

# RFID Middleware

# Deployment Manual

# V2.0

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## Revision record

Version	Revised content	Revised by / Revision time
V1.0	First draft	Zhiqiang Yang /2017.09.13

## 1 Environment dependence

The middleware is essentially a software that can be installed on a reader with a raspberry pi Linux OS, or on a PC with Windows or Linux OS.

### 1.1 Local Dependence

RFID middleware is developed with Java8, and it needs to install JRE1.8 or JDK1.8 Runtime Environment. Download it through internet and use the default installation steps.

### 1.2 Remote Dependence

#### 1.2.1 MySQL

RFID middleware database uses MySQL5, users can download and install from the official website. Recommend using mysql-5.7.17. When installed, it can be installed with the RFID middleware under the same server, and can also be installed on different servers. Users need to set data access rights so that RFID middleware can access its data tables.

#### 1.2.2 ActiveMQ

RFID messaging middleware using ActiveMQ, users can download and install from its official website. Recommended version 5.13.3; It can be installed on the same server as RFID middleware or on different server.

##### 1.2.2.1 Windows System

Select the appropriate service to install according to the OS bit number of the server. The installation of ActiveMQ is installed by batch, double-click  InstallService.bat to install(Run as administrator).

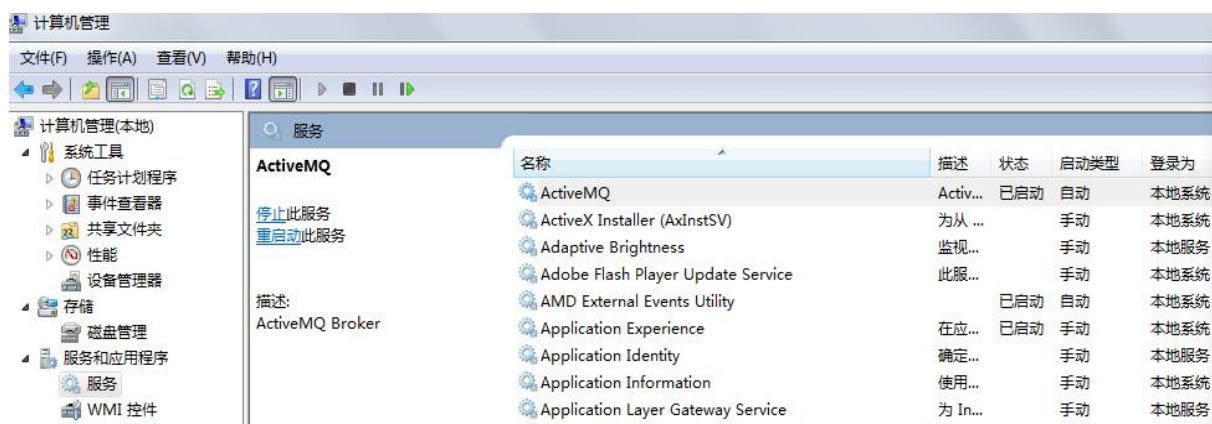
The Windows 64-bit system is installed as follows:

Windows7_OS (C:) ▶ apache-activemq-5.13.3 ▶ bin ▶ win64			
工具(T) 帮助(H)			
名称	修改日期	类型	大小
activemq.bat	2016-4-28 13:12	Windows 批处理...	2 KB
InstallService.bat	2016-4-28 13:12	Windows 批处理...	2 KB
UninstallService.bat	2016-4-28 13:12	Windows 批处理...	2 KB
wrapper.conf	2016-4-28 13:12	CONF 文件	7 KB
wrapper.dll	2016-4-28 12:29	应用程序扩展	75 KB
wrapper.exe	2016-4-28 12:29	应用程序	216 KB

The Windows 32-bit system is installed as follows:

Windows7_OS (C:) ▶ apache-activemq-5.13.3 ▶ bin ▶ win32			
工具(T) 帮助(H)			
名称	修改日期	类型	大小
activemq.bat	2016-4-28 13:12	Windows 批处理...	2 KB
InstallService.bat	2016-4-28 13:12	Windows 批处理...	2 KB
UninstallService.bat	2016-4-28 13:12	Windows 批处理...	2 KB
wrapper.conf	2016-4-28 13:12	CONF 文件	7 KB
wrapper.dll	2016-4-28 12:29	应用程序扩展	80 KB
wrapper.exe	2016-4-28 12:29	应用程序	200 KB

