



Connect JOnAS to WebSphere™ MQ

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Plan

- **JOnAS / MQ integration**
- Prerequisites
- Setup the JCA Adapter
- jonasAdmin extension
- Professional Support Services

JOnAS MQ Integration

- Targets WebSphere MQ 6
 - « Binding » or « client » connection
- JCA 1.5 Adapter to MQ
 - Requires the « resource » service
- Setup similar to that of the Joram for JOnAS connector
- Manageable from jonasAdmin and JMX
 - jonasAdmin extension will be released with JOnAS 4.8.6
 - Yet available in the head of the JOnAS 4.8.6 CVS branch



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Prérequisites (1)

- Install MQ somewhere with the following packages:
 - Server
 - Client Extended Transaction Support
 - Java Extended Transaction Support
- MQ configuration
 - An active queue manager
 - Start the publish / subscribe service (if topics are used)
 - A SVRCONN type Channel
 - An active listener for the queue manager



Prerequisites (2)

■ Libraries to make known to JOnAS

- From <MQ-ROOT>/Java/lib

- dhibcore.jar
- com.ibm.mq.jar
- com.ibm.mqjms.jar
- com.ibm.mqetclient.jar

- From IBM site

- com.ibm.mq.pcf.jar
- Mqcontext.jar

(<ftp://ftp.software.ibm.com/software/integration/support/supportpacs/individual/ms0b.zip> and [me01.zip](ftp://ftp.software.ibm.com/software/integration/support/supportpacs/individual/me01.zip))

■ To put into:

- JONAS_ROOT/lib/commons or JONAS_BASE/lib/commons



Example of MQ Setup (Initial setup)

- Setup a queue manager, then start it

```
>crtmqm QM_JONAS  
>strmqm QM_JONAS
```

- Setup then start the publish/subscribe service (if you use topics)

```
>runmqsc QM_JONAS < MQ_ROOT/Java/bin/MQJMS_PSQ.mqsc  
>strmqbrk -m QM_JONAS
```

- Start a command console for QM_JONAS, then setup a listener and a channel, then start the listener

```
>runmqsc QM_JONAS  
: define listener(LSNR_JONAS) trdtype(TCP) port(1415)  
: define channel (CHNL_JONAS) chdtype(SVRCONN) trdtype(TCP)  
MCAUSER('MUSR_MQADMIN') → on linux use 'MQM' instead of 'MQM_MQADMIN'  
: start listener(LSNR_JONAS)  
: end  
>
```

Note: « > » is the prompt in the shell or cmd. « : » is the prompt in the MQ console



Example of MQ Setup (further setup)

■ Start

```
>strmqm QM_JONAS
>strmqbrk -m QM_JONAS
>runmqsc QM_JONAS
  : start listener(LSNR_JONAS)
  : end
>
```

■ Stop

```
>runmqsc QM_JONAS
  : stop listener(LSNR_JONAS)
  : end
>endmqbrk -m QM_JONAS
>endmqm QM_JONAS
```


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JCA MQ connector

- A rar: jonasmqconnect.rar
 - Deployed as any resource adapter
 - Can be configured from jonasAdmin, through the generic configuration tabs.
- Configuration
 - JOnAS specific descriptor: jonas-ra.xml
 - \$JONAS_BASE/conf/jonasmq.xml
 - This is the default. Each adapter may have its own file within \$JONAS_BASE/conf
 - Enforced at deployment
- Management with the jonasAdmin extension



