BETA

SIMULATION SOLUTIONS

physics on screen

SPDRM

WORKFLOW MANAGER

Installation Guide

v1.8.0

BETA CAE Systems International AG
D4 Business Village Luzern, Platz 4
CH-6039 Root D4, Switzerland
T +41 41 545 3650, F +41 41 545 3651
ansa@beta-cae.com
www.beta-cae.com

Table of Contents

1. Introduction

1.1. About this Document

This document is written for system administrators or people responsible for the installation and maintenance of the latest commercially available version of SPDRM, the Simulation Process, Data & Resources Management software of BETA CAE Systems.

Installation of SPDRM requires basic knowledge of Linux operating systems, as well as familiarity with the basic operations of the license management (beta_lm_tools) of BETA CAE Systems.

The following topics are covered in this document:

- Recommended system requirements
- Pre-installation considerations
- SPDRM installation / update
- SPDRM operation
- SPDRM maintenance

1.2. Brief Overview of SPDRM Architecture

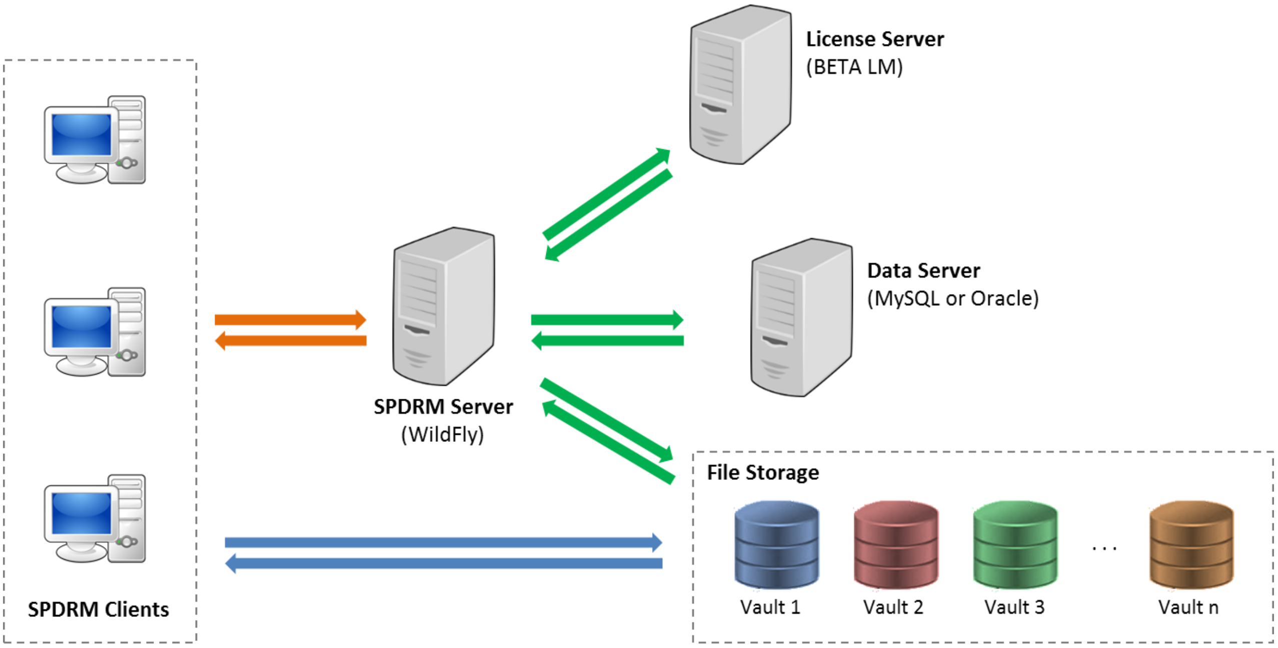
The SPDRM software consists of two distinct programs:

- the SPDRM Server, and
- the SPDRM Client

The SPDRM Client is the “front end” of SPDRM. The SPDRM Client offers the interface for the data, process and resources management.

The SPDRM Server is the “back end” of SPDRM. The SPDRM Server responds to requests made by the SPDRM Clients by creating, querying and modifying database records.

The following image presents the SPDRM architecture which is based on a decentralized system, built on the concept of satellites.



Being an Enterprise solution, the SPDRM Server and the Clients are installed on different workstations that communicate over a computer network. The data handled by SPDRM do not necessarily need to reside on the SPDRM Server. Usually, the data reside on a separate Data Server, while the physical files are stored in one or more Data Vaults.

The execution of processes (e.g. execution of scripts, launching of applications) takes place locally on the SPDRM Client’s workstation and as a result, the SPDRM Server remains at a relatively low load, and is able to respond swiftly, keeping total traffic on minimum level. This is achieved by limiting the communication sessions between the SPDRM Clients and the Server to the absolutely necessary.

2. Recommended System Requirements

2.1. SPDRM Server Requirements

2.1.1. Hardware Requirements

- CPU: 4-core/8-thread Intel i7 (e.g. i7 960)
- Memory: 16GB
- HDD: 1TB
- Network: 1GBit
- Static IP

2.1.2. Software Requirements

- OS: Linux or Windows (64-bit)
  - CentOS (6.4 or later), Fedora (12 or later), SuSE (11 or later), Red Hat Enterprise Linux 6.5
  - Windows 7 or later (Professional, Enterprise, Ultimate), Windows Server (2008, 2012)
- Database:
  - MySQL Community Server Edition
    - 5.5, 5.6 or 5.7
  - Oracle Database Enterprise Edition, or Standard Edition
    - 12.2.0.1.0 (*12c Release 2*)
    - 12.2.0.3 // 19.3 (*19c*)
- Administrative privileges (create users/shares, change file privileges)
- Capability to share folders across the network (NFS/Samba)
- Configurable firewall
- ***Unzip*** and ***lsof*** packages must be available in Linux OS.
- Max file descriptors (fd) must be at least 1500 in Linux OS.

2.2. SPDRM Client Requirements

2.2.1. Hardware Requirements

- Memory: 4GB[1]

2.2.2. Software Requirements

- OS: Linux or Windows (64-bit)
  - CentOS (6.4 or later), Fedora (12 or later), SuSE (11 or later), Red Hat Enterprise Linux 6.5
  - Windows (7 or later)
- Configurable firewall
- Ability to connect to the SPDRM Server IP
- Ability to connect to the SPDRM Server shares (i.e. data vault(s) and client directories)

[1] Memory requirements for applications that are used from within the SPDRM Client are not included.

3. Pre-Installation Considerations

Prior to installing SPDRM the following items should be considered:

3.1. Install and Start Database

3.1.1. MySQL

1. Install MySQL database on the Data Server:
   Download and install the latest MySQL Community Server edition (http://www.mysql.com/downloads/mysql/).
2. Start MySQL database:
   - Open a terminal window and change directory to: ***[MYSQL_INSTALL_DIR]/bin/***
     (e.g. `cd /opt/mysql/bin/`)
   - Run the `mysqld` (MySQL server daemon program) using the following process arguments:
     - `--verbose`
     - `--lower-case-table-names=1`
     - `--character-set-server=utf8`
     - `--collation-server=utf8_general_ci`
     - `--transaction-isolation=READ-COMMITTED`

     (e.g. `mysqld --verbose --lower-case-table-names=1 --character-set-server=utf8 --collation-server=utf8_general_ci --transaction-isolation=READ-COMMITTED`)

     NOTE: The process arguments mentioned above can be set-up also through the MySQL Workbench.

3.1.2. Oracle

1. Install Oracle Database on the Data Server:
   Download and install the Oracle Database Enterprise Edition
   (http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html).
2. Start Oracle Database.

3.2. Install and Start BETA License Manager

- Contact BETA CAE Systems (http://www.beta-cae.com/) to request access to the secure web server in order to download the latest license management package and the latest version of SPDRM.
- Select a machine that will be used as License Server: It should be a designated machine that resides in the same network as the SPDRM Server/Client and onto which a recent version of beta_lm_tools will be installed. The corresponding license daemon, called beta_lm, will handle the initial contact and communication with the SPDRM Server/Client through a TCP/IP network protocol.
- Obtain a valid license file: This is a file that contains all information necessary for the uninterrupted use of SPDRM Server/Client. This file, usually called license.dat, is copied on the license server and is read by the license daemon.
- Install the license daemon using the license file.
- Properly configure the TCP/IP services: SPDRM Server/Client use the TCP/IP network protocol to communicate with the license server. Note that even if the License Server is the same machine as the SPDRM Server, TCP/IP is still used.
- In order to verify that your TCP/IP connection is working, open a terminal window and type:
  ```
  ping <hostname>
  ```
  where <hostname> is the name of the license server. If you receive a reply from the license server, then the connection is working.

3.2.1. Install BETA_LM_TOOLS

For the installation of the License Manager please refer to the beta_lm_tools Set Up Guide that can be downloaded from the BETA CAE Systems secure web-server.

3.2.2. Check SPDRM license validity

Verify that beta_lm is up and running on each server using the command:

```
beta_lm_stat -h <license_server_name>
```

The outcome of the above command will display the packages available within the license.dat file. Note that in a hardware failover redundant server scheme, only the server that is currently the master will respond.

Check that the **SPDRM** and **SPDRM_CLIENT_PACK** (that includes **SPDRM_CLIENT** and **SPDRM_CLIENT_BATCH** license features) are included in the list of the available license packages and they are not expired.

Optionally, the license feature **SPDRM_EXTERNAL_CONNECTIONS** should be available in case there is a need to use the REST API to fetch data from the SPDRM server, through third-party (i.e. non-BETA) applications.

3.2.3. Validate ANSA_SRV Environment Variable

When the user launches the SPDRM Server or Client, SPDRM will search through the network for available licenses. To do so SPDRM must first contact the license server. The location of the license server is given to SPDRM through an environment variable called ANSA_SRV.
For more details about the ANSA_SRV environment variable please refer to the beta_lm_tools Set Up Guide that can be downloaded from the BETA CAE Systems secure web-server.

3.3. Configure SPDRM Server Firewall Settings

Ensure that the following ports are open.

Port	Listener	Description
8080	HTTP	The SPDRM application server listens for HTTP requests on this port. To access deployed Web services, clients (e.g. SPDRM Client, ANSA, META) connect to this port.
9990	HTTP API	The web console is served through the same port as the HTTP management API. It can be accessed by pointing your browser to: `http://<host>:9990/console`.

<u>NOTE:</u> The aforementioned ports refer to the default ports used by the SPDRM Installer. The SPDRM Installer provides the option to define an offset for those two ports. If an offset is going to be used on the installer, please make sure that the respective ports will be open, for example if ***offset = 10000***, ports ***18080*** and ***19990*** must be open.

<u>NOTE:</u> If an HTTPS communication is going to be established for the SPDRM Server, then make sure that the ports ***8443*** and ***9993*** are also open. The previous note has an effect here too, so the offset must be taken under consideration for the HTTPS configuration.

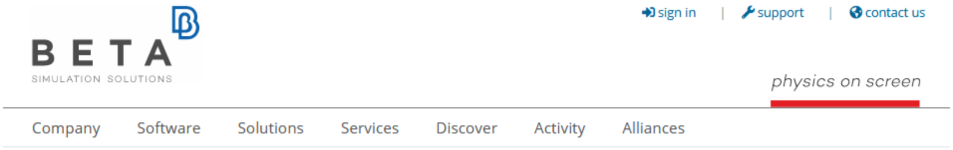
4. SPDRM Installation

4.1. Preparation

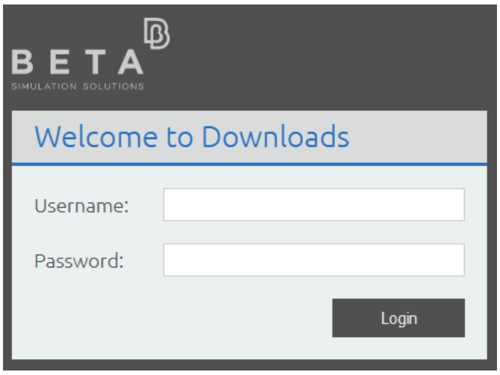
1. Make sure that the beta_lm license daemon and the corresponding license.dat file are properly installed on the machines that are specified as license server(s).
2. Create a user account (or select an existing) to act as the “SPDRM administrator”. This user will perform the SPDRM installation, maintenance and administration. For the SPDRM installation on Windows OS this user needs to have administrative privileges (i.e. be a member of the Administrators group).
3. Log-in to the SPDRM Server machine as the user that was created/selected in the previous step (i.e. the “SPDRM administrator”).
4. Additionally, for Windows SPDRM Servers only, create a new local user group with the name “SPDRM_users” and add to this group all the users that are going to use SPDRM
   (For information about creating a user group, see: http://windows.microsoft.com/en-us/windows/user-groups).

4.2. Download the SPDRM package

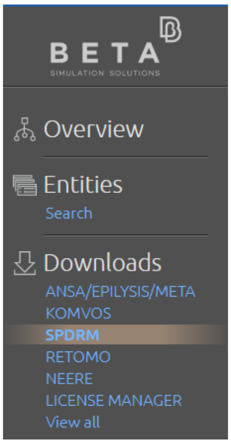
1. Visit the website of BETA CAE Systems (http://www.beta-cae.com/).
2. Access the BETA CAE Systems secure web-server by selecting the “*sign in*” option, at the top-right hand side.



3. Login to the BETA CAE Systems secure web-server.



4. Access the SPDRM downloads folder by clicking on the ***Downloads>SPDRM*** item on the tree.



5. From the SPDRM downloads folder, access the folder ***SPDRM_v1.8.0***.
6. Download the ***SPDRM_v1.8.0_linux_Wildfly.tar.gz*** (for Linux) or ***SPDRM_v1.8.0_windows_Wildfly.zip*** (for Windows).

4.3. Configure Database

1. Copy the SPDRM installation package (i.e. ***SPDRM_v1.8.0_linux_Wildfly.tar.gz***, or ***SPDRM_v1.8.0_windows_Wildfly.zip***) in the desired SPDRM installation directory (from now on it will be referenced as: `SPDRM_INSTALL_DIR`).
2. Extract the SPDRM installation package.

4.3.1. Configure MySQL Database

1. Open a terminal window and change directory to: ***[MYSQL_INSTALL_DIR]/bin/***
2. Run the following commands:
   - `mysql -u root -p < [SPDRM_INSTALL_DIR]/db_configuration/MySQL/mysql_init.sql`
   - `mysql -u root -p taxisdb < [SPDRM_INSTALL_DIR]/db_configuration/MySQL/taxisdbclean.sql`

   NOTE: When you are prompted for password, enter the MySQL root password.

4.3.2. Configure Oracle Database

1. Open a terminal window and change directory to: ***[ORACLE_INSTALL_DIR]/BIN/*** (e.g. `cd /opt/oracle/BIN/`)
2. Login to Oracle database via SQL Plus with SYSDBA privileges, using the following command:
   - `sqlplus / as sysdba`
3. Create the SPDRM user (schema) and grant the appropriate privileges, by running the following SQL command:
   - `@ [SPDRM_INSTALL_DIR]/db_configuration/Oracle/oracle_create_spdrm_user.sql`
4. Get the directory path of the *DATA_PUMP_DIR*, by executing the following SQL query:
   - `SELECT DIRECTORY_PATH FROM DBA_DIRECTORIES WHERE DIRECTORY_NAME='DATA_PUMP_DIR';`
5. Copy the `oracle_clean_spdrm.dmp` file (located in: `[SPDRM_INSTALL_DIR]/db_configuration/Oracle/`) to the *DATA_PUMP_DIR* directory (as resulted in the previous step).
6. Exit from SQL Plus
7. Import the required tables to the SPDRM schema, by running the following command:
   - `impdp SYSTEM remap_schema=SPDRM180:SPDRM directory=DATA_PUMP_DIR remap_tablespace=SPDRM_tbs:SPDRM_TABLESPACE dumpfile=oracle_clean_spdrm.dmp logfile=impdp_spdrm.log`

     where:
     - SPDRM180: is the source schema
     - SPDRM: is the target schema
     - SPDRM_tbs: is the source tablespace
     - SPDRM_TABLESPACE: is the target tablespace
     - oracle_clean_spdrm.dmp: is the dmp file provided by BETA CAE Systems as the original clean schema file
     - impdp_spdrm.log: is the name for the log file to be created for the impdp functionality

   NOTE: When you are prompted for password, enter the Oracle Administrative (SYS) password.

   NOTE: For Oracle 19c you must define the pluggable database also during import in the aforementioned command. Use for example:

   ```
   SYSTEM/<password>@pdb1
   ```

   instead of `SYSTEM`, where pdb1 is the name of the pluggable database that has been set up.

> **IMPORTANT:** The import command can be executed, even if the SPDRM Administrator doesn't have administrator's access to the database. The creation of the SPDRM user on Step 3 and the privileges given to the user by the Oracle Database Administrator are enough, so that the import command is able to be executed by the SPDRM user.
>
> More information and step-by-step guide for the creation of the SPDRM user and the applied privileges can be found in the ***oracle_pre_configuration.txt*** file, located in the following directory:
>
> *[SPDRM_INSTALL_DIR]/db_configuration/Oracle/*
>
> The import command for the SPDRM user can be found on Step 4 of the same file.

4.4. Install SPDRM

The SPDRM Installation is performed by the SPDRM Installer that can be executed by the installSPDRM.sh (shell script) for Linux installation and by the installSPDRM.bat (batch script) for Windows installation.

The installSPDRM.bat script for Windows installation can only perform SPDRM installation using graphics (GUI mode).

The installSPDRM.sh script for Linux installation can be executed in 3 modes:

- **Mode 1: Installation using graphics (Default)** – Graphical User Interface guides the Administrator through all the necessary steps for the completion of the installation.

- **Mode 2: Command Line installation** – Enables the SPDRM installation without the use of graphics. The Administrator can perform a GUI-less installation through an interactive command line process. All information needed for the installation is given by the Administrator via keyboard.

- **Mode 3: Unattended installation** – Enables the SPDRM installation by giving all the information needed in a configuration file. When the installer is executed, information is retrieved by parsing the configuration file and an unattended installation is performed, without any user interaction.

The following sub-chapters describe analytically the installation procedure for each of the available installation modes.

NOTE: The application server that is used for the deployment of the SPDRM Server is **WildFly 14**.

4.4.1. How to install SPDRM on Linux using graphics

1. Run the ***installSPDRM.sh*** (shell script) to start the SPDRM Installer.

   The command:

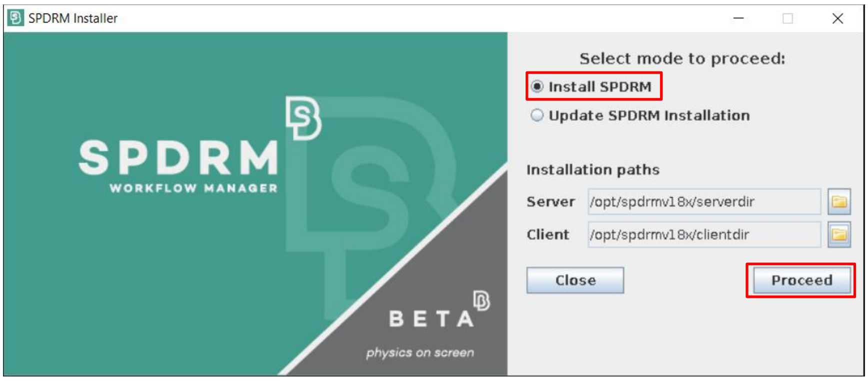
   ```
   ./installSPDRM.sh
   ```

   is equivalent to the mode selection command:

   ```
   ./installSPDRM.sh –m 1
   ```

   since GUI mode is the default installation mode.

2. Select the "*Install SPDRM*" option and press the "*Proceed*" button.



Select mode to proceed:

● Install SPDRM

○ Update SPDRM Installation

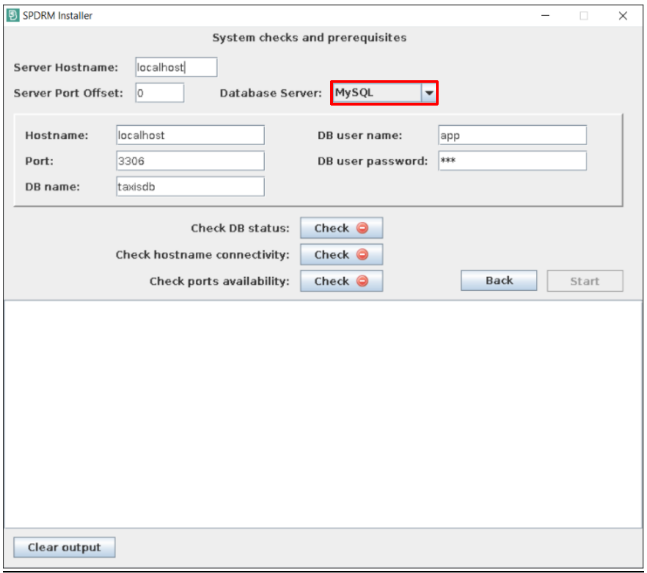
Installation paths

Server /opt/spdrmv18x/serverdir

Client /opt/spdrmv18x/clientdir

3. On the **System checks and prerequisites** window, the Administrator must define
   - Server Hostname (e.g. localhost, laptop-178, jupiter)
   - Server Port Offset : The port offset from the default ports 8080 for SPDRM Server and 9990 for Wildfly application server
   - Database Server : Selection between MySQL and Oracle database servers (as well as Version for Oracle database)

4. During the first step of the installation procedure the following system checks are performed.
   - Check status and connectivity to the Database. A slightly different form needs to be filled-in depending on the type of the database server, MySQL or Oracle.
   - Check connectivity to the SPDRM Server.
   - Check Server Port availability.



SPDRM Installer

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0 Database Server: MySQL

Hostname: localhost DB user name: app

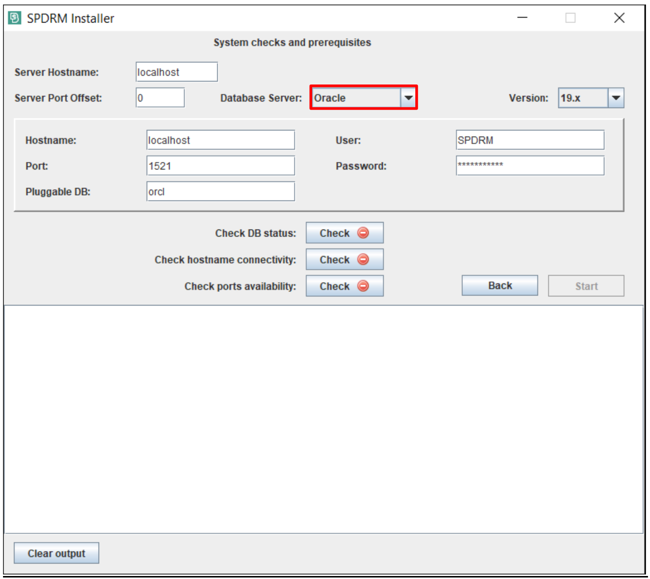
Port: 3306 DB user password: ***

DB name: taxisdb

Check DB status: Check
Check hostname connectivity: Check
Check ports availability: Check
Back
Start
Clear output

NOTE: The Hostname, Port (default: 3306), DB name, DB user name and DB user password for the MySQL database need to be filled-in before pressing the "*Check*" button.

- Hostname = localhost (or hostname)
- Port = 3306
- DB name = taxisdb
- DB user name = app
- DB user password = app



SPDRM Installer

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0 Database Server: Oracle Version: 19.x

Hostname: localhost User: SPDRM

Port: 1521 Password: ***********

Pluggable DB: orcl

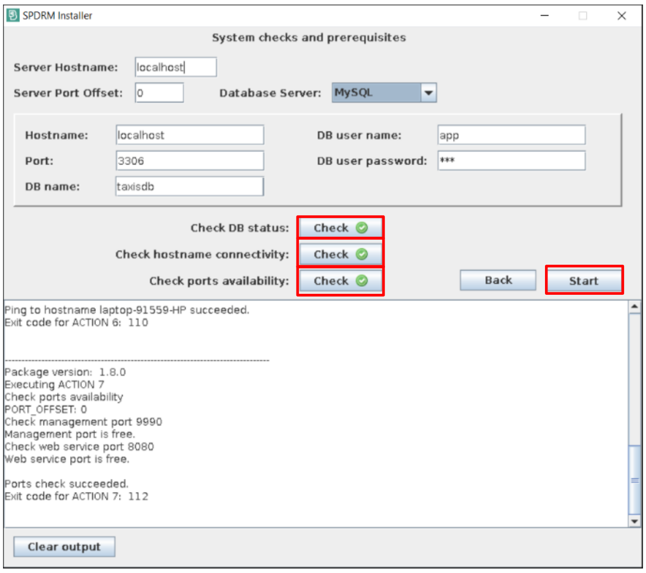
Check DB status: Check
Check hostname connectivity: Check
Check ports availability: Check
Back
Start
Clear output

NOTE: The Hostname, Port (default: 1521), Global DB Name, User and Password for the Oracle database need to be filled-in before pressing the "*Check*" button.

- Hostname = HOST*
- Port = PORT*
- Global DB Name = SERVICE_NAME*
- User = SPDRM
- Password = spdrm

*The HOST, PORT and SERVICE_NAME can be found in the `tnsnames.ora` file that is located in: `[ORACLE_INSTALL_DIR]/NETWORK/ADMIN`.

5. After performing successfully all these checks the "*Start*" button is activated. Press the "*Start*" button to start the installation procedure.



