



RabbitMQ Installation and Integration with Advanced Marketing Solution

Version 2.0

Document Change Sheet

Revision	Date	Description of Change	Author
v1.0	6/11/2014	Initial Version	Murali Valluri
V1.1	6/26/2014	Add ERLANG_HOME and Management plugin steps	Xueling Lu
V1.2	7/16/2014	Added Clustering Setup Instructions	Murali Valluri
V1.3	11/20/2014	Added Logging related instructions	Murali Valluri
V1.4	04/01/2015	Added information related to Offline Queue	Murali Valluri
V2.0	01/02/2016	Added information about newly added Queues for Customer Service	Kiran Akella
V2.1	14/09/2017	RabbitMQ and Erlang version upgrade	Gaurav Singh

Table of Contents

1. Introduction	3
2. Erlang Installation	3
3. RabbitMQ Installation	5
4. RabbitMQ Server Configuration.....	7
5. Integrating Logix with RabbitMQ.....	10
6. Integrating Customer Broker with RabbitMQ.....	10
7. Clustering	15
8. Miscellaneous	18
9. Logging	19
10. Frequently Asked Questions	21

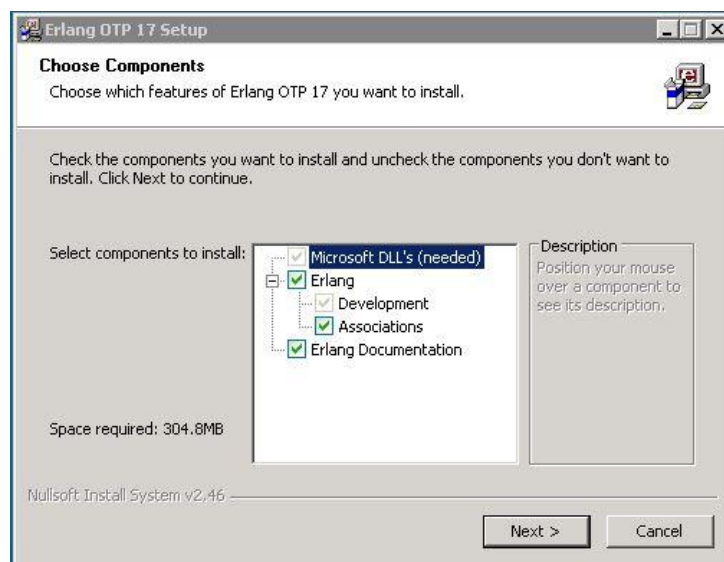
1. Introduction

This document assumes that RabbitMQ is being installed on one of the Logix servers.

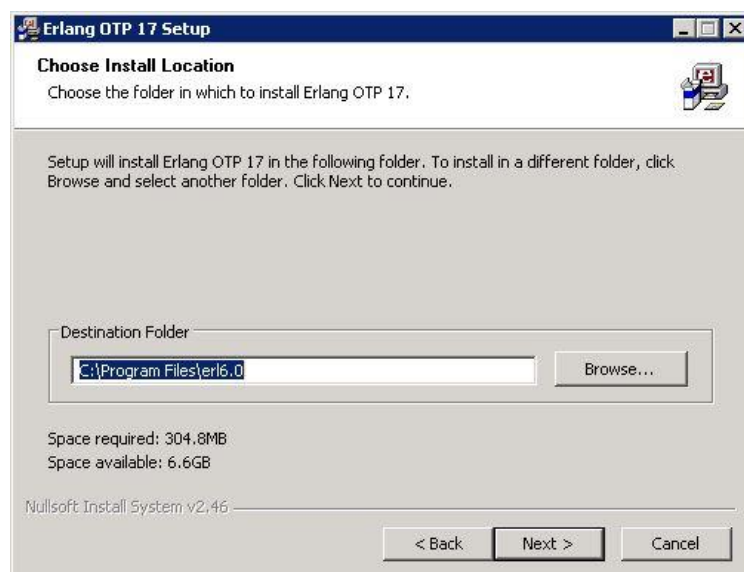
2. Erlang Installation

Download Erlang 19.1 from <http://www.erlang.org/download.html>. If the system is 32-bit download x86 binaries or else download x64 binaries. Run msi and follow the steps below.

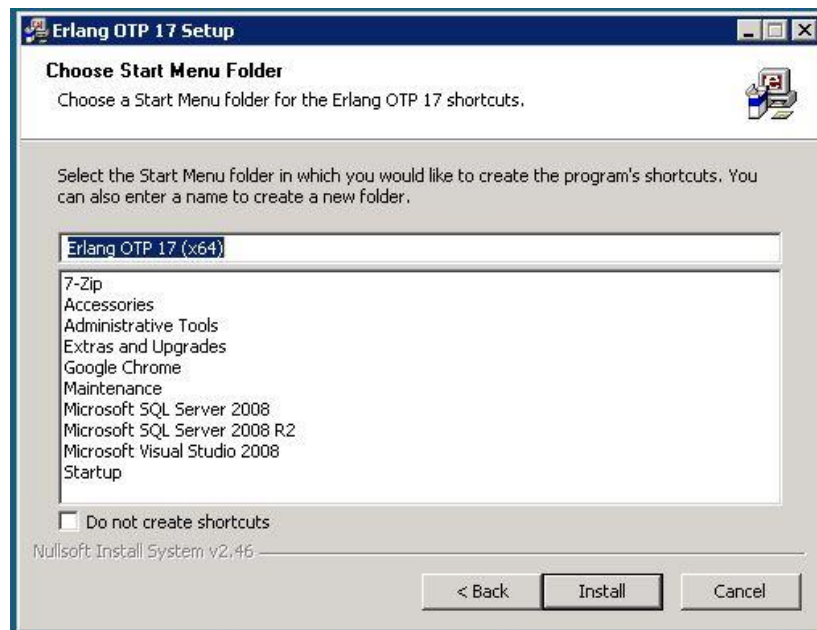
- a. Select all the components and click next.



- b. Select the location where you want to install Erlang.

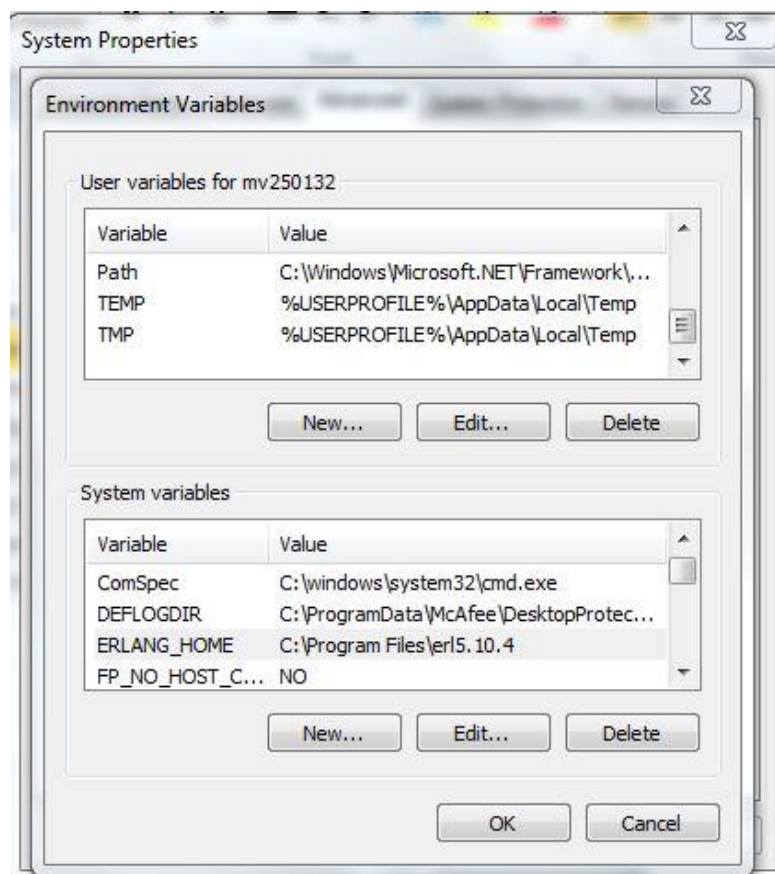


- c. Click install.