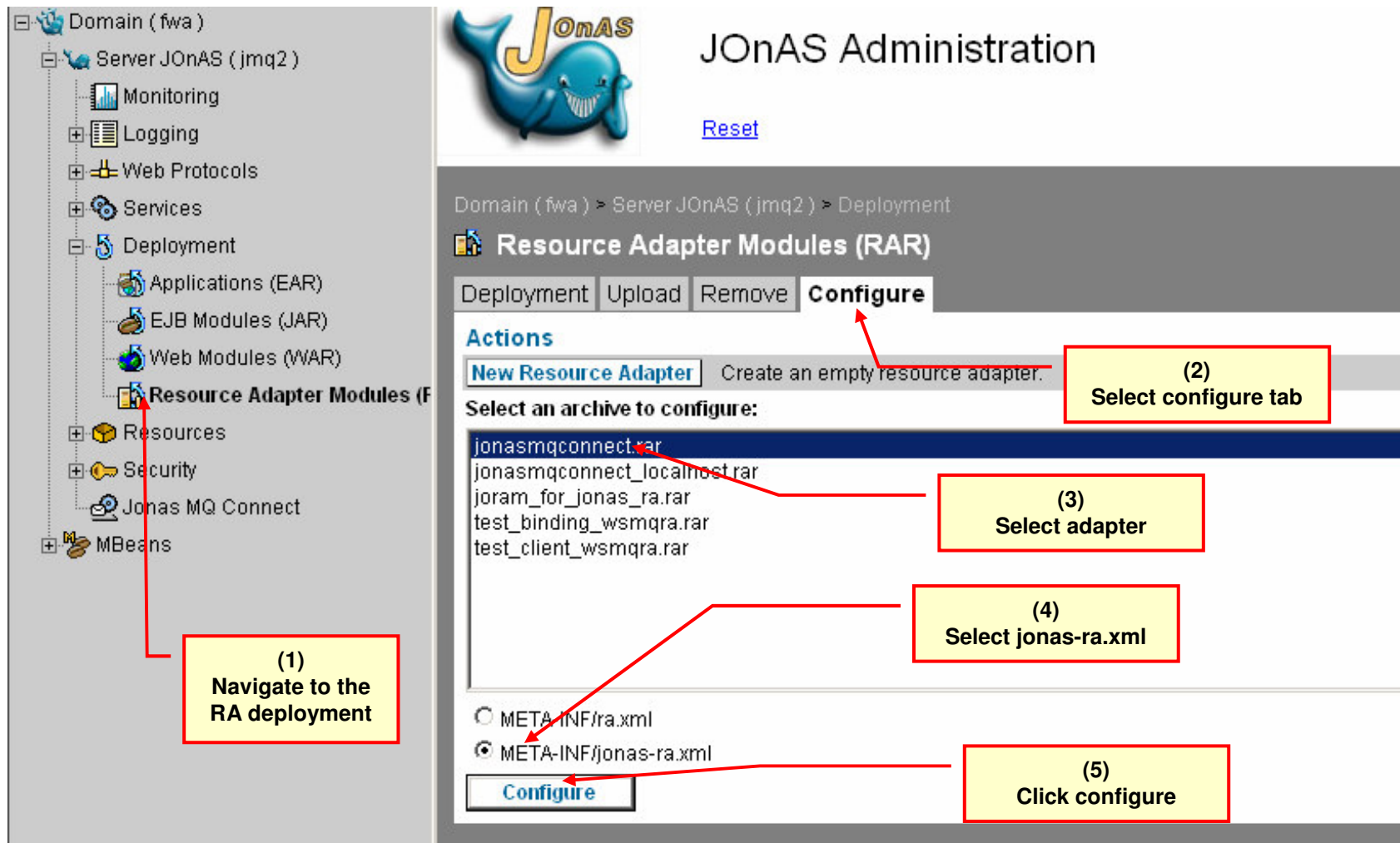
Configure the RA from jonasAdmin (1)

- The simplest way
 - Through the configure tab for connectors (see next slide)
- Operate on an undeployed adapter
- Minimum properties to configure
 - transportType: « client » or « binding »
 - If « client »: HostName, Port, Channel
 - If « binding »: QueueManager

(other properties may be configured too, see next slides)
- Make sure JNDI names do not collide
- Apply changes, then deploy the adapter
- Further on line configuration from the jonasAdmin extension



Configure the RA from jonasAdmin (2)



The screenshot displays the JOnAS Administration web interface. On the left is a tree view of the domain structure. The main panel shows the 'Resource Adapter Modules (RAR)' configuration page for the 'Domain (fwa) > Server JOnAS (jmq2) > Deployment' path. The 'Configure' tab is selected. A list of RARs is shown, with 'jonasmqconnect.rar' selected. Below the list, the 'META-INF/jonas-ra.xml' file is selected for configuration. The 'Configure' button is at the bottom.

