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## Open e-TrustEx version 2.5.0 Installation Guide

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## Document History

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## 1. INTRODUCTION

This document describes how to prepare the installation for the Open e-TrustEx 2.5.0 application. This document is for system administrators who want to install e-TrustEx into an existing environment or for fresh installations.

This document is divided into the following sections:

- (1) *Planning*: provides a high-level planning about the installation process;
- (2) *System Requirements*: describes the hardware and software required to complete the installation;
- (3) *Installation*: describes the detailed steps of the installation process;
- (4) *System verification*: describes the necessary steps in order to verify the correctness of the system installation.

In order to be familiar with the terms used in this document and before going on with the installation, read the [Appendix 1 – Terms used in this document](#) section.

## 2. PLANNING

This section of the document provides a first overview on the installation tasks.

The required steps for the installation are described below:

- (1) Make sure you have acquired all of the required packages and software to go ahead with the installation. For more information about the required packages and software see [System Requirements](#);
- (2) Decide which database management system you want to use for e-TrustEx. E-TrustEx 2.5.0 was tested with Wildfly 10.1.0.Final and MySQL 5.5 database;
- (3) Prepare the computer on which you want to install e-TrustEx, checking if it fulfils the requirements;
- (4) Follow the steps described in the [Installation chapter](#) in order to install e-TrustEx;
- (5) Check the correctness of the installation running basic tests on the application.

### 3. SYSTEM REQUIREMENTS

This chapter describes the hardware and software requirements that the system must satisfy in order to install e-TrustEx.

#### 3.1. Hardware requirements

The hardware requirements for the e-TrustEx installation depend on several factors, above all on availability and scalability requirements (number of documents to be exchanged, number of concurrent users, required SLAs, etc.). Therefore, they are tightly connected to the specific context in which e-TrustEx will be used. For this reason this section describes only the minimum hardware requirements to let e-TrustEx run.

E-TrustEx can be installed and used on any operating system that supports Java JEE. For performance reasons a 64-bit operating system is preferred. The target environment must be able to support the chosen operating system, the Java JEE conformant application server and the database server.

For example, the following system specifications should be satisfactory in general:

- 2 Gb RAM;
- 1 GHz CPU;
- 2 Gb hard disk space.

#### 3.2. Software requirements

This section describes which software is required in order to install e-TrustEx on your system.

##### 3.2.1. *Operating System*

Because e-TrustEx is Java EE based, it is cross-platform and can be installed and used on any operating system that supports Java.

##### 3.2.2. *Java Development Kit*

A working installation of **JDK 1.8 or higher** is necessary to install correctly the whole environment in which e-TrustEx can run. The 32-bit or 64-bit JVM can be installed depending on requirements or availability. e-TrustEx was tested using the 64-bit Oracle JDK 1.8.

##### 3.2.3. *Application Server*

In order to run e-TrustEx, a Java EE application server is required.

e-TrustEx 2.3.0 was tested using Wildfly 10.1.0.Final as Java EE application server.

##### 3.2.4. *Database*

e-TrustEx needs an application database, used to store data directly generated by the application. That database must support XA transactions.

e-TrustEx was tested on MySQL 5.5 and database installation scripts are provided for this platform.

##### 3.2.5. *Additional software*

#### **SoapUI (Optional)**

In order to check the correctness of the e-TrustEx installation, a web service testing tool is required. e-TrustEx was tested using SoapUI web service testing tool version 5.2.1.

## 4. INSTALLATION

### 4.1. Overview

e-TrustEx is a JEE application, which runs in a customized Java application server environment. The JEE application is OS independent. e-TrustEx was developed on Ubuntu 12.04.2 LTS and Windows 7 Enterprise platforms. e-TrustEx 2.3.0 was tested on Wildfly 10.1.0.Final, with a configured MySQL database. e-TrustEx is developed using Eclipse JEE. For certain database operations you would need MySQL tools. For testing the services provided by e-TrustEx you can use SoapUI. The platform has also been tested with Oracle database and Weblogic 12c application server.

### 4.2. Bill of Materials

This section enumerates all the files that are needed to create the development environment. Most files can be downloaded via the provided hyperlink.

For an Ubuntu Linux environment:

- The latest version of Ubuntu Server LTS can be downloaded from [here](#)
- The latest version of Oracle Java JDK 8 can be downloaded from [here](#)
- Wildfly 10.1.0.Final can be downloaded [here](#)
  - additional files provided to customize the Wildfly environment for e-TrustEx can be found [here](#)
- MySQL server
  - Select the MySQL 5.5 database server metapackage from the Ubuntu Update Manager (see below for details)
- SoapUI
  - The latest version of SoapUI can be downloaded [here](#)

### 4.3. Installation steps

#### 4.3.1. Install the operating system

- (optional) The default terminal profile must be modified to increase the scrollback lines from the default value of 512 to 8192 for example. This should be enough to accommodate the extensive logging.

#### 4.3.2. Install the JDK

- Oracle Java JDK 8 is needed instead of the default OpenJDK. Open e-TrustEx version 2.4.0 also requires the JCE Unlimited Jurisdiction Policy Files. You have to overwrite the files `local_policy.jar` and `US_export_policy.jar` in `$JAVA_HOME/jre/lib/security` with the ones in the downloaded zip file.

#### 4.3.3. Install MySQL Server

- There were problems installing version 5.5.25a-1 due to the different packaging. The latest MySQL 5.5 was installed using Ubuntu Update Manager.