- d. Set ERLANG_HOME environment variable

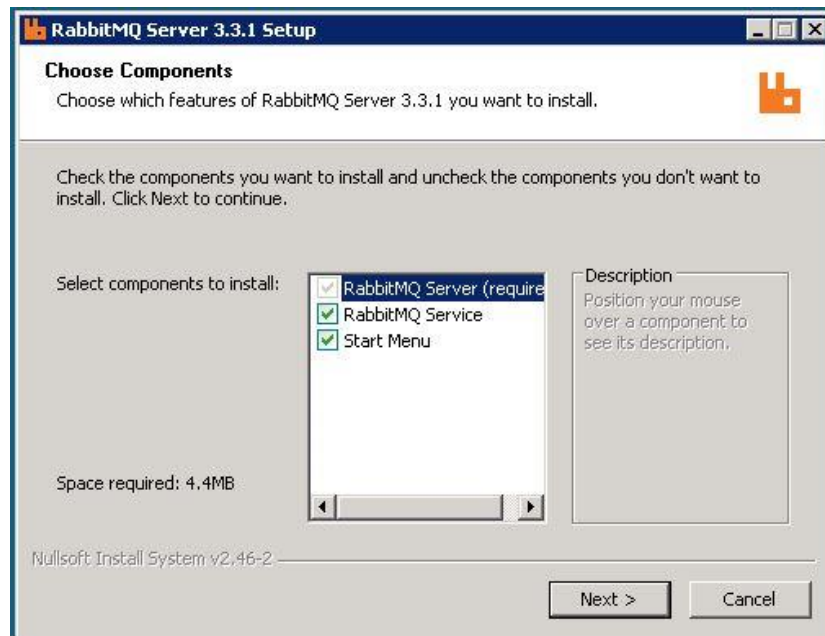
Go to Start > Settings > Control Panel > System > Advanced > Environment Variables. Create the system environment variable ERLANG_HOME and set it to the full path of the directory which contains bin\erl.exe.



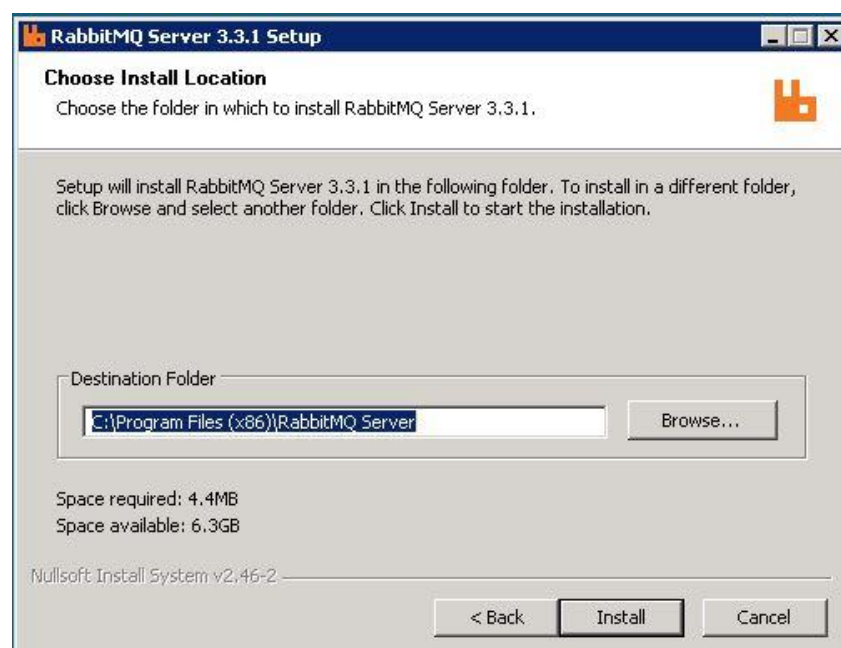
3. RabbitMQ Installation

Download RabbitMQ 3.6.5 Server from <http://www.rabbitmq.com/download.html>, run the msi and follow the steps below.

- a. Select both RabbitMQ Service component and Start Menu and click next.



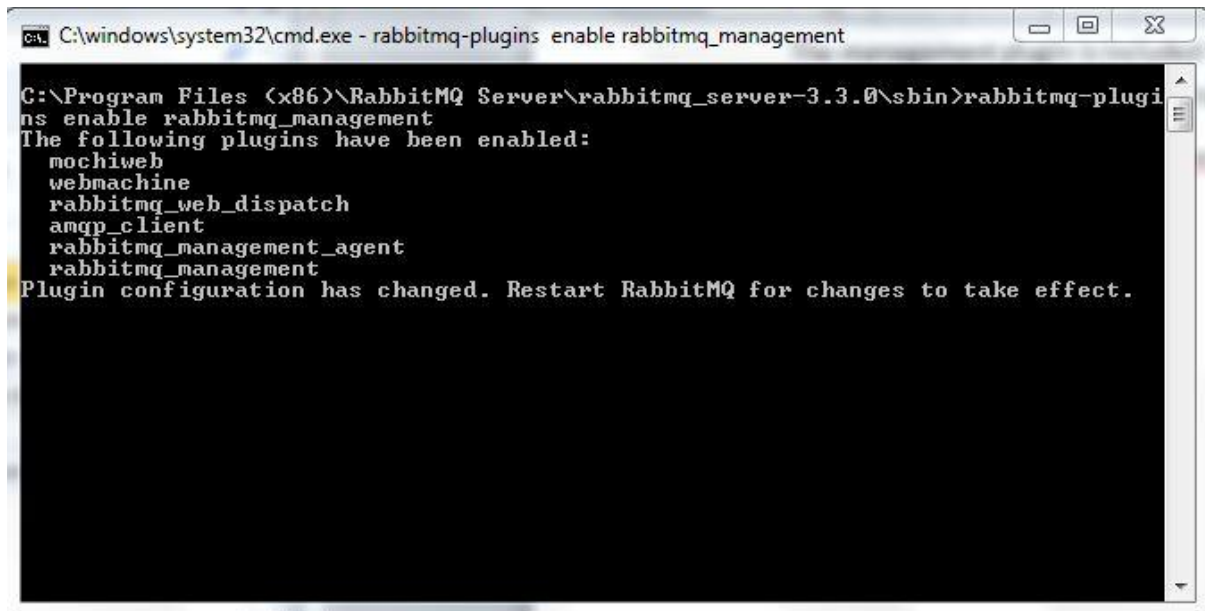
- b. Give the path where you want to install RabbitMQ server and click install.



c. Enable RabbitMQ management plugin

The management plugin is included in the RabbitMQ distribution. To enable it, open a console window, change directory to *RabbitMQ installation\sbin*:

```
rabbitmq-plugins enable rabbitmq_management
```

