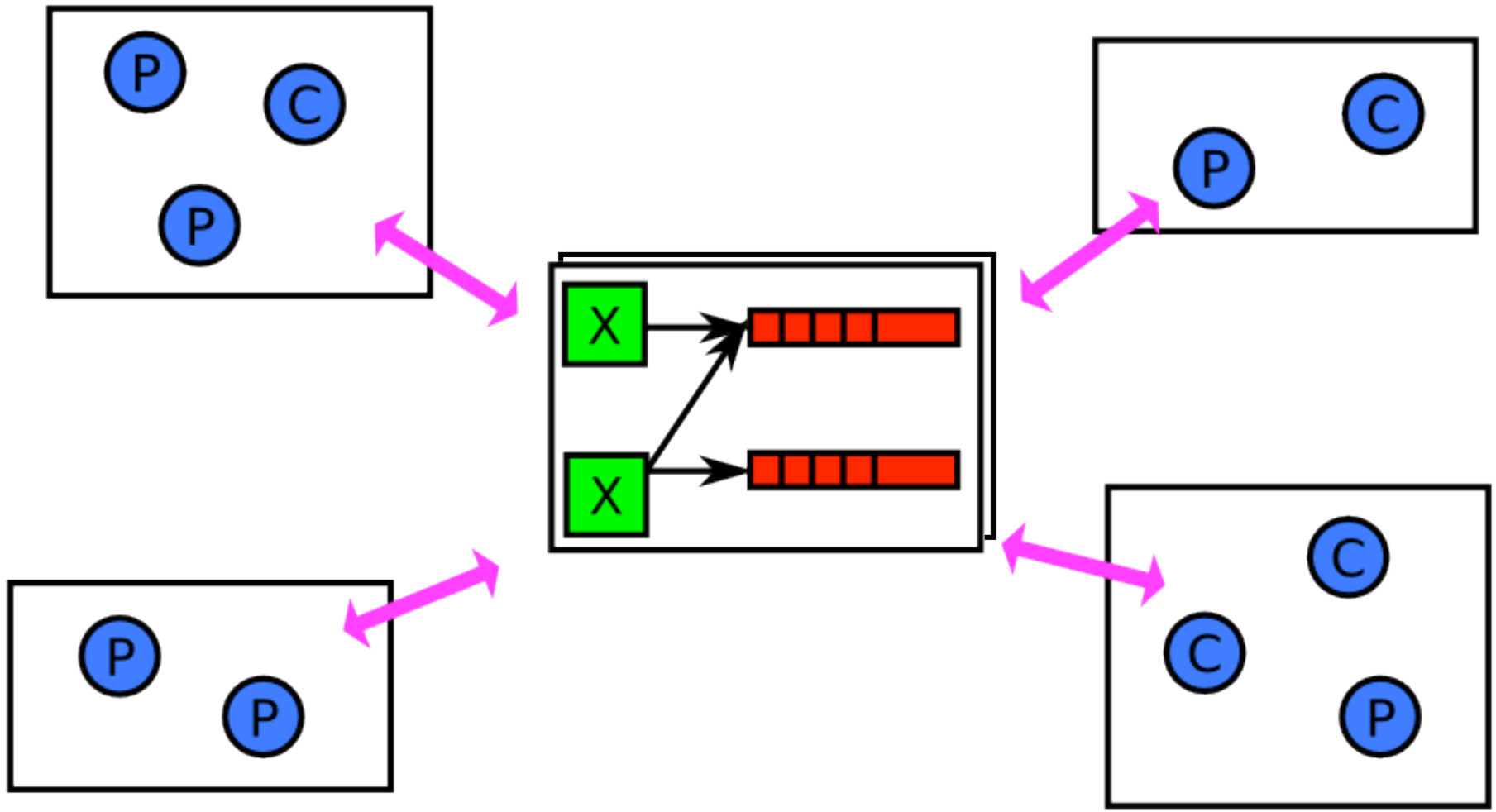
Evan and Anders want to follow what Tony says. They can follow Tony by binding their queues to a RabbitMQ exchange, using the pattern "tony".

Tony publishes the message "is at work" to the same RabbitMQ exchange, using the routing key "tony".