After you install the ActiveMQ service, you need to start the ActiveMQ service. In the computer management interface - services and applications - services, the ActiveMQ service is a stop state and needs to be started. And modify the start mode to auto. As shown in the following figure:



### 1.2.3 Linux System

Copy the bin/activemq in the ActiveMQ directory to /etc/init.d (root permissions), and edit the JAVA\_HOME and ACTIVEMQ\_HOME definitions at the front, as shown below. Modify the execution permission of /etc/init.d/activemq through the command chmod +x activemq.

```
# Unless required by applicable law or agreed to in writing, software
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.
# -----
#
# This script controls standalone Apache ActiveMQ service processes.
# To ensure compatibility to macosx and cygwin we do not utilize
# lsb standard infrastructure for controlling daemons like
# "start-stop-daemon".
#
# See also http://activemq.apache.org/activemq-command-line-tools-reference.html
# for additional commandline arguments
#
# System variables for this script, like ACTIVEMQ_OPTS and ACTIVEMQ_OPTS_MEMORY,
# can be configured in 'env' script located in this directory.
#
# For more information on configuring the script, see http://activemq.apache.org/unix-shell-script.html
#
#
# Authors:
# Marc Schoechlin <ms@256bit.org>

export JAVA_HOME=/usr/bin
ACTIVEMQ_HOME=/home/pi/app/apache-activemq-5.14.3

# -----
# IMPROVED DEBUGGING (execute with bash -x)
# export PS4=' ${BASH_SOURCE}:${LINENO}(${FUNCNAME[0]}) '

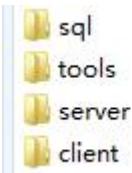
#
# Backup invocation parameters
COMMANDLINE_ARGS="$@"
EXEC_OPTION=""
```

Add ActiveMQ to the list of system services through the command `chkconfig --add activemq`, the command `chkconfig --list` is used to see if the service has been added, in Ubuntu, there may be no `chkconfig` command or execute failure, can be replaced with the Ubuntu `update-rc.d` command.

## 2 Middleware Installation

The RFID middleware software has been packaged into an installation package called `RFIDMiddleWare.zip`.

After decompression, the file structure is as follows:



## Include

sql: Database initialization script

tools: Tool set

client: Middleware client

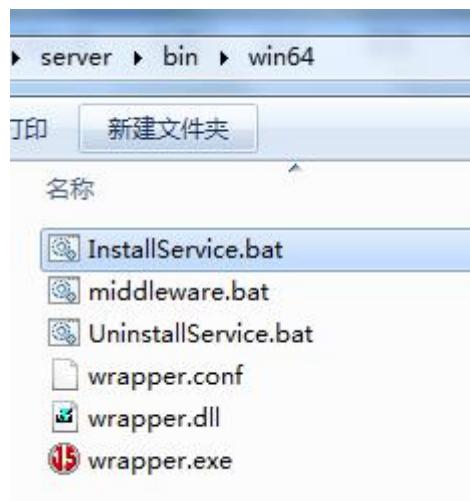
server: Middleware server

## 2.1 Middleware Server Installation

### 2.1.1 Window System

Select the appropriate service to install according to the OS bit of the server. Middleware server installation is done by batch, double-click  InstallService.bat to install.

