Test Data Management

Software Version 24.4.0

Installation Guide

opentext™

Legal notices

Copyright 2023 - 2024 Open Text

The only warranties for products and services of Open Text and its affiliates and licensors ("Open Text") are as may be set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Open Text shall not be liable for technical or editorial errors or omissions contained herein. The information contained herein is subject to change without notice.

Except as specifically indicated otherwise, this document contains confidential information and a valid license is required for possession, use or copying. If this work is provided to the U.S. Government, consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Documentation updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

Support

Visit the MySupport portal to access contact information and details about the products, services, and support that OpenText offers.

This portal also provides customer self-solve capabilities. It gives you a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the MySupport portal to:

- View information about all services that Support offers
- Submit and track service requests
- Contact customer support
- Search for knowledge documents of interest
- View software vulnerability alerts
- Enter into discussions with other software customers
- Download software patches
- Manage software licenses, downloads, and support contracts

Many areas of the portal require you to sign in. If you need an account, you can create one when prompted to sign in.

Contents

Test Data Management Installation

Prerequisites

The Test Data Management (TDM) is an add-on to the Structured Data Manager (SDM) and therefore must install and meet the system specifications of SDM. In the documentation, this directory where SDM installed is referred to as *<SDM_install_dir>*.

TDM and SDM version Compatibility

TDM verification results with SDM in terms of compatibility are given below.

✓ : Compatible , X: Incompatible

Table 1-1: TDM verification results

	SDM 7.6.6	SDM 7.6.7	SDM 23.2	SDM 24.1	SDM 24.3
TDM 1.0.0	✓	✓	X	X	X
TDM 2.0.0	X	✓	✓	X	X
TDM 2.1.0	X	✓	✓	X	X
TDM 2.1.1	X	✓	✓	X	X
TDM 24.1	X	X	✓	✓	X
TDM 24.2	X	X	✓	✓	X
TDM 24.2.1	X	X	✓	✓	✓
TDM 24.4.0	X	X	X	✓	✓

> **NOTE:** When trying to use version 24.4.0 and previous versions together, visual incompatibility may occur.

External Downloads for Installation

It is recommend to install the TDM (Test Data Management) in a distributed architecture. If you are installing on Windows virtual machines, it is recommended to use environments that allow nested virtualization.

Depending on the installation architecture:

Windows (Non-distributed)

- Docker

- Key Generator

Linux (Non-distributed)

- Docker

- OpenSSL

Distributed (Windows + Linux)

- Key Generator (Windows)

- Docker (Linux)

Server Requirements

Server requirements for TDM installation are given below:

- If installing in a non-distributed architecture, meet the SDM requirements.

- For a distributed architecture (recommended: Windows + Linux), meet the SDM requirements for the Windows server.

- For a Linux server, hardware requirements vary depending on the amount of synthetic data to be produced at one time. Minimum 16 GB RAM, 4-core CPU, 50 GB disk is suitable.

Installation Steps

The installation process consists of 4 parts. Installations are given below in sequence.

> **NOTE:**
> - Before you begin the installation, for TDM to communicate with TLS 1.3, make sure to configure SDM and PostgreSQL repository with TLS 1.3 protocol.
>
> - If you have installed older versions of TDM, uninstall the older version before installing TDM 24.4.0. For more information, refer TDM WEB Uninstallation.

1. Create DB Schemas and Tables

2. Install TDM Web.

3. SSL Configuration (Optional)

4. Synthetic Data Generation (SDG) Engine Installation (Docker is a prerequisite)

Create DB Schemas and Tables

To create DB Schemas and Tables, follow the steps given below respectively.

1. Install **SDM Repository** via **SDM Web Console**.

2. Stop **SDM** if it is up and running.

3. Perform one of the following:

    a. For a fresh installation of Test Data Management, follow the steps below.

        • Go to the directory **TDM DB Scripts** >**TDM Initial Installation**.

        • Download the script file for the version you want to install.

        • Connect to the database and run the SQL script to create the **TDM Schemas**.

    b. If you are upgrading Test Data Management from any of the previous versions, follow the steps below.