SPDRM Installer

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0 Database Server: MySQL

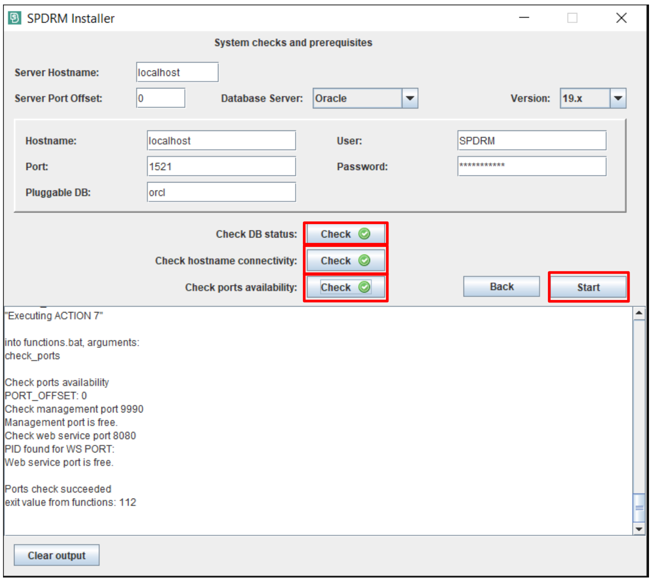
Hostname: localhost DB user name: app

Port: 3306 DB user password: ***

DB name: taxisdb

Check DB status: Check
Check hostname connectivity: Check
Check ports availability: Check
Back
Start
Clear output

```
Ping to hostname laptop-91559-HP succeeded.
Exit code for ACTION 6:  110


--------------------------------------------------------------------------------
Package version:  1.8.0
Executing ACTION 7
Check ports availability
PORT_OFFSET: 0
Check management port 9990
Management port is free.
Check web service port 8080
Web service port is free.

Ports check succeeded.
Exit code for ACTION 7:  112
```



SPDRM Installer

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0 Database Server: Oracle Version: 19.x

Hostname: localhost User: SPDRM

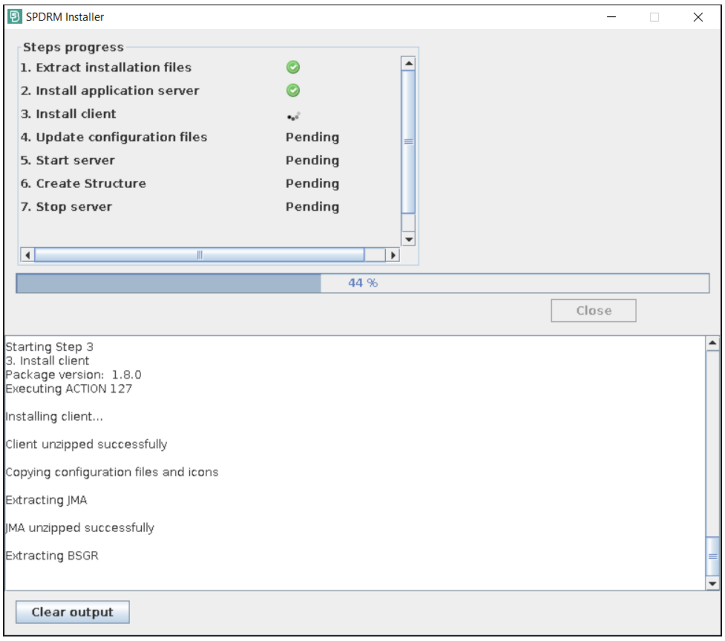
Port: 1521 Password: ***********

Pluggable DB: orcl

Check DB status: Check
Check hostname connectivity: Check
Check ports availability: Check
Back
Start
Clear output

```
"Executing ACTION 7"

into functions.bat, arguments:
check_ports

Check ports availability
PORT_OFFSET: 0
Check management port 9990
Management port is free.
Check web service port 8080
PID found for WS PORT:
Web service port is free.

Ports check succeeded
exit value from functions: 112
```

6. During the installation procedure the following actions will be performed.
   - Extraction of the installation files.
     (The installation files are extracted inside the ***spdrm_installation*** directory that will be selected on the previous step).
   - Validation of Java environment.
   - Installation of the SPDRM Application Server (i.e. WildFly).
   - Installation of the SPDRM Client.
   - Start of the server.
   - Creation of the data model.
   - Stop of the server



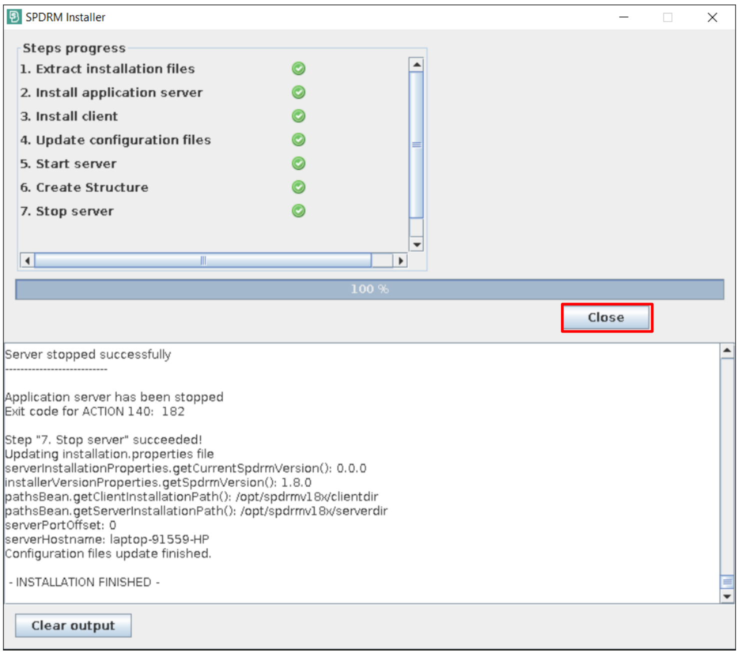
Steps progress

1. Extract installation files	✓
2. Install application server	✓
3. Install client	
4. Update configuration files	Pending
5. Start server	Pending
6. Create Structure	Pending
7. Stop server	Pending

44 %

```
Starting Step 3
3. Install client
Package version:  1.8.0
Executing ACTION 127

Installing client...

Client unzipped successfully

Copying configuration files and icons

Extracting JMA

JMA unzipped successfully

Extracting BSGR
```

7. After performing successfully all these checks the “*Start*” button is activated.
   Press the “*Start*” button to start the installation procedure.



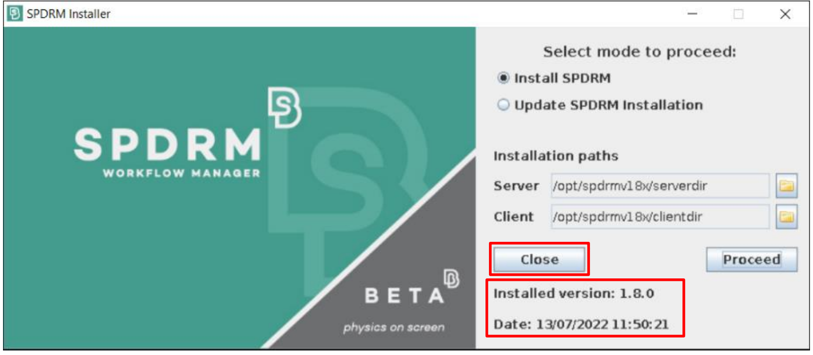
Steps progress

1. Extract installation files	✓
2. Install application server	✓
3. Install client	✓
4. Update configuration files	✓
5. Start server	✓
6. Create Structure	✓
7. Stop server	✓

100 %

```
Server stopped successfully
--------------------------

Application server has been stopped
Exit code for ACTION 140:  182

Step "7. Stop server" succeeded!
Updating installation.properties file
serverInstallationProperties.getCurrentSpdrmVersion(): 0.0.0
installerVersionProperties.getSpdrmVersion(): 1.8.0
pathsBean.getClientInstallationPath(): /opt/spdrmv18x/clientdir
pathsBean.getServerInstallationPath(): /opt/spdrmv18x/serverdir
serverPortOffset: 0
serverHostname: laptop-91559-HP
Configuration files update finished.

 - INSTALLATION FINISHED -
```

8. After performing successfully the SPDRM installation, the version and date of the installation appear on the main window of the SPDRM Installer.
   Press the “*Close*” button to exit the installation procedure.



Select mode to proceed:

● Install SPDRM

○ Update SPDRM Installation

Installation paths

Server: /opt/spdrmv18x/serverdir

Client: /opt/spdrmv18x/clientdir

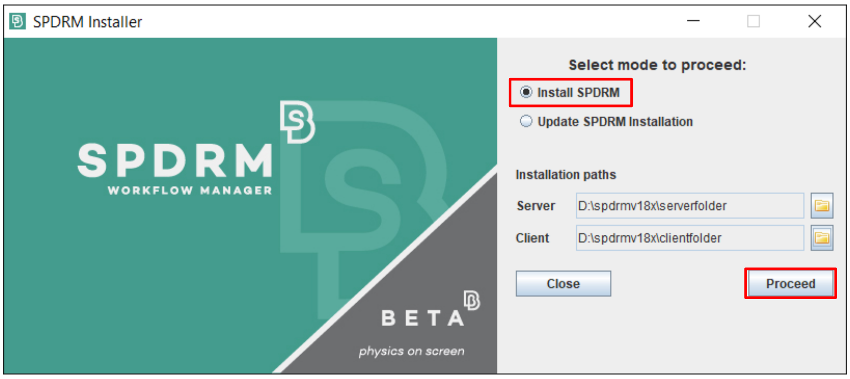
Installed version: 1.8.0

Date: 13/07/2022 11:50:21

4.4.2. How to install SPDRM on Windows

1. Run the ***installSPDRM.bat*** to start the SPDRM Installer.

2. Select the "*Install SPDRM*" option and press the "*Proceed*" button.



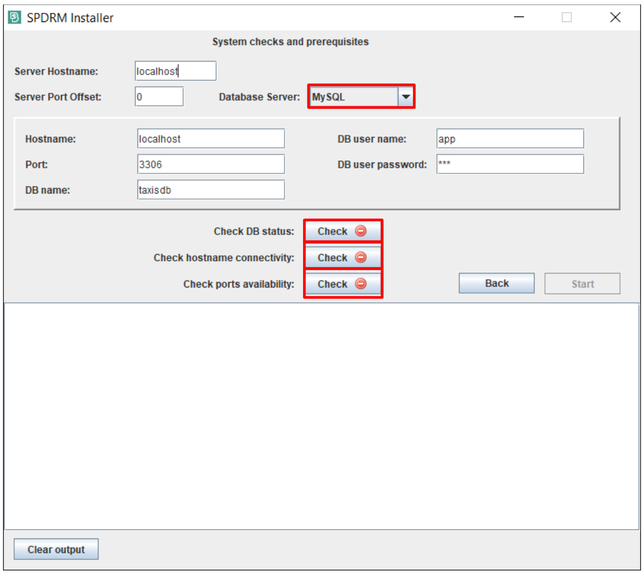
Select mode to proceed:
● Install SPDRM
○ Update SPDRM Installation

Installation paths
Server: D:\spdrmv18x\serverfolder
Client: D:\spdrmv18x\clientfolder

3. On the **System checks and prerequisites** window, the Administrator must define:

    - Server Hostname (e.g. localhost, laptop-178, jupiter)
    - Server Port Offset : The port offset from the default ports 8080 for SPDRM Server and 9990 for Wildfly application server.
    - Database Server : Selection between MySQL and Oracle database servers (as well as Version for Oracle database).

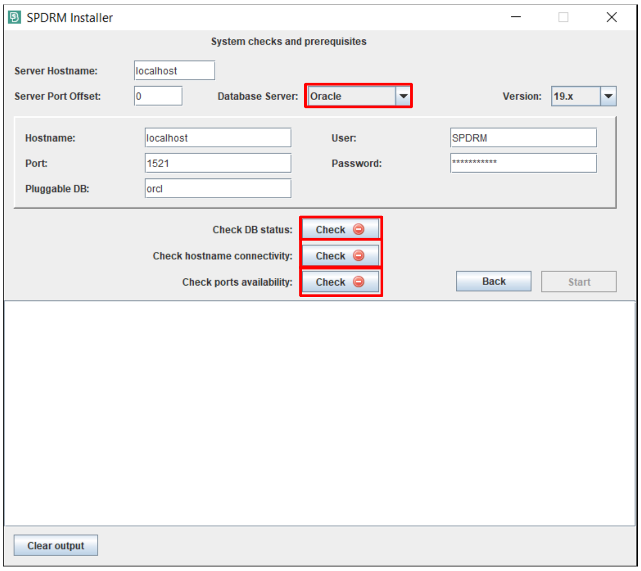
4. During the first step of the installation procedure the following system checks are performed.
    - Check status and connectivity to the Database. A slightly different form needs to be filled-in depending on the type of the database server, MySQL or Oracle.
    - Check connectivity to the SPDRM Server.
    - Check Server Port availability.



System checks and prerequisites
Server Hostname: localhost
Server Port Offset: 0
Database Server: MySQL
Hostname: localhost
Port: 3306
DB name: taxisdb
DB user name: app
DB user password: ***
Check DB status:
Check hostname connectivity:
Check ports availability:

<u>NOTE:</u> The Hostname, Port (default: 3306), DB name, DB user name and DB user password for the MySQL database need to be filled-in before pressing the "*Check*" button.

- Hostname = localhost (or hostname)
- Port = 3306
- DB name = taxisdb
- DB user name = app
- DB user password = app



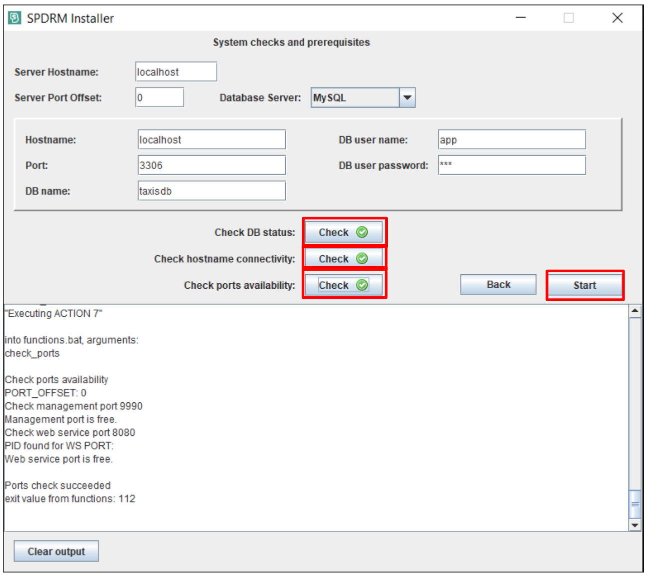
System checks and prerequisites
Server Hostname: localhost
Server Port Offset: 0
Database Server: Oracle
Version: 19.x
Hostname: localhost
Port: 1521
Pluggable DB: orcl
User: SPDRM
Password: ***********
Check DB status:
Check hostname connectivity:
Check ports availability:

<u>NOTE:</u> The Hostname, Port (default: 1521), Global DB Name, User and Password for the Oracle database need to be filled-in before pressing the "*Check*" button.

- Hostname = HOST*
- Port = PORT*
- Global DB Name = SERVICE_NAME*
- User = SPDRM
- Password = spdrm

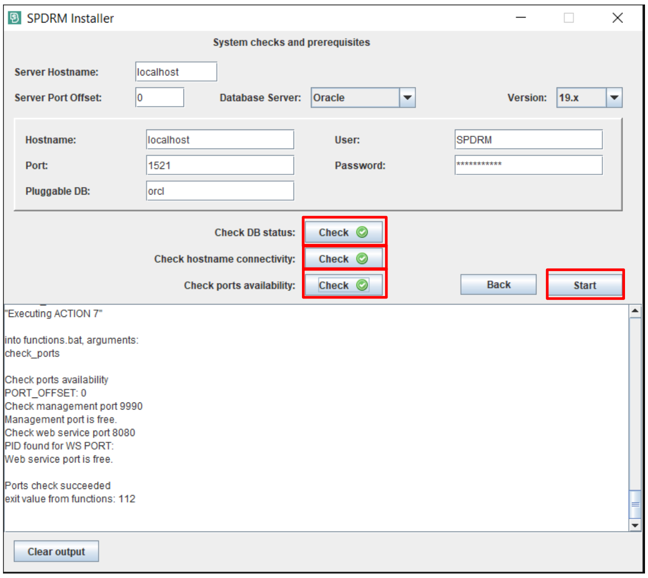
*The HOST, PORT and SERVICE_NAME can be found in the `tnsnames.ora` file that is located in: `[ORACLE_INSTALL_DIR]/NETWORK/ADMIN.`

5. After performing successfully all these checks the "*Start*" button is activated.
   Press the "*Start*" button to start the installation procedure.



Server Hostname: localhost
Server Port Offset: 0
Database Server: MySQL
Hostname: localhost
Port: 3306
DB name: taxisdb
DB user name: app
DB user password: ***
Check DB status: Check ✓
Check hostname connectivity: Check ✓
Check ports availability: Check ✓

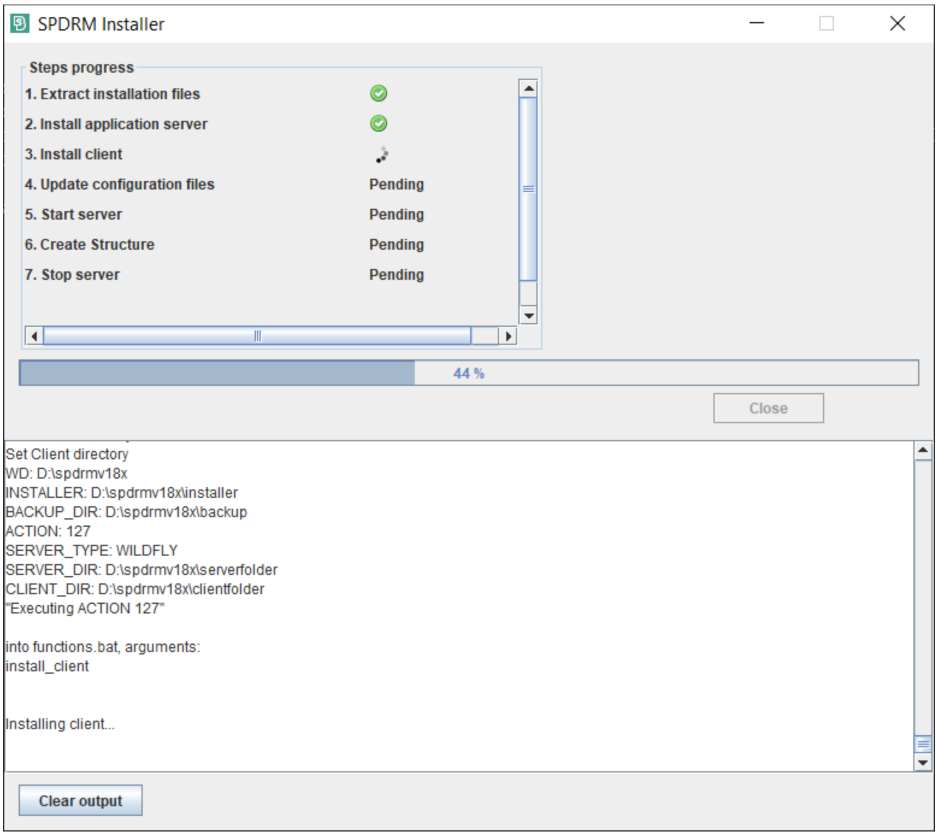
```
"Executing ACTION 7"

into functions.bat, arguments:
check_ports

Check ports availability
PORT_OFFSET: 0
Check management port 9990
Management port is free.
Check web service port 8080
PID found for WS PORT:
Web service port is free.

Ports check succeeded
exit value from functions: 112
```



Server Hostname: localhost
Server Port Offset: 0
Database Server: Oracle
Version: 19.x
Hostname: localhost
Port: 1521
Pluggable DB: orcl
User: SPDRM
Password: ***********
Check DB status: Check ✓
Check hostname connectivity: Check ✓
Check ports availability: Check ✓

```
"Executing ACTION 7"

into functions.bat, arguments:
check_ports

Check ports availability
PORT_OFFSET: 0
Check management port 9990
Management port is free.
Check web service port 8080
PID found for WS PORT:
Web service port is free.

Ports check succeeded
exit value from functions: 112
```

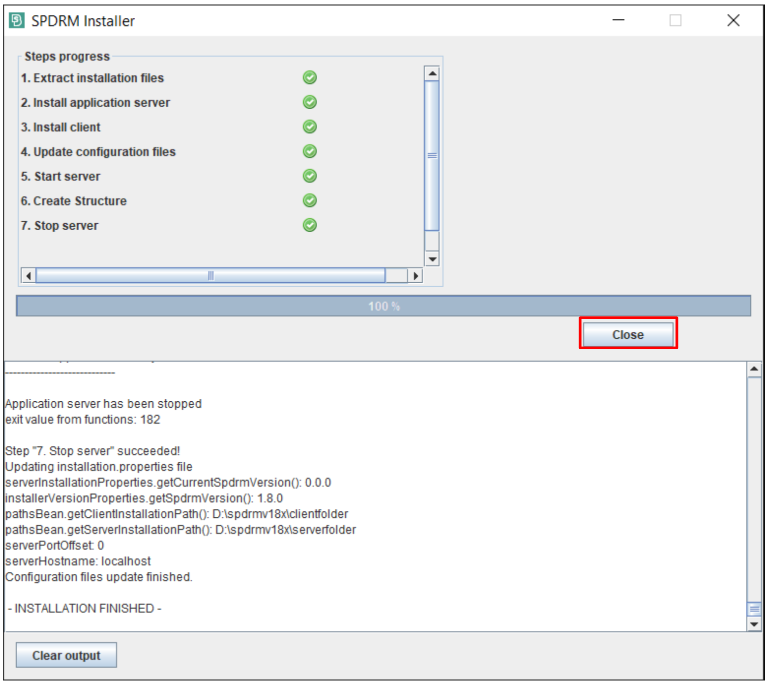
6. During the installation procedure the following actions will be performed.
   - Extraction of the installation files
     (The installation files are extracted inside the ***spdrm_installation*** directory that will be selected on the previous step).
   - Validation of Java environment.
   - Installation of the SPDRM Application Server (i.e. WildFly).
   - Installation of the SPDRM Client.
   - Start of the server.
   - Creation of the data model.
   - Stop of the server



1. Extract installation files ✓
2. Install application server ✓
3. Install client
4. Update configuration files Pending
5. Start server Pending
6. Create Structure Pending
7. Stop server Pending

```
Set Client directory
WD: D:\spdrmv18x
INSTALLER: D:\spdrmv18x\installer
BACKUP_DIR: D:\spdrmv18x\backup
ACTION: 127
SERVER_TYPE: WILDFLY
SERVER_DIR: D:\spdrmv18x\serverfolder
CLIENT_DIR: D:\spdrmv18x\clientfolder
"Executing ACTION 127"

into functions.bat, arguments:
install_client


Installing client...
```

7. After performing successfully all the steps of the installation procedure, the “*Close*” button is activated. Press the “*Close*” button to return to the main window of the SPDRM Installer.

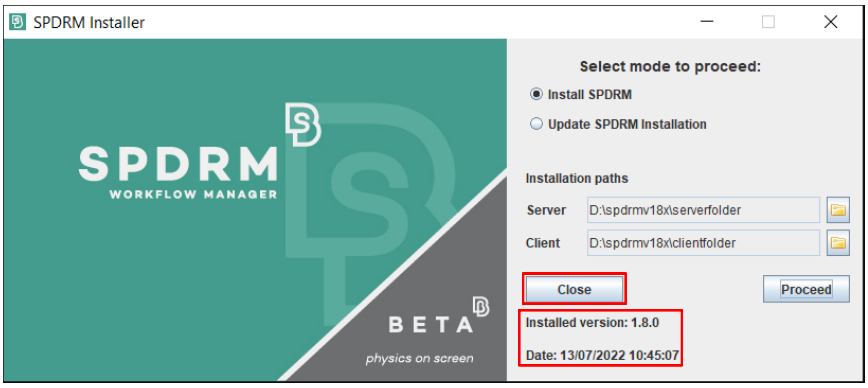


Steps progress
1. Extract installation files ✓
2. Install application server ✓
3. Install client ✓
4. Update configuration files ✓
5. Start server ✓
6. Create Structure ✓
7. Stop server ✓

100 %

```
----------------------------

Application server has been stopped
exit value from functions: 182

Step "7. Stop server" succeeded!
Updating installation.properties file
serverInstallationProperties.getCurrentSpdrmVersion(): 0.0.0
installerVersionProperties.getSpdrmVersion(): 1.8.0
pathsBean.getClientInstallationPath(): D:\spdrmv18x\clientfolder
pathsBean.getServerInstallationPath(): D:\spdrmv18x\serverfolder
serverPortOffset: 0
serverHostname: localhost
Configuration files update finished.

 - INSTALLATION FINISHED -
```

8. After performing successfully the SPDRM installation the Installed version and the Date of installation appear on the main window of the SPDRM Installer.
Press the “*Close*” button to exit the installation procedure.