Domain (fwa)

- Server JOnAS (jmq2)
 - Monitoring
 - Logging
 - Web Protocols
 - Services
 - Deployment
 - Applications (EAR)
 - EJB Modules (JAR)
 - Web Modules (WAR)
 - Resource Adapter Modules (RAR)**
 - Resources
 - Security
 - Jonas MQ Connect
 - MBeans

JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq2) > Deployment

Resource Adapter Modules (RAR)

Deployment Upload Remove **Configure**

Actions

[New Resource Adapter](#) Create an empty resource adapter.

Select an archive to configure:

- jonasmqconnect.rar**
- jonasmqconnect_localhost.rar
- joram_for_jonas_ra.rar
- test_binding_wsmqra.rar
- test_client_wsmqra.rar

☐ META-INF/ra.xml

☒ META-INF/jonas-ra.xml

[Configure](#)

(1) Navigate to the RA deployment

(2) Select configure tab

(3) Select adapter

(4) Select jonas-ra.xml

(5) Click configure

Jonas-ra.xml

- Connections common properties
- JNDI Authentication
- Managed Connection factories
- Non Managed connection factories
- Outbound and inbound flow

... *Configuration pattern*

```
<jonas-config-property>  
  <jonas-config-property-name>name</jonas-config-property-name>  
  <jonas-config-property-value>value</jonas-config-property-value>  
</jonas-config-property>
```

...



Jonas-ra.xml : <jonas-config-property>

Common connection properties

- TransportType
 - « client » or « binding »
- HostName
- Port
- Channel
 - If « client » mode
- QueueManager
 - If « binding » mode

JNDI Authentication

- AuthenticationMode
 - none, simple or CRAM_MD5
- JndiUserName (*)
- JndiPassword (*)

(*) required if mode ≠ none

Connection factories

- ConnectionFactoryProperties
- QueueConnectionFactoryProperties
- QueueConnectionFactoryProperties

Comma separated list of 'name=value' pairs.

Non-managed connection factories

- JConnectionFactoryJndiName
- JQueueConnectionFactoryJndiName
- JTopicConnectionFactoryJndiName



Jonas-ra.xml – example with « client » TransportType

```
<?xml version="1.0" encoding="UTF-8"?>
<jonas-connector xmlns=http://www.objectweb.org/jonas/ns
...
<jonas-config-property>
  <jonas-config-property-name>TransportType</jonas-config-property-name>
  <jonas-config-property-value>client</jonas-config-property-value>
</jonas-config-property>
<jonas-config-property>
  <jonas-config-property-name>HostName</jonas-config-property-name>
  <jonas-config-property-value>host001</jonas-config-property-value>
</jonas-config-property>
<jonas-config-property>
  <jonas-config-property-name>Port</jonas-config-property-name>
  <jonas-config-property-value>1415</jonas-config-property-value>
</jonas-config-property>
<jonas-config-property>
  <jonas-config-property-name>Channel</jonas-config-property-name>
  <jonas-config-property-value>CHNL_JONAS</jonas-config-property-value>
</jonas-config-property>
...
```



Jonas-ra.xml – example with « binding » TransportType

```
<?xml version="1.0" encoding="UTF-8"?>
<jonas-connector xmlns=http://www.objectweb.org/jonas/ns
...
<jonas-config-property>
  <jonas-config-property-name>TransportType</jonas-config-property-name>
  <jonas-config-property-value>binding</jonas-config-property-value>
</jonas-config-property>
<jonas-config-property>
  <jonas-config-property-name>QueueManager</jonas-config-property-name>
  <jonas-config-property-value>QM_JONAS</jonas-config-property-value>
</jonas-config-property>
...
```



Jonas-ra.xml : <jonas-config-property>

<u>Configuration file</u>	<u>Connector Mbean Name</u>
<ul style="list-style-type: none">– ConfigFileName <p>Each instance of MQ connector can be associated with its own « jonasmq.xml » file.</p> <p>Shall be supplied if several MQ connector are deployed</p>	<ul style="list-style-type: none">– MdbName <p>Used to register the connector mbeans</p> <p>Shall be supplied if several MQ connector are deployed</p>

```
...  
<jonas-config-property>  
  <jonas-config-property-name>ConfigFileName</jonas-config-property-name>  
  <jonas-config-property-value>mq-config.xml</jonas-config-property-value>  
</jonas-config-property>  
...
```