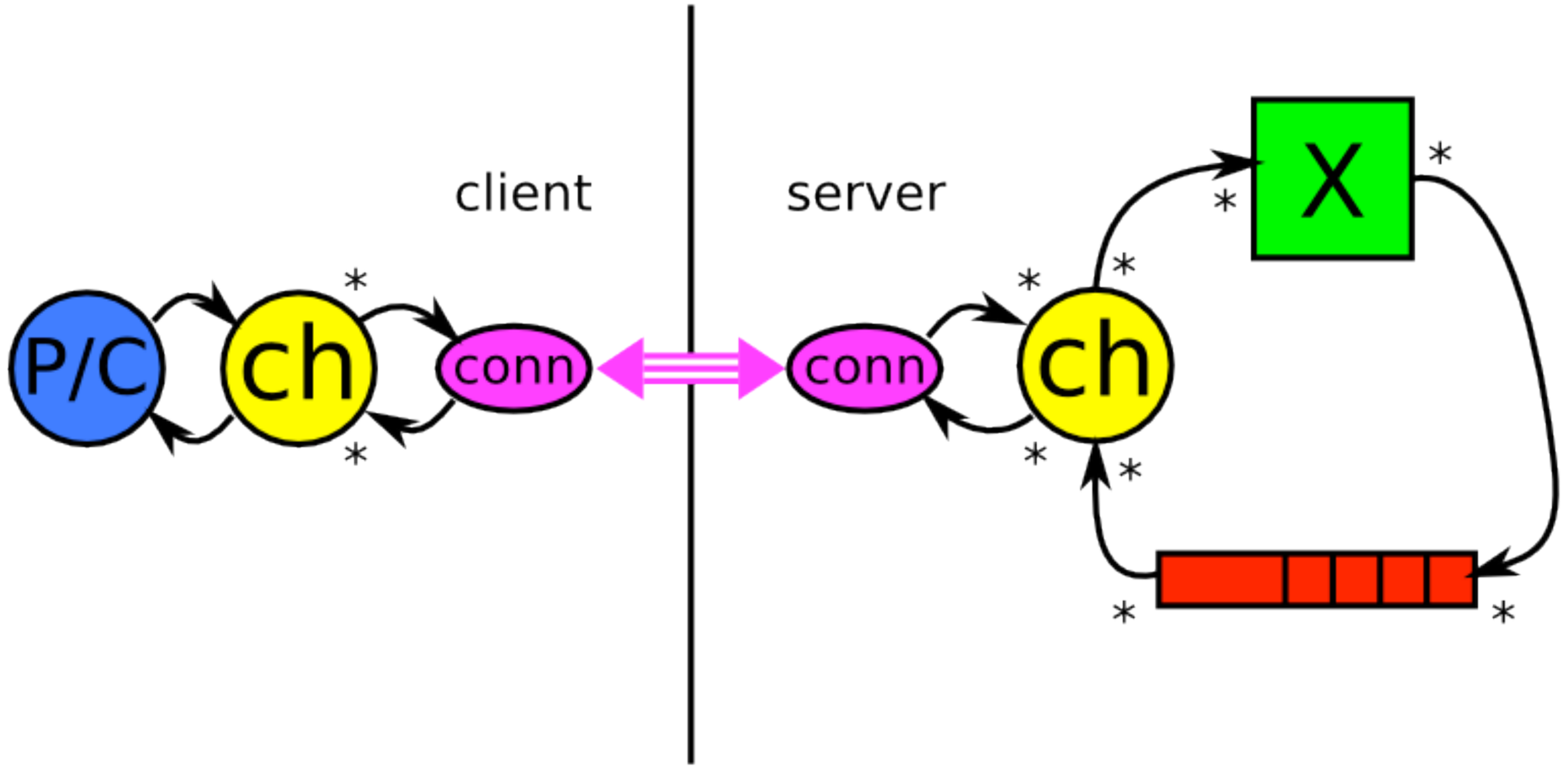
The exchange updates Evan's and Anders' queues accordingly, for subsequent consumption by their client applications.

Many other patterns are possible e.g. for filtering by topic similar to this: http://jchris.mfdz.com/posts/64

