EUROPEAN COMMISSION

DIGIT
Connecting Europe Facility

Access Point

Administration Guide

Domibus 3.3.4

Version [1.3.3]

Status [Final]

Date: 21/11/2018

Document Approver(s):

Approver Name	Role
Adrien FERIAL	CEF Technical Office

Document Reviewers:

Reviewer Name	Role
Cosmin BACIU	CEF Technical Office
Catalin-Emanuel ENACHE	CEF Technical Office

Summary of Changes:

Version	Date	Created by	Short Description of Changes
1.07	09/02/2018	Chaouki BERRAH Caroline AEBY	Update for version 3.3.2 Information on MySQL and Oracle deletion scripts added as well as Domibus operational guidelines.
1.08	20/03/2018	Caroline AEBY	Reuse notice added, links to AS4 specifications upated.
1.09	04/04/2018	Chaouki BERRAH Caroline AEBY	Domibus 3.3.3
1.2	16/04/2018	Caroline AEBY	Domibus 3.3.4 PMode configuration moved from plugin management section into separate section. Domibus properties: dynamic.discovery => dynamicdiscovery. 2 new properties added: domibus.dynamicdiscovery.partyid.responder.role & domibus.dynamicdiscovery.partyid.type
1.3	21/06/2018	Chaouki BERRAH	Domibus 3.3.4 Updates + binary files sources references updated
1.3.1	19/10/2018	Chaouki BERRAH	-Djava.io.tmpdir=<path to _tmp directory> option added
1.3.2	24/10/2018	Chaouki BERRAH	Oracle configuration update
1.3.3	21/11/2018	Caroline AEBY	Added missing line in Pmode about Pull mode

Table of Contents

1. INTRODUCTION

This Administration Guide is intended for Server Administrators in charge of installing, managing and troubleshooting an eDelivery Access Point.

1.1. Purpose

The purpose of this guide is to provide detailed information on how to deploy and configure Domibus on WebLogic, Tomcat and WildFly with MySQL or Oracle. It also provides detailed descriptions of related Security Configurations (Policies, Certificates), Message Filtering, PMode Configuration, Application Monitoring, Custom Plugins Registration, JMS Monitoring, Data Archiving, Troubleshooting and TLS Configuration.

1.2. References

Ref.	Document	Content outline
[REF1]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus+-+v3.3.4	Location of the release artefacts on the CEF Digital site
[REF2]	https://dev.mysql.com/downloads/connector/j/	Location to download the MySQL JDBC driver from the Official website
[REF3]	http://www.oracle.com/technetwork/database/features/jdbc/default-2280470.html	Location of the Oracle JDBC driver from the Official website
[REF4]	https://docs.jboss.org/author/display/WFLY9/WildFly+9+Cluster+Howto	Location to the Official documentation on how to setup a cluster on WildFly 9
[REF5]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/PKI+Service	CEF Public Key Infrastructure (PKI) Service Offering Document
[REF6]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus	Location of the latest Domibus release on the Single Web Portal

Ref.	Document	Content outline
[REF7]	https://access.redhat.com/documentation/en-US/Red_Hat_JBoss_Fuse/6.0/html/XML_Configuration_Reference/files/cxf-http-conf-2_7_0_xsd_Element_http-conf_tlsClientParameters.html	RedHat page for the XML Configuration Reference of the *http-conf:tlsClientParameters* element
[REF8]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+SMP	SMP (Service Metadata Publisher) and Dynamic Discovery in AS4 Gateways
[REF9]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+SMP	Space describing the SMP (Service Metadata Publisher)
[REF10]	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+AS4	eDelivery AS4 Profile

2. CONVENTIONS

The commands and configuration files listed in this document usually contain a mix of reserved words (commands, instructions and system related special words) and user defined words (chosen by the user) as well as comments and preferred values for certain variables. The conventions used in this document, to distinguish between them, are the followings:

- To keep this document release agnostic as much as possible, the strings "x-y-z" or "x.y.z" are intended to refer to the version of Domibus discussed in this version of the document, in the present case "Domibus 3.3.4".
- **Bold** is used for "reserved" words and commands.
- *Normal italic* together with a short description of the argument is used for user-defined names (chosen by you to designate items like users, passwords, database etc.). Normally contains at least 2 words separated by "_".
- ***Bold and Italic*** is used for advisable values which can be changed by the user depending on their infrastructure.
- Comments are sometimes added to describe the purpose of the commands, usually enclosed in brackets ().

By default, non-OS specific paths will be described using Linux patterns.

2.1. Example 1: Sample Oracle Statement

create user *edelivery_user* **identified by** *edelivery_password*;

grant all privileges to *edelivery_user*;

(Where *edelivery_user* and *edelivery_password* are names chosen by the user)

2.2. Example 2: Sample Configuration file

jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver

jdbc.datasource.0.driver.url=jdbc:mysql://*localhost:3306/* *domibus_schema*

jdbc.datasource.0.driver.password=*edelivery_password*

jdbc.datasource.0.driver.username=*edelivery_user*

(Where:

- *edelivery_user, domibus_schema* and *edelivery_password* are names chosen by the user.

- ***localhost:3306*** represents hostname:port parameters of the MySQL database.)

3. PREREQUISITES

Please install the following software on the target system. For further information and installation details, we kindly advise you to refer to the software owner's documentation.

- Java runtime environnement (JRE), version 7 or 8:

  http://www.oracle.com/technetwork/java/javase/downloads/index.html

- One of the supported Database Management Systems :
  - MySQL 5,6 or above
  - Oracle 10g+
- If you don't plan to deploy Domibus according to the Pre-Configured Single Server Deployment method, you must also install one of the supported application/web servers:
  - WebLogic 12c
  - WildFly 9
  - Apache Tomcat 8.0.x
- All Domibus installation resources, including full distributions and documentation can be found on the Single Web Portal :

  https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus

3.1. Binaries repository

All the Domibus 3.3.4 artefacts can be directly downloaded from the CEF Digital site (cf.[REF1]).

4. DOMIBUS DEPLOYMENT

Remark:

*The variable **cef_edelivery_path** referring to the folder where the package is installed will be used later in this document*.

4.1. Database Configuration

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-sql-scripts.zip**

4.1.1. MySQL and Oracle Deletion scripts

A deletion script for MySQL (mysql5innoDb-3.3.4-delete-db.sql) and Oracle (oracle10g-3.3.4-delete-db.sql) Domibus DB is available in the **domibus-distribution-X.Y.Z-sql-scripts.zip**.

The purpose of the script is to delete all messages within a user defined period to recover disk space. The script requires a START_DATE parameter and an END_DATE parameter to be set.

The tables affected by the execution of this script are:

- TB_MESSAGING
- TB_ERROR_LOG
- TB_PARTY_ID
- TB_RECEIPT_DATA
- TB_PROPERTY
- TB_PART_INFO
- TB_RAWENVELOPE_LOG
- TB_ERROR
- TB_USER_MESSAGE
- TB_SIGNAL_MESSAGE
- TB_RECEIPT
- TB_MESSAGE_INFO
- TB_MESSAGE_LOG

Any information relevant to a message received or sent during the predefined period, will be removed from these tables.

In order to execute this script, it is advised to use a UI tool such as SQL developer of MySQL workbench.

Important: in order to keep the JMS queues synchronized with the DB data that will be deleted by this script, the Domibus Administrator should remove manually the associated JMS messages from the plugin notifications queues

4.1.2. MySQL configuration

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path***/sql-scripts.**

2. Open a command prompt and navigate to this directory: *cef_edelivery_path***/sql-scripts**.

3. (Optional) Storing payload messages in a database with size over 30 MB.

   Domibus can temporarily store the messages in the database. They are not deleted before they are successfully transferred to the final recipient (see §7 – *"PMode Configuration"*). Therefore, it is required to increase the maximum allowed size of packets. Update the default properties of **my.ini** (Windows) or **my.cnf** (Linux).

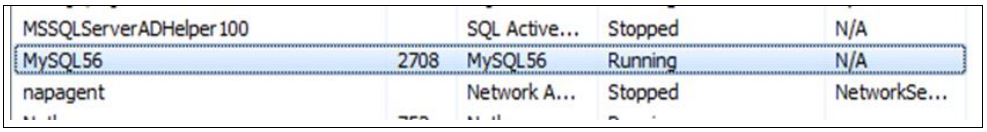
   - **max_allowed_packet** property

```
# The maximum size of one packet or any generated or intermediate string, or any
# parameter sent by the
# mysql_stmt_send_long_data() C API function.
max_allowed_packet=512M
```

   - **innodb_log_file_size** property

```
# Size of each log file in a log group. You should set the combined size
# of log files to about 25%-100% of your buffer pool size to avoid
# unneeded buffer pool flush activity on log file overwrite. However,# note that larger logfile size will increase the time needed for the recovery process
innodb_log_file_size=5120M
```

   - Restart MySQL service (Windows):



MySQL service

4. (Optional) For storing payload messages in a file system instead of a database see §5.2 – *"Domibus Properties"*).

5. For MySQL 8 and Connector/J 8.0.x please set the database timezone. One way of setting the timezone is to modify the MySQL **my.ini** configuration file by adding the following property with the adjusted timezone. It is recommended that the database timezone is the same as the timezone of the machine where Domibus is installed.

```
default-time-zone='+00:00'
```

6. Execute the following MySQL commands at the command prompt :

   Remark:

   User defined names like root_password, domibus_schema etc..., are in italic as described in the Convention section.

mysql -h *localhost* -u *root_user* **--password=***root_password* **-e "drop schema if exists** *domibus_schema***;create schema** *domibus_schema***;alter database** *domibus_schema* **charset=utf8 collate=utf8_bin; create user** *edelivery_user@localhost* **identified by '***edelivery_password***';grant all on** *domibus_schema.** **to** *edelivery_user@localhost***;"**

The above creates a schema (*domibus_schema*) and a user (*edelivery_user*) that have all the privileges on the schema**.**

```
mysql -h localhost -u root_user --password=root_password domibus_schema < mysql5innoDb-x.y.z.ddl
```

The above creates the required tables in *domibus_schema.*

Remark:

If you are using Windows, make sure to have the parent directory of mysql.exe added to your PATH variable.

4.1.3. Oracle configuration

1. Unzip **domibus-distribution-X.Y.Z-sql-scripts.zip** in *cef_edelivery_path***/sql-scripts**
2. Open a command prompt and navigate to this directory: *cef_edelivery_path***/sql-scripts**.
3. Open a command line session, log in and execute the following commands :

```
sqlplus sys as sysdba (password should be the one assigned during the Oracle installation )
==========================================================================
Once logged in Oracle:
CREATE USER <edelivery_user> IDENTIFIED BY <edelivery_password> DEFAULT TABLESPACE <tablespace>
QUOTA UNLIMITED ON <tablespace>;
GRANT CREATE SESSION TO <edelivery_user>;
GRANT CREATE TABLE TO <edelivery_user>;
GRANT CREATE VIEW TO <edelivery_user>;
GRANT CREATE SEQUENCE TO <edelivery_user>;
GRANT EXECUTE ON DBMS_XA TO <edelivery_user>;
GRANT SELECT ON PENDING_TRANS$ TO <edelivery_user>;
GRANT SELECT ON DBA_2PC_PENDING TO <edelivery_user>;
GRANT SELECT ON DBA_PENDING_TRANSACTIONS TO <edelivery_user>;
CONNECT <edelivery_user>
SHOW USER; (should return : edelivery_user)
@oracle10g-x.y.z.ddl
EXIT
==========================================================================
```

4.2. Domibus on WebLogic 12.1.3

This section does not include the installation of WebLogic server 12.1.3. It is assumed that the WebLogic Server is installed and a Domain is created.
Hereafter the domain location will be referred as *DOMAIN_HOME (user defined name)*.

Remark:

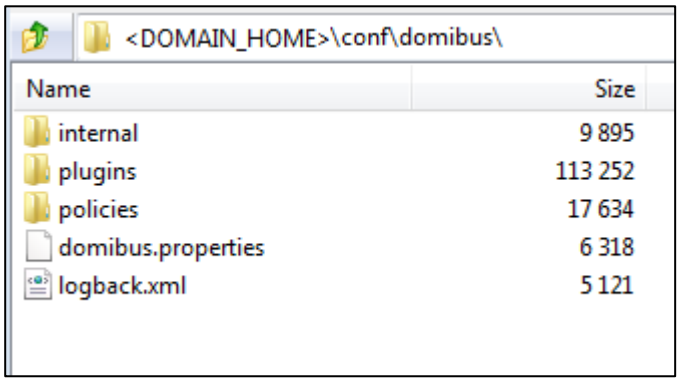
The Apache CXF library referred by Domibus, internally uses the environment variable java.io.tmpdir to buffer large attachments received. If the property java.io.tmpdir is not specified, then by default this points to the <Weblogic_domain_directory>. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the Weblogic application server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.

4.2.1. Single Server Deployment

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository "* for the download location):

- **domibus-distribution-X.Y.Z-weblogic-war.zip**
- **domibus-distribution-X.Y.Z-weblogic-configuration.zip**
- **domibus-distribution-X.Y.Z-default-ws-plugin.zip** (optional)
- **domibus-distribution-X.Y.Z-default-jms-plugin.zip** (optional)
- **domibus-distribution-X.Y.Z-default-fs-plugin.zip** (optional)

1. Download and unzip **domibus-distribution- X.Y.Z-weblogic-configuration.zip** in the directory *DOMAIN_HOME***/conf/domibus**



2. Download and unzip **domibus-distribution- X.Y.Z-weblogic-war.zip** in a temporary folder to prepare it for deployment.

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*

4. Add the following lines in:

   - For Windows : *DOMAIN_HOME***\bin\setDomainEnv.cmd**

     - Locate the **set DOMAIN_HOME** statement and add the following lines after:

```
…
set DOMAIN_HOME
# Added for Domibus
**************************************************************
```

```
set EXTRA_JAVA_PROPERTIES=%EXTRA_JAVA_PROPERTIES% -
Ddomibus.config.location=%DOMAIN_HOME%/conf/Domibus -Djava.io.tmpdir=<path to _tmp
directory>
#
*************************************************************************
*******
…
```

- For Linux : *DOMAIN_HOME*/**bin/setDomainEnv.sh**

  - Locate the **export DOMAIN_HOME** statement and add the following lines after:

```
…
export DOMAIN_HOME
# Added for Domibus
*****************************************************************
EXTRA_JAVA_PROPERTIES="$EXTRA_JAVA_PROPERTIES -
Ddomibus.config.location=$DOMAIN_HOME/conf/domibus" -Djava.io.tmpdir=<path to _tmp
directory>
export EXTRA_JAVA_PROPERTIES
#
*************************************************************************
*******
…
```

5. Run the WebLogic Scripting Tool (WLST) in order to create the JMS resources and the Database datasources from the command line:

   - Download the WLST Package from following location: https://ec.europa.eu/cefdigital/artifact/content/repositories/eDelivery/eu/europa/ec/digit/ipcis/wslt-api/1.9.1/wslt-api-1.9.1.zip

   - Configure the WSLT API tool

     - Unzip the **wslt-api-1.9.1.zip**

     - Define the **WL_HOME** as a system environment variable to point to the WebLogic 'wlserver' directory as defined in the **DOMAIN_HOME/bin/setDomainEnv.[cmd|sh]**

       e.g. WL_HOME=/wls12130/wlserver

   - Take the script **WeblogicSingleServer.properties** from **domibus-distribution-X.Y.Z-weblogic-configuration.zip** under the scripts directory and copy the **WeblogicSingleServer.properties** file into the **wslt-api-1.9.1** directory and adapt the following properties :

     - Adapt the properties for connecting to the WebLogic domain:

```
domain.loading.type=connect
domain.connect.url=t3://localhost:7001
domain.connect.username=weblogic_name
domain.connect.password=weblogic_password
```

```
domain.name=my_domain1
```

- Adapt the jdbc.datasource properties for the datasources:

  - For Oracle database:

```
jdbc.datasource.0.name=eDeliveryDs
jdbc.datasource.0.driver.name=oracle.jdbc.xa.client.OracleXADataSource
jdbc.datasource.0.driver.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
jdbc.datasource.0.driver.password=edelivery_password
jdbc.datasource.0.driver.username=edelivery_username

jdbc.datasource.1.name=eDeliveryNonXA
jdbc.datasource.1.driver.name= oracle.jdbc.OracleDriver
jdbc.datasource.1.driver.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
jdbc.datasource.1.driver.password=edelivery_password
jdbc.datasource.1.driver.username=edelivery_username
```

Remark:

MySQL configuration is commented by default. To enable MySQL, remove the comment (#) from the lines below. Don't forget to add the comment (#) for Oracle to disable it.

  - For MySQL:

```
jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver
# Connector/J 8.0.x
#jdbc.datasource.0.driver.name= com.mysql.cj.jdbc.Driver
jdbc.datasource.0.driver.url=jdbc:mysql://localhost:3306/domibus_schema
jdbc.datasource.0.driver.password=edelivery_password
jdbc.datasource.0.driver.username=edelivery_username
jdbc.datasource.0.transaction.protocol=LoggingLastResource
jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1

jdbc.datasource.1.driver.name=com.mysql.jdbc.Driver
# Connector/J 8.0.x
#jdbc.datasource.1.driver.name= com.mysql.cj.jdbc.Driver
jdbc.datasource.1.driver.url=jdbc:mysql://localhost:3306/domibus_schema
jdbc.datasource.1.driver.password=edelivery_password
jdbc.datasource.1.driver.username=edelivery_username
jdbc.datasource.1.transaction.protocol=None
jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1

#.
#.
#.

#Oracle
#domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=oracle.jdbc.xa.client.OracleXADataSource
#domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.Oracle10gDialect
#MySQL
```

```
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=com.mysql.jdbc.Driver
# Connector/J 8.0.x
#domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=com.mysql.cj.jdbc.Driver
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.MySQL5InnoDBDialect
```

- Adapt the property for location of the filestore **persistent.filestore.0.location**.

  Example:

```
persistent.filestore.0.location=DOMAIN_HOME/filestore
```

Remark:

Make sure that the path for the filestore contains forward slashes (/).

- Adapt if necessary the JMX security configuration:

  Example:

```
#################################################################
## Policy configuration
#################################################################
security.policies.0.mode = CREATE
security.policies.0.resource = type=<jmx>, operation=invoke, application=,
mbeanType=weblogic.management.runtime.JMSDestinationRuntimeMBean
security.policies.0.realm = myrealm
security.policies.0.authorizer = XACMLAuthorizer
security.policies.0.expression= Rol(Admin)|Grp(Administrators)|Grp(JMSManagers)
security.policies.items = 1
#################################################################
## Users configuration
#################################################################
security.users.0.realm=myrealm
security.users.0.name=jmsManager
security.users.0.password=jms_Manager1
security.users.0.comment=
security.users.0.authenticator=DefaultAuthenticator
security.users.items=1
#################################################################
## Groups configuration
#################################################################
security.groups.0.realm=myrealm
security.groups.0.name=JMSManagers
security.groups.0.description=
security.groups.0.authenticator=DefaultAuthenticator
security.groups.items=1
#################################################################
## Groups Membership configuration
#################################################################
security.group.member.0.user=jmsManager
security.group.member.0.groups=JMSManagers
security.group.member.0.realm=myrealm
security.group.member.0.authenticator=DefaultAuthenticator
```

security.group.member.items=1

- Start the WebLogic domain from within *DOMAIN_HOME:*
  - For Windows:

startWebLogic.cmd

  - For Linux:

startWebLogic.sh

- Execute the following command from within the **wlstapi-1.9.1/bin** directory:
  - For Windows:

wlstapi.cmd ..\scripts\import.py --property ..\WeblogicSingleServer.properties

  - For Linux:

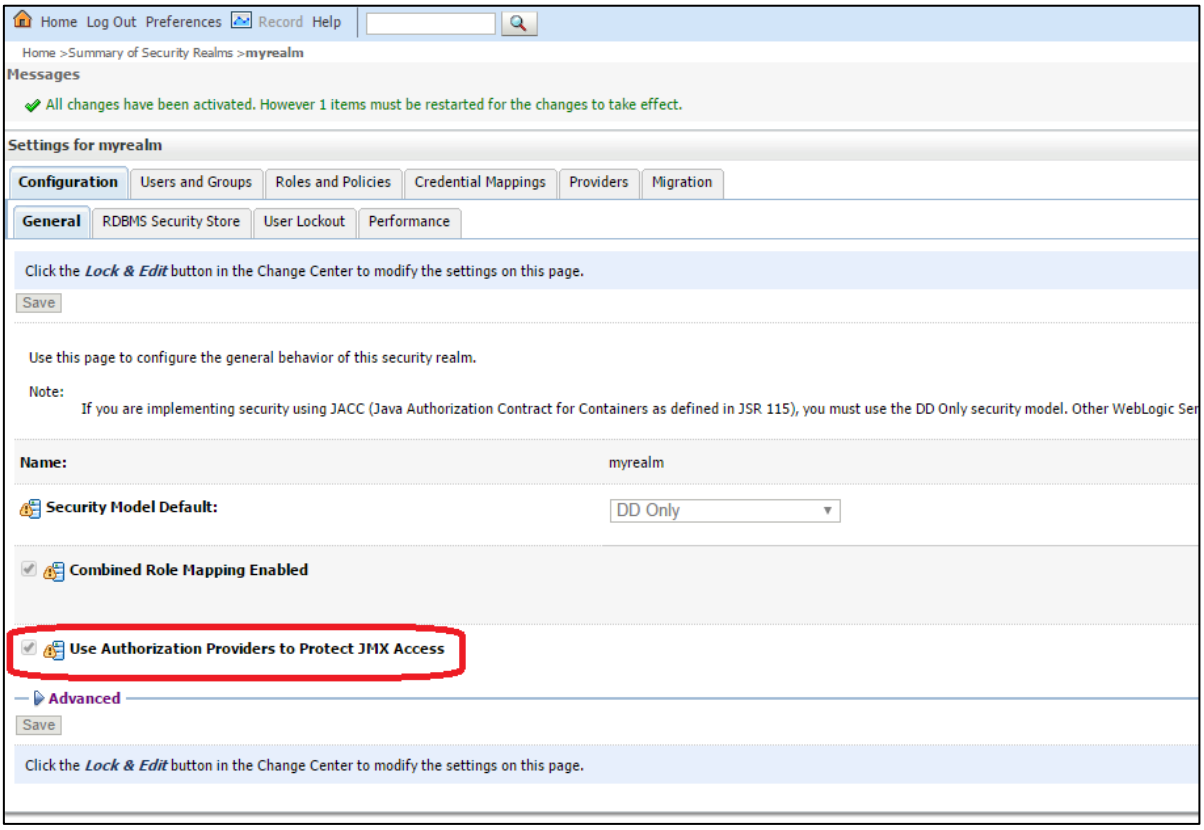
wlstapi.sh ../scripts/import.py --property ../WeblogicSingleServer.properties

Expected result:

```
Saving all your changes ...
Saved all your changes successfully.
Activating all your changes, this may take a while ...
The edit lock associated with this edit session is released
once the activation is completed.
Activation completed
Location changed to serverRuntime tree. This is a read-only tree with DomainMBean as the root.
For more help, use help('domainConfig')

Disconnected from weblogic server: AdminServer
```

6. Activate the use of the authorization providers to protect the JMX access:



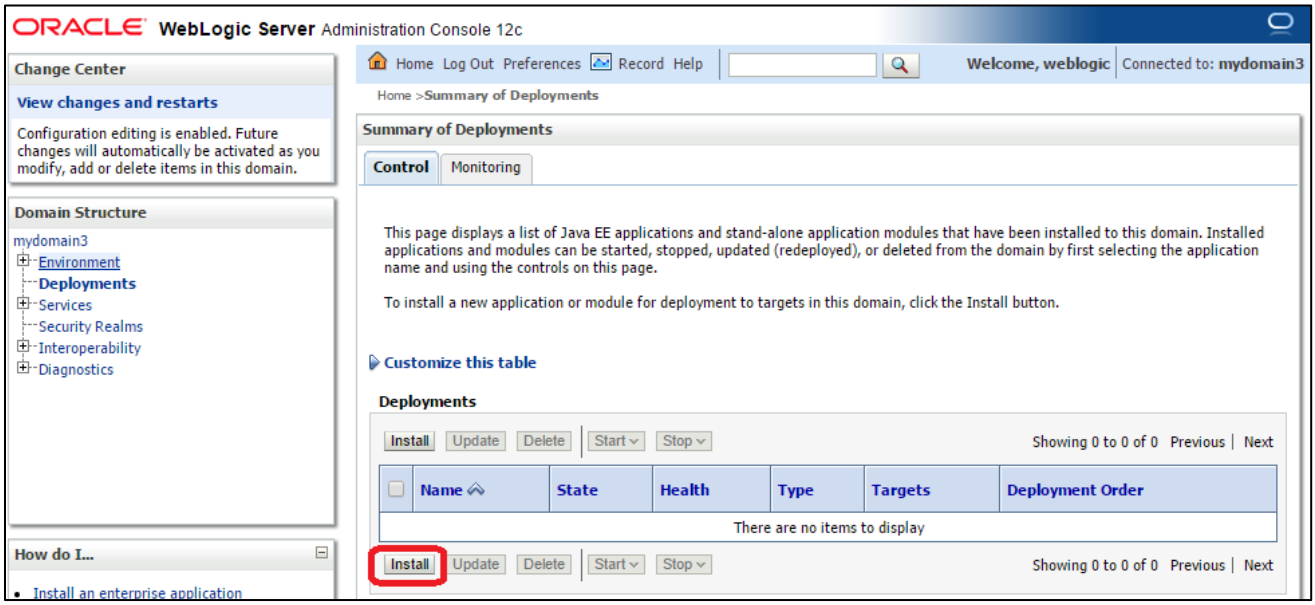
7. The database dialect is pre-configured to use the Oracle database. If you are using a MySQL database, you should adapt the following properties in <*DOMAIN_HOME*>**/conf/domibus/domibus.properties** as highlighted in the example below:

```
# ----------------------------- EntityManagerFactory ----------------------
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=
com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.MySQL5InnoDBDialect
```

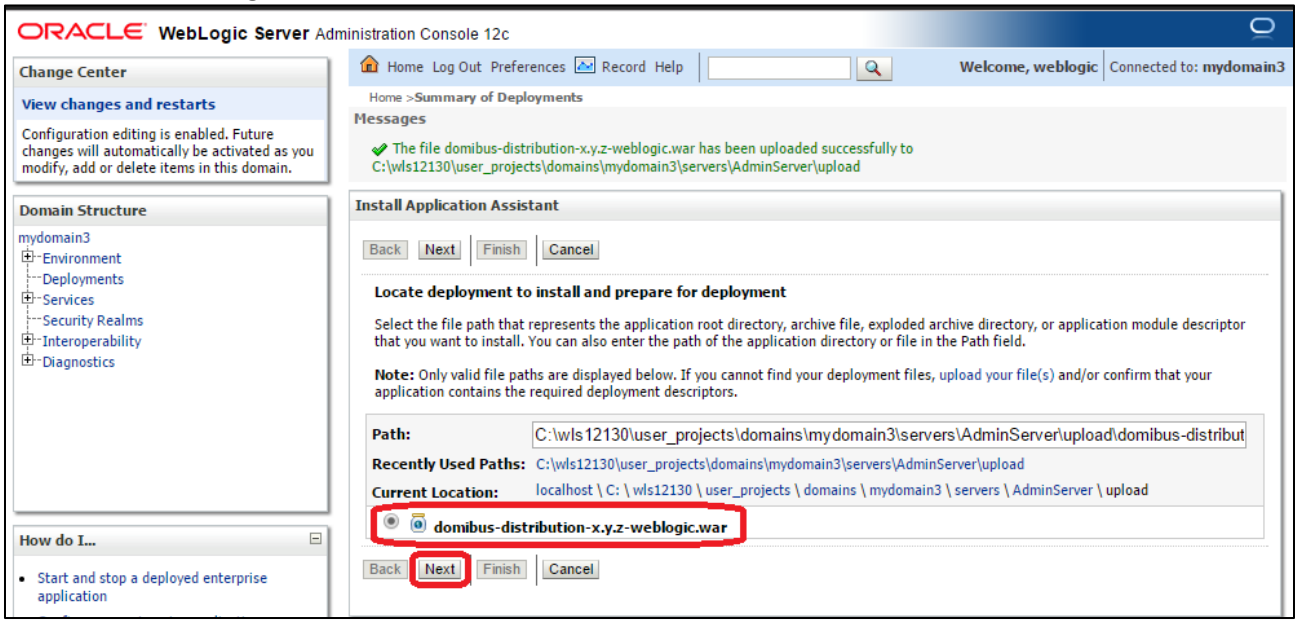
8. Install the WS Plugin. For more details, see section §6.2.1.2 – *"WebLogic"*.

9. Deploy **domibus-distribution-X.Y.Z-weblogic.war**

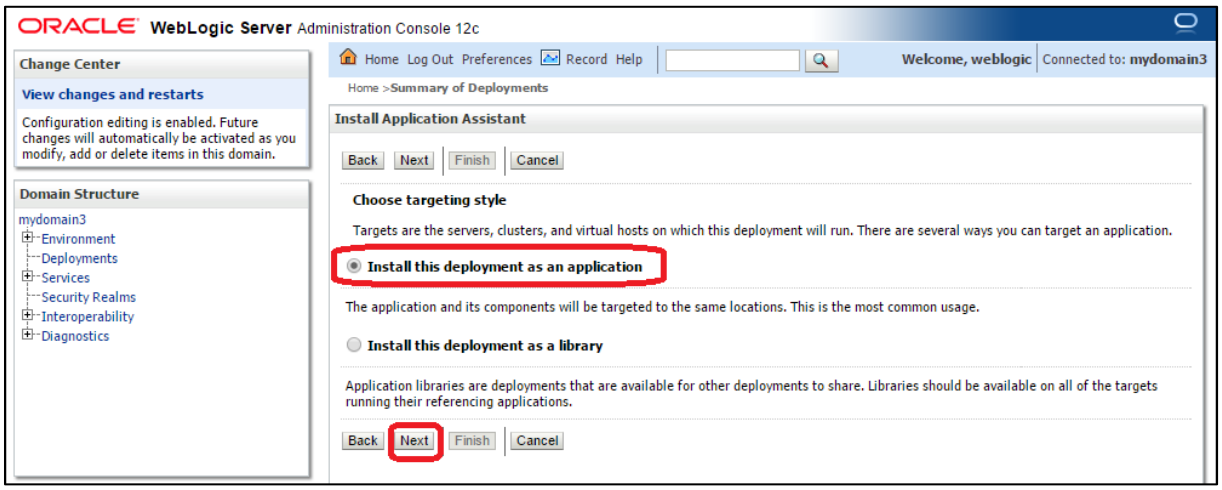
   - Click on **Install**:



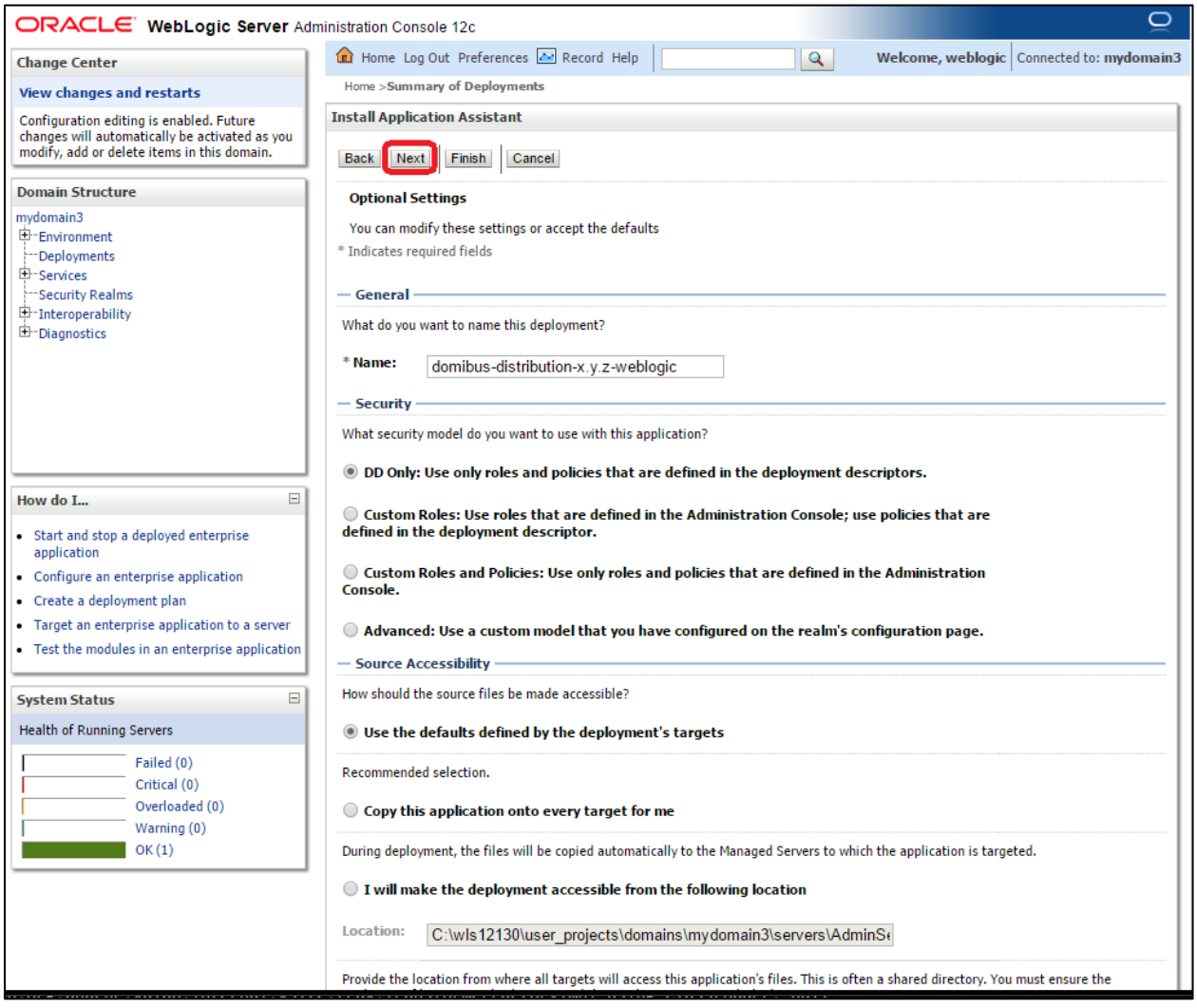
   - Navigate to the location of the **.war** file and click **Next**:



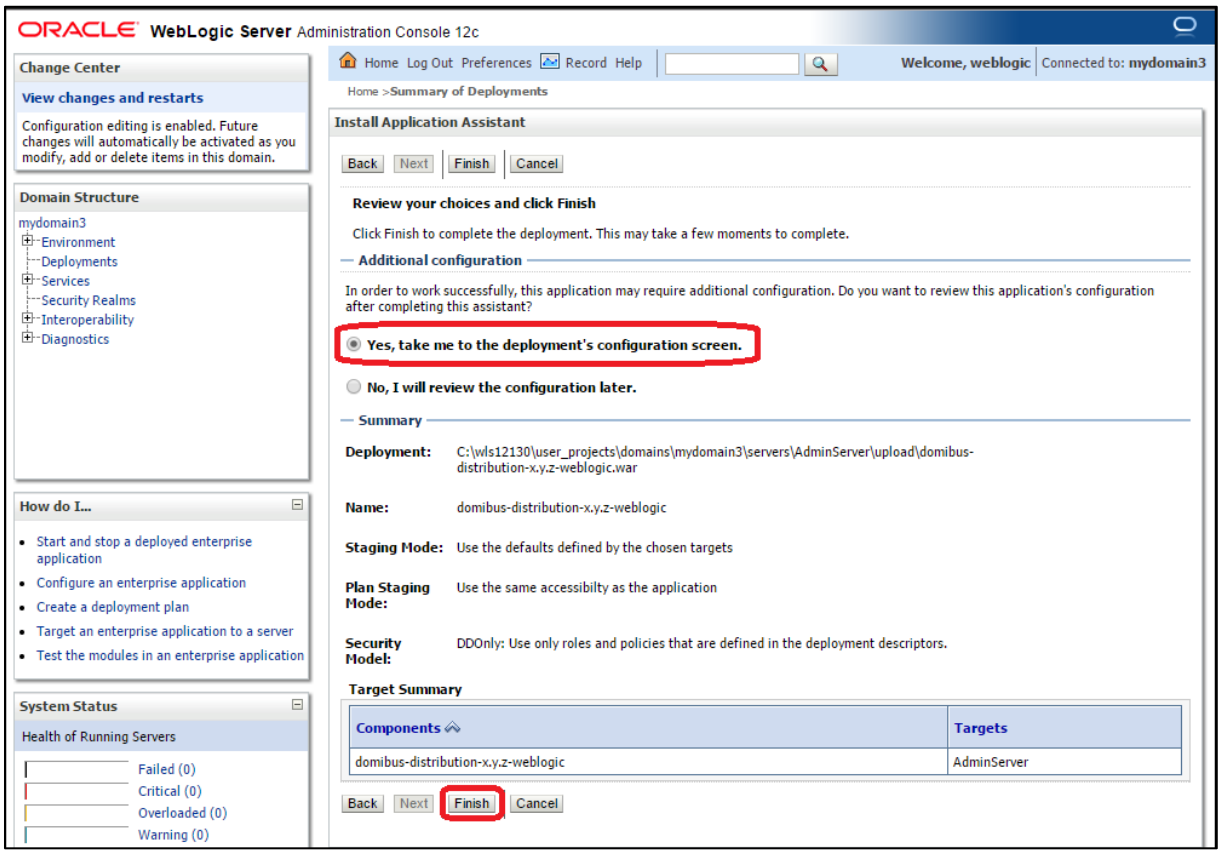
- Choose **Install this deployment as an application** and click **Next**:



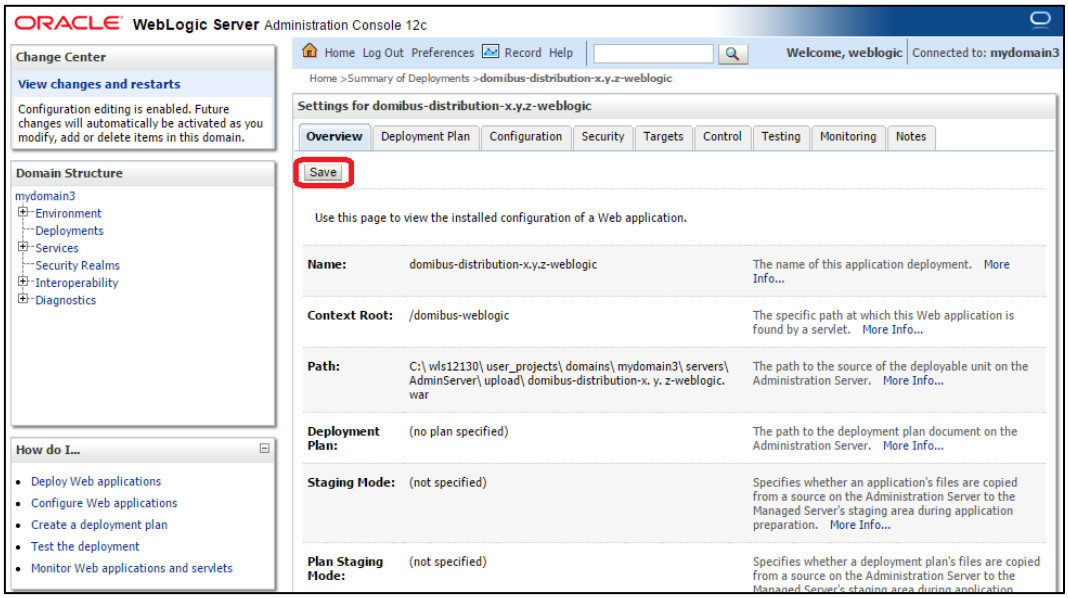
- Accept the default options and click **Next**:



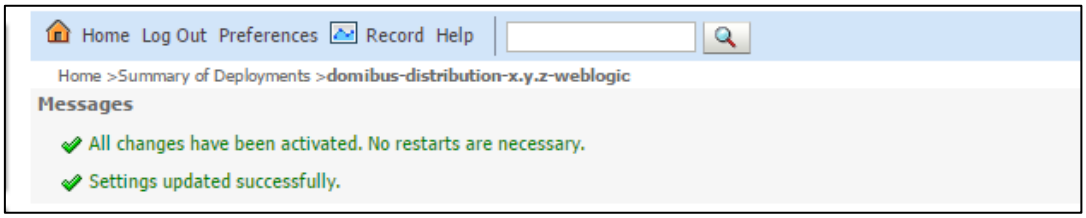
- Select the following option and click **Finish**:



- Here is an overview of the resulting settings, you can now click on the **Save** button:



The expected positive response to the deployment request should be the following:



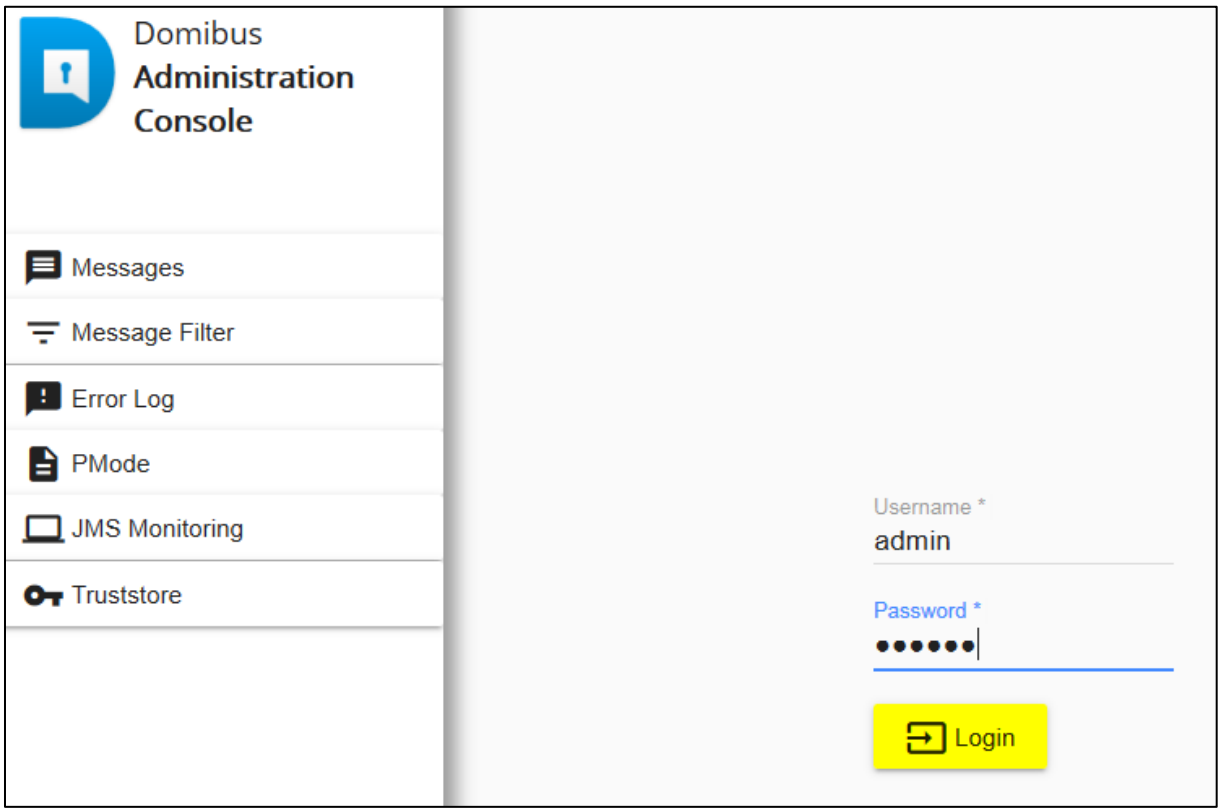
10. Verify the installation by navigating with your browser to http://*localhost*:*7001*/domibus-weblogic: if you can access the page it means the deployment was successful.