The Windows 64-bit system is installed as follows:



The Windows 32-bit system is installed as follows:



After installing middleware server service, middleware server service need to be started. In the computer management interface - services and applications - services, middleware server service is in stop state and the service needs to be started. And modify the start mode to auto. As shown in the following figure:



### 2.1.2 Linux System

Copy the bin/middleware from the middleware server directory to /etc/init.d (root permission) and edit the JAVA\_HOME and MIDDLEWARESRV\_HOME definitions at the front, as shown below. Modify the execution permission of /etc/init.d/ middleware by command chmod +x middleware.

```
#!/bin/sh

### BEGIN INIT INFO
# Provides:          middleware
# Required-Start:    $remote_fs $network $syslog
# Required-Stop:     $remote_fs $network $syslog
# Default-Start:    3 5
# Default-Stop:     0 1 6
# Short-Description: Starts MiddleWare
# Description:       Starts MiddleWare Message Broker Server
### END INIT INFO

# -----
# This script controls standalone MiddleWare service processes.
# To ensure compatibility to macosx and cygwin we do not utilize
# lsb standard infrastructure for controlling daemons like
# "start-stop-daemon".
#
# System variables for this script, like MIDDLEWARESRV_OPTS and MIDDLEWARESRV_OPTS_MEMORY,
# can be configured in 'env' script located in this directory.
#
# Authors:
# Michael Young
# -----
export JAVA_HOME=/usr/bin
MIDDLEWARESRV_HOME=/home/pi/app/middleware/server

# -----
# IMPROVED DEBUGGING (execute with bash -x)
# export PS4=' ${BASH_SOURCE}:${LINENO}(${FUNCNAME[0]}) '
#
# Backup invocation parameters
COMMANDLINE_ARGS="$@"
EXEC_OPTION=""
```

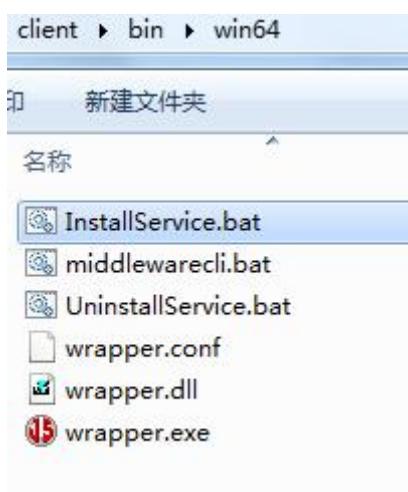
Add middleware service to the list of system services through the command chkconfig --add middleware , the command chkconfig --list is used to see if the service has been added, in Ubuntu, there may be no chkconfig command or execute failure, can be replaced with the Ubuntu update-rc.d command.

## 2.2 Middleware Client Installation

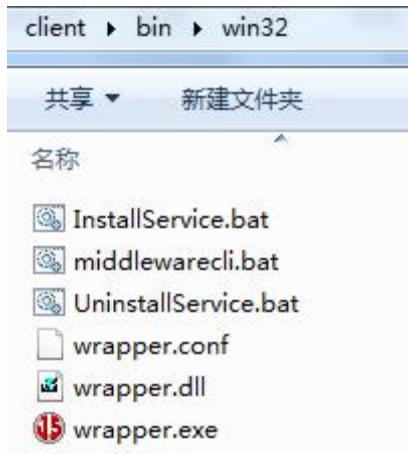
### 2.2.1 Window System

Select the appropriate service to install according to the OS bit number of the server. The installation of the middleware client is installed by batch, double-click  `InstallService.bat` to install.

The Windows 64-bit system is installed as follows:

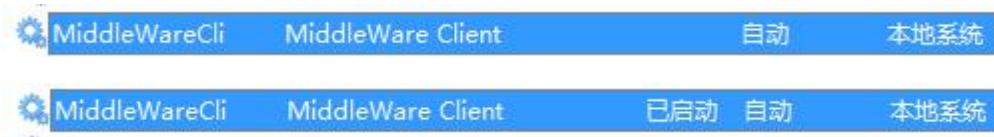


The Windows 32-bit system is installed as follows:



After you install the middleware client service, you need to start the middleware client service. In the computer management interface - services and applications - services, the middleware client service is

stopped and the service needs to be started. And modify the start mode to auto. As shown in the following figure:



### 2.2.2 Linux System

Copy the bin/middlewarecli from the middleware client directory to /etc/init.d (root permission) and edit the JAVA\_HOME and MIDDLEWARECLI\_HOME definitions at the front, as shown below. Modify the execution permission of /etc/init.d/ middlewarecli by command chmod +x middlewarecli.

```
#!/bin/sh

### BEGIN INIT INFO
# Provides:          middlewarecli
# Required-Start:    $remote_fs $network $syslog
# Required-Stop:     $remote_fs $network $syslog
# Default-Start:    3 5
# Default-Stop:     0 1 6
# Short-Description: Starts MiddleWareClient
# Description:       Starts MiddleWareClient Message Broker Server
### END INIT INFO

# -----
# This script controls standalone MiddleWareClient service processes.
# To ensure compatibility to macosx and cygwin we do not utilize
# lsb standard infrastructure for controlling daemons like
# "start-stop-daemon".
#
# System variables for this script, like MIDDLEWARECLI_OPTS and MIDDLEWARECLI_OPTS_MEMORY,
# can be configured in 'env' script located in this directory.
#
# Authors:
# Michael Young
# -----
export JAVA_HOME=/usr/bin
MIDDLEWARECLI_HOME=/home/pi/app/client

# -----
# IMPROVED DEBUGGING (execute with bash -x)
# export PS4=' ${BASH_SOURCE}:${LINENO}(${FUNCNAME[0]}) '
#
# Backup invocation parameters
COMMANDLINE_ARGS="$@"
EXEC_OPTION=""
```

Add middlewarecli service to the list of system services through the command chkconfig --add middlewarecli, the command chkconfig --list is used to see if the service has been added, in Ubuntu, there may be no chkconfig command or execute failure, can be replaced with the Ubuntu update-rc.d command.

## 2.3 Configuration

RFID middleware needs to be configured before it can be used properly.

### 2.3.1 Database Configuration

The RIFD middleware needs the supporting database to work properly.

The database initialization script is in the SQL folder, and the script can initialize the database.

#### 2.3.1.1 Server Configuration

The server-side configuration file is located under the middleware server directory server\conf:

❖ middleware.properties

middleware.properties is used to configure middleware runtime information, including:

- ✓ middleware.datasource.driver-class-name: Database driver name, generally no need to modify
- ✓ middleware.datasource.url: databaseURL
- ✓ middleware.datasource.username: Database login account
- ✓ middleware.datasource.password: Database login password
- ✓ middleware.jpa.database-platform: The dialect used in a database is generally not required to be modified
  
- ✓ middleware.activemq.url: ActiveMQ path
- ✓ middleware.activemq.queue: Master service queue name
  
- ✓ middleware.log.tag.enable: Tag log enable
- ✓ middleware.log.tag.interval: Tag log storage interval (ms)
- ✓ middleware.log.tag.recnum: Maximum number of label logs

```
#  
#Tue Apr 25 09:44:08 CST 2017  
  
#using mysql  
middleware.datasource.driver-class-name=com.mysql.cj.jdbc.Driver  
middleware.datasource.url = jdbc:mysql://127.0.0.1:3306/middleware?useSSL=false&serverTimezone=UTC  
middleware.datasource.username = root  
middleware.datasource.password = 002121  
middleware.jpa.database-platform=org.hibernate.dialect.MySQL5Dialect  
  
# using sqlite  
middleware.datasource.driver-class-name=org.sqlite.JDBC  
middleware.datasource.url = jdbc:sqlite:middleware.db  
middleware.datasource.username =  
middleware.datasource.password =  
middleware.jpa.database-platform=org.hibernate.dialect.SQLiteDialect  
  
middleware.activemq.url=tcp://127.0.0.1:61616  
middleware.activemq.queue=middleware.queue.server  
  
middleware.log.tag.enable = true  
middleware.log.tag.interval = 2000  
middleware.log.tag.recnum = 100000
```

❖ log4j.properties

log4j.properties Log system configuration

### 2.3.1.2 Client Configuration

The client configuration file is located under the middleware client directory client\conf:

❖ application.properties

application.properties is used to configure middleware runtime information, including:

- ✓ server.port: Service port number
- ✓ spring.datasource.driver-class-name: Database driver