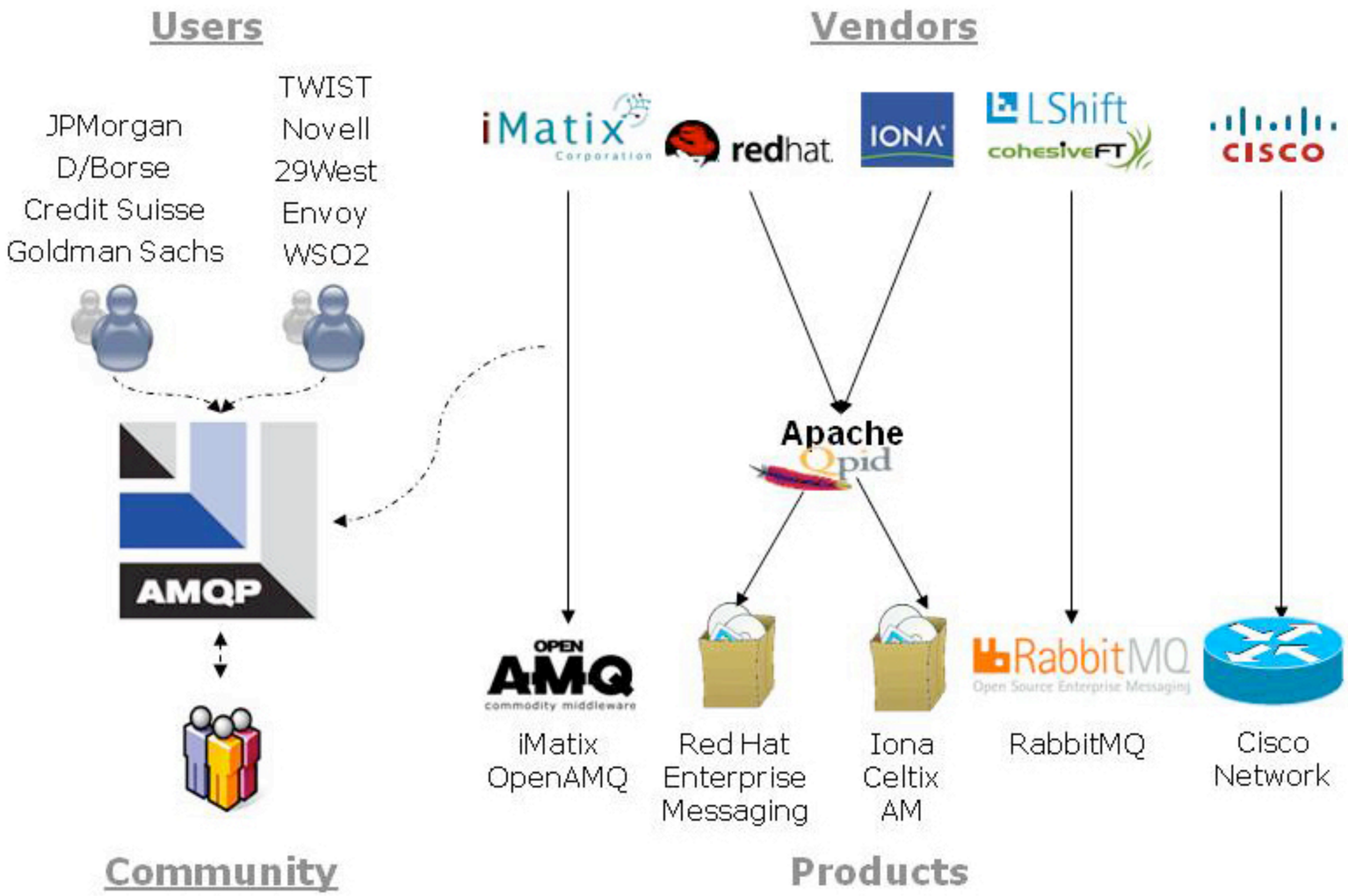
Producers and consumers logically interact through a broker cloud



Critical path == logical path



Developed by a Working Group of Users (yay!) as well as Vendors (boo....)



RabbitMQ

RabbitMQ

Open Source Enterprise Messaging

News Download Documentation Examples Services FAQ

RabbitMQ is an implementation of AMQP, the emerging standard for high performance enterprise messaging.

Features	Distribution
A complete, conformant and interoperable implementation of the published AMQP specification	RabbitMQ server, written on top of the widely-used Open Telecom Platform
Based on a proven platform, offering exceptionally high reliability, availability and scalability	RabbitMQ clients, supporting multiple programming languages, including a Java client API to AMQP
Good throughput and latency performance that is predictable and consistent	Platform-neutral distribution, plus platform-specific packages and bundles for easy installation
Compact, easily maintainable code base, for rapid customisation and hot deployment	Several user-contributed packages that extend the core RabbitMQ functionality
Extensive facilities for management, monitoring, control and debugging	Extensive documentation, several demos and examples, and a functional/performance test suite
Licensed under the open source Mozilla Public License	Download Now!

RabbitMQ is a complete and highly reliable Enterprise Messaging system. The RabbitMQ client libraries and broker daemon can be used together to create an AMQP network, or used individually to bring the benefits of RabbitMQ to established networks.