        • Go to the directory **TDM DB Scripts** >**TDM Upgrade**.

        • Download the SQL script files from your current version to the version you are installing.

            For example, if you are using **TDM v1.0.0** and want to install **TDM 24.4**, you need the scripts below:

            ◦ **TDM_DB_Upgrade_v1.0.0 - v2.0.0**

            ◦ **TDM_DB_Upgrade_v2.0.0 - v2.1.0**

            ◦ **TDM_DB_Upgrade_v2.1.0 - v2.1.1**

            ◦ **TDM_DB_Upgrade_v2.1.1 - v24.1**

            ◦ **TDM_DB_Upgrade_v2.24.1 - v24.2**

            ◦ **TDM_DB_Upgrade_v2.24.2 - v24.2.1**

            ◦ **TDM_DB_Upgrade_v24.2.1 - v24.4** and **TDM_DB_Migration_v24.2.1 - v24.4**

            > **NOTE:** The database user running these scripts must be the same as the SDM database user, which is set during repository installation.

        • Connect to the database and run them respectively.

    c. If a database with the **synthetic_data** schema is used to run the `TDM_DB_Built-inListGenerators_v24.4.sql` script, the following list generators will be produced. If the database already contains list generators with these names, there won't be any updates or additions made:

        • Occupational Titles

        • Currencies

        • Colors

- Marital Status

- Fuel Types

- Sports

TDM WEB Installation

Windows installation

Windows installation

Prepare for Install

To install TDM Web, follow the below steps:

1. Obtain the Test Data Management installation software and download `TDMInstaller.jar` and `TDMInstaller.bat` in the Installation directory.

2. Copy `TDMInstaller.jar` and `TDMInstaller.bat` to `<SDM_install_dir>/obt/bin` directory.

3. From the path `<SDM_install_dir>/obt/bin` open the command prompt.

4. Run `TDMInstaller.bat`.

    Once the Welcome window displays, start the installation.

Installation

1. Before you begin the installation, check and confirm the TDM version displayed on the **Welcome** window and then click **Next**.

2. **Summary Configuration Data** window displays the installation path of TDM. Click **Next**.

3. In the **User Data** window, enter the following information for PostgreSQL database connection:

   - Host - <host_IP> of the machine where the PostgreSQL database is installed

     > **NOTE:** This host IP should be added to the `pg_hba.conf` file located at ~\PostgreSQL\<version_number>\data, as shown in the example below.

     > **EXAMPLE:** Copy the first line under the # IPv4 Local connections section and paste it below. Only change the IP address field to the host IP.
     >
     > # IPv4 local connections:
     >
     > | host | all | all | 127.0.0.1/32 | scram-sha-256 |
     > | --- | --- | --- | --- | --- |
     > | host | all | all | *<host_IP>*/32 | scram-sha-256 |

   - Port
   - Database
   - Username - database username
   - Password - user's database password
   - SDM Schema
   - **SDM Encryption Key** - must be the same as the key that was entered when the repository installation was done.
   - **SDM Redirect URL** – The URL of the installed SDM. For example, http(s)://<host_IP>:8080 (or 8443 for HTTPS)
   - **Extensions Path** - must point to the `<SDM_install_dir>/OBTHOME/extensions` directory.
   - **SDG (Synthetic Data Generation) Api URL** - must point to the IP of the machine where the SDG Engine is installed with port number **4101**. As SDG Engine supports both HTTP and HTTPS protocol connections, the SDG Api URL must be entered according to this configuration.

     For example, https://*<host_IP>*:4101

     > **NOTE:** When accessing SDM via a browser, the host of the SDM Web Console URL must match the host of the SDG API URL parameter.

- **SDM Admin Username** – admin username of SDM

- **SDM Admin Password** – admin's password

4. Click **Next**.

5. From **Language** drop down select the user interface language.

6. Click **Next**.

   Perform External Processes window displays.

   Once the **Processing** is complete, the database connection for TDM is tested and configured.

7. Click **Next**.

   Installation window displays and you can observe the progress of the installation process.