Select mode to proceed:
● Install SPDRM
○ Update SPDRM Installation

Installation paths
Server D:\spdrmv18x\serverfolder
Client D:\spdrmv18x\clientfolder

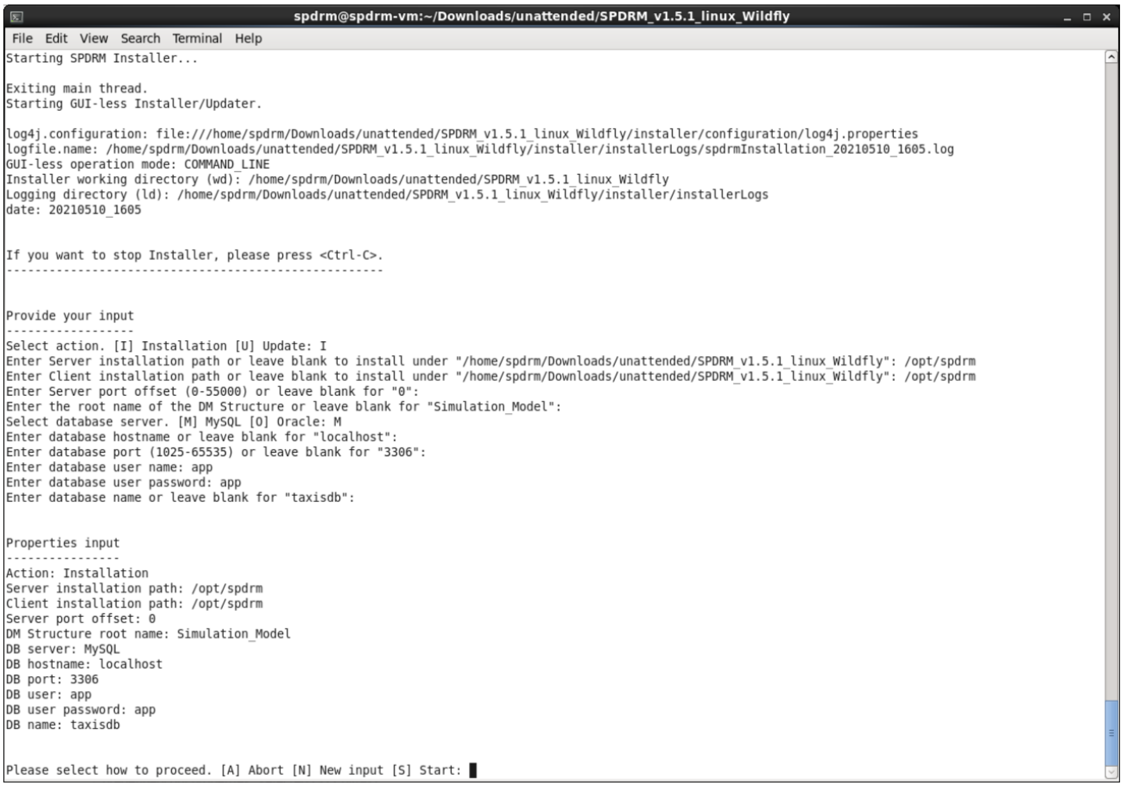
Installed version: 1.8.0
Date: 13/07/2022 10:45:07

4.4.3. How to install SPDRM on Linux via Command Line

Command line installation can be started by running the command:

```
./installSPDRM.sh –m 2
```

where **m** defines the mode. When the command is executed the **Provide your input** field appears in the terminal:


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```
Starting SPDRM Installer...

Exiting main thread.
Starting GUI-less Installer/Updater.

log4j.configuration: file:///home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/installer/configuration/log4j.properties
logfile.name: /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/installer/installerLogs/spdrmInstallation_20210510_1605.log
GUI-less operation mode: COMMAND_LINE
Installer working directory (wd): /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
Logging directory (ld): /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/installer/installerLogs
date: 20210510_1605


If you want to stop Installer, please press <Ctrl-C>.
-----------------------------------------------------


Provide your input
------------------
Select action. [I] Installation [U] Update: I
Enter Server installation path or leave blank to install under "/home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly": /opt/spdrm
Enter Client installation path or leave blank to install under "/home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly": /opt/spdrm
Enter Server port offset (0-55000) or leave blank for "0":
Enter the root name of the DM Structure or leave blank for "Simulation_Model":
Select database server. [M] MySQL [O] Oracle: M
Enter database hostname or leave blank for "localhost":
Enter database port (1025-65535) or leave blank for "3306":
Enter database user name: app
Enter database user password: app
Enter database name or leave blank for "taxisdb":


Properties input
----------------
Action: Installation
Server installation path: /opt/spdrm
Client installation path: /opt/spdrm
Server port offset: 0
DM Structure root name: Simulation_Model
DB server: MySQL
DB hostname: localhost
DB port: 3306
DB user: app
DB user password: app
DB name: taxisdb


Please select how to proceed. [A] Abort [N] New input [S] Start: █
```

Initially, the system administrator must select the action between:

- **Installation [I]**
- **Update [U]**

When Installation is selected, the administrator must provide all necessary information needed for the installation.

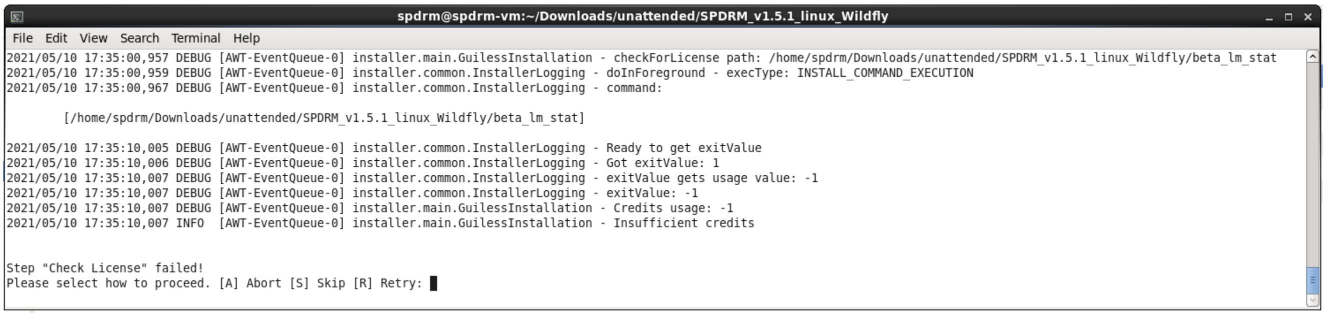
Terminal cursor continues to next line, only if the previous line is filled with the value needed. Some of the asked values, such as **database name** or **database port** are optional. If **Enter** is pressed on the optional line, the SPDRM Installer will use the default values referred.

When all information is provided, a summary of the given values is presented in the terminal and the administrator is asked to select how to process:

- **[A] Abort** - The option will cancel the installation.
- **[N] New input** - The option will start the info prompt procedure from the beginning asking for new values.
- **[S] Start** - The option will instantiate the installation procedure.

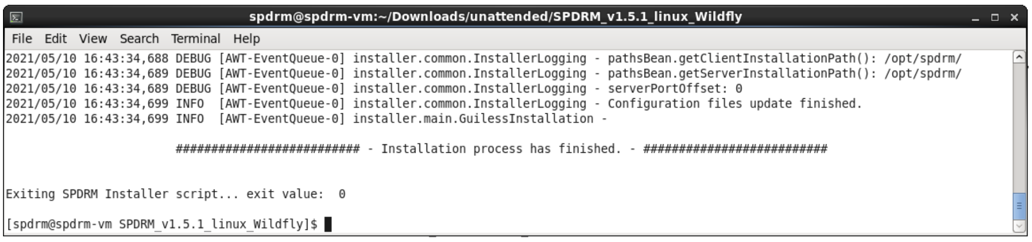
If something goes wrong during the checks or the procedure, the terminal asks the administrator for one of the following actions:

- **[A] Abort** - The option will cancel the installation.
- **[S] Skip** - The option will skip the check or step, endangering however the successful completion.
- **[R] Retry** - If the problem can be detected and fixed (e.g. if beta_lm service is not running and started), the administrator can try with the current option to perform again the installation.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File
Edit
View
Search
Terminal
Help

```
2021/05/10 17:35:00,957 DEBUG [AWT-EventQueue-0] installer.main.GuilessInstallation - checkForLicense path: /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/beta_lm_stat
2021/05/10 17:35:00,959 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - doInForeground - execType: INSTALL_COMMAND_EXECUTION
2021/05/10 17:35:00,967 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - command:

        [/home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/beta_lm_stat]

2021/05/10 17:35:10,005 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - Ready to get exitValue
2021/05/10 17:35:10,006 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - Got exitValue: 1
2021/05/10 17:35:10,007 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - exitValue gets usage value: -1
2021/05/10 17:35:10,007 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - exitValue: -1
2021/05/10 17:35:10,007 DEBUG [AWT-EventQueue-0] installer.main.GuilessInstallation - Credits usage: -1
2021/05/10 17:35:10,007 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Insufficient credits


Step "Check License" failed!
Please select how to proceed. [A] Abort [S] Skip [R] Retry: 
```

When the procedure terminates successfully, the successful exit value will appear in terminal.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File
Edit
View
Search
Terminal
Help

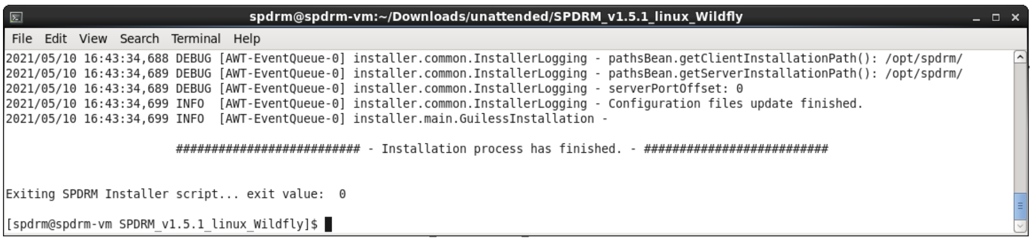
```
2021/05/10 16:43:34,688 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getClientInstallationPath(): /opt/spdrm/
2021/05/10 16:43:34,689 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getServerInstallationPath(): /opt/spdrm/
2021/05/10 16:43:34,689 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - serverPortOffset: 0
2021/05/10 16:43:34,699 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - Configuration files update finished.
2021/05/10 16:43:34,699 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation -

                        ########################## - Installation process has finished. - ##########################


Exiting SPDRM Installer script... exit value:  0

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$ 
```

4.4.4. How to install SPDRM on Linux with Unattended Installation

The unattended installation mode enables the SPDRM installation with no interaction by the user. All information needed for the installation is given in a configuration file, named **predefinedconf.properties,** and the user can perform the installation by executing the command:

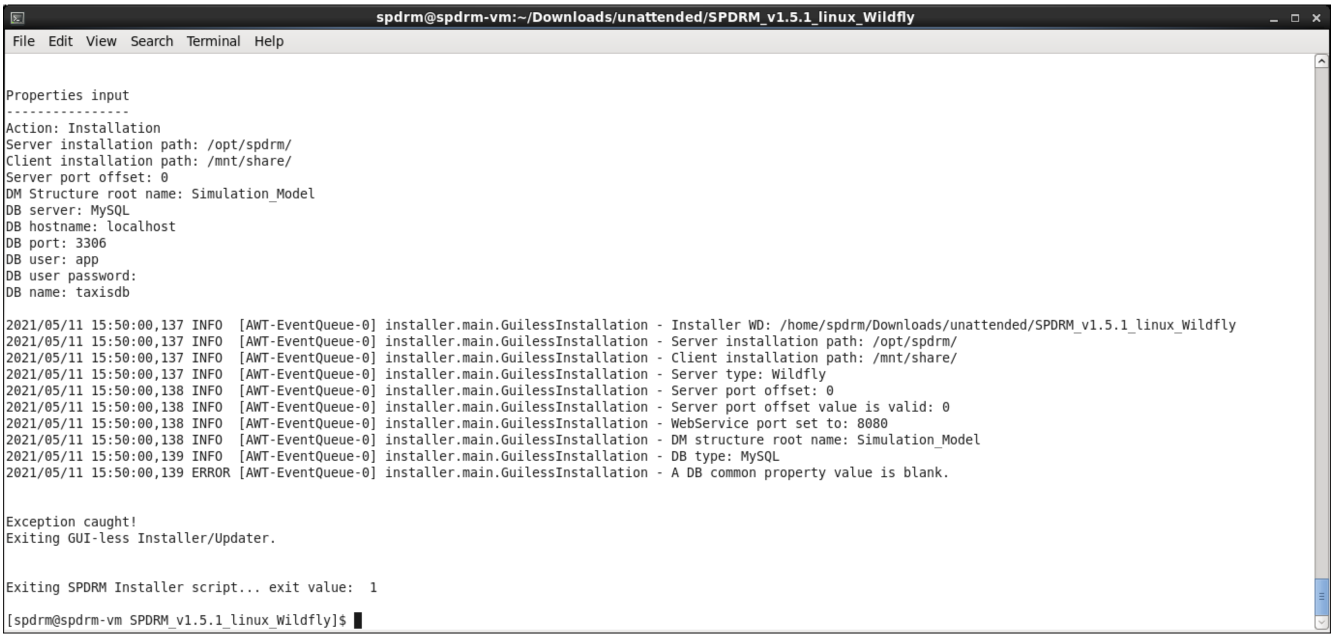
```
./installSPDRM –m 3 –f [SPDRM_INSTALL_DIR]/installer/configuration/predefinedconf.properties
```

The SPDRM Installer will read all the necessary information from the file and if all values given are correct, the full installation will take place and the successful exit value will appear in terminal.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```
2021/05/10 16:43:34,688 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getClientInstallationPath(): /opt/spdrm/
2021/05/10 16:43:34,689 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getServerInstallationPath(): /opt/spdrm/
2021/05/10 16:43:34,689 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - serverPortOffset: 0
2021/05/10 16:43:34,699 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - Configuration files update finished.
2021/05/10 16:43:34,699 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation -

                        ######################### - Installation process has finished. - #########################


Exiting SPDRM Installer script... exit value:  0

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$
```

When the Unattended installation starts, a **Properties input** summary always appears in the terminal with all the values read by the configuration file. If any value given in the configuration file is mistaken or is missing, then the SPDRM Installer will exit with the error **exit value 1** and erroneous value will be displayed accordingly. The following example displays an exit error code due to missing **DB user password** value:

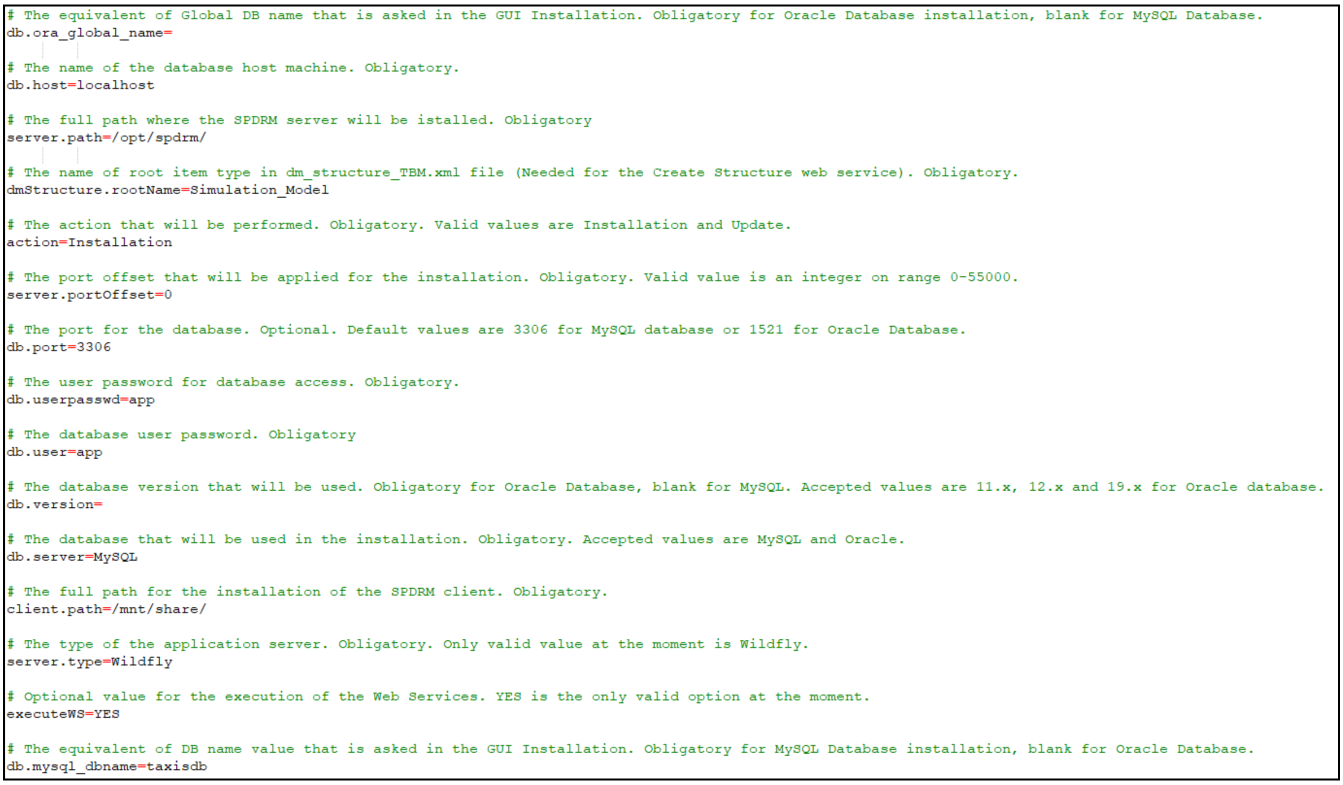

spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```


Properties input
----------------
Action: Installation
Server installation path: /opt/spdrm/
Client installation path: /mnt/share/
Server port offset: 0
DM Structure root name: Simulation_Model
DB server: MySQL
DB hostname: localhost
DB port: 3306
DB user: app
DB user password:
DB name: taxisdb

2021/05/11 15:50:00,137 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Installer WD: /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
2021/05/11 15:50:00,137 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Server installation path: /opt/spdrm/
2021/05/11 15:50:00,137 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Client installation path: /mnt/share/
2021/05/11 15:50:00,137 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Server type: Wildfly
2021/05/11 15:50:00,138 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Server port offset: 0
2021/05/11 15:50:00,138 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - Server port offset value is valid: 0
2021/05/11 15:50:00,138 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - WebService port set to: 8080
2021/05/11 15:50:00,138 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - DM structure root name: Simulation_Model
2021/05/11 15:50:00,139 INFO  [AWT-EventQueue-0] installer.main.GuilessInstallation - DB type: MySQL
2021/05/11 15:50:00,139 ERROR [AWT-EventQueue-0] installer.main.GuilessInstallation - A DB common property value is blank.


Exception caught!
Exiting GUI-less Installer/Updater.


Exiting SPDRM Installer script... exit value:  1

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$
```

The sample configuration file located under path:

```
[SPDRM_INSTALL_DIR]/installer/configuration/predefinedconf.properties
```

contains information regarding each value that must be set as a comment:



```
# The equivalent of Global DB name that is asked in the GUI Installation. Obligatory for Oracle Database installation, blank for MySQL Database.
db.ora_global_name=

# The name of the database host machine. Obligatory.
db.host=localhost

# The full path where the SPDRM server will be istalled. Obligatory
server.path=/opt/spdrm/

# The name of root item type in dm_structure_TBM.xml file (Needed for the Create Structure web service). Obligatory.
dmStructure.rootName=Simulation_Model

# The action that will be performed. Obligatory. Valid values are Installation and Update.
action=Installation

# The port offset that will be applied for the installation. Obligatory. Valid value is an integer on range 0-55000.
server.portOffset=0

# The port for the database. Optional. Default values are 3306 for MySQL database or 1521 for Oracle Database.
db.port=3306

# The user password for database access. Obligatory.
db.userpasswd=app

# The database user password. Obligatory
db.user=app

# The database version that will be used. Obligatory for Oracle Database, blank for MySQL. Accepted values are 11.x, 12.x and 19.x for Oracle database.
db.version=

# The database that will be used in the installation. Obligatory. Accepted values are MySQL and Oracle.
db.server=MySQL

# The full path for the installation of the SPDRM client. Obligatory.
client.path=/mnt/share/

# The type of the application server. Obligatory. Only valid value at the moment is Wildfly.
server.type=Wildfly

# Optional value for the execution of the Web Services. YES is the only valid option at the moment.
executeWS=YES

# The equivalent of DB name value that is asked in the GUI Installation. Obligatory for MySQL Database installation, blank for Oracle Database.
db.mysql_dbname=taxisdb
```

NOTE: Detailed information for the installation modes can be found also by using the help (–h) argument in the terminal.