Packages/installers are available for all major operating systems and platforms. RabbitMQ can also be deployed as a VMWare/Debian virtual appliance.

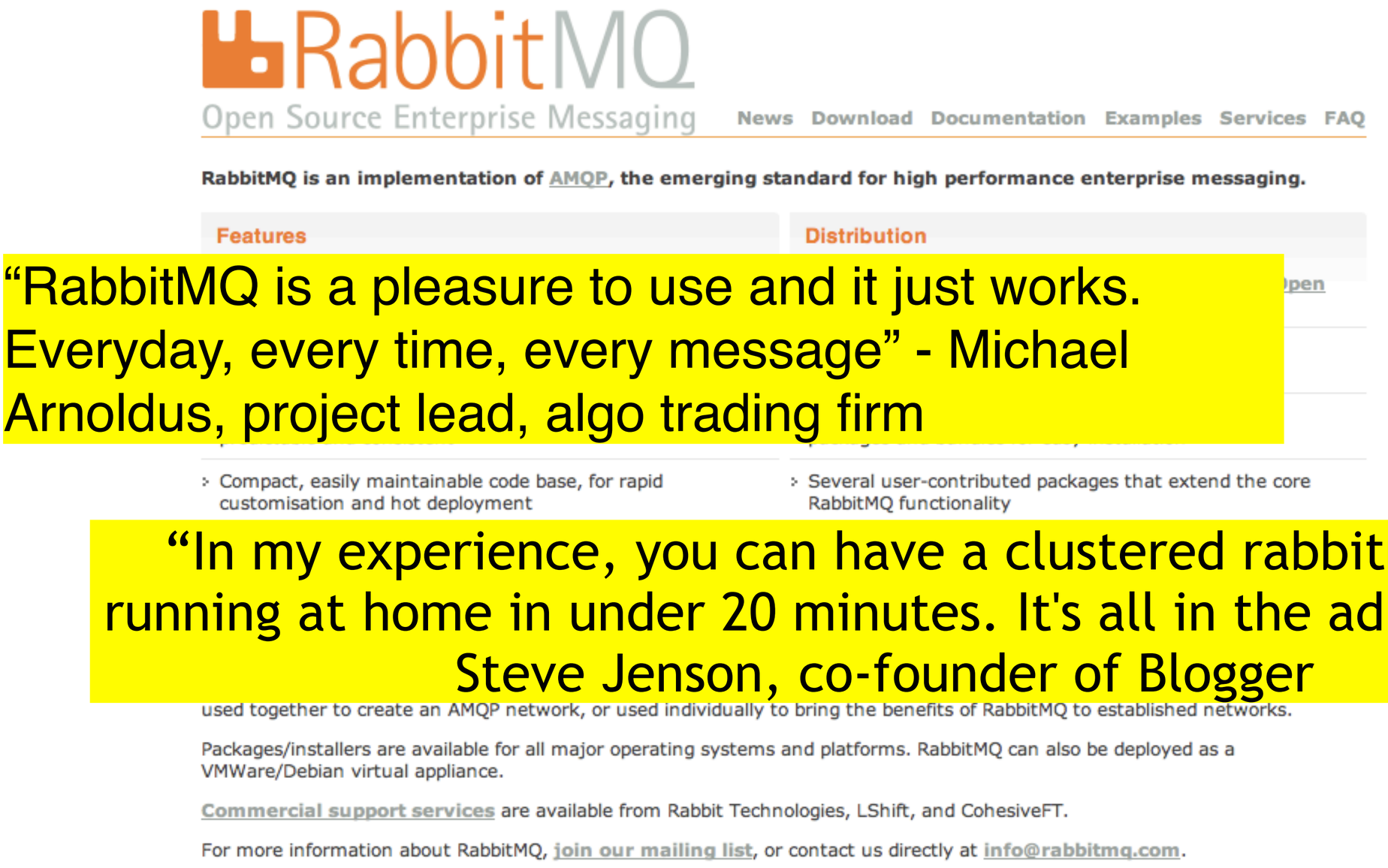
Commercial support services are available from Rabbit Technologies, LShift, and CohesiveFT.

For more information about RabbitMQ, join our mailing list, or contact us directly at info@rabbitmq.com.

