

# AMQ RFC012

## AMQP/Fast Semantics for JMS

version 0.1

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# 1 Cover

## 1.1 State of this Document

This document is a request for comments. Distribution of this document is currently limited to iMatix and JPMorgan internal use.

This document is a provisional proposal. This document is a formal standard.

## 1.2 Copyright Notice

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## 1.3 Authors

This document was written by James Strachan <jstrachan@protique.com>.

## 1.4 Abstract

This proposal defines a mapping of the JMS specification onto the AMQ protocol.

## 2 Design Proposal

### 2.1 Detailed Proposal

We map the message-oriented semantics of JMS onto AMQP/Fast as follows:

1. JMS connections and sessions are mapped cleanly onto AMQP connections and channels.
2. JMS MessageConsumers will each use a single AMQP handle.
3. JMS MessageProducers will each use at least one AMQP handle. For a MessageProducer created with a specific Destination, then a single AMQP handle will be used; though JMS supports other destinations to be used and so other handles will be used.
4. Though there is nothing in JMS which naturally maps to HANDLE REQUEST, a provider may wish to use this mechanism, outside of the JMS specification such as to implement a remote JMX protocol.
5. The MIME type for the request field in CHANNEL SUBSCRIBE commands will be "Application/JMS".
6. The JMS destination types are mapped to the AMQP 'path' somehow (TBD)

### 2.2 destinationType Semantics

JMS supports the following destinationType values and associated semantics.

**/topic/durable** A durable topic; messages must be persisted to disk before ACKs and subscriptions do not terminate when the channel closes. Messages are never removed unless consumed or some administrator deletes them.

**/queue/durable** A durable queue; messages must be persisted to disk before ACKs. Messages are never removed unless consumed or some administrator deletes them.

**/topic/transient** A transient topic; messages may be buffered into disk/RAM for a period of time. If a client disconnects and reconnects some form of recovery/replay may be used but this is provider dependent

**/transient/queue** A transient queue; messages may be buffered to disk/in RAM up for a period of time and if a client disconnects and reconnects some form of recovery/replay may be used but this is provider dependent

**/tmp/queue** A temporary queue which survives only as long as the current connection does. On reconnection, the queue no longer exists.

**/topic/tmp** A temporary topic which survives only as long as the current connection does. On reconnection, the topic no longer exists.

### 2.3 MessageProducer mapping

A handle in AMQP is bound to a single destinationType (such as /queue/durable or /topic/tmp). However in the JMS API a MessageProducer can send/receive to any destination and can use both temporary

destinations or permanent ones as well as using topics and queues.

So to map to AMQP, a MessageProducer must remember the current destinationType of the AMQP channel, and if a new destination or delivery mode is different, it must explicitly open a new HANDLE for the new destination.

Some providers may find this inefficient and may wish to create, lazily, up to 6 different AMQP channels for each JMS MessageProducer, and use the correct one each time to avoid the rebind.

## 2.4 TBD

We need to come up with MIME types for the 5 standard JMS message bodies types

- Java serialized object
- text (application/text?)
- binary (BytesMessage and StreamMessage)
- MapMessage (key-value pairs of primitive types)

## 2.5 Future Considerations

If multiple MessageConsumer instances are consuming on similar topics with overlapping selectors, then a single message could be delivered to several MessageConsumers. Currently there is no optimisation in the AMQP protocol to cater for this scenario.

There could be, in future AMQP versions, a custom header used to indicate all other matching handle subscriptions that a given message matches; allowing a JMS client to map a single message to multiple channels.

Currently this is only an issue for multiple consumers on overlapping topics. It is advisable to use a single MessageConsumer channel in the JMS client to minimise the redundant use of the network in this particular case.

## 2.6 Security Considerations

This proposal does not have any specific security considerations.

## 3 Appendices

[For other information you want to include with this document. If you do not have any appendices, you can delete this heading.]

## 4 Comments on this Document

Comments by readers; these comments may be edited, incorporated, or removed by the author(s) of the document at any time.

### 4.1 Date, name

No comments at present.