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Windows Deployment

imc Learning Suite

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Windows Deployment

For the deployment of the Learning Management System (ILS) on a MS Windows machine, two ZIP files are provided:

- A deployment package that contains everything that is required to install and maintain the system together with the default configuration for your system.
- A configuration package that contains files that need to be adjusted by you.

The separation between default configuration and customer adjustable configuration enables you to not share security relevant information with us and to support an easier update workflow. See Section "3 System Update".

Please note that a database is not part of the deployment and must be installed and configured separately. Please consult the section "Prepare Database" in the document ILS_Installation_Win_Tomcat_IIS_EN for ILS database setup.

1 Deployment package contents

1.1 Initial folders

The package contains the following folders:

- apps: Java Applications which are deployed in Apache Tomcat.
- config: Default configuration files to configure your system. Additional folders starting with the prefix "`config`" may be part of the package to support installation on multiple systems, e.g. `ref`, `stage`, `prod`.
- data: Data folder where all binary files required by ILS are stored, e.g. images, videos, etc.
- environment: JRE and Tomcat distribution.
- services: Executable wrappers that allow the installation of Tomcat et. alt. as MS Windows services.
- event-bus-home: Distribution of the ActiveMQ Artemis Event Bus. This folder is optional and only available if the Event Bus is part of your deployment.
- solrhome: Configuration of various indexes that are used by Apache Solr.

1.2 Folders created during setup/runtime

During the installation of the system, the following folders are created:

- `instance`: Configuration of applications run by Apache Tomcat. All log files can be found in "`.\instance\logs`".
- `event-bus-instance`: Installation of the ActiveMQ Artemis Event Bus. This folder is optional and only available if the Event Bus is part of your deployment.

1.3 Files of notice

- `configservicedefinitions.bat`: Sets environment variables that are used by the Config Server.
- `setup.bat`: Installation routine. Will install the system as a set of MS Windows services.
- `start-services.bat`: Used to start the system / MS Windows services.
- `stop-services.bat`: Used to stop the system / MS Windows services.
- `restart-services.bat`: Used to restart the system, e.g. after configuration changes have been made.
- `delete-services.bat`: Used to uninstall the system / MS Windows services. This will not remove the deployment package or any folders/files created during the installation.

2 System Installation

2.1 MS Windows Services

The system will be installed as a set of MS Windows services with startup mode "Automatic". During the installation the following MS Window Services will be registered and started.

- **Config Server**: The Config server will be started first. It uses configuration files from the "`.\config`" folder to configure the system. Config Server runs on Port `8888` by default. In case you want to change that, please adapt the file "`.\configserverdefinitions.bat`" before installing the system.
- **Apache Tomcat**: All applications from the "`apps`" folder will run in Tomcat. Tomcat starts after Config Server is running. By default, Apache Tomcat runs on port `8080`. See section "4 System Configuration" on how to change the port.
- **Gateway**: All request to the system go through the gateway. The gateway starts after Config Server is running. The default port is 443 for Https (80 for HTTP). See section "4 System Configuration" on how to change the port. Gateway port should be the only ports reachable from the "outside". Access to Tomcat and Config Server ports should only be available from "localhost".
- **Event Bus** (optional): The Event Bus is started after Config Server is running. By default, Event Bus runs on ports `8161`, `61616` and `5672`. See section "4 System Configuration" on how to change the ports.

Besides the maintenance batch scripts that are part of the deployment package, MS Windows Services App "`services.msc`" can be used to maintain the services and lookup their startup dependencies.

2.2 Installation steps

1. Unpack the deployment package to a location of your choice, e.g. "`C:\IMC\LearningSuite`".
2. Unpack the configuration package to a location of your choice, e.g. "`C:\IMC\Config`". Make sure to have it outside of the unpacked deployment package.
3. Adjust "configserverdefinitions.bat" to
   - Let "`USER_CONFIG_DIR`" point to the location of the configuration folder. Please note that you need to use forward slashes, e.g. "`C:/IMC/Config`".
   - Change "`CONFIG_SERVER_PORT`" to a port of your choice in case default port `8888` is already in use on your system.

4. Install and setup a database. See "Database installation manual". During that, you may need to copy required database drivers. JDBC drivers for Postgresql and MSSQL are already part of the package. In case you need a different driver for e.g. Oracle, this driver has to be copied to "`.\environment\tomcat\lib`" folder manually.
5. Move ".\data" folder to a location of your choice outside of the installation folder, e.g. "`C:\IMC\data`".
6. (Optional) In case you received multiple folders prefixed with "`config`" in your deployment package, you may choose the type of system, e.g. `stage` or `ref` see section "4.1 Multiple default configuration folders" on how to replace folders. The default config is targeted at production.
7. Configure the system by adapting provided files in the configuration directory, e.g. "`C:\IMC\Config`". See section "4 System Configuration".
8. Open MS Windows command prompt "`cmd`" as Adminstrator.
9. Navigate to the installation folder, e.g. "`C:\IMC\LearningSuite`".
10. Execute "`setup.bat`" from the command prompt.