RabbitMQ

Open Source Enterprise Messaging

RabbitMQ - NOM NOM NOM

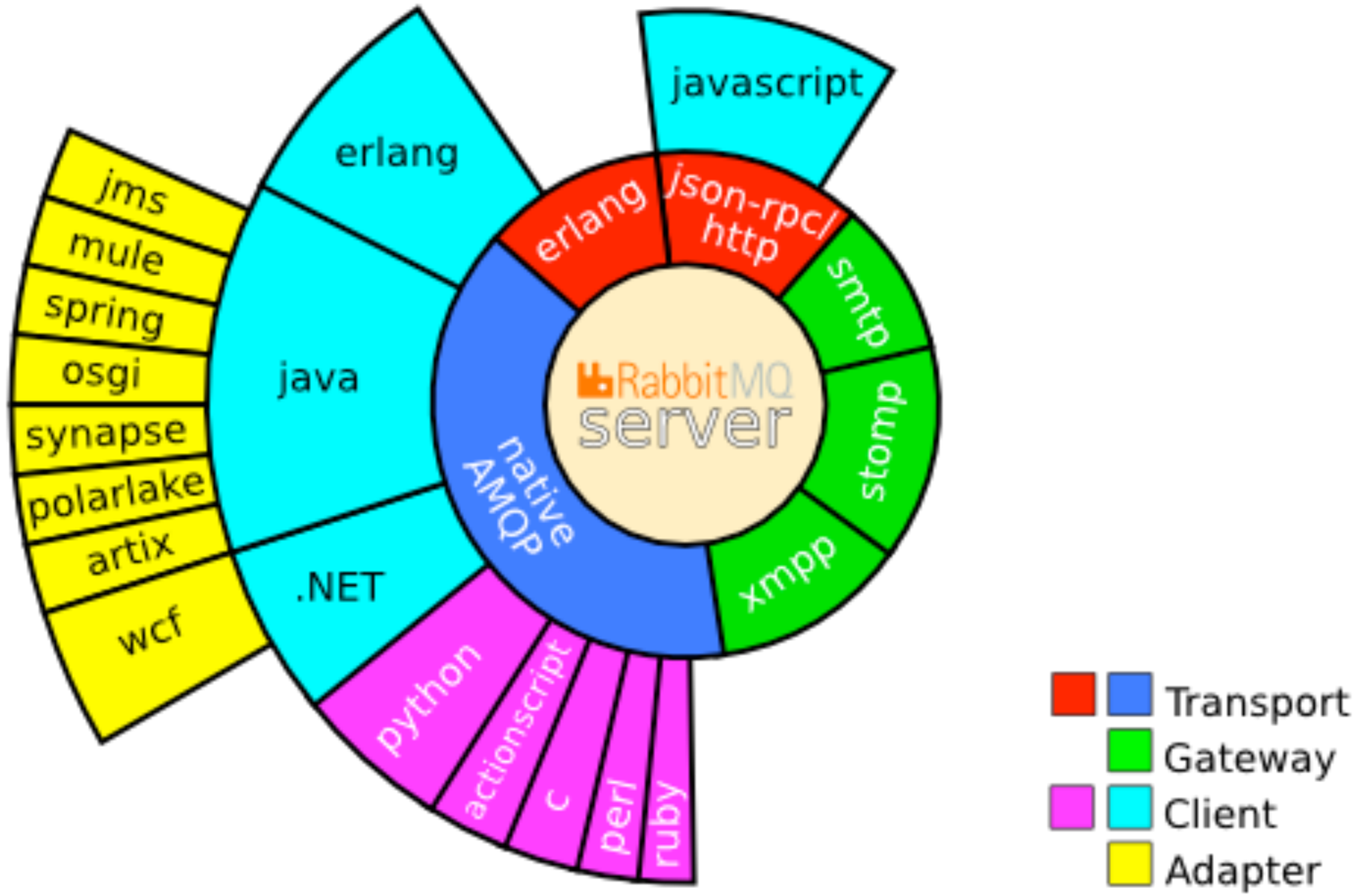


"RabbitMQ is a pleasure to use and it just works. Everyday, every time, every message" - Michael Arnoldus, project lead, algo trading firm

