

## Interoperability Through Community

Apache Stonehenge  
AMQP & Apache Qpid

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Apache  
CON

Kent Brown, Product Manager, Microsoft

# APACHE STONEHENGE



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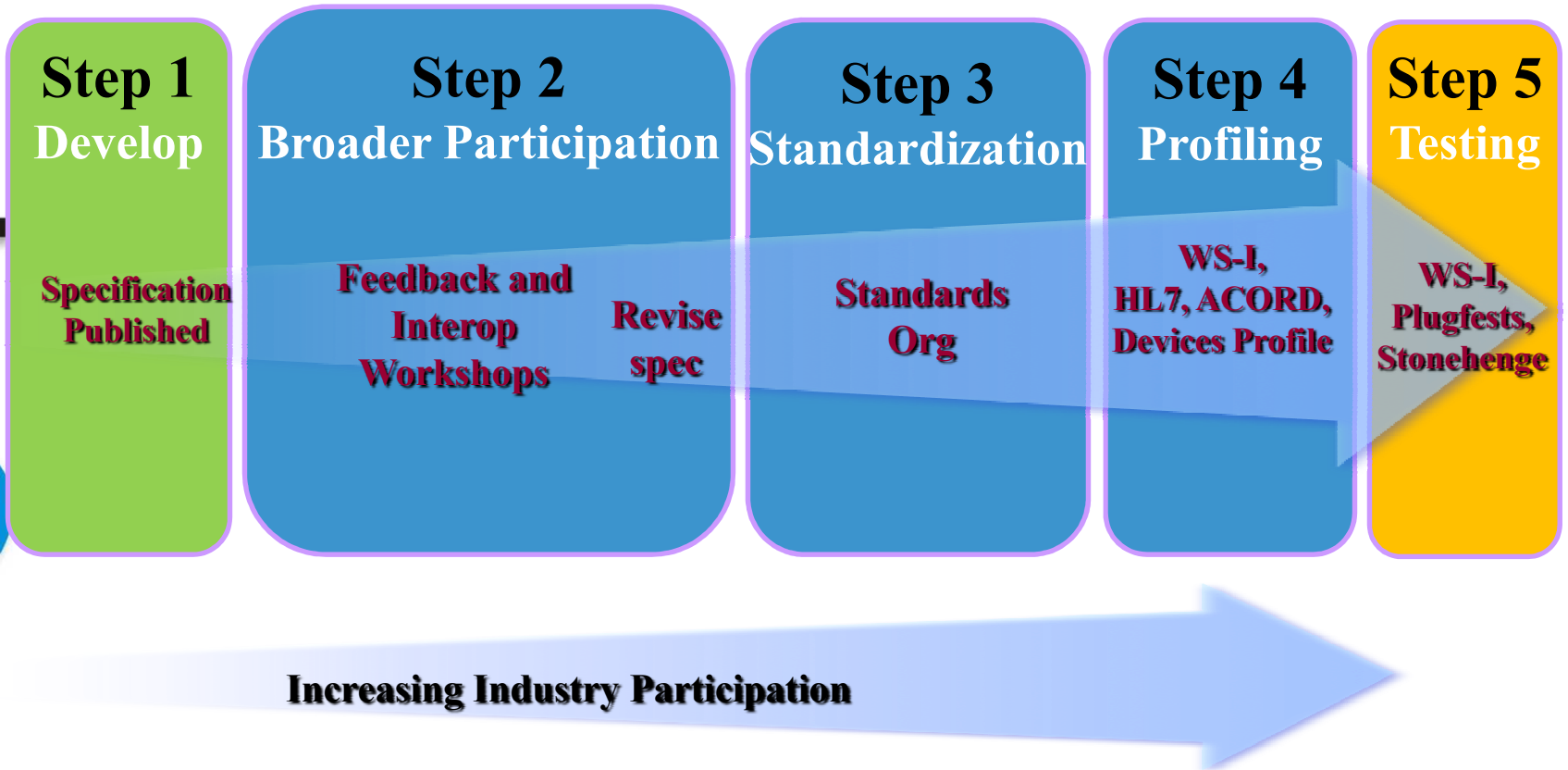
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## WS-\* Core Standards

WS-ReliableMessaging 1.2	OASIS Standard	5 February 2009
WS-Coordination 1.2	OASIS Standard	5 February 2009
WS-AtomicTransaction 1.2	OASIS Standard	5 February 2009
WS-Security 1.0 / 1.1	OASIS Standard	March 2004 / 1 February 2006
WS-SecureConversation 1.4	OASIS Standard	5 February 2009
WS-Trust 1.4	OASIS Standard	5 February 2009
WS-Policy 1.5	W3C Recommendation	4 September 2007
WS-Addressing 1.0	W3C Recommendation	9 May 2006
SOAP 1.2	W3C Recommendation	24 June 2003*
WSDL 1.1	W3C Note	15 March 2001
SOAP MTOM	W3C Recommendation	25 January 2005



## WS-\* Specification Process



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# Project Stonehenge



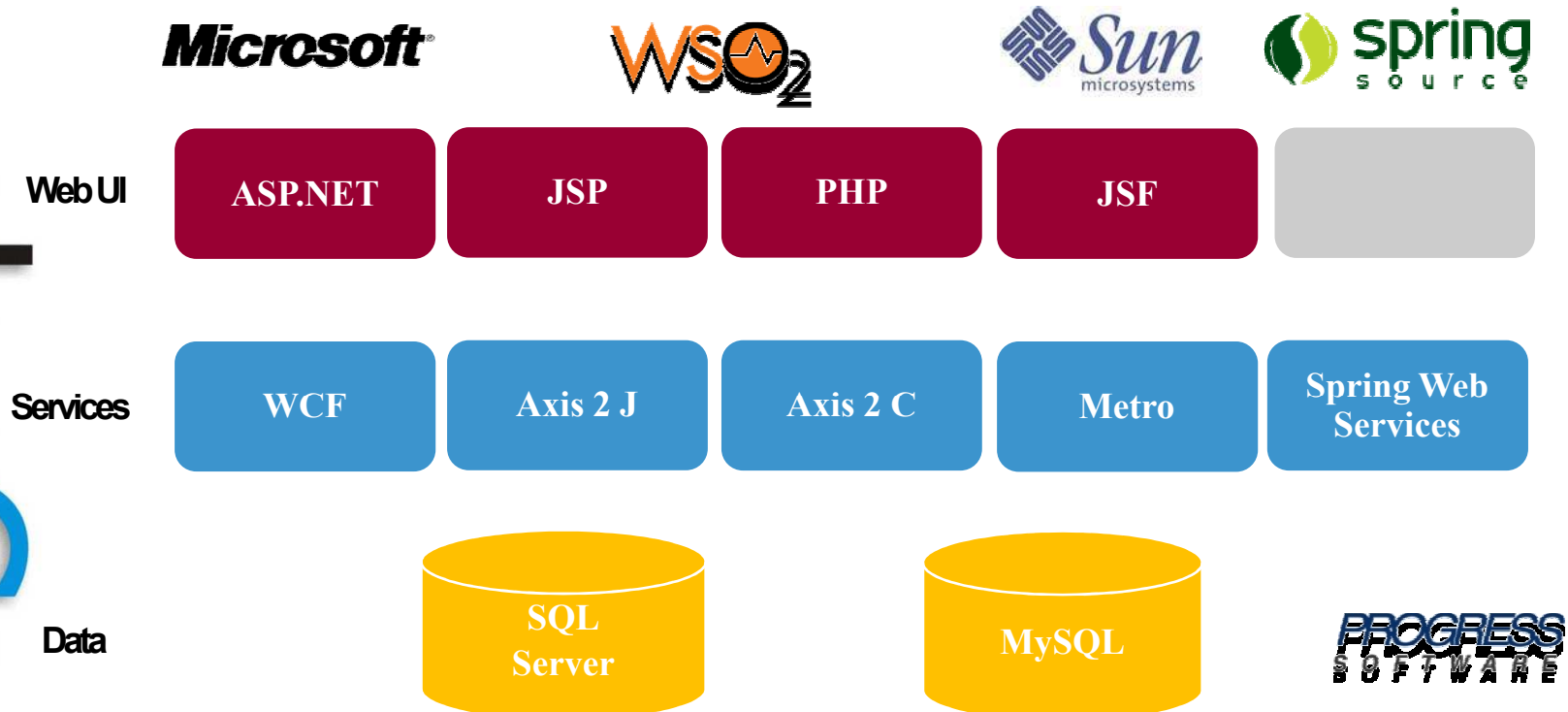
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## Stonehenge Goals