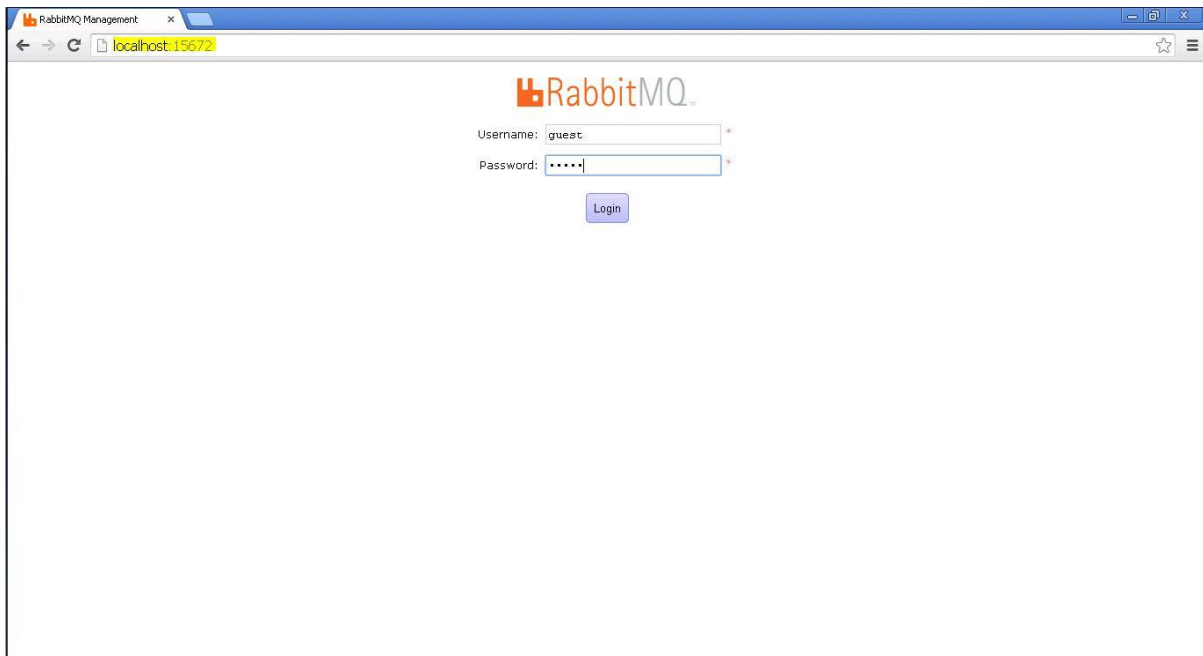


```
C:\windows\system32\cmd.exe - rabbitmq-plugins enable rabbitmq_management

C:\Program Files (x86)\RabbitMQ Server\rabbitmq_server-3.3.0\sbin>rabbitmq-plugins
ns enable rabbitmq_management
The following plugins have been enabled:
  mochiweb
  webmachine
  rabbitmq_web_dispatch
  amqp_client
  rabbitmq_management_agent
  rabbitmq_management
Plugin configuration has changed. Restart RabbitMQ for changes to take effect.
```

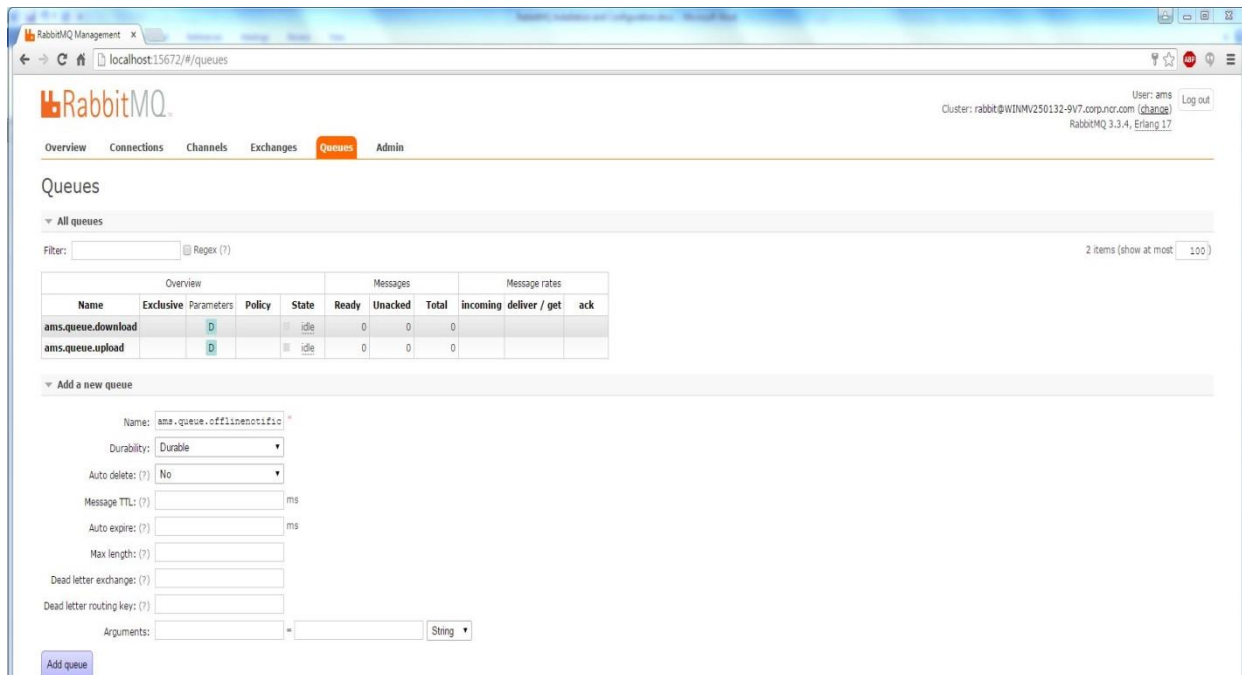
4. RabbitMQ Server Configuration

- a. Go to `http://localhost:15672`, give username as *'guest'* and password as *'guest'* and login.



- b. If using UE offline feature, add a queue and name it as **'ams.queue.offlinenotification'**.