8. Once the process is completed, click **Next**.

   Installation Finished window displays.

9. Click **Done** to finish the installation of TDM.

> **NOTE:** If the installed SDM version is 7.6.7 or above, from command prompt run the below commands:
>
> ```
> > copy ... <SDM_install_dir>/obt/webconsole/apache-tomcat/webapps/WebConsole/WEB-
> INF/classes/sql.properties ....<SDM_install_dir>/OBTHOME/extensions
> ```

Linux installation

Prepare for install

To install TDM Web on Linux, follow the below steps:

1. Obtain the Test Data Management installation software and download `TDMInstaller.jar` and `TDMInstaller.sh` (Linux) files in the Installation directory.

2. Copy `TDMInstaller.sh` and `TDMInstaller.jar` to the `<SDM_install_dir>/obt/bin` directory.

3. From the path `<SDM_install_dir>/obt/bin` open the command prompt.

4. Run `TDMInstaller.sh` file with the commands for the following systems:

Red Hat ES 9.1	`bash TDMInstaller.sh`
Ubuntu 22.04	`bash TDMInstaller.sh`
Ubuntu 20.04	`bash TDMInstaller.sh`
Ubuntu 18.04	`bash TDMInstaller.sh`
Centos 7.9	`bash TDMInstaller.sh` or `./TDMInstaller.sh`
AlmaLinux 9.0	`bash TDMInstaller.sh`

Once the Welcome window displays, start the installation.

Installation

1. Before you begin the installation, check and confirm the TDM version displayed on the **Welcome** console and then press 1.

2. In the **User Data** window, enter the following information for the PostgreSQL database connection:

   - Host - <host_IP> of the machine where the PostgreSQL database is installed

     > **NOTE:** This host IP should be added to the `pg_hba.conf` file located at ~\PostgreSQL\<version_number>\data, as shown in the example below.

     > **EXAMPLE:** Copy the first line under the # IPv4 Local connections section and paste it below. Only change the IP address field to the host IP.
     >
     > # IPv4 local connections:
     >
     > | host | all | all | 127.0.0.1/32 | scram-sha-256 |
     > |------|-----|-----|--------------|---------------|
     > | host | all | all | *<host_IP>*/32 | scram-sha-256 |

   - Port
   - Database
   - Username - database username
   - Password - user's database password
   - SDM Schema
   - **SDM Encryption Key** - must be the same as the key that was entered when the repository installation was done.
   - **SDM Redirect URL** – The URL of the installed SDM. For example, http(s)://<host_IP>:8080 (or 8443 for HTTPS)
   - **Extensions Path** - must point to the `<SDM_install_dir>/OBTHOME/extensions` directory.
   - **SDG (Synthetic Data Generation) Api URL** - must point to the IP of the machine where the SDG Engine is installed with port number **4101**. As SDG Engine supports both HTTP and HTTPS protocol connections, the SDG Api URL must be entered according to this configuration.

     For example, https://*<host_IP>*:4101

     > **NOTE:** When accessing SDM via a browser, the host of the SDM Web Console URL must match the host of the SDG API URL parameter.

   - **SDM Admin Username** – The admin username of SDM
   - **SDM Admin Password** – admin's password

3. Press 1 to continue.

4. Press 0 to choose **English** as the user interface language.

5. Press 1 to continue.

6. On **Perform External Processes** console, you can observe the progress of the installation process.

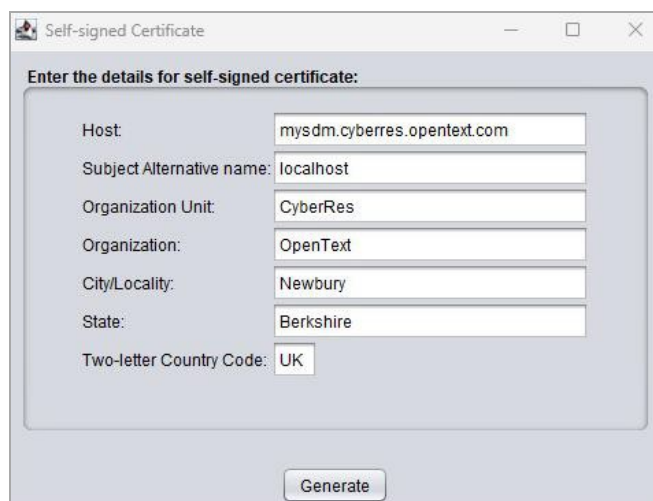7. When the process is complete, **Installation Finished** appears.