- Open, community-driven interoperability testing
- Real-world interoperability scenarios
- Practical interoperability guidance
- The place to go when you are stuck



## StockTrader



<http://cwiki.apache.org/STONEHENGE/index.html>



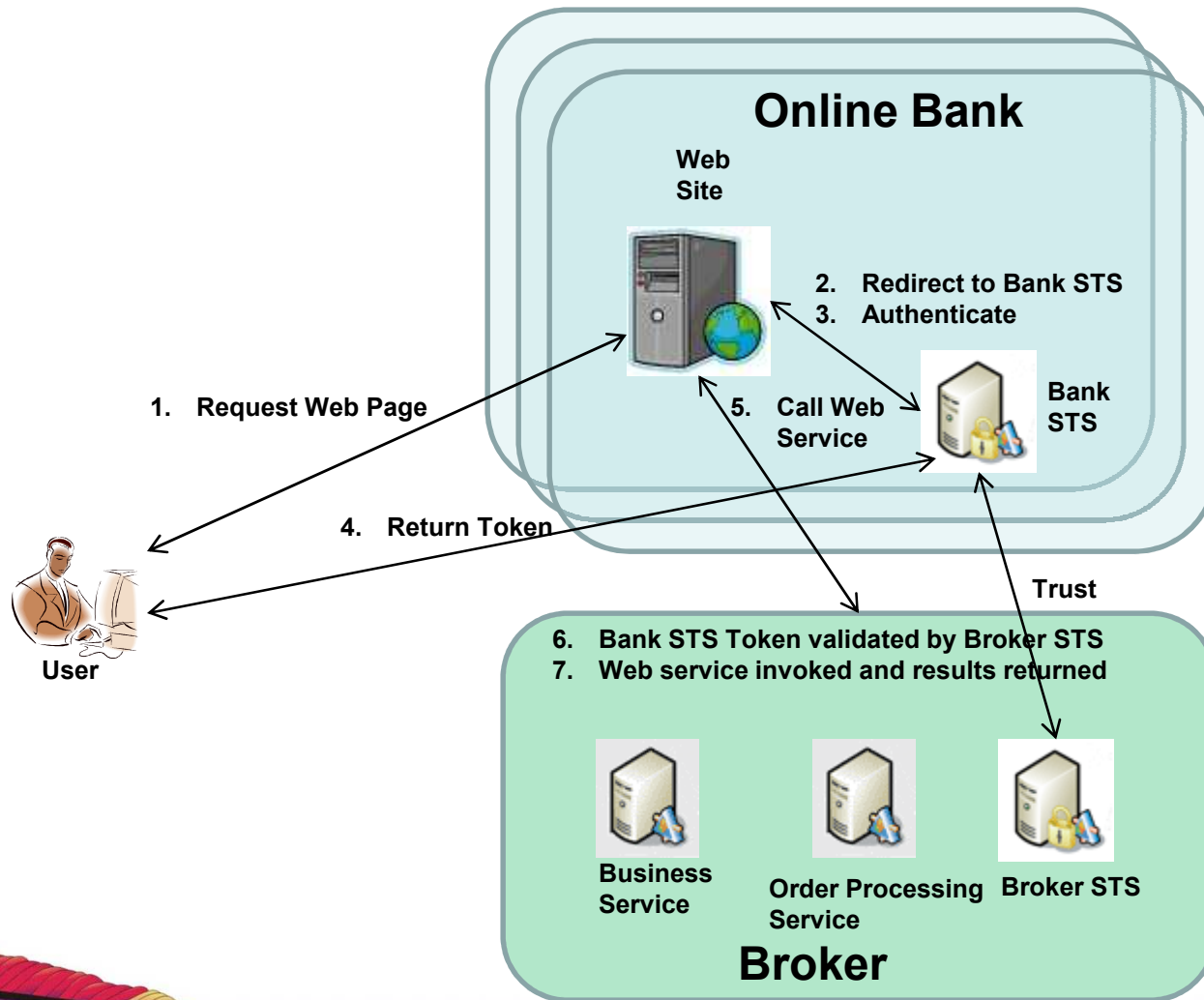


## Evolution of Stonehenge

- Released M1
  - Got Microsoft and WSO2 versions cleaned up, packaged, tested, and documented
- Sun joined
- Spring Source joined
- Currently finishing M2
  - Added claims-based security
  - Updating to use latest versions of the specs



## Claims-based Security in M2



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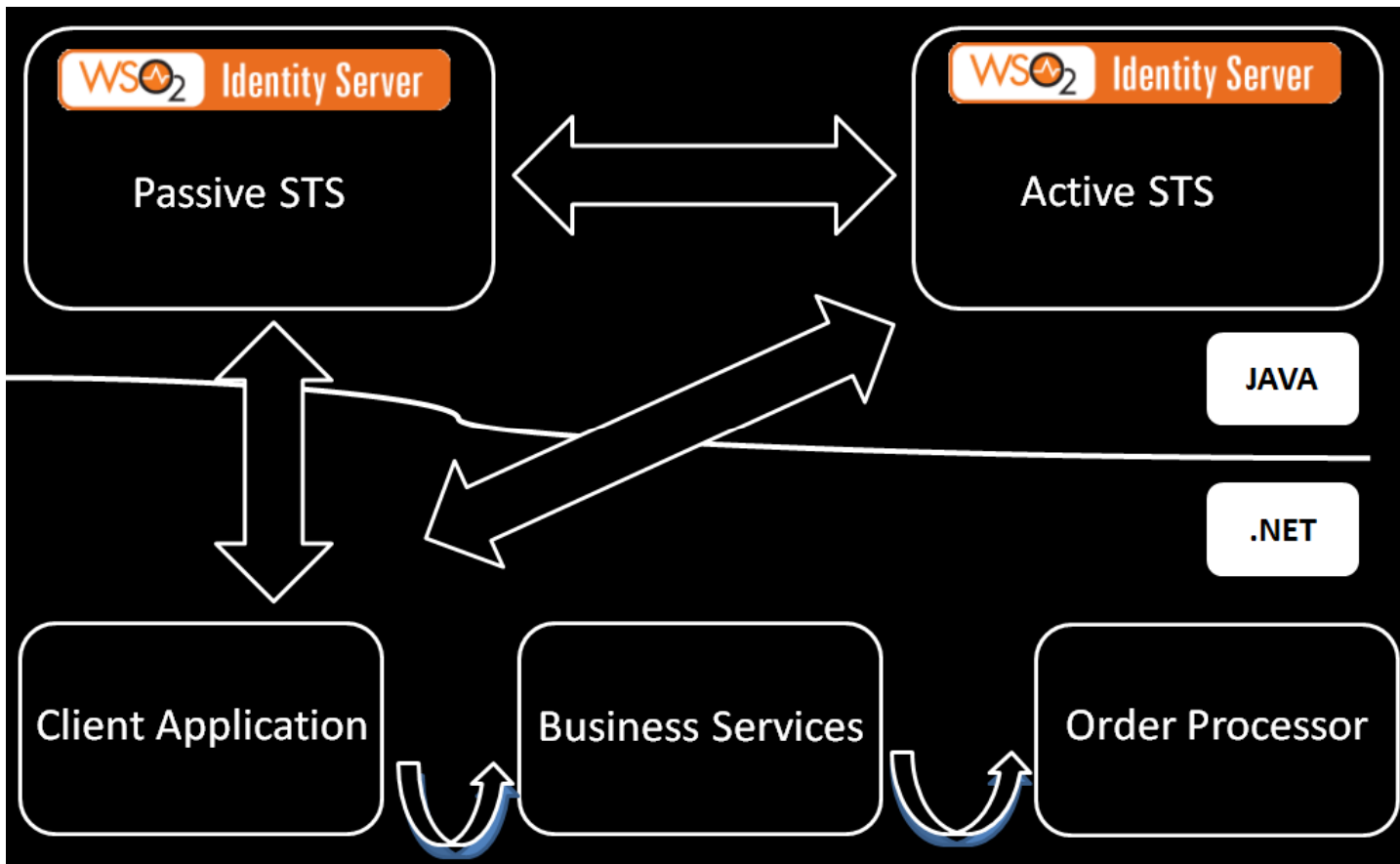
Prabath Siriwardena, Rampart/WSS4J, WSO2