- ✓ spring.datasource.url: Database URL
- ✓ spring.datasource.username: Database login account
- ✓ spring.datasource.password: Database login password
- ✓ spring.jpa.database-platform: Database dialect version
- ✓ middleware.activemq.url: ActiveMQ URL path
- ✓ middleware.activemq.queue: Queue name

```
#####
###EMBEDDED SERVER CONFIGURATION (ServerProperties)
#####
server.port=8080

# using mysql
spring.datasource.driver-class-name=com.mysql.jdbc.Driver
spring.datasource.url = jdbc:mysql://127.0.0.1:3306/middleware?useSSL=false&serverTimezone=UTC
spring.datasource.username = root
spring.datasource.password = 002121
spring.jpa.database-platform=org.hibernate.dialect.MySQL5Dialect

# using sqlite
#spring.datasource.driver-class-name=org.sqlite.JDBC
#spring.datasource.url = jdbc:sqlite:middleware.db
#spring.datasource.username =
#spring.datasource.password =
#spring.jpa.database-platform=org.hibernate.dialect.SQLiteDialect

middleware.activemq.url=tcp://127.0.0.1:61616
middleware.activemq.queue=middleware.queue.server
```

❖ log4j.properties

log4j.propertiesLog system configuration

### 2.3.2 Authorization

The middleware server needs to be authorized to use, and the user need to send the machine code authorization to our company. Our

company will generate the authorization file license and send it to the user.

The user executes the java -jar GetSN.Jar --c in the tool directory to generate SN

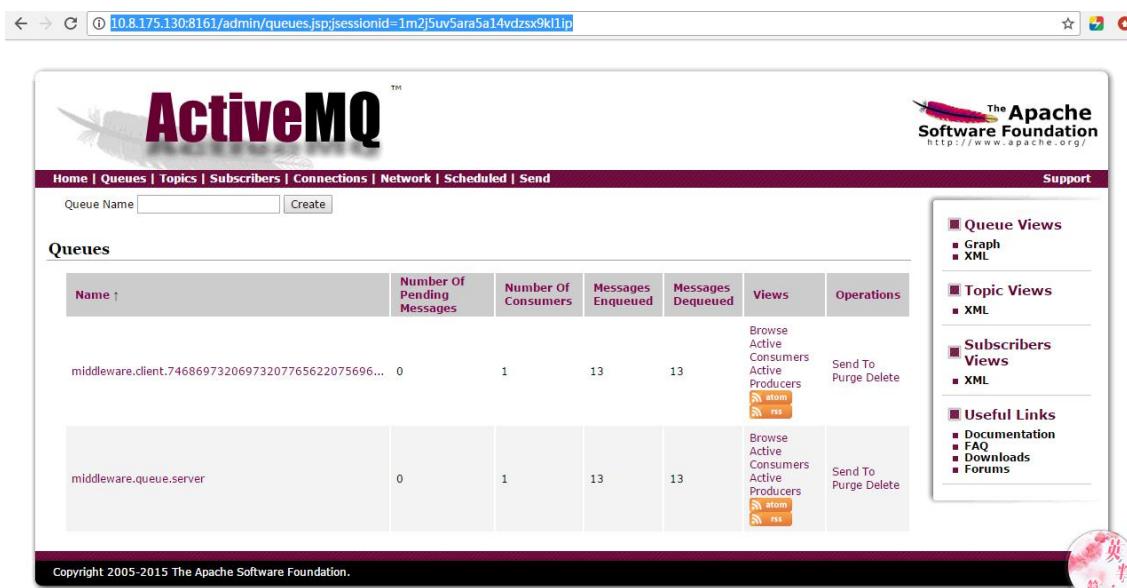
After you get the SN, please send it to our related personnel. Our staff will send the corresponding license files back.

## 2.4 Validation

### 2.4.1 Server Validation

Through the http://ip:8161 into the ActiveMQ management page, View the queue, the main message queue has a consumer representative configured successfully.

The default account is admin / admin.