    (By default: User = ***admin***; Password = ***123456)***

    Remark*:*

    It is recommended to change the passwords for the default users (See §9.1 – "Administration " *for further information).*

Expected result:



4.2.2. Clustered Deployment

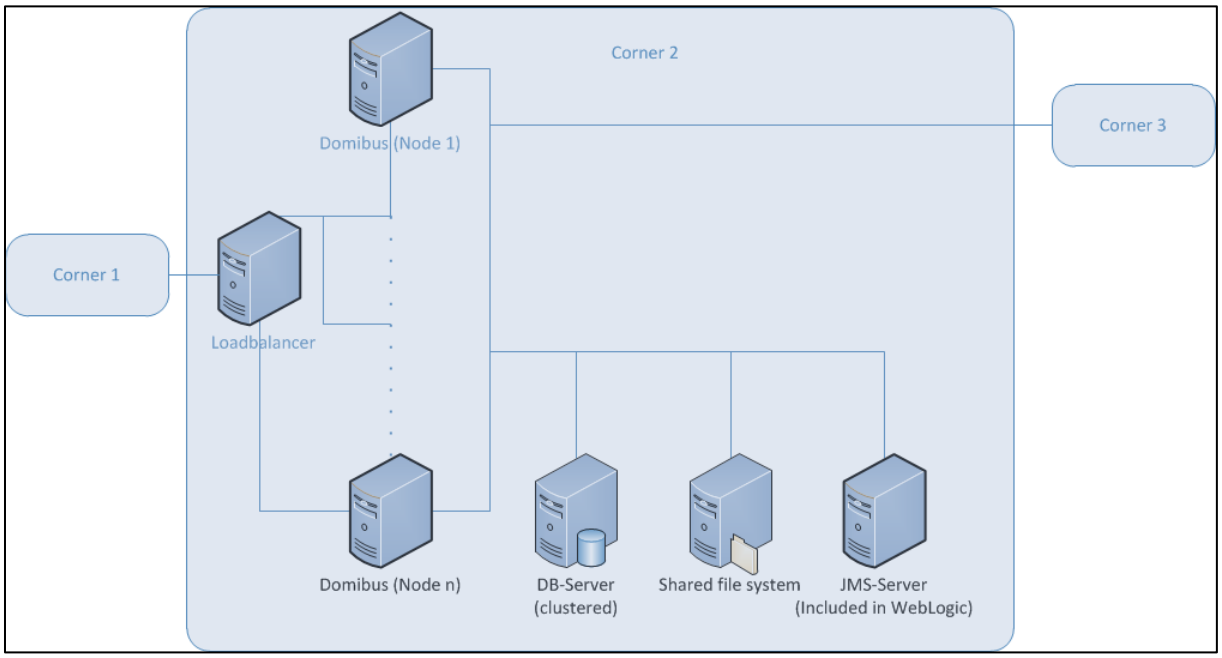


Figure 1 - Diagram representing the Deployment of Domibus in a Cluster on WebLogic

Remark:

In this section, we assume that a Domain and a WebLogic Cluster are already setup.

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-weblogic-war.zip**
- **domibus-distribution-X.Y.Z-weblogic-configuration.zip**
- **domibus-distribution-X.Y.Z-default-ws-plugin.zip** (optional)
- **domibus-distribution-X.Y.Z-default-jms-plugin.zip** (optional)
- **domibus-distribution-X.Y.Z-default-fs-plugin.zip** (optional)

1. Download and unzip **domibus-distribution- X.Y.Z-weblogic-configuration.zip** in in a shared location that is accessible by all the nodes from the cluster. We will refer to this directory as *cef_shared_edelivery_path***/Domibus**.

2. Download and unzip **domibus-distribution- X.Y.Z-weblogic-war.zip** in a temporary folder to prepare it for deployment.

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*

4. Add the following lines in:

    - For Windows : *DOMAIN_HOME***\bin\setDomainEnv.cmd**

        - Locate the **set DOMAIN_HOME** statement and add the following lines after:

```
…
set DOMAIN_HOME
# Added for Domibus
*****************************************************************
set EXTRA_JAVA_PROPERTIES=%EXTRA_JAVA_PROPERTIES% -
Ddomibus.config.location=%DOMAIN_HOME%/conf/Domibus -Djava.io.tmpdir=<path to _tmp
directory>
#
*****************************************************************************
*******
…
```

    - For Linux : *DOMAIN_HOME***/bin/setDomainEnv.sh**

        - Locate the **export DOMAIN_HOME** statement and add the following lines after:

```
…
export DOMAIN_HOME
# Added for Domibus
*****************************************************************
EXTRA_JAVA_PROPERTIES="$EXTRA_JAVA_PROPERTIES -
Ddomibus.config.location=$DOMAIN_HOME/conf/domibus" -Djava.io.tmpdir=<path to _tmp
directory>
export EXTRA_JAVA_PROPERTIES
```

```
#
**********************************************************************************
*******
...
```

5. Run the WebLogic Scripting Tool (WLST) in order to create the necessary JMS resources and Database datasources from the command line:

   - Download the WLST Package from the following location: https://ec.europa.eu/cefdigital/artifact/content/repositories/eDelivery/eu/europa/ec/digit/ipcis/wslt-api/1.9.1/wslt-api-1.9.1.zip

   - Configure the WSLT API tool:

     - Unzip the **wslt-api-1.9.1.zip**

     - Define the WL_HOME (SET or export command depending on your operating system) environment variable to point to the WebLogic **wlserver** directory

       e.g. WL_HOME=/wls12130/wlserver

   - Take the script **WeblogicCluster.properties** from **domibus-distribution-X.Y.Z-weblogic-configuration.zip** under the scripts directory and copy the **WeblogicCluster.properties** file into the **wslt-api-1.9.1** directory and apply the following changes :

     - Adapt the properties for connecting to the WebLogic domain

```
domain.loading.type=connect
domain.connect.url=t3://localhost:7001
domain.connect.username=weblogic_user
domain.connect.password=weblogic_password
domain.name=mydomain1
```

     - Adapt the jdbc.datasource properties for the datasources

       For Oracle database:

```
jdbc.datasource.0.name= eDeliveryDs
jdbc.datasource.0.driver.name=oracle.jdbc.xa.client.OracleXADataSource
jdbc.datasource.0.driver.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
jdbc.datasource.0.driver.password=edelivery_password
jdbc.datasource.0.driver.username=edelivery_username
jdbc.datasource.0.targets=cluster_name

jdbc.datasource.1.name=edeliveryNonXA
jdbc.datasource.1.driver.name= oracle.jdbc.OracleDriver
jdbc.datasource.1.driver.url=jdbc:oracle:thin:@127.0.0.1:1521:xe
jdbc.datasource.1.driver.password=edelivery_password
jdbc.datasource.1.driver.username=edelivery_username
jdbc.datasource.1.targets=cluster_name
```

       For MySQL database:

Remark:

MySQL configuration is commented by default. To enable MySQL, remove the comment (#) from the lines below. Don't forget to add the comment (#) for Oracle to disable it.

```
jdbc.datasource.0.name= eDeliveryDs
jdbc.datasource.0.driver.name=com.mysql.jdbc.Driver
# Connector/J 8.0.x
#jdbc.datasource.0.driver.name= com.mysql.cj.jdbc.Driver
jdbc.datasource.0.driver.url=jdbc:mysql://localhost:3306/domibus_schema
jdbc.datasource.0.driver.password=edelivery_password
jdbc.datasource.0.driver.username=edelivery_username
jdbc.datasource.0.targets=cluster_name
jdbc.datasource.0.transaction.protocol=LoggingLastResource
jdbc.datasource.0.pool.connection.test.onreserv.sql=SQL SELECT 1

jdbc.datasource.1.name= edeliveryNonXA
jdbc.datasource.1.driver.name=com.mysql.jdbc.Driver
# Connector/J 8.0.x
#jdbc.datasource.1.driver.name= com.mysql.cj.jdbc.Driver
jdbc.datasource.1.driver.url=jdbc:mysql://localhost:3306/domibus_schema
jdbc.datasource.1.driver.password=edelivery_password
jdbc.datasource.1.driver.username=edelivery_username
jdbc.datasource.1.targets=cluster_name
jdbc.datasource.1.transaction.protocol=None
jdbc.datasource.1.pool.connection.test.onreserv.sql=SQL SELECT 1
```

- Adapt the properties for target and location of the filestore:

```
persistent.filestore.0.target=cluster_name
persistent.filestore.0.location=DOMAIN_HOME/filestores
```

Remark*:*

If you are using Windows, make sure that the paths for the filestore contain forward slash (/).

- Adapt if necessary the JMX security configuration:

Example:

```
#################################################################
## Policy configuration
#################################################################
security.policies.0.mode = CREATE
security.policies.0.resource = type=<jmx>, operation=invoke, application=,
mbeanType=weblogic.management.runtime.JMSDestinationRuntimeMBean
security.policies.0.realm = myrealm
security.policies.0.authorizer = XACMLAuthorizer
security.policies.0.expression= Rol(Admin)|Grp(Administrators)|Grp(JMSManagers)
security.policies.items = 1
#################################################################
## Users configuration
#################################################################
```

```
security.users.0.realm=myrealm
security.users.0.name=jmsManager
security.users.0.password=jms_Manager1
security.users.0.comment=
security.users.0.authenticator=DefaultAuthenticator
security.users.items=1
################################################################
## Groups configuration
################################################################
security.groups.0.realm=myrealm
security.groups.0.name=JMSManagers
security.groups.0.description=
security.groups.0.authenticator=DefaultAuthenticator
security.groups.items=1
################################################################
## Groups Membership configuration
################################################################
security.group.member.0.user=jmsManager
security.group.member.0.groups=JMSManagers
security.group.member.0.realm=myrealm
security.group.member.0.authenticator=DefaultAuthenticator
security.group.member.items=1
```

- Adapt the property for JMS Server:

Example:

```
jms.server.0.target=cluster_name
```

- Adapt the property for JMS Module:

Example:

```
jms.module.0.targets=cluster_name
```

- Start the WebLogic domain from within *DOMAIN_HOME:*
  - For Windows:

```
startWebLogic.cmd
```

  - For Linux:

```
startWebLogic.sh
```

- Execute the following command from within the **wlstapi-1.9.1/bin** directory:

For Windows:

```
wlstapi.cmd ..\scripts\import.py --
property ..\WeblogicCluster.properties
```

For Linux:

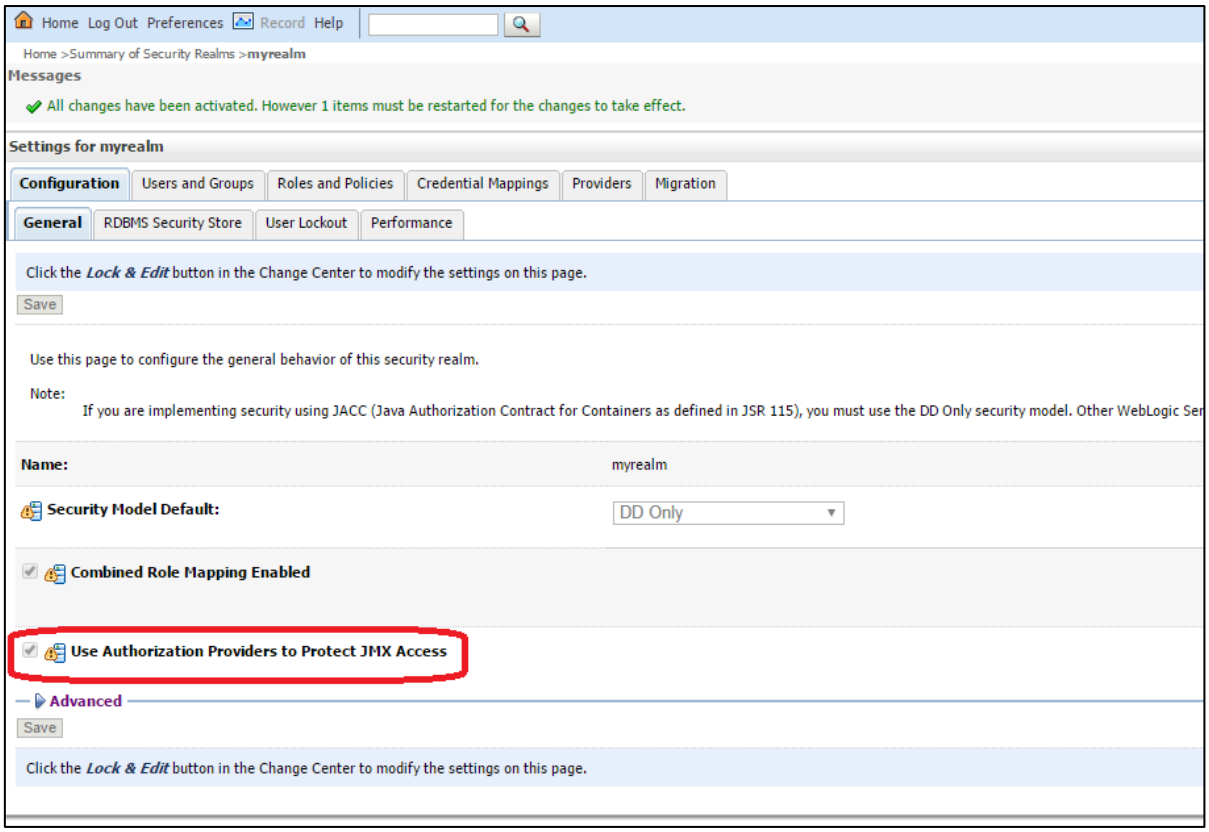
```
wlstapi.sh ../scripts/import.py --
property ../WeblogicCluster.properties
```

Expected result:

```
Saving all your changes ...
Saved all your changes successfully.
Activating all your changes, this may take a while ...
The edit lock associated with this edit session is released
once the activation is completed.
Activation completed
Location changed to serverRuntime tree. This is a read-only tree with DomainMBean as the root.
For more help, use help('domainConfig')

Disconnected from weblogic server: AdminServer
```

6. Activate the use of the authorization providers to protect the JMX access:



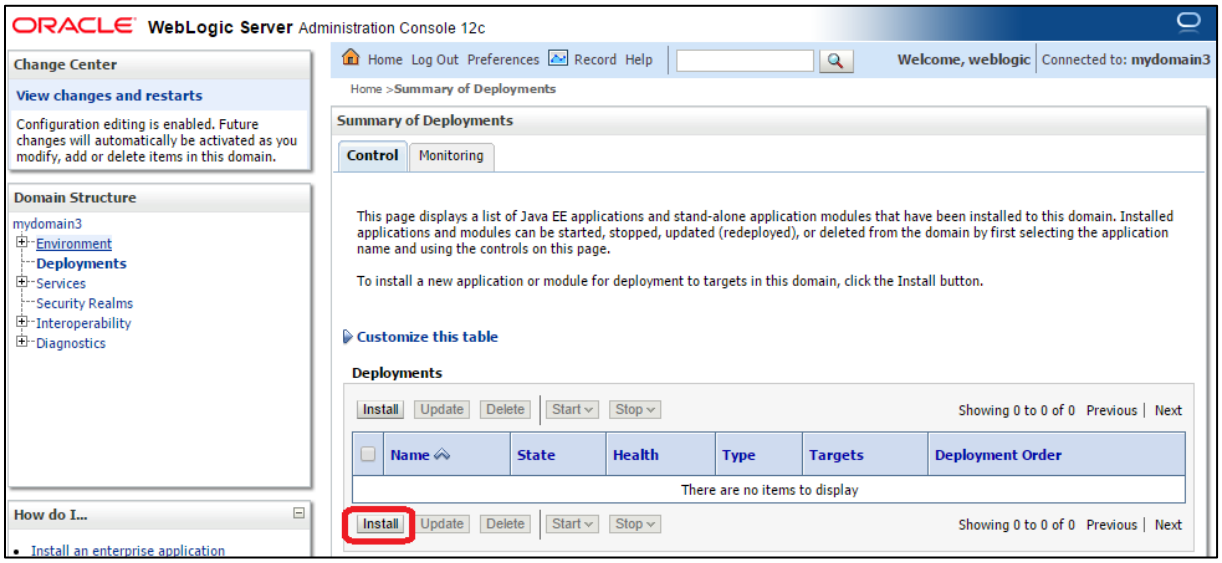
7. The database dialect is pre-configured to use the Oracle database. If you are using the MySQL database you should adapt the dialect as highlighted in the text below in <*DOMAIN_HOME*>**/conf/domibus/domibus.properties** file :

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=
com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.MySQL5InnoDB
Dialect
```

8. Install the WS plugin. For more details, refer to chapter §6.2.1.2 – "WebLogic".

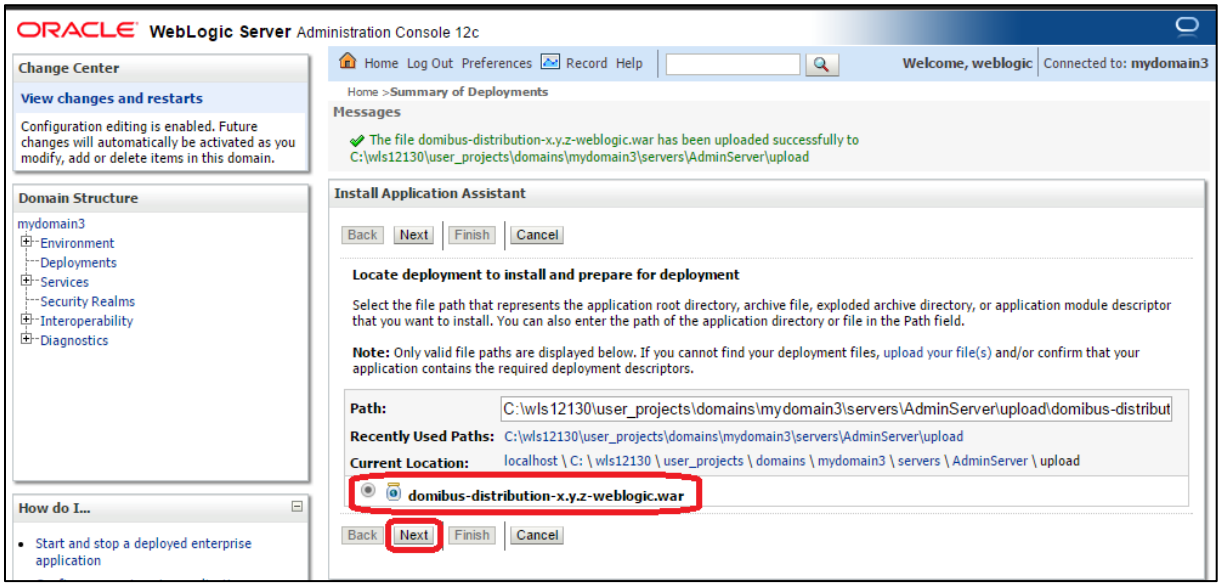
9. Deploy **domibus-distribution-X.Y.Z-weblogic.war**.

- Click **Install**

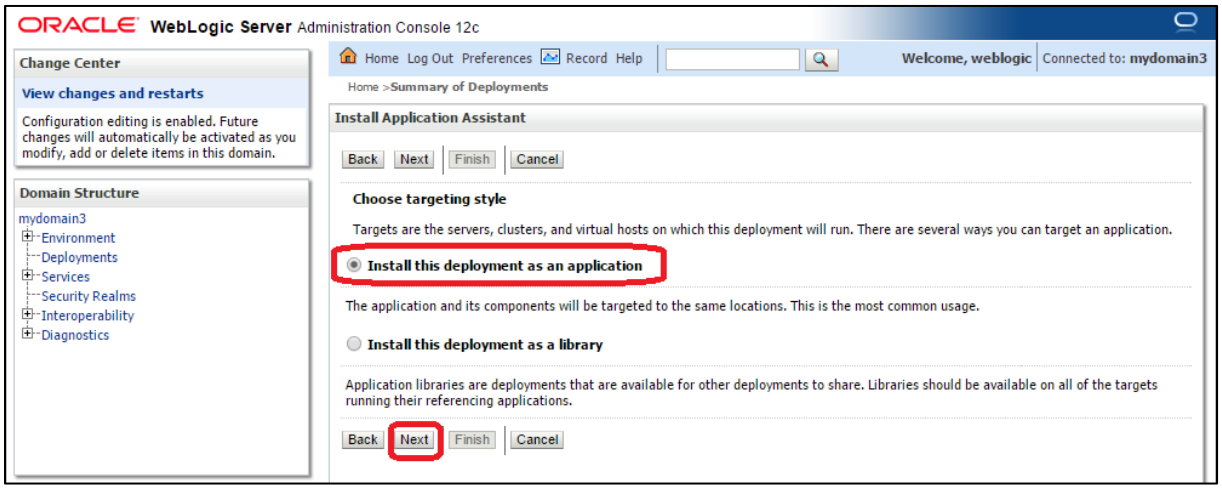


- Navigate to location DOMAIN_HOME**/conf/domibus** where the **domibus-distribution-X.Y.Z-weblogic.war** file has been previously copied.

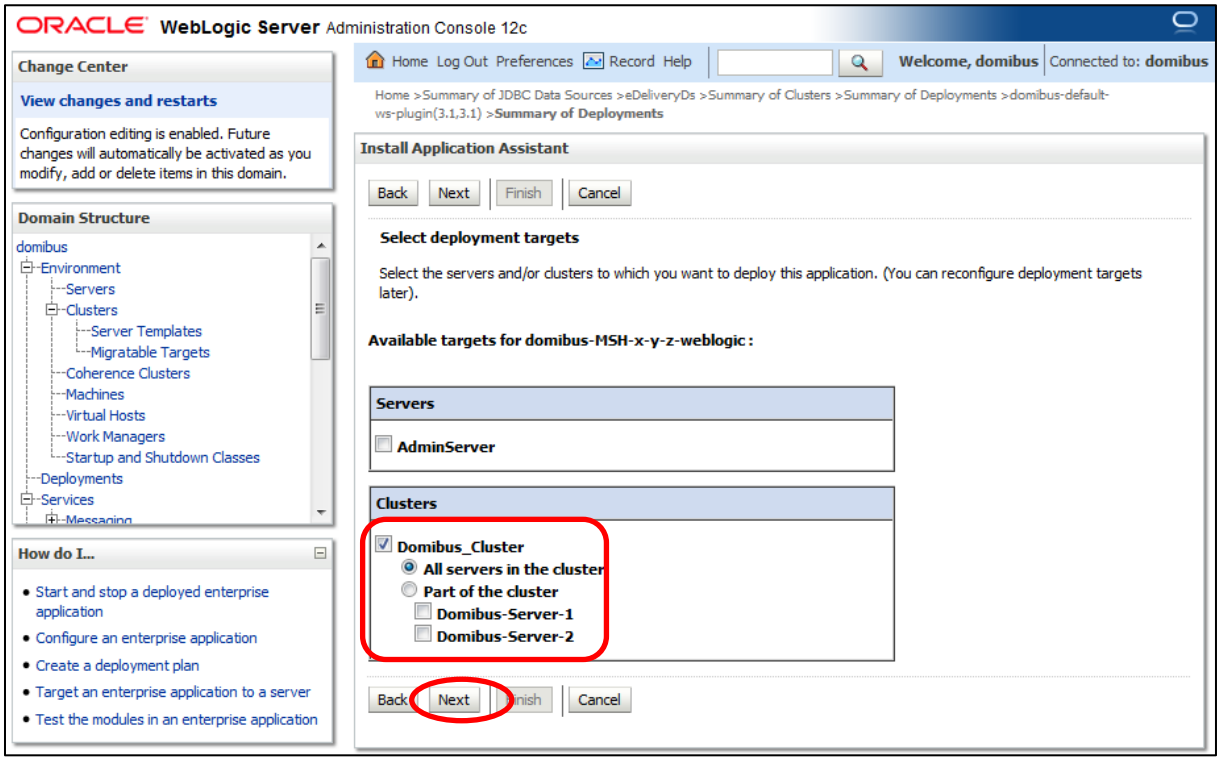
- Select the **domibus-distribution-X.Y.Z-weblogic.war** file and click **Next**:



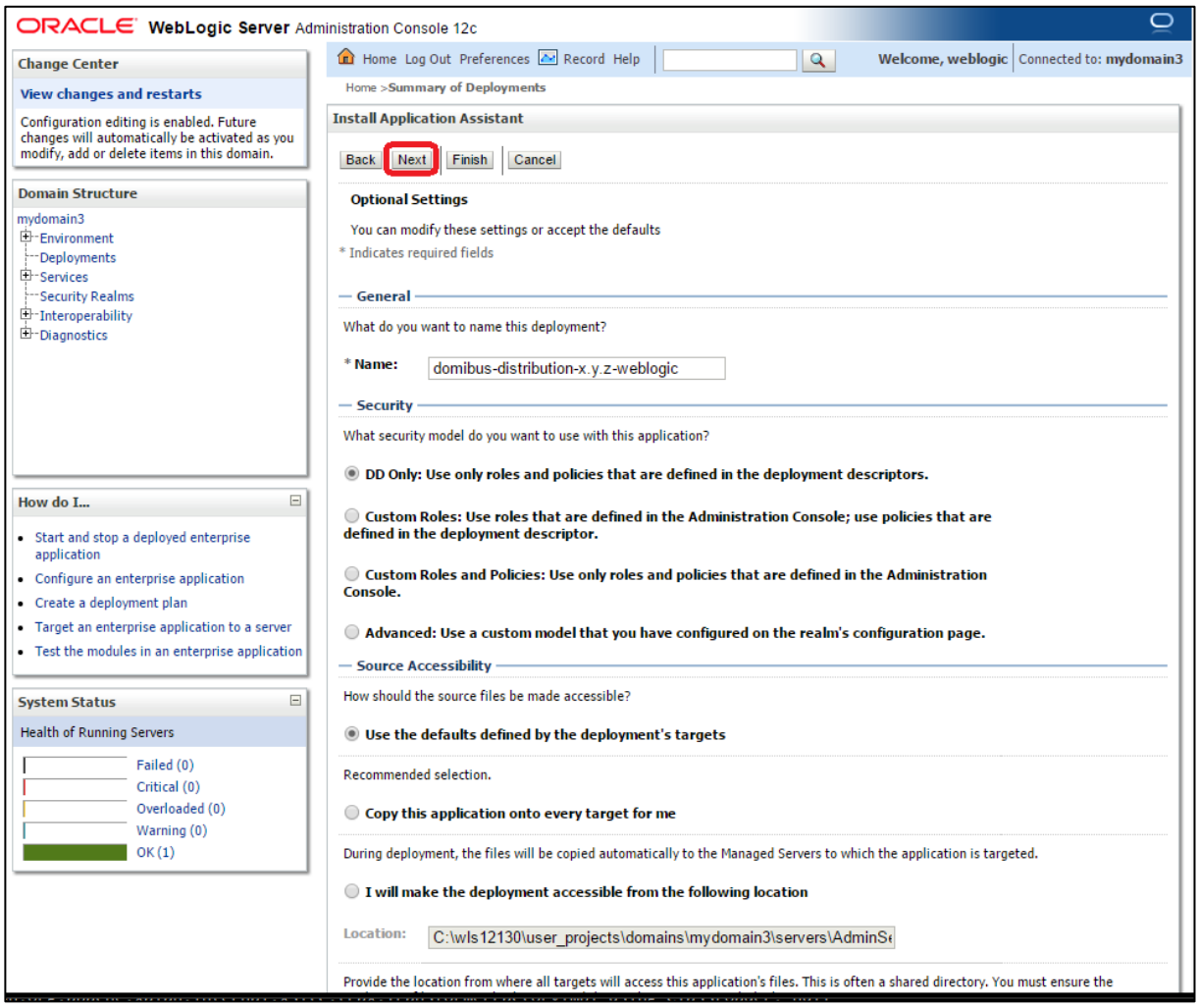
- Choose **Install this deployment as an application** and click **Next**:



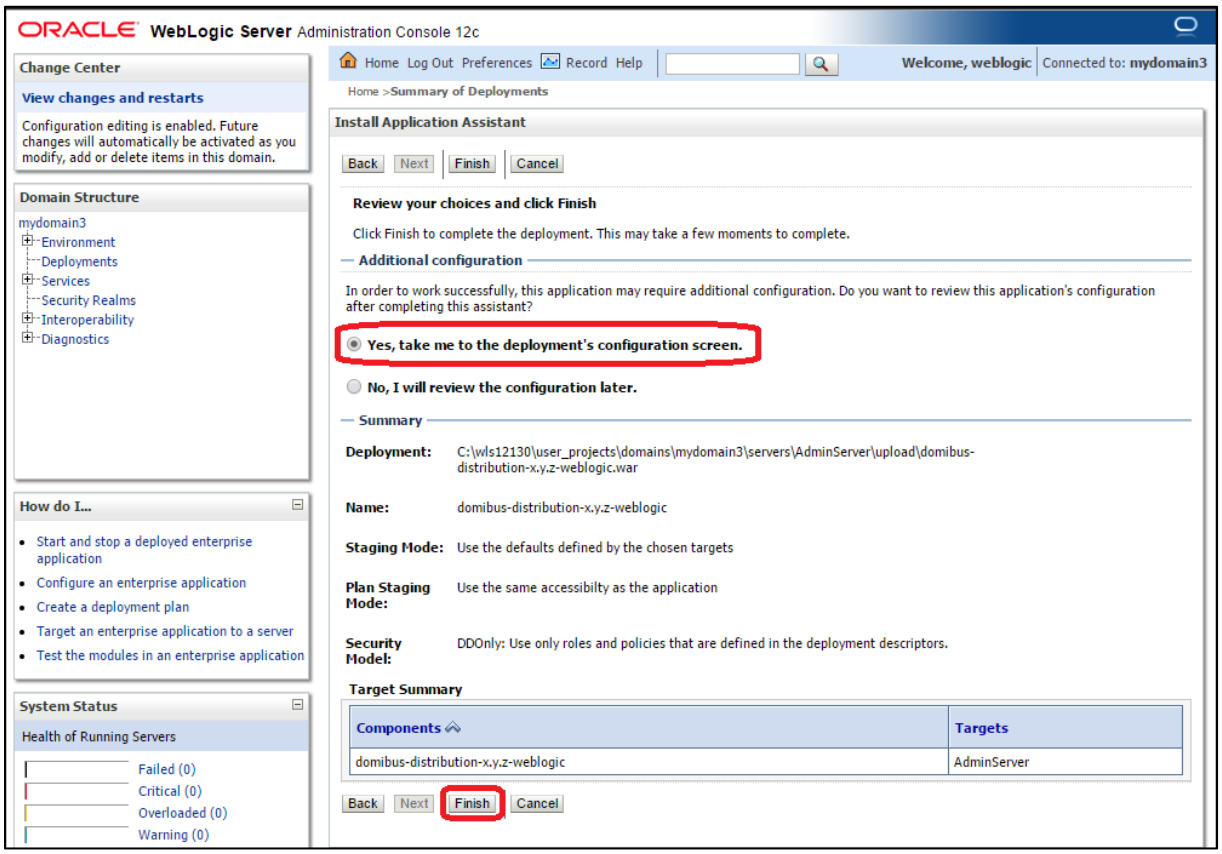
- Select your cluster for the deployment target and click **Next**:



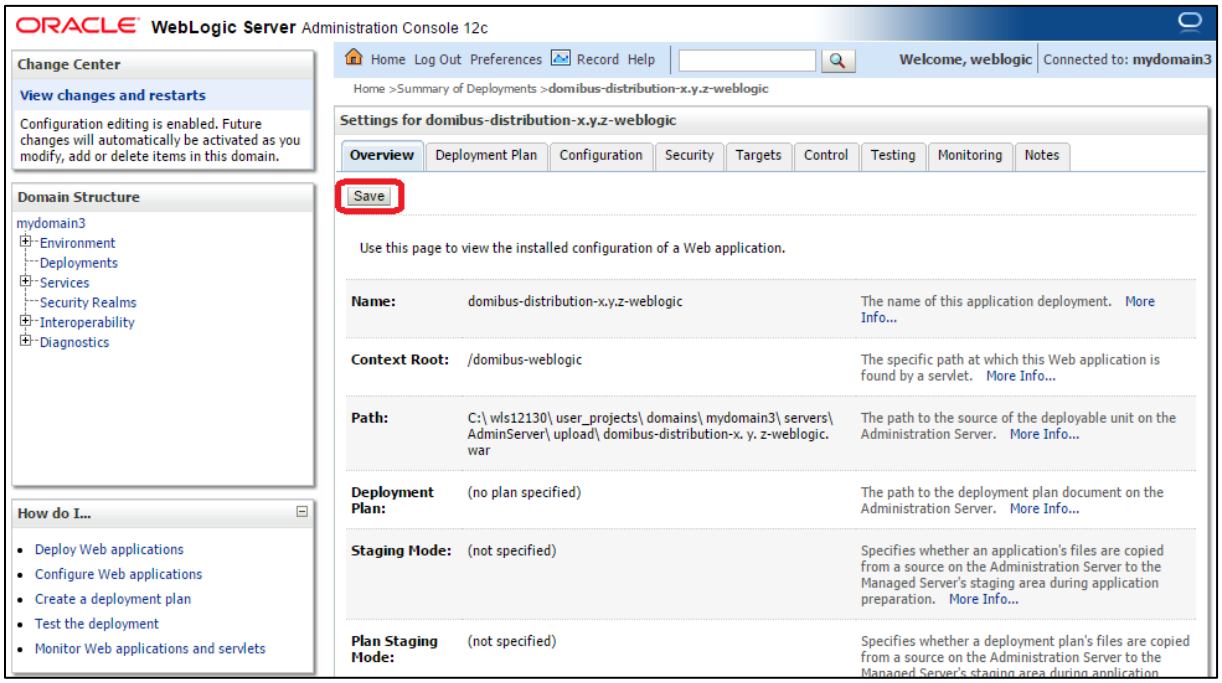
- Select the following options and click **Next**:



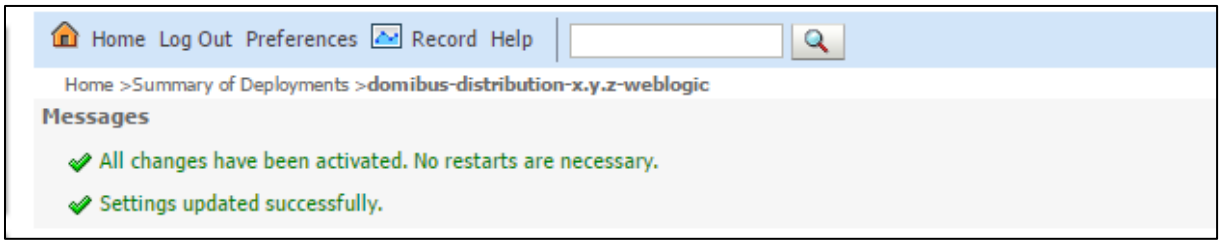
- Select the following option and click **Finish**:



- Here is an overview of the resulting settings, you can now click on the **Save** button:



The expected positive response to the deployment request should be the following:



10. Verify the installation by navigating with your browser to http://*localhost*:*7001*/domibus-weblogic

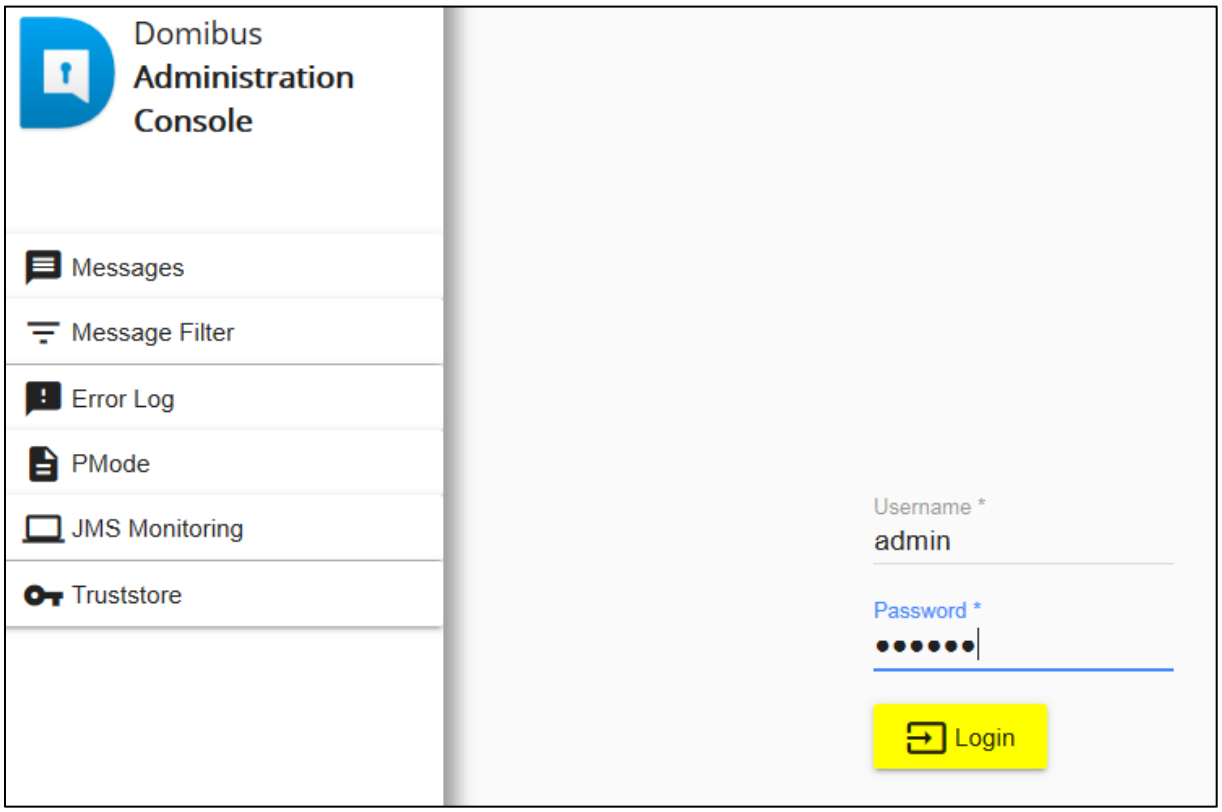
    If you can access the page it means the deployment was successful.

    (by default: user = ***admin***; password = ***123456)***

    Remark*:*

    It is recommended to change the passwords for the default users (See §9.1 – "Administration *" for further information).*

Expected result:



4.3. Domibus on Tomcat

Remarks:

- *As Tomcat is not a full Java EE application server and does not offer JMS capabilities by default, Domibus uses ActiveMQ as an in-memory JMS broker when deployed on a Tomcat servlet container. The configuration for the ActiveMQ JMS broker can be found in cef_edelivery_path**/domibus/internal/activemq.xml**.*

- *The Apache CXF library referred by Domibus, internally uses the environment variable java.io.tmpdir to buffer large attachments received. If the property java.io.tmpdir is not specified, then by default this points to the <CATALINA_BASE directory/temp>. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the Tomcat server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.*

4.3.1. Pre-Configured Single Server Deployment

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-tomcat-full.zip**

1. Unzip the archive:
    - Unzip **domibus-distribution-X.Y.Z-tomcat-full.zip** to a location on your physical machine: *cef_edelivery_path*.

2. Prepare the database:
    - For MySQL database:

Add MySQL JDBC driver (available on MySQL official web site cf. [REF2]) in the folder *cef_edelivery_path***/domibus/lib**.

Remark:

The version of the JDBC driver has to be mysql-connector-java-5.1.40.jar or higher.

Edit the properties file *cef_edelivery_path***/conf/domibus/domibus.properties** and adjust the highlighted parts in the text below according to your environment. The properties associated to the database configuration are pre-configured for the MySQL database:

```
# ---------------------------------- Database ----------------------------------
#Database server name
domibus.database.serverName=localhost
```

```
#Database port
domibus.database.port=3306

#XA properties
domibus.datasource.xa.property.user=edelivery_user
domibus.datasource.xa.property.password=edelivery_password
#MySQL
domibus.datasource.xa.property.url=jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/ domibus_schema?pinGlobalTxToPhysicalConnection=true
#Non-XA Datasource
domibus.datasource.url=jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/domibus_schema?useSSL=false
domibus.datasource.user=edelivery_user
domibus.datasource.password=edelivery_password
```

- For Oracle database:

Add the Oracle JDBC driver (e.g. ***ojdbc7.jar***) (available on the Oracle official web site cf.[REF3]) in the *cef_edelivery_path***/domibus/lib folder**.

Edit the properties file *cef_edelivery_path***/conf/domibus/domibus.properties** and adjust the highlighted parts in the text below according to your environment:

```
# ---------------------------------- Database ---------------------------------

#Database server name
domibus.database.serverName=localhost

#Database port
domibus.database.port=1521

#XA Datasource
domibus.datasource.xa.xaDataSourceClassName=oracle.jdbc.xa.client.OracleXADataSource
#XA properties
domibus.datasource.xa.property.user=edelivery_user
domibus.datasource.xa.property.password=edelivery_password
domibus.datasource.xa.property.url=jdbc:oracle:thin:@${domibus.database.serverName}:${domibus.database.port}[:SID|/Service]

#Non-XA Datasource
domibus.datasource.driverClassName=oracle.jdbc.OracleDriver
domibus.datasource.URL=jdbc:oracle:thin:@${domibus.database.serverName}:${domibus.database.port}[:SID|/Service]
domibus.datasource.user=edelivery_user
domibus.datasource.password=edelivery_password
```

Remark:

Configure the database dialect as it is pre-configured for MySQL by default.

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=oracle.jdbc.xa.client.OracleXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.Oracle10gDialect
```

3. Configure your Keystore based on section §5.1.2 – *"Certificates"*.

4. Set JVM parameters:

Domibus expects a single environment variable **domibus.config.location**, pointing towards the *cef_edelivery_path***/conf/domibus** folder.

