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Windows Deployment

imc Learning Suite

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Content

Windows Deployment

For the deployment of the Learning Management System (ILS) on a MS Windows machine, one ZIP file is provided. This ZIP file contains three further ZIP packages inside:

- A deployment package that contains everything that is required to install and maintain the system together with the default configuration for your system.
- “data.zip”: A data folder where all binary files required by ILS are stored, e.g. images, videos, etc.
- “docu.zip”: A collection of manuals and other documentation.

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 Configuration.

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 `imc_LS_Installation_Win-Tomcat-IIS_14.10.1_EN.docx` 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`.
- 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 and the installation routine.
- `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.
  Service name: `IMC-<CUSTOMER_NAME>-config-server`.
- **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 "3 System Configuration" on how to change the port.
  Service Name: `IMC-<CUSTOMER_NAME>-tomcat`.
- **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 "3 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, which is named by the following scheme: `win-<CUSTOMER_NAME>_<REVISION>.zip`, to a location of your choice, e.g. "`C:\IMC\LearningSuite`".
2. Create folder to host persistent customer configuration (e.g. for database passwords and other secrets) outside of the installation folder, e.g. "`C:\IMC\persistent-config`".
3. Adjust "`configserverdefinitions.bat`" to
   - If you've created a folder in step 2, 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/persistent-config`".
     Note: If this path is returned to the imc, then it can already be integrated into future delivery packages and the customer does not have to change it each time during the update.
   - 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. Unpack the "data.zip" package to a location of your choice outside of the installation folder, e.g. "`C:\IMC\data`".
   Note: The main folder with the name "`data`" is already part of the ZIP package. Please avoid creating a path like "`C:\IMC\data\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 "3.2 Multiple default configuration folders" on how to replace folders. The default config is targeted at production.
7. Open MS Windows command prompt "`cmd`" as Adminstrator.
8. Navigate to the installation folder, e.g. "`C:\IMC\LearningSuite`".
9. 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 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\persistent-config`". In addition to your configuration folder, there is a default configuration folder, located at "`.\config`" within the deployment package. This configuration has been created by our consulting for your target system and must not be changed.

3.1 Working with persistent configuration

The installation works with two folders for configuration.

- The persistent configuration e.g. "`C:\IMC\persistent-config`"
- The pre-set configuration by imc e.g. "`C:\IMC\Learning-Suite\config`"

Configuration from the persistent folder overwrites settings from the pre-set configuration. This allows to customize the configuration with e.g. required ports or secrets.

In addition the configuration uses profiles. In the yml files profiles are separated like this:

```
---
spring.profiles: win
```

See variable CONFIG_SERVER_PROFILE in `configservicedefinitions.bat` to check what profiles are being used. If there are mutltiple entries (separated by ,) the order denotes the order in which the profiles are being read by config-server.

If the property you want to override stems from a profile you need to set the profile in the overriding file as well.

Example – configure gateway port for usage with IIS:

1. Create new empty file "application.yml" in your persistent config folder
2. Copy the lines including the profile
3. (optional) Delete entries that do not need to change e.g. gateway.server.ssl.enabled: false

It should look like this:

```
---
spring.profiles: winiis

gateway:
  server:
    port: <port-to-use>
```

Note:

- Overriding configuration is only really necessary for configuration that needs to be kept secret or is not static. All other information can be set by the imc team to be delivered with the next package if provided.
- You can only override configuration properties. You cannot “unset” them.
- The per-property override is only possible for yml files. All other files are overriden in full.
- Take care to properly order your overrides when using profiles. Everything below the profile separator (up until the next separator) is treated to belong to that profile.

3.2 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".

3.3 Configuration Sections

The following section shows how to configure the most important aspects of the system.
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.
- Configuration adjustments should only ever be done inside the persistent configuration folder or be adressed by imc as a change request.

3.3.1 Port configuration

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

- Tomcat port:

```
tomcat:
  host: localhost
  port: 8081
  shutdown:
    port: 8005
```

- Gateway port:

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

- Event Bus port:

```
messaging:
  host: event-bus
  port: 5672
  consolePort: 8161
```

3.3.2 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:
  intern:
    ...
  extern:
    host: https://<hostname>:${gateway.port}
    ...
```

3.3.3 Data directory

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

```
deployment:
  ...
  ilsdatadir: <path-to-data-folder>
  ...
```

3.3.4 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
```

An Example for MSSQL:

```
ils:
  database:
    dbname: <dbname>
    host: <hostname>
    port: <port>
    url: "jdbc:sqlserver://${ils.database.host}:${ils.database.port};
DatabaseName=${ils.database.dbname}"
    username: <username>
    password: <password>
    driver: com.microsoft.sqlserver.jdbc.SQLServerDriver
    sqldialect: de.imc.igs.core.db.SqlServerUnicodeDialect
    query: "select 1"
    connection-properties: "defaultRowPrefetch=10"
```

And another example for Oracle:

```
ils:
  database:
    host: <hostname>
    url: "jdbc:oracle:thin:@${ils.database.host}:${ils.database.port}:
${ils.database.dbname}"
    username: <username>
    password: <password>
    driver: oracle.jdbc.driver.OracleDriver
    sqldialect: de.imc.igs.core.db.OracleUnicodeDialect
    query: "select 1 from dual"
    connection-properties: "defaultRowPrefetch=100"
```

3.3.5 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.

4 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 (see section 3.3.3 Data directory).
- The logfiles directory is located outside of the installation directory (in case logfiles should be kept – see section 3.3.5 Log files location).

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.
   Note: If this path is returned to the imc, then it can already be integrated into future delivery packages and the customer does not have to change it each time during the update.
6. Unpack the “data.zip” package to a location of your choice outside of the installation folder, e.g. "`C:\IMC\data`".
   You may override existing files.
7. Open Windows command prompt "`cmd`" as Adminstrator.
8. Run "`setup.bat`".

Usually, no changes to your persistent configuration folder are required, but it can be necessary in some rare cases. Fore example, with the move to ILS 14.10.0.0 the structure of the yml files has changed. This has then to be considered during a system update.

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.