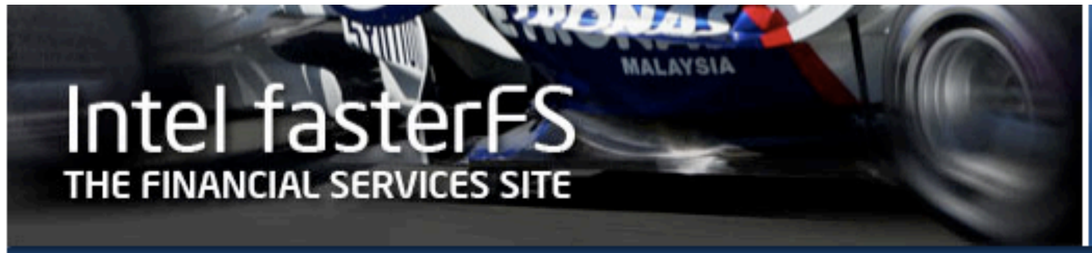
"In my experience, you can have a clustered rabbitmq setup running at home in under 20 minutes. It's all in the admin guide." Steve Jenson, co-founder of Blogger

RabbitMQ
Open Source Enterprise Messaging

RabbitMQ is for everyone



RabbitMQ is fast



Intel® Software Partner Program
Find out more and sign up

Intelligence in Finance
Subscribe to our newsletter

TRADING

- Trading
  - Industry comment/news
  - Research & Benchmarks
  - Customer Stories
  - Partners
- Risk
- Supply Chain
- Multi-Channel
- Core Banking
- Technology

HOME

INTEL LOW LATENCY TRADING LAB SET TO IMPROVE FINANCIAL TRADING PERFORMANCE

PROVING GROUND FOR FASTER TRADING HARDWARE AND SOFTWARE YIELDS FIRST RESULTS, OFFERS PROSPECT OF FURTHER GAINS

London, United Kingdom, Nov 14, 2007 – The quest for greater speed and lower latency trading in the financial services sector is set for a major boost due to a new initiative from Intel® Solution Services, the Intel Low Latency Trading lab. Using non-proprietary, standards-based technologies is already known to reduce maintenance and integration costs. However, solutions architects at Intel's Low Latency Lab in London, have shown that optimising financial messaging for Intel server technologies such as Intel® I/O Acceleration Technology 2 (Intel I/OAT2) is also capable of delivering greater trading performance on major financial messaging technologies including Options Price Reporting Authority (OPRA) feed, Financial Information eXchange (FIX) Protocol Limited's FAST data compression and the Advanced Message Queuing Protocol (AMQP) protocol over TCP/IP for message transport.

NEWS

Intel Low Latency Trading
Lab Set
Financia
Perform

TABB G
$300 Mi
on Low-
Infrastr

Reuters
System
High ›

Preparir
Introduc
technol

Pushing
boundar
Street ›

News Ar

PODCAST

twitter

Just slammed RabbitMQ with a ton of messages and it handled it like a champ. I think I've got the right tools for this job today.

about 19 hours ago from web

binary42
Brian Mitchell

STOP - LOOK - LISTEN - THINK

(CC) Javic @flickr.com

STOP - LOOK - LISTEN - THINK

- Clustered, highly available messaging is complex - don't build this at home
- Get RabbitMQ - it takes a couple of minutes to set up and JUST WORKS
- RabbitMQ began in 2006 - first release Feb 2007 - four more releases since
- Complete, conformant and interoperable implementation of the AMQP spec
- RabbitMQ is FREE to use - open source MPL license - prolific
- SUPPORTED commercially
- "Ready to run" bundles install in minutes on most platforms (and the cloud)
- Several extensions - HTTP, STOMP, XMPP, ... (PB?)

Show me some !!@ link love

- http://www.rabbitmq.com (product, documentation and mailing list)
- http://hg.rabbitmq.com/ (open source repositories)
- Run RabbitMQ right now on EC2 or a VM: http://es.cohesiveft.com/site/rabbitmq
- Jump page for Ruby and Python fans: http://github.com/tmm1/amqp/tree/master
- Introduction to AMQP, use cases and RabbitMQ community, from Dmitriy Samovskiy of the CohesiveFT Elastic Server team: http://www.slideshare.net/somic/introduction-to-amqp-messaging-with-rabbitmq/
- Infovore: http://del.icio.us/alexisrichardson/rabbitmq
- What people are saying: http://search.twitter.com/search?q=rabbitmq and IRC #rabbitmq on freenode
- RabbitMQ blogs: http://www.lshift.net/blog/category/lshift-sw/rabbitmq/ has detail from today on AMQP, erlang, and XMPP. Then http://hopper.squarespace.com/blog/category/amqp has many client examples
- AMQP 1.0 users charter and scope: http://jira.amqp.org/confluence/display/AMQP/User+SIG and background interviews: http://www.interopnews.com/analysis/can-amqp-break-ibms-mom-monopoly-part-1.html ... and some experimental community work: http://wiki.amqp.org/

Join the project!