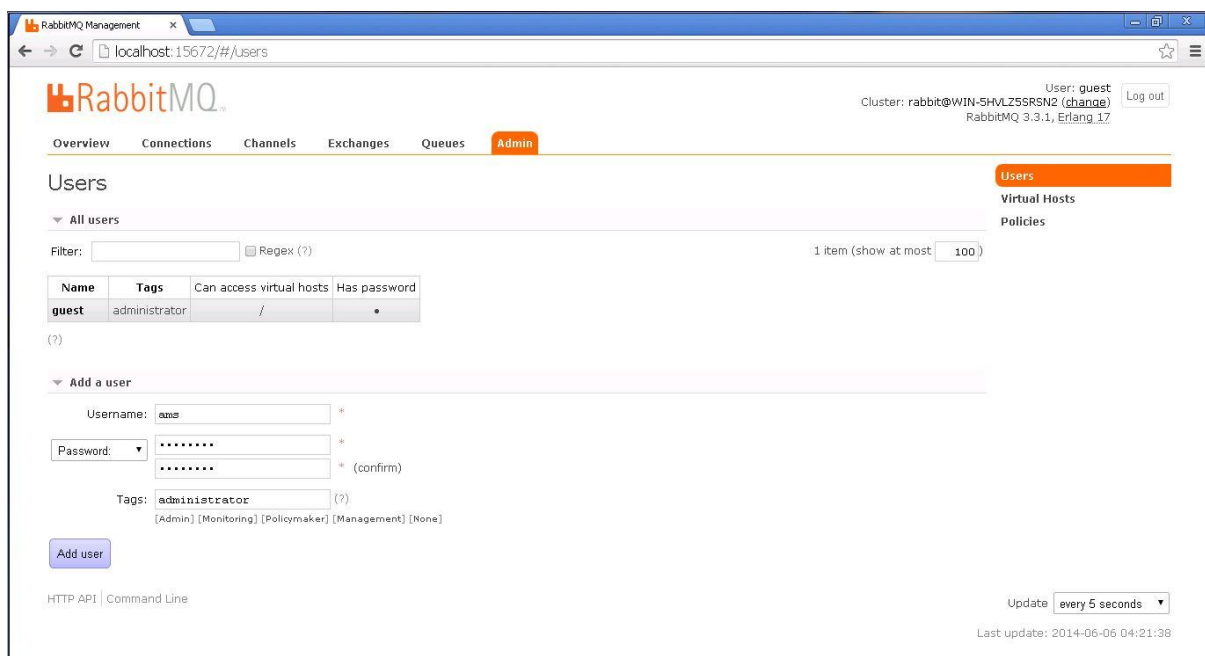
Note: Queue name should be 'ams.queue.offlinenotification'. It cannot be changed.



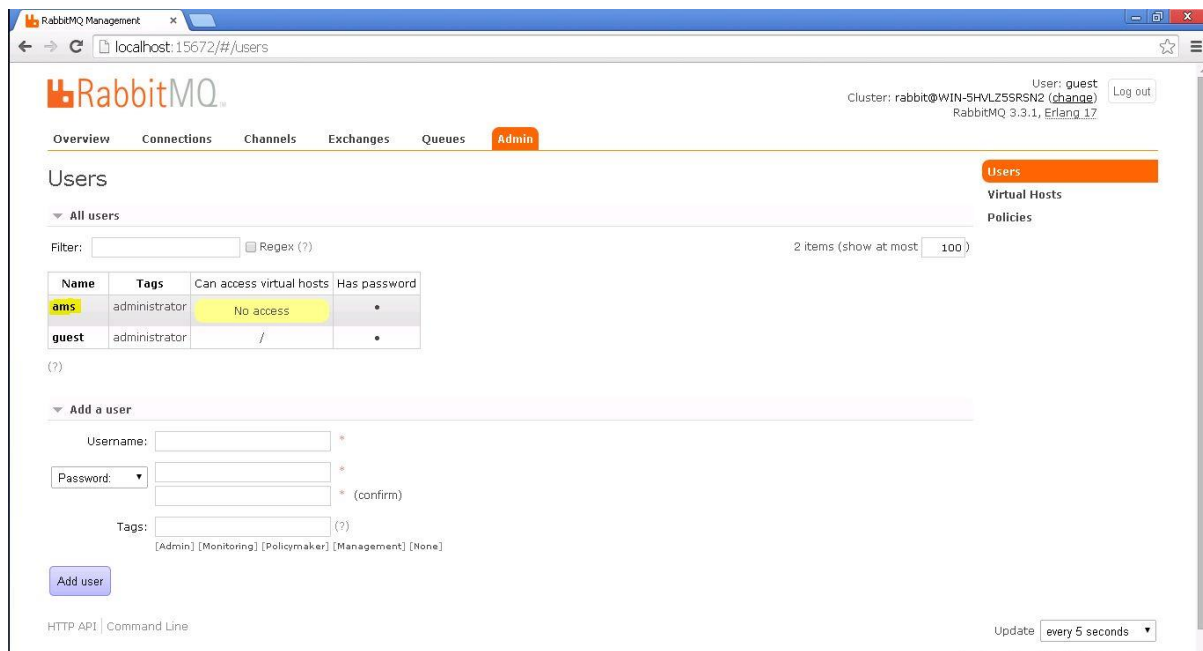
- c. Now go to *Admin* tab and add new user. Enter username, password and in tags enter 'administrator'.

Note: By default Customer Broker assumes password to be ncr.ams.

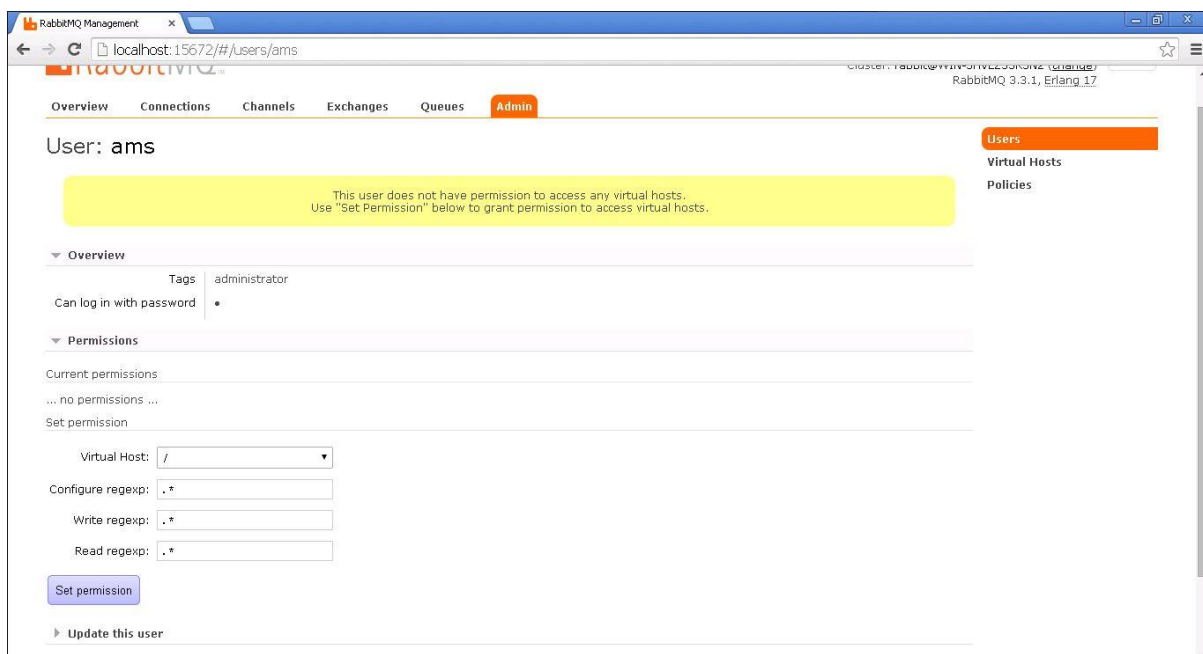
Note: Adding tag as administrator is important.