## DEMO



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## Stonehenge Future

- Planning M3 – Making Interoperability easier for developers
  - Lightweight micro-samples
  - Targeted How-To documentation
  - Automated test harness
  - Open test results
- Beyond
  - New “Best Practices” sample app(s)
  - REST, AMQP, etc.
- Get Involved:  
<http://cwiki.apache.org/STONEHENGE>



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David Ingham, Program Manager, Microsoft

## AMQP & APACHE QPID



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## Message-oriented Middleware

- Common patterns
  - Message queuing
  - Publish/subscribe
  - Content-based routing
- Advantages
  - Loose coupling
  - Temporal decoupling
  - Load balancing
- Common usages
  - Application asynchrony
  - Integration
  - Event distribution
  - Event-driven architecture
  - Queued file transfer

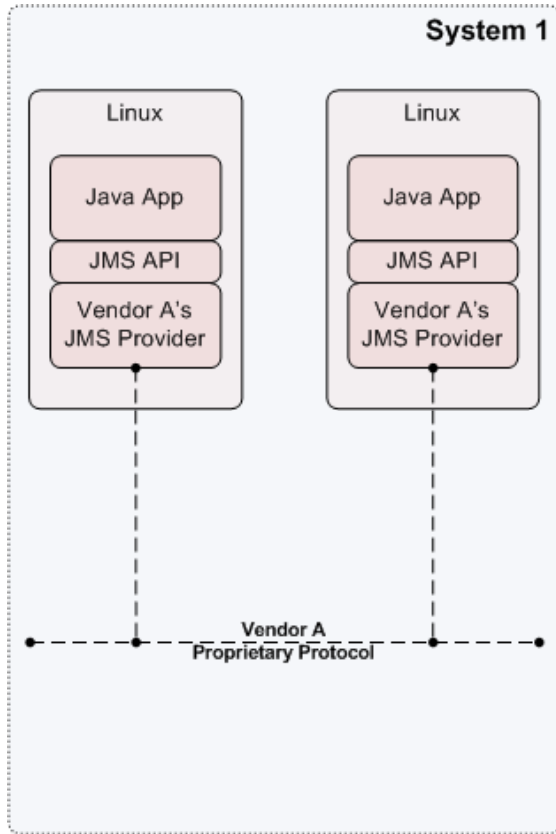
## MOM Interoperability

- Enterprises typically have a mix of technology platforms...
  - ...but messaging systems are often targeted to a single platform, e.g., JMS, MSMQ
- Enterprises typically have a range of messaging needs...
  - ...but messaging systems often target specific patterns, e.g., queuing or publish/subscribe