You can do this by editing the first command lines of *cef_edelivery_path***\domibus\bin\setenv.bat** (Windows) or *cef_edelivery_path***/domibus/bin/setenv.sh** (Linux). Set **CATALINA_HOME** equal to the absolute path of the installation *cef_edelivery_path***/domibus.**

- **For Windows** : edit *cef_edelivery_path***\domibus\bin\setenv.bat** by adding the following:

```
…
set CATALINA_HOME=cef_edelivery_path\domibus
set CATALINA_TMPDIR=<path to _tmp directory>
set  JAVA_OPTS=%JAVA_OPTS% -Dfile.encoding=UTF-8  -Xms128m -Xmx1024m -XX:PermSize=64m
set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%CATALINA_HOME%\conf\domibus
…
```

- **For Linux** : edit *cef_edelivery_path***/domibus/bin/setenv.sh** by adding the following:

```
…
export CATALINA_HOME=cef_edelivery_path/Domibus
export CATALINA_TMPDIR=<path to _tmp directory>
export JAVA_OPTS="$JAVA_OPTS –Xms128m –Xmx1024m "
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$CATALINA_HOME/conf/domibus"
…
```

5. Launch the Domibus application:

   - For Windows :

```
cd cef_edelivery_path\domibus\bin\
startup.bat
```

   - For Linux :

```
cd cef_edelivery_path /domibus/bin/chmod  u+x *.sh ./startup.sh
```

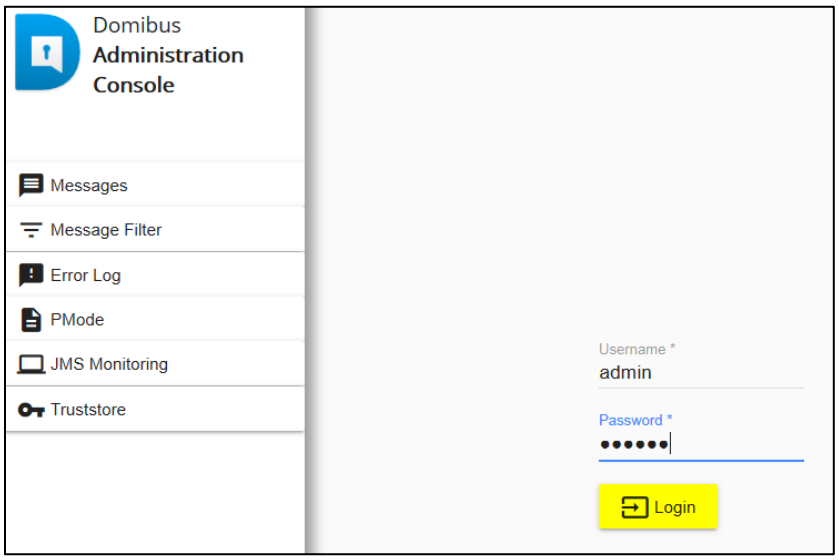
6. Display the Domibus home page on your browser: http://localhost:8080/domibus.
   (By default: User = ***admin***; Password = ***123456)***

   Remark*:*

   It is recommended to change the passwords for the default users. See §9.1 – "Administration " for further information.

   If you can access the page it means the deployment was successful.

Expected result:



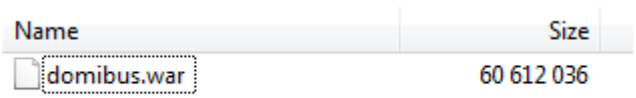
4.3.2. Single Server Deployment

For this step, you will have to use the following resources (see §3.1–" *Binaries repository*" for the download location):

- **domibus-distribution-X.Y.Z-tomcat-configuration.zip**
- **domibus-distribution-X.Y.Z-tomcat-war.zip**

We assume that an Apache Tomcat 8.0.x is already installed and the installation location is now considered as your *cef_edelivery_path/domibus***.**

1. Download and unzip the artefact **domibus-distribution-X.Y.Z-tomcat-configuration.zip** into the directory *cef_edelivery_path/conf/domibus.*
2. Configure the MySQL or Oracle datasource as indicated in §4.3.1 – *"Pre-Configured Single Server Deployment"*
3. Configure your Keystore based on §5.1.2 – *"Certificates"*.
4. Execute *step 4* from §4.3.1 – "Pre-Configured Single Server Deployment".
5. If not already present, create a folder and name it **temp** under *cef_edelivery_path/conf/Domibus*.
6. Rename **domibus-MSH-X.Y.Z-tomcat.war** to **domibus.war** and deploy it to *cef_edelivery_path***/domibus /webapps**.



7. Launch the Domibus application:
   - For Windows :

cd *cef_edelivery_path***\domibus\bin**
startup.bat

   - For Linux :

```
cd cef_edelivery_path /domibus/bin/
chmod +x *.sh
./startup.sh
```

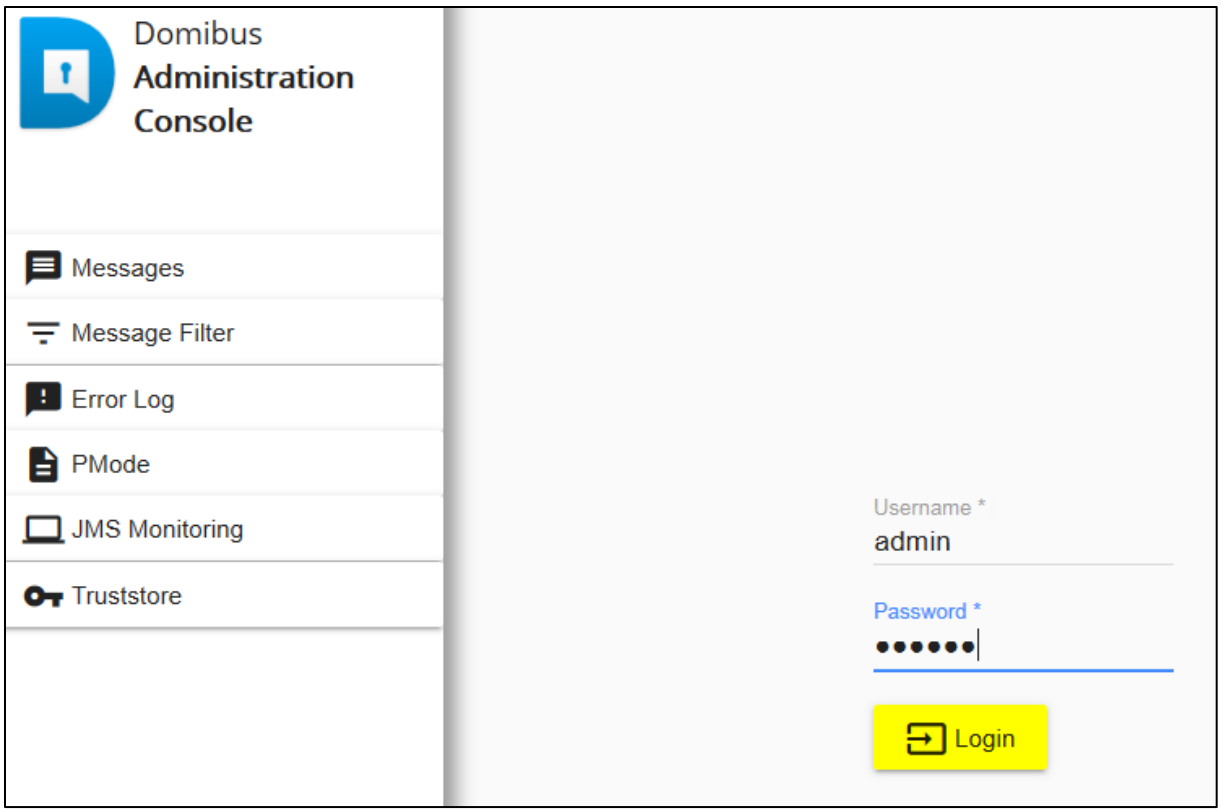
7. Display the Domibus home page on your browser: http://localhost:8080/domibus
(By default: User = ***admin***; Password = ***123456)***:

Remark:

It is recommended to change the passwords for the default users. See §9.1 – "Administration " for further information.

If you can access the page it means the deployment was successful.

Expected result:



4.3.3. Clustered Deployment

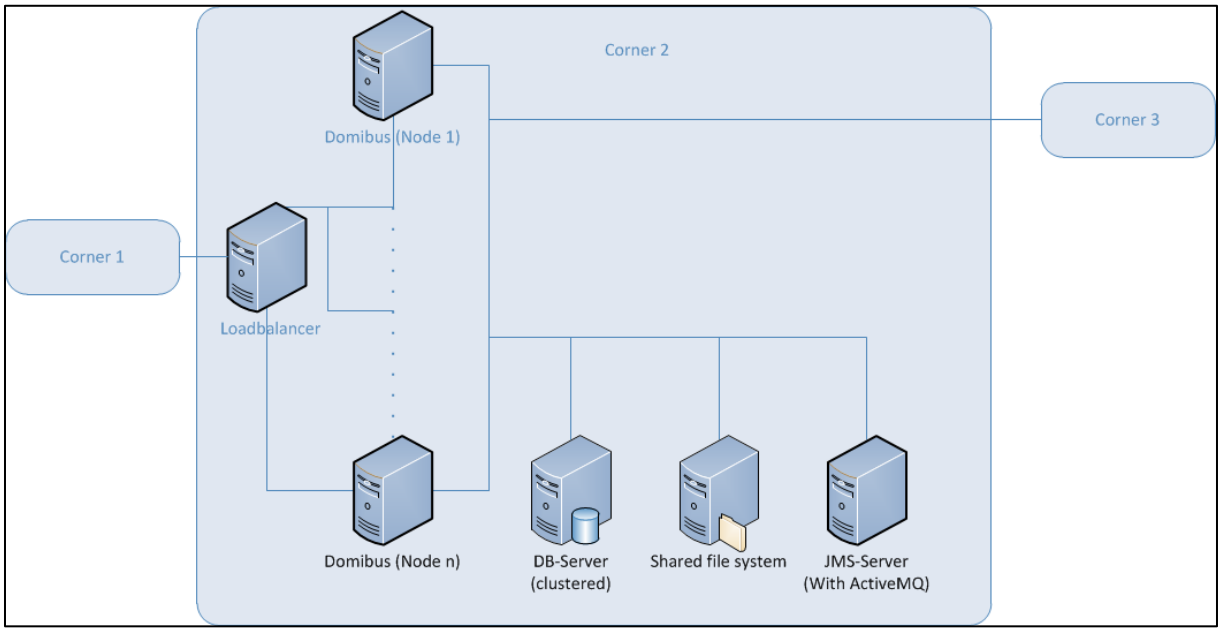


Figure 2 - Diagram representing the Deployment of Domibus in a Cluster on Tomcat

Remark:

In this section we assume that a JMS Broker and a Loadbalancer are configured separately (e.g. httpd).

For this step, you will have to use the following resources (see §3.1–*" Binaries repository "* for the download location):

- **domibus-distribution-X.Y.Z-tomcat-full.zip**
- **domibus-distribution-X.Y.Z-tomcat-war.zip**

1. Follow steps **1**, **2, 3, 4** and **5** from the §4.3.2 – *"Single Server Deployment"*

2. Set the JVM parameters:

Domibus expects a single JVM parameter **$domibus.config.location**, pointing towards the *cef_edelivery_path***/conf/domibus** folder.

You can do this by editing *cef_edelivery_path***\domibus\bin\setenv.bat** (Windows) or *cef_edelivery_path***/domibus/bin/setenv.sh** (Linux). Set **CATALINA_HOME** equal to the absolute path of the installation *cef_edelivery_path***/Domibus**.

- For Windows**:** edit *cef_edelivery_path***\domibus\bin\setenv.bat** by adding the following:

Remark:

your_node_id refers to the installed node in the cluster which starts normally at 01(then 02, etc.).

```
…
set CATALINA_HOME=cef_edelivery_path\domibus
set CATALINA_TMPDIR=<path to _tmp directory>
set  JAVA_OPTS=%JAVA_OPTS% -Dfile.encoding=UTF-8 -Xms128m -Xmx1024m -XX:PermSize=64m
set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%CATALINA_HOME%\conf\domibus
```

set JAVA_OPTS=%JAVA_OPTS% -Ddomibus.node.id=*your_node_id*
…

- For Linux : edit *cef_edelivery_path***/domibus/bin/setenv.sh** by adding the following:

…
export CATALINA_HOME=*cef_edelivery_path***/Domibus**
export CATALINA_TMPDIR=<path to _tmp directory>
export JAVA_OPTS=$JAVA_OPTS –Xms128m –Xmx1024m
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$*CATALINA_HOME***/conf/domibus"**
export JAVA_OPTS="$JAVA_OPTS -Ddomibus.node.id=*your_node_id***"**
…

3. Integrate the external JMS Broker with Domibus by adapting the following properties in *cef_edelivery_path***/conf/domibus/domibus.properties**.
   - Please note that the **activeMQ.embedded.configurationFile** property should be deleted as the JMS broker is external.

#ActiveMQ
activeMQ.broker.host=*localhost*
activeMQ.brokerName=*localhost*
~~#activeMQ.embedded.configurationFile=**file:///${domibus.config.location}/internal/activemq.xml**~~
activeMQ.connectorPort=*1199*
activeMQ.rmiServerPort=*1200*
activeMQ.transportConnector.uri=**tcp://${activeMQ.broker.host}:***61616*
activeMQ.username=*domibus*
activeMQ.password=*changeit*

4. Change the following properties related to the **Atomikos** configuration in parameters in *cef_edelivery_path***/conf/domibus/domibus.properties**:

For clustered deployment:

Uncomment the following lines:
#com.atomikos.icatch.output_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/${domibus.node.id}
#com.atomikos.icatch.log_base_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/${domibus.node.id}/log

Comment the following lines:
com.atomikos.icatch.output_dir=${domibus.work.location:${domibus.config.location}}/work/transactions
com.atomikos.icatch.log_base_dir=${domibus.work.location:${domibus.config.location}}/work/transactions/log

5. Follow step **6** and **7** from the §4.3.2 – *"Single Server Deployment".*

4.4. Domibus on WildFly

Remark:

The Apache CXF library referred by Domibus, internally uses the environment variable java.io.tmpdir to buffer large attachments received. If the property java.io.tmpdir is not specified, then this defaults to values provided by the operating system to the JRE. On Unix/Linux systems this usually defaults to '/tmp'. On Windows systems this usually defaults to %TEMP% folder. It is recommended to point this to a local directory '_tmp' on each managed server and accessible by the Wildfly server. The disk space allocated for '_tmp' directory would depend on the size of attachments received. On production environment it is recommended to provide 100GB for '_tmp'.

4.4.1. Pre-Configured Single Server Deployment

In this section we assume that WildFly is installed at the location *cef_edelivery_path***/domibus**.

For this step, you will have to use the following resources (see section §3.1–"*Binaries repository*" for the download location):

- **domibus-distribution-X.Y.Z-wildfly-full.zip**

1. Download and unzip the **domibus-distribution-X.Y.Z-wildfly-full.zip** archive in your *cef_edelivery_path* location.

2. Configure the MySQL database (Option 1).

   - Drivers:

     Create the directory *cef_edelivery_path***/domibus/modules/system/layers/base/com/mysql/main** if it does not exist**.**
     Under this directory:

     - Download the MySQL JDBC driver available on MySQL official web site (cf.[REF2]) and copy it in the folder.

       Remark:

       The version of the driver has to be mysql-connector-java-5.1.40.jar or higher.

     - Create or edit the file *cef_edelivery_path***/domibus/modules/system/layers/base/com/mysql/main/module.xml** and copy the following module configuration. Make sure to put the name of the driver you are using as an argument of **resource-root** element. e.g. ***mysql-connector-java-5.1.40.jar***:

```
<module xmlns="urn:jboss:module:1.3" name="com.mysql">
```

```
        <resources>
                <resource-root path="mysql-connector-java-5.1.40.jar"/>
        </resources>
        <dependencies>
                <module name="javax.api"/>
                <module name="javax.transaction.api"/>
    </dependencies>
</module>
```

- Add your DBMS driver metadata to the Drivers section of the *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml**.

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
  ……..……
  <datasources>
     ……..……
     <drivers>
          <driver name="com.mysql" module="com.mysql">
        <driver-class>com.mysql.jdbc.Driver</driver-class>
        <xa-datasource-class>
              com.mysql.jdbc.jdbc2.optional.MysqlXADataSource
        </xa-datasource-class>
        <!--Connector/J 8.0.x
       <driver-class>com.mysql.cj.jdbc.Driver</driver-class>
       <xa-datasource-class>com.mysql.cj.jdbc.MysqlXADataSource</xa-datasource-class>
        -->
      </driver>
     <drivers>
    ……..……
  </datasources>
  ……..……
</subsystem>
```

- Datasources:
  - Add the datasources as indicated below to *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml**.

Remark:

*Please make sure you modify the connection details for the **MysqlXADS** datasource for MySQL according to your environment.*

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
<datasources>
……..……
<xa-datasource jndi-name="java:/jdbc/cipaeDeliveryDs" pool-
name="eDeliveryMysqlXADS" enabled="true" use-ccm="true" statistics-enabled="true">
        <xa-datasource-property name="ServerName">localhost</xa-datasource-property>
       <xa-datasource-property name="DatabaseName">domibus_schema</xa-datasource-
property>
       <xa-datasource-class>com.mysql.jdbc.jdbc2.optional.MysqlXADataSource</xa-datasource-
class>
        <!--Connector/J 8.0.x
         <xa-datasource-class>com.mysql.cj.jdbc.MysqlXADataSource</xa-datasource-class>
        -->
```

```
        <driver>com.mysql</driver>
            <security>
              <user-name>edelivery_user</user-name>
              <password>edelivery_password</password>
            </security>
<validation>
<valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLValidConnectionChecker"/>
<background-validation>true</background-validation>
<exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLExceptionSorter"/>
                  </validation>
        </xa-datasource>
<datasource jndi-name="java:/jdbc/cipaeDeliveryNonXADs" pool-name="eDeliveryMysqlNonXADS"
enabled="true" use-ccm="true">
  <connection-url>jdbc:mysql://localhost:3306/domibus_schema</connection-url>
  <driver-class>com.mysql.jdbc.Driver</driver-class>
  <!--Connector/J 8.0.x
  <driver-class>com.mysql.cj.jdbc.Driver</driver-class>
   -->
  <driver>com.mysql</driver>
  <security>
    <user-name>edelivery_username</user-name>
    <password>edelivery_password</password>
  </security>
  <validation>
    <valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLValidConnectionChecker"/>
    <background-validation>true</background-validation>
    <exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.mysql.MySQLExceptionSorter"/>
  </validation>
</datasource>
……..
        </datasources>
</subsystem>
```

3. Configure the Oracle Database (option 2):
    - Drivers:

Create the directory *cef_edelivery_path***/domibus/modules/system/layers/base/com/oracle/main** if it does not exist. Under this directory:

- Download and copy the Oracle JDBC driver (e.g. ***ojdbc7.jar***, available on the Oracle official web site cf.[REF3]) in the folder.
- Copy the file *cef_edelivery_path***/domibus/modules/system/layers/base/com/mysql/main/module.xml** in the recently created folder.

Edit **module.xml** by copying the following module configuration. Make sure to put the name of the driver you are using as an argument of **resource-root** element. e.g. ***ojdbc7.jar***:

```
<module xmlns="urn:jboss:module:1.3" name="com.oracle">
        <resources>
                <resource-root path="ojdbc7.jar"/>
        </resources>
        <dependencies>
                <module name="javax.api"/>
                <module name="javax.transaction.api"/>
        </dependencies>
</module>
```

- Add your DBMS driver metadata to the Drivers section in *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml** (only change the items described below while replacing MYSQL configuration in the process):

```
<subsystem xmlns="urn:jboss:domain:datasources:3.0">
  <datasources>
    .....................
<xa-datasource jndi-name="java:/jdbc/cipaeDeliveryDs" pool-name="eDeliveryOracleXADS"
enabled="true" use-ccm="true">
<xa-datasource-property name="URL">jdbc:oracle:thin:@localhost:1521[:SID|/Service]
<driver>com.oracle</driver>
<user-name>edelivery_user</user-name>
<password>edelivery_password</password>
```

  - Datasources:
    - Add the datasources as indicated below to *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml**.

Remark:

*Please make sure you modify the connection details for the **eDeliveryOracleXADS** datasource for Oracle according to your environment.*

```
<valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleValidConnectionChecker"/>
                <exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleExceptionSorter"/>


            <driver name="com.oracle" module="com.oracle">
              <xa-datasource-class>oracle.jdbc.xa.client.OracleXADataSource</xa-datasource-class>
<datasource jta="true" jndi-name="java:/jdbc/cipaeDeliveryNonXADs" pool-
name="eDeliveryOracleNonXADS" enabled="true" use-ccm="true">
  <connection-url>jdbc:oracle:thin:@localhost:1521[:SID|/Service]</connection-url>
  <driver-class>oracle.jdbc.OracleDriver</driver-class>
  <driver>com.oracle</driver>
  <security>
    <user-name>edelivery_username</user-name>
    <password>edelivery_password</password>
```

```
  </security>
  <validation>
    <valid-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleValidConnectionChecker"/>
    <background-validation>true</background-validation>
    <stale-connection-checker class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleStaleConnectionChecker"/>
    <exception-sorter class-
name="org.jboss.jca.adapters.jdbc.extensions.oracle.OracleExceptionSorter"/>
  </validation>
</datasource>
```

- Edit the configuration file *cef_edelivery_path***/conf/domibus/domibus.properties** and configure the datasources as indicated below.

Remark:

Configure the database dialect as it is pre-configured for MySQL by default.

```
#EntityManagerFactory
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class=oracle.jdbc.xa.client.
OracleXADataSource
domibus.entityManagerFactory.jpaProperty.hibernate.dialect=org.hibernate.dialect.Oracle10gDialec
t
```

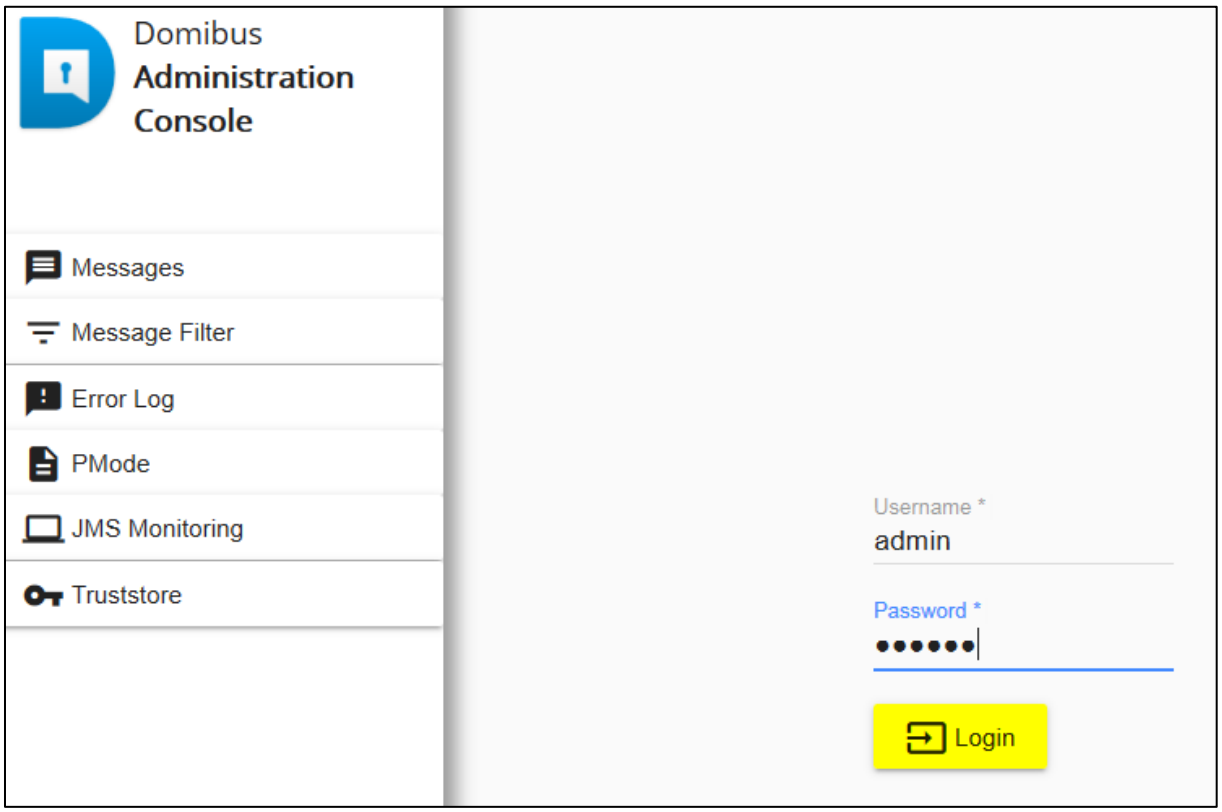
4. Configure your Keystore based on §5.1.2 – *"Certificates"*.
5. Run the standalone server:
   - For Windows under *cef_edelivery_path***\domibus\bin**
   - **standalone.bat --server-config=standalone-full.xml**
   - For Linux under *cef_edelivery_path***/domibus/bin/**
   - **standalone.sh --server-config=standalone-full.xml**
6. Display the Domibus home page in your browser: http://*localhost*:*8080*/domibus-wildfly (by default: User = ***admin***; Password = ***123456***).

   Remark*:*

   It is recommended to change the passwords for the default users. See §9.1 – "Administration *" for further information.*

   If you can access the page it means the deployment was successful.

Expected result:



4.4.2. *Single Server Deployment*

In this section we assume that WildFly is installed at the location *cef_edelivery_path***/domibus**.

For this step, you will have to use the following resources (see section §3.1-"*Binaries repository* " for the download location):

- **domibus-distribution-X.Y.Z-wildfly-war.zip**
- **domibus-distribution-X.Y.Z-wildfly-configuration.zip**

1. Follow steps **2** (MySQL) or **3** (Oracle) from the §4.4.1 – *"Pre-Configured Single Server Deployment".*

2. Configure the environment variables

   For Windows: edit cef_edelivery_path/domibus/bin/standalone.conf.bat as follows:

```
…
set "JAVA_OPTS=-Xms128M  –Xmx1024M  -XX:MaxPermSize=256M"
set "JAVA_OPTS=%JAVA_OPTS% -Djava.net.preferIPv4Stack=true"
set "JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%JBOSS_HOME%/conf/domibus -
Djava.io.tmpdir=<path to _tmp directory>"
…
```

   For Unix/Linux: edit cef_edelivery_path/domibus/bin/standalone.conf as follows:

```
……
JAVA_OPTS="-Xms128m –Xmx1024m -XX:MaxPermSize=256m  java.net.preferIPv4Stack=true"
JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$JBOSS_HOME/conf/domibus  -
Djava.io.tmpdir=<path to _tmp directory>
……
```

3. Download and unzip **domibus-distribution-X.Y.Z-wildfly-configuration.zip** in the directory *cef_edelivery_path***/conf/domibus**.
4. Configure your Keystore based on §5.1.2 – *"Certificates".*
5. Configure the JMS resources:

Configure the JMS resources in the configuration file *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml** by adding the **jms-connection-factories** and **jms-queues**.

```
<address-settings>
    <!--default for catch all-->
    <address-setting match="#">
        <dead-letter-address>jms.queue.DLQ</dead-letter-address>
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <max-size-bytes>10485760</max-size-bytes>
        <page-size-bytes>2097152</page-size-bytes>
        <message-counter-history-day-limit>10</message-counter-history-day-limit>
    </address-setting>
    <address-setting match="jms.queue.DomibusSendMessageQueue">
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <redelivery-delay>1000</redelivery-delay>
        <max-delivery-attempts>1</max-delivery-attempts>
    </address-setting>
    <address-setting match="jms.queue.DomibusPullMessageQueue">
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <redelivery-delay>1000</redelivery-delay>
        <max-delivery-attempts>1</max-delivery-attempts>
    </address-setting>
    <address-setting match="jms.queue.DomibusBusinessMessageOutQueue">
        <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <redelivery-delay>300000</redelivery-delay>
        <max-delivery-attempts>10</max-delivery-attempts>
    </address-setting>
    <address-setting match="jms.queue.DomibusNotifyBackendJmsQueue">
        <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <redelivery-delay>300000</redelivery-delay>
        <max-delivery-attempts>10</max-delivery-attempts>
    </address-setting>
    <address-setting match="jms.queue.DomibusErrorNotifyConsumerQueue">
        <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
        <expiry-address>jms.queue.ExpiryQueue</expiry-address>
        <redelivery-delay>300000</redelivery-delay>
        <max-delivery-attempts>10</max-delivery-attempts>
    </address-setting>
    <address-setting match="jms.queue.DomibusErrorNotifyProducerQueue">
```

```
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
            <address-setting match="jms.queue.DomibusBusinessMessageInQueue">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
        <address-setting match="jms.queue.DomibusPluginToBackendQueue">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
        <address-setting match="jms.queue.DomibusNotifyBackendWebServiceQueue">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
        <address-setting match="jms.queue.DomibusUnknownReceiverQueue">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
        <address-setting match="jms.queue.DomibusNotifyBackendQueue">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>300000</redelivery-delay>
            <max-delivery-attempts>10</max-delivery-attempts>
        </address-setting>
        <address-setting match="jms.queue.DomibusClusterCommandTopic">
            <dead-letter-address>jms.queue.DomibusDLQ</dead-letter-address>
            <expiry-address>jms.queue.ExpiryQueue</expiry-address>
            <redelivery-delay>10000</redelivery-delay>
            <max-delivery-attempts>3</max-delivery-attempts>
        </address-setting>
    </address-settings>
    ……
    <subsystem xmlns="urn:jboss:domain:messaging:3.0">
        <hornetq-server>
            <jmx-management-enabled>true</jmx-management-enabled>
            <jms-connection-factories>
    ……
                    <connection-factory name="edeliveryConnectionFactory">
                        <connectors>
                            <connector-ref connector-name="in-vm"/>
                        </connectors>
```

```
                    <entries>
                        <entry name="java:/jms/ConnectionFactory"/>
                    </entries>
                      <compress-large-messages>false
                      </compress-large-messages>
                        <failover-on-initial-connection>false
                        </failover-on-initial-connection>
                          <use-global-pools>true</use-global-pools>
            </connection-factory>
          ……….
        </jms-connection-factories>
          <jms-destinations>
          ……….
          <jms-queue name="DomibusBusinessMessageOutQueue">
            <entry name="java:/jms/domibus.backend.jms.outQueue"/>
            <entry name="java:/jms/queue/DomibusBusinessMessageOutQueue"/>
                <durable>true</durable>
          </jms-queue>
          <jms-queue name="DomibusNotifyBackendJmsQueue">
            <entry name="java:/jms/domibus.notification.jms"/>
            <entry name="java:/jms/queue/DomibusNotifyBackendJmsQueue"/>
    <durable>true</durable>
          </jms-queue>
          <jms-queue name="DomibusErrorNotifyConsumerQueue">
            <entry name="java:/jms/domibus.backend.jms.errorNotifyConsumer"/>
            <entry name="java:/jms/queue/DomibusErrorNotifyConsumerQueue"/>
                <durable>true</durable>
           </jms-queue>
           <jms-queue name="DomibusErrorNotifyProducerQueue">
            <entry name="java:/jms/domibus.backend.jms.errorNotifyProducer"/>
            <entry name="java:/jms/queue/DomibusErrorNotifyProducerQueue"/>
                <durable>true</durable>
           </jms-queue>
           <jms-queue name="DomibusBusinessMessageInQueue">
            <entry name="java:/jms/domibus.backend.jms.inQueue"/>
            <entry name="java:/jms/queue/DomibusBusinessMessageInQueue"/>
                <durable>true</durable>
           </jms-queue>
           <jms-queue name="DomibusPluginToBackendQueue">
            <entry name="java:/jms/domibus.backend.jms.replyQueue"/>
            <entry name="java:/jms/queue/DomibusPluginToBackendQueue"/>
                <durable>true</durable>
          </jms-queue>
          <jms-queue name="DomibusSendMessageQueue">
            <entry name="java:/jms/domibus.internal.dispatch.queue"/>
            <entry name="java:/jms/queue/DomibusSendMessageQueue"/>
                <durable>true</durable>
           </jms-queue>
           <jms-queue name="DomibusNotifyBackendWebServiceQueue">
            <entry name="java:/jms/domibus.notification.webservice"/>
            <entry name="java:/jms/queue/DomibusNotifyBackendWebServiceQueue"/>
                <durable>true</durable>
```

```
            </jms-queue>
            <jms-queue name="DomibusUnknownReceiverQueue">
              <entry name="java:/jms/domibus.internal.notification.unknown"/>
              <entry name="java:/jms/queue/DomibusUnknownReceiverQueue"/>
                  <durable>true</durable>
            </jms-queue>
            <jms-queue name="DomibusNotifyBackendQueue">
              <entry name="java:/jms/domibus.internal.notification.queue"/>
              <entry name="java:/jms/queue/DomibusNotifyBackendQueue"/>
                  <durable>true</durable>
            </jms-queue>
            <jms-queue name="DLQ">
              <entry name="java:/jms/domibus/ DLQ"/>
              <entry name="java:/jms/queue/DLQ"/>
                  <durable>true</durable>
            </jms-queue>
            <jms-topic name="DomibusClusterCommandTopic">
              <entry name="java:/jms/domibus.internal.command"/>
              <entry name="java:/jms/topic/DomibusClusterCommandTopic"/>
            </jms-topic>
            ……..
            </jms-destinations>
     </hornetq-server>
</subsystem>
```

Remark:

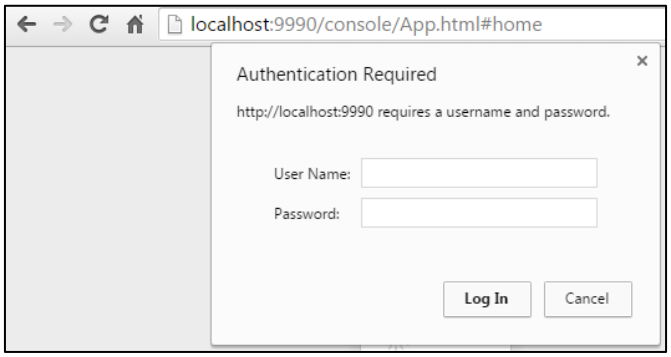
Please note that the JMX management also has to be enabled so the JMS resources can be monitored in the JMS Monitoring screen.