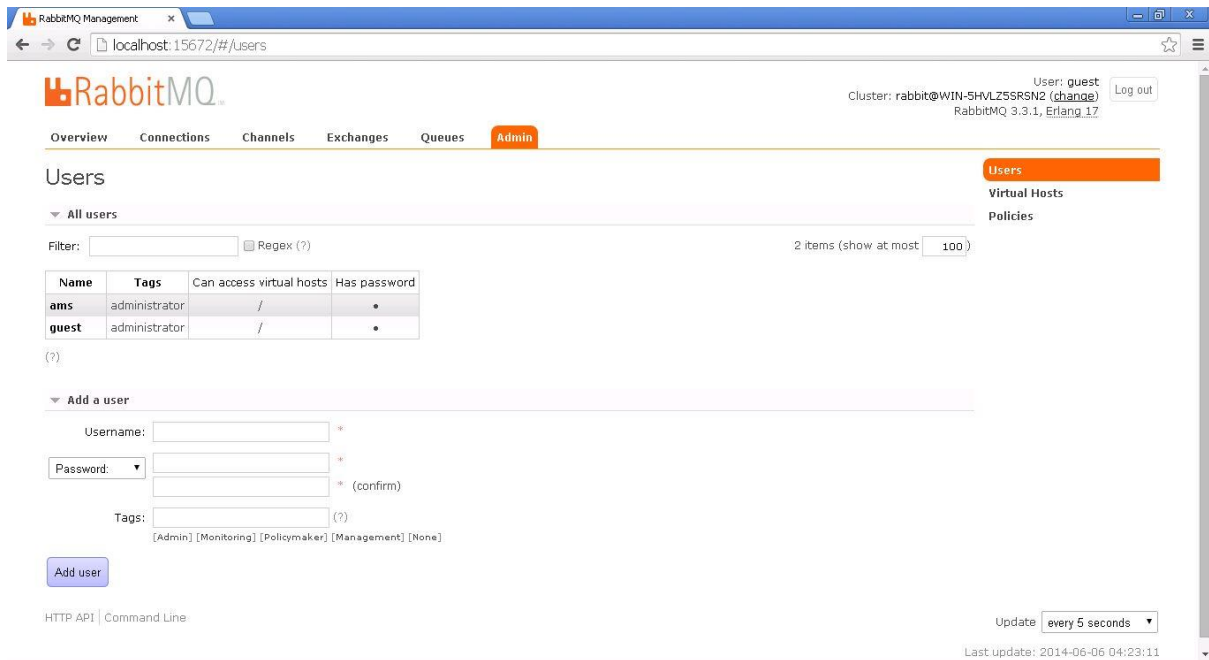
- d. Now click on user which has been added in previous step so the access permissions can be given.



e. By default all the fields are filled with default values so click *Set permission*.



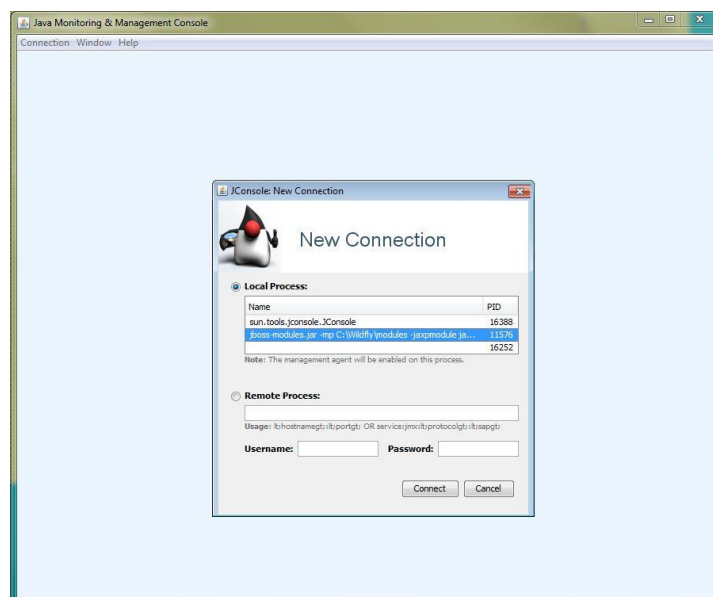
f. Now *Admin* tab should display 2 users with tags as 'administrator' and Can access virtual hosts as '/'.
/



5. Integrating Customer Broker with RabbitMQ

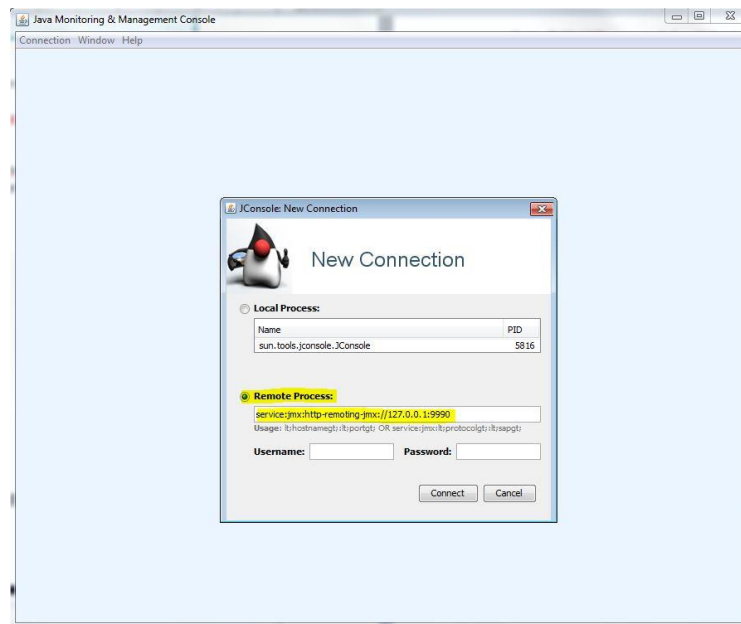
By default, password is set to *ncr.ams* in encrypted format during Customer Broker installation. **If you do not want to change the default password, skip step a-b.** If you have used a different RabbitMQ password other than the default one, follow step a-c to generate encrypted password for it through JConsole.

- Navigate to [Wildfly-Directory]/bin/, open jconsole.bat and connect to Wildfly server if it is listed under Local Process.

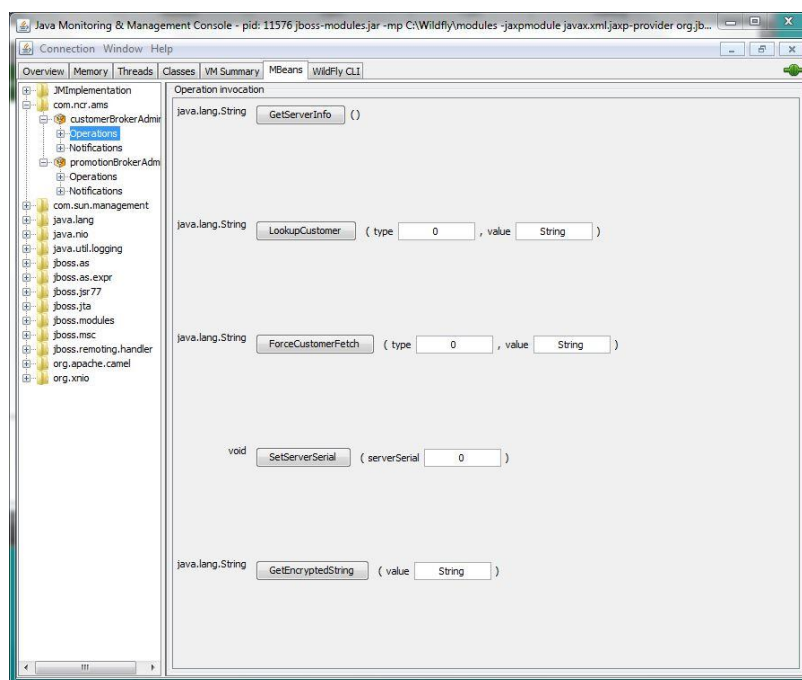


- b. If it is not listed under Local Process, connect to the server using Remote Process using the following command.

service:jmx:http-remoting-jmx://{Wildfly_Server_ip}:9990



- c. In the text box beside *GetEncryptedString*, enter the new password which you have given while creating RabbitMQ user to get the new encrypted password.