```
./installSPDRM –h
```

NOTE: For your convenience, store the configuration file (*predefinedconf.properties*) in order to be used for a future update with the SPDRM Installer.

4.5. Configure SPDRM Vault

A vault is automatically created by the installer in: ***[SPDRM_INSTALL_DIR]/vaults/vault1/*** and this path has been used to automatically update the server and client configuration files (please refer to the next sections).

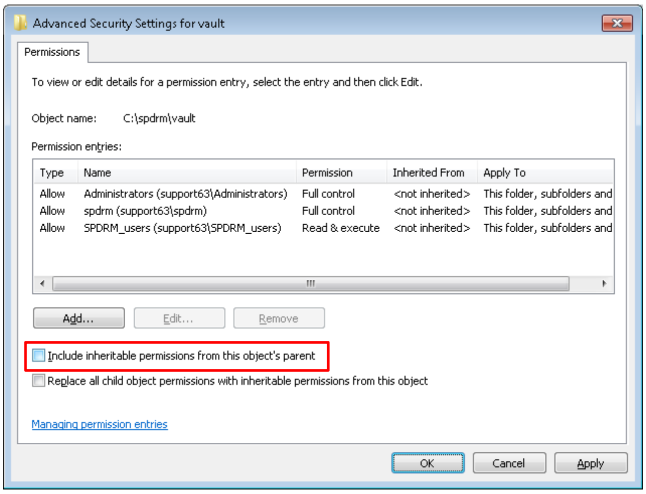
In case a new vault should be created on another location (or file system) the following steps should be performed by the "*SPDRM administrator*" user.

1. Create a "***vault***" directory, which will be used by the SPDRM Server for files storage and retrieval. It can be located at any path that is accessible by the SPDRM Server machine and allows full access to the "*SPDRM administrator*" user.

   NOTE: The option to define more than one vault (in different file systems) is supported by the SPDRM Server.

   After creating this directory the following permissions need to be set:

   - Linux: 711 (rwx--x--x)
   - Windows: Remove the inherited parent permissions, by unchecking the "*Include inheritable permission's from this object's parent*" check-box in the *Advanced Security Settings* for this folder (*Properties > Security > Advanced > Change Permissions…*).



Advanced Security Settings for vault

Permissions

To view or edit details for a permission entry, select the entry and then click Edit.

Object name: C:\spdrm\vault

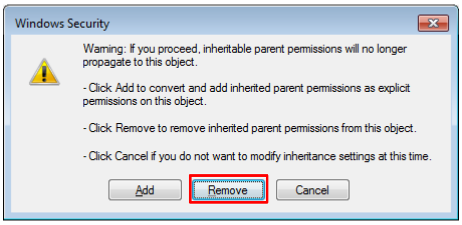
Permission entries:

Type	Name	Permission	Inherited From	Apply To
Allow	Administrators (support63\Administrators)	Full control	<not inherited>	This folder, subfolders and
Allow	spdrm (support63\spdrm)	Full control	<not inherited>	This folder, subfolders and
Allow	SPDRM_users (support63\SPDRM_users)	Read & execute	<not inherited>	This folder, subfolders and

□ Include inheritable permissions from this object's parent

□ Replace all child object permissions with inheritable permissions from this object

Press the "*Remove*" button in the pop-up window.



Windows Security

Warning: If you proceed, inheritable parent permissions will no longer propagate to this object.

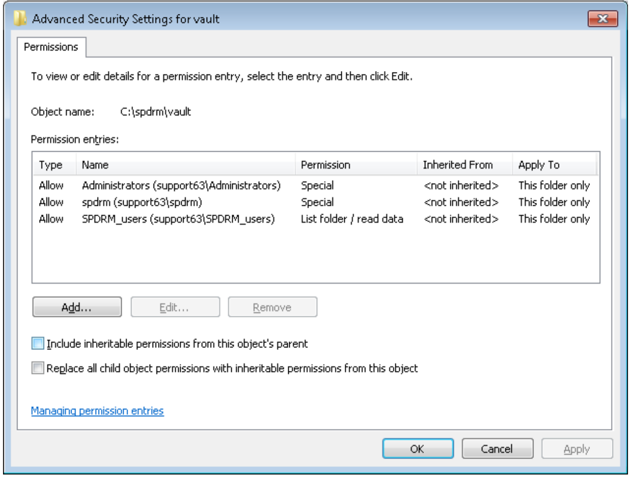
- Click Add to convert and add inherited parent permissions as explicit permissions on this object.

- Click Remove to remove inherited parent permissions from this object.

- Click Cancel if you do not want to modify inheritance settings at this time.

Then, add the following permissions that should be applied to this folder only:

- "*Full control*" to the "*Administrators*" group
- "*Full control*" to the "*SPDRM administrator*" user
- "*List folder / read data*" permissions to the "*SPDRM_users*" group



Advanced Security Settings for vault

Permissions

To view or edit details for a permission entry, select the entry and then click Edit.

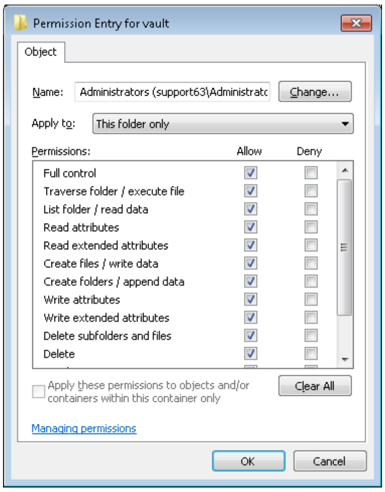
Object name: C:\spdrm\vault

Permission entries:

Type	Name	Permission	Inherited From	Apply To
Allow	Administrators (support63\Administrators)	Special	<not inherited>	This folder only
Allow	spdrm (support63\spdrm)	Special	<not inherited>	This folder only
Allow	SPDRM_users (support63\SPDRM_users)	List folder / read data	<not inherited>	This folder only

□ Include inheritable permissions from this object's parent

□ Replace all child object permissions with inheritable permissions from this object



Permission Entry for vault

Object

Name: Administrators (support63\Administratc Change...

Apply to: This folder only

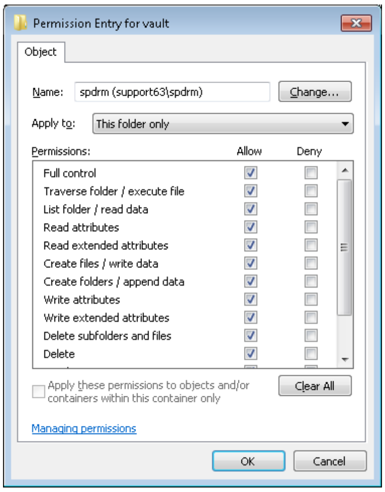
Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel



Permission Entry for vault

Object

Name: spdrm (support63\spdrm) Change...

Apply to: This folder only

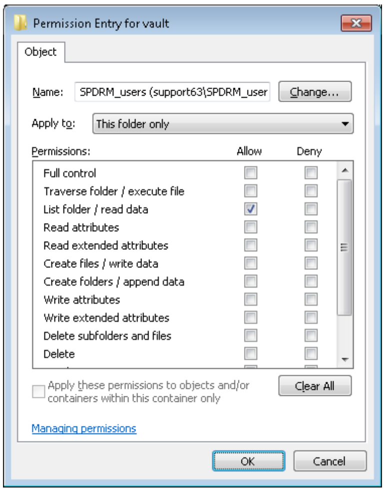
Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel



Permission Entry for vault

Object

Name: SPDRM_users (support63\SPDRM_user Change...

Apply to: This folder only

Permissions:	Allow	Deny
Full control	□	□
Traverse folder / execute file	□	□
List folder / read data	☑	□
Read attributes	□	□
Read extended attributes	□	□
Create files / write data	□	□
Create folders / append data	□	□
Write attributes	□	□
Write extended attributes	□	□
Delete subfolders and files	□	□
Delete	□	□

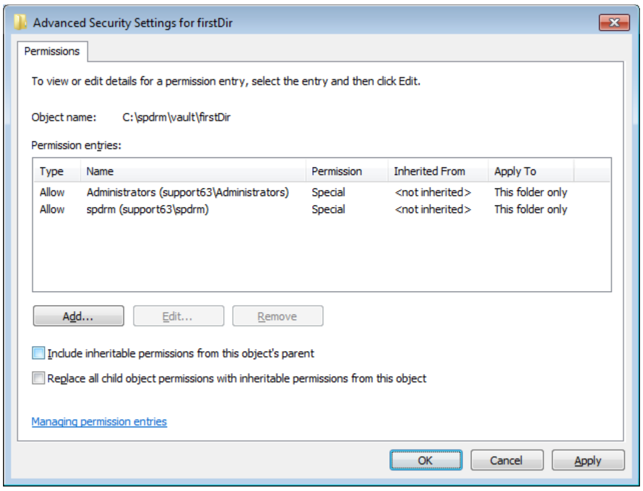
□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel

2. Into the "***vault***" directory create the "***firstDir***" directory, which will be used only by the SPDRM Server for internal files storage and retrieval, and set the following permissions:
   - Linux: 700 (rwx------)
   - Windows: Disable the inherited parent permissions, by unchecking the "*Include inheritable permission's from this object's parent*" check-box in the *Advanced Security Settings* for this folder (*Properties > Security > Advanced > Change Permissions…*).
     Then, remove all the existing permissions entries and allow "*Full control*" (to this folder only) to the "*Administrators*" group and the "*SPDRM administrator*" user.



Advanced Security Settings for firstDir

Permissions

To view or edit details for a permission entry, select the entry and then click Edit.

Object name: C:\spdrm\vault\firstDir

Permission entries:

Type	Name	Permission	Inherited From	Apply To
Allow	Administrators (support63\Administrators)	Special	<not inherited>	This folder only
Allow	spdrm (support63\spdrm)	Special	<not inherited>	This folder only

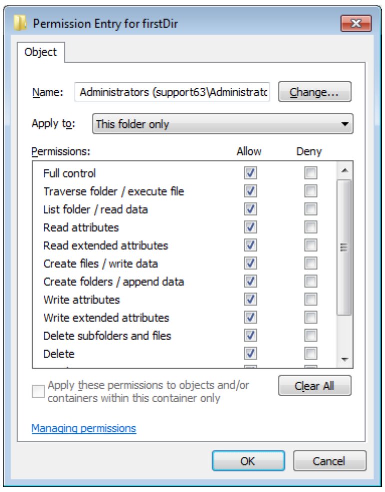
Add... Edit... Remove

□ Include inheritable permissions from this object's parent

□ Replace all child object permissions with inheritable permissions from this object

Managing permission entries

OK Cancel Apply



Permission Entry for firstDir

Object

Name: Administrators (support63\Administratc Change...

Apply to: This folder only

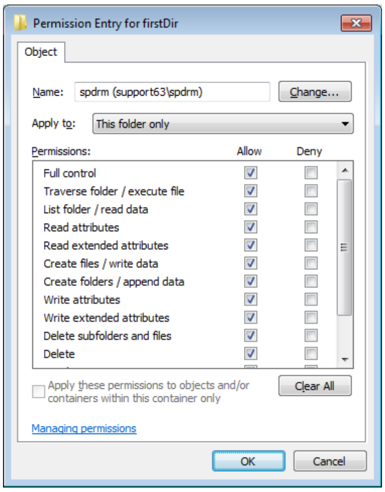
Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel



Permission Entry for firstDir

Object

Name: spdrm (support63\spdrm) Change...

Apply to: This folder only

Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

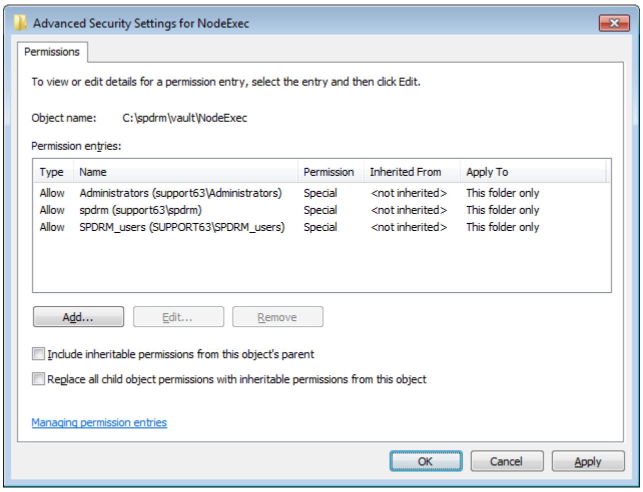
Clear All

Managing permissions

OK Cancel

3. Additionally, into the "***vault***" directory create the "***NodeExec***" directory. The "***NodeExec***" directory will be used for SPDRM Server's exposed working directories. The following permissions need to be set on these directories:
   - Linux: 755 (rwxr-xr-x)

- Windows: Disable the inherited parent permissions, by unchecking the "*Include inheritable permission's from this object's parent*" check-box in the *Advanced Security Settings* for this folder (*Properties > Security > Advanced > Change Permissions…*).
  Then, remove all the existing permissions entries and allow "*Full control*" (to this folder only) to the "*Administrators*" group and the "*SPDRM administrator*" user. Moreover allow the following permissions (to this folder only) for the "*SPDRM_users*" group:
  - Traverse folder / execute file
  - List folder / read data
  - Read attributes
  - Read extended attributes
  - Read permissions



Advanced Security Settings for NodeExec

Permissions

To view or edit details for a permission entry, select the entry and then click Edit.

Object name: C:\spdrm\vault\NodeExec

Permission entries:

Type	Name	Permission	Inherited From	Apply To
Allow	Administrators (support63\Administrators)	Special	<not inherited>	This folder only
Allow	spdrm (support63\spdrm)	Special	<not inherited>	This folder only
Allow	SPDRM_users (SUPPORT63\SPDRM_users)	Special	<not inherited>	This folder only

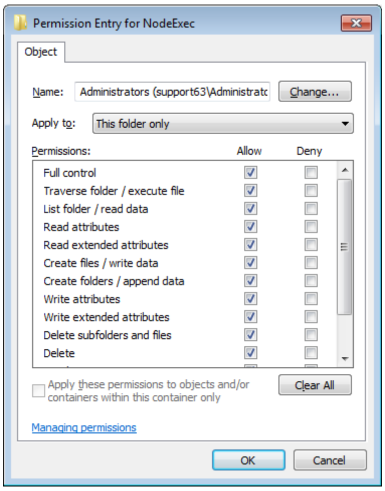
Add... Edit... Remove

□ Include inheritable permissions from this object's parent

□ Replace all child object permissions with inheritable permissions from this object

Managing permission entries

OK Cancel Apply



Permission Entry for NodeExec

Object

Name: Administrators (support63\Administratc Change...

Apply to: This folder only

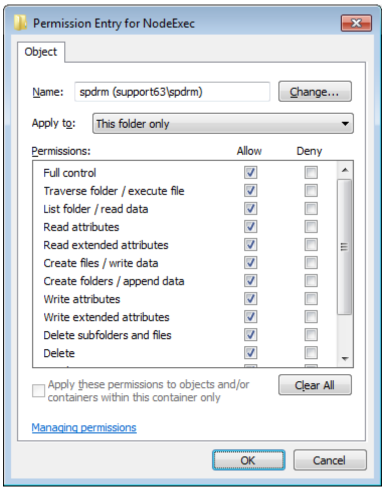
Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel



Permission Entry for NodeExec

Object

Name: spdrm (support63\spdrm) Change...

Apply to: This folder only

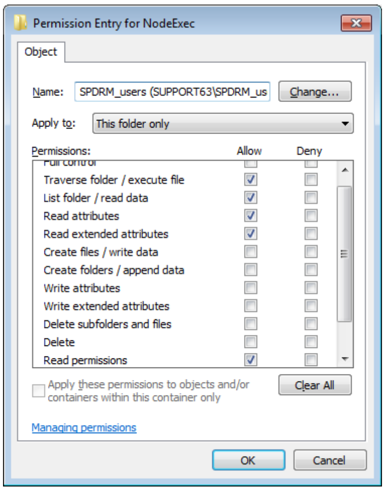
Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel



Permission Entry for NodeExec

Object

Name: SPDRM_users (SUPPORT63\SPDRM_us Change...

Apply to: This folder only

Permissions:	Allow	Deny
Full control	□	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	□	□
Create folders / append data	□	□
Write attributes	□	□
Write extended attributes	□	□
Delete subfolders and files	□	□
Delete	□	□
Read permissions	☑	□

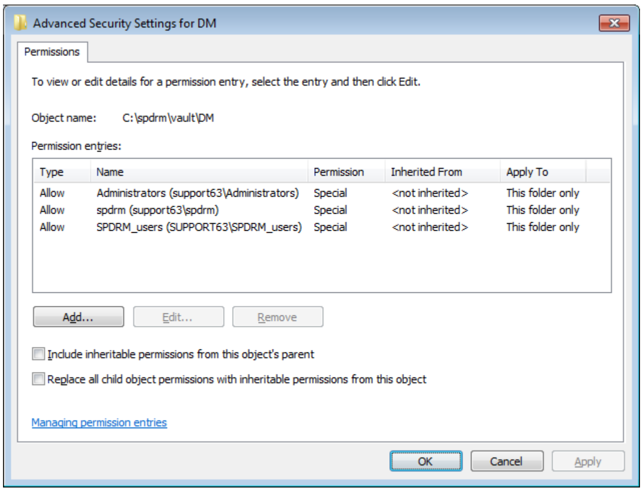
□ Apply these permissions to objects and/or containers within this container only

Clear All

Managing permissions

OK Cancel

4. Finally, into the "***vault***" directory create the "***DM***" directory. The "***DM***" is an optional directory that will be used for exporting SPDRM data structure in the file system. The following permissions need to be set on this directory:
   - Linux: 755 (rwxr-xr-x)
   - Windows: Disable the inherited parent permissions, by unchecking the "*Include inheritable permission's from this object's parent*" check-box in the *Advanced Security Settings* for this folder (*Properties > Security > Advanced > Change Permissions…*).
     Then, remove all the existing permissions entries and allow "*Full control*" (to this folder only) to the "*Administrators*" group and the "*SPDRM administrator*" user. Moreover allow the following permissions (to this folder only) for the "*SPDRM_users*" group:
     - Traverse folder / execute file
     - List folder / read data
     - Read attributes
     - Read extended attributes
     - Read permissions



To view or edit details for a permission entry, select the entry and then click Edit.

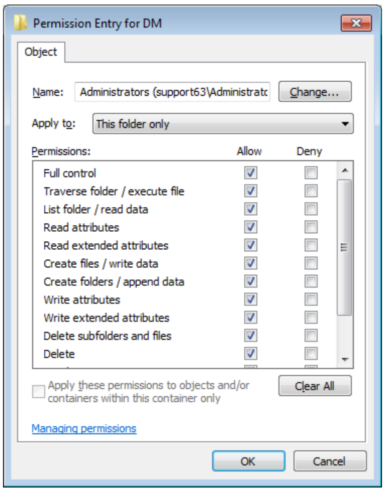
Object name: C:\spdrm\vault\DM

Permission entries:

Type	Name	Permission	Inherited From	Apply To
Allow	Administrators (support63\Administrators)	Special	<not inherited>	This folder only
Allow	spdrm (support63\spdrm)	Special	<not inherited>	This folder only
Allow	SPDRM_users (SUPPORT63\SPDRM_users)	Special	<not inherited>	This folder only

□ Include inheritable permissions from this object's parent

□ Replace all child object permissions with inheritable permissions from this object

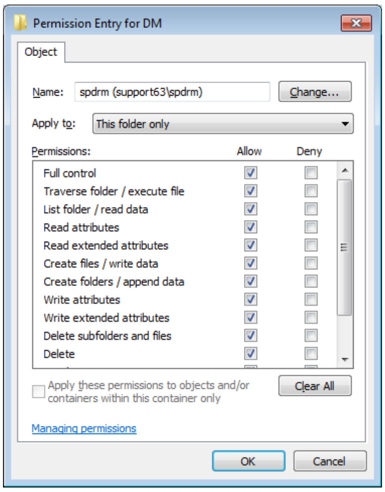


Name: Administrators (support63\Administratc

Apply to: This folder only

Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only

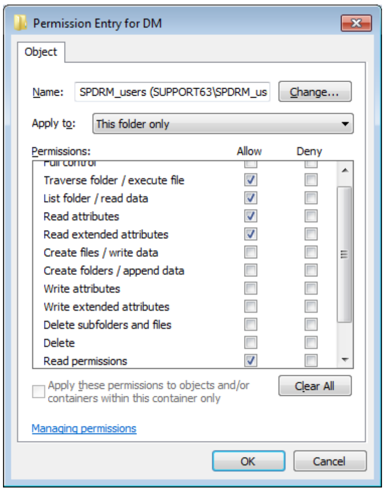


Name: spdrm (support63\spdrm)

Apply to: This folder only

Permissions:	Allow	Deny
Full control	☑	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	☑	□
Create folders / append data	☑	□
Write attributes	☑	□
Write extended attributes	☑	□
Delete subfolders and files	☑	□
Delete	☑	□

□ Apply these permissions to objects and/or containers within this container only



Name: SPDRM_users (SUPPORT63\SPDRM_us

Apply to: This folder only

Permissions:	Allow	Deny
Full control	□	□
Traverse folder / execute file	☑	□
List folder / read data	☑	□
Read attributes	☑	□
Read extended attributes	☑	□
Create files / write data	□	□
Create folders / append data	□	□
Write attributes	□	□
Write extended attributes	□	□
Delete subfolders and files	□	□
Delete	□	□
Read permissions	☑	□

□ Apply these permissions to objects and/or containers within this container only

5. For Windows installations only, ensure that the "*SPDRM_users*" group has (at least) "*List folder*" permissions on the full folder path, up to the "***vault***" directory.

6. Create appropriate shares (NFS or Samba) to the "***vault***" and the "***client***" folders so they will be accessible from your client machines.

4.6. Configure SPDRM Server

The configuration settings of the SPDRM Server are included in the ***taxis.conf*** files that are located in: ***[SPDRM_INSTALL_DIR]/server/wildfly/standalone/configuration/spdrm/***.
Edit the ***taxis.conf*** in order to update the configuration settings of the SPDRM Server.

```
<properties>
  <entry key="vaults">vault1</entry>
  <entry key="defaultVault">vault1</entry>
  <entry key="vault1">/path/to/vault/</entry>
  <entry key="export_vault1">/path/for/exported/data/</entry>
  <entry key="W_vault1">/windows/shared/path/to/vault/</entry>
  <entry key="L_vault1">/linux/shared/path/to/vault/</entry>
  <entry key="vault1_directorySize">51200</entry>
  <entry key="nodeExecPath">NodeExec/</entry>
  <entry key="securityEnabled">true</entry>
  <entry key="commonSML">u+rwx,go=rx</entry>
  <entry key="privateSML">u+rwx,go=</entry>
  <entry key="regexValid">^[A-Za-z0-9*${}._:-]+$</entry>
  <entry key="dmLIBRARY">LIBRARY_ITEMS</entry>
  <entry key="dmTMP">TMP</entry>
  <entry key="componentsContainer">Entities</entry>
  <entry key="DMEntity">Component</entry>
  <entry key="DMSimulationModel">Simulation_Model</entry>
  <entry key="DMLoadcase">Loadcase</entry>
  <entry key="DMRun">Run</entry>
  <entry key="dmStructureContainer">Structure</entry>
  <entry key="default_privileges_group">mvx</entry>
  <entry key="default_privileges_others">vx</entry>
  <entry key="default_privileges_samesubgroups">vx</entry>
  <entry key="default_privileges_subgroups_commongroup">vx</entry>
  <entry key="win_user_group">SPDRM_users</entry>
  <entry key="chownBasedOnSPDRMUser">false</entry>
  <entry key="LDAP_username">uid={0},ou=People,o=developers,dc=localdomain</entry>
  <entry key="LDAP_URL">ldap://server.localdomain:389</entry>
  <entry key="LibraryItems_targetVault">vault1</entry>
  <entry key="allowEmptySpace_inFilename">false</entry>
  <entry key="ansa_multi_output">true</entry>
  <entry key="mxnInstanceLimit">90</entry>
  <entry key="ansa_auth_type">LDAP</entry>
  <entry key="spdrm_auth_type">LDAP</entry>
  <entry key="workingDirSLP">0</entry>
  <entry key="workingDirSLP_WS">0</entry>
  <entry key="skip_mxn_instances">true</entry>
  <entry key="client_acquires_license">true</entry>
  <entry key="set_target_vault_per_role">true</entry>
</properties>
```

<u>**NOTE:**</u> All the paths that are included in this file should always end with "/" (slash).

The following table contains and describes all the available keys that can be set in taxis.conf for the SPDRM Server configuration:

Configuration key	**Description**
vaults	The name of the vault(s) (comma separated).
vault1	The path of the "*vault1*" vault. <u>**NOTE:**</u> In case that more than one vault will be used, then this line should be copied

	as many times as the number of vaults.
export_vault1	The path where the data of the “*vault1*” vault are exported to. This path will be used by the SPDRM server as the designated location for the export of all or some of the data that are stored in the DM tree. The result of this export is a folder-based structure. This functionality is disabled by default. In order to enable the DM export functionality: • log-in to SPDRM Client • go to: Tools > DM structure export setup • select which levels of the DM tree (i.e. Entities, Structure, TMP, LIBRARY_ITEMS) you would like to export (if any) • select which file types to export (i.e. All, None, or Specific). **NOTE:** In case that more than one vault will be used, then this line should be copied as many times as the number of vaults.
W_vault1	The path that is used for the communication of data between the SPDRM Server and a Windows-based ANSA client. This is how the path of the “*vault1*” vault is known by ANSA Windows clients. This path will be concatenated with the "*NodeExec*" and the "*<user>_<uuid>_ws*" in order for the server to generate the full path that will provide to other client applications that exchange data with the SPDRM server through web-services (e.g. ANSA). This path should be registered using a network drive letter, giving read and execute permissions. **NOTE:** In case that more than one vaults will be used, then this line should be copied as many times as the number of vaults.
L_vault1	The path that is used for the communication of data between the SPDRM Server and a Linux-based ANSA client. This is how the path of the “*vault1*” vault is known by the ANSA Linux clients in order to read and write files. This path will be concatenated with "*NodeExec*" and "*<user>_<uuid>_ws*" in order for the server to generate the path that will provide to other client applications that exchange data with the SPDRM server through web-services (e.g. ANSA). This path should be mounted in the Linux client machine, giving read and execute permissions. **NOTE:** In case that more than one vaults will be used, then this line should be copied as many times as the number of vaults.
defaultVault	The name of the vault that will be used as default storage location, in case the vault information is not set by the user. This option makes sense only for multiple-vault config urations. In case of single-vault configurations, this key must be equal to “*vault1*”.
nodeExecPath	The relative path (to vault) of the SPDRM Sever exposed working directories.
vault1_directorySize	The maximum number of files that can be stored under the “*firstDir*” directory of the “*vault1*” vault. The default value is 51200. **NOTE:** In case that more than one vaults will be used, then this line should be copied as many times as the number of vaults.
securityEnabled	• **true**: Enable “chown” operation on the files during importing actions in SPDRM. • **false**: Disable “chown” operation on the files during importing actions in SPDRM (“copy” mechanism will be used instead). Please refer to the Appendix B for more details about the SPDRM security policy.
commonSML	Defines the permissions that will be given to the files that are exported from SPDRM (inside the “***NodeExec***” directory). The permissions are specified with a symbolic notation, as a combination of references and modes, similarly to the syntax of the chmod command (e.g. `u+rwx,go=rx` adds read, write and execute permissions to the user (owner) and assign read and execute permissions for his/her group and others).
privateSML	Define the permissions on the files that are imported to SPDRM (inside the “***firstDir***” directory). **NOTE:** This only affects SPDRM Server configuration with securityEnabled = true.
regexValid	Define the regex validation for text fields inside SPDRM Client. This regular expression will be used by the validator of all text fields within the SPDRM Client.
dmLIBRARY	Define the name of the folder under which all the library items should be stored.
dmTMP	Define the name of the folder under which all the temp data that will be created through workflows execution will be stored.
componentsContainer	Define the name of the container item (pool) under which all the model data (i.e.

	components) will be stored upon their creation.
DMEntity	Define the name of the model data entity (e.g. component, sub-model) as this is defined in the data model structure.
dmStructureContainer	Define the name of the container item under which all the items defined by the data model will be stored in a tree structure way.
default_privileges_group	When a user adds data in SPDRM, define the default access control scheme that should be considered for other users of his/her group. Available options: • m: for modify • v: for view • d: for deletion (and setting of privileges) • x: for execution **NOTE:** This declaration is overwritten by any particular access control definition on the data, made by the user during their addition.
default_privileges_others	When a user adds data in SPDRM, define the default access control scheme that should be considered for other users, outside of his/her group. Available options: • m: for modify • v: for view • d: for deletion (and setting of privileges) • x: for execution **NOTE:** This declaration is overwritten by any particular access control definition on the data, made by the user during their addition.
win_user_group	In order for the SPDRM Server to be able to set the appropriate file permissions during Client-Server I/O, all SPDRM users must be members of the same user group, whose name is defined here. The default name is: *SPDRM_users*.
chownBasedOnSPDRMUser	When the “securityEnabled” key is set equal to “true” all the NodeExec directories that are created by the server, to facilitate the files I/O between the client and the server, must be accessible only by the specific user. Thus, the “chown” operation is used by the server in order to change the ownership of these directories and their contents. This key supports the following two options regarding the “chown” operation: • **false**: Perform “chown” operation based on the OS Client user. • **true**: Perform “chown” operation based on the SPDRM Client logged-in user. Please refer to the Appendix B for more details about the SPDRM security policy.
LDAP_username (*optional*)	Specify the LDAP username. This is an optional setting that is used in case an LDAP / Active Directory server is used in your organization, and you would like the authentication during login to the SPDRM client to take place directly in the LDAP / AD server (and not in the SPDRM server). In case that there is no LDAP / AD server installed in your company, or you would like to authenticate through the SPDRM server anyway, then this line should be omitted.
LDAP_URL (*optional*)	Specify the LDAP server URL. This is an optional setting that is used in case an LDAP / Active Directory server is used in your organization, and you would like the authentication during login to the SPDRM client to take place directly in the LDAP / AD server (and not in the SPDRM server). In case that there is no LDAP / AD server installed in your company, or you would like to authenticate through the SPDRM server anyway, then this line should be omitted.
LibraryItems_targetVault (*optional*)	This option enables the system administrator to globally define the target vault during importing library items. This option is applicable in SPDRM installations with multiple vaults, when there is a need to store all library items under a specific vault (e.g. `vault1`).
allowEmptySpace_inFilename (*optional*)	When this option is set to “false” it denies the import of files and folders that contain the space character in their name.
ansa_multi_output (*optional*)	When this option is set to “true” it enables the definition of components by multiple include files.

NOTE: An example of the SPDRM Server configuration file (i.e. ***taxis.conf***) can be found in the Appendix.

4.7. Configure SPDRM Client

The configuration settings of the SPDRM Client are included in the ***taxisprops.xml.linux*** and ***taxisprops.xml.windows*** files that are located in: ***[SPDRM_INSTALL_DIR]/client***.
Edit the ***taxisprops.xml.linux*** and ***taxisprops.xml.windows*** files.