- **Note: This step is only for Linux platforms, because on Windows it would cause errors!**  
Edit `/etc/mysql/my.cnf` and add the following line: `lower_case_table_names=1`
- Create the initial database setup by running the necessary [scripts](#) (01 through 04). On the file 03 dealing with reference data, change all the paths inside the instruction `LOAD_FILE` to point to the folder where you unzipped the deployment files.
- Make sure that the `dba` role is granted to the `mysql` user `etrustex`.
- Make sure that the user `etrustex` can login to MySQL. You might need to specify `localhost` as location instead of the default wildcard `%` in the connection server manager.
- Configure `FILE_STORE_PATH` and `SERVER_URL` metadata in the table `"etr_tb_metadata"`. The distribution on joinup expects to find a folder `'c:\etrFileStore'` already present on disk..

#### 4.3.4. (optional) Install Emma (or a MySQL management tool of your choice)

- Though MySQL Server installation contains MySQL Workbench, this might also be needed for convenience. Select and install it from Ubuntu Update Manager.

#### 4.3.5. Install Wildfly and copy application file

- Use/unzip all the additional files provided to customize the Wildfly installation.
  - Replace the modules folder of your Wildfly installation with the one included in the [modules.zip](#) file
  - Copy the Wildfly config files `standalone-etrustex.xml`, `standalone.conf.bat` and `standalone.conf` from [GitHub](#) in the `standalone\configuration` folder of your Wildfly installation.

- Add the following Wildfly user to ManagementRealm:

username: *manager*

password: *manage*

JBoss offers a utility script called `"add_user.bat"` in the `"bin"` folder for this purpose (see [here](#) how to use it).

- Add the user `jmsuser` with role `'guest'` to the application users. It should be used to access the JMS queues.
- (optional) You may override the default 60 seconds deployment timeout in `standalone-etrustex.xml` in order to avoid timeout errors upon deployment for slower environments:
 

```
<subsystem xmlns="urn:jboss:domain:deployment-scanner:1.1">
  <deployment-scanner path="deployments" relative-to="jboss.server.base.dir"
    scan-interval="5000" deployment-timeout="300"/>
</subsystem>
```
- In order to dispatch to external JMS queues, the necessary classes for the Initial context factory should be present in the project's Ear, so the maven dependencies need to be adapted accordingly.



#### 4.3.6. *Install SoapUI*

Please follow the instructions provided on the SoapUI website to proceed with the installation. Additionally, you can find a test suite and installation guide for SOAP UI [here](#).

## 5. DEPLOYING E-TRUSTEX

### 5.1 The etx\_config directory

Download the folder etx\_config from [GitHub](#) to the Wildfly directory of Wildfly. By default, the application will search for it under the path: D:\tools\wildfly-10.1.0.Final\etx\_config. In order to change the location it is read from, please follow the instructions in chapter "5.3. Building your own distribution".

The file etx-config.properties contains configuration properties related to security:

Property key	Role
keyStore.password	The password of the keystore containing the private key of e-TrustEx. This is used for signing the acknowledgements sent by the application
trustStore.password	The password of the application truststore. It should contain all trusted public key certificates against which the digital signature is verified
aes.keyStore.password	The password of the keystore containing the symmetric key used for encrypting the endpoint passwords stored in the database
keyStoreHandler.privateKeyPassword	The password of the private key of the application
encryptionKey.value	The AES key used for encrypting the binaries stored in the filesystem
java.naming.factory.initial	The JNDI initial context factory class
java.naming.provider.url	The JNDI provider URL
java.naming.security.principal	The JNDI lookup username
java.naming.security.credentials	The JNDI lookup password

The file etxkeystore.jck contains the AES symmetric key for database password encryption.

The file keystore.jks is the keystore containing the private key for acknowledgement signing.

The file truststore.jks is the application truststore containing trusted public key certificates.

**It is highly recommended to change all passwords and encryption keys for a production environment.**

### 5.2 The Distribution

After having configured all of the resources described in the previous chapters, you can deploy e-TrustEx into the Wildfly application server.

e-TrustEx is distributed as an EAR (Enterprise Archive). An enterprise archive is a file format used for packaging one or more modules into a single archive so that the deployment of the various modules onto an application server happens simultaneously and coherently.

In order to deploy e-TrustEx you must follow these steps:

- Download the e-TrustEx EAR archive from Joinup into your configured Wildfly under the <WILDFLY\_HOME>/standalone/deployments folder.
- Start Wildfly using the following command: standalone -c standalone-etrustex.xml

### 5.3 Building your own distribution

You can fork the source code from GitHub and build the application with Maven 3.3.x or higher.

To do that you need to first install a war library on your local maven repository:

```
mvn install:install-file -Dfile=%repository path%\e-TrustEx\etrustex-admin-old\lib\jSCAF-war-1.10.war -DgroupId=eu.europa.ec.digit.etrustex -DartifactId=jSCAF-war -Dversion=1.10 -Dpackaging=war
```

And then by executing the following command:

```
mvn clean install -P openetrustex,mysql,JBoss,LOCAL-JBOSS
```

If you need to change the path the folder `etx_config` is read from, you can define an environment variable `JBOSS_HOME` that should point to your Wildfly installation folder (e.g. `D:\tools\wildfly-10.1.0.Final`), then build the application.

## **6. VERIFYING THE SYSTEM**

After having completed the installation of the whole system, different test cases must be carried out in order to verify the correctness of the installation.

A test suite was created to reach this aim. The test suite contains a detailed documentation describing all the steps to be executed to verify the installation.

## 7. APPENDIX 1 – TERMS USED IN THIS DOCUMENT

EAR	An Enterprise ARchive is a file format used for packaging one or more modules into a single archive so that the deployment of the various modules onto an application server happens simultaneously and coherently.
JBOSS_HOME	JBoss installation root directory
(Java) JEE	Java Enterprise Edition
JDK	Java Development Kit