- d. Navigate to C:/etc/ams directory on Windows (or) /etc/ams directory if Customer Broker is installed on Linux. Open ams-broker.properties in text editor and edit the following lines in it. Set rabbitmq_host, rabbitmq_username, rabbitmq_password with appropriate values and restart customer-broker.

Note: RabbitMQ password should be in encrypted format and should be within ENC()

```

ams-broker.properties
15  ams_broker_promotions_integration_fetch_centralversion=5.20
16  ams_broker_promotions_integration_fetch_centralbuild=1
17  ams_broker_promotions_integration_fetch_longreplytimeoutval=60000
18  ams_broker_promotions_integration_fetch_conntimeoutval=20000
19  ams_broker_promotions_integration_fetch_simplereplytimeoutval=30000
20  ams_broker_promotions_integration_fetch_numretries=3
21  ams_broker_promotions_integration_fetch_retryinterval=1000
22  ams_broker_promotions_integration_fetch_dircache=C:/NCRUE/PromoData/logix-stub/download/
23  ams_broker_promotions_integration_fetch_usethrottle=false
24  ams_broker_promotions_integration_fetch_supportepm=true
25  ams_broker_promotions_integration_fetch_useca=false
26  ams_broker_promotions_integration_fetch_passphrase=""
27  ams_broker_promotions_integration_fetch_trustcafile=""
28  ams_broker_promotions_integration_fetch_hostnameverifier=2
29  ams_broker_promotions_integration_fetch_serverName=DemoServer
30  ams_broker_promotions_integration_fetch_macaddress=A1-B2-C3-D4-E5-F6
31
32  ams_broker_integration_locations_dropPath=C:/NCRUE/PromoData/service-in/locations/
33
34  ams_broker_integration_promotions_load_utilityExec=C:/Program Files (x86)/NCR/AMS/bin/PromoDataUtil
35  ams_broker_integration_promotions_load_utilityArgs=
36
37  ams_broker_promotions_snapshots_uploadUrl=http://localhost:8080/ams-broker-promotion/snapshots
38
39  ams_broker_customers_integration_fetch_centralprotocol=http
40  ams_broker_customers_integration_fetch_centralip=193.60.106.100
41  ams_broker_customers_integration_fetch_centralpath=connectors/UE/
42  ams_broker_server_serial = 1
43
44  rabbitmq_host=193.60.106.100
45  rabbitmq_username=ams
46  rabbitmq_password=ENC(3LuCmRIX45ViN8AaYRq8PArPTU3aU06)
47
Properties file                                length : 2279   lines : 47                                Ln : 44   Col : 29   Sel : 0 | 0

```

- e. After successful deployment, Customer Service will automatically create the following 3 queues: **ams.queue.cs.upload**, **ams.queue.cs.issuance** and **ams.queue.dlx**. This confirms that Customer Service will be producing and consuming on these queues.



Overview
Connections
Channels
Exchanges
Queues
Admin

Queues

▼ All queues
Filter: ☐ Regex (?)

Overview					Messages			Message rates		
Name	Exclusive	Parameters	Policy	State	Ready	Unacked	Total	incoming	deliver / get	ack
ams.queue.cs.issuance		DLX D		idle	0	0	0	0.00/s	0.00/s	0.00/s
ams.queue.cs.upload		DLX D		idle	0	0	0	0.00/s	0.00/s	0.00/s
ams.queue.dlx		D		idle	1	0	1		0.00/s	

▶ Add a new queue

HTTP API | Command Line

- f. The **ams.queue.dlx** is a dead-letter-queue that is used to hold messages that were not processed by Customer Service. Any malformed or invalid messages that cannot be consumed by Customer Service are put on this queue.

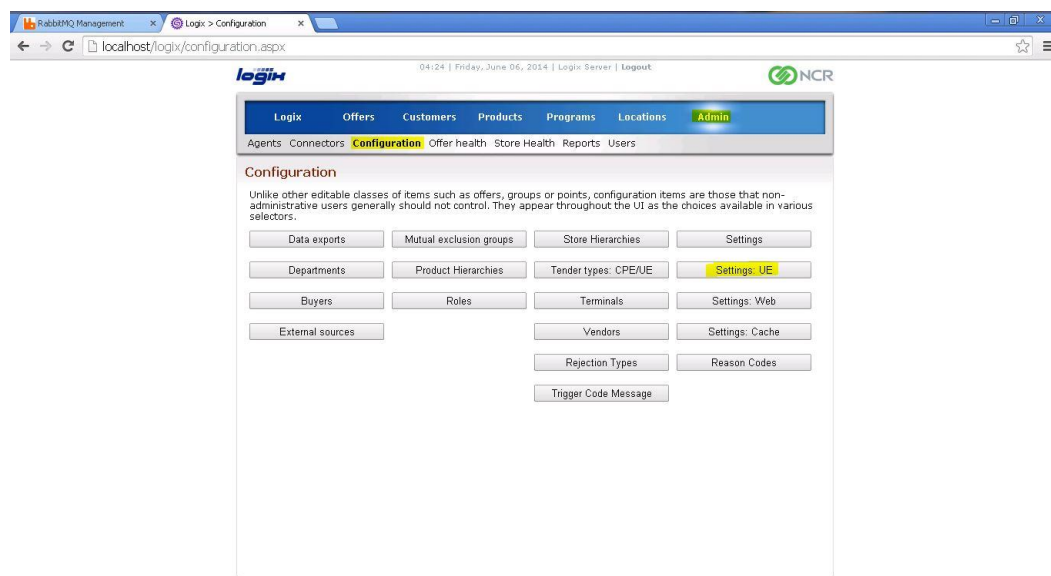
Logix MessageReceiverAgent deprecated

- g. For upgrading from previous AMS setup,
 - a. The Logix AMSMessageReceiverAgent has been replaced by Customer Service and the `ams.queue.upload` is used by the MessageReceiverAgent.
 - b. Once the 6.1.2 Customer Service is successfully deployed, the `ams.queue.upload` will become obsolete.
 - c. Then, the AMSMessageReceiverAgent can be disabled after making sure that the `ams.queue.upload` is empty.
 - d. The `ams.queue.upload` is deprecated and will not be used further. This queue can be deleted once the AMSMessageReceiverAgent has been disabled.
 - e. Also, the previous queue - `ams.queue.download` is no longer used and can be deleted.

6. Integrating Logix with RabbitMQ

Note: By default Logix is configured with default username: “ams” and password: “ncr.ams”.

- a. Navigate to Logix->Admin->Configuration->Settings:UE



- b. Under Miscellaneous section, set *Operate at Enterprise* to 'Yes'.