```
<properties>
  <entry key="serverAddress">SERVER_HOST</entry>
  <entry key="vault1">VAULT_LOCATION</entry>
  <entry key="export_vault1">EXPORT_VAULT_PATH</entry>
  <entry key="serverPort">8080</entry>
  <entry key="serverVendor">wildfly</entry>
  <entry key="dmitem_icons_path">/path/to/icons/</entry>
</properties>
```

NOTE: All the paths that are included in these files should always end with "/" (slash).

Configuration key	**Description**
serverAddress	The hostname or IP address of the SPDRM server.
vault1	This is how the path of the "*vault1*" vault is known by SPDRM clients. **NOTE:** In case that more than one vaults will be used, then this line should be copied as many times as the number of vaults.
export_vault1	This is how the path where the data of the "*vault1*" vault are exported to, is known by SPDRM clients. **NOTE:** In case that more than one vaults will be used, then this line should be copied as many times as the number of vaults.
serverPort	The port for the Client-Server communication. The default value is 8080.
serverVendor	The vendor of the Application Server. The default value is wildfly.
dmitem_icons_path	The path to the icons used by the DM items, as declared in the *data_views.xml* (the default icons for DM items are located in: ***[SPDRM_INSTALL_DIR]/client/dmicons***).

NOTE: An example of the SPDRM Client configuration files (i.e. ***taxisprops.xml.linux*** and ***taxisprops.xml.windows***) can be found in the Appendix.

4.8. Start SPDRM Server

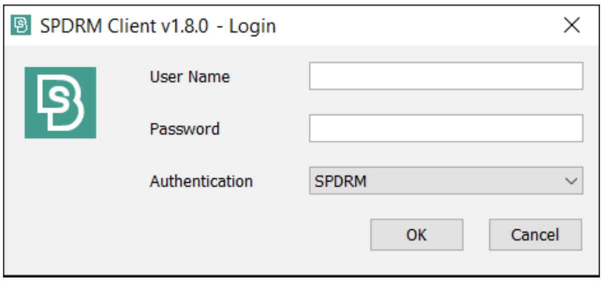
1. Login as root (for Linux), or as a user that belongs to the Administrators group (for Windows) to the machine where the SPDRM Application Server is installed.
2. Open a terminal window and change directory to the SPDRM installation directory.
3. Run the command: `./startServer.sh` (for Linux), or `startServer.bat` (for Windows)

4.9. Start SPDRM Client

1. Open a terminal window and change directory to: ***[SPDRM_INSTALL_DIR]/client***
2. Run the appropriate command:
   - `startClient.sh`
   - `startClient.bat`

   NOTE: The ***client*** directory should be shared in order for remote users to have access to these files and run the SPDRM client successfully.

3. Login using the following credentials:
   - User Name: ***admin***
   - Password: ***admin***


SPDRM Client v1.8.0 - Login

User Name

Password

Authentication: SPDRM

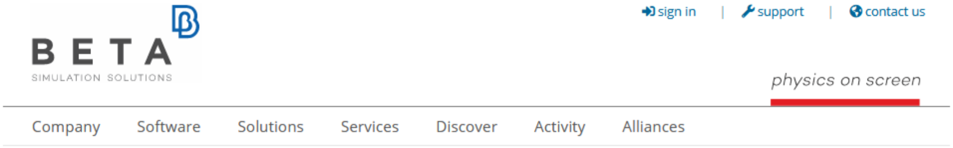
5. SPDRM Update

5.1. Preparation

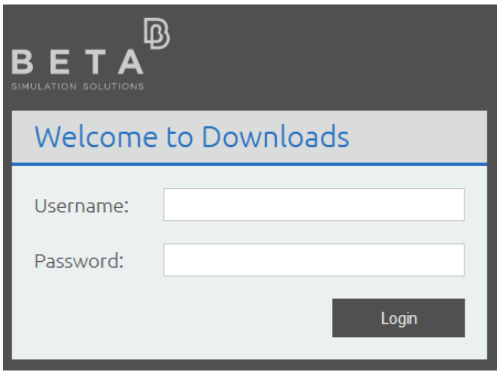
1. Make sure that the beta_lm license daemon and the corresponding license.dat file are properly installed on the machines that are specified as license server(s).
2. Log-in to the SPDRM Server machine as the "SPDRM administrator" user.
3. Ensure that the SPDRM Server is up and running.
4. Make a backup of the database (for instructions please refer to section 7.1).

5.2. Download SPDRM package

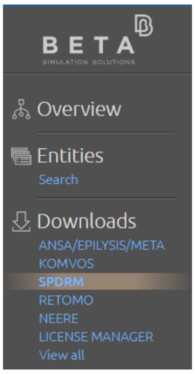
1. Visit the website of BETA CAE Systems (http://www.beta-cae.com/).
2. Access the BETA CAE Systems secure web-server by selecting the "*user login*" option, at the top-right hand side.



3. Login to the BETA CAE Systems secure web-server.



4. Access the SPDRM downloads folder by clicking on the ***Downloads>SPDRM*** item on the tree.

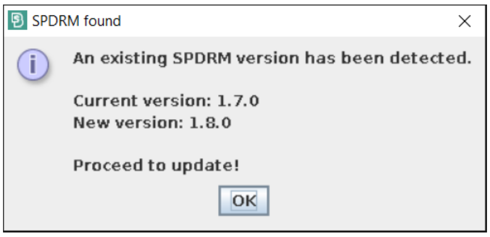


5. From the SPDRM Downloads folder, access the folder ***SPDRM_v1.8.0***.
6. Download the ***SPDRM_v1.8.0_linux_Wildfly.tar.gz*** (for Linux) or ***SPDRM_v1.8.0_windows_Wildfly.zip*** (for Windows).

5.3. Update an existing SPDRM installation

5.3.1. How to update SPDRM on Linux using graphics

1. Copy the ***SPDRM_v1.8.0_linux_Wildfly.tar.gz*** in the existing SPDRM installation directory (e.g. `/opt/sprdm/`).
2. Extract the ***SPDRM_v1.8.0_linux_Wildfly.tar.gz*** (e.g. `tar -xf SPDRM_v1.8.0_linux_Wildfly.tar.gz`).
3. Run the ***installSPDRM.sh*** (bash script) to start the SPDRM Installer.
4. A message window will be displayed, once the SPDRM Installer will detect an existing SPDRM version.

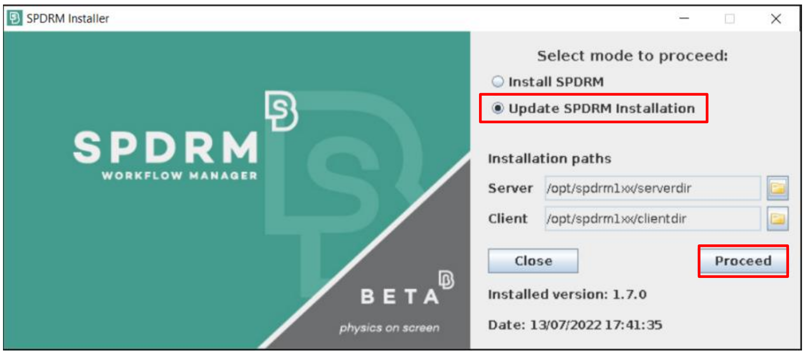

SPDRM found

An existing SPDRM version has been detected.

Current version: 1.7.0
New version: 1.8.0

Proceed to update!

5. Press the "*OK*" button to close this dialog and return to the main window of the SPDRM Installer.
6. Select the "*Update SPDRM Installation*" option and press the "*Proceed*" button.

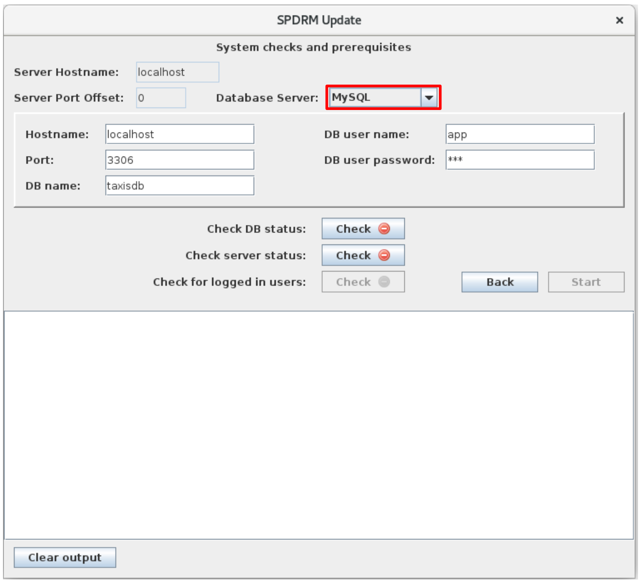

SPDRM Installer

Select mode to proceed:
○ Install SPDRM
● Update SPDRM Installation

Installation paths
Server /opt/spdrm1xx/serverdir
Client /opt/spdrm1xx/clientdir

Installed version: 1.7.0
Date: 13/07/2022 17:41:35

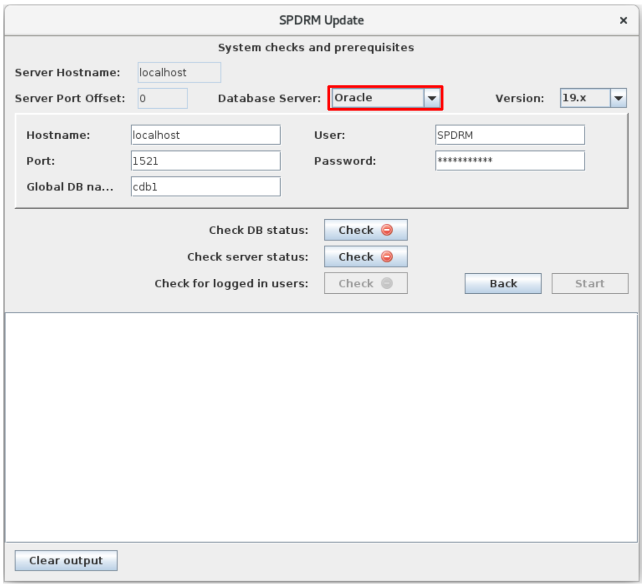
7. During the first step of the update procedure the following system checks should be performed.
    - Check status and connectivity to the Database.
    - Check that the SPDRM Server is up and running.
    - Check if there are any logged in users to the SPDRM Server.


SPDRM Update

System checks and prerequisites

Server Hostname: localhost
Server Port Offset: 0
Database Server: MySQL
Hostname: localhost
Port: 3306
DB name: taxisdb
DB user name: app
DB user password: ***

Check DB status:
Check server status:
Check for logged in users:


SPDRM Update

System checks and prerequisites

Server Hostname: localhost
Server Port Offset: 0
Database Server: Oracle
Version: 19.x
Hostname: localhost
Port: 1521
Global DB na...: cdb1
User: SPDRM
Password: **********

Check DB status:
Check server status:
Check for logged in users:

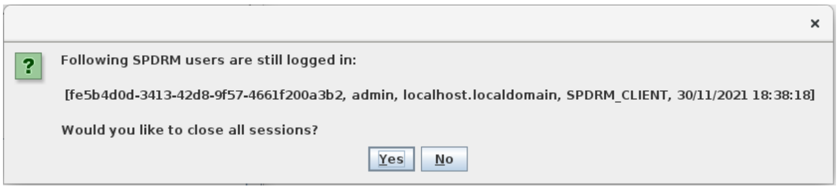
NOTE: The Hostname, Port (default: 3306), DB name and DB root password for the MySQL database need to be filled-in before pressing the "*Check*" button.

NOTE: The Hostname, Port (default: 1521), Global DB Name, User and Password for the Oracle database need to be filled-in before pressing the "*Check*" button.

- Hostname = HOST*
- Port = PORT*
- Global DB Name = SERVICE_NAME*
- User = SPDRM
- Password = spdrm

*The HOST, PORT and SERVICE_NAME can be found in the `tnsnames.ora` file that adis located in: `[ORACLE_INSTALL_DIR]/NETWORK/ADMIN.`

8. In case that logged in users are detected during the last check, they should be informed to close their SPDRM Client sessions, and then try again to perform this check. Alternativelly, by pressing the "Yes" button in the following window all active SPDRM Client sessions will be remotely closed.

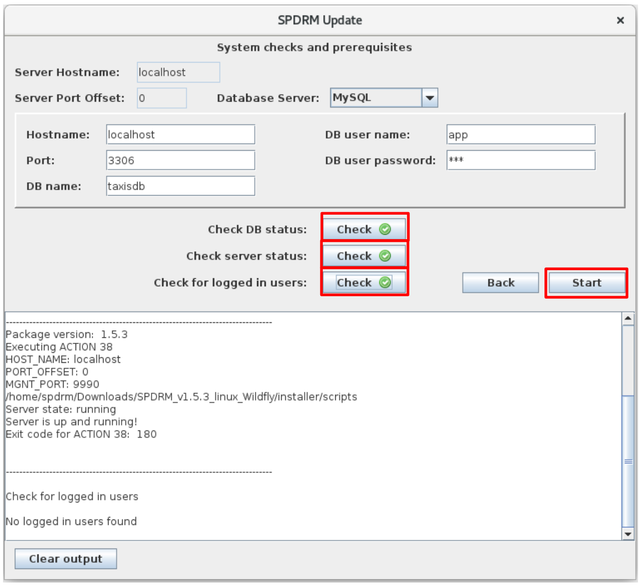


Following SPDRM users are still logged in:

[fe5b4d0d-3413-42d8-9f57-4661f200a3b2, admin, localhost.localdomain, SPDRM_CLIENT, 30/11/2021 18:38:18]

Would you like to close all sessions?

9. After performing successfully all these checks the “*Start*” button is activated. Press the “*Start*” button to proceed with the update procedure.



SPDRM Update

System checks and prerequisites

Server Hostname: localhost

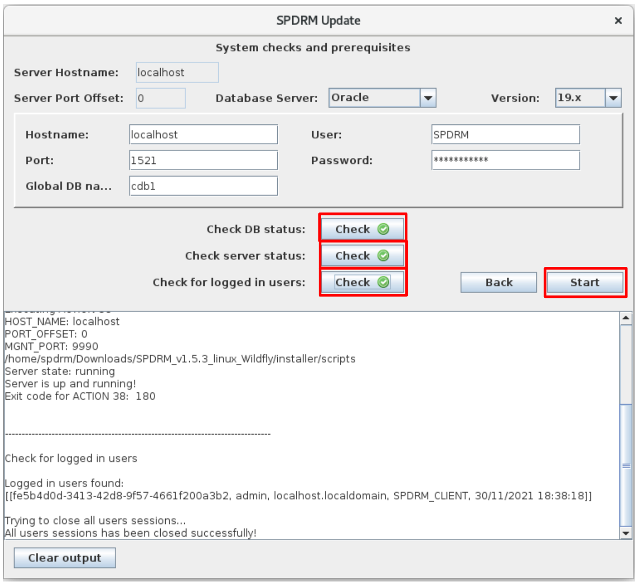
Server Port Offset: 0 Database Server: MySQL

Hostname: localhost DB user name: app

Port: 3306 DB user password: ***

DB name: taxisdb

```
-----------------------------------------------------------------------------
Package version:  1.5.3
Executing ACTION 38
HOST_NAME: localhost
PORT_OFFSET: 0
MGNT_PORT: 9990
/home/spdrm/Downloads/SPDRM_v1.5.3_linux_Wildfly/installer/scripts
Server state: running
Server is up and running!
Exit code for ACTION 38:  180



-----------------------------------------------------------------------------


Check for logged in users

No logged in users found
```



SPDRM Update

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0 Database Server: Oracle Version: 19.x

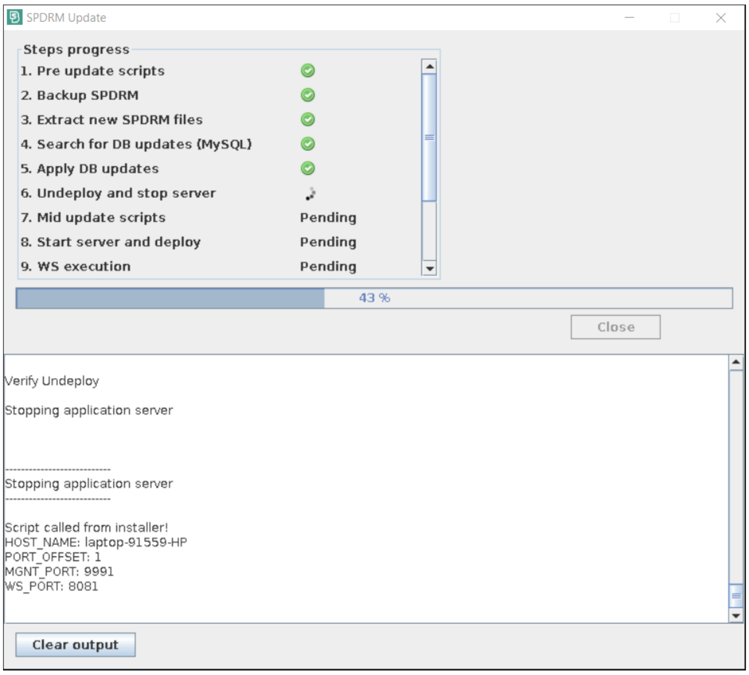
Hostname: localhost User: SPDRM

Port: 1521 Password: ***********

Global DB na... cdb1

```
HOST_NAME: localhost
PORT_OFFSET: 0
MGNT_PORT: 9990
/home/spdrm/Downloads/SPDRM_v1.5.3_linux_Wildfly/installer/scripts
Server state: running
Server is up and running!
Exit code for ACTION 38:  180



-----------------------------------------------------------------------------


Check for logged in users

Logged in users found:
[[fe5b4d0d-3413-42d8-9f57-4661f200a3b2, admin, localhost.localdomain, SPDRM_CLIENT, 30/11/2021 18:38:18]]

Trying to close all users sessions...
All users sessions has been closed successfully!
```

10. During the update procedure the following actions will be performed.
    - Update previous version’s scripts
    - Backup of the current configuration files inside the ***backup*** directory.
    - Extraction of the update files.
    - Search for available updates related to the SPDRM database.
    - Apply the appropriate updates to the SPDRM database.
    - Update of the SPDRM Application Server.
    - Execute Web Services.
    - Update of the SPDRM Client.
    - Update of the SPDRM configuration files.



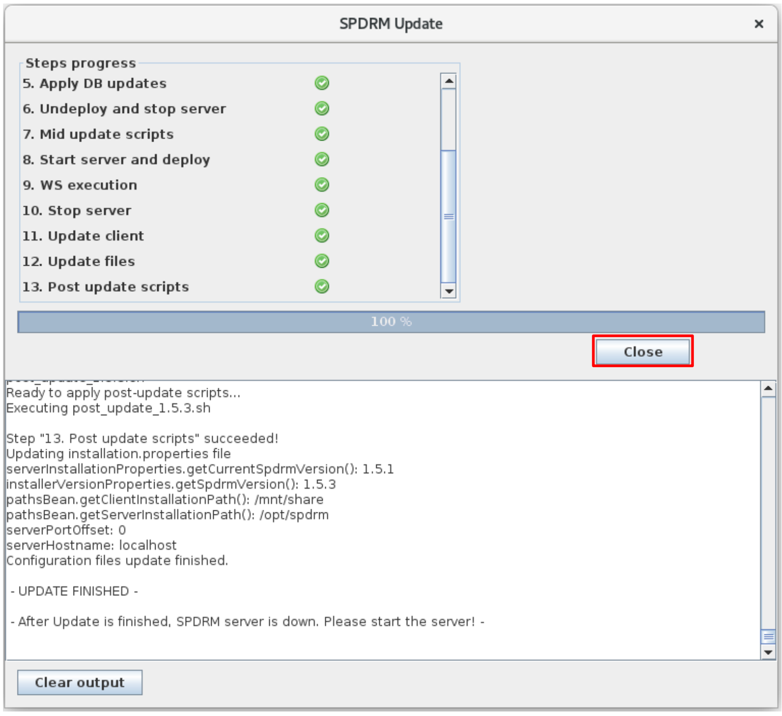
SPDRM Update

Steps progress

1. Pre update scripts ✓
2. Backup SPDRM ✓
3. Extract new SPDRM files ✓
4. Search for DB updates (MySQL) ✓
5. Apply DB updates ✓
6. Undeploy and stop server
7. Mid update scripts Pending
8. Start server and deploy Pending
9. WS execution Pending

```
Verify Undeploy

Stopping application server


------------------------
Stopping application server
------------------------

Script called from installer!
HOST_NAME: laptop-91559-HP
PORT_OFFSET: 1
MGNT_PORT: 9991
WS_PORT: 8081
```

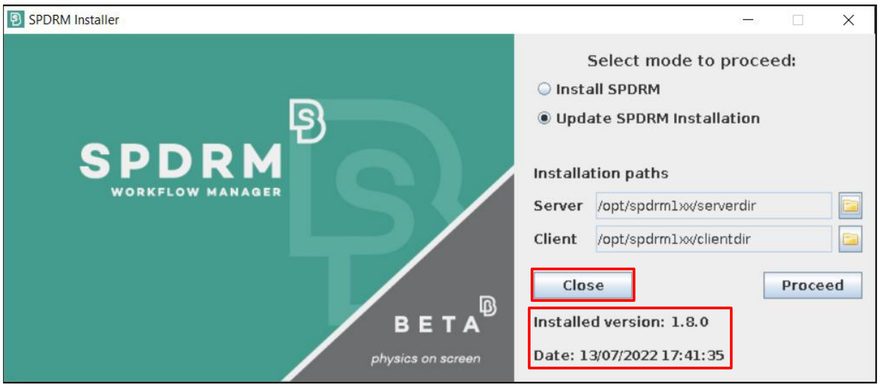
11. After performing successfully all these steps the “*Close*” button is activated.
    Press the “*Close*” button to return to the main window of the SPDRM Installer.



5. Apply DB updates ✓
6. Undeploy and stop server ✓
7. Mid update scripts ✓
8. Start server and deploy ✓
9. WS execution ✓
10. Stop server ✓
11. Update client ✓
12. Update files ✓
13. Post update scripts ✓

```
Ready to apply post-update scripts...
Executing post_update_1.5.3.sh

Step "13. Post update scripts" succeeded!
Updating installation.properties file
serverInstallationProperties.getCurrentSpdrmVersion(): 1.5.1
installerVersionProperties.getSpdrmVersion(): 1.5.3
pathsBean.getClientInstallationPath(): /mnt/share
pathsBean.getServerInstallationPath(): /opt/spdrm
serverPortOffset: 0
serverHostname: localhost
Configuration files update finished.

 - UPDATE FINISHED -

 - After Update is finished, SPDRM server is down. Please start the server! -
```

12. After performing successfully the SPDRM update, the version and date of the installation appear in the main window of the SPDRM Installer.
    Press the “*Close*” button to finish the update procedure.



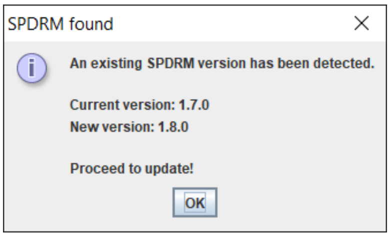
Select mode to proceed:
○ Install SPDRM
● Update SPDRM Installation

Installation paths
Server: /opt/spdrm1xx/serverdir
Client: /opt/spdrm1xx/clientdir

Installed version: 1.8.0
Date: 13/07/2022 17:41:35

5.3.2. How to update SPDRM on Windows

1. Copy the ***SPDRM_v1.8.0_windows_Wildfly.zip*** in the existing SPDRM installation directory.
2. Extract the ***SPDRM_v1.8.0_windows_Wildfly.zip***.
3. Run the ***installSPDRM.bat*** to start the SPDRM Installer.
4. A message window will be displayed, once the SPDRM Installer will detect an existing SPDRM version.



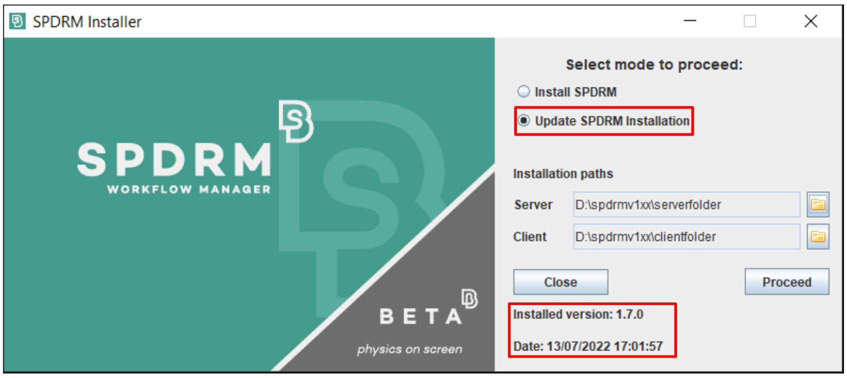
SPDRM found

An existing SPDRM version has been detected.

Current version: 1.7.0
New version: 1.8.0

Proceed to update!

5. Press the “*OK*” button to close this dialog and return to the main window of the SPDRM Installer.
6. Select the “*Update SPDRM Installation*” option and press the “*Proceed*” button.



SPDRM Installer

Select mode to proceed:

○ Install SPDRM

● Update SPDRM Installation

Installation paths

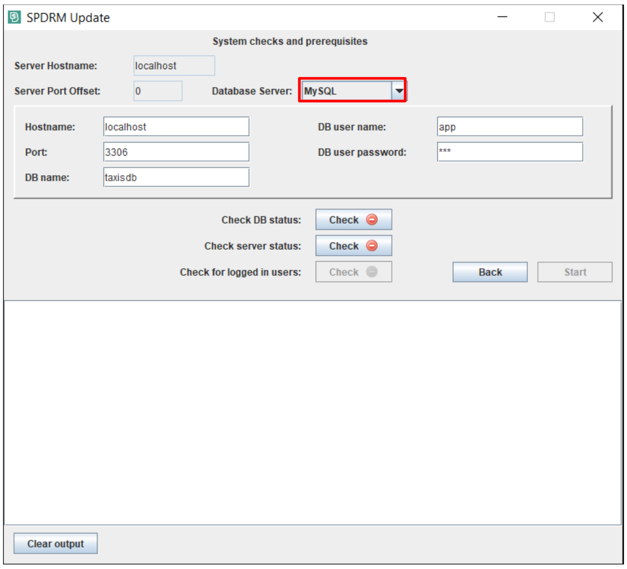
Server: D:\spdrmv1xx\serverfolder

Client: D:\spdrmv1xx\clientfolder

Installed version: 1.7.0

Date: 13/07/2022 17:01:57

7. During the first step of the update procedure the following system checks should be performed.
   - Check status and connectivity to the Database.
   - Check that the SPDRM Server is up and running.
   - Check if there are any logged in users to the SPDRM Server.



SPDRM Update

System checks and prerequisites

Server Hostname: localhost

Server Port Offset: 0

Database Server: MySQL

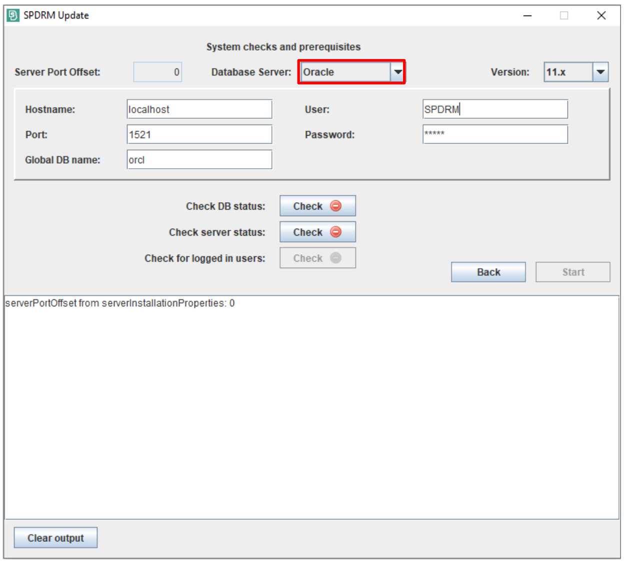
Hostname: localhost

Port: 3306

DB name: taxisdb

DB user name: app

DB user password: ***



SPDRM Update

System checks and prerequisites

Server Port Offset: 0

Database Server: Oracle

Version: 11.x

Hostname: localhost

Port: 1521

Global DB name: orcl

User: SPDRM

Password: *****