6. Configure the executor services:

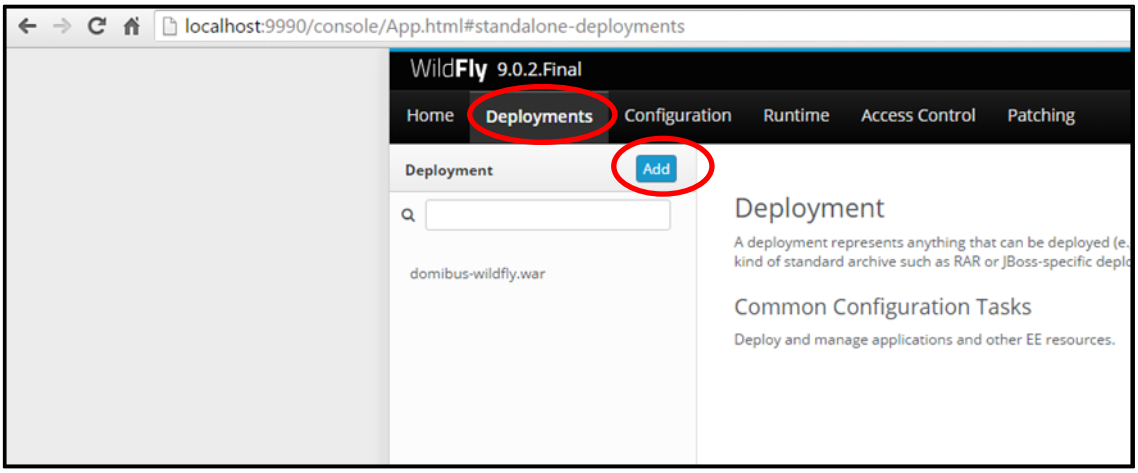
Configure the executor services in the configuration file *cef_edelivery_path***/domibus/standalone/configuration/standalone-full.xml**.

```
<subsystem xmlns="urn:jboss:domain:ee:3.0">
   .....................
   <concurrent>
      .....................
      <managed-executor-services>
         <managed-executor-service name="domibusExecutorService" jndi-
name="java:jboss/ee/concurrency/executor/DomibusExecutorService" context-service="default"
hung-task-threshold="60000" core-threads="5" max-threads="25" keepalive-time="5000"/>
      </managed-executor-services>
      <managed-executor-services>
         <managed-executor-service name="quartzExecutorService" jndi-
name="java:jboss/ee/concurrency/executor/QuartzExecutorService" context-service="default" hung-
task-threshold="0" long-running-tasks="true" core-threads="5" max-threads="25" keepalive-
time="5000"/>
      </managed-executor-services>
       .....................
   </concurrent>
   .....................
<subsystem xmlns="urn:jboss:domain:ee:3.0">
```

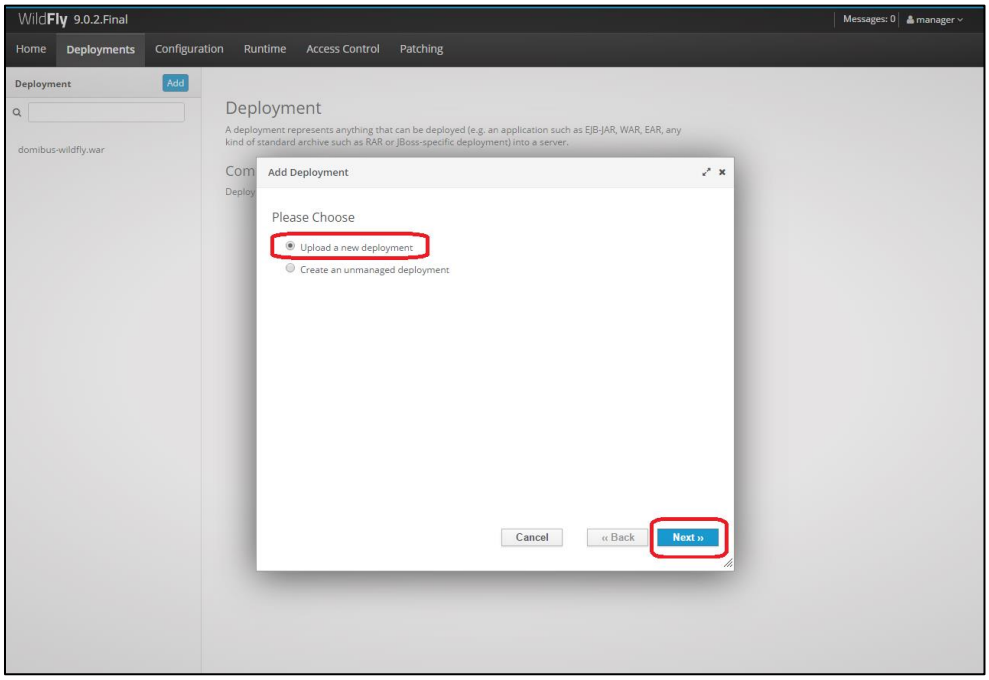
7. Connect to the Admin Console of WildFly at **http://*localhost*:*9990/console***:



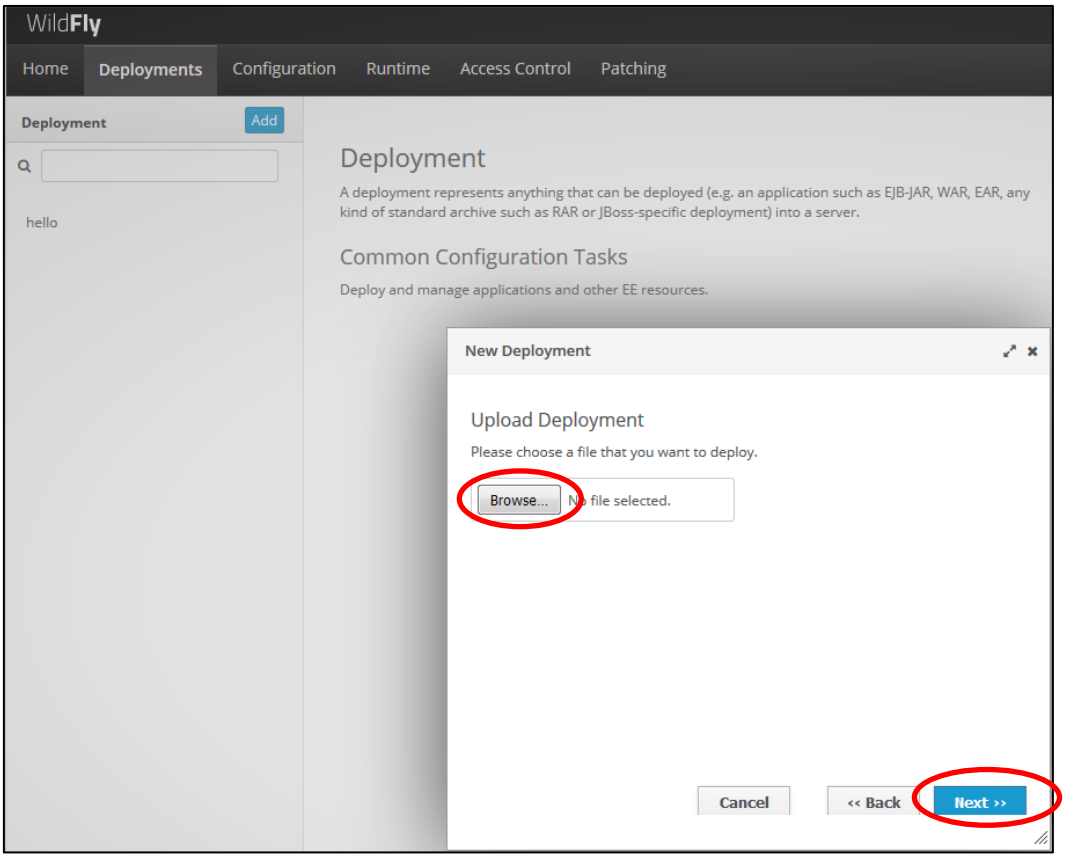
8. Click on **Deployments** in the console menu then click on **Add**:



9. Select **Upload a new deployment** then click **Next**:

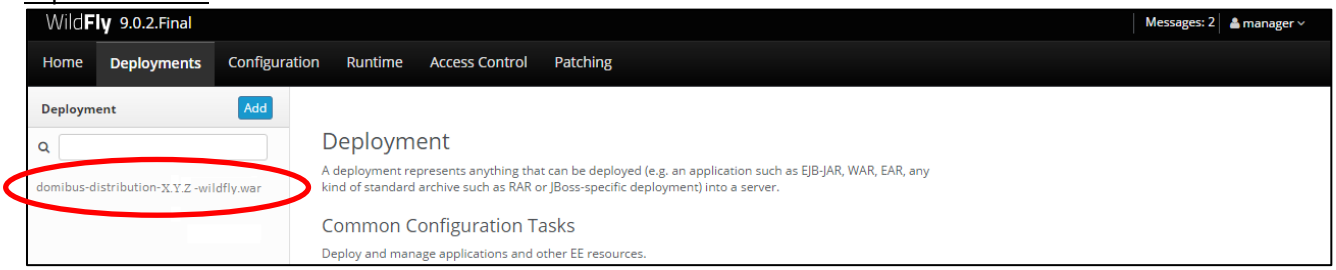


10. Browse to the location of the **domibus-distribution-X.Y.Z-wildfly.war** file, select it and click **Next** :



11. The deployment is successful when the name of the .war file appears in the Deployment column.

Expected result:



4.4.3. Clustered Deployment

For this step, you will have to use the following resources (see section §3.1–*"Binaries repository"* for the download location):

- **domibus-distribution-X.Y.Z-wildfly-configuration.zip**
- **domibus-distribution-X.Y.Z-wildfly-war.zip**

In this section we assume that the setup of Wildfly 9 in domain mode has already been done and that the cluster has been enabled as described in the official documentation. For more details on how to perform an installation of Wildfly 9 in domain mode, please refer to the official documentation (cf.[REF4]).

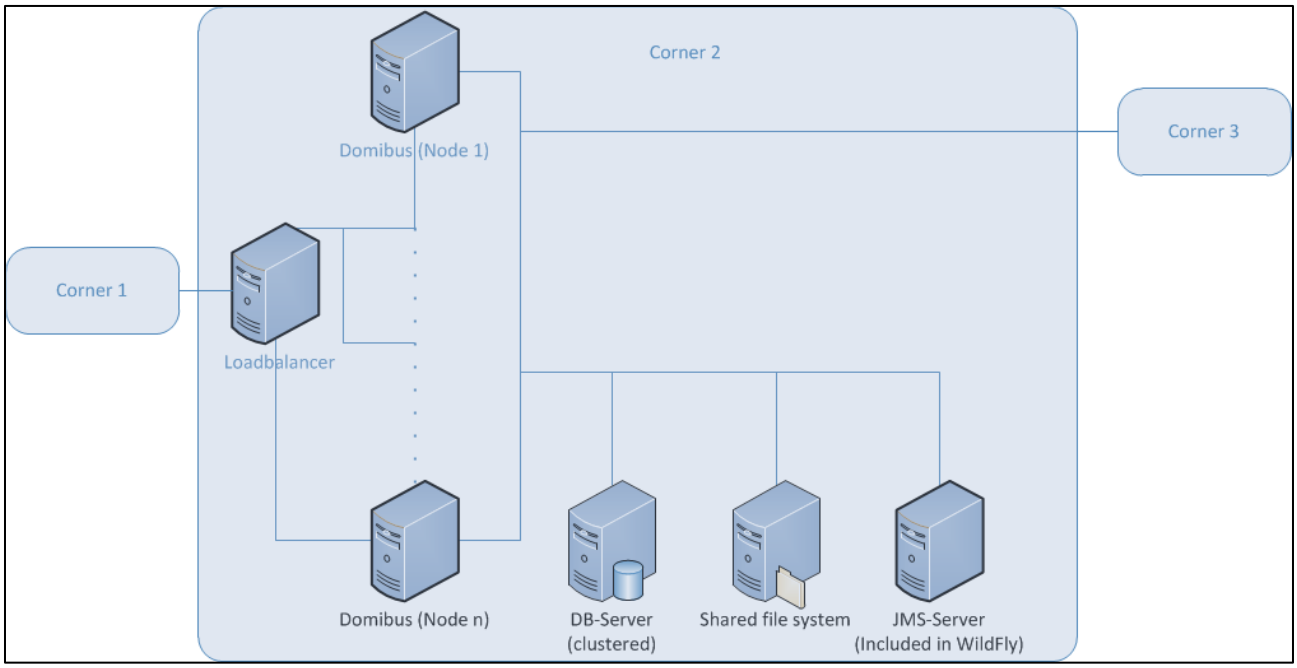


Figure 3 - Diagram representing the Deployment of Domibus in a Cluster on WildFly

In order to install Domibus in a WildFly cluster please follow the steps below:

1. Download and unzip **domibus-distribution-X.Y.Z-wildfly-configuration.zip** in a shared location that is accessible by all the nodes from the cluster. We will refer to this directory as *cef_shared_edelivery_path***/Domibus**.

2. Follow steps **2** (MySQL) or **3** (Oracle) from the §4.4.1 – *"Pre-Configured Single Server Deployment"*.

   Remarks:

   - *This step needs to be performed on all the nodes from the cluster*
   - *In the following 2 steps we will edit the profile **full-ha** from the configuration file **domain/configuration/domain.xml** located in the master node*

3. Configure the JMS queues and topics as indicated in §4.4.2 point 5 – *"Configure the JMS resources"*.

4. Configure the database dialect as indicated in §4.4.1 point 3 – "*Edit the configuration file cef_edelivery_path**/conf/domibus/domibus.properties***"

5. Configure the environment variables as follows:

   For Windows: edit cef_edelivery_path/bin/domain.conf.bat located in each WildFly node. The environment variable setting needs to be performed for every node in the cluster:

```
……
set "JAVA_OPTS=-Xms128M  –Xmx1024M  -XX:MaxPermSize=256M"
set "JAVA_OPTS=%JAVA_OPTS% -Djava.net.preferIPv4Stack=true"
set "JAVA_OPTS=%JAVA_OPTS% -Ddomibus.config.location=%JBOSS_HOME%/conf/domibus -
Djava.io.tmpdir=<path to _tmp directory>"
……
```

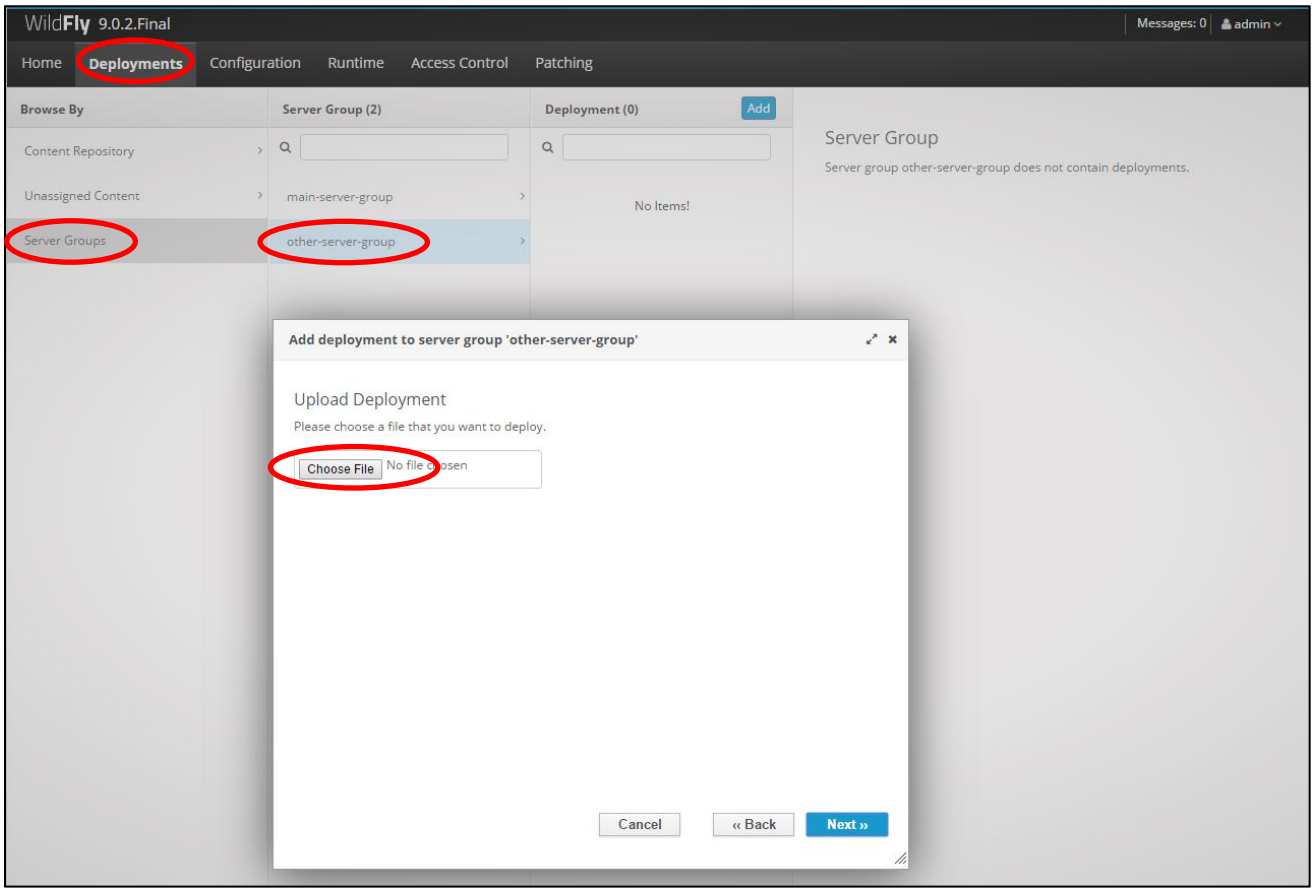
For Unix/Linux: edit cef_edelivery_path/bin/domain.conf located in each WildFly node. The environment variable setting needs to be performed for every node in the cluster:

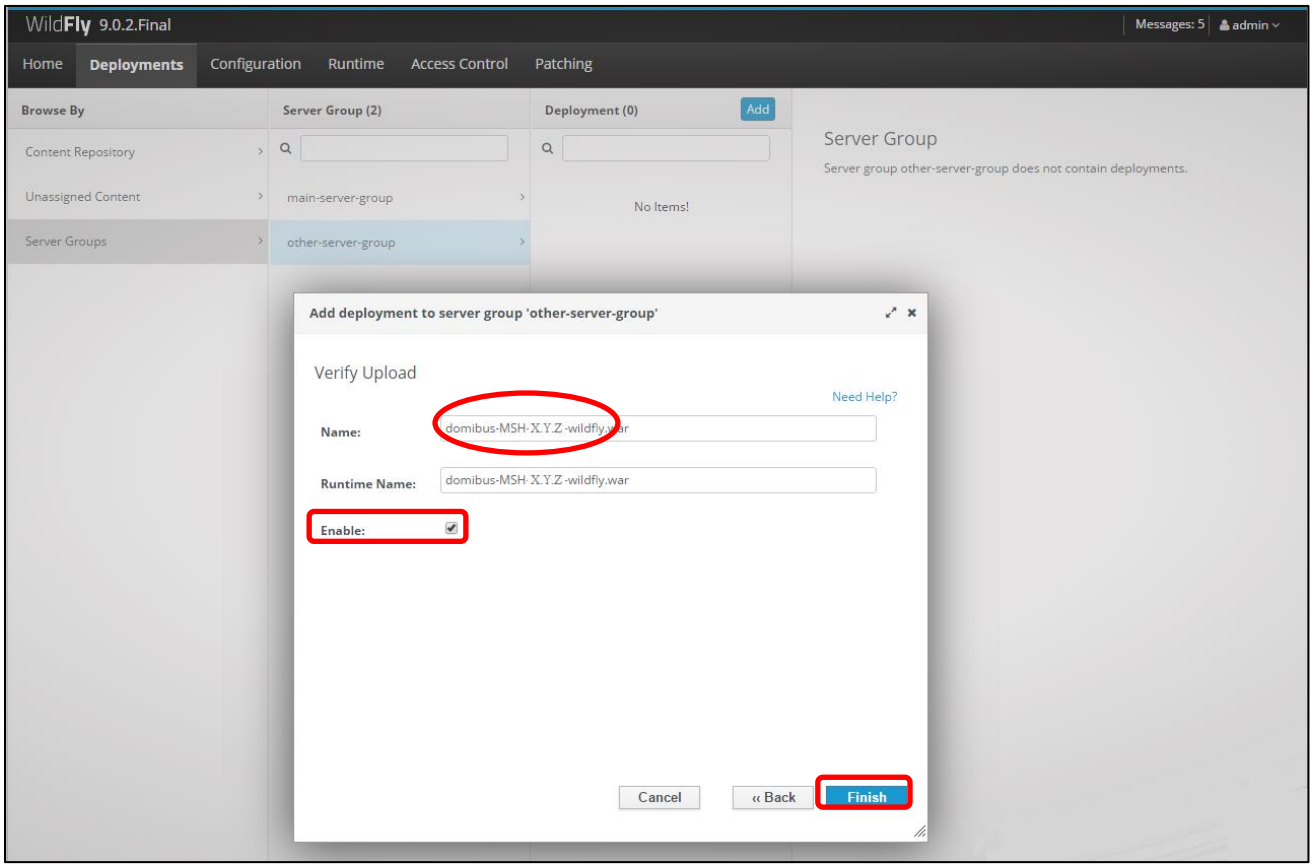
```
……..
JAVA_OPTS="-Xms128m –Xmx1024m -XX:MaxPermSize=256m  java.net.preferIPv4Stack=true"
JAVA_OPTS="$JAVA_OPTS -Ddomibus.config.location=$JBOSS_HOME/conf/domibus  -
Djava.io.tmpdir=<path to _tmp directory>
……..
```

Remark:

bin/domain.conf is located in each WildFly node. The environment variable setting needs to be performed in every node from the cluster.

6. Deploy the **domibus-distribution-X.Y.Z-wildfly.war** to the cluster. We will use the Wildfly Administration console for performing the deployment. We will deploy the application on the **other-server-group** cluster which is configured step by step in the official documentation (cf.[REF4]).




WildFly 9.0.2.Final
Messages: 5
admin
Home
Deployments
Configuration
Runtime
Access Control
Patching
Browse By
Content Repository
Unassigned Content
Server Groups
Server Group (2)
main-server-group
other-server-group
Deployment (0)
Add
No Items!
Server Group
Server group other-server-group does not contain deployments.
Add deployment to server group 'other-server-group'
Verify Upload
Need Help?
Name:
domibus-MSH-X.Y.Z-wildfly.war
Runtime Name:
domibus-MSH-X.Y.Z-wildfly.war
Enable:
Cancel
« Back
Finish

5. DOMIBUS CONFIGURATION

Domibus exposes the Message Service Handler endpoint as **../services/msh**. Only this endpoint has to be reachable by the other AS4 Access Points and it is typically exposed on the internet.

If the Default WS Plugin (§6.1.2 – *"WS Plugin"*) is deployed, Domibus exposes the Default WS Plugin endpoint as **../services/backend**. This endpoint should ONLY be exposed to the backend client(s) within the trusted zone and it should not be exposed to the internet.

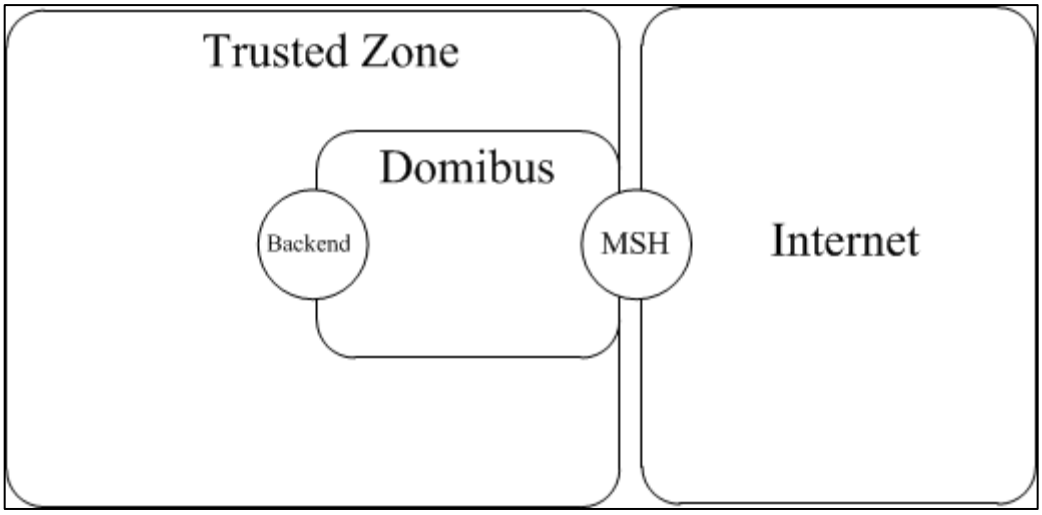


Figure 4 - Message Service Handler diagram

5.1. Security Configuration

5.1.1. Security Policies

The WS-Security policy used by Domibus when exchanging messages can be specified in the PMode configuration file (§7 – *"PMode Configuration"*). The recommended security policy is **eSensPolicy.v2.0.xml:** it can be found under *cef_edelivery_path***/conf/domibus/policies/eSensPolicy.v2.0.xml**.

5.1.2. Certificates

The certificates that are used for signing and encrypting the messages when communicating with the other Access Points can be configured in the property file located under *cef_edelivery_path***/conf/domibus/*domibus.properties.***
By default Domibus is pre-configured to use self-signed certificates. Please note that self-signed certificates should be used only for testing purposes and are not intended for production use.

In order to configure Domibus to use custom certificates the following properties need to be modified:

```
#The location of the keystore
domibus.security.keystore.location=${domibus.config.location}/keystores/gateway_keystore.jks
#Type of the used keystore
domibus.security.keystore.type=jks
#The password used to load the keystore
domibus.security.keystore.password=test123

#Private key
#The alias from the keystore of the private key
domibus.security.key.private.alias=blue_gw
#The private key password
domibus.security.key.private.password=test123

#Truststore
#The location of the truststore
domibus.security.truststore.location=${domibus.config.location}/keystores/gateway_truststore.jks
#Type of the used truststore
domibus.security.truststore.type=jks
#The password used to load the trustStore
domibus.security.truststore.password=test123
```

1. Create, if not present, a folder *cef_edelivery_path***/conf/domibus/keystores**.
2. Get your key pair from an external provider. (Self-signed certificates should only be used for testing purposes, not production). If you are interested in using the CEF Public Key Infrastructure Solution (cf.[REF5]).
3. Create, if not present, the public and private keys containers (e.g. *truststore***.jks** *and keystore***.jks**).
4. Import your private key into your keystore.

Remarks:

- *Your private key and your keystore should always stay secret. Please never share them.*
- *The keystore alias has to be the same as the party ID defined in the §7 – "PMode Configuration". It is strongly recommended to put your key pair (private and public key) and the public key of the other participants you trust in two separate containers.*

5.2. Domibus Properties

The following properties defined in the property file *cef_edelivery_path***/conf/domibus/domibus.properties** can be used to configure Domibus:

Configuration Property	Default value	Purpose
domibus.msh.messageid.suffix	domibus.eu	This Property is used to generate the random Message id with a fixed suffix which is set by default to "domibus.eu". The resulting format will be UUID@$domibus.msh.messageid.suffix. This property is mandatory.
domibus.msh.retry.cron	0/5 * * * *	It is the retry cron job to send the messages. It is set by default to every 5 seconds. This property is mandatory

domibus.dispatch.ebms.error.unrecoverable.retry	true	This property should be set to true if Domibus needs to retry sending the failed messages. This property is mandatory
domibus.smlzone	acc.edelivery.tech.ec.europa.eu	Set the SMLZone if Domibus needs to be used under Dynamic discovery model. This property is only mandatory if an SML is used.
domibus.dynamicdiscovery.client.specification	OASIS	The property specifies the dynamic discovery client to be used for the dynamic process. Possible values: OASIS and PEPPOL.
domibus.dynamicdiscovery.peppolclient.mode	TEST	This information is passed to the PEPPOL client that requires to know if the usage is in PRODUCTION or TEST mode.
domibus.dynamicdiscovery.oasisclient.regexCertificateSubjectValidation		Apart from validating response of signer certificates against the truststore, the Oasis Dynamic Discovery Client gives the possibility to add (optional) a regular expression to validate any certificate metadata related to the subject of the signer certificate. Example: domibus.dynamicdiscovery.oasisclient.regexCertificateSubjectValidation="^.*EHEALTH_SMP.*$"
domibus.dynamicdiscovery.partyid.responder.role		The role of the responder PartyId may be defined here (default values are: urn:fdc:peppol.eu:2017:roles:ap:as4 for PEPPOL and http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/responder for OASIS
domibus.dynamicdiscovery.partyid.type=urn:oasis:names:tc:ebcore:partyid-type:unregistered		The type of the PartyId may be defined here (default values are: urn:fdc:peppol.eu:2017:identifiers:ap for PEPPOL and urn:oasis:names:tc:ebcore:partyid-type:unregistered for OASIS)
domibus.backend.jmsInQueue	domibus.backend.jms.inQueue	This queue is the entry point for messages to be sent by the sending MSH. This property is only mandatory if the JMS plugin is used.
domibus.jms.queue.pull	domibus.internal.pull.queue	Domibus internal queue used for dispatching the pull requests
domibus.deployment.clustered	false	If true the quartz scheduler jobs are clustered. This property is mandatory, it should be set to true if the deployment of Domibus is done in a cluster.
messageFactoryClass		The factory for creating SOAPMessage objects Default values - Tomcat/WebLogic: com.sun.xml.internal.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl - WildFly: com.sun.xml.messaging.saaj.soap.ver1_2.SOAPMessageFactory1_2Impl
domibus.dispatcher.allowChunking	true	Allows chunking when sending messages to other Access Points
domibus.dispatcher.chunkingThreshold	104857600	If domibus.dispatcher.allowChunking is true, this property sets the threshold at which messages start getting chunked(in bytes). Messages under this limit do not get chunked. Defaults to 100 MB.
domibus.dispatcher.concurency	5-20	Specify concurrency limits via a "lower-upper" String, e.g. "5-10", or a simple upper limit String, e.g. "10" (the lower limit will be 1 in this case) #when sending messages to other Access Points.

domibus.msh.pull.cron	0 0 0/1 * * ?	Cron expression used for configuring the message puller scheduling.
domibus.pull.queue.concurency	1-1	Number of threads used to parallelize the pull requests.
domibus.pull.request.send.per.job.cycle	1	Number of pull requests executed every cron cycle.
domibus.retentionWorker.cronExpression	0/60 * * * * ?	Cron expression used for configuring the retention worker scheduling. The retention worker deletes the expired messages (downloaded and not-downloaded).
message.retention.downloaded.max.delete	50	This property is used to tweak the maximum downloaded messages to be deleted by the retention worker.
message.retention.not_downloaded.max.delete	50	This property is used to tweak the maximum not-downloaded messages to be deleted by the retention worker.
domibus.attachment.storage.location	-	It is possible to configure Domibus to save the message payloads on the file system instead of the database. This setting is recommended when exchanging payloads bigger than 30MB. In order to enable the file system storage please add the following property: domibus.attachment.storage.location= *your_file_system_location* where *your_file_system_location* is the location on the file system where the payloads will be saved. Remark: In a cluster configuration the file system storage needs to be accessible by all the nodes from the cluster.
domibus.taskExecutor.threadCount	50	Tomcat only: customize the task executor threads count.
domibus.jmx.user	jmsManager	WebLogic specific: the user that will be used to access the queues via JMX.
domibus.jmx.password	jms_Manager1	WebLogic specific: the associated password of the configured domibus.jmx.user.
domibus.sendMessage.messageIdPattern	^[\x20-\x7E]*$	When an initiator backend client submits messages to Domibus for transmission, with the message id field populated, then the message id should be RFC2822 compliant. The pattern specified here ensures this validation. This field is optional. In case the existing client does not match this message id pattern during submission, then this property can be omitted to skip the validation.

domibus.listPendingMessages.maxCount	500	This property specifies the maximum number of messages that would be served when the 'listPendingMessages' operation is invoked. Setting this property is expected to avoid timeouts due to huge resultsets being served. A value of 0 would return all the pending messages. This property is optional. Omitting this property would default the resultset size to 500. Note: For Tomcat server, the maximum number of shown messages in queue monitoring is defined by the 'domibus.listPendingMessages.maxCount' property.
domibus.fourcornermodel.enabled	true	This property affects the GUI search and behaviour. If the property is set to false, 'Final Recipient' and 'Original Sender' criteria disappear from Messages Filter, Messages column picker and from Message details in the GUI. The internal SQL queries for User and Signal Message do not use TB_PROPERTY.NAME = 'finalRecipient' and 'originalSender' anymore.
domibus.dispatcher.connectionTimeout	240000	For connection between the access points – C2 & C3. Specifies the amount of time, in milliseconds, that the consumer will attempt to establish a connection before it times out. 0 is infinite.
domibus.dispatcher.receiveTimeout	240000	For connection between the access points – C2 & C3. Specifies the amount of time, in milliseconds, that the consumer will wait for a response before it times out. 0 is infinite.
domibus.msh.retry.tolerance	10800000	Timeout tolerance for retry messages (in miliseconds). Scheduled retries that, due to any reason, were not performed within this period will be timeout.
domibus.sendMessage.failure.delete.payload	false	Whether to delete the message payload or send failure. Defaults to false (the admin could put the message back in the send queue) .
domibus.auth.unsecureLoginAllowed	true	The property specifies if authentication is required or not.
domibus.pmode.dao.implementation	CachingPModeProvider	Internal configuration provider for managing the PMode access.
compressionBlacklist	application/vnd.etsi.asic-s+zip,image/jpeg	The list of mime-types that will not be compressed (in outgoing messages) even if compression is turned on for the given message.
domibus.security.keystore.location	${domibus.config.location}/keystores/gateway_keystore.jks	The location of the keystore.
domibus.security.keystore.type	jks	The type of the used keystore.
domibus.security.keystore.password	test123	The password used to load the keystore.
domibus.security.key.private.alias	blue_gw	The alias from the keystore of the private key.

domibus.security.key.private.password	test123	The private key password.
domibus.security.truststore.location	${domibus.config.location}/keystores/gateway_truststore.jks	The location of the truststore.
domibus.security.truststore.type	jks	The type of the used keystore.
domibus.security.truststore.password	test123	The password used to load the trustStore.
domibus.entityManagerFactory.packagesToScan	eu.domibus	Packages to be scanned (comma separated) by the EntityManagerFactory.
domibus.entityManagerFactory.jpaProperty.hibernate.connection.driver_class		The JDBC driver class used for connecting to the database.
domibus.entityManagerFactory.jpaProperty.hibernate.dialect		This property makes Hibernate generate the appropriate SQL for the chosen database.
domibus.entityManagerFactory.jpaProperty.hibernate.format_sql	true	Pretty print the SQL in the log and console.
domibus.entityManagerFactory.jpaProperty.transaction.factory_class		The classname of a TransactionFactory to use with Hibernate Transaction API.
domibus.entityManagerFactory.jpaProperty.hibernate.transaction.manager_lookup_class		The classname of the TransactionManagerLookup.
com.atomikos.icatch.output_dir	${domibus.work.location:${domibus.config.location}}/work/transactions	Tomcat only: Specifies the directory in which to store the debug log files for Atomikos.
com.atomikos.icatch.log_base_dir	${domibus.work.location:${domibus.config.location}}/work/transactions/log	Tomcat only: Specifies the directory in which the log files should be stored.
com.atomikos.icatch.default_jta_timeout	60000	Tomcat only: The default timeout for JTA transactions.
com.atomikos.icatch.max_timeout	300000	Tomcat only: The default transaction max timeout for JTA transactions
domibus.jms.XAConnectionFactory.maxPoolSize	20	Tomcat only: The max pool size of the JMS connection factory.
activeMQ.broker.host	localhost	Tomcat only: The host of the JMS broker.
activeMQ.brokerName	localhost	Tomcat only: The name of the JMS broker.
activeMQ.embedded.configurationFile	file:///${domibus.config.location}/internal/activemq.xml	Tomcat only: The configuration file of the embedded ActiveMQ broker. In case an external broker is used this property is not needed and it should be deleted from the property file.

activeMQ.JMXURL	service:jmx:rmi://${activeMQ.broker.host}:${activeMQ.rmiServerPort}/jndi/rmi://${activeMQ.broker.host}:${activeMQ.connectorPort}/jmxrmi	Tomcat only: The service URL of the MBeanServer.
activeMQ.connectorPort	1199	Tomcat only: The port that the JMX connector will use for connecting to ActiveMQ.
activeMQ.rmiServerPort	1200	Tomcat only: The RMI server port.
activeMQ.transportConnector.uri	tcp://${activeMQ.broker.host}:61616	Tomcat only: The connection URI that the clients can use to connect to an ActiveMQ broker using a TCP socket.
activeMQ.username	domibus	Tomcat only: The username that is allowed to connect to the ActiveMQ broker.
activeMQ.password	changeit	Tomcat only: The password of the username defined in the **activeMQ.username** property.
domibus.datasource.xa.xaDataSourceClassName	com.mysql.jdbc.jdbc2.optional.MysqlXADataSource	Tomcat only(XA datasource): The fully qualified underlying XADataSource class name.
domibus.datasource.xa.maxLifetime	60	Tomcat only(XA datasource): Sets the maximum amount of seconds that a connection is kept in the pool before it is destroyed automatically.
domibus.datasource.xa.minPoolSize	5	Tomcat only(XA datasource): Sets the minimum pool size. The amount of pooled connections will not go below this value. The pool will open this amount of connections during initialization.
domibus.datasource.xa.maxPoolSize	100	Tomcat only(XA datasource): Sets the maximum pool size. The amount of pooled connections will not go above this value.
domibus.database.serverName	localhost	Tomcat only(XA datasource): The host name or the IP address of the database server.
domibus.database.port	3306	Tomcat only(XA datasource): The port number of the database server.
domibus.datasource.xa.property.user	edelivery	Tomcat only(XA datasource): A user who has access to the Domibus database schema.
domibus.datasource.xa.property.password	edelivery	Tomcat only(XA datasource): The password of the user defined in the **domibus.datasource.xa.property.user** property.
domibus.datasource.xa.property.url	jdbc:mysql://${domibus.database.serverName}:${domibus.database.port}/domibus?pinGlobalTxToPhysicalConnection=true	Tomcat only(XA datasource): The JDBC URL connection. It re-uses the properties for the user and password defined above.
domibus.datasource.driverClassName	com.mysql.jdbc.Driver	Tomcat only(Non-XA datasource): the JDBC driver class name.
domibus.datasource.url	jdbc:mysql://localhost:3306/domibus?useSSL=false	Tomcat only(Non-XA datasource): The JDBC URL connection.

domibus.datasource.user	edelivery	Tomcat only(Non-XA datasource): A user who has access to the Domibus database schema.
domibus.datasource.password	edelivery	Tomcat only(Non-XA datasource): The password of the user defined in the **domibus.datasource.user** property.
domibus.receiver.certificate.validation.onsending	true	If activated Domibus will verify before sending a User Message if the receiver's certificate is valid and not revoked. If the receiver's certificate is not valid or it has been revoked Domibus will not send the message and it will mark it as SEND_FAILURE
domibus.sender.certificate.validation.onsending	true	If activated Domibus will verify before sending a User Message if his own certificate is valid and not revoked. If the certificate is not valid or it has been revoked, Domibus will not send the message and it will mark it as SEND_FAILURE (default is true)
domibus.sender.certificate.validation.onreceiving	true	If activated Domibus will verify before receiving a User Message if the sender's certificate is valid and not revoked. If the certificate is not valid or it has been revoked, Domibus will not accept the message (default is true)
domibus.sender.trust.validation.onreceiving	false	An extra security validation that requires that the party name reflected in the alias of the sender public key should also be contained in the subject of the certificate.
domibus.console.login.maximum.attempt	5	Maximum connection attempts before the account gets locked (suspended).
domibus.console.login.suspension.time	60	Property defining how many minutes the account remains locked (suspended) before it is automatically unlocked by the system.

Configuration Property	Default value	Purpose
Proxy Settings		In case your Access Point has to use a proxy server you can configure it with these properties.
domibus.proxy.enabled	false	true/false depending on whether you need to use proxy or not.
domibus.proxy.http.host	-	Host name of the proxy server.
domibus.proxy.http.port	-	Port of Proxy server
domibus.proxy.user	-	Username for authentication on the proxy server.
domibus.proxy.password	-	Password.
domibus.proxy.nonProxyHosts	-	Indicates the hosts that should be accessed without going through the proxy.

Table 1 - Domibus Properties

6. PLUGIN MANAGEMENT

This section describes the different types of plugins and their registration process.

6.1. Default Plugins

Domibus comes with three default plugins. The three Interface Control Documents (ICD) describe these three plugins (JMS, WS and File System Plugin) (cf.[REF6]).

6.1.1. JMS Plugin

For the JMS plugin, you will have to use the following resources (see section § 3.1-" *Binaries repository* " for the download location):

- **domibus-distribution-X.Y.Z-default-jms-plugin.zip**

6.1.2. WS Plugin

For the WS plugin, you will have to use the following resources (see section §3.1-"*Binaries repository*" for the download location):

- **domibus-distribution-X.Y.Z-default-ws-plugin.zip**

6.1.2.1. Domibus authentication

The default web service plugin includes an example of how to implement authentication and authorization. By default this feature is disabled to insure backwards compatibility with older versions of Domibus.

The documentation below answers the question "*how to enable and use the authentication in the WS plugin?*"

The default WS plugin supports:

- Basic Authentication
- X509 Certificates Authentication
- Blue Coat Authentication

***Remark**:*

Blue Coat is the name of the reverse proxy at the Commission. It forwards the request in HTTP with the certificate details inside the request ("Client-Cert" header key).

When more than one authentication method is used, the Basic Authentication takes precedence on both http and https.
When no Basic Authentication is provided, X509 certificates are expected on https requests.
When no Basic Authentication is provided, Blue Coat certificates are expected on http requests.

6.1.2.2. Domibus Authorization

For convenience, the WS plugin uses exactly the same database as configured for Domibus core to store the users/passwords and certificate ids. To learn more about authorization (and authentication), please refer to the plugin cookbook (cf.[REF6]).

There are two default users already inserted in the database (make sure you already ran the migration scripts):

- *admin* and *user* both with **123456** as password.
- *admin* has the role ROLE_ADMIN and *user* has the role ROLE_USER.

Roles:

ROLE_ADMIN has the permission to call:

- submitMessage with any value for originalSender property
- retrieveMessage (any message among messages notified to this plugin)
- listPendingMessages will list all pending messages for this plugin
- getStatus and getMessageErrors

ROLE_USER has the permission to call:

- submitMessage with originalSender equal to the originalUser
- retrieveMessage, only if finalRecipient equals the originalUser
- listPendingMessages, only messages with finalRecipient equal to the origi-nalUser

6.1.2.3. Enable the authentication in Domibus

To enable the authentication at Domibus level the following steps must be configured:

1. In **conf/domibus/domibus.properties**, set the property "**domibus.auth.unsecureLoginAllowed**" to false:

```
domibus.auth.unsecureLoginAllowed=false
```

2. The application server must be configured to allow https requests and pass the authentication credentials to Domibus.

6.1.3. File System Plugin

For the File System plugin, you will have to use the following resources (see section §3.1-"*Binaries repository*" for the download location):

- **domibus-distribution-X.Y.Z-default-fs-plugin.zip**

6.2. Custom Plugin

Users can develop their own plugins. Please refer to the plugin cookbook for more details (cf.[REF6]).

6.2.1. Plugin registration

***Remark**:*

Please refer to section 9.1.4 - "Message Filtering" *for the routing of the specific plugin after registering the plugin on your specific Application Server.*

6.2.1.1. Tomcat

In order to install a custom plugin for Tomcat, please follow the steps below**:**

1. Stop Tomcat server
2. Copy the custom plugin jar file to the plugins folder *CATALINA_HOME***/conf/domibus/plugins/lib**
3. Copy the custom plugin XML configuration file to *CATALINA_HOME***/conf/domibus/plugins/config**
4. Start Tomcat server

Remark:

CATALINA_HOME is the folder where the Tomcat is installed.

6.2.1.2. *WebLogic*

In order to install a custom plugin for WebLogic please follow the steps below**:**

1. Stop the WebLogic server
2. Copy the custom plugin jar file to the plugins folder *DOMAIN_HOME***/conf/domibus/plugins/lib**
3. Copy the custom plugin XML configuration file to *DOMAIN_HOME***/conf/domibus/plugins/config**
4. Start the WebLogic server

Remark:

DOMAIN_HOME is the folder corresponding to the WebLogic domain.