Jonas-ra.xml: Outbound

```
...
<jonas-connection-definition>
  <description>
    com.bull.jonasmqconnector.outbound.ManagedQueueConnectionFactoryImpl
  </description>
  <jndi-name>QCF</jndi-name>
</jonas-connection-definition>

<jonas-connection-definition>
  <description>
    com.bull.jonasmqconnector.outbound.ManagedTopicConnectionFactoryImpl
  </description>
  <jndi-name>TCF</jndi-name>
</jonas-connection-definition>

<jonas-connection-definition>
  <description>
    com.bull.jonasmqconnector.outbound.ManagedJMSConnectionFactoryImpl
  </description>
  <jndi-name>CF</jndi-name>
</jonas-connection-definition>
...
```

Mind the JNDI names !



Jonas-ra.xml: Inbound

```
...  
<jonas-activation-spec>  
  <description>javax.jms.MessageListener</description>  
  <jndi-name>jonasmq_as</jndi-name>  
  <defaultAS>true</defaultAS>  
</jonas-activation-spec>  
...
```

Mind the JNDI names !

- Jndi-name unique identifier among all connectors
- defaultAs=true
 - Mark this connector to be the default connector
 - If a MDB does not specify the connector jndi name in jonas-ejb-jar, this one shall be used.



Configuration file: jonasmq.xml

- Configuration of destinations
- In JONAS_BASE/conf
- Associated to an MQ adapter via the `<jonas-config-property>` named `ConfigFileName`.

```
<?xml version="1.0" encoding="UTF-8"?>
<jonasmq>
  <destinations>
    <destination name="sampleTopic" type="Topic">
      <property name="BaseTopicName" value="sampleTopic"/>
    </destination>
    <destination name="sampleQueue" type="Queue">
      <property name="BaseQueueName" value="sampleQueue"/>
    </destination>
  </destinations>
</jonasmq>
```

- destination name: JNDI name in JOnAS
- BaseTopicName, BaseQueueName properties: MQ names:



MDB deployment :

```
<message-driven>
...
  <ejb-name>DTMdbTest</ejb-name>
  <ejb-class>com.bull.jonasmqconnector.test.dtmdb.DTMdbTestBean</ejb-class>
  <messaging-type>javax.jms.MessageListener</messaging-type>
  <transaction-type>Container</transaction-type>
  <message-destination-type>javax.jms.Topic</message-destination-type>
  <activation-config>
    <activation-config-property>
      <activation-config-property-name>
        destination
      </activation-config-property-name>
      <activation-config-property-value>
        MyQueue
      </activation-config-property-value>
    </activation-config-property>
  </activation-config>
...
...

```

Ejb-jar: <activation-config> properties

- **destination** (String) : destination JNDI name
- **destinationType** (String): javax.jms.Topic or javax.jms.Queue
- **destinationProperties** (String): comma separated property 'name=value' pairs
- **acknowledgeMode** (String): see JMS 1.1
- **messageSelector** (String): see JMS 1.1
- **subscriptionDurability** (String): « Durable » or « NonDurable ». See JMS 1.1
- **subscriptionName** (String): required if subscriptionDurability=« Durable »
- **maxMessages** (Integer): see JMS 1.1
- **userName** (String) and **password** (String)
- **poolSize** (integer): ServerSession pool size. Default is 1
- **maxNumberOfWork** (Integer): max number of threads to run the ServerSessions.
- **mdbName** (String): key value for buiding the MBean ObjectName

- **reconnect** (Boolean): whether the MDB attempts to restor a broken connection. Default is true.
- **maxReconnect** (Integer): max number of attempts to reconnect (default is 6)
- **reconnectInterval** (Long): delai (in milliseconds) between two reconnection attempts. (default is 10000).