> **NOTE:** If the installed SDM version is 7.6.7 or over, execute below commands:
>
> ```
> $ cp .. /<SDM_install_dir>/obt/webconsole/apache-tomcat/webapps/WebConsole/WEB-
> INF/classes/sql.properties .. /<SDM_install_dir>/OBTHOME/extensions.
> ```

SSL Configuration (Optional)

If using SDM, TDM Web and TDM WEB-SDG Engine connection with SSL configuration, follow the steps below:

1. Navigate to folder `<SDM_install_dir>/obt/bin` and open command prompt.

2. Run the utility `enable_ssl_for_wc.bat/sh`.

3. In the Self-signed Certificate window, enter the following:

   a. **Host** - the hostname of the machine

   b. **Subject Alternative name** - hostname of the machine where SDM 24.4 is installed

4. Navigate to the folder `<SDM_install_dir>/obt/webconsole/apache-tomcat/conf/`.

5. Open `server.xml` in a text editor.

   a. Comment out the following HTTP connector (the port number may vary based on your configuration):

```
<Connector port="8080" protocol="HTTP/1.1" connectionTimeout="60000"
redirectPort="8443"/>
```

b. Add the following HTTPS connector (you can change the port number if needed):

```
<Connector port="8443" protocol="org.apache.coyote.http11.Http11NioProtocol"
maxThreads="150" SSLEnabled="true" scheme="https" secure="true"
clientAuth="false"
sslProtocol="TLS" sslEnabledProtocols="TLSv1.2"
keystoreFile="conf/SDMKeyStore.jks" keystoreType="JKS" keystorePass="
changeit" keyPass="changeit"/>
```

6. Place to `<SDM_install_dir>/obt/webconsole/apache-tomcat/conf`.

7. Destination path must be `<SDM_install_dir>/OBTHOME/extensions/certificates`.

   Create a folder*certificates* under `<SDM_install_dir>/OBTHOME/extensions/`, if it is not available.

8. Copy `SDMKeyStore.jks` from the folder `<SDM_install_dir>/obt/webconsole/apache-tomcat/conf/` to `<SDM_install_dir>/OBTHOME/extensions/certificates`.

9. Run SDM.

10. Open the browser and enter URL as https://*<hostmachineIP>*:8443/WebConsole. SDM login page must be appear. If it does not appear, please control the steps.

11. Stop SDM.

> **NOTE:** To enable or disable the SSL protocol for the SDG Engine after installation, follow the TDM and SDG uninstallation and installation instructions.

12. After copying the `SDMKeyStore.jks file`, create the `SDMKeyStore.p12` file in the `<SDM_install_dir>/OBTHOME/extensions/certificates` directory to allow the **tdm-service** to send requests to SDM by running the following command from certificates directory.

    ```
    > cd <SDM_install_dir>/OBTHOME/extensions/certificates
    ```

    ```
    > keytool -v -importkeystore -srckeystore SDMKeyStore.jks -destkeystore
    SDMKeyStore.p12 -deststoretype PKCS12
    ```

13. To set up the **tdm-ui** project with HTTPS, follow the steps below to generate the `nginx_cert.crt` and `nginx_cert.key` files. These steps are applicable to both Windows and Linux environments:

    a. Generate key pair.