6.2.1.3. WildFly

In order to install a custom plugin please follow the steps below**:**

1. Stop the WildFly server
2. Copy the custom plugin jar file to the plugins folder *cef_edelivery_path* **/conf/domibus/plugins/lib**
3. Copy the custom plugin XML configuration file to *cef_edelivery_path* **/conf/domibus/plugins/config**
4. Start the WildFly server

7. PMode Configuration

Processing Modes (PModes) are used to configure Access Points. The PMode parameters are loaded into the Access Point via an XML file.

The features described in the PMode file are: Security, Reliability, Transport, Business Collaborations, Error Reporting, Message Exchange Patterns (MEPs) and Message Partition Channels (MPCs).

As different messages may be subject to various types of processing or, as different business domains may have several requirements, Access Points commonly support several PModes. Some PMode parameters are mandatory, others are optional. For more information please refer to the Access Point Component Offering Document.

7.1. Configuration

In Domibus, PModes are XML files that you can create or edit. You can configure the two files given: *cef_edelivery_path**/conf/pmodes/domibus-gw-sample-pmode**-party_id_name1**.xml*** and *cef_edelivery_path**/conf/pmodes/domibus-gw-sample-pmode**-party_id_name2**.xml.***

The "*party_id_name1" value must be replaced* with your own party name and *the "party_id_name2"* with your corresponding party name.

The party_id must match the alias of the certificate in the keystore and the endpoint must be the external access link to your instance.

***Remark**:*

> *This step could be managed by a PMode Configuration Manager, known to your Business Owner.*

```
<party name="party_id_name2"
           endpoint="http:// party_id_name2_hostname:8080/domibus/services/msh"
           allowChunking="false">
   <identifier partyId="party_id_name2_1"
                       partyIdType="partyTypeUrn"/>
</party>
<party name="party_id_name1"
           endpoint="http:// party_id_name1_hostname:8080/domibus/services/msh"
           allowChunking="false">
   <identifier partyId="party_id_name1_1" partyIdType="partyTypeUrn"/>
</party>
```

Figure 5 - PMode view

7.1.1. Adding a new participant

If a new participant's Access Point is joining your network, you need to configure your PMode accordingly and re-upload it like mentioned in §7.1.4 – *"Upload new Configuration"*.

- Add a "new_party" element:

```
<party name="new_party_name"
                        endpoint="http://new_party_msh"
                        allowChunking="false">
        <identifier partyId="new_party_id" partyIdType="partyTypeUrn"/>
</party>
```

- Add your "new_party_name" as initiator:

The party with the role of initiator will be the sender of the messages:

```
<initiatorParties>
                ...
                <initiatorParty name="new_party_name"/>
        </initiatorParties>
```

- Add your "new_party_name" as responder:

The party with the role of responder will be the receiver of the messages:

```
<responderParties>
                ...
                <responderParty name="new_party_name"/>
        </responderParties>
```

7.1.2. Sample PMode file

Processing modes (PModes) describe how messages are exchanged between AS4 partners (in this case *Access Points blue_gw and red_gw*). These files contain the identifiers of each AS4 Access Point (identified as *parties* in the PMode file below).

Sender and Receiver Identifiers represent the organizations that send and receive the business documents. They are both used in the authorization process (PMode). Therefore, adding, modifying or deleting a participant implies modifying the corresponding PMode files.

Here is an example of a PMode XML file:

***Remark**:*

In this setup, we have allowed each party (blue_gw or red_gw) to initiate the process. If only blue_gw is supposed to send messages, then put only blue_gw in <initiatorParties> and red_gw in <responderParties>.

```
<?xml version="1.0" encoding="UTF-8"?>
<db:configuration xmlns:db="http://domibus.eu/configuration" party="blue_gw">
        <mpcs>
                <mpc name="defaultMpc"
                        qualifiedName="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/defaultMPC"
                        enabled="true"
                        default="true"
                        retention_downloaded="0"
                        retention_undownloaded="14400"/>
        </mpcs>
        <businessProcesses>
                <roles>
                        <role name="defaultInitiatorRole"
                                value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/initiator"/>
```

```
                <role name="defaultResponderRole"
                        value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder"/>
            </roles>
            <parties>
                <partyIdTypes>
                    <partyIdType name="partyTypeUrn"
value="urn:oasis:names:tc:ebcore:partyid-type:unregistered"/>
                </partyIdTypes>
                <party name="red_gw"
                    endpoint="http://<red_hostname>:8080/domibus/services/msh"
                        allowChunking="false">
                    <identifier partyId="domibus-red" partyIdType="partyTypeUrn"/>
                </party>
                <party name="blue_gw"
                        endpoint="http://<blue_hostname>:8080/domibus/services/msh"
                        allowChunking="false">
                    <identifier partyId="domibus-blue" partyIdType="partyTypeUrn"/>
                </party>
            </parties>
            <meps>
                <mep name="oneway" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/oneWay"/>
                <mep name="twoway" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/twoWay"/>
                <binding name="push" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/push"/>
                <binding name="pull" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/pull"/>
                <binding name="pushAndPush" value="http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/push-and-push"/>
            </meps>
            <properties>
                <property name="originalSenderProperty"
                        key="originalSender"
                        datatype="string"
                        required="true"/>
                <property name="finalRecipientProperty"
                        key="finalRecipient"
                        datatype="string"
                        required="true"/>
                <propertySet name="ecodexPropertySet">
                    <propertyRef property="finalRecipientProperty"/>
                    <propertyRef property="originalSenderProperty"/>
                </propertySet>
            </properties>
            <payloadProfiles>
                <payload name="businessContentPayload"
                        cid="cid:message"
                        required="true"
                        mimeType="text/xml"/>
                <payload name="businessContentAttachment"
                        cid="cid:attachment"
                        required="false"
                        mimeType="application/octet-stream"/>
                <payloadProfile name="MessageProfile"
                        maxSize="40894464">
                    <attachment name="businessContentPayload"/>
```

```
                        <attachment name="businessContentAttachment"/>
                    </payloadProfile>
                </payloadProfiles>
                <securities>
                    <security name="eDeliveryPolicy"
                              policy="eDeliveryPolicy.xml"
                              signatureMethod="RSA_SHA256" />
                    <security name="noSigNoEnc"
                              policy="doNothingPolicy.xml"
                              signatureMethod="RSA_SHA256"/>
                    <security name="eSensPolicy"
                              policy="eSensPolicy.v2.0.xml"
                              signatureMethod="RSA_SHA256"/>
                </securities>
                <errorHandlings>
                    <errorHandling name="demoErrorHandling"
                                   errorAsResponse="true"
                                   businessErrorNotifyProducer="false"
                                   businessErrorNotifyConsumer="false"
                                   deliveryFailureNotifyProducer="false"/>
                </errorHandlings>
                <agreements>
        <agreement name="agreement1" value="A1" type=""/>
        <agreement name="agreement2" value="A2" type=""/>
        <agreement name="agreement3" value="A3" type=""/>
                </agreements>
                <services>
                 <service name="testService1" value="bdx:noprocess" type="tc1"/>
                </services>
                <actions>
                    <action name="tc1Action" value="TC1Leg1"/>
                    <action name="tc2Action" value="TC2Leg1"/>
                </actions>
                <as4>
                    <receptionAwareness name="receptionAwareness" retry="12;4;CONSTANT"
duplicateDetection="true"/>
                    <reliability name="AS4Reliability" nonRepudiation="true"
replyPattern="response"/>
                    <reliability name="noReliability" nonRepudiation="false" replyPattern="response"/>
                </as4>
                <legConfigurations>
                    <legConfiguration name="pushTestcase1tc1Action"
                                      service="testService1"
                                      action="tc1Action"
                                      defaultMpc="defaultMpc"
                                      reliability="AS4Reliability"
                                      security="eDeliveryPolicy"
                                      receptionAwareness="receptionAwareness"
                                      propertySet="ecodexPropertySet"
                                      payloadProfile="MessageProfile"
                                      errorHandling="demoErrorHandling"
                                      compressPayloads="true"/>
                    <legConfiguration name="pushTestcase1tc2Action"
                                                  service="testService1"
                                                  action="tc2Action"
                                                  defaultMpc="defaultMpc"
                                                  reliability="AS4Reliability"
                                                  security="eSensPolicy"
```

```
receptionAwareness="receptionAwareness"
                                                    propertySet="ecodexPropertySet"
                                                    payloadProfile="MessageProfile"
errorHandling="demoErrorHandling"
                                                    compressPayloads="true"/>
                    </legConfigurations>
<process name="tc1Process"
      agreement=""
      mep="oneway"
      binding="push"
      initiatorRole="defaultInitiatorRole"
      responderRole="defaultResponderRole">
          <initiatorParties>
                    <initiatorParty name="blue_gw"/>
                    <initiatorParty name="red_gw"/>
          </initiatorParties>
          <responderParties>
                    <responderParty name="blue_gw"/>
                    <responderParty name="red_gw"/>
          </responderParties>
          <legs>
                    <leg name="pushTestcase1tc1Action"/>
                    <leg name="pushTestcase1tc2Action"/>
          </legs>
</process>
          </businessProcesses>
</db:configuration>
```

7.1.3. Domibus PMode configuration to ebMS3 PMode Mapping

The following table provides additional information concerning the Domibus PMode configuration files.

Domibus PMode Configuration	EbMS3 Specification [ebMS3CORE] [AS4-Profile]	Description
MPCs	-	Container which defines the different MPCs (Message Partition Channels).
MPC	PMode[1].BusinessInfo.MPC: The value of this parameter is the identifier of the MPC (Message Partition Channel) to which the message is assigned. It maps to the attribute **Messaging** / **UserMessage**	Message Partition Channel allows the partition of the flow of messages from a *Sending MSH* to a *Receiving MSH* into several flows, each of which is controlled separately. An MPC also allows merging flows from several *Sending MSHs* into a unique flow that will be treated as such by a *Receiving MSH*. The value of this parameter is the identifier of the MPC to which the message is assigned.
MessageRetentionDownloaded	-	Retention interval for messages already delivered to the backend.

MessageRetentionUnDownloaded	-	Retention interval for messages not yet delivered to the backend.
Parties	-	Container which defines the different PartyIdTypes, Party and Endpoint.
PartyIdTypes	maps to the attribute **Messaging/UserMessage/ PartyInfo**	Message Unit bundling happens when the Messaging element contains multiple child elements or Units (either User Message Units or Signal Message Units).
Party ID	maps to the element **Messaging/UserMessage/ PartyInfo**	The ebCore Party ID type can simply be used as an identifier format and therefore as a convention for values to be used in configuration and – as such – does not require any specific solution building block.
Endpoint	maps to **PMode[1].Protocol.Address**	The endpoint is a party attribute that contains the link to the MSH. The value of this parameter represents the address (endpoint URL) of the *Receiver MSH* (or *Receiver Party*) to which Messages under this PMode leg are to be sent. Note that a URL generally determines the transport protocol (e.g. if the endpoint is an email address, then the transport protocol must be SMTP; if the address scheme is "http", then the transport protocol must be HTTP).
AS4	-	Container.
Reliability [@Nonrepudiation] [@ReplyPattern]	Nonrepudiation maps to **PMode[1].Security.SendReceipt.NonRepudiation** ReplyPattern maps to **PMode[1].Security.SendReceipt.ReplyPattern**	PMode[1].Security.SendReceipt.NonRepudiation : value = ‘true' (to be used for non-repudiation of receipt), value = 'false' (to be used simply for reception awareness). PMode[1].Security.SendReceipt.ReplyPattern: value = ‘Response’ (sending receipts on the HTTP response or back-channel). PMode[1].Security.SendReceipt.ReplyPattern: value = ‘Callback’ (sending receipts use a separate connection).

ReceptionAwareness [@retryTimeout] [@retryCount] [@strategy] [@duplicateDetection]	retryTimeout maps to **PMode[1].ReceptionAwareness.Retry=true** PMode[1].ReceptionAwareness.Retry.Parameters retryCount maps to **PMode[1].ReceptionAwareness.Retry.Parameters** strategy maps to **PMode[1].ReceptionAwareness.Retry.Parameters** duplicateDetection maps to **PMode[1].ReceptionAwareness.DuplicateDetection**	These parameters are stored in a composite string. • *retryTimeout* defines timeout in seconds. • *retryCount* is the total number of retries. • *strategy* defines the frequency of retries. The only *strategy* available as of now is *CONSTANT*. • *duplicateDetection* allows to check duplicates when receiving twice the same message. The only *duplicateDetection* available as of now is *TRUE*.
Securities	-	Container.
Security	-	Container.
Policy	PMode[1].Security.* NOT including PMode[1].Security.X509.Signature.Algorithm	The parameter defines the name of a WS-SecurityPolicy file.
SignatureMethod	PMode[1].Security.X509.Signature.Algorithm	This parameter is not supported by WS-SecurityPolicy and therefore it is defined separately.
BusinessProcessConfiguration	-	Container.
Agreements	maps to eb:Messaging/ UserMessage/ CollaborationInfo/ AgreementRef	This OPTIONAL element occurs zero times or once. The *AgreementRef* element is a string that identifies the entity or artifact governing the exchange of messages between the parties.
Actions	-	Container.
Action	maps to **Messaging/ UserMessage/ CollaborationInfo/Action**	This REQUIRED element occurs once. The element is a string identifying an operation or an activity within a Service that may support several of these
Services	-	Container.
ServiceTypes Type	maps to **Messaging/ UserMessage/ CollaborationInfo/ Service[@type]**	This REQUIRED element occurs once. It is a string identifying the service that acts on the message and it is specified by the designer of the service.

MEP [@Legs]	-	An ebMS MEP defines a typical choreography of ebMS User Messages which are all related through the use of the referencing feature (RefToMessageId). Each message of an MEP Access Point refers to a previous message of the same Access Point, unless it is the first one to occur. Messages are associated with a label (e.g. *request*, *reply*) that precisely identifies their direction between the parties involved and their role in the choreography.
Bindings	-	Container.
Binding	-	The previous definition of ebMS MEP is quite abstract and ignores any binding consideration to the transport protocol. This is intentional, so that application level MEPs can be mapped to ebMS MEPs independently from the transport protocol to be used.
Roles	-	Container.
Role	Maps to **PMode.Initiator.Role or PMode.Responder.Role** depending on where this is used. In ebMS3 message this defines the content of the following element: • For Initiator: **Messaging/UserMessage/PartyInfo/From/Role** • For Responder: **Messaging/UserMessage/PartyInfo/To/Role**	The required role element occurs once, and identifies the authorized role (*fromAuthorizedRole* or *toAuthorizedRole*) of the Party sending the message (when present as a child of the *From* element), or receiving the message (when present as a child of the *To* element). The value of the role element is a non-empty string, with a default value of *http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/defaultRole* Other possible values are subject to partner agreement.
Processes	-	Container.
PayloadProfiles	-	Container.
Payloads	-	Container.

Payload	maps to **PMode[1].BusinessInfo.PayloadProfile**	This parameter allows specifying some constraint or profile on the payload. It specifies a list of payload parts. A payload part is a data structure that consists of five properties: 1. **name** (or Content-ID) that is the **part identifier**, and can be used as an index in the notation PayloadProfile; 2. **MIME data type** (text/xml, application/pdf, etc.); 3. **name of the applicable XML Schema file** if the MIME data type is text/xml; 4. **maximum size in kilobytes**; 5. **Boolean** string indicating whether the part is **expected** or **optional**, within the User message. The message payload(s) must match this profile.
ErrorHandlings	-	Container.
ErrorHandling	-	Container.
ErrorAsResponse	maps to **PMode[1].ErrorHandling.Report.AsResponse**	This Boolean parameter indicates (if *true*) that errors generated from receiving a message in error are sent over the back-channel of the underlying protocol associated with the message in error. If *false*, such errors are not sent over the back-channel.
ProcessErrorNotifyProducer	maps to **PMode[1].ErrorHandling.Report.ProcessErrorNotifyProducer**	This Boolean parameter indicates whether (if *true*) the Producer (application/party) of a User Message matching this PMode should be notified when an error occurs in the Sending MSH, during processing of the *User Message to be sent*.
ProcessErrorNotifyConsumer	maps to **PMode[1].ErrorHandling.Report.ProcessErrorNotifyProducer**	This Boolean parameter indicates whether (if *true*) the Consumer (application/party) of a User Message matching this PMode should be notified when an error occurs in the Receiving MSH, during processing of the *received User message*.

DeliveryFailureNotifyProducer	maps to **PMode[1].ErrorHandling.Report.DeliveryFailuresNotifyProducer**	When sending a message with this reliability requirement (*Submit* invocation), one of the two following outcomes shall occur: - The Receiving MSH successfully delivers (*Deliver* invocation) the message to the Consumer. - The Sending MSH notifies (*Notify* invocation) the Producer of a delivery failure.
Legs	-	Container.
Leg	-	Because messages in the same MEP may be subject to different requirements - e.g. the reliability, security and error reporting of a response may not be the same as for a request – the PMode will be divided into *legs*. Each user message label in an ebMS MEP is associated with a PMode leg. Each PMode leg has a full set of parameters for the six categories above (except for *General Parameters*), even though in many cases parameters will have the same value across the MEP legs. Signal messages that implement transport channel bindings (such as PullRequest) are also controlled by the same categories of parameters, except for *BusinessInfo group*.
Process	-	In *Process* everything is plugged together.

Table 2 - Domibus PMode configuration to ebMS3 mapping

7.1.4. Upload new Configuration

7.1.4.1. Upload the PMode file

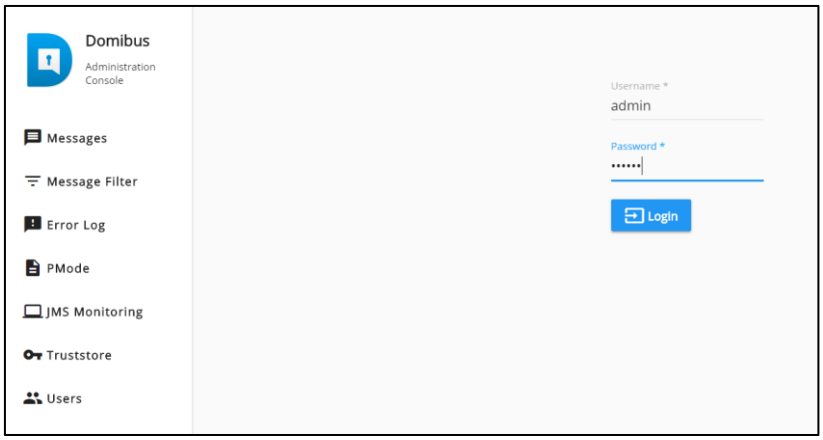
Remark:

In case of a cluster environment, the PMode configuration is replicated automatically on all the nodes.

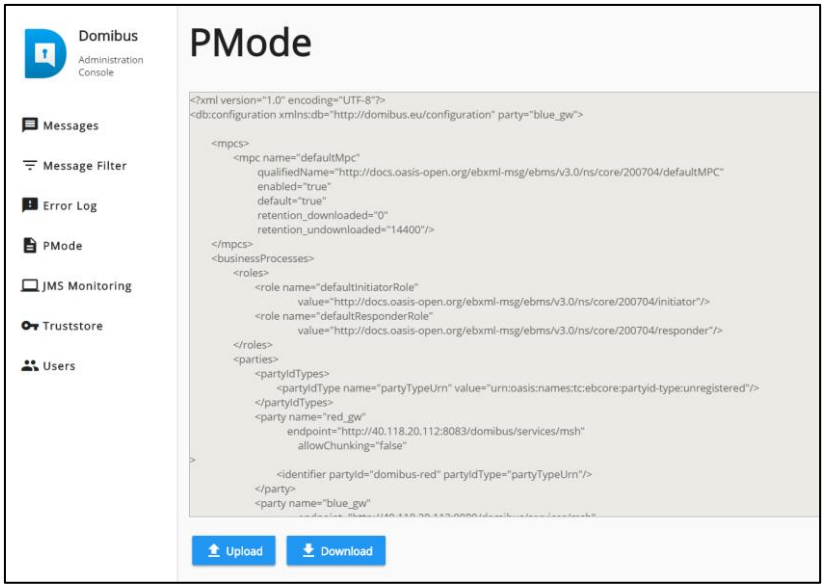
1. To update the PMode configuration and/or Truststore, connect to the Administration Console using the administrator's credentials (by default: User = ***admin***; Password = ***123456***) to http://*localhost:8080*/domibus.

Remark*:*

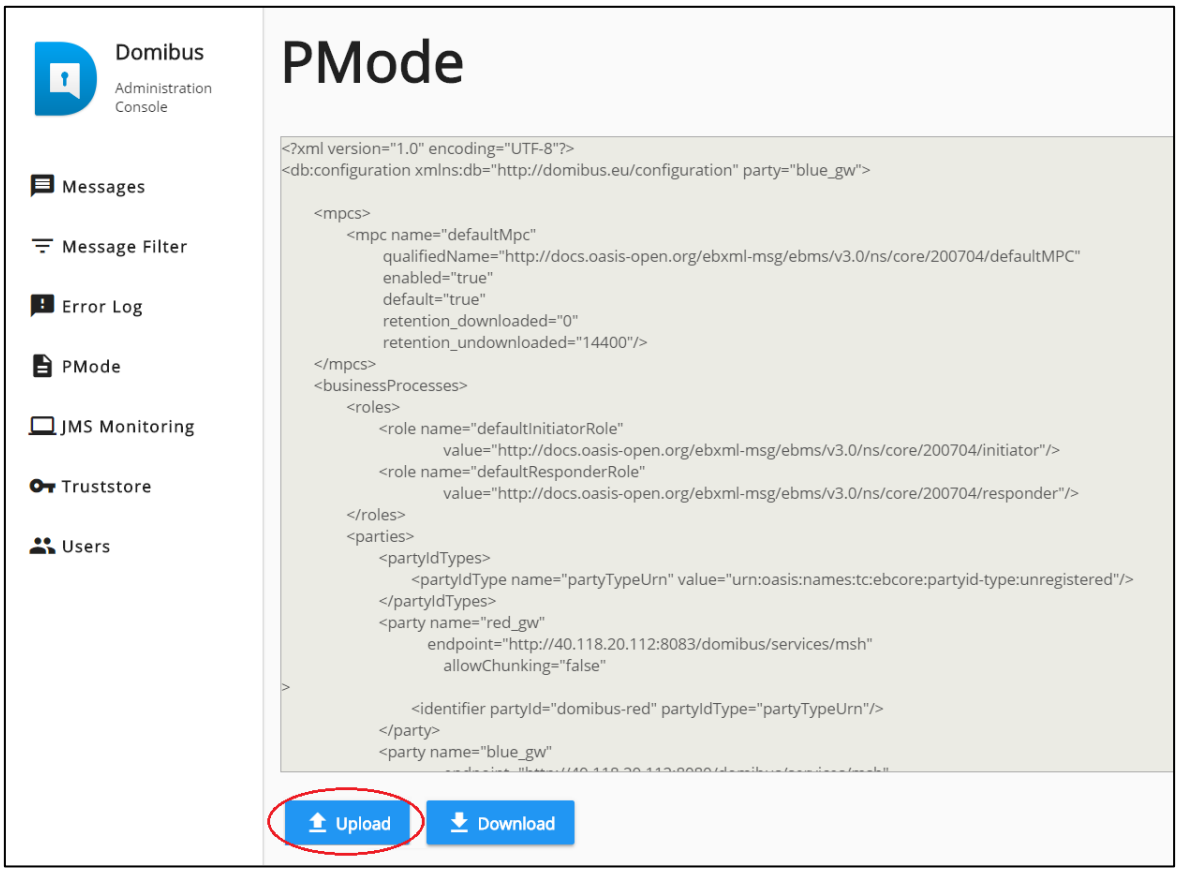
It is recommended to change the passwords for the default users.
See §9.1 – "Administration *" for further information.*



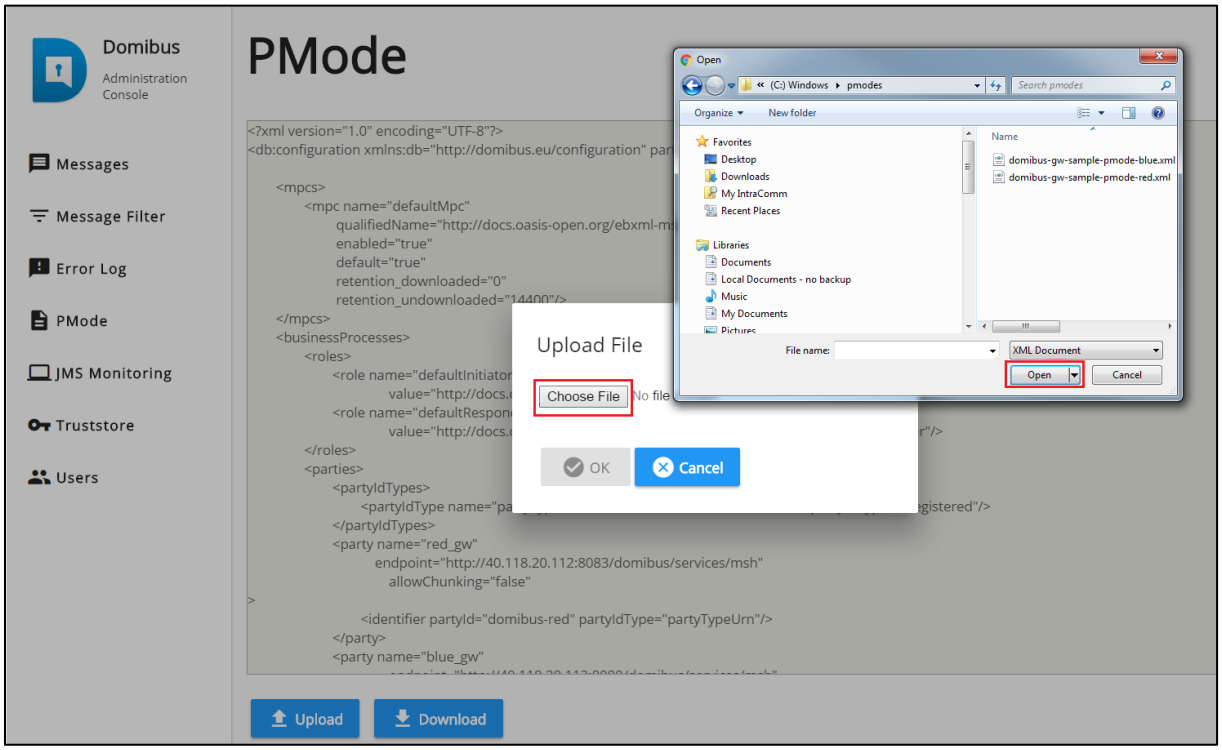
2. Click on the **PMode menu**:



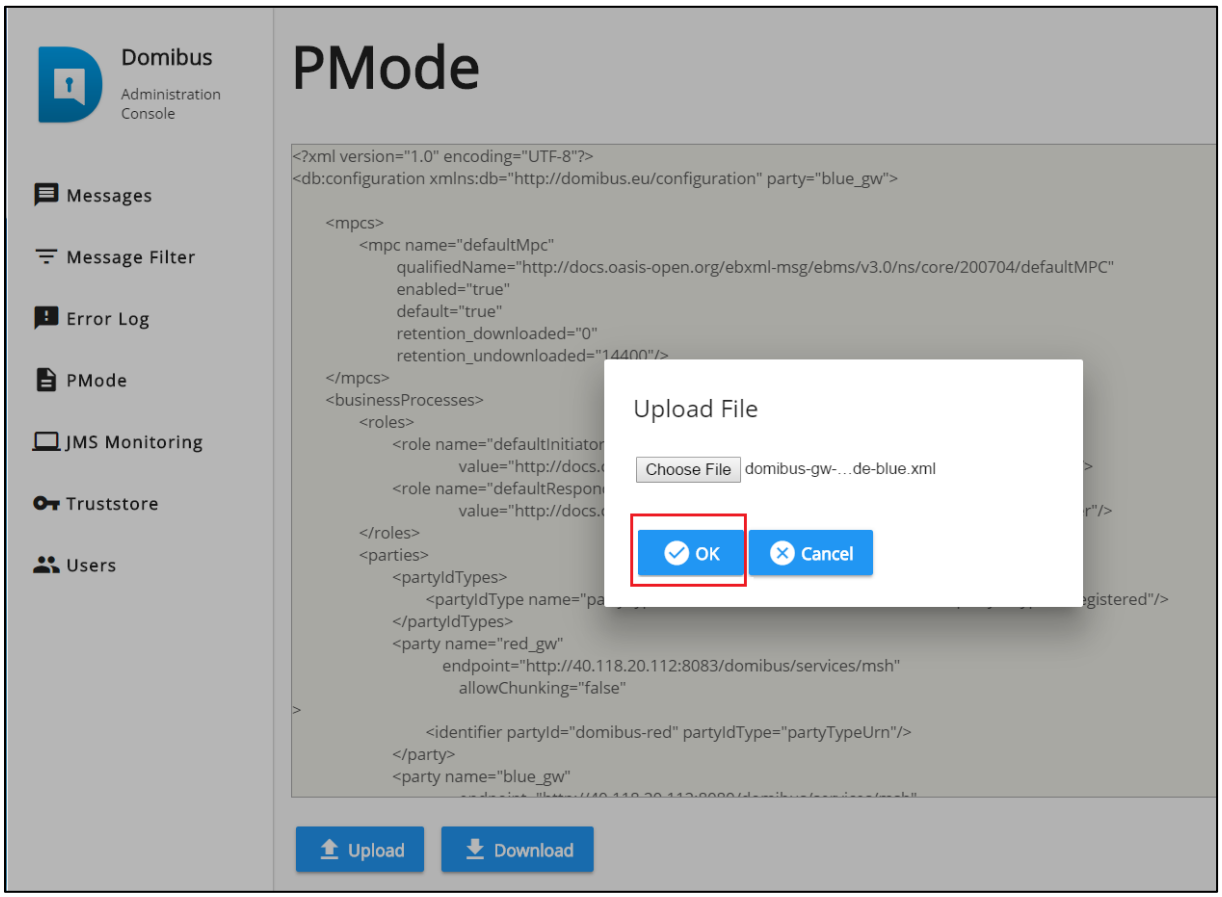
3. Press the **Upload** button:



4. Press the **Choose File** button, and navigate to the PMode file, select it and click on the **Open** button (or equivalent) in the standard dialog box:



5. Once the file has been selected, click "**OK**" to upload the PMode xml file:

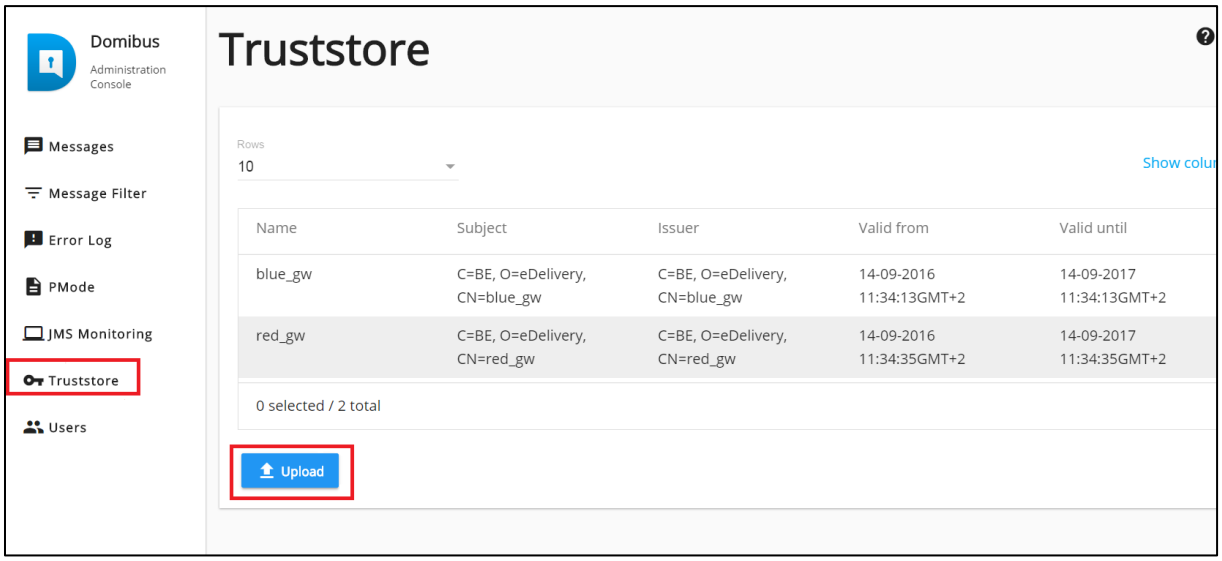


Remark:

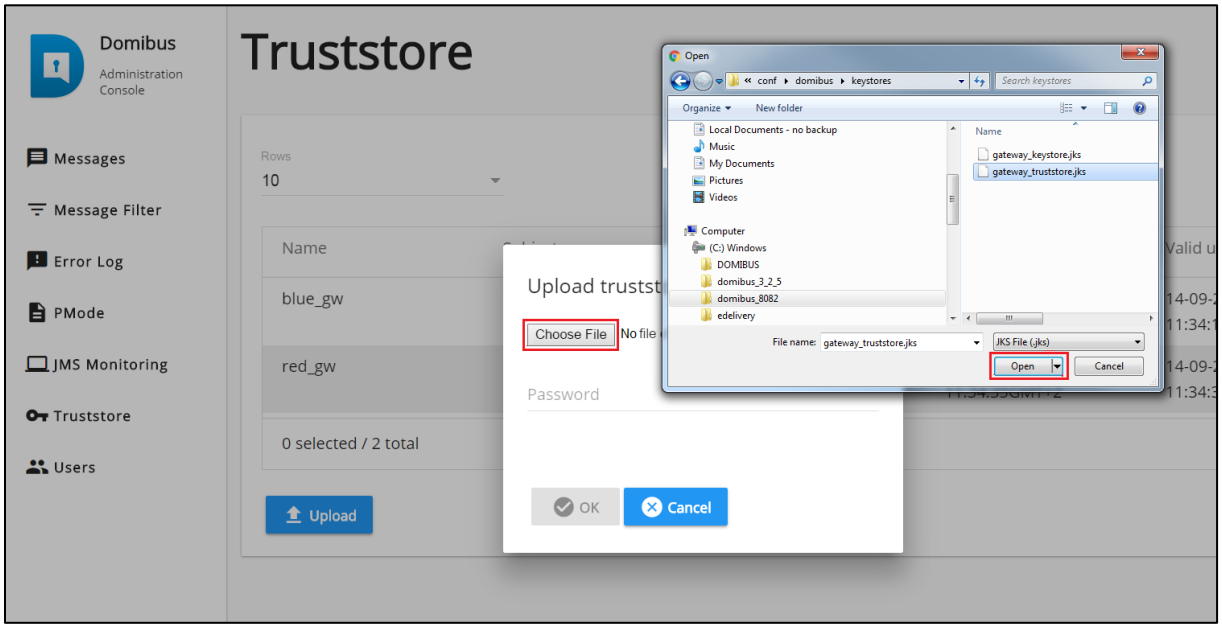
Every time a PMode is updated, the truststore is also reloaded from the filesystem.

7.1.4.2. Upload the Truststore

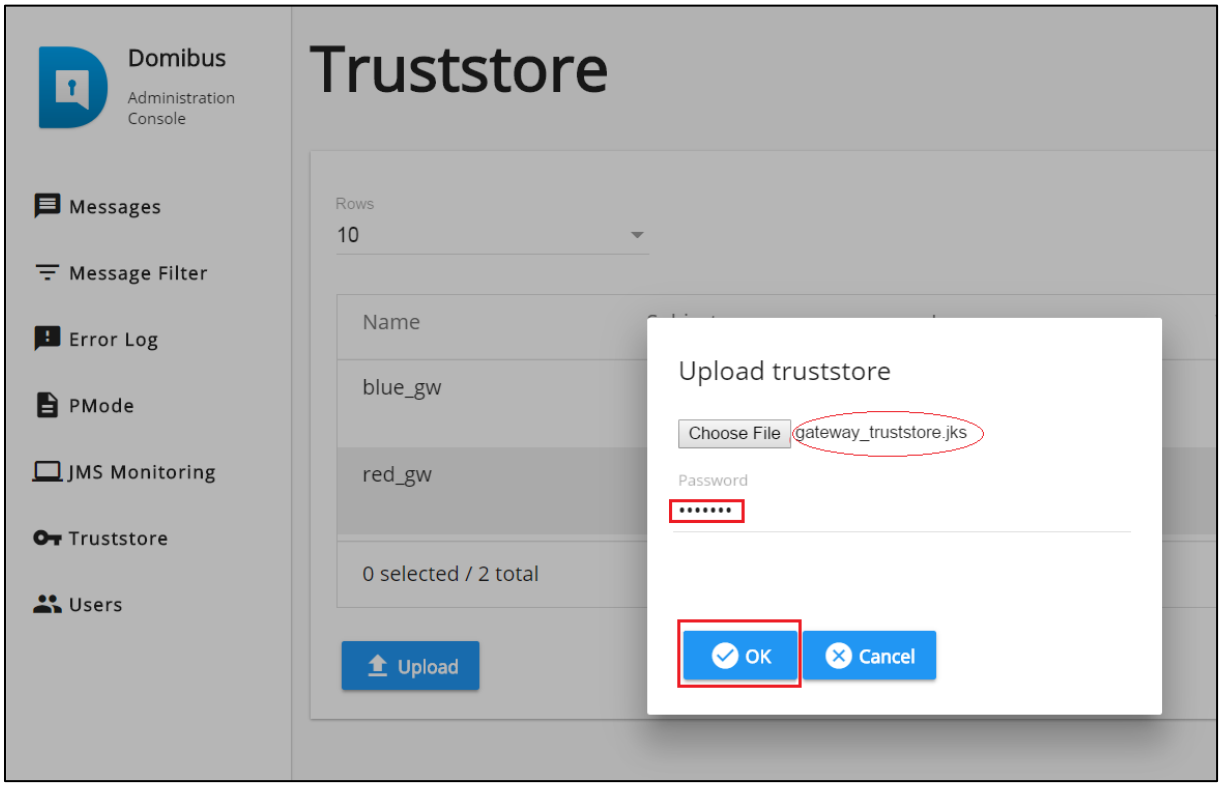
1. Select the "Truststore" menu and press the **Upload** button:



2. Navigate to the Truststore and select it by clicking on the **Open** button (or equivalent) of the standard file open dialog:



3. Once the file has been selected, enter the keystore password and click on the **OK** button to activate the new **truststore jks file:**



8. Special Scenario: Sender and Receiver are the same

In this special scenario, the Sender Access Point acts also as the Receiver Access Point. Multiple backends can exchange messages via the same Access Point using the same or different plugins.

8.1. PMode Configuration

A party (e.g. **blue_gw**) which is Sender and Receiver must be defined in both the <initiatorParties> and <responderParties> sections as shown below:

```
.....
        <initiatorParties>
                ……
                <initiatorParty name="blue_gw"/>
                ……
        </initiatorParties>
        <responderParties>
                ……
                <responderParty name="blue_gw"/>
                ……
        </responderParties>
.....
```

8.2. Message structure

A message that is sent to the same Access Point will have to contain the same party id in both **From** and **To** sections. Below there is an example of a message sent using the Default WS Plugin:

```
<ns:UserMessage>
…
 <ns:PartyInfo>
  <ns:From>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-
blue</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
  </ns:From>
  <ns:To>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-
blue</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-
msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
  </ns:To>
</ns:PartyInfo>
….
```

8.3. Message ID convention

Due to some limitations related to the uniqueness of the message identifier, a convention has been defined in this scenario. The message ID used for the received message is derived from the message ID used for the sent message with the following rule: the suffix ***"_1"*** is added to the sent message id.

Example:

sent message ID is **ae15851e-78fb-4b51-aac8-333c08c450d6@domibus**

received message ID is **ae15851e-78fb-4b51-aac8-333c08c450d6@domibus_1**

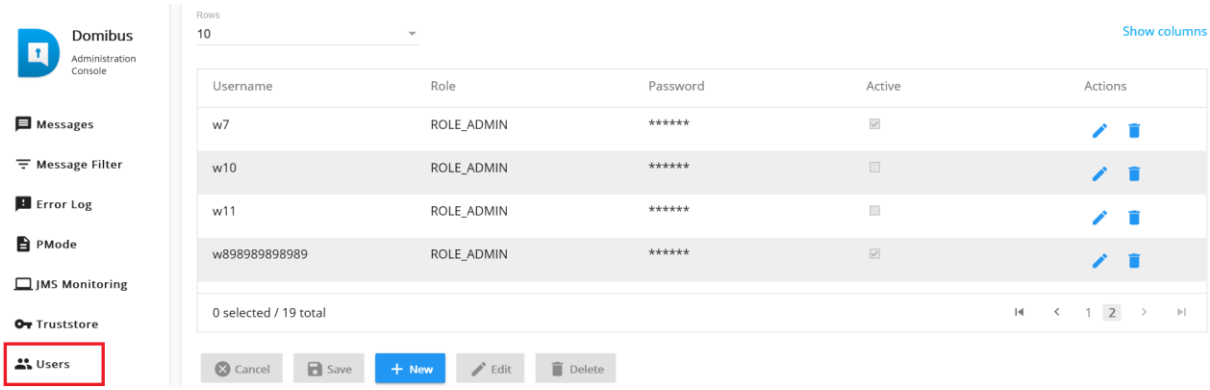
9. ADMINISTRATION TOOLS

9.1. Administration Console

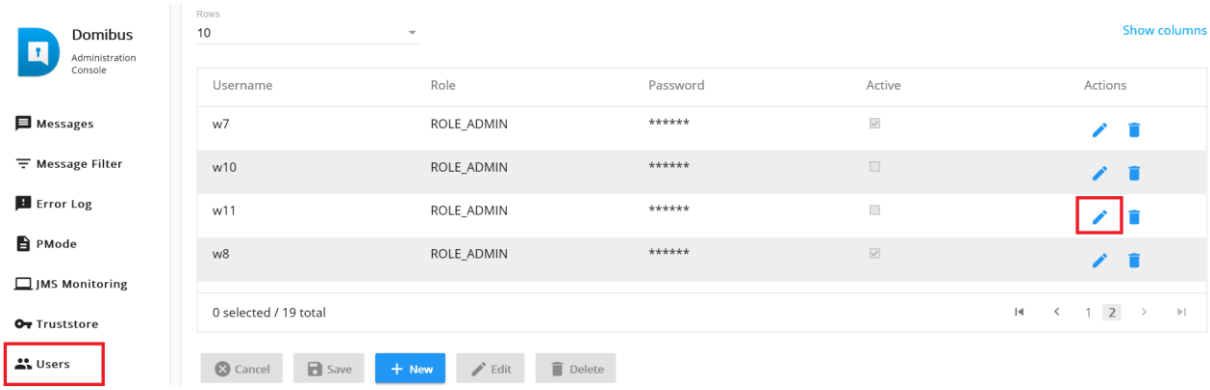
9.1.1. *Changing passwords*

It is recommended to change the passwords for the default users, who are allowed to have access to the Domibus Administration Console, mainly ***admin*** and ***user***.