The screenshot shows the Logix UE settings page. The browser address bar indicates the URL is localhost/logix/UE/UEsettings.aspx?uesettings=Settings%3A+UE. The page has a navigation bar with tabs: Logix, Offers, Customers, Products, Programs, Locations, Admin. Below this is a sub-navigation bar with links: Agents, Connectors, Configuration, Offer health, Store Health, Reports, Users. The main content area is titled 'UE settings' and has a 'Save' button. The 'Miscellaneous' section is expanded, showing various configuration options:

- Allow return discounting: Yes
- Default lane type: 13
- Default operator display type: 0
- Default printer type: 3
- Enable issuance: No
- Enable reporting (enterprise): No
- GetCustomerInfo IP address:
- Impression reporting default: Disabled
- IPL - Concurrent window (minutes): 0
- IPL - Max concurrent: 0
- IPL - Max records per batch: 0
- Item Level Adjustment Application: Never apply to future items; Never redistribute
- Number of cashier message lines (10 max): 2
- Offer validation grace period (hours): 8
- Operate At Enterprise?: Yes
- Zero balance messages default: Do not print

The 'Localization' section is also visible below 'Miscellaneous':

- Enable multi unit of measure for UE: No
- Enable multi currency for UE: No

- c. Now a new section named Messaging would be displayed. Under this, set the ip or DNS name of RabbitMQ as host, and also username and password which were configured previously and click save.

The screenshot shows the Logix UE settings page with the 'Messaging' section expanded. The browser address bar indicates the URL is localhost/logix/UE/UEsettings.aspx?uesettings=Settings%3A+UE. The page has a navigation bar with tabs: Logix, Offers, Customers, Products, Programs, Locations, Admin. Below this is a sub-navigation bar with links: Agents, Connectors, Configuration, Offer health, Store Health, Reports, Users. The main content area is titled 'UE settings' and has a 'Save' button. The 'Messaging' section is expanded, showing various configuration options:

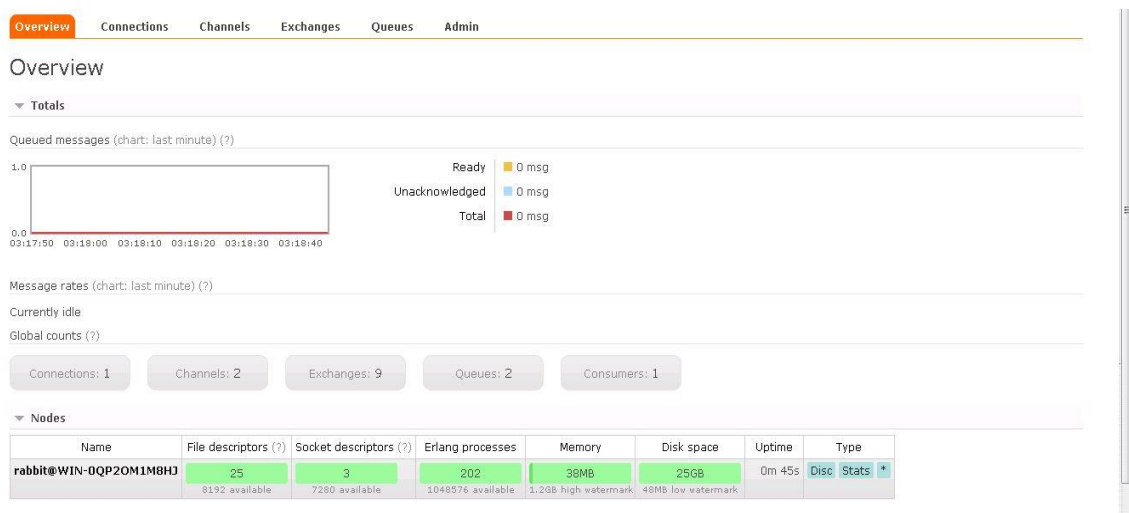
- Default currency type: US Dollars
- Enable legacy offer text: Yes
- Trackable Coupons**
 - Enable Trackable Coupons: Yes
 - Trackable Coupon Cache Refresh Interval (hours): 24
 - Trackable coupon lock timeout (seconds): 14400
 - Display coupon count on Trackable coupon program: Yes
- Products**
 - Default Product Group Type: Standard product group
- Messaging**
 - Messaging Server Host: 192.168.1.11
 - Messaging Server Port: 5672
 - Messaging Username: ams
 - Messaging Password:
- Buyers**
 - Display buyer ID with offer and product group names: No
 - Enable Buyer ID column on the offer list page and template list page: No
 - Enable Buyer ID column on the Product Group list page: No

7. Clustering

This section explains how to setup RabbitMQ clustering.

Note: In order to setup RabbitMQ cluster, all nodes should have same version of Erlang and RabbitMQ Server. And also make sure 4369 port is open.

- Follow steps in sections 2 and 3 to install Erlang and RabbitMQ.



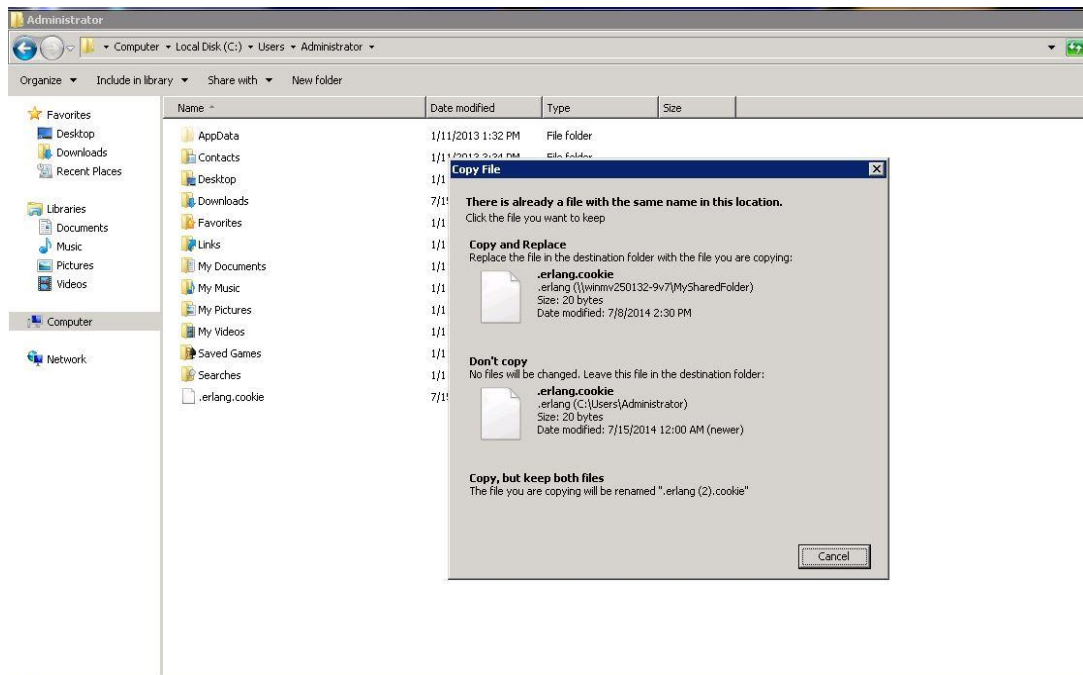
- Create new user and password following steps mentioned in section 4 of this document.

Note: Do not create queues on non-master nodes. And also username and password should be the same on all the nodes. By default username is "ams" and password is "ncr.ams".

The screenshot shows the RabbitMQ Users page. At the top, there are tabs for Overview, Connections, Channels, Exchanges, Queues, and Admin. The Admin tab is selected. Below the tabs, there's a section for 'Users' with a sub-tab 'All users'. There's a 'Filter:' input field and a 'Regex (?)' checkbox. Below the filter, there's a table showing details for two users: 'ams' and 'guest'.