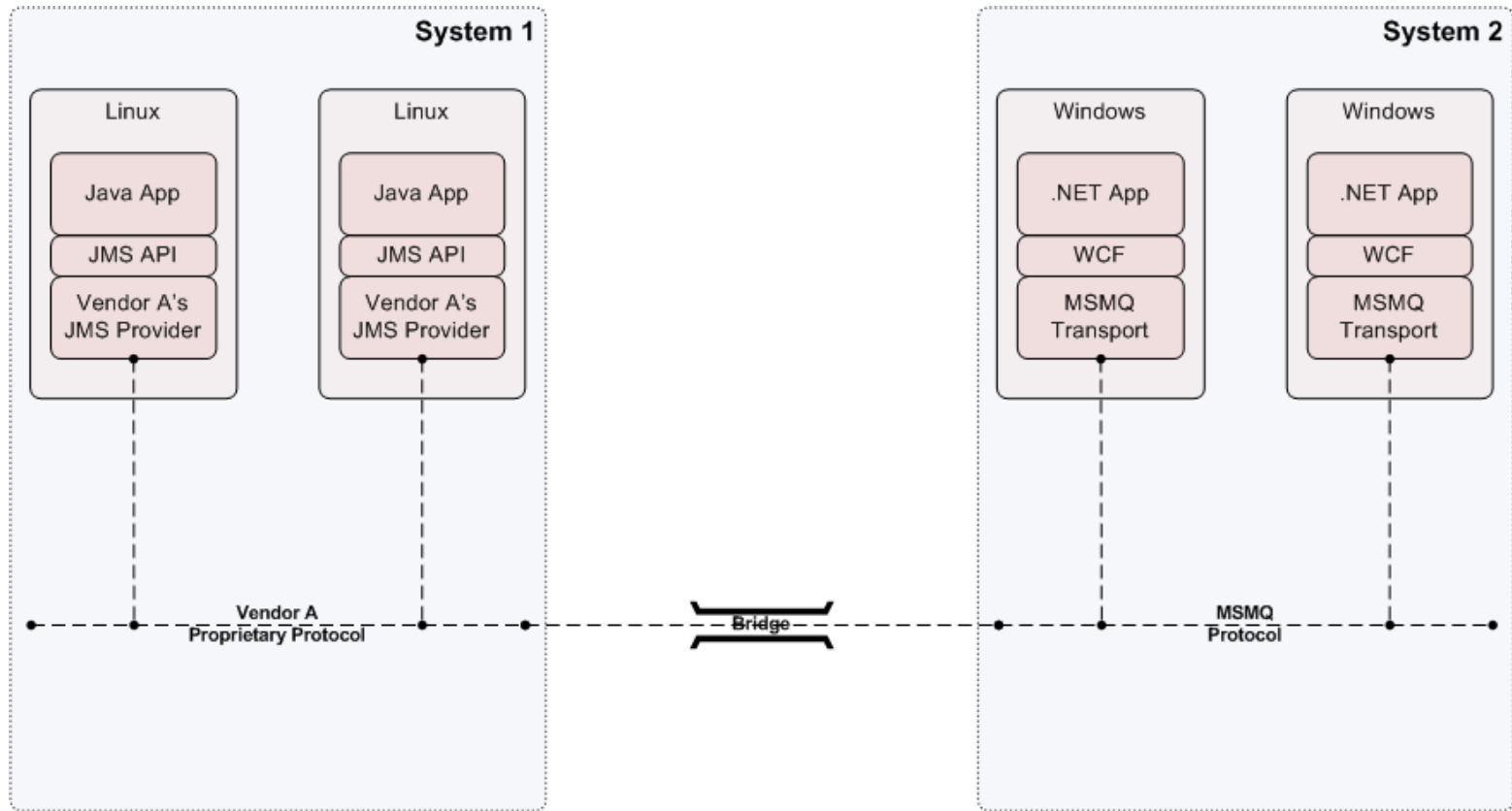




## MOM Islands



## Bridging the Gap

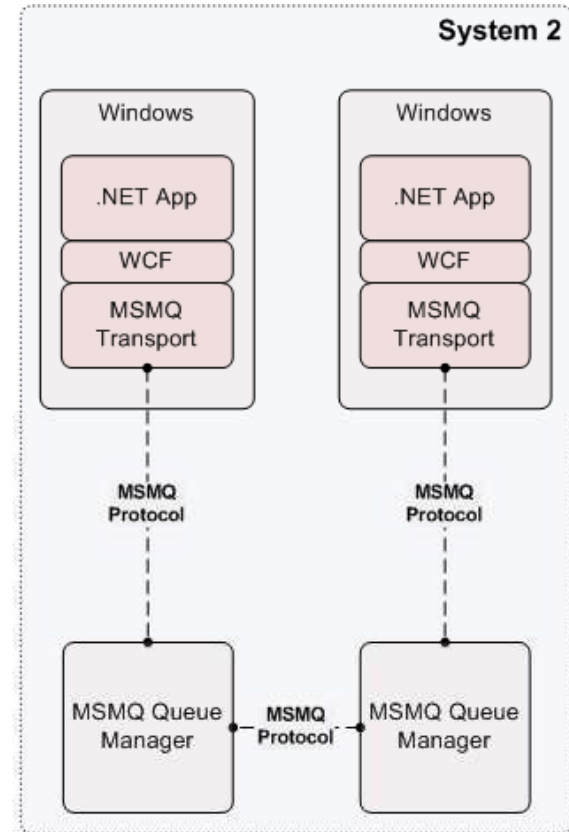
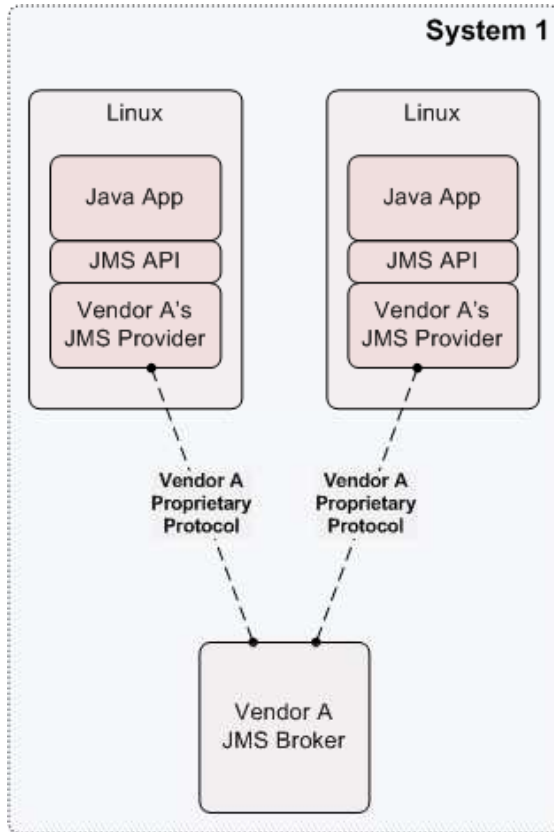


## Technical Challenges

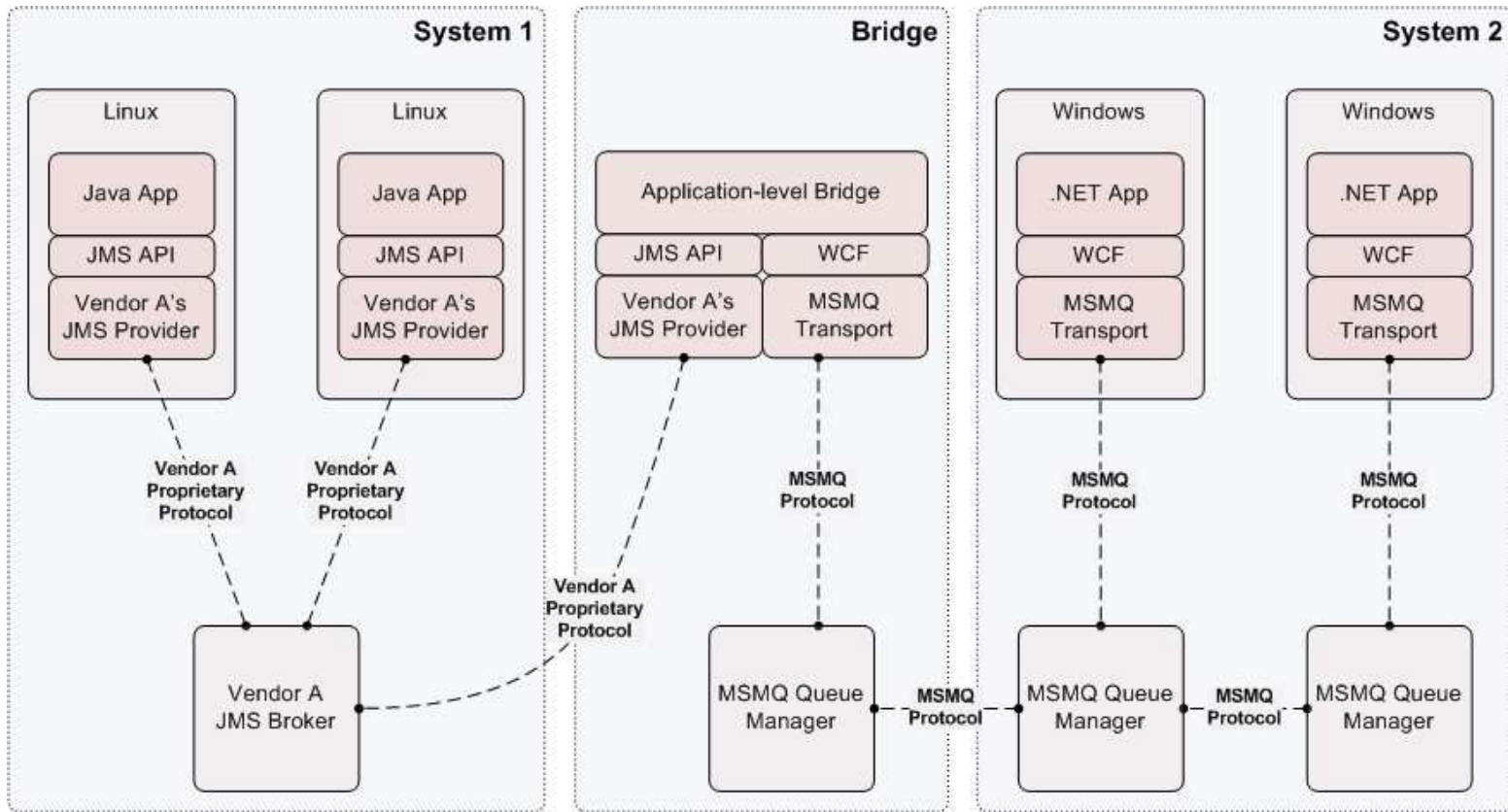
- Connecting the wires
  - Proprietary wire-level formats necessitate application-level bridging
- Mapping the payloads
  - Integrating existing messaging systems typically requires manipulation of the message payload
- Programming abstraction matching
  - Messaging system programming abstractions leak into message payloads and require mapping