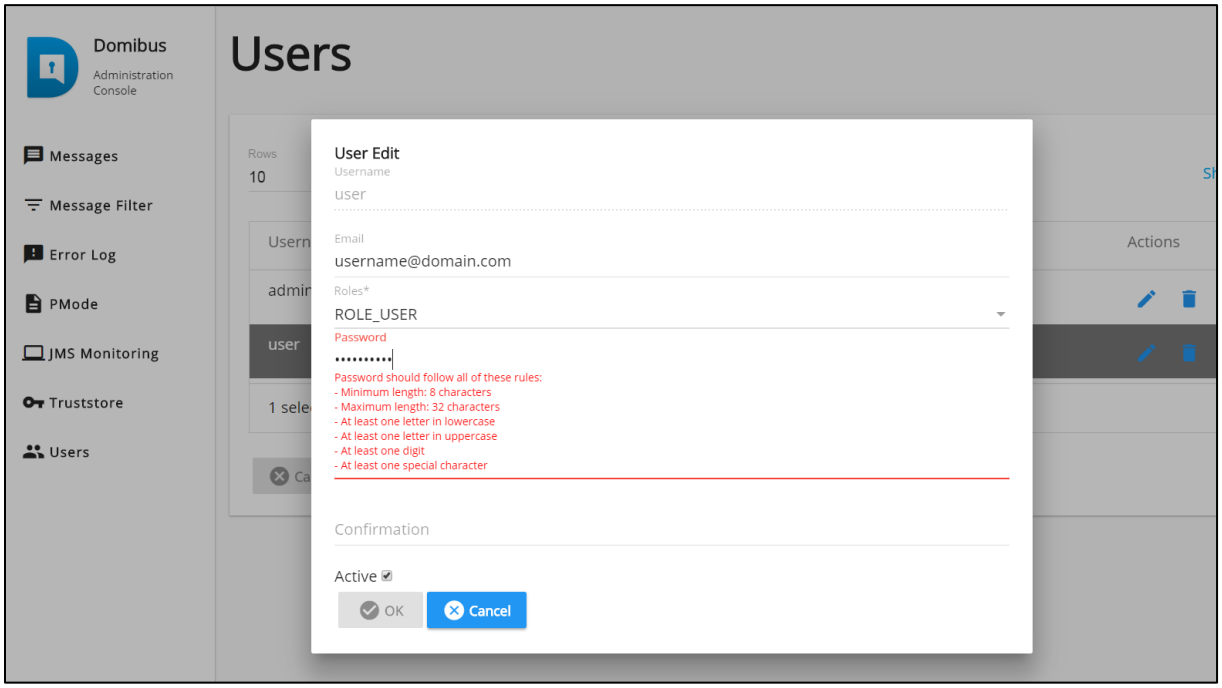
1. In order to change the password for a user, navigate to the **Users** menu entry to obtain the list of configured users:



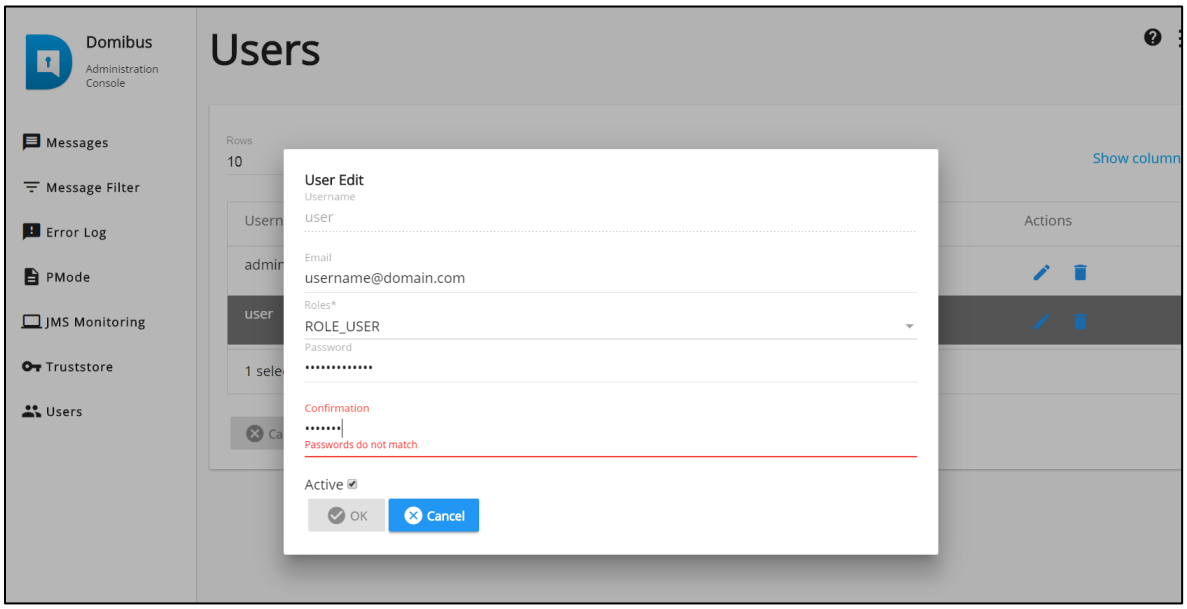
2. To edit the user details, click on the **EDIT** icon (in **RED**). DO NOT click on the BIN icon as this would DELETE the record.



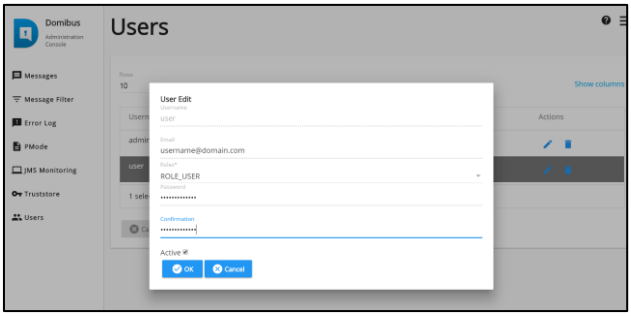
3. In the popup window, choose a new password using the rules shown:



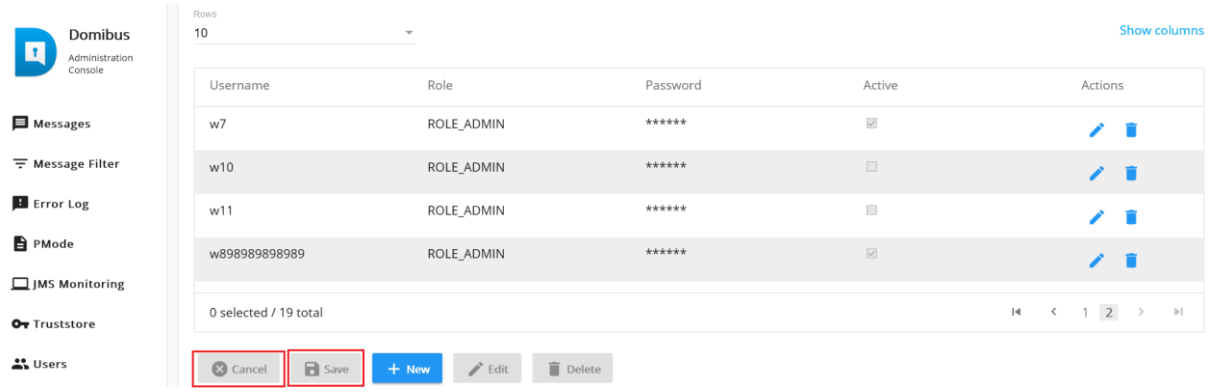
4. Confirm the password:



5. Click on **OK**:

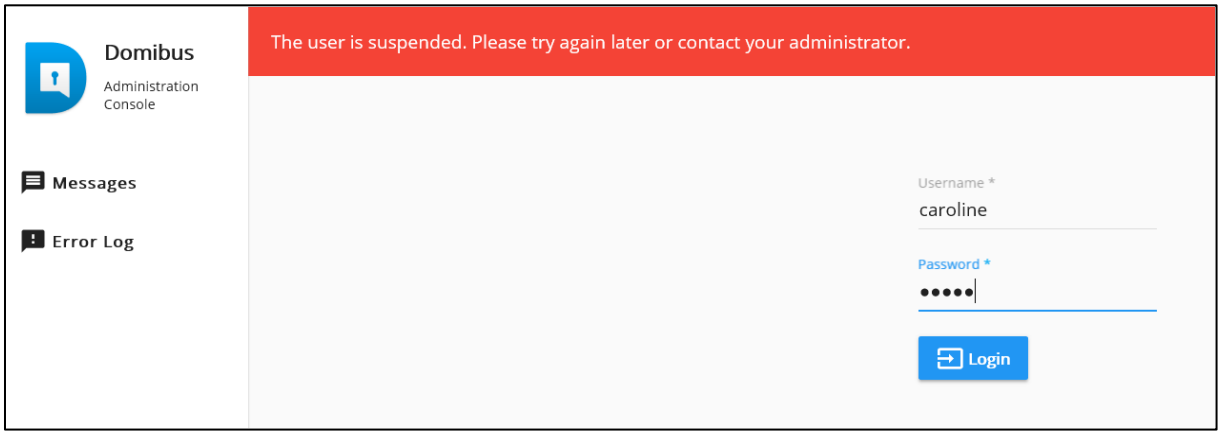


6. When done, either click on **Save,** to save the new password or **Cancel** to leave the password unchanged.



9.1.2. User Account Lockout Policy

A user account lockout policy has been implemented on Domibus Admin Console. By default, if a user tries to log to the Admin Console with a wrong password 5 times in a row, his account will be suspended (locked):

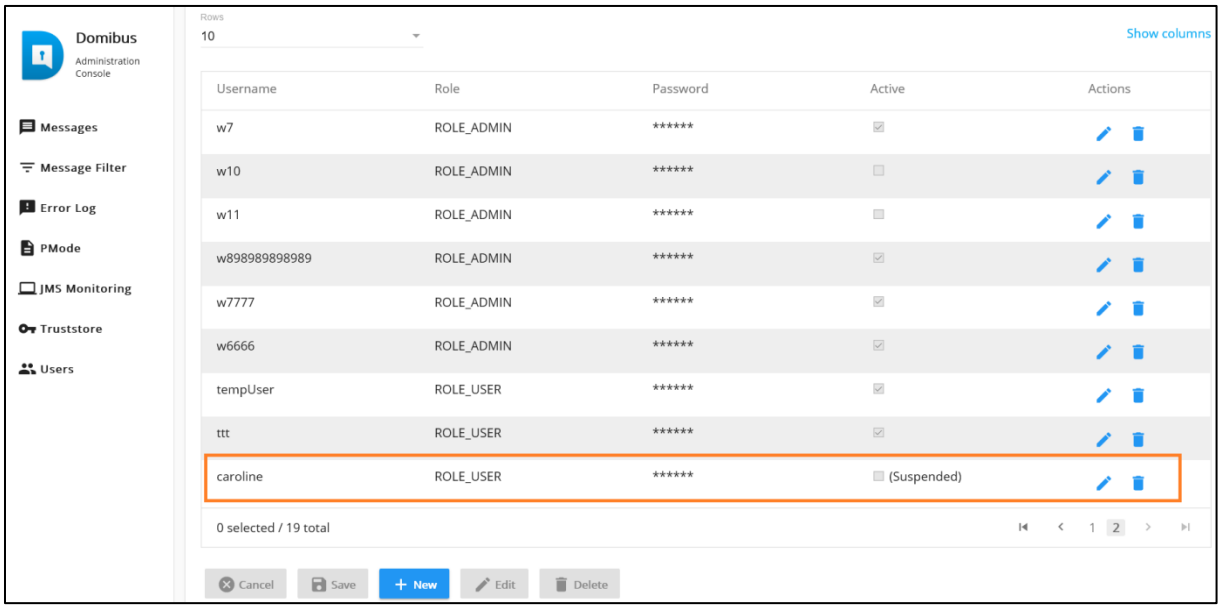


You can define in domibus.properties (section **5.2 Domibus Properties**) the number of failed attempts after which a user's account will be locked.

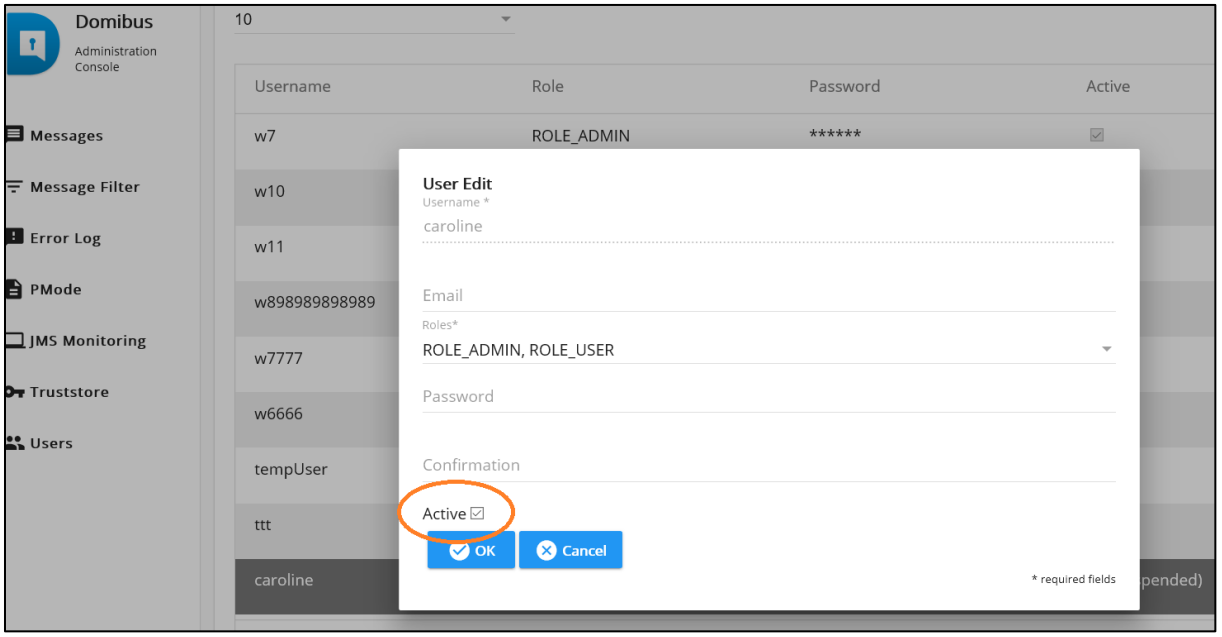
By default, a user remains suspended during one hour before his account is automatically unlocked and the user can try to log again.

If the user wants his account to be unlocked without waiting the default one hour, he can ask his administrator to unlock the account. To unlock the account, the administrator must change the user's status on the Admin Console from "Suspended" to "Active".

Select the suspended user and click on "Edit":



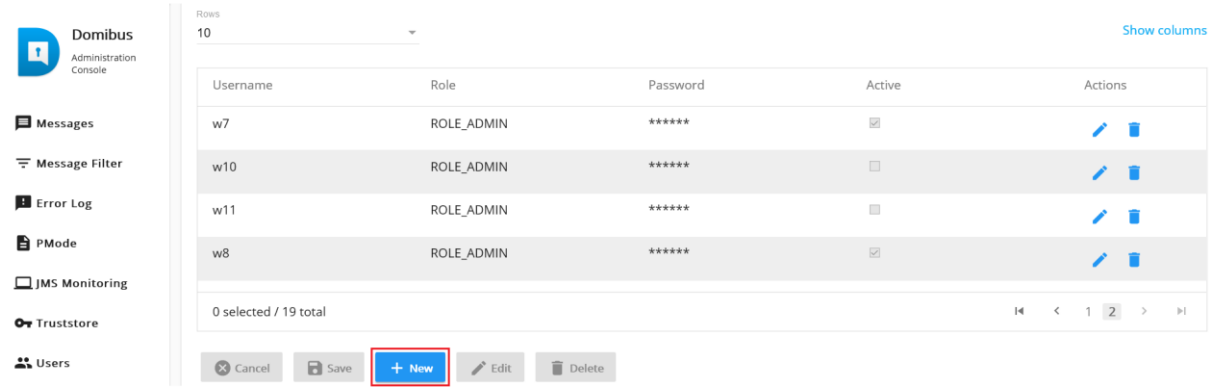
Re-activate the user (unlock it) by checking the “Active” status and confirming with OK:



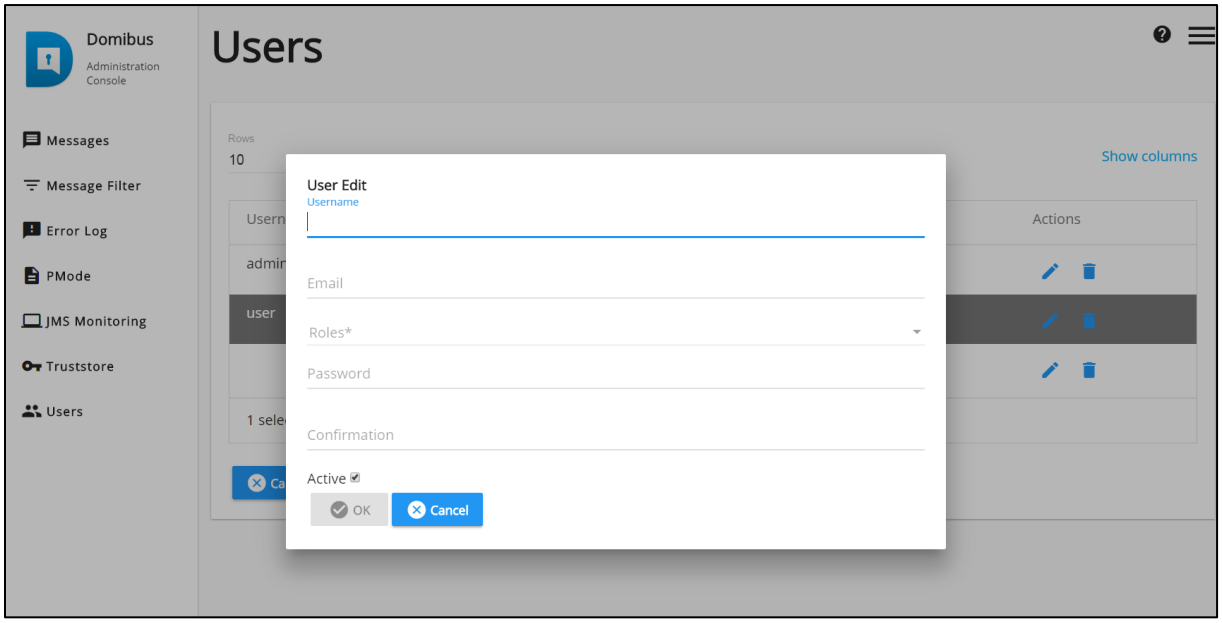
Do not forget to click on **Save** on the next window and then on **Yes** to confirm the change.

9.1.3. Adding new users

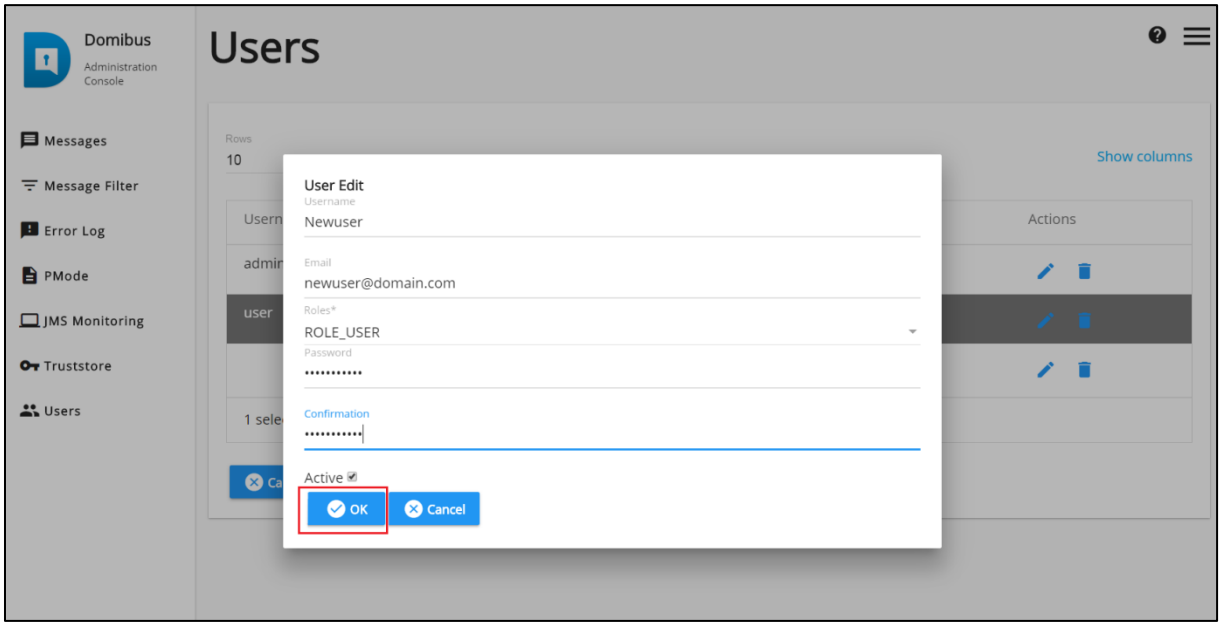
1. New users can be added to the existing default users (**admin** and **user**) by clicking on **New**:



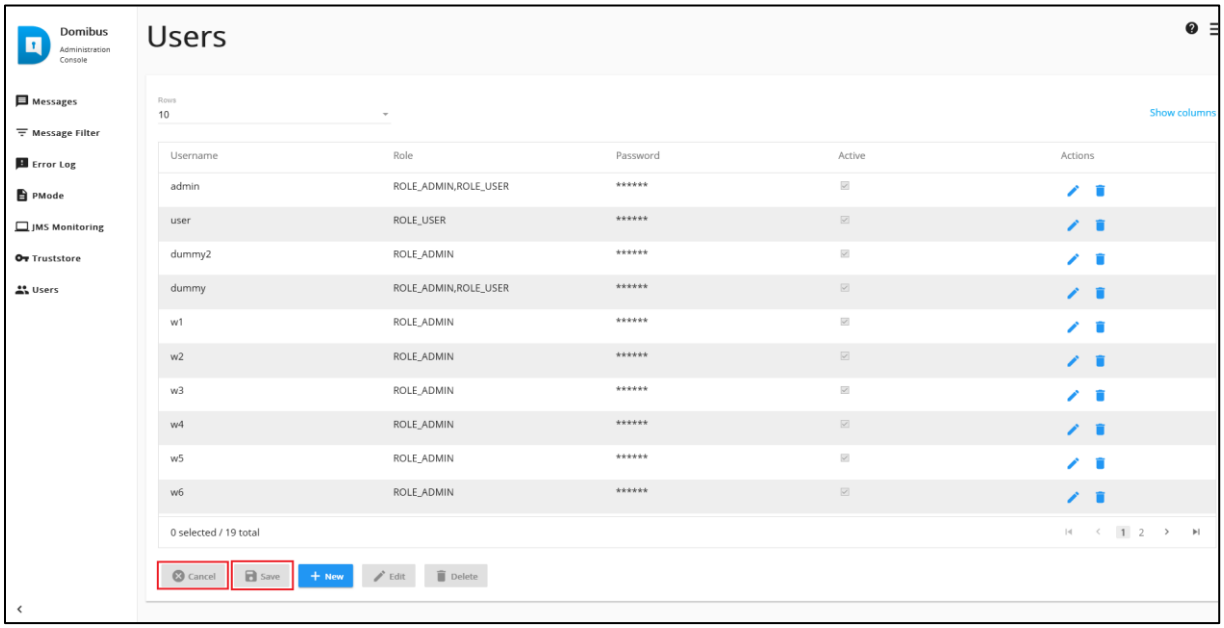
2. For each new user, you must enter a username, an email, a role and a password:



3. Click on **OK**:



4. Again, once the user has been created, do not forget to click on the **Save** button on the **Users** page to register your changes on the system:



9.1.4. Message Filtering

Domibus allows the routing of messages to different plugins, based on some messages attributes:

- **From** : initial sender (C1)
- **To** : final recipient (C4)

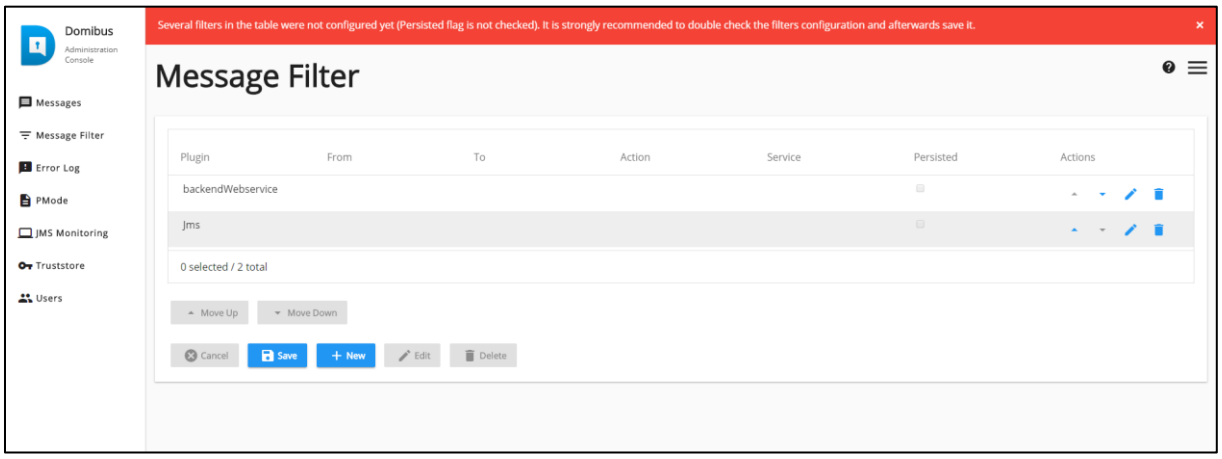
- **Action**: defined as 'Leg' in the PMode
- **Service**: as defined in the PMode

The following rules apply:

- Domibus considers the ordered list of 'filters' to route all messages. The first filter matching the filter criteria, will define the target plugin. The order of the plugin is therefore important in the routing process.

  Note 1: if the filters are all mutually exclusive, the order would not matter.

  Note 2: The 'Persisted' column indicates if the plugin filter configuration has already been saved. If a plugin filter configuration has not already been saved, the 'Persisted' value is unchecked and an error message is shown on the top of the screen. In this case, it is strongly recommended to review the filters configuration and save it afterwards.



- One plugin may be applied to multiple filters. This is done by the use of the 'OR' criteria. (cf. backendWebservice in the example below).
- Multiple attributes could also be defined in one filter. This is done by the use of the 'AND' criteria.
  (cf. the first filter in the example below).
- One filter may have no criteria, meaning that all messages (not matching previous filters) will be routed to the corresponding plugin automatically. As a result, subsequent filters will therefore not be considered for any incoming message. In the example below, the last filter routes all remaining messages to plugin 'backendWebservice'.

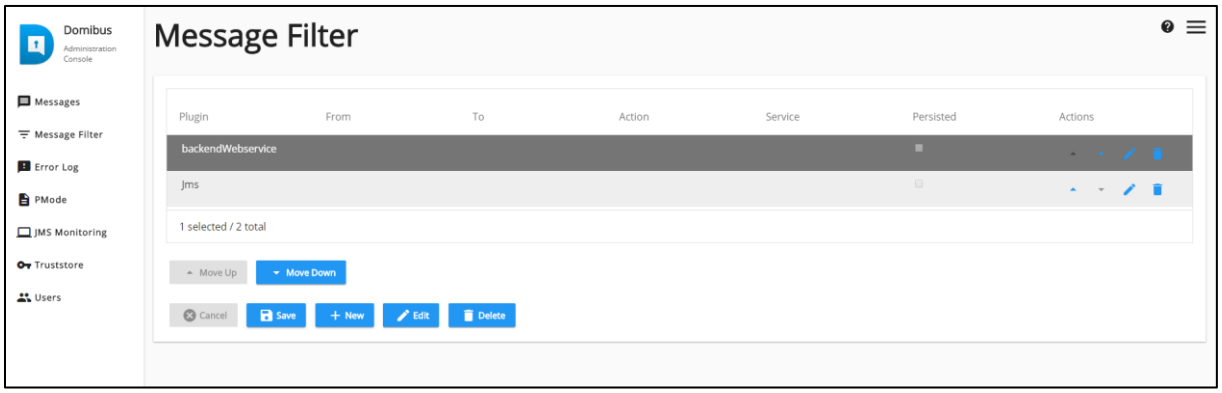


Figure 9 – Message Filter Page

Use the **New** and **Delete** buttons to create or delete a filter.

As the order matters, move up and down actions allow placing each filter in the right order:

Cf. **Move Up** and **Move Down** buttons.

After some changes have been applied to the filters, the **Cancel** and **Save** buttons become active:

- Press **Cancel** to cancel the changes
- Press **Save** to save the changes and activate them immediately.

The console will ask the user to confirm the operation, before proceeding.

Example of message attributes used for routing and matching the first filter used in the example above:

- **Action** : *TC1Leg1*
- **Service** : *bdx:noprocess:tc2*
- **From** : domibus-blue:urn:oasis:names:tc:ebcore:partyid-type:unregistered
- **To** : domibus-red:urn:oasis:names:tc:ebcore:partyid-type:unregistered

That information can be found in the incoming message received by Domibus (e.g. see below):

```
<ns:PartyInfo>
        <ns:From>
          <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-
blue</ns:PartyId>
          <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
        </ns:From>
        <ns:To>
          <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">domibus-red</ns:PartyId>
          <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/responder</ns:Role>
        </ns:To>
</ns:PartyInfo>
      <ns:CollaborationInfo>
        <ns:Service type="tc1">bdx:noprocess</ns:Service>
        <ns:Action>TC1Leg1</ns:Action>
      </ns:CollaborationInfo>
```

9.2. Message Log

Domibus administration dashboard includes a message logging page that gives the administrator information related to sent messages, received messages and their status (SENT, RECEIVED, FAILED, ACKNOWLEDGED,…).

The following state machines illustrate the evolution of the processing of messages according to the encountered events:

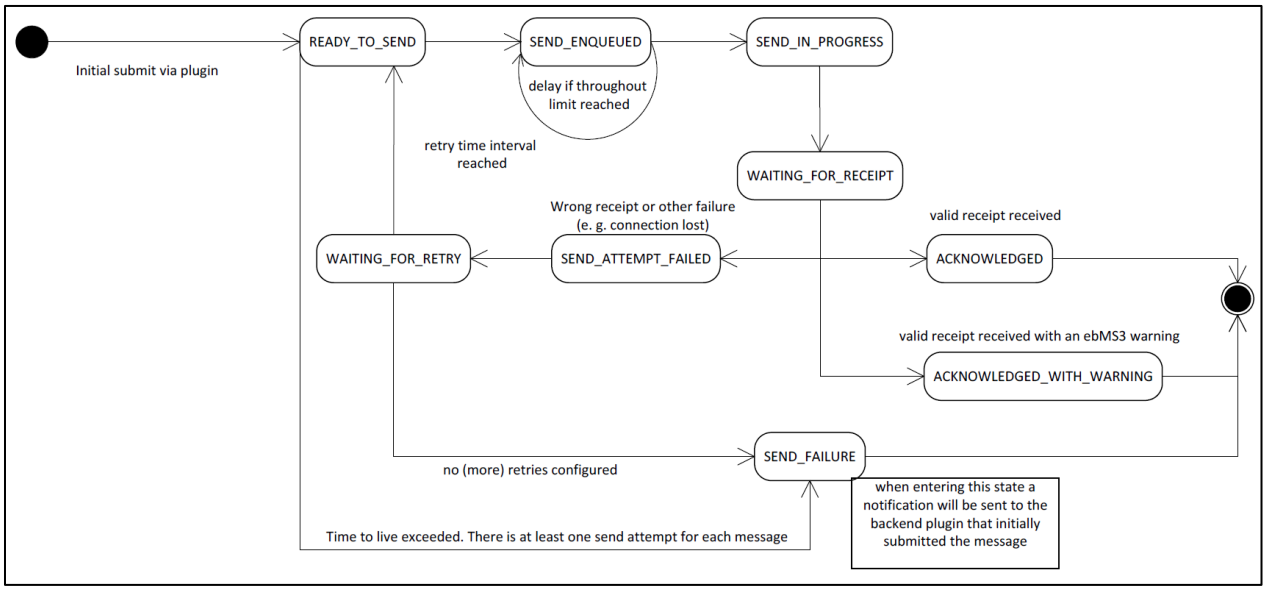


Figure 10 - State machine of Corner 2 (sending access point)

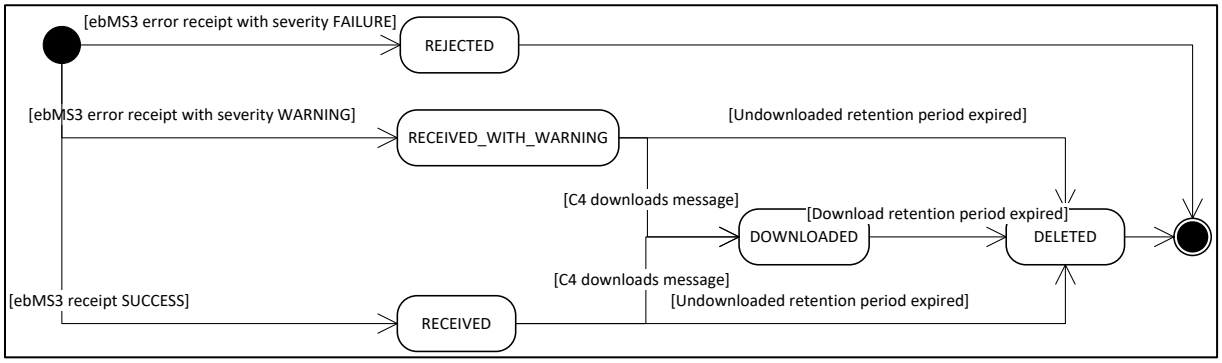


Figure 11 - State machine of Corner 3 (receiving access point)

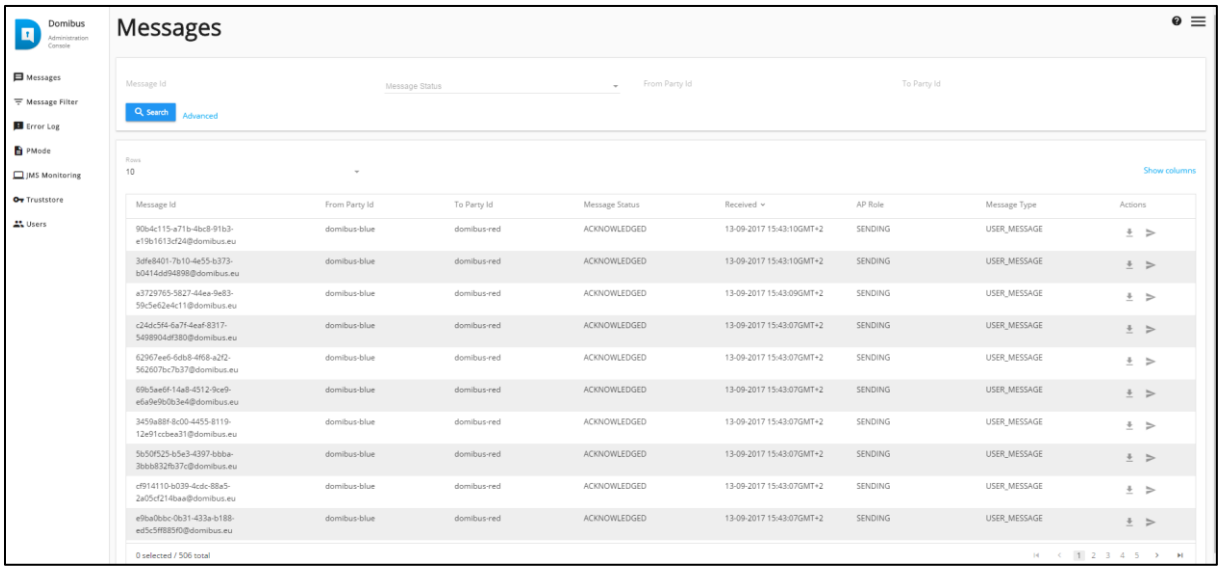


Figure 12 - Domibus Message Log

Remark:

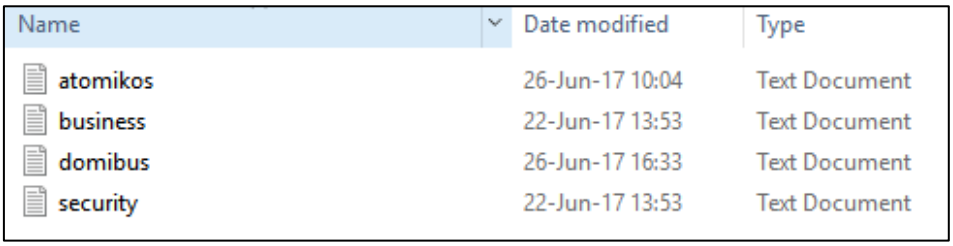
The administration dashboard is reachable via the following URLs:
http:**//***your_server*:*your_port_number***/**domibus (Tomcat)
http:**//***your_server*:*your_port_number***/**domibus-wildfly (WildFly)
http:**//***your_server*:*your_port_number***/**domibus-weblogic (WebLogic)

9.3. Application Logging

9.3.1. Domibus log files

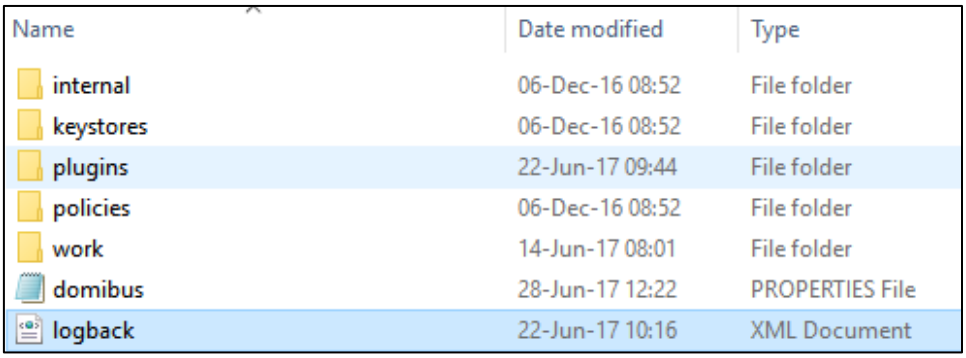
Domibus has three log files:

1. domibus-security.log : this log file contains all the security related information. For example, you can find information about the clients who connect to the application.
2. domibus-business.log: this log file contains all the business related information. For example, when a message is sent or received, etc.
3. domibus.log : this log file contains both the security and business logs plus miscellaneous logs like debug information, logs from one of the framework used by the application, etc.