MDB deploiement : jonas-ejb-jar.xml

```
<jonas-message-driven>
  <ejb-name>DTMdbTest</ejb-name>

  <jonas-message-driven-destination>
    <jndi-name>jonasmq_as</jndi-name>
  </jonas-message-driven-destination>

  <max-cache-size>20</max-cache-size>
  <min-pool-size>10</min-pool-size>

</jonas-message-driven>... ..
```



Plan

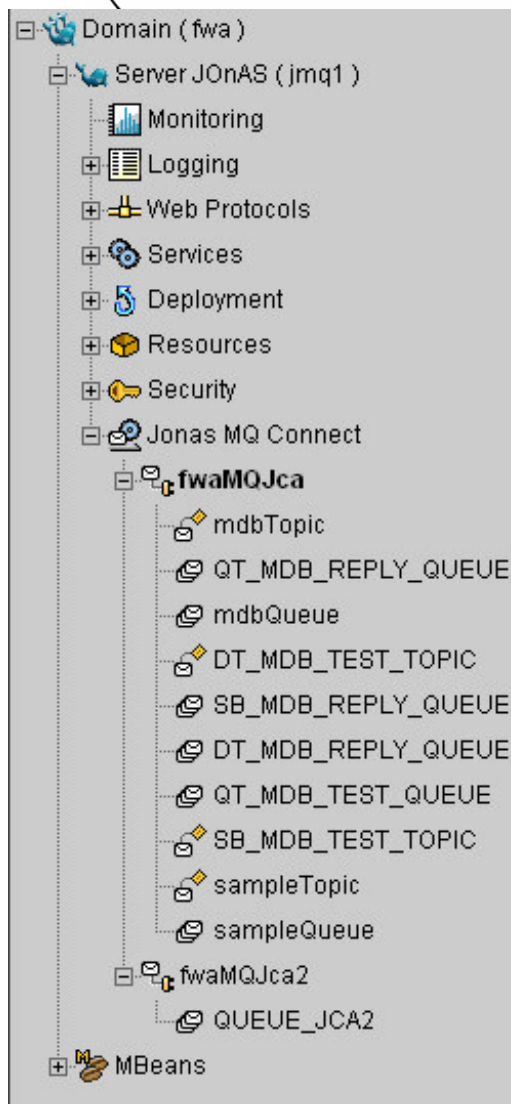
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jonasAdmin extension

- Enable the management of deployed connectors
 - Connection parameters
 - Connection factories
 - Destination creation, deletion, edit
 - MDB display
 - MDB and destinations statistics
- Based on MBeans
- « Standard » jonasAdmin enable management of undeployed connectors





JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq1) > Jonas MQ Connect

fwaMQJca

Jonas MQ Connectors **fwaMQJca** Destinations Mdbbs

Action

[Edit Properties](#)

[Save Destination Config](#)

[Load Destination Config](#)

[Refresh](#)

Implementation version 1.0.0

Jonas MQ Connector properties

Hostname frecb000650

Channel CHANNEL1

Port 1415

Queue Manager

TransportType client

Connection Factories

[Connection Factory \(CF\)](#)

[Topic Connection Factory \(TCF\)](#)

[Queue Connection Factory \(QCF\)](#)



JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq1) > Jonas MQ Connect

fwaMQJca

Jonas MQ Connectors fwaMQJca **Destinations** Mdbms

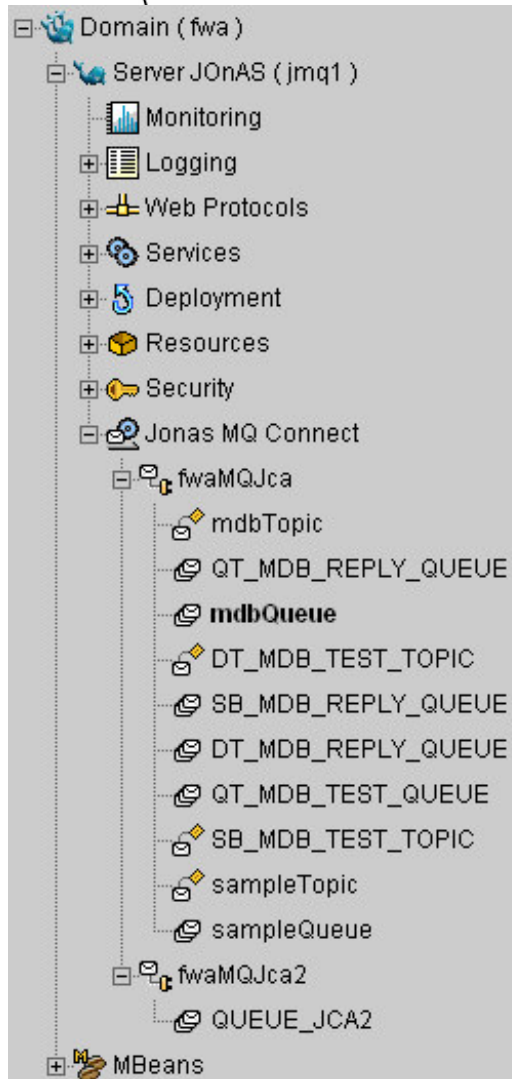
Action

[Create Jms destination](#)

[Remove Jms destination](#)

Name	Type	Base name
<input type="checkbox"/> QT_MDB_TEST_QUEUE	queue	QT_MDB_TEST_QUEUE
<input type="checkbox"/> mdbTopic	topic	mdbTopic
<input type="checkbox"/> mdbQueue	queue	mdbQueue
<input type="checkbox"/> QT_MDB_REPLY_QUEUE	queue	QT_MDB_REPLY_QUEUE
<input type="checkbox"/> DT_MDB_TEST_TOPIC	topic	DT_MDB_TEST_TOPIC
<input type="checkbox"/> sampleTopic	topic	sampleTopic
<input type="checkbox"/> sampleQueue	queue	sampleQueue
<input type="checkbox"/> SB_MDB_TEST_TOPIC	topic	SB_MDB_TEST_TOPIC
<input type="checkbox"/> SB_MDB_REPLY_QUEUE	queue	SB_MDB_REPLY_QUEUE
<input type="checkbox"/> DT_MDB_REPLY_QUEUE	queue	DT_MDB_REPLY_QUEUE





JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq1) > Jonas MQ Connect > fwaMQJca

mdbQueue

Jonas MQ Connectors fwaMQJca Destinations **Destination - mdbQueue** Mdbbs

Action

[Edit](#) [Clear Queue](#)

Properties of destination : mdbQueue

BaseQueueManagerName	
BaseQueueName	mdbQueue
CCSID	1208
Description	
Encoding	273
FailIfQuiesce	1
Persistence	-2
Priority	-2
QueueName	queue:///mdbQueue
StringFromDestination	queue:///mdbQueue
TargetClient	0

Stat. Properties of destination : mdbQueue

Messages in the queue	0
Max messages in the queue	5000
Processus listening on the queue	0
Processus sending to the queue	0

BULL



JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq1) > Jonas MQ Connect

fwaMQJca

Jonas MQ Connectors fwaMQJca Destinations **Mdbbs**

Name	MQ Destination	# Received Messages
processor#22948078	inQueueMQ	0
sink#24297842	outQueueMQ	0



JOnAS Administration

[Reset](#)

Domain (fwa) > Server JOnAS (jmq1) > Jonas MQ Connect

fwaMQJca

Jonas MQ Connectors fwaMQJca Destinations Mdb **Mdb - processor#22948078**

Properties of MDB : processor#22948078

AcknowledgeMode	1
Destination	inQueueMQ
DestinationProperties	null
DestinationType	javax.jms.Queue
InitPoolSize	1
MaxMessages	1
MaxNumberOfWorks	10
MaxReconnect	6
MdbName	processor
MessageSelector	null
Password	null
PoolSize	10
ReconnectInterval	10000
SubscriptionDurability	NonDurable
SubscriptionName	null
UserName	null



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Support

- Look at OW2 site

<http://wiki.jonas.objectweb.org/xwiki/bin/view/Main.Services/ProfessionalSupport>

- Bull offers professional support

<http://www.bull.com/support/>

<mailto:srv.services@bull.net?subject=JOnAS support subscription>





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