## Under the Covers



## Application-level Bridging

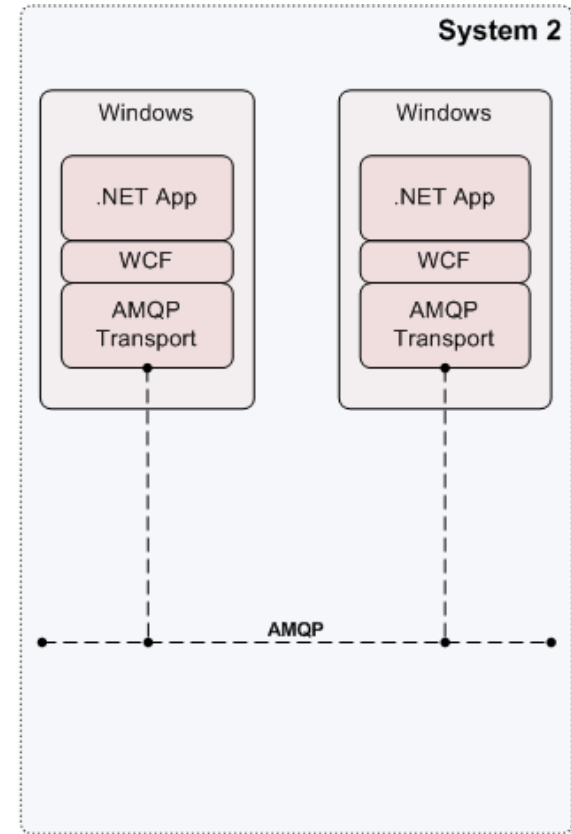
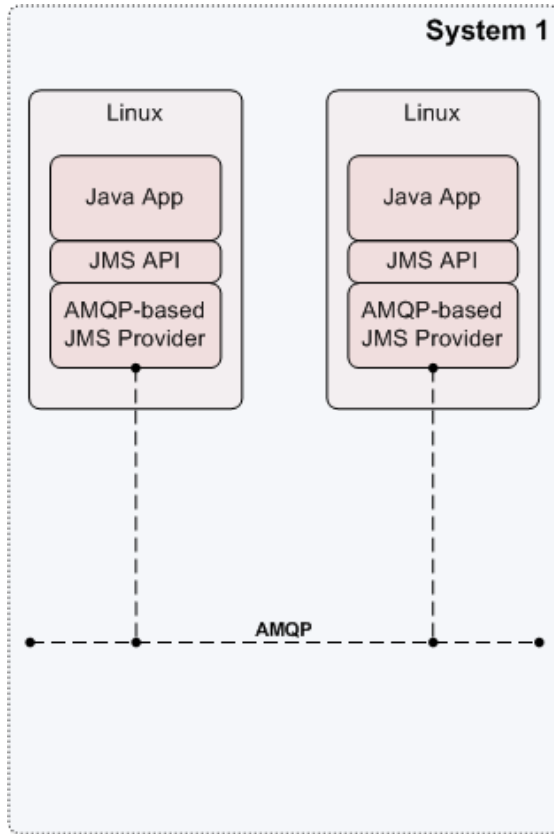


## Advanced Message Queuing Protocol

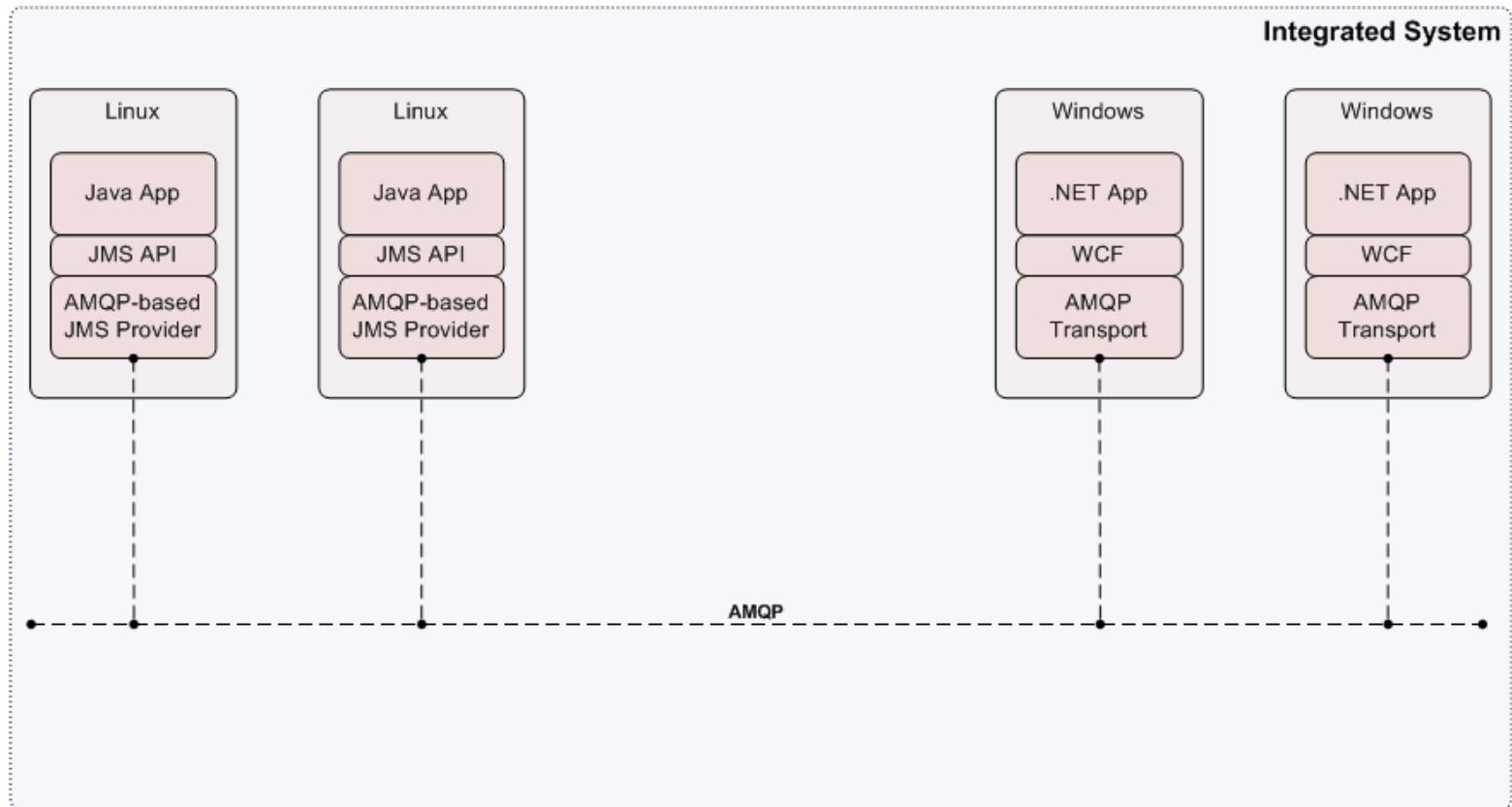
- AMQP Working Group set up by JPMorgan in 2006
  - Goal to make Message Oriented Middleware pervasive
  - Make it practical, useful, interoperable
  - Bring together users and vendors to solve the problem
- A standardized binary wire-level protocol for MOM
  - Symmetric – client-to-broker & broker-to-broker
- Scope
  - Queuing with strong delivery assurances
  - Event distribution with flexible routing
  - Large message capability (gigabytes)
  - Global addressing scheme (email-like)
  - Meet common requirements of mission-critical systems
- Allows heterogeneous clients to connect at full fidelity without bridging