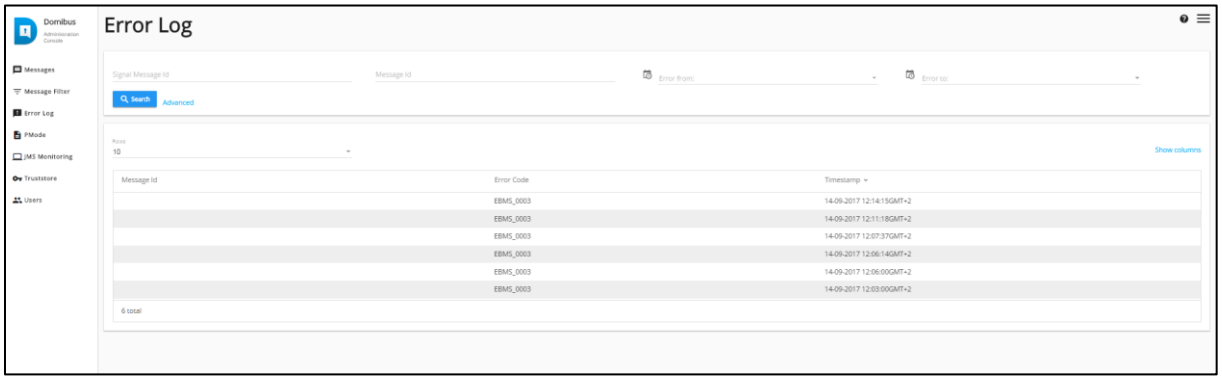
9.3.2. Logging properties

It is possible to modify the configuration of the logs by editing the logging properties file:
*cef_edelivery_path***/conf/domibus/logback.xml**:



9.3.3. Error Log page

To go to the error log page of the Domibus Admin Console, click on the **Error log** menu entry:



This option lists all the Message Transfers error logs and includes the **ErrorSignalMessageId**, **ErrorDetail** and **Timestamp**. You can sort messages by using the up or down arrow to search for a specific message.

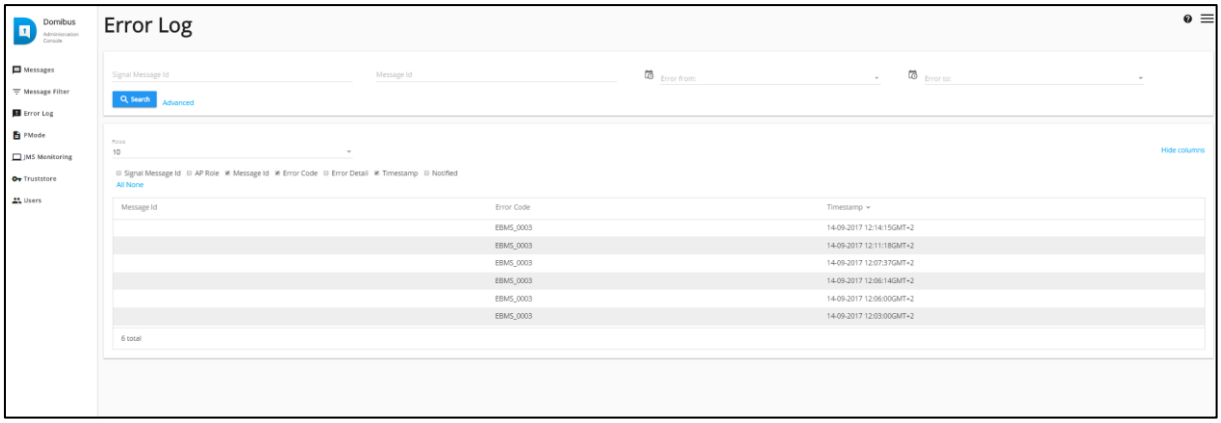


Figure 13 - Domibus – Error Log page

9.4. Queue Monitoring

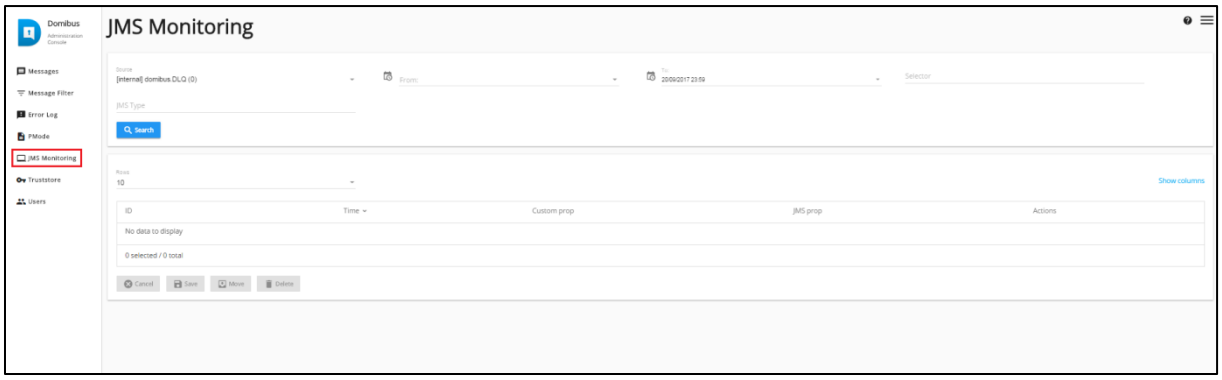
Domibus uses JMS queues to handle the messages:

Destination type	JNDI name	Comment	Description
Queue	jms/domibus.internal.dispatch.queue	No redelivery because redelivery of MSH messages is handled via ebMS3/AS4	This queue is used for scheduling messages for sending via the MSH.
Queue	jms/domibus.internal.notification.unknown		Notifications about received messages (by the MSH) that do not match any backend routing criteria will be sent to this queue. In production environment this queue should be monitored in order to handle those messages manually.
Topic	jms/domibus.internal.command		This topic is used for sending commands to all nodes in a cluster. For example, it is used after a PMode was uploaded in order to notify all nodes to update their PMode cache (in case caching is enabled).
Queue	jms/domibus.backend.jms.replyQueue		This queue is used for sending replies back to the sender of a message. Replies contain: a correlationId, ebMS3 messageId (if possible), error messages (if available).
Queue	jms/domibus.backend.jms.outQueue		Messages received by the MSH (that match the routing criteria for the JMS plugin) will be sent to this queue.
Queue	jms/domibus.backend.jms.inQueue		This queue is the entry point for messages to be sent by the sending MSH.
Queue	jms/domibus.backend.jms.errorNotifyConsumer		This queue is used to inform the receiver of a message that an error occurred during the processing of a received message.
Queue	jms/domibus.backend.jms.errorNotifyProducer		This queue is used to inform the sender of a message that an error occurred during the processing of a message to be sent.

Queue	jms/domibus.notification.jms		Used for sending notifications to the configured JMS plugin.
Queue	jms/domibus.internal.notification.queue		This queue is used to notify the configured plugin about the status of the message to be sent.
Queue	jms/domibus.notification.webservice		Used for sending notifications to the configured WS plugin.
Queue	jms/domibus.DLQ		This is the Dead Letter Queue of the application. The messages from other queues that reached the retry limit are redirected to this queue.

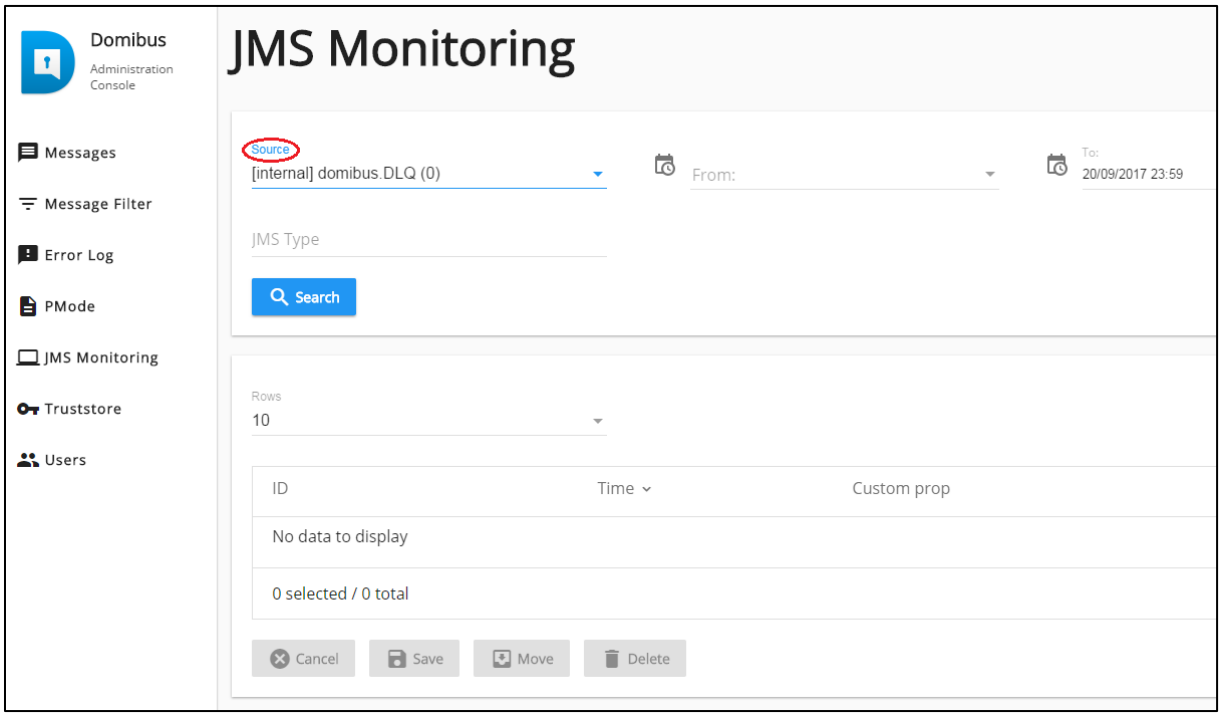
Table 3 - Queue Monitoring

All these queues can be monitored and managed using the **JMS Monitoring** page, which is accessible from the **JMS Monitoring** menu of the administration console:



Warning:
For Tomcat server, the maximum number of shown messages in the queue monitoring is defined by the 'domibus.listPendingMessages.maxCount' property.

In the **Source** field, we have all the queues listed, along with the number of messages pending in each queue:



If a queue is used internally by the application core, its name will start with **[internal].** A regular expression is used to identify all the internal queues. The value for this regular expression can be adapted in the **domibus.jms.internalQueue.expression** property from the *cef_edelivery_path***/conf/domibus/domibus.properties** file.

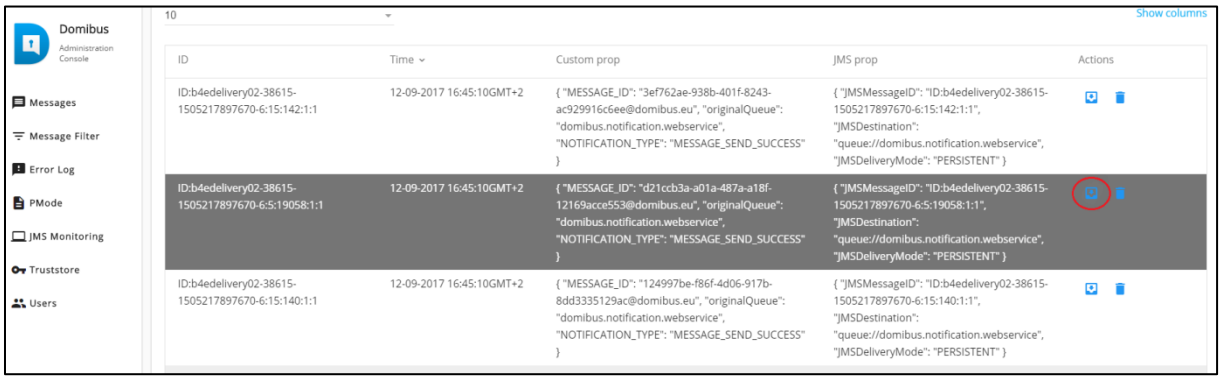
In the **JMS Monitoring** page the following operations can be performed:

1. Inspecting and filtering the messages from a queue based on the following fields:
    a. Signal Message id: identifier of an error signal message
    b. Message id: identifier of a message
    c. Error detail: text of the error (full)
    d. AP Role: role of the AP
    e. Error Code: structured code of the error
    f. Source: the source queue of the messages
    g. Error or Notified Time Period: time interval that will filter the messages based on the send dates
    h. JMS type: the JMS header **JMSType**
    i. Selector: the JMS message selector expression

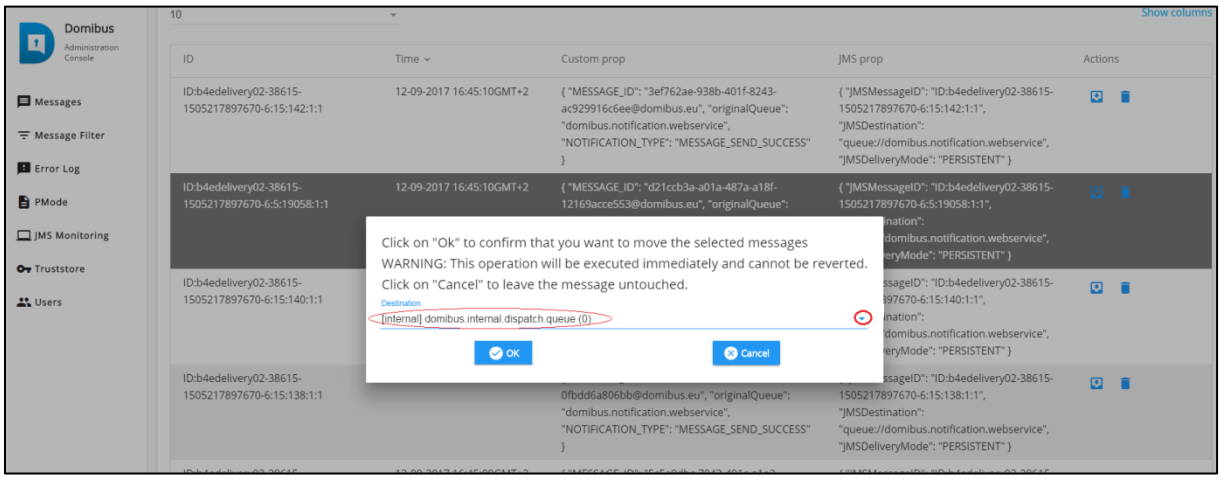
Remark:

For more information on the JMS message headers and the JMS message selector, please check the official documentation at https://docs.oracle.com/cd/E19798-01/821-1841/bnces/index.html.

2. Move a message:
    a. Move the message from the DLQ to the original queue:
        - Select the JMS message from the DLQ and press the **Move** icon (**in RED marker**):

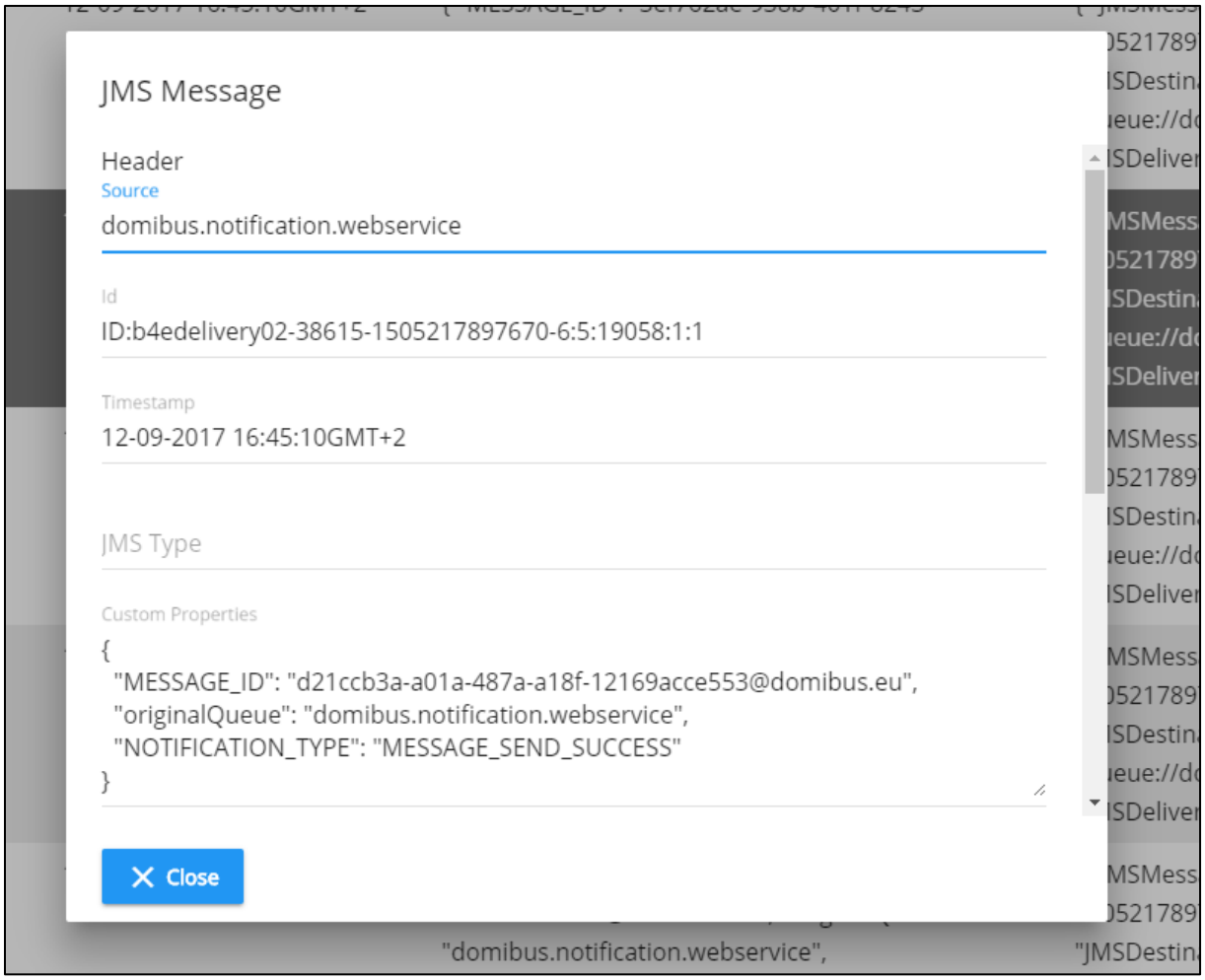


        - Select the original queue from the **Destination** dropdown list in the dialog box:



        - Press the **Ok** button in the dialog, and the message will be moved to the original queue.

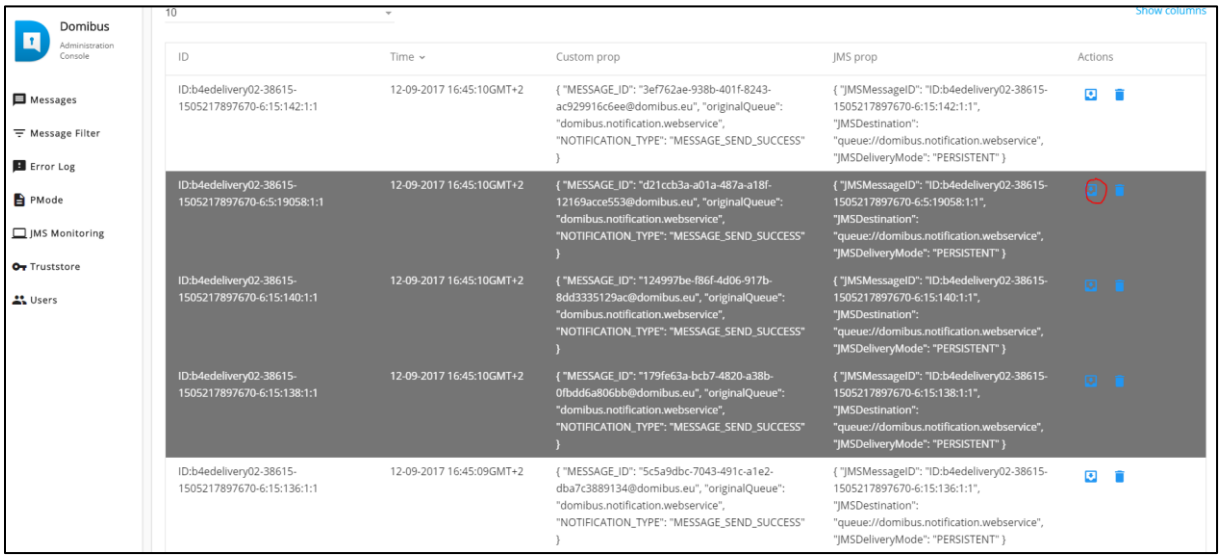
Note: the details of a message can be viewed by selecting it (double-clicking) from the message list:



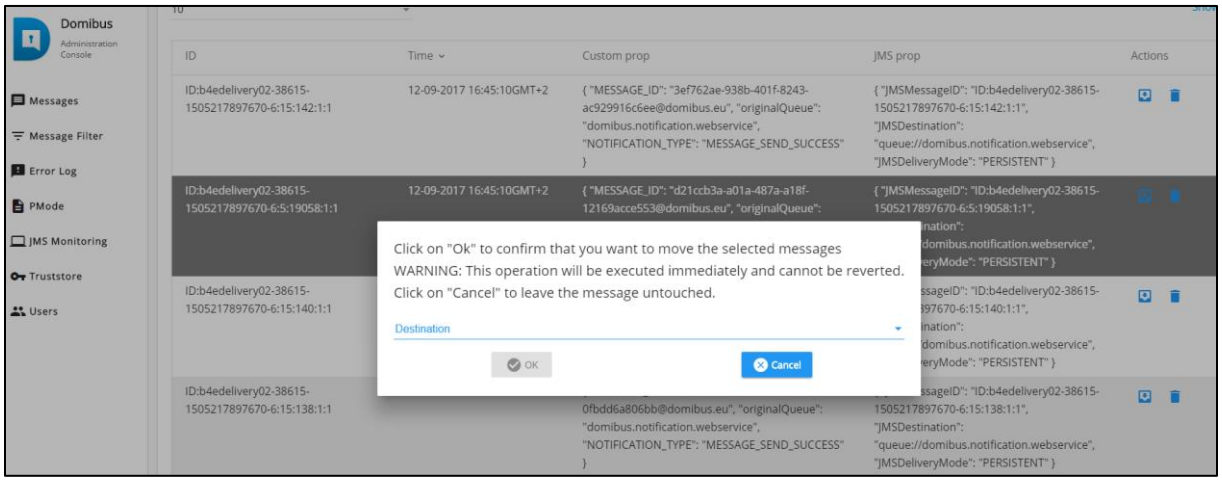
Click **Close** to exit the dialog box.

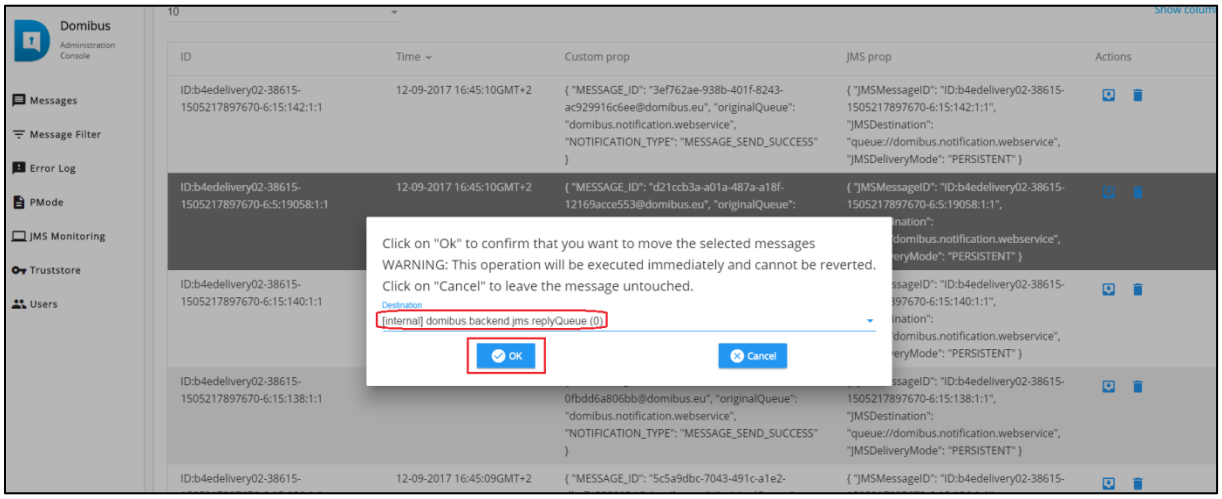
b. Move multiple messages from the DLQ to the original queue:

- Select multiple JMS messages from the DLQ and press the **Move** icon button:



- Select the original queue from the Destination dropdown list, and click **Ok**.

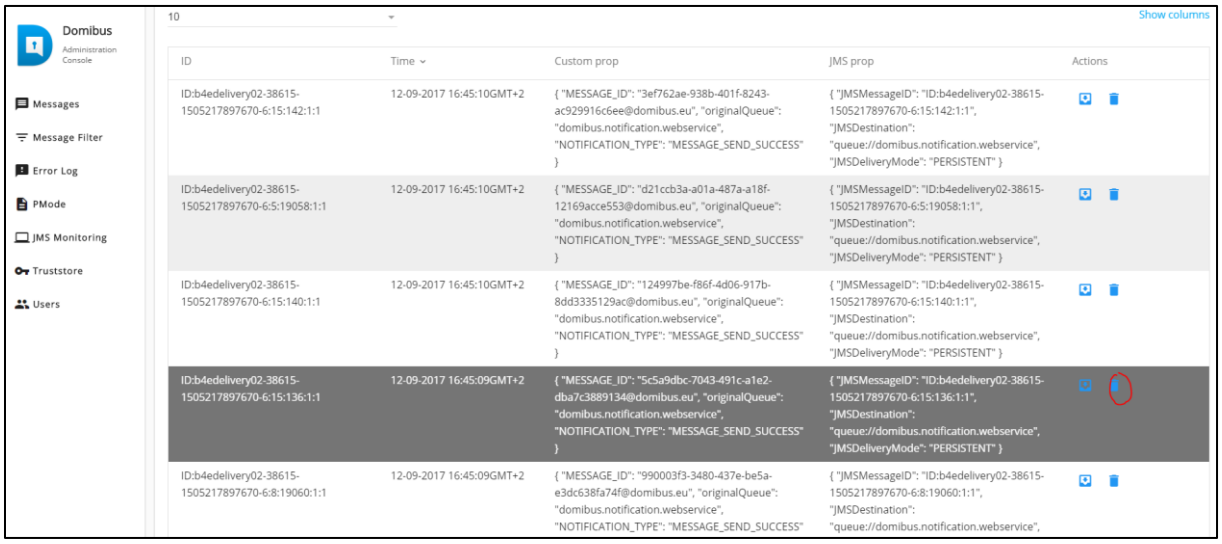




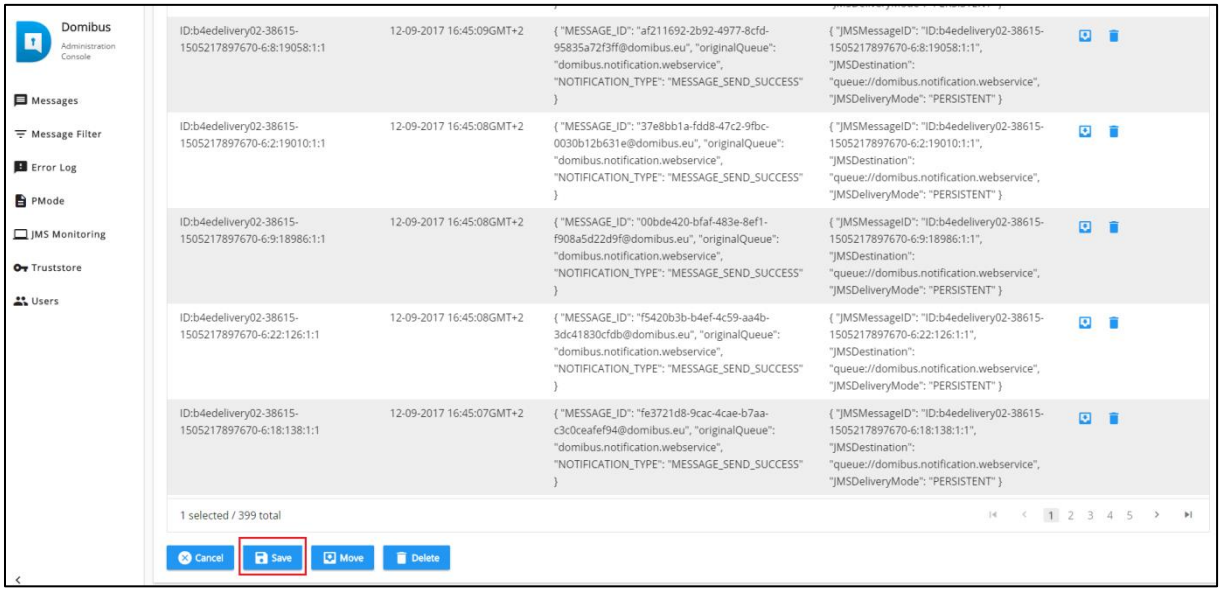
***Remark**:*

Please make sure that all the selected messages came from the same source queue. Use the filtering capabilities to ensure this.

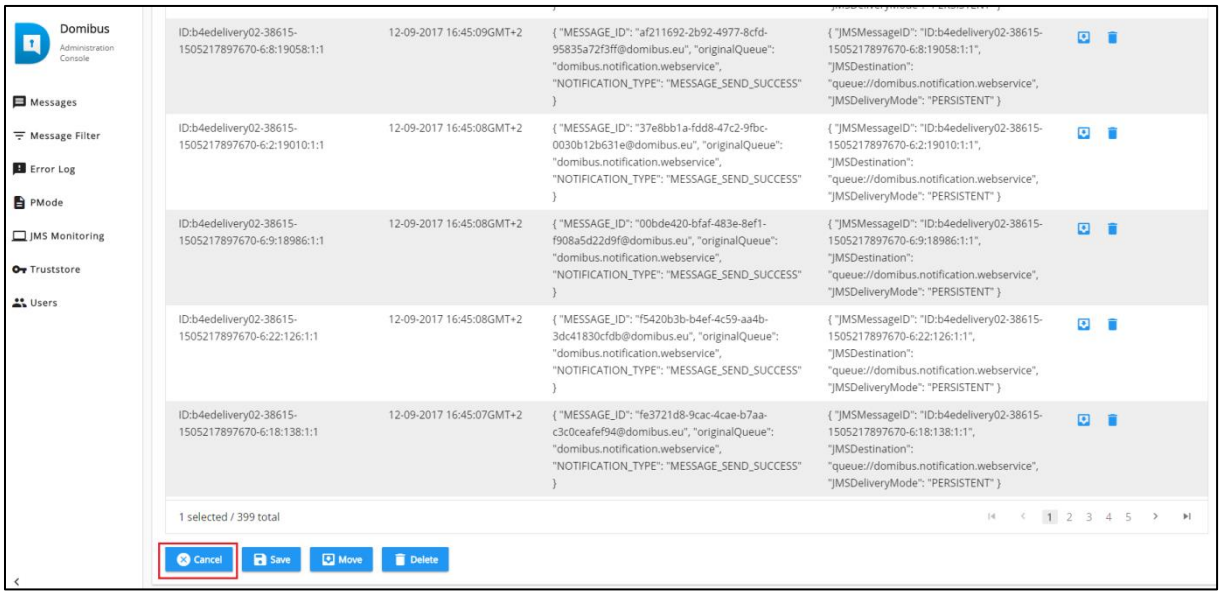
3. Delete message(s)
    a. Delete one or more messages from one queue:
        - Select one or several JMS messages from the source queue and press the **Delete** button:



- By clicking the **Delete** button, the selected messages are removed from the screen, but you still have to confirm your changes by clicking on the **Save** button. As long as you have not clicked on the **Save** button, your changes are not taken into account in the system.



- To cancel the changes you made, click on the **Cancel** button instead:



9.5. Configuration of the queues

Queues should be configured appropriately and according to the backend system needs and re-delivery policy.

9.5.1. Tomcat

Domibus uses ActiveMQ as JMS broker. The various queues are configured in the *cef_edelivery_path***/conf/domibus/internal/activemq.xml** file.

Please see ActiveMQ redelivery policy and configure the parameters below if needed:

```
<redeliveryPlugin fallbackToDeadLetter="true"
            sendToDlqIfMaxRetriesExceeded="true">
  <redeliveryPolicyMap>
    <redeliveryPolicyMap>
      <defaultEntry>
                        <!-- default policy-->
                        <redeliveryPolicy maximumRedeliveries="10"       redeliveryDelay="300000"/>
              </defaultEntry>
      <redeliveryPolicyEntries>
              <redeliveryPolicy queue="domibus.internal.dispatch.queue" maximumRedeliveries="0"/>
              <redeliveryPolicy queue="domibus.internal.pull.queue" maximumRedeliveries="0"/>
</redeliveryPolicyEntries>
    </redeliveryPolicyMap>
  </redeliveryPolicyMap>
</redeliveryPlugin>
```

Access to the JMS messaging subsystem is protected by a username and a password in clear text defined in the Domibus properties file *cef_edelivery_path***/conf/domibus/domibus.properties**.

It is recommended to change the password for the default user:

```
activeMQ.username=domibus
activeMQ.password=changeit
```

Remark:

*The user (**activeMQ.username**) and the password (**activeMQ.password**) defined in the **domibus.properties** file are referenced in the authentication section of the **activemq.xml** file provided.*

9.5.2. WebLogic

Please use the admin console of WebLogic to configure the re-delivery limit and delay if necessary.

9.5.3. WildFly

Please use the admin console of WildFly to configure the re-delivery limit and delay if necessary.

10. LARGE FILES SUPPORT

Domibus supports transfers between Access Points of files up to 2 GB using Java 8. In order to compute the message signature, Domibus loads the whole message into memory using a byte array. In Java, byte arrays can hold a maximum of 2 GB hence the Domibus limitation of 2 GB.

If Domibus is started using Java 7 the limitation is 1 GB due to a limitation in Java 7 version.

In order to optimize the sending of such large files, HTTP chunking is activated by default in the connection with the receiver Access Points. As chunked encoding is useful when sending larger amounts of data but decreases the performance on smaller amounts, Domibus uses a threshold to activate the chunking when appropriate only.

The following properties are used to configure chunking: **domibus.dispatcher.allowChunking** and **domibus.dispatcher.chunkingThreshold.** For more information about these properties, please refer to the section **5.2 Domibus Properties**.

11. Data Archiving

11.1. What's archiving?

Data archiving consists of moving messages that have been processed successfully or unsuccessfully by the access point to an external storage location for long-term retention.

Archived data consists of older data that have been processed at the communication level by the access points that are still significant to the business and may be needed for future reference. They may also be retained for legal constraints.

Data archives are indexed and searchable to allow easy retrieval.

It is not recommended to use Domibus as an archiving solution. Nevertheless, if the data really needs to be stored for long periods, then it is possible to set the Data Retention Policy to allow it to be extracted from the database through the webservices or through an external archiving tool.

11.2. Data Retention Policy

A data retention policy is a procedure established by the business for continuous information storage for operational, legal or compliance reasons.

The data retention policy needs to be defined based on the business needs and constraints.

In Domibus, the data retention policy can be found in the PMode file:

```
<mpcs>
    <mpc name="defaultMpc"
         qualifiedName="http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/defaultMPC"
         enabled="true"
         default="true"
         retention_downloaded="0"
         retention_undownloaded="14400"/>
</mpcs>
```

In the above extract of the sample PMode configuration of Domibus, the data retention policy is set to **14400 minutes** (10 days) if the message is not downloaded. This means that if the message is not downloaded, it will be deleted and then only the metadata containing the information of the receiver and the acknowledgement will be retained.

The data retention policy is set by default to **0 minutes** if the message is downloaded. This means that the message will be instantaneously deleted as soon as it is downloaded. These two parameters, retention_downloaded and retention_undownloaded, can therefore be modified to meet the needs of the business.

11.3. Data Extraction

In order to keep the metadata and the payload of the message for a longer period than the one set, in the PMode, it is recommended to extract it to an external storage. As long as the retention worker does not delete it, data can be extracted through the webservices or through an external archiving tool.

For more information, please refer to the Data Model provided in the "Domibus Software Architecture Document" that can be found on the CEF Digital single web portal [REF6].

12. NON REPUDIATION

In order to guarantee non-repudiation, the sending Access Point (C2) stores the full **SignalMessage**, including the **MessageInfo,** the Receipt (that contains the **NonRepudiationInformation** for each part) and the signature of the receipt by the receiver Access Point (C3).

This will guarantee that the receiver Access Point (C3) cannot deny having received a message from the sender Access Point (C2) during the sending process. However; if the initial sender (C1) wants to be sure that the final recipient (C4) cannot deny having received a specific content inside this message, then the sender must be able to show the specific content that was used to produce the receiver Access Point (C3) signature.

Domibus, as a sending Access Point (C2), keeps track of the metadata of the sent messages but does not store the actual message payloads. Therefore; it is recommended that the initial sender (C1) stores the message payloads safely for the time needed to guarantee non-repudiation of the sent messages.

In order to guarantee non-repudiation, the receiving Access Point (C3) stores the full UserMessage and the associated signature of the sender (C2).

This will guarantee that the sender Access Point (C2) cannot deny having sent a message to the receiver during the sending process. However; if the final recipient (C4) wants to be sure that the sender cannot deny having sent a specific content inside this message, then the final recipient (C4) must be able to show the specific content that was used to produce the sender Access Point signature (C2).

Domibus, as a receiving Access Point (C3), keeps track of the metadata of the received messages and will store the message payloads, only for the (limited) duration configured in the retention period (specified in the PMode). Therefore, it is recommended that the final recipient (C4) either stores the message payloads safely or aligns the retention period on the receiving Access Point (C3) with the time needed to guarantee non-repudiation of the received messages.

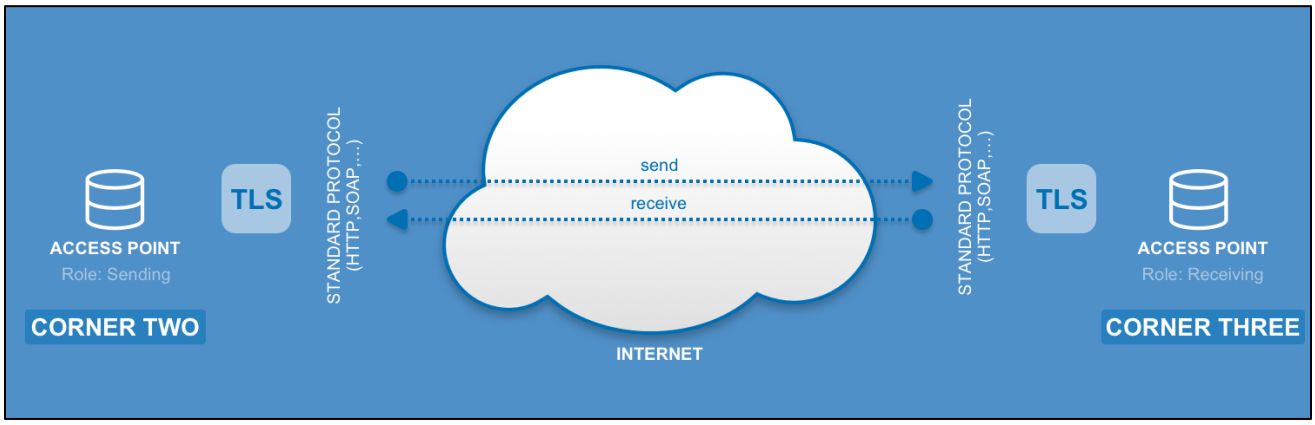
13. TLS CONFIGURATION

13.1. TLS Configuration

13.1.1. Transport Layer Security in Domibus

One way of implementing TLS for the eDelivery AS4 profile is to use the TLS in the Domibus Message Handler (MSH) described below, otherwise this would have to be handled at a higher level (e.g. Application Server, Proxy, etc…).

To enable secure communication at the transport layer (TLS) between a sending and a receiving MSH (Access Point), both the client and the server need to be configured accordingly.



The client is used in the initiator MSH to send the request and is therefore configured via CXF while the server is configured at container/application server level.

13.1.2. Client side configuration (One Way SSL)

The **tlsClientParameters** are configured in the *cef_edelivery_path***/conf/domibus/clientauthentication.xml** file:

```
<http-conf:tlsClientParameters disableCNCheck="true" secureSocketProtocol="TLSv1.2"
    xmlns:http-conf="http://cxf.apache.org/transports/http/configuration"
    xmlns:security="http://cxf.apache.org/configuration/security">

<security:trustManagers>
    <security:keyStore type="JKS" password="your_trustore_password"
            file="${domibus.config.location}/keystores/your_trustore_ssl.jks"/>
</security:trustManagers>

</http-conf:tlsClientParameters>
```

Remark:

*your_trustore_ssl is used at the transport layer (SSL) while your_trustore, described in §5.1.2 – "*Certificates*" is used by Domibus to encrypt and sign (WS-Security).*

When the **clientauthentication.xml** file is present and the endpoint of the receiving MSH is *https://*, the TLS parameters are added via the CXF framework to the send request.

The version of the TLS must be specified by setting **secureSocketProtocol="TLSv1.2"**.

If you use self-signed certificates you need to set **disableCNCheck="true"**.

The attribute **disableCNCheck** specifies whether JSSE should omit checking if the host name specified in the URL matches the host name specified in the Common Name (CN) of the server's certificate. The attribute is "false" by default and must not be set to "true" during production use (cf.[REF7]).

Remark:

TLSv1.2 is mandatory for eDelivery AS4 Profile.