```
serverPortOffset from serverInstallationProperties: 0
```

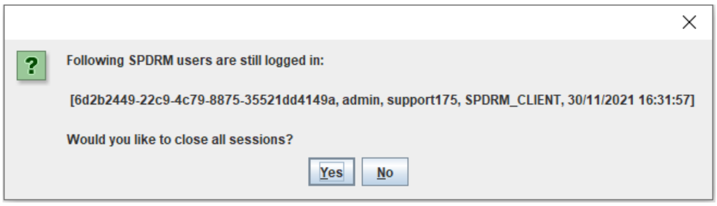
NOTE: The Hostname, Port (default: 3306), DB Name and DB root password for the MySQL database need to be filled-in before pressing the "*Check*" button.

NOTE: The Hostname, Port (default: 1521), Global DB Name, User and Password for the Oracle database need to be filled-in before pressing the "*Check*" button.

- Hostname = HOST*
- Port = PORT*
- Global DB Name = SERVICE_NAME*
- User = SPDRM
- Password = spdrm

*The HOST, PORT and SERVICE_NAME can be found in the `tnsnames.ora` file that is located in: `[ORACLE_INSTALL_DIR]/NETWORK/ADMIN`.

8. In case that logged in users are detected during the last check, they should be informed to close their SPDRM Client sessions, and then try again to perform this check. Alternatively, by pressing the "Yes" button in the following window all active SPDRM Client sessions will be remotely closed.

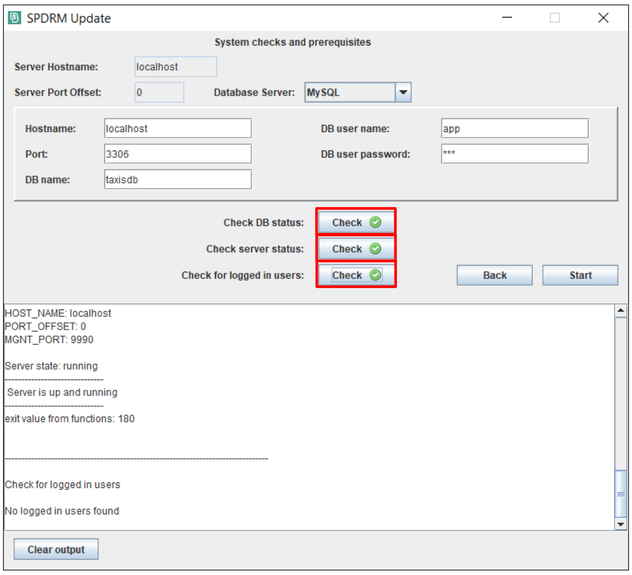


Following SPDRM users are still logged in:

[6d2b2449-22c9-4c79-8875-35521dd4149a, admin, support175, SPDRM_CLIENT, 30/11/2021 16:31:57]

Would you like to close all sessions?

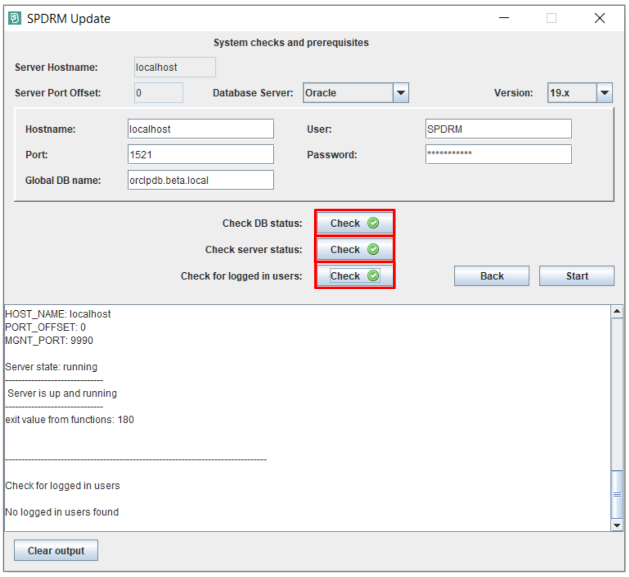
9. After performing successfully all these checks the “*Start*” button is activated. Press the “*Start*” button to proceed with the update procedure.



System checks and prerequisites

Server Hostname: localhost
Server Port Offset: 0
Database Server: MySQL
Hostname: localhost
Port: 3306
DB name: taxisdb
DB user name: app
DB user password: ***
Check DB status:
Check server status:
Check for logged in users:

```
HOST_NAME: localhost
PORT_OFFSET: 0
MGNT_PORT: 9990

Server state: running
------------------------------
 Server is up and running
------------------------------
exit value from functions: 180


--------------------------------------------------------------------------------

Check for logged in users

No logged in users found
```

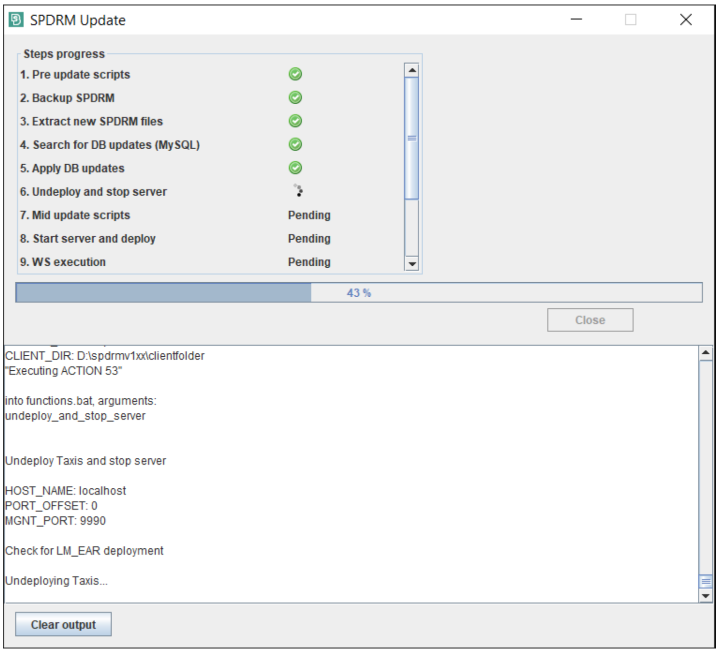


System checks and prerequisites

Server Hostname: localhost
Server Port Offset: 0
Database Server: Oracle
Version: 19.x
Hostname: localhost
Port: 1521
Global DB name: orclpdb.beta.local
User: SPDRM
Password: ***********
Check DB status:
Check server status:
Check for logged in users:

```
HOST_NAME: localhost
PORT_OFFSET: 0
MGNT_PORT: 9990

Server state: running
------------------------------
 Server is up and running
------------------------------
exit value from functions: 180


--------------------------------------------------------------------------------

Check for logged in users

No logged in users found
```

10. During the update procedure the following actions will be performed.
    - Update previous version’s scripts
    - Backup of the current configuration files inside the ***backup*** directory.
    - Extraction of the update files.
    - Search for available updates related to the SPDRM database.
    - Apply the appropriate updates to the SPDRM database.
    - Update of the SPDRM Application Server.
    - Execute Web Services.
    - Update of the SPDRM Client.
    - Update of the SPDRM configuration files.

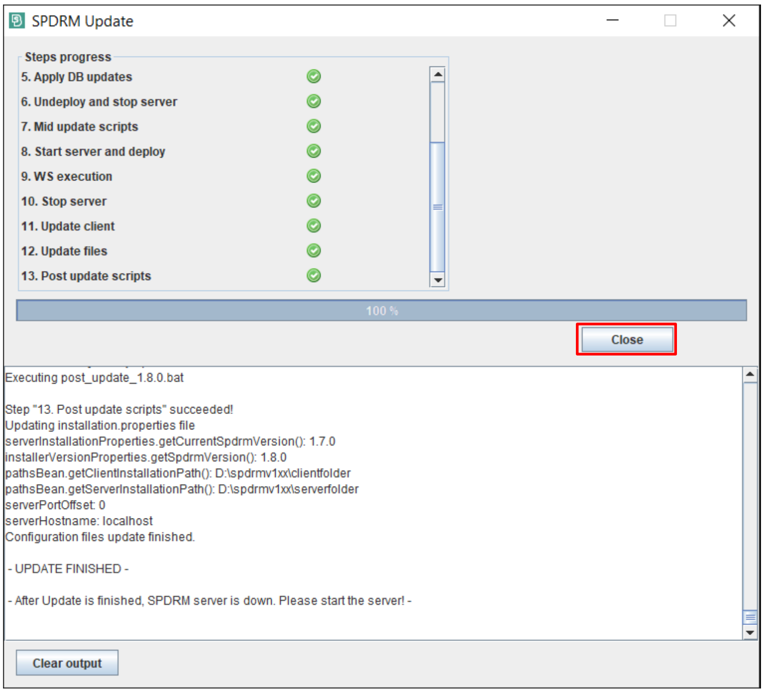


Steps progress

1. Pre update scripts ✓
2. Backup SPDRM ✓
3. Extract new SPDRM files ✓
4. Search for DB updates (MySQL) ✓
5. Apply DB updates ✓
6. Undeploy and stop server
7. Mid update scripts Pending
8. Start server and deploy Pending
9. WS execution Pending

```
CLIENT_DIR: D:\spdrmv1xx\clientfolder
"Executing ACTION 53"

into functions.bat, arguments:
undeploy_and_stop_server


Undeploy Taxis and stop server

HOST_NAME: localhost
PORT_OFFSET: 0
MGNT_PORT: 9990

Check for LM_EAR deployment

Undeploying Taxis...
```

11. After performing successfully all these steps the “*Close*” button is activated. Press the “*Close*” button to return to the main window of the SPDRM Installer.

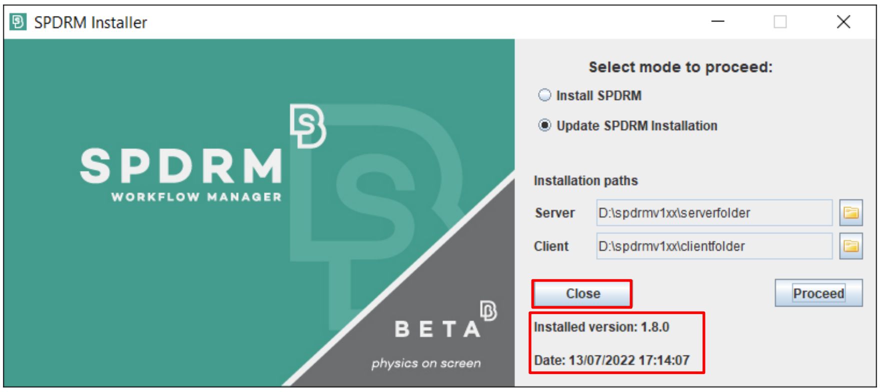


Steps progress

- 5. Apply DB updates ✓
- 6. Undeploy and stop server ✓
- 7. Mid update scripts ✓
- 8. Start server and deploy ✓
- 9. WS execution ✓
- 10. Stop server ✓
- 11. Update client ✓
- 12. Update files ✓
- 13. Post update scripts ✓

```
Executing post_update_1.8.0.bat

Step "13. Post update scripts" succeeded!
Updating installation.properties file
serverInstallationProperties.getCurrentSpdrmVersion(): 1.7.0
installerVersionProperties.getSpdrmVersion(): 1.8.0
pathsBean.getClientInstallationPath(): D:\spdrmv1xx\clientfolder
pathsBean.getServerInstallationPath(): D:\spdrmv1xx\serverfolder
serverPortOffset: 0
serverHostname: localhost
Configuration files update finished.

- UPDATE FINISHED -

- After Update is finished, SPDRM server is down. Please start the server! -
```

12. After performing successfully the SPDRM update, the version and date of the installation appear in the main window of the SPDRM Installer.
    Press the "*Close*" button to finish the update procedure.



Select mode to proceed:

○ Install SPDRM

● Update SPDRM Installation

Installation paths

Server: D:\spdrmv1xx\serverfolder

Client: D:\spdrmv1xx\clientfolder

Installed version: 1.8.0

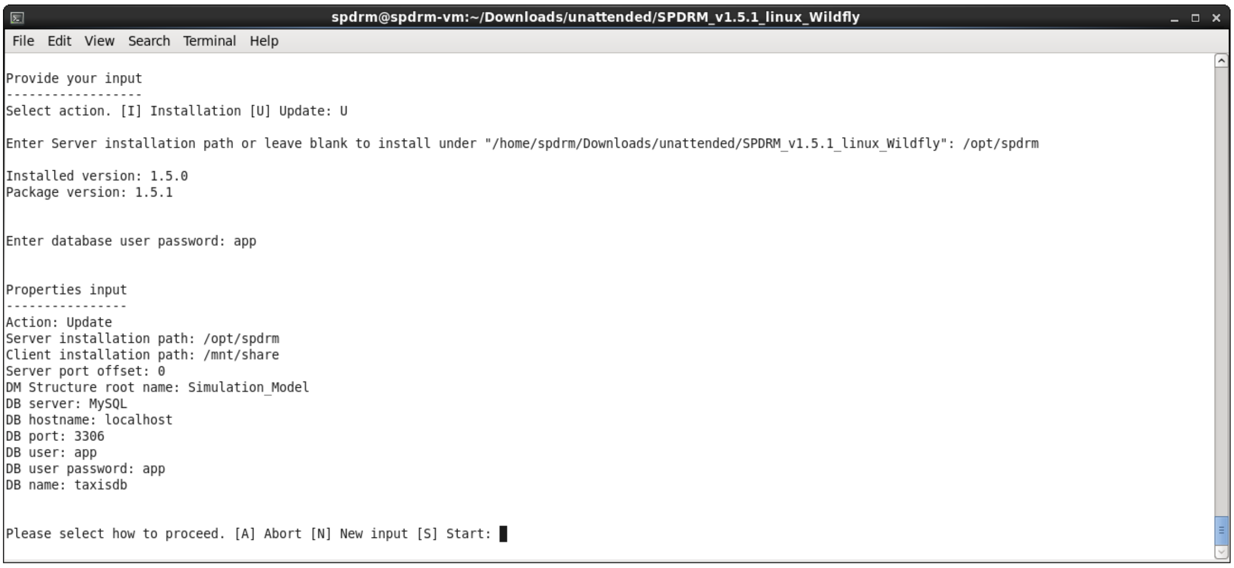
Date: 13/07/2022 17:14:07

5.3.3. How to update SPDRM on Linux via Command Line

Command line update can be started by running the command:

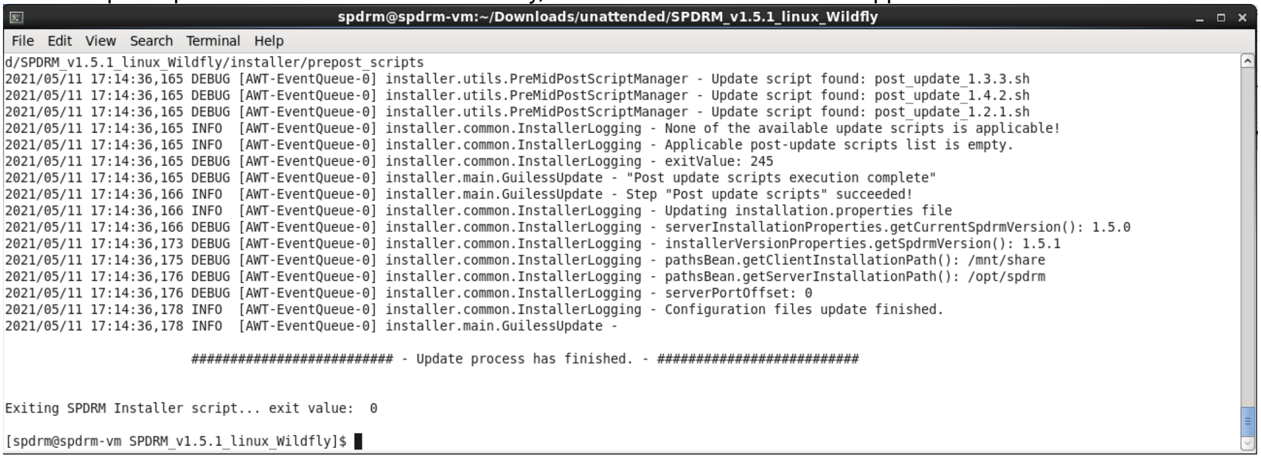
```
./installSPDRM.sh –m 2
```

and by selecting Update [U] option. Afterwards, by just giving the correct path to the already installed SPDRM Server, all necessary information will be found by the SPDRM Installer and the only asked information will be the Database password. If correct, the SPDRM Installer displays all the update information found and prompts for **Start** or **Abort**.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

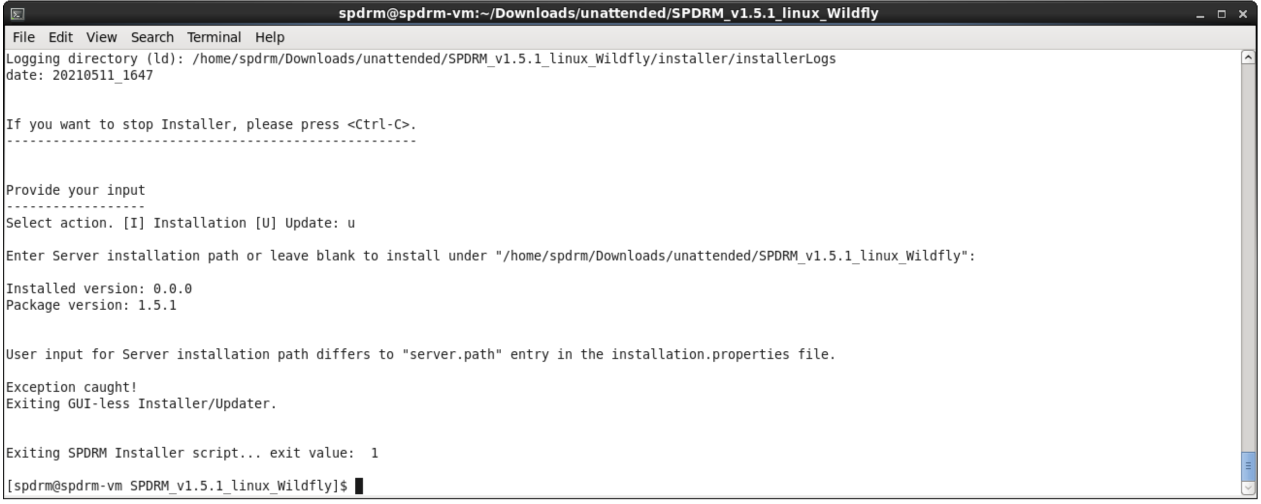
```
Provide your input
------------------
Select action. [I] Installation [U] Update: U

Enter Server installation path or leave blank to install under "/home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly": /opt/spdrm

Installed version: 1.5.0
Package version: 1.5.1


Enter database user password: app


Properties input
----------------
Action: Update
Server installation path: /opt/spdrm
Client installation path: /mnt/share
Server port offset: 0
DM Structure root name: Simulation_Model
DB server: MySQL
DB hostname: localhost
DB port: 3306
DB user: app
DB user password: app
DB name: taxisdb


Please select how to proceed. [A] Abort [N] New input [S] Start: █
```

When the update procedure terminates successfully, the successful exit value will appear in terminal.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```
d/SPDRM_v1.5.1_linux_Wildfly/installer/prepost_scripts
2021/05/11 17:14:36,165 DEBUG [AWT-EventQueue-0] installer.utils.PreMidPostScriptManager - Update script found: post_update_1.3.3.sh
2021/05/11 17:14:36,165 DEBUG [AWT-EventQueue-0] installer.utils.PreMidPostScriptManager - Update script found: post_update_1.4.2.sh
2021/05/11 17:14:36,165 DEBUG [AWT-EventQueue-0] installer.utils.PreMidPostScriptManager - Update script found: post_update_1.2.1.sh
2021/05/11 17:14:36,165 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - None of the available update scripts is applicable!
2021/05/11 17:14:36,165 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - Applicable post-update scripts list is empty.
2021/05/11 17:14:36,165 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - exitValue: 245
2021/05/11 17:14:36,165 DEBUG [AWT-EventQueue-0] installer.main.GuilessUpdate - "Post update scripts execution complete"
2021/05/11 17:14:36,166 INFO  [AWT-EventQueue-0] installer.main.GuilessUpdate - Step "Post update scripts" succeeded!
2021/05/11 17:14:36,166 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - Updating installation.properties file
2021/05/11 17:14:36,166 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - serverInstallationProperties.getCurrentSpdrmVersion(): 1.5.0
2021/05/11 17:14:36,173 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - installerVersionProperties.getSpdrmVersion(): 1.5.1
2021/05/11 17:14:36,175 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getClientInstallationPath(): /mnt/share
2021/05/11 17:14:36,176 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - pathsBean.getServerInstallationPath(): /opt/spdrm
2021/05/11 17:14:36,176 DEBUG [AWT-EventQueue-0] installer.common.InstallerLogging - serverPortOffset: 0
2021/05/11 17:14:36,178 INFO  [AWT-EventQueue-0] installer.common.InstallerLogging - Configuration files update finished.
2021/05/11 17:14:36,178 INFO  [AWT-EventQueue-0] installer.main.GuilessUpdate -

                        ########################## - Update process has finished. - ##########################


Exiting SPDRM Installer script... exit value:  0

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$ █
```

If a mistaken value is given, for example invalid SPDRM Server path, the SPDRM Installer will exit with error code 1.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```
Logging directory (ld): /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/installer/installerLogs
date: 20210511_1647


If you want to stop Installer, please press <Ctrl-C>.
-----------------------------------------------------


Provide your input
------------------
Select action. [I] Installation [U] Update: u

Enter Server installation path or leave blank to install under "/home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly":

Installed version: 0.0.0
Package version: 1.5.1


User input for Server installation path differs to "server.path" entry in the installation.properties file.

Exception caught!
Exiting GUI-less Installer/Updater.


Exiting SPDRM Installer script... exit value:  1

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$ █
```

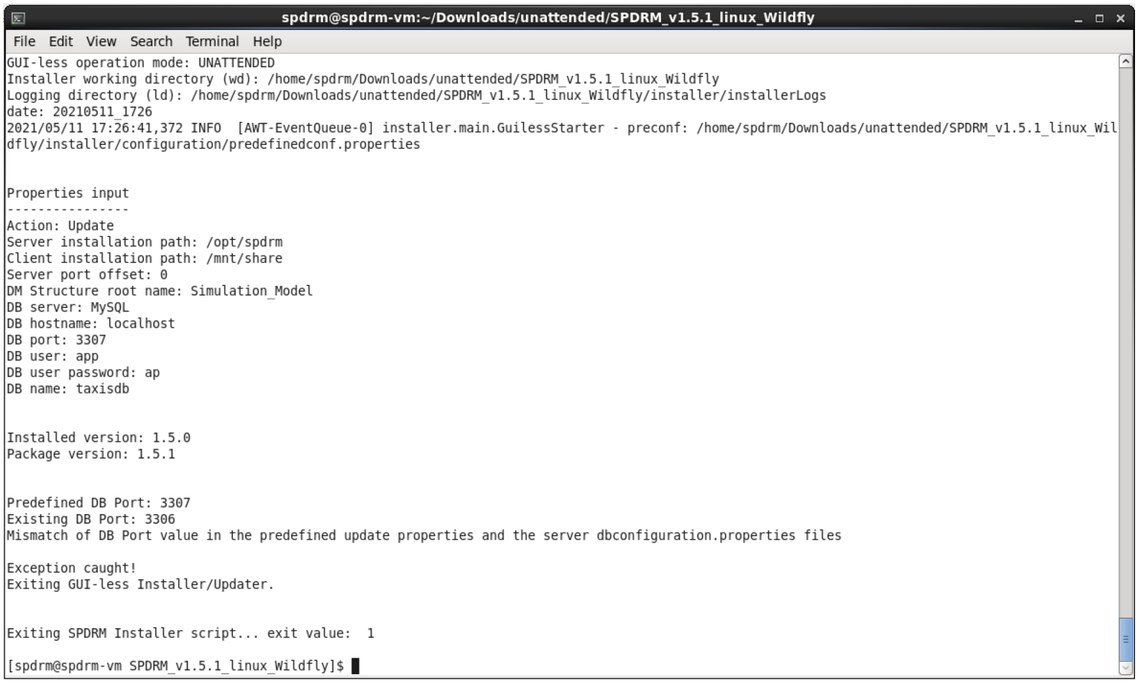
5.3.4. How to update SPDRM on Linux with Unattended Update

The unattended update mode enables the SPDRM update with no interaction by the user. All information needed for the update is given in the configuration file used in Chapter 4.4.4 for Unattended Installation. The only modification in the file must be the change of the **action** value from **Installation** to **Update**. The administrator can perform the update by executing the command:

```
./installSPDRM –m 3 –f [SPDRM_INSTALL_DIR]/installer/configuration/predefinedconf.properties
```

The SPDRM Installer will read all the necessary information from the file and if all values given are correct, the full update will take place and the successful exit value will appear in terminal.

If a mistaken value is given in the configuration file, the SPDRM Installer will detect the difference, will exit with error code and will inform the administrator for the mismatch.


spdrm@spdrm-vm:~/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
File Edit View Search Terminal Help

```
GUI-less operation mode: UNATTENDED
Installer working directory (wd): /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly
Logging directory (ld): /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wildfly/installer/installerLogs
date: 20210511_1726
2021/05/11 17:26:41,372 INFO  [AWT-EventQueue-0] installer.main.GuilessStarter - preconf: /home/spdrm/Downloads/unattended/SPDRM_v1.5.1_linux_Wil
dfly/installer/configuration/predefinedconf.properties


Properties input
----------------
Action: Update
Server installation path: /opt/spdrm
Client installation path: /mnt/share
Server port offset: 0
DM Structure root name: Simulation_Model
DB server: MySQL
DB hostname: localhost
DB port: 3307
DB user: app
DB user password: ap
DB name: taxisdb


Installed version: 1.5.0
Package version: 1.5.1


Predefined DB Port: 3307
Existing DB Port: 3306
Mismatch of DB Port value in the predefined update properties and the server dbconfiguration.properties files

Exception caught!
Exiting GUI-less Installer/Updater.