## Standardizing the Wire

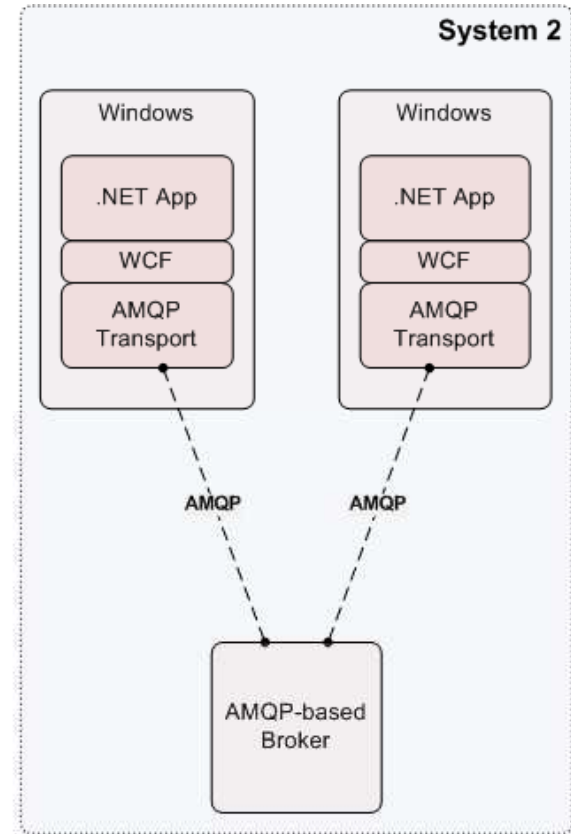
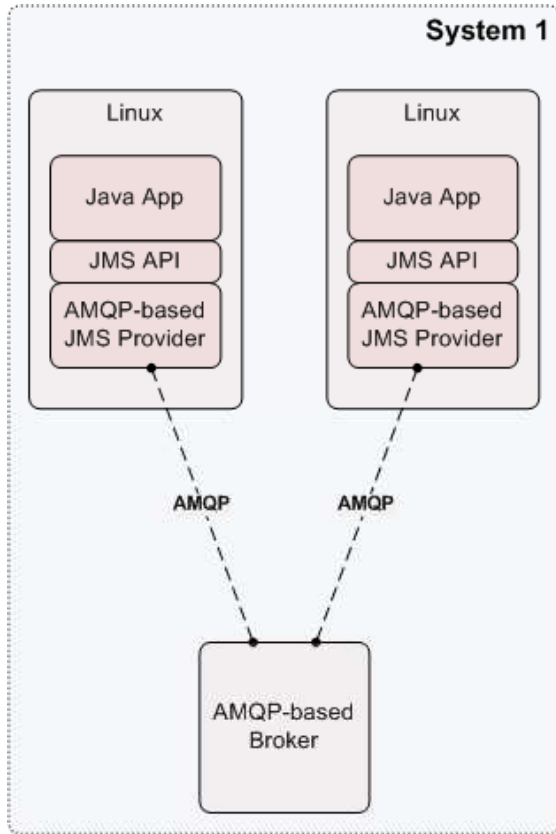


## Seamless Connectivity

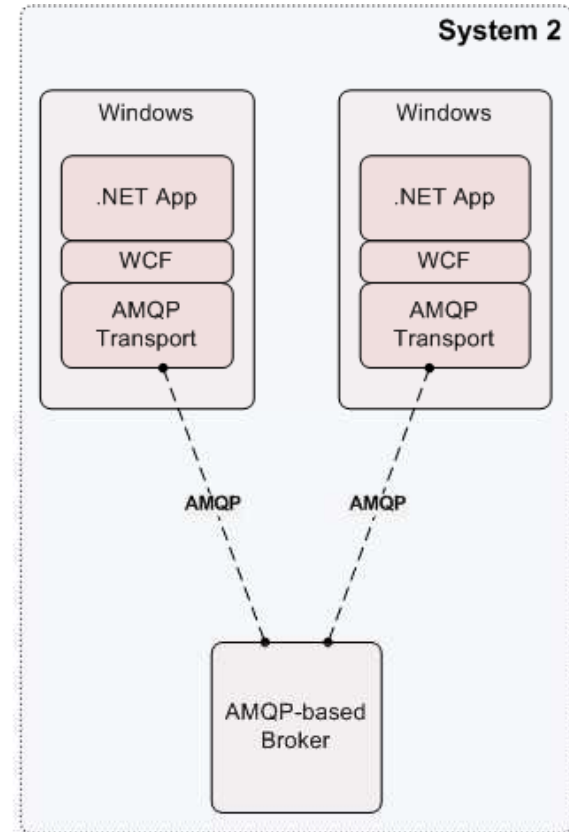
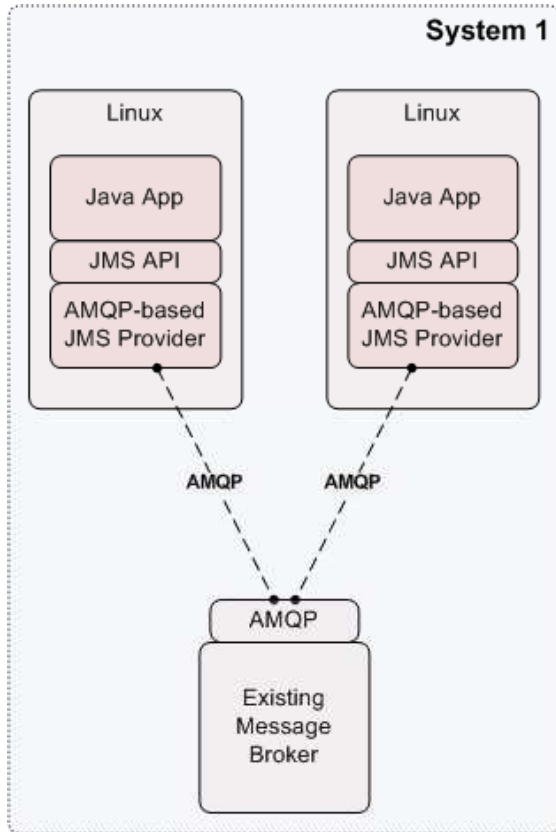