13.1.3. Client side configuration (Two Way SSL)

The configuration is similar to the one used for O*ne Way SSL*, except that the **tlsClientParameters** gets configured with both *trustManagers* and *keystoreManagers* . The **clientauthentication.xml** file should look like this:

```
<http-conf:tlsClientParameters disableCNCheck="true" secureSocketProtocol="TLSv1.2"
      xmlns:http-conf="http://cxf.apache.org/transports/http/configuration"
      xmlns:security="http://cxf.apache.org/configuration/security">
   <security:trustManagers>
      <security:keyStore type="JKS" password="your_trustore_password"
           file="${domibus.config.location}/keystores/your_trustore_ssl.jks"/>
   </security:trustManagers>
     <security:keyManagers keyPassword="your_keystore_password">
      <security:keyStore type="JKS" password="your_keystore_password"
           file="${domibus.config.location}/keystores/your_keystore_ssl.jks"/>
   </security:keyManagers>
</http-conf:tlsClientParameters>
```

Remark:

your_trustore_ssl and your_keystore_ssl are used at the transport layer (SSL) while your_trustore and your_keystore, described in §5.1.2 – "Certificates" are used by Domibus to encrypt and sign (WS-Security).

Two Way SSL is optional and based on the eDelivery AS4 Profile.

13.1.4. Server side configuration

13.1.4.1. Tomcat 8

In Server.xml, add a new connector with the **SSLEnabled** attribute set to "true":

```
<Connector SSLEnabled="true"
           protocol="org.apache.coyote.http11.Http11NioProtocol"
           port="8443" maxThreads="200"
           scheme="https" secure="true"
           keystoreFile="${domibus.config.location}/keystores/your_keystore_ssl.jks"
keystorePass="your_keystore_password"
           clientAuth="false" sslProtocol="TLS" />
```

The keystore jks location and password must be specified, otherwise the default ones will be taken into account.

TLS version can also be specified.

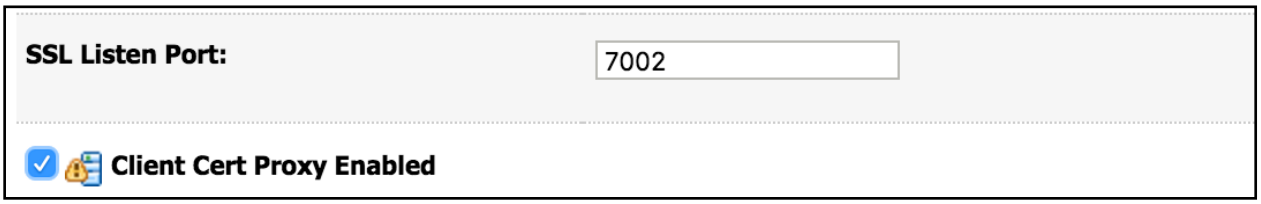
The above connector has **clientAuth="false"**, which means that only the server has to authenticate itself (One Way SSL). To configure "Two Way SSL", which is optional in the eDelivery *AS4* Profile, set **clientAuth="true"** in Server.xml and provide the location of the *your_truststore_ssl*.**jks** file so that the server can verify the client:

```
<Connector SSLEnabled="true"
        protocol="org.apache.coyote.http11.Http11NioProtocol"
        port="8443" maxThreads="200"
        scheme="https" secure="true"
        keystoreFile="${domibus.config.location}/keystores/your_keystore_ssl.jks"
keystorePass="your_keystore_password"
        truststoreFile="${domibus.config.location}/keystores/your_truststore_ssl.jks"
truststorePass="your_trustore_password"
        clientAuth="true" sslProtocol="TLS" />
```

13.1.4.2. WebLogic

1. Specify the use of SSL on default port 7002

Go to Servers ➔ select Server Name ➔ Configuration ➔ General then **click** on **Client Cert Proxy Enabled**:



2. Add keystore and truststore:

Go to Servers ➔ select Server Name ➔ Configuration ➔ Keystores and SSL tabs and use **Custom Identity and Custom Trust** then set keystore and trustore jks.

To disable basic authentication at WebLogic level:

By default WebLogic performs its own basic authentication checks before passing the request to Domibus. As we want basic authentication to be performed by Domibus, we need to disable it at the application server level.

To do so, in **DOMAIN_HOME/config/config.xml,** add:

```
<enforce-valid-basic-auth-credentials>false</enforce-valid-basic-auth-credentials>
```

13.1.4.3. Wildfly 9

In the *cef_edelivery_path*/**domibus/standalone/configuration/standalone-full.xml file***:*

- add the keystore and trustore jks file names to the ApplicationRealm:

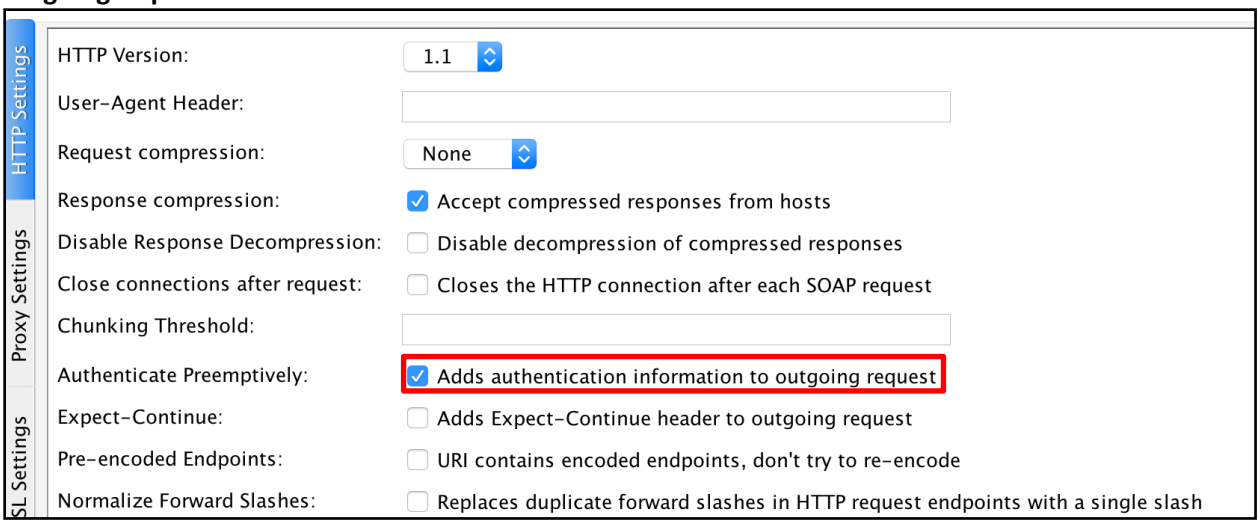
```
<security-realm name="ApplicationRealm">
 <server-identities>
  <ssl>
   <keystore path="../conf/domibus/keystores/gateway_keystore.jks" relative-to="jboss.server.base.dir"
keystore-password="test123" alias="blue_gw" key-password="test123"/>
  </ssl>
 </server-identities>
 <authentication>
  <truststore path="../conf/domibus/keystores/gateway_truststore.jks" relative-
to="jboss.server.base.dir" keystore-password="test123" />
...
</authentication>
```

- add https-listener to default-server:

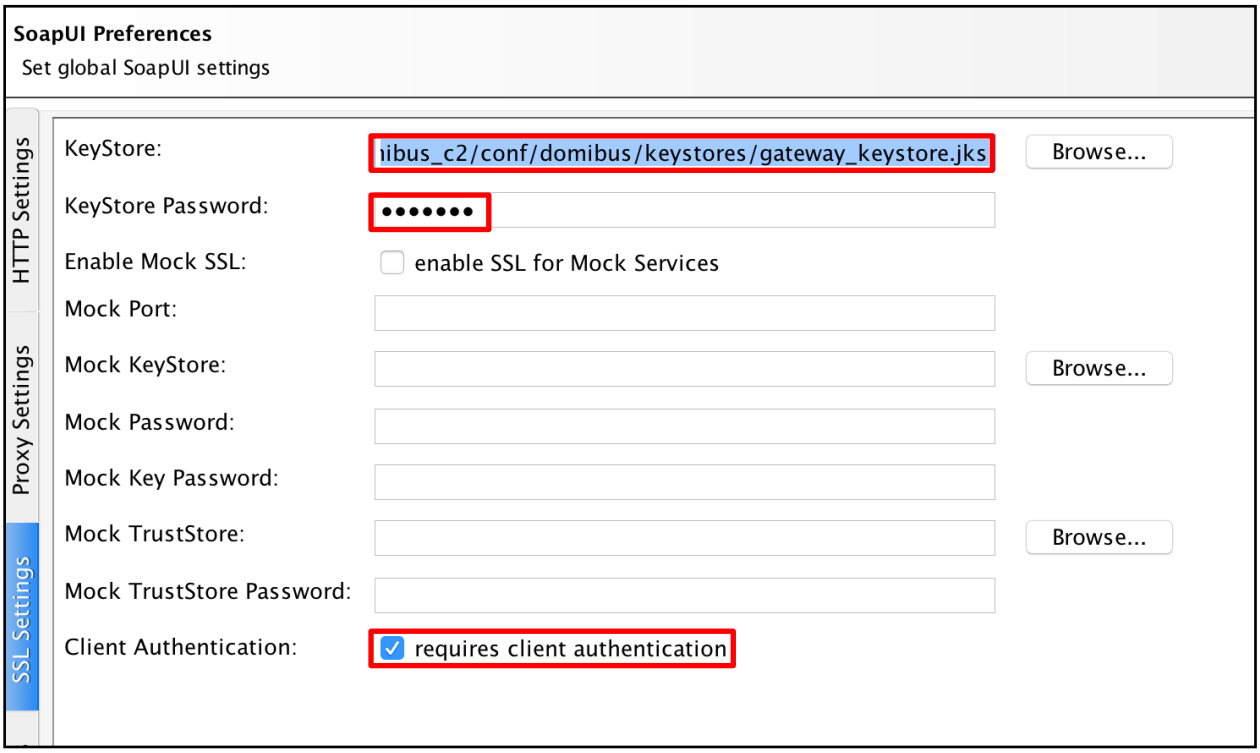
```
<subsystem xmlns="urn:jboss:domain:undertow:2.0">
        <buffer-cache name="default"/>
        <server name="default-server">
          <http-listener name="default" socket-binding="http" redirect-socket="https"/>
          <https-listener name="default_https" socket-binding="https" security-realm="ApplicationRealm"
verify-client="REQUIRED"/>
```

13.1.4.4. Configure Basic and Certificates authentication in SoapUI

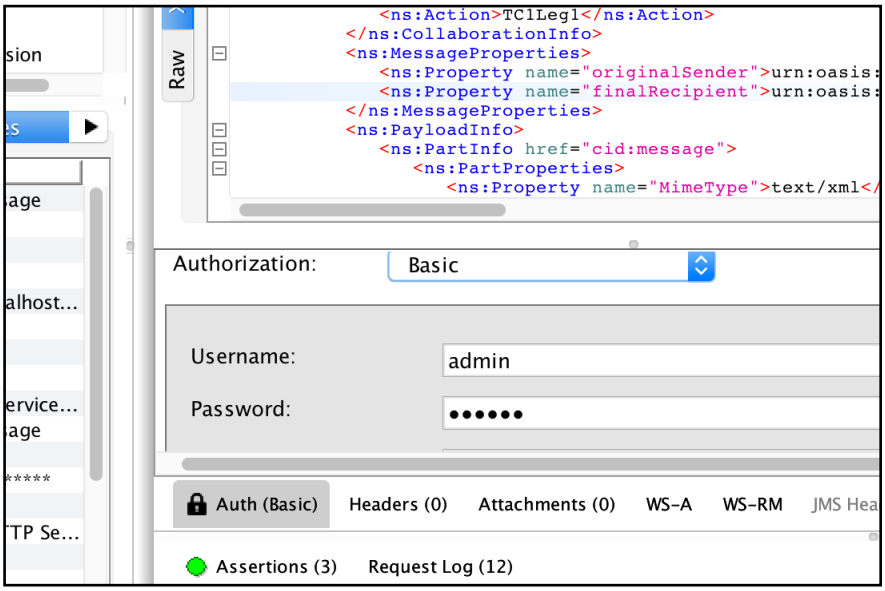
Go to File ➔ Preferences ➔ HTTP Settings and check the option **Adds authentication information to outgoing requests**:



Go to File ➔ Preferences ➔ SSL Settings, add the **KeyStore** and **KeyStore Password** and check the option **requires client authentication**:



To allow Basic Authentication, select the Auth tab, click Add New Authorization and select Basic. Enter user and password (e.g: Username = ***admin***; Password = ***123456***)



13.1.4.5. PMode update

If you enable HTTPS then your PMode Configuration Manager needs to make sure that all other endpoint PModes are modified accordingly.

With the SSL connector configured as above, the MSH endpoint is now: **https://***your_domibus_host***:*8443*/domibus/services/msh**.

After the updates, upload the PModes via the Admin Console:

Example:

```
<party name="party_id_name1"
endpoint=
"https:// party_id_name1_hostname:8443/domibus/services/msh" allowChunking="false">
```

14. Dynamic Discovery of unknown participants

14.1. Overview

In a dynamic discovery setup, the sender and/or the receiver parties and their capabilities are not configured in advance.

The sending Access Point will dynamically retrieve the necessary information for setting up an interoperability process from the Service Metadata Publisher (SMP). The SMP stores the interoperability metadata which is a set of information on the recipient or end entity (its identifier, supported business documents and processes) and AP (metadata which includes technical configuration information on the receiving endpoint, such as the transport protocol and its address) cf.[REF8].

The receiving AP registers its metadata in the SMP and configures the PMode to be able to accept messages from trusted senders that are not previously configured in the PMode. The receiving AP will have to configure one process in its PMode for each SMP entry.

The mapping between the PMode process and the SMP entry is defined in §14.3 – *"PMode configuration for PEPPOL"* and §14.8 - – "PMode configuration for OASIS".

Please note that the sender does not have to be registered in the SMP and the receiver merely extracts its identifier from the received message.

The following sections describe how to configure Domibus AP in order to use Dynamic Discovery (§14.3 – *"PMode configuration for PEPPOL"*, §14.4 – *"Policy and certificates for PEPPOL"*, §14.8 – *"PMode configuration for OASIS"*, §14.9 – *"Policy and certificates for OASIS"*).

14.2. Domibus configuration for PEPPOL

To enable the integration with the SMP/SML components, Domibus requires some changes in the **domibus.properties** configuration file which include:

1. Adding the following properties to enable the usage of the PEPPOL dynamic discovery client:

   domibus.dynamicdiscovery.client.specification">PEPPOL

2. Setting the dynamic discovery client to use certificates to access the SMP. These certificates are different in TEST and PRODUCTION, therefore we need to specify the Mode used by the dynamic discovery client by setting the following property:

   domibus.dynamicdiscovery.peppolclient.mode">TEST

3. Setting the "**domibus.smlzone**" property.
4. Configuring the bean "**pModeProvider**" with **"DynamicDiscoveryPModeProvider**".

14.3. PMode configuration for PEPPOL

14.3.1. Sender PMode

In a dynamic discovery process, the receiver of the messages is not known beforehand and therefore the **PMode.Responder** parameter SHOULD NOT be set.

The dynamic discovery process must include a leg which maps the configured entry (action, service and service type – see section. 14.5 – "*Message format for PEPPOL*") of the Receiver in the SMP.

The security policy to be used in the leg is the following (see section §5.1.1 – *"Security Policies"* for more information):

```
security="eSensPolicy_CA"
```

Remark:

eSensPolicy.v2.0_CA is also supported.

Sample Sender PMODE configuration extract:

```
...
<services>
    <service name="testService1"
        value="urn:www.cenbii.eu:profile:bii05:ver2.0"
        type="cenbii-procid-ubl"/>
</services>
<actions>
    <action name="tc1Action"
        value="urn:oasis:names:specification:ubl:schema:xsd:CreditNote-2::CreditNote##urn:www.cenbii...."/>
</actions>
<securities>
    <security name="eSensPolicy"
        policy="eSensPolicy.xml"
        signatureMethod="RSA_SHA256"/>
    <security name="eSensPolicy_CA"
        policy="eSensPolicy.v2.0_CA.xml"
        signatureMethod="RSA_SHA256"/>
</securities>
<legConfigurations>
    <legConfiguration name="pushTestcase1tc1Action"
    service="testService1"
    action="tc1Action"
    defaultMpc="defaultMpc"
    reliability="AS4Reliability"
    security="eSensPolicy_CA"
    receptionAwareness="receptionAwareness"
    propertySet="ecodexPropertySet"
    payloadProfile="MessageProfile"
    errorHandling="demoErrorHandling"
    compressPayloads="true"/>
</legConfigurations>
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
```

```
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="senderalias"/>
    </initiatorParties>
    <!-- no responderParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

14.3.2. Receiver PMode

Dynamic discovery configuration of the receiver is similar to the configuration of the sender, except that the roles are swapped: the sender of the messages is not known beforehand. As a consequence the ***PMode.Initiator*** parameter SHOULD NOT be set.

```
...
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

14.4. Policy and certificates for PEPPOL

The receiver must include the certificate of the trusted authority(ies) in its truststore. It will only accept messages that were signed with certificates issued by the trusted authority(ies) (cf. §18 – "*Annex 1 - Usage of certificates in PEPPOL and OASIS"* for more information).

14.5. Message format for PEPPOL

When dynamic discovery is used, the "to" field should not be statically configured in the PMode (the "to" field may even be omitted in the message). The lookup is performed by C2 based on the **finalRecipient** message property.

Example of a message using the **finalRecipient** for dynamic discovery:

```
<ns:UserMessage>
 <ns:PartyInfo>
  <ns:From>
```

```
    <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">senderalias</ns:PartyId>
    <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
   </ns:From>
   <ns:To>
   </ns:To>
  </ns:PartyInfo>
  <ns:CollaborationInfo>
   <ns:Service type="cenbii-procid-ubl">urn:www.cenbii.eu:profile:bii05:ver2.0</ns:Service>
                    <ns:Action>urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii.eu:transaction:biitrns014:ver2.0:extended:urn:www.peppol.eu:bis:peppol5a:v
er2.0::2.1</ns:Action>
  </ns:CollaborationInfo>
   <ns:MessageProperties>
    <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
    <ns:Property name="finalRecipient" type="iso6523-actorid-upis">0007:9340033829test1</ns:Property>
   </ns:MessageProperties>
</ns:UserMessage>
```

14.6. SMP entry

The following table describes the mapping between the PMode static configuration and the dynamic SMP records structure:

SMP Endpoint registration record	PMode attributes
ServiceMetadata/ServiceInformation/ProcessIdentifier	PMode[1].BusinessInfo.Service
ServiceInformation/Processlist/Process/ProcessIdentifier/@scheme	PMode[1].BusinessInfo.Service/@Type
ServiceMetadata/ServiceInformation/DocumentIdentifier	Pmode[1].BusinessInfo.Action
ServiceInformation/Processlist/Process/ServiceEndpointList/Endpoint/EndpointReference/Address	Pmode[].Protocol.Address

Table 4 - SMP Entry Mapping

The Service Metadata Record also provides the receiving end's certificate. This certificate can be used to encrypt the message to be sent to the receiver. The certificate can also provide the name of the gateway for this PMode by using the Certificate's CNAME as the PMode identifier (cf.[REF9]).

14.7. Domibus configuration for OASIS

To enable the integration with the SMP/SML components, Domibus requires some changes in the **domibus.properties** configuration file:

1. Add the following properties to enable the usage of the OASIS dynamic discovery client:

   domibus.dynamicdiscovery.client.specification"> OASIS

   Note: this property is not mandatory as it defaults to the above value.
2. Set the property "**domibus.smlzone**", e.g. "ehealth.acc.edelivery.tech.ec.europa.eu"
3. The bean "**pModeProvider**" must be configured with "**DynamicDiscoveryPModeProvider**"

14.8. PMode configuration for OASIS

14.8.1. Sender PMode

In a dynamic discovery process, the receiver of the messages is not known beforehand and therefore the **PMode.Responder** parameter SHOULD NOT be set.

The dynamic discovery process must include a leg which maps the configured entry (action, service and service type – cf. 14.5 – "Message format for PEPPOL") of the Receiver in the SMP.

The security policy to be used in the leg is the following (see §5.1.1 – *"Security Policies"* for more information):

```
security="eSensPolicy_CA"
```

Remark:

eSensPolicy.v2.0_CA is also supported.

Sample Sender PMODE configuration extract:

```
...
<services>
    <service name="testService1"
        value="urn:www.cenbii.eu:profile:bii05:ver2.0"
        type="cenbii-procid-ubl"/>
</services>
<actions>
    <action name="tc1Action"
        value="'your-schema-name'::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii...."/>
</actions>
<securities>
    <security name="eSensPolicy"
        policy="eSensPolicy.xml"
        signatureMethod="RSA_SHA256"/>
    <security name="eSensPolicy_CA"
        policy="eSensPolicy.v2.0_CA.xml"
        signatureMethod="RSA_SHA256"/>
</securities>
<legConfigurations>
    <legConfiguration name="pushTestcase1tc1Action"
    service="testService1"
    action="tc1Action"
    defaultMpc="defaultMpc"
    reliability="AS4Reliability"
    security="eSensPolicy_CA"
    receptionAwareness="receptionAwareness"
    propertySet="ecodexPropertySet"
    payloadProfile="MessageProfile"
    errorHandling="demoErrorHandling"
    compressPayloads="true"/>
</legConfigurations>
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="senderalias"/>
    </initiatorParties>
    <!-- no responderParties element -->
    <legs>
```

```
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

Remark:

> *Schema name should be added to action value. E.g:* ***ehealth-actorid-qns::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-2::CreditNote##urn:www.cenbii...***

14.8.2. Receiver PMode

The dynamic discovery configuration of the receiver is similar to the configuration of the sender, except that the roles are swapped: the sender of the messages is not known beforehand. As a consequence, the **PMode.Initiator** parameter SHOULD NOT be set.

```
...
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    inding="push"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
...
```

14.9. Policy and certificates for OASIS

The receiver must include the certificate of the trusted authority(ies) in its truststore. It will only accept messages that were signed with certificates issued by the trusted authority(ies).

The sender truststore must include the SMP public certificate. This certificate is used by the AP to validate the identity of the used SMP (cf. §18 –*" Annex 1 - Usage of certificates in PEPPOL and OASIS"* for more information).

14.10. Message format for OASIS

When dynamic discovery is used, the "to" field should not be statically configured in the PMode (the "to" field may even be omitted in the message). The lookup is performed by C2 based on the **finalRecipient** message property.

Note: For OASIS clients; in the PMode "action" value, the document scheme must be included with the document ID (for PEPPOL client, only document ID is needed).

Example of message using the **finalRecipient** for dynamic discovery:

```
<ns:UserMessage>
 <ns:PartyInfo>
  <ns:From>
   <ns:PartyId type="urn:oasis:names:tc:ebcore:partyid-type:unregistered">senderalias</ns:PartyId>
   <ns:Role>http://docs.oasis-open.org/ebxml-msg/ebms/v3.0/ns/core/200704/initiator</ns:Role>
  </ns:From>
  <ns:To>
  </ns:To>
 </ns:PartyInfo>
 <ns:CollaborationInfo>
  <ns:Service type="cenbii-procid-ubl">urn:www.cenbii.eu:profile:bii05:ver2.0</ns:Service>
                    <ns:Action>'your_schema_name'::urn:oasis:names:specification:ubl:schema:xsd:CreditNote-
2::CreditNote##urn:www.cenbii.eu:transaction:biitrns014:ver2.0:extended:urn:www.peppol.eu:bis:peppol5a:v
er2.0::2.1</ns:Action>
 </ns:CollaborationInfo>
  <ns:MessageProperties>
   <ns:Property name="originalSender">urn:oasis:names:tc:ebcore:partyid-
type:unregistered:C1</ns:Property>
   <ns:Property name="finalRecipient" type="iso6523-actorid-upis">0007:9340033829test1</ns:Property>
  </ns:MessageProperties>
</ns:UserMessage>
```

15. MESSAGE PULLING

15.1. Setup

In order to configure message pulling the process section should be configured with **mep** set to "oneway" and binding set to "pull" as shown in the following example:

```
<process name="tc1Process"
    agreement="agreementEmpty"
    mep="oneway"
    binding="pull"
    initiatorRole="defaultInitiatorRole"
    responderRole="defaultResponderRole">
    <initiatorParties>
        <initiatorParty name="initiatoralias"/>
    </initiatorParties >
    <responderParties>
        <responderParty name="receiveralias"/>
    </responderParties>
    <!-- no initiatorParties element -->
    <legs>
        <leg name="pushTestcase1tc1Action"/>
    </legs>
</process>
```

In the case of a pull process, the **initiatorParties** section contains the party that initiate the pull request. The **responderParties** section contains the parties that can be pulled from.

In domibus.properties configuration file adapt the following properties to your needs. Note that domibus.msh.pull.cron and domibus.pull.queue.concurency are mandatory.

```
# ---------------------------------- Pulling-------------------------------------

#Cron expression used for configuring the message puller scheduling.
domibus.msh.pull.cron=0 0 0/1 * * ?

# Number of threads used to parallelize the pull requests.
domibus.pull.queue.concurency=1-1

#Number or pull requests executed every cron cycle
#domibus.pull.request.send.per.job.cycle=1
```

15.2. Configuration restriction

A correctly configured **one-way pull process** should only contain one party configured in the **initiatorParties** section.

Different **legConfiguration** with the same **defaultMpc** (highlighted in red in the following configuration) should not be configured in the same pull process or across different pull processes.

If those restrictions are not respected, the message will not be exchanged and a warning message will detail the configuration problem.

```
<legConfiguration name="pushTestcase1tc2Action"
                                                    service="testService1"
                                                    action="tc2Action"
                                                    defaultMpc="defaultMpc"
                                                    reliability="AS4Reliability"
                                                    security="eSensPolicy"
receptionAwareness="receptionAwareness"
                                                    propertySet="ecodexPropertySet"
                                                    payloadProfile="MessageProfile"
errorHandling="demoErrorHandling"
                                                    compressPayloads="true"/>
```

16. TROUBLESHOOTING

16.1. Failed to obtain DB connection from datasource

SEVERE: **Exception sending context initialized event to listener instance of class org.springframework.web.context.ContextLoaderListener**
org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'org.springframework.scheduling.quartz.SchedulerFactoryBean#0' defined in ServletContext resource [/WEB-INF/msh-config.xml]: Invocation of init method failed; nested exception is org.quartz.JobPersistenceException: **Failed to obtain DB connection from datasource** 'springTxDataSource.org.springframework.scheduling.quartz.SchedulerFactoryBean#0': com.atomikos.jdbc.AtomikosSQLException: **Failed to grow the connection pool [See nested** exception: com.atomikos.jdbc.AtomikosSQLException: Failed to grow the connection pool]
at org.springframework.beans.factory.support.AbstractAutowireCapableBeanFactory.initializeBean(AbstractAutowireCapableBeanFactory.java:1578)
at org.springframework.beans.factory.support.AbstractAutowireCapableBeanFactory.doCreateBean(AbstractAutowireCapableBeanFactory.java:545)
at org.springframework.beans.factory.support.AbstractAutowireCapableBeanFactory.createBean(AbstractAutowireCapableBeanFactory.java:482)
at org.springframework.beans.factory.support.AbstractBeanFactory$1.getObject(AbstractBeanFactory.java:305)
at org.springframework.beans.factory.support.DefaultSingletonBeanRegistry.getSingleton(DefaultSingletonBeanRegistry.java:230)
at org.springframework.beans.factory.support.AbstractBeanFactory.doGetBean(AbstractBeanFactory.java:301)
SEVERE: **One or more listeners failed to start. Full details will be found in the appropriate container log file**
May 11, 2016 10:12:43 AM org.apache.catalina.util.SessionIdGeneratorBase createSecureRandom
INFO: Creation of SecureRandom instance for session ID generation using [SHA1PRNG] took [13,256] milliseconds.
May 11, 2016 10:12:43 AM org.apache.catalina.core.StandardContext startInternal
SEVERE: **Context [/domibus] startup failed due to previous errors**
May 11, 2016 10:12:43 AM org.apache.catalina.core.ApplicationContext log
INFO: Closing Spring root WebApplicationContext
May 11, 2016 10:12:43 AM org.apache.catalina.core.ApplicationContext log
INFO: Shutting down log4j

Solution: *Setup the password properly in the* ***domibus.properties****.*

16.2. Exception sending context initialized event to listener instance of class

SEVERE: **Exception sending context initialized event to listener instance of class** org.springframework.web.context.ContextLoaderListener
org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'entityManagerFactory' defined in URL [file:////home/edelivery/domibusf1/conf/domibus/domibus-datasources.xml]: **Cannot resolve reference to bean 'domibusJDBC-XADataSource' while setting bean**

property 'dataSource'; nested exception is org.springframework.beans.factory.BeanCreationException: Error creating bean with name 'domibusJDBC-XADataSource' defined in URL [file:////home/edelivery/domibusf1/conf/domibus/domibus-datasources.xml]: Invocation of init method failed; nested exception is com.atomikos.jdbc.AtomikosSQLException: **The class 'com.mysql.jdbc.jdbc2.optional.MysqlXADataSource' specified by property 'xaDataSourceClassName' could not be found in the classpath. Please make sure the spelling is correct, and that the required jar(s) are in the classpath.**

Solution: Add MySQL connector in domibus/lib folder.

16.3. Neither the JAVA_HOME nor the JRE_HOME environment variable is defined

Neither the JAVA_HOME nor the JRE_HOME environment variable is defined
At least one of these environment variables is needed to run this program

Solution: Set JAVA_HOME variable or/and JRE_HOME.

16.4. Cannot access Admin Console

http://*your_server*:*your_port_number*/domibus
No SEVER errors in logs but no admin option in browser under

Solution: Check if the firewall is open for port_no (e.g. 8080).

16.5. Handshake Failure

Full stack trace below:

```
org.apache.cxf.interceptor.Fault: Could not write attachments.
at org.apache.cxf.interceptor.AttachmentOutInterceptor.handleMessage(AttachmentOutInterceptor.java:74)
at org.apache.cxf.phase.PhaseInterceptorChain.doIntercept(PhaseInterceptorChain.java:308)
at org.apache.cxf.endpoint.ClientImpl.doInvoke(ClientImpl.java:514)
at org.apache.cxf.endpoint.ClientImpl.invoke(ClientImpl.java:423)
at org.apache.cxf.endpoint.ClientImpl.invoke(ClientImpl.java:324)
at org.apache.cxf.endpoint.ClientImpl.invoke(ClientImpl.java:277)
at org.apache.cxf.endpoint.ClientImpl.invokeWrapped(ClientImpl.java:312)
at org.apache.cxf.jaxws.DispatchImpl.invoke(DispatchImpl.java:327)
at org.apache.cxf.jaxws.DispatchImpl.invoke(DispatchImpl.java:246)
at eu.domibus.ebms3.sender.MSHDispatcher.dispatch(MSHDispatcher.java:126)
at eu.domibus.ebms3.sender.MSHDispatcher$$FastClassBySpringCGLIB$$105974a1.invoke(<generated>)
at org.springframework.cglib.proxy.MethodProxy.invoke(MethodProxy.java:204)
at
org.springframework.aop.framework.CglibAopProxy$CglibMethodInvocation.invokeJoinpoint(CglibAopProxy.ja
va:717)
at
org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:1
57)
```

```
at
org.springframework.transaction.interceptor.TransactionInterceptor$1.proceedWithInvocation(TransactionInterceptor.java:99)
at
org.springframework.transaction.interceptor.TransactionAspectSupport.invokeWithinTransaction(TransactionAspectSupport.java:281)
at org.springframework.transaction.interceptor.TransactionInterceptor.invoke(TransactionInterceptor.java:96)
at
org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:179)
at
org.springframework.aop.framework.CglibAopProxy$DynamicAdvisedInterceptor.intercept(CglibAopProxy.java:653)
at eu.domibus.ebms3.sender.MSHDispatcher$$EnhancerBySpringCGLIB$$da53e95a.dispatch(<generated>)
at eu.domibus.ebms3.sender.MessageSender.sendUserMessage(MessageSender.java:116)
at eu.domibus.ebms3.sender.MessageSender.onMessage(MessageSender.java:195)
at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
at sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:57)
at sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl.java:43)
at java.lang.reflect.Method.invoke(Method.java:606)
at org.springframework.aop.support.AopUtils.invokeJoinpointUsingReflection(AopUtils.java:302)
at
org.springframework.aop.framework.ReflectiveMethodInvocation.invokeJoinpoint(ReflectiveMethodInvocation.java:190)
at
org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:157)
at
org.springframework.transaction.interceptor.TransactionInterceptor$1.proceedWithInvocation(TransactionInterceptor.java:99)
at
org.springframework.transaction.interceptor.TransactionAspectSupport.invokeWithinTransaction(TransactionAspectSupport.java:281)
at org.springframework.transaction.interceptor.TransactionInterceptor.invoke(TransactionInterceptor.java:96)
at
org.springframework.aop.framework.ReflectiveMethodInvocation.proceed(ReflectiveMethodInvocation.java:179)
at org.springframework.aop.framework.JdkDynamicAopProxy.invoke(JdkDynamicAopProxy.java:207)
at com.sun.proxy.$Proxy163.onMessage(Unknown Source)
at
org.springframework.jms.listener.AbstractMessageListenerContainer.doInvokeListener(AbstractMessageListenerContainer.java:746)
at
org.springframework.jms.listener.AbstractMessageListenerContainer.invokeListener(AbstractMessageListenerContainer.java:684)
at
org.springframework.jms.listener.AbstractMessageListenerContainer.doExecuteListener(AbstractMessageListenerContainer.java:651)
at
org.springframework.jms.listener.AbstractPollingMessageListenerContainer.doReceiveAndExecute(AbstractPollingMessageListenerContainer.java:315)
at
org.springframework.jms.listener.AbstractPollingMessageListenerContainer.receiveAndExecute(AbstractPollingMessageListenerContainer.java:233)
at
org.springframework.jms.listener.DefaultMessageListenerContainer$AsyncMessageListenerInvoker.invokeListener(DefaultMessageListenerContainer.java:1150)
```

```
at
org.springframework.jms.listener.DefaultMessageListenerContainer$AsyncMessageListenerInvoker.executeOn
goingLoop(DefaultMessageListenerContainer.java:1142)
at
org.springframework.jms.listener.DefaultMessageListenerContainer$AsyncMessageListenerInvoker.run(Default
MessageListenerContainer.java:1039)
at java.lang.Thread.run(Thread.java:745)
Caused by: javax.net.ssl.SSLHandshakeException: Received fatal alert: handshake_failure
at sun.security.ssl.Alerts.getSSLException(Alerts.java:192)
at sun.security.ssl.Alerts.getSSLException(Alerts.java:154)
at sun.security.ssl.SSLSocketImpl.recvAlert(SSLSocketImpl.java:1979)
at sun.security.ssl.SSLSocketImpl.readRecord(SSLSocketImpl.java:1086)
at sun.security.ssl.SSLSocketImpl.performInitialHandshake(SSLSocketImpl.java:1332)
at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1359)
at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1343)
at sun.net.www.protocol.https.HttpsClient.afterConnect(HttpsClient.java:563)
at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.connect(AbstractDelegateHttpsURLConnect
ion.java:185)
at sun.net.www.protocol.http.HttpURLConnection.getOutputStream(HttpURLConnection.java:1092)
at sun.net.www.protocol.https.HttpsURLConnectionImpl.getOutputStream(HttpsURLConnectionImpl.java:250)
at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.setupWrap
pedStream(URLConnectionHTTPConduit.java:236)
at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.handleHeadersTrustCaching(HTTPConduit.
java:1302)
at org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.onFirstWrite(HTTPConduit.java:1262)
at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.onFirstWrit
e(URLConnectionHTTPConduit.java:267)
at org.apache.cxf.io.AbstractWrappedOutputStream.write(AbstractWrappedOutputStream.java:47)
at org.apache.cxf.io.AbstractThresholdOutputStream.write(AbstractThresholdOutputStream.java:69)
at org.apache.cxf.io.AbstractWrappedOutputStream.write(AbstractWrappedOutputStream.java:60)
at org.apache.cxf.io.CacheAndWriteOutputStream.write(CacheAndWriteOutputStream.java:89)
at org.apache.cxf.attachment.AttachmentSerializer.writeProlog(AttachmentSerializer.java:172)
at org.apache.cxf.interceptor.AttachmentOutInterceptor.handleMessage(AttachmentOutInterceptor.java:72)
... 43 more
```

Solution: If you receive this error, then it's likely that you configured the client with TLSv1.1 while the server only accepts TLSv1.2.

17. OPERATIONAL GUIDELINES

In this section you will find some recommendations on how to administer Domibus in an efficient way. The following topics are tackled: JMS Queue management, log management, capacity planning, database management and the monitoring of message life cycle.

17.1. JMS Queue Management

Domibus provides following out of the box features to manage the JMS Queues used in Domibus (see also §9.4- Queue Monitoring):

- Inspecting and filtering the messages from a queue based on the contents of Source, Period, JMS Type or Selector
- Move message from the DLQ (Dead Letter Queue) to the original Queue
- Delete stuck or pending message(s) from Queues

It is recommended to monitor the Queue size and number of messages in the different Queues. If some messages are stuck in any of the Queue then alerts must be sent to the Domibus Administrator.

Please pay special attention to the deadletter queue (DLQ). Messages stuck in this queue is a signal that there is some issue in Domibus that needs to be analysed and an alert should be sent to the Domibus Administrator.

Important:

The 'ListPendingMessages' operation on WS Plugin browses the JMS queue. Max count is limited to destination MaxBrowsePageSize which can be changed via the 'domibus.listPendingMessages.maxCount' Domibus property.

If your received messages are not returned by the webservice listPendingMessages method the you should:

1. increase the value of the 'domibus.listPendingMessages.maxCount'property;
2. delete the messages from the domibus.notification.webservice queue with selector NOTIFICATION_TYPE=MESSAGE_SEND_SUCCESS using JMX tools : http://activemq.apache.org/how-can-i-monitor-activemq.html .

17.2. Log Management

17.2.1. Log Level

It is recommended that the log level is correctly set in all the environments:

- The log level should be set to INFO/DEBUG in all the test environments for de-bugging purpose.
- The log level should be set to ERROR/WARN in production environment (keeping log level to INFO in production environment will degrade the performance of Domibus).

17.2.2. Log Rotation and Archiving

It is recommended that log rotation and archiving logic is implemented.

Domibus provides by default log rotation, but Domibus administrator should manage Domibus archiving logic.

17.2.3. Log Monitoring

It is recommended to monitor continuously Domibus logs. It can be done using an automated script which looks for keywords like "ERROR", WARNING", etc. and reports all the errors and warnings to the Domibus administrator.

17.3. Capacity Planning

17.3.1. JVM Memory Management

Hereafter some recommendations:

- the JVM memory parameters must first be tested in a test environment with the load expected in production
- the JVM parameters i.e. heap size must be monitored with the help of automated scripts and any abnormal hikes in heap size must be reported to the administrator.

17.3.2. CPU, IO operations and Disk Space Monitoring

CPU, IO operations and disk space must be continuously monitored using automated scripts. Any abnormal hikes must be reported to Domibus administrator and further investigated.

17.4. Database Management

17.4.1. Database Monitoring

It is important to monitor the database size.

The Payload of the message is deleted from the sending Access Point. Only the metadata of the message stays in the table. The Payload from the receiving Access Point is deleted based on the retention policy defined in the Pmode settings.

Domibus uses approximately 40 MB of table space to store the metadata of 1000 messages.

17.4.2. Database Archiving

Since the Database contains AS4 receipts that are used for non-repudiation purposes, they should be archived before purging the database.

The metadata of the database can be purged if it is no longer required.

17.4.3. Monitor Message Life Cycle

It is recommended to monitor the message status in the TB_MessageLog table. Automated scripts can be used to count different status in the table.

Please pay special attention to the following statuses:

- WAITING_FOR_RETRY: this means that there is some issue between C2 and C3 that must be resolved.
- SEND_FAILURE: this means that that there is some issue between C2 and C3 that must be resolved.
- SEND_ENQUEUED: this message status is part of the successful message life cycle, however abnormal increase in the count of messages with this status means that there is an issue. Further investigation is recommended.

18. Annex 1 - Usage of certificates in PEPPOL and OASIS

		C2		C3	
		Keystore	**Truststore**	**Keystore**	**Truststore**
PEPPOL	Certificate:	Sender's (issued by CA)	Empty	Receiver's	CA's
	Note:	C2 signs the message with its private key	C2 discover C3's public certificate from the SMP	C3 signs the receipt with its private key	The receiver trusts all senders who's certificate were issue dby these CA's
OASIS	Certificate:	Sender's (issued by CA)	SMP's	Receiver's	CA's
	Note:	C2 signs the message with its private key	C2 discover C3's public certificate from the SMP To trust the SMP, the sender needs its public certificate	C3 signs the receipt with its private key	The receiver trusts all senders who's certificate were issue dby these CA's

19. ANNEX 2 – DOCUMENT PARTS

20. List of Figures

List of TablesTable 1 - Domibus Properties

21. Contact Information

CEF Support Team

By email: CEF-EDELIVERY-SUPPORT@ec.europa.eu

By phone: +32 2 299 09 09

- Standard Service: 8am to 6pm (Normal EC working Days)
- Standby Service*: 6pm to 8am (Commission and Public Holidays, Weekends)

* *Only for critical and urgent incidents and only by phone*