       ```
       > keytool -genkeypair -keyalg RSA -keysize 2048 -keystore tdm_nginx_ssl.jks
       -validity 365 -alias tdm_nginx_ssl
       ```

    b. Convert the `tdm_nginx_ssl.jks` keystore to a `tdm_nginx_ssl.p12` file:

       ```
       > keytool -v -importkeystore -srckeystore tdm_nginx_ssl.jks -destkeystore
       tdm_nginx_ssl.p12 -deststoretype PKCS12
       ```

> **NOTE:** For the below steps, if you use a Windows or Linux system, you must download and install OpenSSL before proceeding.

    c. Generate the `nginx_cert.crt` file:

```
> openssl pkcs12 -in tdm_nginx_ssl.p12 -nokeys -out nginx_cert.crt -legacy
```

    d. Generate the `nginx_cert.key` file:

```
> openssl pkcs12 -in tdm_nginx_ssl.p12 -nocerts -nodes -out nginx_cert.key -
legacy
```

Synthetic Data Generation (SDG) Engine Installation

To install the Synthetic Data Generation (SDG) Engine:

Docker must be installed. Docker and SDG Engine installation can be done on the same machine (the machine where TDM and SDM are installed) or on a separate machine.

Follow the steps below on the machine where this installation takes place:

Docker Installation

1. If Docker is not already installed on the machine, refer to Docker Installation Guide to install.

2. Run **Docker** if it is not already running.

3. Open the command prompt and test the Docker Installation with the hello-world container by executing the "`docker run hello-world`" command.

4. For Docker installation on **Windows**, open **Docker Desktop** and navigate to **Settings** > **Resources** > **Advanced** tab, increase the CPU, RAM, and disk allocations as specified below.

   - Set a minimum of 4 CPUs and 16 GB of RAM. If higher capacity is available, allocate 75% of the total CPU and 75% of the total RAM.

   - Swap can be set between 2-8 GB, but if the environment is for production, swap should be set to 0.

   - The minimum disk space should be 100 GB. If more space is available, allocate 75%.

5. For Docker installation on Windows, open **Docker Desktop**, navigate to **Settings** > **Resources** > **File Sharing** tab, and allow access to the directory where SDM is installed. Then, restart Docker.

SDG Engine Installation

SDG engine installation involves two different methods:

- **Non-distributed Installation** : Installation on the same machine

- **Distributed Installation** : Installation in different machine.

Select the installation method as required

Prerequisites for both Distributed and Non-distributed Installations

1. Go to **TDM_Installation** folder, find and download **SDG_Installation.zip** file and unzip the file using an unzip software.

2. It is recommended to create a folder named **SDG_Installation** and copy all the downloaded files to this folder.

3. If the installation is in a distributed architecture, copy the `application.properties` file which is under the folder `…/SDM/OBTHOME/extensions` from the machine where SDM and TDM installed to the **SDG_Installation** folder.

4. If SDM is configured with SSL protocol and SDG Engine is installed in a distributed architecture, copy the `SDMKeyStore.p12`, `nginx_cert.crt` and `nginx_cert.key` files which are under the folder `<SDM_install_dir>/OBTHOME/extensions/certificates` from the machine where SDM and TDM installed to the **SDG_Installation** folder.

5. If the database of the SDM is configured with TLS 1.3 protocol, `server.key` and `server.crt` files are required.

   - In common installation, `server.key` and `server.crt` files are copied to the `<SDM_install_dir>/OBTHOME/extensions/certificates` folder.

   - In distributed installation, `server.key` and `server.crt` files are copied to the **SDG_Installation** folder

6. Check whether **curl** is installed by typing the `curl --version` command in the terminal. A curl version with TLS 1.3 support, using OpenSSL/1.1.1m or LibreSSL/3.9.2 (or later), is needed. If **curl** is installed, **curl version** information is given as follows.

```
curl 8.4.0 (Windows) libcurl/8.4.0 Schannel WinIDN
Release-Date: 2023-10-11
Protocols: dict file ftp ftps http https imap imaps pop3 pop3s smtp smtps telnet tftp
Features: AsynchDNS HSTS HTTPS-proxy IDN IPv6 Kerberos Largefile NTLM SPNEGO SSL SSPI threadsafe Unicode UnixSockets
```

   If it is not installed, a warning like `'curl' is not recognized as an internal or external command, operable program or batch file.` will appear. In this case, download **curl** from here and install.