Exiting SPDRM Installer script... exit value:  1

[spdrm@spdrm-vm SPDRM_v1.5.1_linux_Wildfly]$ █
```

NOTE: If the configuration file hasn't been stored after the installation, necessary information for the existing SPDRM environment can be found in the file: ***[SPDRM_INSTALL_DIR]/serverconf/installation.properties***

6. SPDRM Operation

6.1. Startup Operations

6.1.1. Start MySQL Database

1. Open a terminal window and change directory to: ***[MYSQL_INSTALL_DIR]/bin/***
   (e.g. `cd /opt/mysql/bin/`)
2. Run the `mysqld` (MySQL server daemon program) using the following process arguments:
   - `--verbose`
   - `--lower-case-table-names=1`
   - `--character-set-server=utf8`
   - `--collation-server=utf8_general_ci`
   - `--transaction-isolation=READ-COMMITTED`

   (e.g. `mysqld --verbose --lower-case-table-names=1 --character-set-server=utf8 --collation-server=utf8_general_ci --transaction-isolation=READ-COMMITTED`)

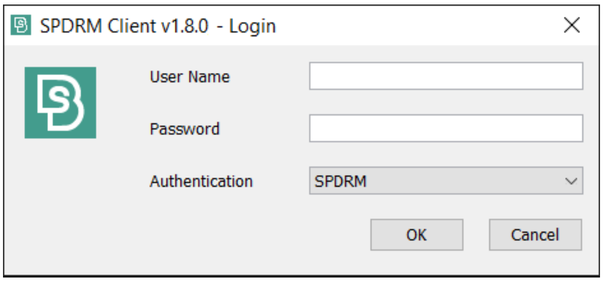
6.1.2. Start SPDRM Server

1. Login as root (for Linux), or as a user that belongs to the Administrators group (for Windows) to the machine where the SPDRM Application Server is installed.
2. Open a terminal window and change directory to the SPDRM installation directory.
3. Run the command: `./startServer.sh` (for Linux), or `startServer.bat` (for Windows)

6.1.3. Start SPDRM Client

1. Open a terminal window and change directory to: ***[SPDRM_INSTALL_DIR]/client***
2. Run the appropriate command:
   - `startClient.sh`
   - `startClient.bat`

   NOTE: The ***client*** directory should be shared in order for remote users to have access to these files and run the SPDRM client successfully.
3. Login using the following credentials:
   - User Name: ***admin***
   - Password: ***admin***



SPDRM Client v1.8.0 - Login

User Name

Password

Authentication: SPDRM

6.2. Stop Operations

6.2.1. SPDRM Client

In order to stop/exit the SPDRM client, select *File > Exit* from the main menu.

6.2.2. Stop SPDRM Server

1. Login as root (for Linux), or as a user that belongs to the Administrators group (for Windows) to the machine where the SPDRM Application Server is installed.
2. Open a terminal window and change directory to the SPDRM installation directory.
3. Run the command: `./stopServer.sh` (for Linux), or `stopServer.bat` (for Windows)

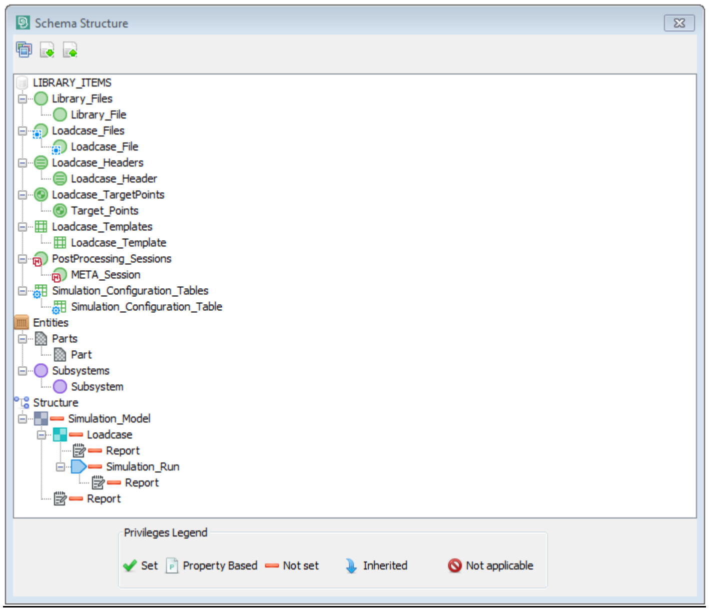
6.2.3. Stop MySQL Database

1. Login to the machine where MySQL database is installed.
2. Open a terminal window and change directory to: ***[MYSQL_INSTALL_DIR]/bin***
   (e.g. `cd /opt/mysql/bin/`).
3. Run the command: `mysqladmin -u root -p shutdown`

6.3 Update Data Model Structure

A default data model structure (i.e. ***dm_structure_TBM.xml***) and data views configuration file (i.e. ***data_views.xml***) are provided in the SPDRM installation package (located in: ***[SPDRM_INSTALL_DIR]/server/wildfly/standalone/configuration/spdrm/***).

The following image shows an overview of the default data model structure and its supported types for data model items.

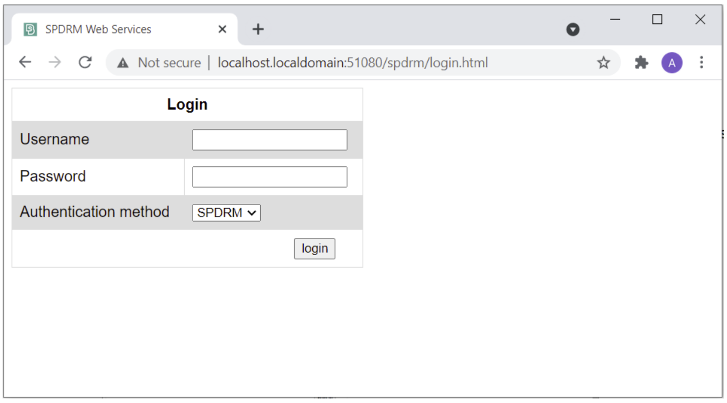


Of course, the data model can be customized according to the needs of your organization. To create your own data model you need to get familiar with the data model description.

<u>NOTE:</u> The description of the data model is available in the SPDRM User's Guide.

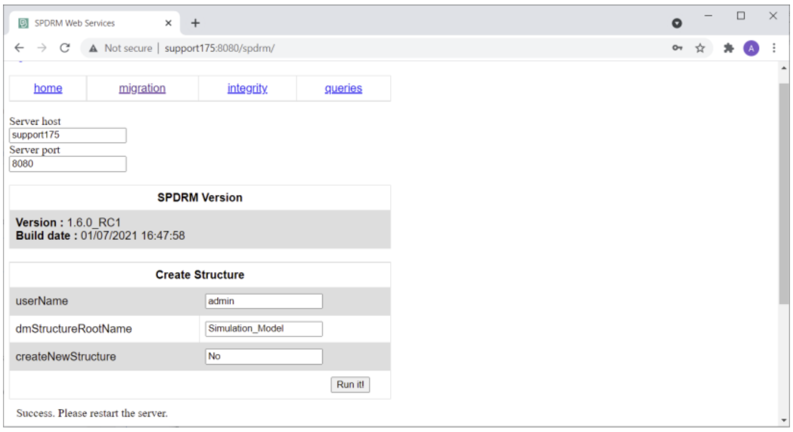
Follow the next steps in order to update the data model structure and apply the data views configuration settings based on the ***dm_structure_TBM.xml*** and ***data_views.xml***.

1. Open a Web Browser and go to **Error! Hyperlink reference not valid.** in order to open the SPDRM Web Services page.
2. Login using the following credentials:
    - User Name: ***admin***
    - Password: ***admin***



3. From the web page that opens, the **Create Structure** Web Service is available. The administrator must fill three fields that correspond to the following keys:
    - **userName:** The name of the SPDRM admin user
    - **dmStructureRootName:** The name of the root DM item type of the Structure
    - **createNewStructure:**
        - **No:** It is used for the update of the existing data structure.
        - **Yes:** It is used for the creation of a new data structure

IMPORTANT: When this argument is set to **Yes** the Web Service deletes all the existing data under the **Structure** and the **LIBRARY_ITEMS** containers.



Server host
support175
Server port
8080

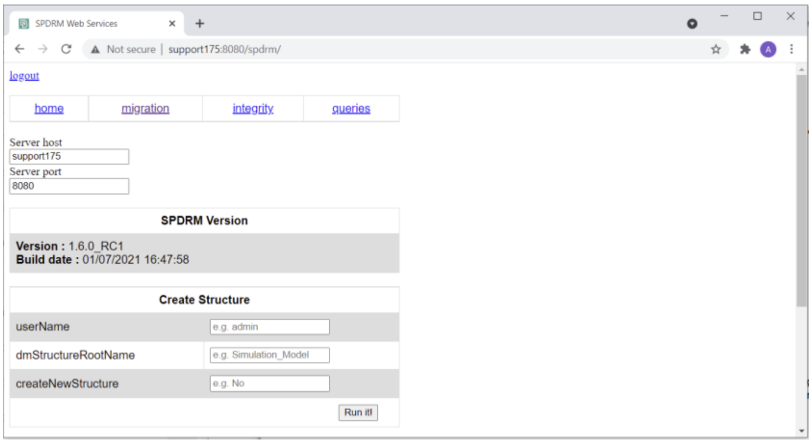
SPDRM Version

Version : 1.6.0_RC1
Build date : 01/07/2021 16:47:58

Create Structure	
userName	admin
dmStructureRootName	Simulation_Model
createNewStructure	No

Success. Please restart the server.

4. When the **Run it!** button is pressed, the web service starts and when it finished the message ‘Success. Please restart the server.’ appears.



Server host
support175
Server port
8080

SPDRM Version

Version : 1.6.0_RC1
Build date : 01/07/2021 16:47:58

Create Structure	
userName	e.g. admin
dmStructureRootName	e.g. Simulation_Model
createNewStructure	e.g. No

5. Finally, restart the SPDRM Application Server as root (for Linux), or as a user that belongs to the Administrators group (for Windows) in order for the new data model structure and data views configuration settings to be applied (see the sections 6.2.2 and 6.1.2 to stop and start again the SPDRM Application Server).

7. SPDRM Maintenance

It is important to frequently back up the database to prevent data loss in case problems occur, such as system crashes, hardware failures, or users deleting data by mistake. Backups are also essential as data security measures before performing an update on the database or the SPDRM Server/Client installation. Additionally, they can be used to transfer data from an existing SPDRM installation to another, or to set up replication slave servers.
In order to backup, recover or reset the database, only the database should be up and running (neither the SPDRM Client, nor the Server).

7.1. Database Backup

7.1.1. MySQL

1. Login to the machine where MySQL database is installed.
2. Open a terminal window and change directory to the ***[MYSQL_INSTALL_DIR]/bin*** (e.g. `cd /opt/mysql/bin/`).
3. Run the command:
   - `mysqldump -u root -p taxisdb > /path/to/DB_filename.sql`
4. Enter the password for the MySQL root user.

7.1.2. Oracle

1. Login to the machine where Oracle database is installed.
2. Open a terminal window and change directory to the ***[ORACLE_INSTALL_DIR]/BIN*** (e.g. `cd /opt/oracle/product/12.2.0/dbhome_1/BIN/`).
3. Run the command:

   -
     ```
     expdp SYSTEM schemas=SPDRM directory=DATA_PUMP_DIR
     dumpfile=YYYYMMDD_expdp_spdrm.dmp logfile=YYYYMMDD_expdp_spdrm.log
     exclude=user
     ```

   NOTE: For Oracle 19c you must define the pluggable database also during import in the aforementioned command. Use for example:

   ```
   SYSTEM/<password>@pdb1
   ```

   instead of `SYSTEM,` where pdb1 is the name of the pluggable database that has been set up.

4. Enter the Oracle Administrative (SYS) password.

7.2. Database Recovery

7.2.1. MySQL

1. Login to the machine where MySQL database is installed.
2. Open a terminal window and change directory to the ***[MYSQL_INSTALL_DIR]/bin*** (e.g. `cd /opt/mysql/bin/`).
3. Run the command:
   - `mysql -u root -p taxisdb < /path/to/DB_filename.sql`
4. Enter the password for the MySQL root user.

7.2.2. Oracle

1. Login to the machine where Oracle database is installed.
2. Open a terminal window and change directory to the ***[ORACLE_INSTALL_DIR]/BIN*** (e.g. `cd /opt/oracle/product/12.2.0/dbhome_1/BIN/`).
3. Run the command:

   -
     ```
     impdp SYSTEM remap_schema=SPDRM:SPDRM EXCLUDE=USER directory=DATA_PUMP_DIR
     remap_tablespace=SPDRM_TABLESPACE:SPDRM_TABLESPACE
     dumpfile=YYYYMMDD_expdp_spdrm.dmp logfile=YYYYMMDD_impdp_spdrm.log
     ```

   NOTE: For Oracle 19c you must define the pluggable database also during import in the aforementioned command. Use for example:

   ```
   SYSTEM/<password>@pdb1
   ```

   instead of `SYSTEM,` where pdb1 is the name of the pluggable database that has been set up.

4. Enter the Oracle Administrative (SYS) password.

7.3. Database Reset

7.3.1. MySQL

1. Login to the machine where MySQL database is installed.
2. Open a terminal window and change directory to the ***[MYSQL_INSTALL_DIR]/bin*** (e.g. `cd /opt/mysql/bin/`).
3. Run the command:

   -
     ```
     mysql -u root -p taxisdb <
     [SPDRM_INSTALL_DIR]/db_configuration/MySQL/taxisdbclean.sql
     ```
4. Enter the password for the MySQL root user.

7.3.2. Oracle

1. Login to the machine where Oracle database is installed.
2. Open a terminal window and change directory to the ***[ORACLE_INSTALL_DIR]/BIN*** (e.g. `cd /opt/oracle/product/12.2.0/dbhome_1/BIN/`).
3. Run the command:

   -
     ```
     impdp SYSTEM remap_schema=SPDRM180:SPDRM EXCLUDE=USER
     directory=DATA_PUMP_DIR remap_tablespace=SPDRM_tbs:SPDRM_TABLESPACE
     dumpfile=oracle_clean_spdrm.dmp logfile=YYYYMMDD_impdp_spdrm.log
     ```

   NOTE: For Oracle 19c you must define the pluggable database also during import in the aforementioned command. Use for example:

   ```
   SYSTEM/<password>@pdb1
   ```

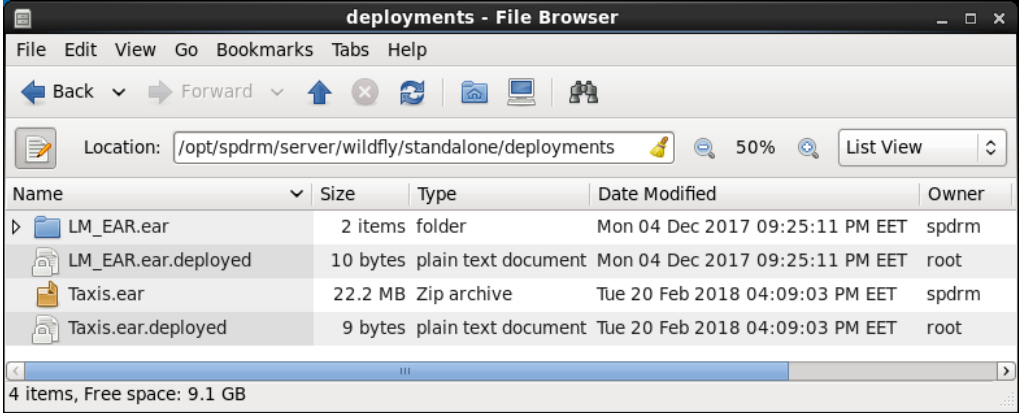
   instead of `SYSTEM`, where pdb1 is the name of the pluggable database that has been set up.

4. Enter the Oracle Administrative (SYS) password.

7.4. SPDRM Server Update (Manual Operation)

In order to manually update the SPDRM Server using a provided SPDRM server update package (***taxis.ear***), both MySQL and SPDRM Server should be up and running, but all the SPDRM client instances must be closed. The SPDRM Server update procedure is described in the following steps:

1. Copy the provided ***taxis.ear*** in: ***[SPDRM_INSTALL_DIR]/server/wildfly/standalone/deployments/*** and replace the existing one.
2. The application server will automatically recognize the new server package (***taxis.ear***) and will soon start its deployment.
3. After finishing successfully the automatic deployment of the new server package, the contents of the ***deployments*** directory should look like the following image:



Location: /opt/spdrm/server/wildfly/standalone/deployments

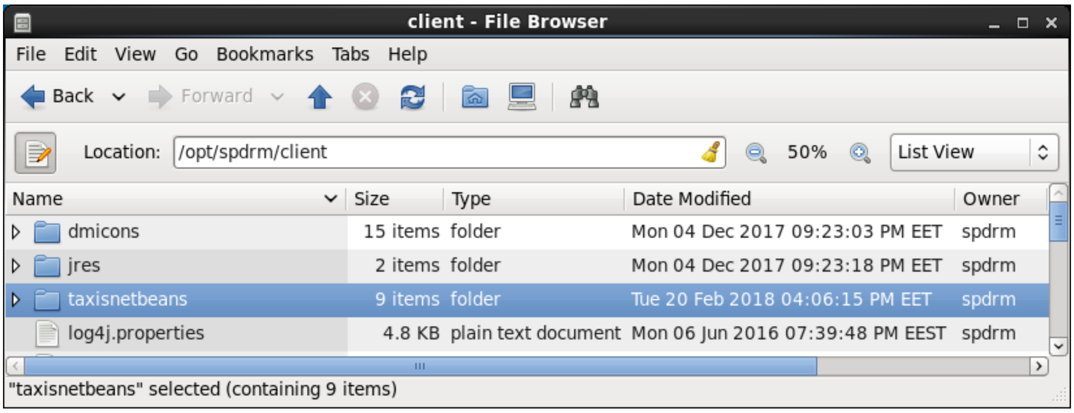
Name	Size	Type	Date Modified	Owner
LM_EAR.ear	2 items	folder	Mon 04 Dec 2017 09:25:11 PM EET	spdrm
LM_EAR.ear.deployed	10 bytes	plain text document	Mon 04 Dec 2017 09:25:11 PM EET	root
Taxis.ear	22.2 MB	Zip archive	Tue 20 Feb 2018 04:09:03 PM EET	spdrm
Taxis.ear.deployed	9 bytes	plain text document	Tue 20 Feb 2018 04:09:03 PM EET	root

4 items, Free space: 9.1 GB

7.5. SPDRM Client Update (Manual Operation)

In order to manually update the SPDRM Client using a provided SPDRM client update package (***taxisnetbeans.zip***), all the SPDRM Client instances that are running on Windows OS must be closed. The SPDRM client update procedure is described in the following steps:

1. Delete the existing *"taxisnetbeans"* folder that is located under the client's directory (i.e. ***[SPDRM_INSTALL_DIR]/client/taxisnetbeans/***).
2. Extract all the contents of the new ***taxisnetbeans.zip*** file into the client's directory (i.e. ***[SPDRM_INSTALL_DIR]/client/***).



client - File Browser
File Edit View Go Bookmarks Tabs Help
Back
Forward
Location: /opt/spdrm/client
50%
List View

Name	Size	Type	Date Modified	Owner
dmicons	15 items	folder	Mon 04 Dec 2017 09:23:03 PM EET	spdrm
jres	2 items	folder	Mon 04 Dec 2017 09:23:18 PM EET	spdrm
taxisnetbeans	9 items	folder	Tue 20 Feb 2018 04:06:15 PM EET	spdrm
log4j.properties	4.8 KB	plain text document	Mon 06 Jun 2016 07:39:48 PM EEST	spdrm

"taxisnetbeans" selected (containing 9 items)

8. SPDRM Plugins

8.1. CAD Conversion

A built-in plugin is offered with the SPDRM installation that facilitates the translation of CAD files in ANSA using remote resources (i.e. a BETA Apps launcher). For the plugin to be successfully executed, both the SPDRM environment and a BETA Apps Launcher need to be properly configured.
First, the SPDRM environment needs to be configured so that process management functionality through ANSA is supported. For this:

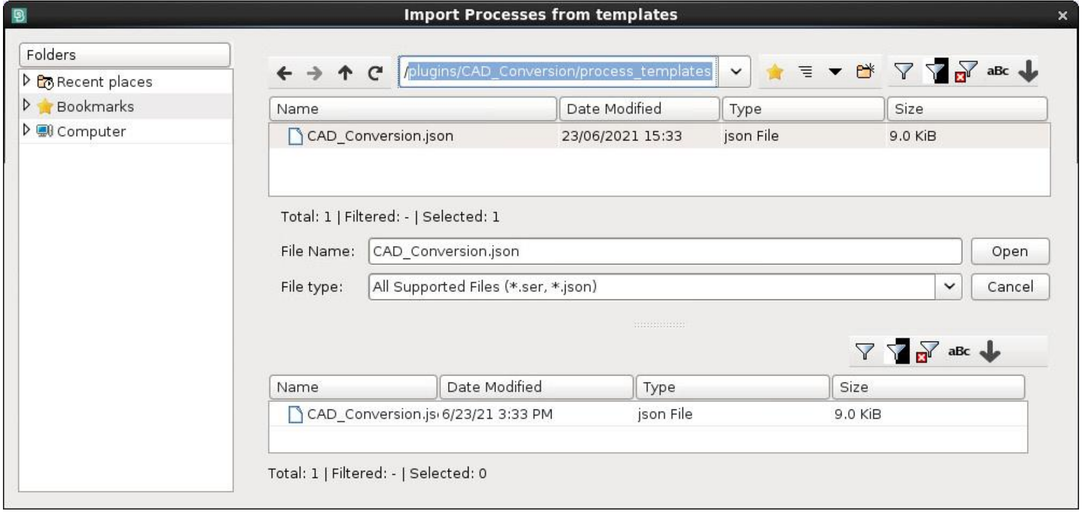
1. the SPDRM Server's configuration file (**taxis.conf)** needs to be edited in order to update the configuration settings of the SPDRM Server with the following keys:
   ```
   <entry key="multi_session_user">{process_execution_user}</entry>
   <entry key=”no_gui_mode”>remote</entry>
   ```

2. a user with the username defined in taxis.conf (`{process_execution_user}`) needs to be created in the SPDRM environment.

Next, a BETA Apps Launcher needs to be setup in the SPDRM environment, containing at least an ANSA application that can be used for the translation of the CAD files. For a detailed description of the BETA Apps Launcher setup, refer to the respective chapter in the Administration section of the SPDRM Users Guide.
Once the configuration of the SPDRM environment and the setup of a BETA Apps Launcher are completed, the plugin can be installed in the SPDRM environment. The files required for the execution of the plugin are available in the following directory: ***[SPDRM_INSTALL_DIR]/plugins/CAD_Conversion***, which contains an SPDRM process template and associated scripts, organized in the respective sub-folders.

In order to make the plugin available to the users, the CAD Conversion process template needs to be imported in SPDRM as follows:

1. Start the SPDRM client as described in section 4.9.
2. From the main SPDRM menu bar select the option **Process > Process Library** in order to open the library of SPDRM process templates.
3. Press the **Import** button 📥 in order to import the CAD Conversion process template.
4. In the file manager window that opens, change directory to: ***[SPDRM_INSTALL_DIR]/plugins/CAD_Conversion/process_templates***



/plugins/CAD_Conversion/process_templates

Name	Date Modified	Type	Size
CAD_Conversion.json	23/06/2021 15:33	json File	9.0 KiB

Total: 1 | Filtered: - | Selected: 1

File Name: CAD_Conversion.json

File type: All Supported Files (*.ser, *.json)

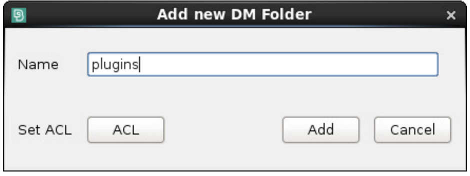
Name	Date Modified	Type	Size
CAD_Conversion.js 6/23/21 3:33 PM		json File	9.0 KiB

Total: 1 | Filtered: - | Selected: 0

5. Select the ***CAD_Conversion.json*** file and press the **Open** button to import the plugin process template.

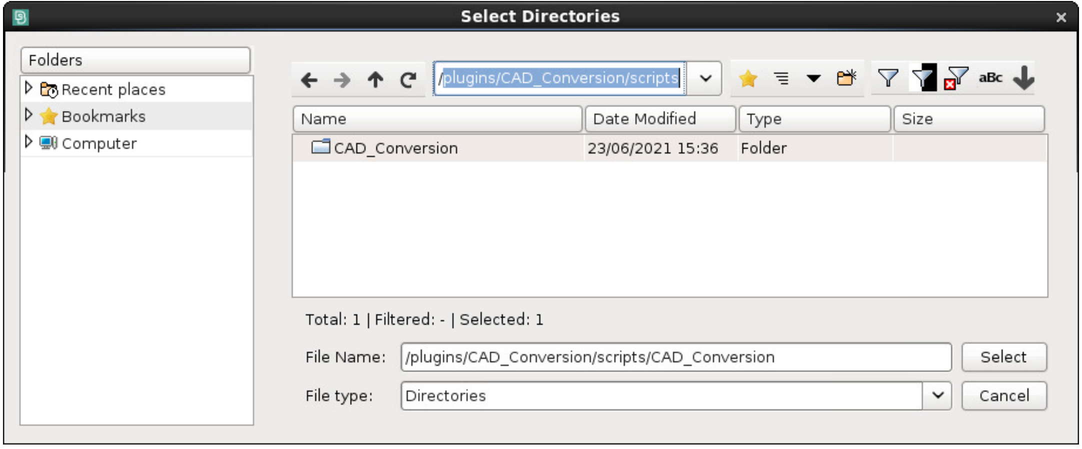
Once the process template is imported in the Process Library, the associated scripts must also be imported in the SPDRM Data Manager as follows:

1. From the main menu bar select the option **Data > Data Manager** in order to open the SPDRM Data Tree. If a folder labelled "plugins" already exists under *DM:/LIBRARY_ITEMS/plugins*, proceed directly to step 3.
2. Select the *LIBRARY_ITEMS* container under *DM:/LIBRARY_ITEMS and* use the context menu option **Add folder** in order to create a new folder labelled **plugins**



Name: plugins

3. Select the *plugins* folder under *DM:/LIBRARY_ITEMS/plugins* and use the context menu option **Import folder(s)** in order to import the folder containing the plugin scripts.
4. Press the **Browse** button and in the file manager window that opens, change directory to: ***[SPDRM_INSTALL_DIR]/plugins/CAD_Conversion/scripts***



Name	Date Modified	Type	Size
CAD_Conversion	23/06/2021 15:36	Folder	

Total: 1 | Filtered: - | Selected: 1

File Name: /plugins/CAD_Conversion/scripts/CAD_Conversion

File type: Directories

5. Select the **CAD_Conversion** folder and press the **Select** button to import the plugin scripts.

8.2. ML Predictor Training

A built-in plugin is offered with the SPDRM installation that can be used to train an Embedded Clips Predictor using remote resources (i.e. a BETA Apps launcher). For the plugin to be successfully executed, both the SPDRM environment and a BETA Apps Launcher need to be properly configured.

First, the SPDRM environment needs to be configured so that process management functionality through ANSA and KOMVOS is supported. For this the SPDRM Client's configuration file (**taxisprops.xml)** needs to be edited in order to update the configuration settings of the SPDRM Client with the following keys:

```
<entry key="script_engine">python</entry>
<entry key=”python_engine_path”>{[SPDRM_INSTALL_DIR]/bsgr/[bsgr_executable]</entry>
<entry_key=”komvos”>{path_to_KOMVOS_executable}</entry>
```

Next, a BETA Apps Launcher needs to be setup in the SPDRM environment, where the *ML Toolkit* must be installed and set up as an application, in order to be used for the training of an Embedded Clips Predictor.

- For a detailed description of the Machine Learning service prerequisites, download information and installation, refer to *Section 6 KOMVOS Machine Learning service* of the KOMVOS Installation Guide.
- For a detailed description of the BETA Apps Launcher setup, refer to the respective chapter in the *Administration* section of the SPDRM Users Guide.

The installed ML Toolkit must be set up as a BETA Apps Launcher application using the following settings in the *application.properties* file:

```
app.applications[0].title=Launch_Lingering_Instance
app.applications[0].path={path_to_ML_Toolkit_launch_script}
app.applications[0].version=1.0
app.applications[0].type=other
```

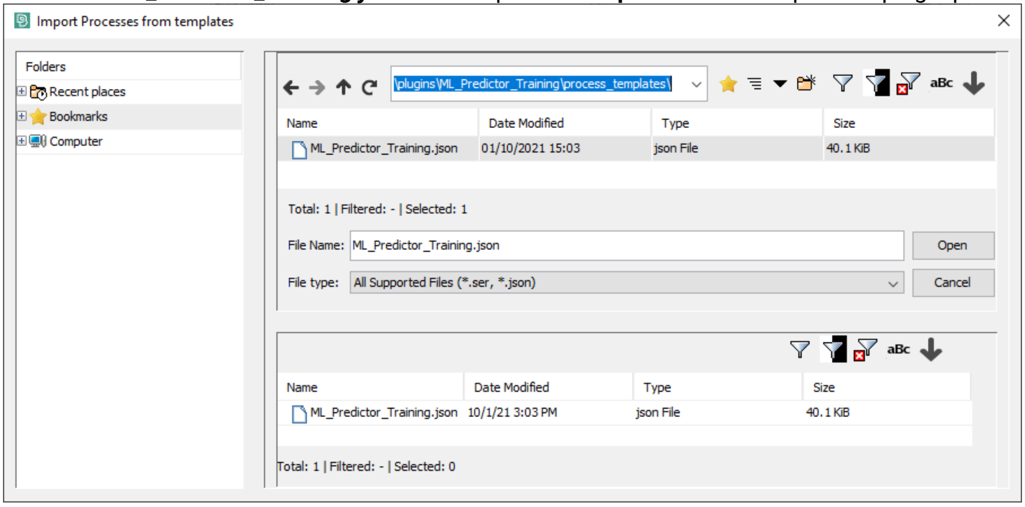
Notes!

- The application tile must be set as ***Launch_Lingering_Instance***.
- The ML Toolkit launch script is provided with the SPDRM installation package and is available in the following directory: ***[SPDRM_INSTALL_DIR]/plugins/ML_Predictor_Training/ml_toolkit_launch_script/***
  It should be copied to a path where the BETA Apps Launcher can access it from this path should be set as the ML Toolkit application path.

Once the configuration of the SPDRM environment and the setup of a BETA Apps Launcher are completed, the plugin can be installed in the SPDRM environment. The files required for the execution of the plugin are available in the following directory: ***[SPDRM_INSTALL_DIR]/plugins/ML_Predictor_Training***, which contains an SPDRM process template and associated scripts, organized in the respective sub-folders.

In order to make the plugin available to the users, the CAD Conversion process template needs to be imported in SPDRM as follows:

1. Start the SPDRM client as described in section 4.9.
2. From the main SPDRM menu bar select the option **Process > Process Library** in order to open the library of SPDRM process templates.
3. Press the **Import** button in order to import the ML Predictor Training process template.
4. In the file manager window that opens, change directory to: ***[SPDRM_INSTALL_DIR]/plugins/ML_Predictor_Training/process_templates***
5. Select the ***ML_Predictor_Training.json*** file and press the **Open** button to import the plugin process template.



Import Processes from templates

\plugins\ML_Predictor_Training\process_templates\

Name	Date Modified	Type	Size
ML_Predictor_Training.json	01/10/2021 15:03	json File	40.1 KiB

Total: 1 | Filtered: - | Selected: 1

File Name: ML_Predictor_Training.json

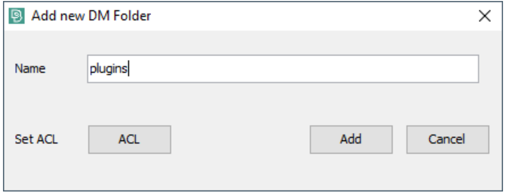
File type: All Supported Files (*.ser, *.json)

Name	Date Modified	Type	Size
ML_Predictor_Training.json	10/1/21 3:03 PM	json File	40.1 KiB

Total: 1 | Filtered: - | Selected: 0

Once the process template is imported in the Process Library, the associated scripts must also be imported in the SPDRM Data Manager as follows:

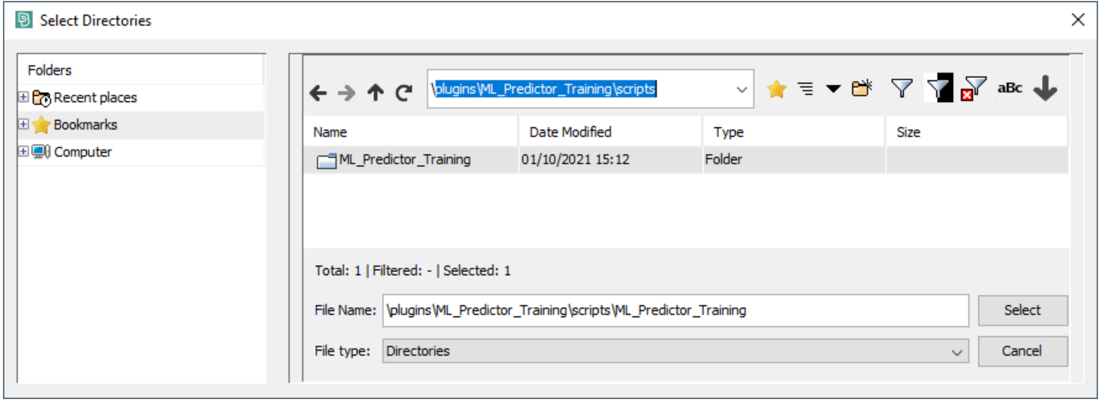
1. From the main menu bar select the option **Data > Data Manager** in order to open the SPDRM Data Tree. If a folder labelled "plugins" already exists under *DM:/LIBRARY_ITEMS/plugins*, proceed directly to step 3.
2. Select the *LIBRARY_ITEMS* container under *DM:/LIBRARY_ITEMS and* use the context menu option **Add folder** in order to create a new folder labelled **plugins**



Add new DM Folder

Name: plugins

3. Select the *plugins* folder under *DM:/LIBRARY_ITEMS/plugins* and use the context menu option **Import folder(s)** in order to import the folder containing the plugin scripts.
4. Press the **Browse** button and in the file manager window that opens, change directory to: ***[SPDRM_INSTALL_DIR]/plugins/ML_Predictor_Training/scripts***



Select Directories

\plugins\ML_Predictor_Training\scripts

Name	Date Modified	Type	Size
ML_Predictor_Training	01/10/2021 15:12	Folder	

Total: 1 | Filtered: - | Selected: 1

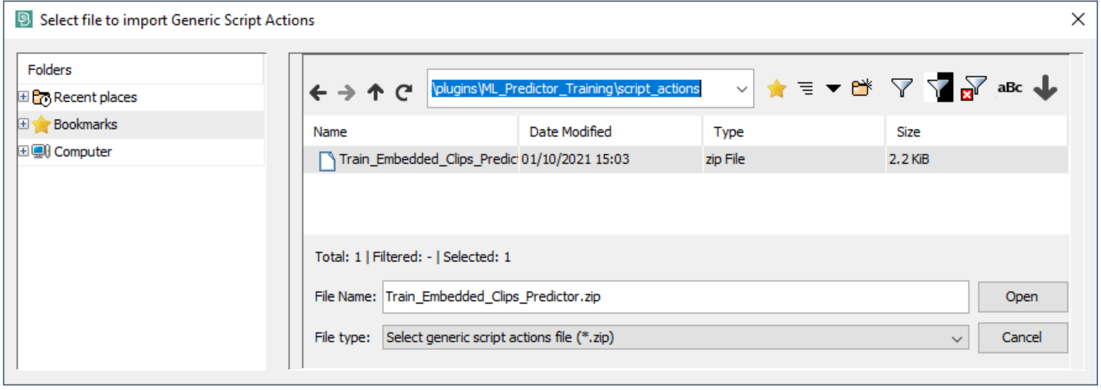
File Name: \plugins\ML_Predictor_Training\scripts\ML_Predictor_Training

File type: Directories

5. Select the **ML_Predictor_Training** folder and press the **Select** button to import the plugin scripts.

Finally, an SPDRM generic script action needs to be imported in order to enable the execution of the plugin workflow through ANSA or KOMVOS and facilitate its execution directly from the SPDRM Client.

1. From the main menu bar select the option **Tools > Manage Script Actions**.
2. In the *Manage Script Actions* window that opens, press the **Import** button in order to import the script action.
3. In the file manager window that opens, change directory to: ***[SPDRM_INSTALL_DIR]/plugins/ML_Predictor_Training/script_actions***



Select file to import Generic Script Actions

\plugins\ML_Predictor_Training\script_actions

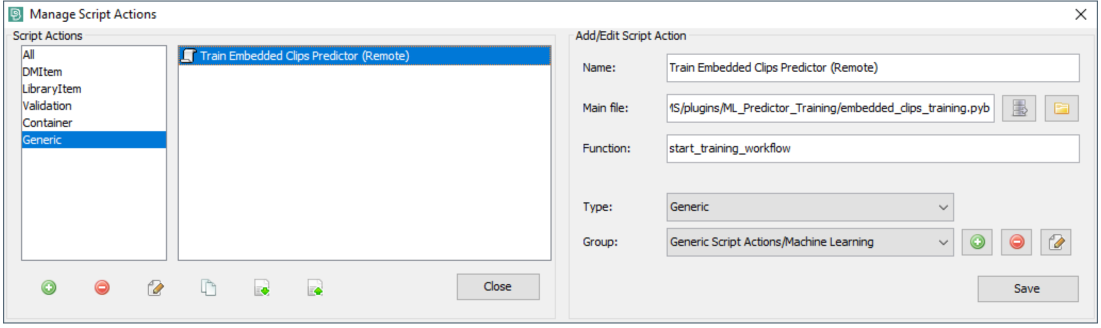
Name	Date Modified	Type	Size
Train_Embedded_Clips_Predic	01/10/2021 15:03	zip File	2.2 KiB

Total: 1 | Filtered: - | Selected: 1

File Name: Train_Embedded_Clips_Predictor.zip

File type: Select generic script actions file (*.zip)

4. Select the **Train_Embedded_Clips_Predictor.zip** file and press the **Open** button to import the script action definition and associated script.



Manage Script Actions

Script Actions: Generic — Train Embedded Clips Predictor (Remote)

Add/Edit Script Action

Name: Train Embedded Clips Predictor (Remote)

Main file: \S/plugins/ML_Predictor_Training/embedded_clips_training.pyb

Function: start_training_workflow

Type: Generic

Group: Generic Script Actions/Machine Learning

Appendix

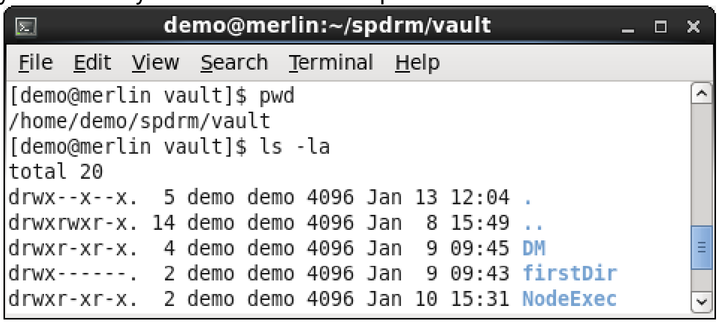
A. SPDRM Configuration Example

In the following example it is assumed that:

- The SPDRM server machine hostname (i.e. ***SERVER_HOST***) is:
  `merlin`
- The SPDRM installation directory (i.e. ***[SPDRM_INSTALL_DIR]***) path is:
  `/opt/spdrm`
- The SPDRM vault path (i.e. ***VAULT_LOCATION***) is:
  `/mnt/share/vaults/vault1`
- The SPDRM exported path of the vault (i.e. ***EXPORT_VAULT_PATH***) is:
  `/mnt/share/vaults/vault1/DM`
- The SPDRM client path is:
  `/opt/spdrm/client`
- NFS share of the SPDRM vault path (for Linux clients):
  `/nfs_share_vault/  -->  /mnt/share/vaults/vault1/`
- NFS share of the SPDRM client dir (for Linux clients):
  `/nfs_share_client/  -->  /opt/spdrm/client/`
- SMB share of the SPDRM client dir and vault path (for Windows clients):
  `M:\  -->  \\merlin\smb_share\  -->  /mnt/share/`[2]

A.1. SPDRM Server Configuration

In this example it is assumed that the ***vault*** dir has been created inside the ***[SPDRM_INSTALL_DIR]***.
An example of the directory structure layout inside the ***vault*** is presented hereafter.



```
[demo@merlin vault]$ pwd
/home/demo/spdrm/vault
[demo@merlin vault]$ ls -la
total 20
drwx--x--x.  5 demo demo 4096 Jan 13 12:04 .
drwxrwxr-x. 14 demo demo 4096 Jan  8 15:49 ..
drwxr-xr-x.  4 demo demo 4096 Jan  9 09:45 DM
drwx------.  2 demo demo 4096 Jan  9 09:43 firstDir
drwxr-xr-x.  2 demo demo 4096 Jan 10 15:31 NodeExec
```

A.1.1. Example of the taxis.conf

```
<properties>
   <entry key="vaults">vault1</entry>
   <entry key="vault1">/mnt/share/vaults/vault1/</entry>
   <entry key="export_vault1">/mnt/share/vaults/vault1/DM/</entry>
   <entry key="W_vault1">M:\vaults\vault1\</entry>
   <entry key="L_vault1">/nfs_share_vault/</entry>
   <entry key="defaultVault">vault1</entry>
   <entry key="nodeExecPath">NodeExec/</entry>
   <entry key="vault1_directorySize">51200</entry>
   <entry key="securityEnabled">true</entry>
   <entry key="commonSML">u+rwx,go=rx</entry>
   <entry key="privateSML">u+rwx,go=</entry>
   <entry key="regexValid">^[A-Za-z0-9*${}._:-]+$</entry>
   <entry key="dmLIBRARY">LIBRARY_ITEMS</entry>
   <entry key="dmTMP">TMP</entry>
   <entry key="componentsContainer">Entities</entry>
   <entry key="DMEntity">Component</entry>
   <entry key="dmStructureContainer">Structure</entry>
```

[2] The Windows clients are requested to assign the appropriate network drive letters for the ***vault*** and the ***client*** shares (e.g. ***M:\***), according to the ***taxisprops.xml.windows***, in order to be able to start and work properly with the SPDRM client.

```
   <entry key="default_privileges_group">mvx</entry>
   <entry key="default_privileges_others">vx</entry>
   <entry key="LDAP_username">uid={0},ou=People,o=sup,dc=localdomain</entry>[3]
   <entry key="LDAP_URL">ldap://monster.localdomain:389</entry>[3]
</properties>
```

A.2. SPDRM Client Configuration

A.2.1. Example of the taxisprops.xml.linux

```
<properties>
   <entry key="serverAddress">merlin</entry>
   <entry key="vault1">/nfs_share_vault/</entry>
   <entry key="export_vault1">/nfs_share_vault/DM/</entry>
   <entry key="serverPort">8080</entry>
   <entry key="serverVendor">wildfly</entry>
   <entry key="dmitem_icons_path">/nfs_share_client/dmicons/</entry>
</properties>
```

A.2.2. Example of the taxisprops.xml. windows

```
<properties>
   <entry key="serverAddress">merlin</entry>
   <entry key="vault1">M:\vaults\vault1\</entry>
   <entry key="export_vault1">M:\vaults\vault1\DM\</entry>
   <entry key="serverPort">8080</entry>
   <entry key="serverVendor">wildfly</entry>
   <entry key="dmitem_icons_path">M:\client\dmicons\</entry>
</properties>
```

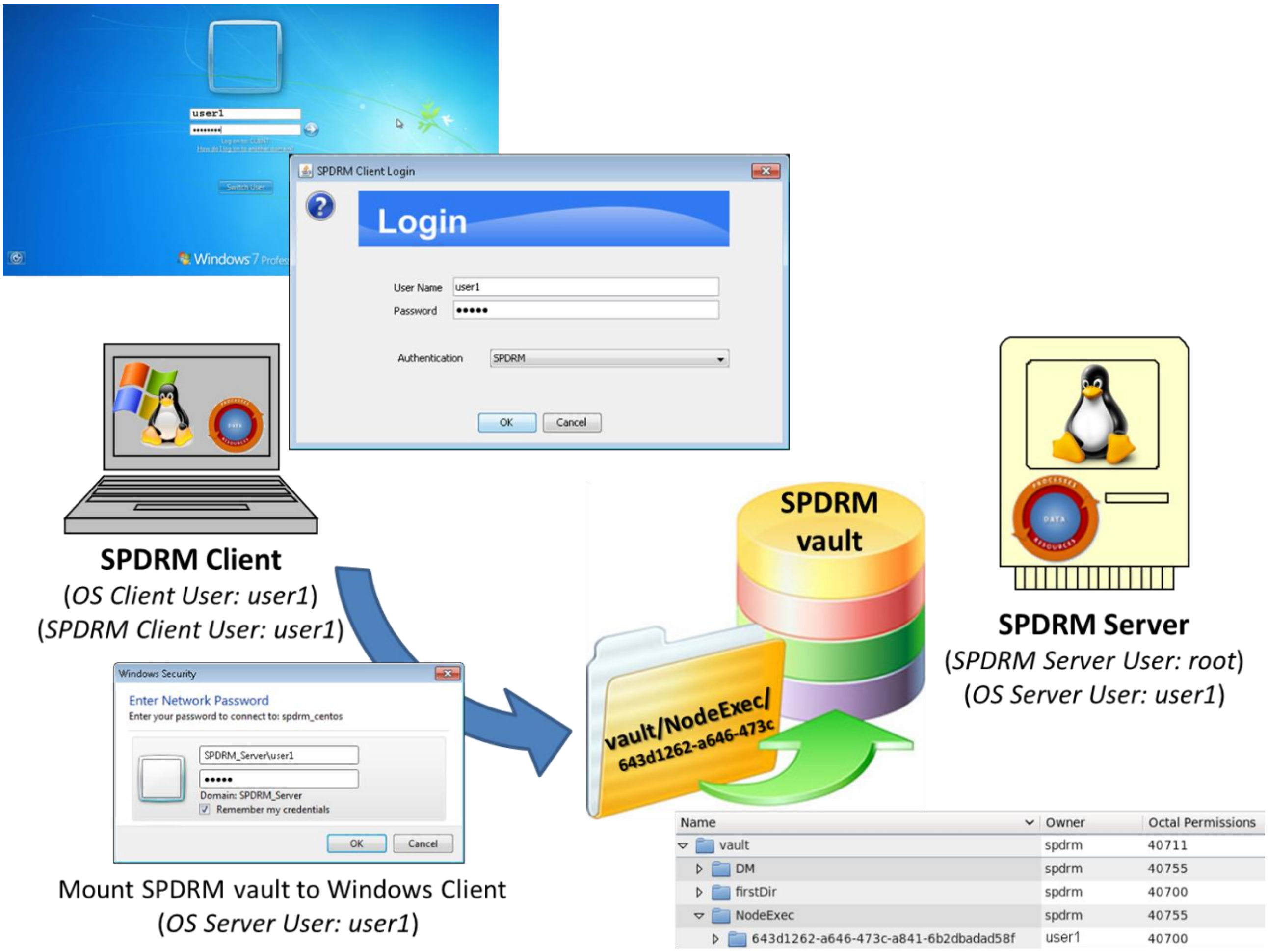
[3] These are two optional settings that are used in case an LDAP / Active Directory server is installed in the company, and you would like the authentication during login to the SPDRM client to take place directly in the LDAP / AD server (and not in the SPDRM server). In case that there is no LDAP / AD server installed in the company, or you would like to authenticate through the SPDRM server anyway, then these two lines should be deleted.

B. SPDRM Security Policy

When the "***securityEnabled***" key is set equal to "***true***" in the SPDRM Server configuration file (i.e. ***taxis.conf***), then the SPDRM server applies security restrictions to all files I/O between SPDRM Server and Client, and uses hard links during importing files in order to minimize the time and the data traffic during the import actions.

This means that all the NodeExec directories[4] that are used during SPDRM Client-Server communications are owned by the corresponding ***OS Client User*** and no other user can access them (i.e. folder permissions 700), but the ***SPDRM Server User*** (i.e. root).
The same security policy applies also during the direct communication between other client applications (e.g. ANSA), and the SPDRM Server.
Thus, in order for the SPDRM Server to apply these security rules in these directories, the ***OS Client User*** should also exist (as an OS user) in the SPDRM Server machine (***OS Server User***).

Moreover, in order for the SPDRM Client (either Windows or Linux) to be able to access (and use) these files, the ***OS Client User*** should be mapped with the ***OS Server User*** during the mounting of the vaults (using Samba or NFS shares). The ***OS Server User*** credentials should be used during the mounting of the vaults to the Client machine.



User Name user1
Password •••••
Authentication SPDRM

Enter Network Password
Enter your password to connect to: spdrm_centos
SPDRM_Server\user1
•••••
Domain: SPDRM_Server
☑ Remember my credentials

Name	Owner	Octal Permissions
vault	spdrm	40711
DM	spdrm	40755
firstDir	spdrm	40700
NodeExec	spdrm	40755
643d1262-a646-473c-a841-6b2dbadad58f	user1	40700

Currently SPDRM Server can handle any inappropriate configurations (i.e. configurations that do not fit the above rules) by switching the "*security mode*" for this Client session to "*unsecure*" (i.e. all the NodeExec directories will acquire permissions 777, and copies of the imported files will be used instead of hard links).

If you are not able to apply the above mentioned configurations and rules, then you can switch the "***securityEnabled***" key to "***false***". In this case the SPDRM server will apply permissions 777 to all NodeExec folders and files I/O between SPDRM Server and Client, and will use copies (instead of hard links) during importing actions.

[4] The NodeExec directories are temporary working directories that are automatically created and deleted by the SPDRM Server. A NodeExec directory is created for every action that requires exchange of files between the SPDRM Client (or ANSA) and the SPDRM Server. They are located inside the NodeExec directory of each vault.