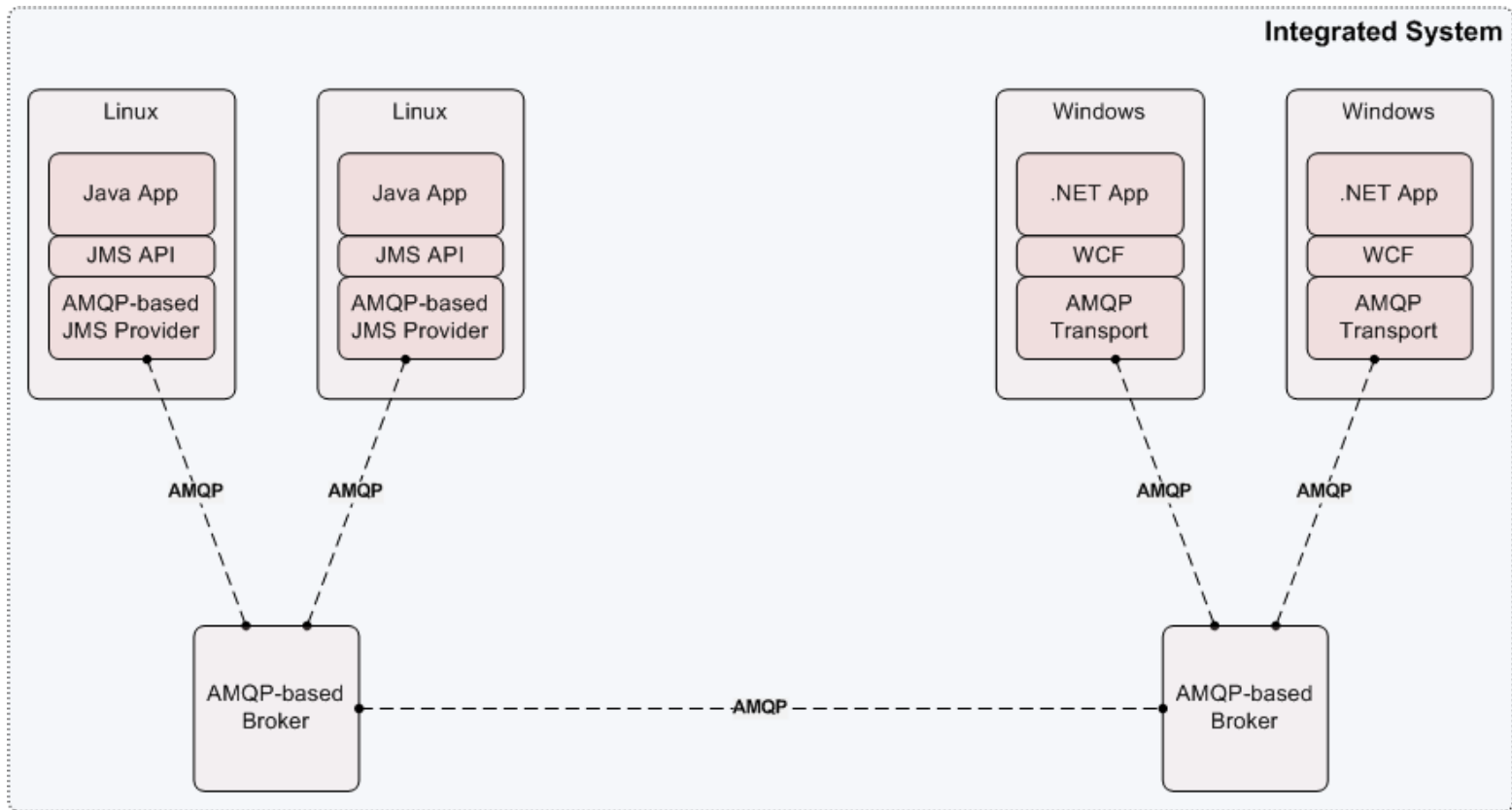
## Under The Covers



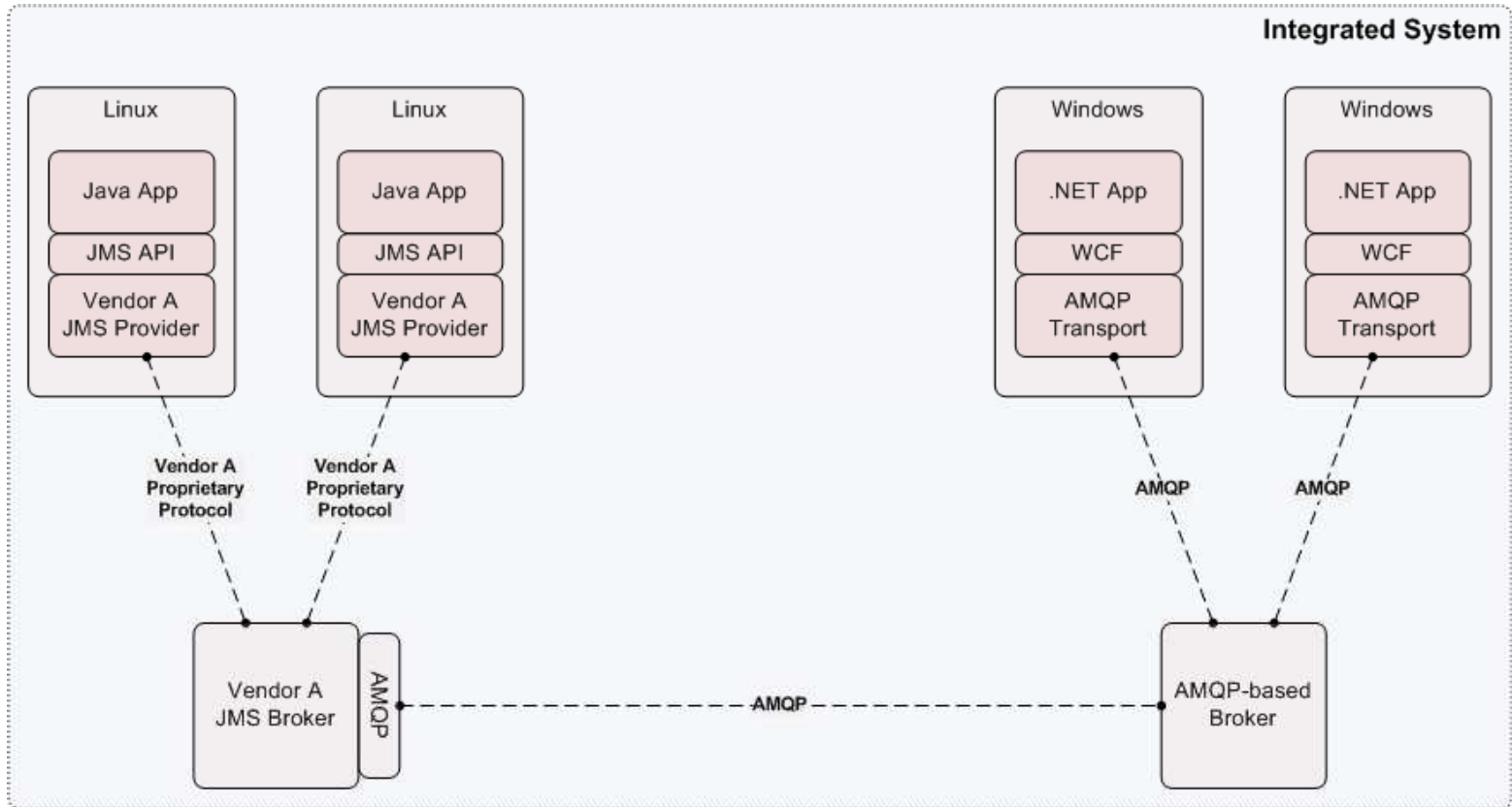
## Under The Covers



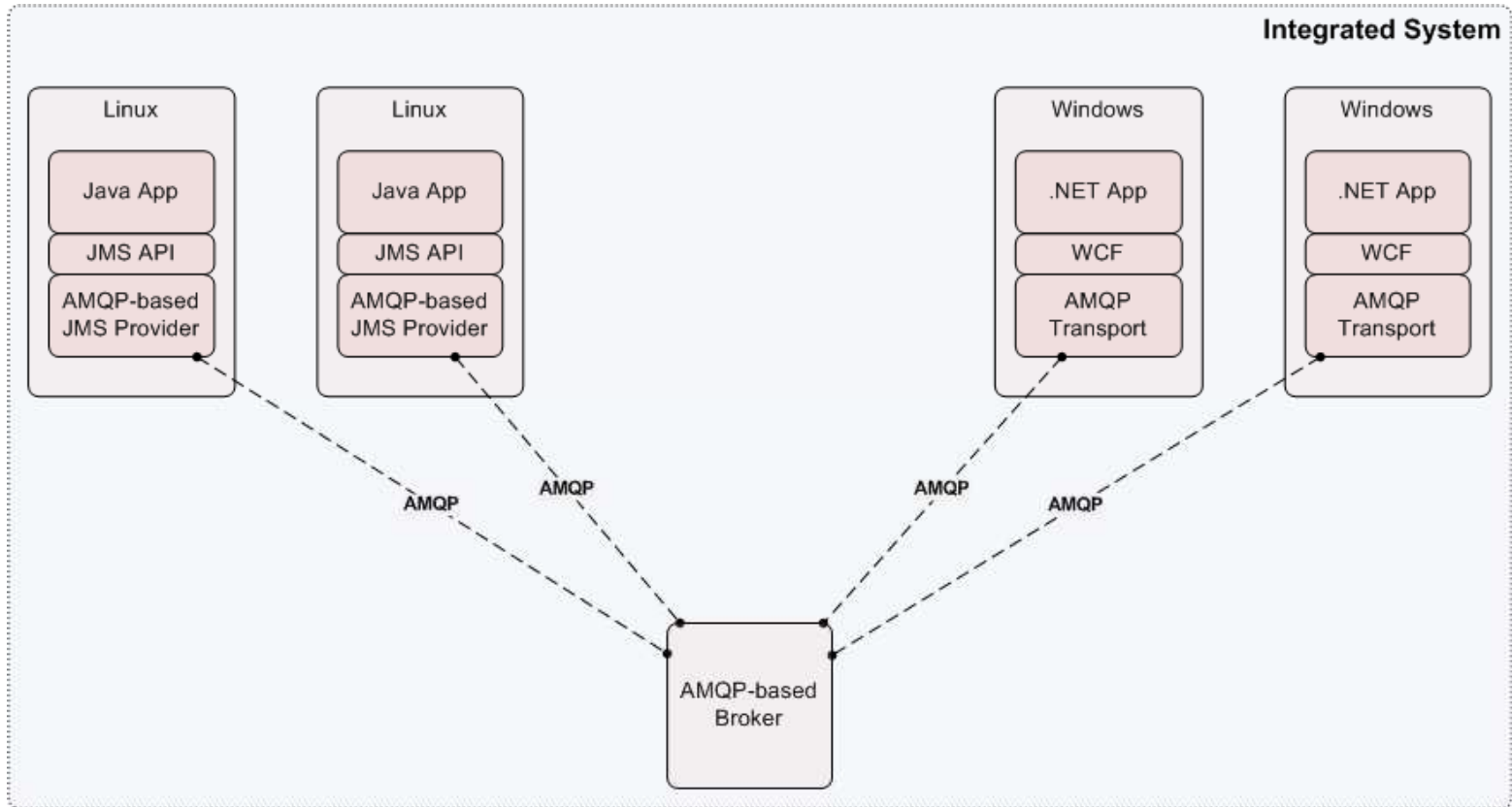
## Symmetric Protocol



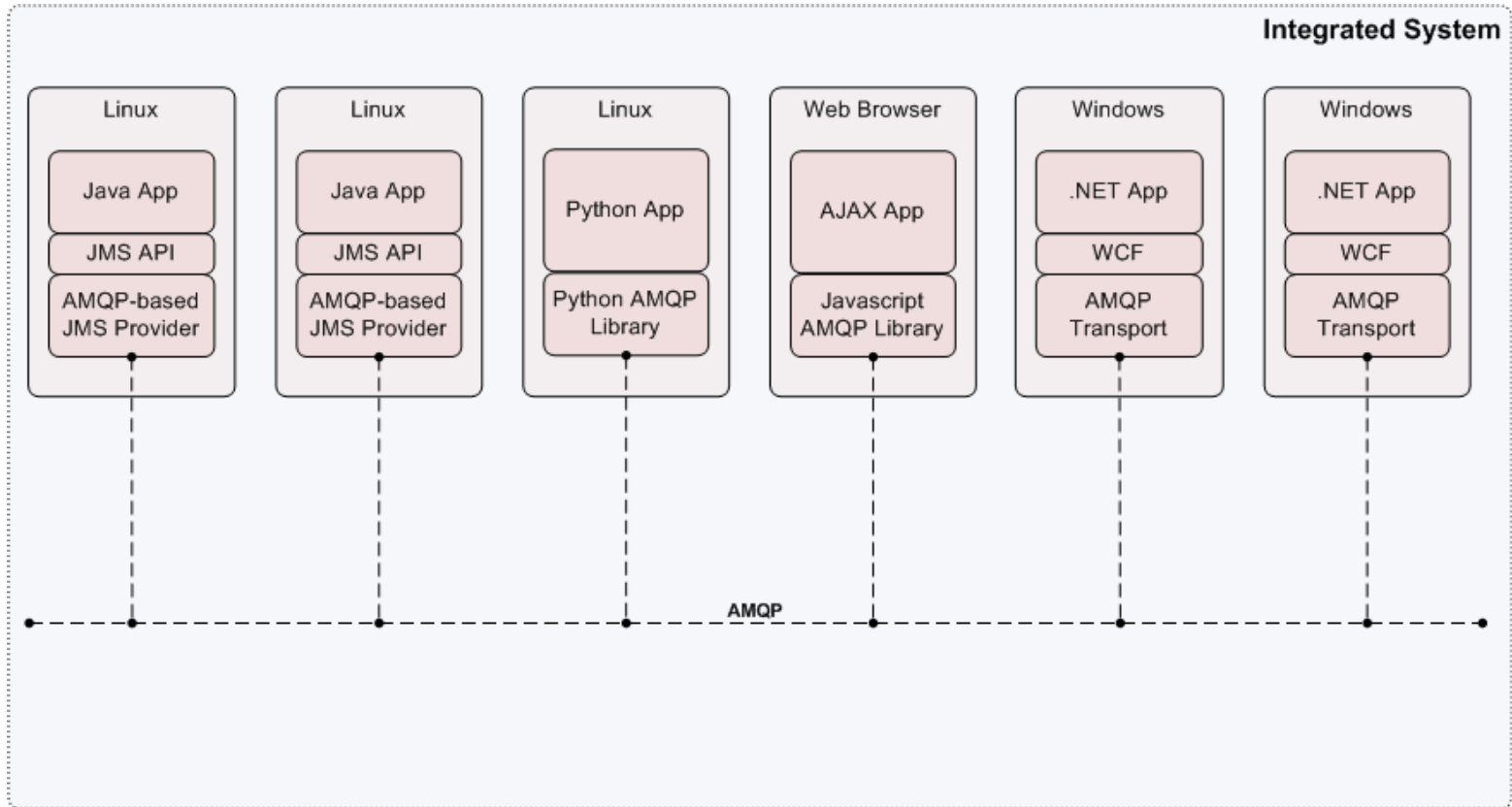
## Symmetric Protocol



## Symmetric Protocol



## Broad Client Support



## Apache Qpid

- Qpid offers full support for the AMQP feature set
  - Supports the latest version of the protocol (v 0-10)
- Project includes
  - 2 brokers
    - Java & C++
  - Client libraries
    - Java, C++, Python, Ruby, ..
- Active and diverse community of developers & users
- Learn more at <http://qpid.apache.org>
- Key features
  - Range of messaging patterns
  - High performance
  - Transient and durable messaging
  - Large message support
  - Clustering and failover
  - Federation
  - Transactions
  - Security
  - Rich queue semantics
  - Integrated management



## Microsoft and AMQP

- Microsoft is a member of AMQP.org
  - Joined in October 2008
  - Working to complete the 1-0 version of the spec
- Microsoft is a contributor to Apache Qpid
  - Windows port of C++ broker and client library
  - WCF channel
  - SQL-based persistence provider
  - Packaging





## Summary

- Most enterprises have a mix of technology platforms
  - Dealing with heterogeneity is a critical issue for enterprise IT
- Apache Stonehenge
  - Open Web Services interop forum
  - Check out <http://cwiki.apache.org/STONEHENGE/index.html>
- AMQP & Apache Qpid
  - Promises to make it easier to deploy enterprise messaging applications in a heterogeneous environment
  - Check out <http://amqp.org> & <http://qpid.apache.org>