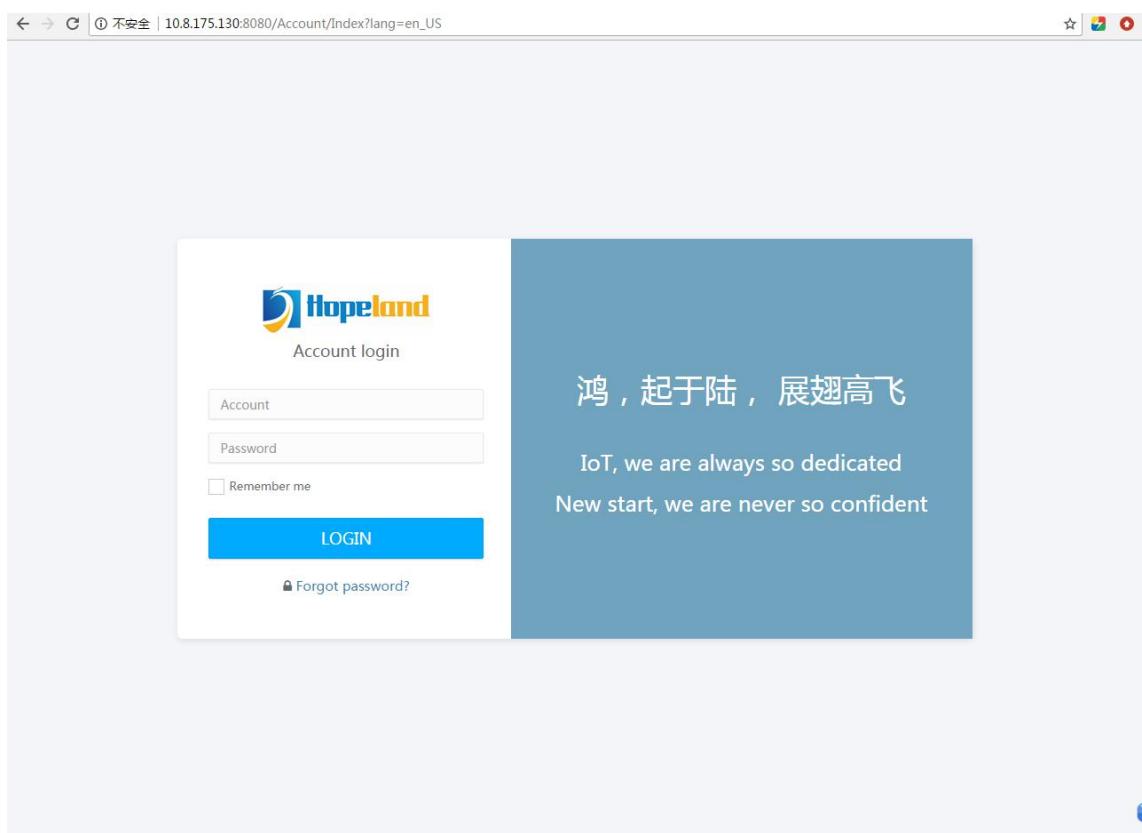
Queues

Name ↑	Number Of Pending Messages	Number Of Consumers	Messages Enqueued	Messages Dequeued	Views	Operations
middleware.client.74686973206973207765622075696...	0	1	13	13	<a href="#">Browse</a> <a href="#">Active Consumers</a> <a href="#">Active Producers</a> <a href="#">atom</a> <a href="#">rss</a>	<a href="#">Send To</a> <a href="#">Purge</a> <a href="#">Delete</a>
middleware.queue.server	0	1	13	13	<a href="#">Browse</a> <a href="#">Active Consumers</a> <a href="#">Active Producers</a> <a href="#">atom</a> <a href="#">rss</a>	<a href="#">Send To</a> <a href="#">Purge</a> <a href="#">Delete</a>

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## 2.4.2 Client Validation

Through the `http://ip:8080` into the middleware client page, can open properly, you can determine the client started successfully.



After logging in, the authorization information can be displayed normally, indicating that both the server and the client start up normally and the connection is successful.

  welcome

  root ▾

root,Welcome to use hopeland RFID system!  
2017-9-18 14:52:40

Total Devices: 0    Total Online: 0    Task Count: 0    Task online Count: 0

**Performance**

CPU: 1% 

Memory: 50% 

**Authorization info.**

**Evaluation**  
Authorized to

**Authorized**  
Authorized status

Wed Oct 18 06:42:14 UTC 2017  
Valid date until

10.8.175.130:8080/Home#4-subPages

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