Please note:

- Administator rights are required to install the system. Choose `Run as Administrator` when opening `` `cmd` ``.
- MS Windows service names are fixed. Therefore, it is not possible to use the same deployment package to install multiple instances of the system on the same machine.

3 System Update

For a system update, the following prerequisites must be met:

- The configuration directory is located outside of the installation directory.
- The data directory is located outside of the installation directory.
- The logfiles directory is located outside of the installation directory (in case logfiles should be kept).

With each update, a new deployment package will be provided. To update your installation, perform the following steps.

1. Delete all MS Windows services by executing "`delete-services.bat`".
2. Check that the services have been unregistered properly in the "Services" view in MS Windows.
3. Delete or rename the installation folder. Please make sure that above requirements are met.
4. Unpack the new deployment package to installation folder of your choice. You may safely use the path of your previous installation.
5. Adapt "`configservicedefinitions.bat`" as explained in the installation instructions.
6. Move the contents of the "`data`" folder from the installation folder to your data folder that is located outside of the installation directory. You may override existing files.
7. Open Windows command prompt "`cmd`" as Adminstrator.
8. Run "`setup.bat`".

Usually, no changes to your configuration folder are required.

4 System Configuration

All configuration files that need to be adapted by you are located in the configuration folder that you've selected during the installation, e.g. "`C:\IMC\Config`". In addition to your configuration folder, there is a default configuration folder, located at "`.\config`" with the deployment package. This configuration has been created by our consulting for your target system and must not be changed.

4.1 Multiple default configuration folders

It may by the case that our consulting team has prepared multiple default configuration folders for different systems, e.g. stage, prod, these folders are part of the deployment package where each of them is prefixed with `` `config` ``. To set up the system for a different profile than production, the following steps are required:

- Rename "`config`" folder to "`config-temp`" or any other name of your choice.
- Rename the prefixed folder that you want to use to "`config`".

4.2 Configuration Sections

The following section shows how to configure the most important aspects of the system using the provided `yml` files in the configuration folder. Please note:

- Applications require restarting for the changed configuration to take effect. You may use the "`restart-services.bat`" script to do that.
- Some examples below use brackets `<example>` to visualize placeholders for you to fill in. These brackets should not be part of your final configuration.

4.2.1 Port configuration

You can change the ports of Tomcat, gateway and event bus (optional) in the file "`application.yml`":

- Tomcat port:

```
tomcat:
  port: 8080
  shutdown:
    port: 8005
```

- Gateway port:

```
gateway:
  port: 443
  http:
    port: 80
```

- Event Bus port:

```
messaging:
  port: 5672
  consolePort: 8161
```

4.2.2 External endpoint

Change the external endpoint in "`application.yml`" to the URL that is used to access the system from the "outside". This is ususally the domain where the system is reachable by your learners. The port is only required when not using default ports.

```
endpoint:
  extern: https://<hostname>:${gateway.port}
```

4.2.3 Data directory

The path to the data directory must be configured in "`ils.yml`":

```
data:
  path: <absolute-path-to-data-folder>
```

4.2.4 Database configuration

Configure the connection settings for the database in "`application.yml`". The corresponding section for configuration of a Postgresql database connection looks as follows:

```
ils:
  database:
    host: <hostname>
    url: "jdbc:postgresql://<host>:<port>/<dbname>?autosave=always"
    username: <username>
    password: <password>
    driver: org.postgresql.Driver
    sqldialect: de.imc.igs.core.db.PostgreSQLUnicodeDialect
```

Another example for MSSQL:

```
ils:
  database:
    host: <hostname>
    url: "jdbc:sqlserver://<hostname>:<port>;DatabaseName=<dbname> "
    username: <username>
    password: <password>
    driver: com.microsoft.sqlserver.jdbc.SQLServerDriver
    sqldialect: de.imc.igs.core.db.SqlServerUnicodeDialect
```

4.2.5 Log files location

It is possible to change the default log path from "`.\instance\logs`" to a folder of your choice by adapting the logging section in "`application.yml`":

```
logging:
  path: <root-folder-for-all-log-files>
```

Please use forward slashes in the path.

5 Appendix A

5.1 Accessing log files

- The logfiles that are written during the setup/installation of the system can be found in "`.\services\<service>\*.log`".
- The application log files are written to "`.\instance\logs`" folder by default.

5.2 Accessing Windows Event Log

MS Windows services that are registered during the installation of the system write some status messages to the MS Windows event log. The event log can be accessed as follows:

- Right click on the Start button and select "Control Panel" > "System & Security" and double-click "Administrative tools".
- Double-click "Event Viewer".
- Select "Application" to see the logs.