Name	Tags	Can access virtual hosts	Has password
ams	administrator	/	•
guest	administrator	/	•

- Copy cookie file which is located in **%UserProfile%\erlang.cookie** of the first node to **%systemroot%** and **%UserProfile%** on all other nodes. Restart RabbitMQ service on all other machines.



d. Go to RabbitMQ sbin directory and enter the following command.

```
> rabbitmqctl stop_app
> rabbitmqctl join_cluster NODE_NAME@COMPUTER_NAME.
> rabbitmqctl start_app
```

```
Administrator: RabbitMQ Command Prompt (sbin dir)

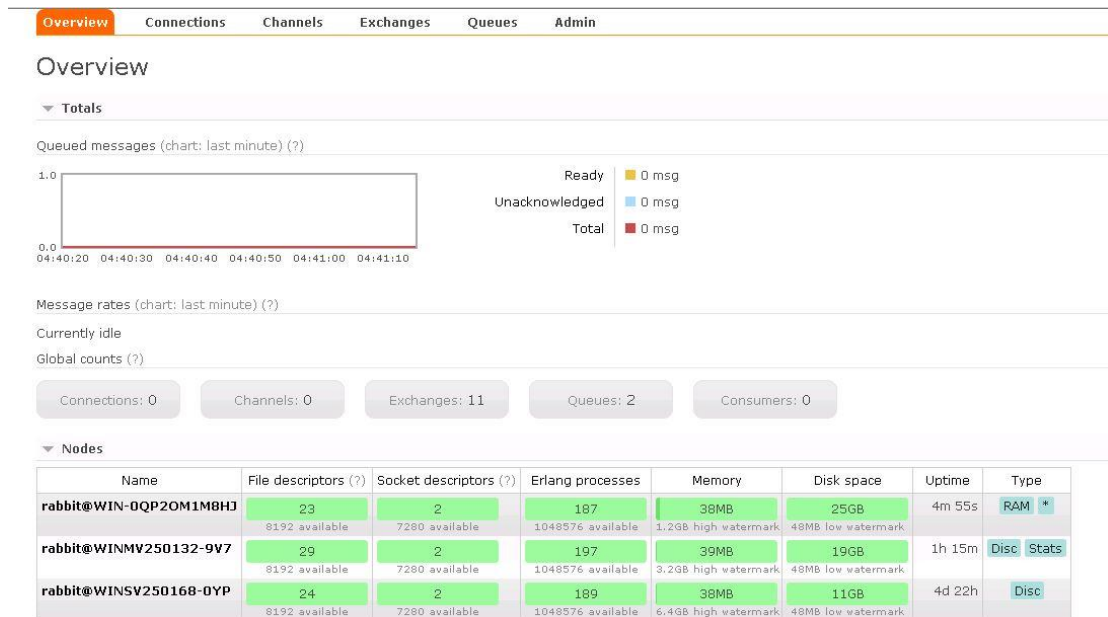
C:\Program Files (x86)\RabbitMQ Server\rabbitmq_server-3.3.4\sbin>rabbitmqctl.ba
t stop_app
Stopping node 'rabbit@WIN-0QP20M1M8HJ' ...
...done.

C:\Program Files (x86)\RabbitMQ Server\rabbitmq_server-3.3.4\sbin>rabbitmqctl.ba
t join_cluster rabbit@WINMU250132-9U7
Clustering node 'rabbit@WIN-0QP20M1M8HJ' with 'rabbit@WINMU250132-9U7' ...
...done (already_member).

C:\Program Files (x86)\RabbitMQ Server\rabbitmq_server-3.3.4\sbin>rabbitmqctl.ba
t start_app
Starting node 'rabbit@WIN-0QP20M1M8HJ' ...
...done.

C:\Program Files (x86)\RabbitMQ Server\rabbitmq_server-3.3.4\sbin>_
```

- e. Verify that the cluster has been created and connected.



- f. Now create a new policy in the first node, so that both the queues would be replicated on all nodes.

The screenshot shows the RabbitMQ Policies page. The 'Add / update a policy' form is filled out with the following values:

- Name: AMSQueuePolicy
- Pattern: /ams\..queue\..
- Apply to: Queues
- Definition: ha-mode = all
- Priority: 0

The 'Add policy' button is visible at the bottom of the form.

- g. Once it is done verify on other nodes whether those queues are created.

The screenshot shows the RabbitMQ Queues page. The table lists the following queues:

Name	Node	Exclusive	Parameters	Policy	State	Ready	Unacked	Total	Message rates
ams.queue.download	rabbit@WINSV250168-0YP	+2	D	AMSQueuePolicy	idle	0	0	0	incoming deliver / get ack
ams.queue.upload	rabbit@WINSV250168-0YP	+2	D	AMSQueuePolicy	idle	0	0	0	

8. Miscellaneous

The following ports need to be opened in order to communicate with RabbitMQ.

Port Number	Description
5672	Main RabbitMQ port used for sending and receiving data from queues.
15672	Used for accessing management console.
25672	Port used for clustering.
4369	Used by EPMD (Erlang Port Mapper Daemon). This makes sure that the nodes can find each other.

9. Logging

To change the default log path

RABBITMQ_LOG_BASE	This base directory contains the RabbitMQ server's log files, unless RABBITMQ_LOGS or RABBITMQ_SASL_LOGS are set explicitly.
RABBITMQ_LOGS	The path of the RabbitMQ server's Erlang log file. This variable cannot be overridden on Windows.
RABBITMQ_SASL_LOGS	The path of the RabbitMQ server's Erlang SASL (System Application Support Libraries) log file. This variable cannot be overridden on Windows.

Logs levels can be configured so that you can log only when particular event occurs. To configure log levels, you need create “rabbitmq.config” in **%AppData%\RabbitMQ**. Add the following lines to config file.

```
[
  {
    rabbit,
    [
      {log_levels, [{connection, error}, {mirroring, error}]}
    ]
  }
]
```

There are 3 categories for logs.

connection	For all events relating to network connections
mirroring	For all events relating to mirrored queues. This is needed when RabbitMQ is clustered.
federation	For all events relating to federation. Currently we are not using federation.

Currently there are 4 different log levels.

info	Logs everything. This is the default log level for all categories.
warning	Logs all warnings and errors.
error	Logs only errors.
none	Logs will be disabled

Note: More information about logging and other configuration can be found in the below link

<https://www.rabbitmq.com/configure.html#example-config>

10. Frequently Asked Questions

- a. Unable to access localhost:15672 from browser.
Make sure that RabbitMQ service is running.
- b. Unable to login to RabbitMQ server.
Make sure that you type the correct [username, password] combination. The default username, password combination is [guest, guest].
- c. Unable to access RabbitMQ from other machine.
Make sure new user has been added with proper permissions set. **You cannot login to remote RabbitMQ server with [guest, guest].**
- d. Messaging settings unavailable in Logix.
Make sure *Operate at Enterprise* is set to *Yes*.
- e. ams.queue.upload has 0 consumers.
Make sure RabbitMQ server ip, port, username, password are configured correctly in Logix and also restart *AMSMessagesenderAgent* and *AMSMessagesReceiverAgent* when settings are changed.
- f. ams.queue.download has 0 consumers.
Make sure RabbitMQ server ip, port, username, password are configured correctly in ams-broker.properties.
- g. Error: unable to connect to nodes [rabbit <at> master]: nodedown
This means either node is down or port 4369 is not open. Open the port and try again. Also make sure that same cookie file is present on all the machines.
- h. Where to find more information about clustering?
For more information refer to <http://www.rabbitmq.com/clustering.html> and <http://www.rabbitmq.com/ha.html>