   > **NOTE:** Only **y** and **n** are accepted as answer for the questions that has (y/n) in it. If you give another input, then "Warning: Please answer by pressing `'y'` for (yes) or `'n'` for (no)" message shows up and the same question will be asked again.

```
Is it distributed installation? (y/n) : a
Warning: Please answer by pressing 'y' for (yes) or 'n' for (no)
Is it distributed installation? (y/n) :
```

7. If **TDM WEB** is installed on Windows Server and **SDG Engine** is installed on Linux Server at Public Cloud (Cross platform Installation)

- The **SDM DB** must be reachable from **SDG Engine**.

- SDM ports which are configured for HTTP and HTTPS (defaults are 8080 and 8443 respectively) must be reachable from the UI users and SDG Engine.

- 4101 and 8181 ports belong to SDG Engine. These ports must be reachable from TDM WEB.

8. Run SDM, if it is not already running.

Distributed Installation

1. From **SDG_Installation** folder, open the command line/terminal and run the following commands:

    - On **Windows**, run > `SDGInstaller.bat`

    - On **Linux**, run the > `bash SDGInstaller.sh`

2. Press **y** for the distributed installation of SDG Engine.

    > **NOTE:** If `application.properties` file does not exist in the installation folder, the installation terminates with an error message .

    ```
    Is it distributed installation? (y/n) : y

    Error: File application.properties does not exist in current directory.
    ```

    ```
    ####### Welcome to the Synthetic Data Generation (SDG) Engine 24.2 Installation #######

    Is it distributed installation? (y/n) :
    ```

3. Press Enter to use the default path or write the desired path to continue. If you enter without writing anything, it will continue with the default path. It is C:/SDG for Windows and /root/SDG for Linux.

    ```
    Press enter to use default installation path or write desired path to continue. (C:/SDG) :
    ```

4. Make sure you typed the correct path and confirm by pressing **y**.

    ```
    Selected path: C:/SDG
    Do you confirm the selected path? (y/n) :
    ```

    > **NOTE:** If you press **n**, the question of path selection appears again.

    ```
    Do you confirm the selected path? (y/n) : n
    Press enter to use default installation path or write desired path to continue. (C:/SDG) :
    ```

    > **NOTE:** If there is a problem while creating the selected path, the following similar error message appears and the installation is terminated.

```
Selected path: *-?
Do you confirm the selected path? (y/n) : y

The filename, directory name, or volume label syntax is incorrect.
Error: Failed to create directory.
```

5. After confirmation, the `application.properties` file is copied to the given path.

```
Do you confirm the selected path? (y/n) : y

        1 file(s) copied.
application.properties copied to C:/SDG/extensions
```

> **NOTE:** If there is a problem while copying the `application.properties` file, a related error message appears and the installation is terminated.

6. If you want to install with the SSL protocol, press **y**. If not, press **n**.

```
Do you want to use SSL protocol? (y/n) :
```

`SDMKeyStore.p12`, `nginx_cert.crt` and `nginx_cert.key` are copied from the installation folder to the `…/certificates` folder.

> **NOTE:** When **y** is pressed, but any of the files `SDMKeyStore.p12`, `nginx_cert.crt`, or `nginx_cert.key` is missing under the installation folder, the following error appears:
>
> `Error: File <filename> does not exist in the current directory.`

> NOTE: If you want to enable/disable SSL protocol for the SDG Engine after the installation, you must follow the uninstallation and installation steps for TDM and SDG.

7. Go to and follow the steps given.

Non-Distributed Installation

1. From **SDG_Installation** folder, open the command line/terminal and run the following commands:

   - On **Windows**, run > `SDGInstaller.bat`

   - On **Linux**, run the > `bash SDGInstaller.sh`

2. Press **n** for the non-distributed installation of **SDG Engine**.

```
####### Welcome to the Synthetic Data Generation (SDG) Engine 24.2 Installation #######

Is it distributed installation? (y/n) :
```

3. Write the path of the OBTHOME folder of SDM.

```
Please write the absolute path of 'OBTHOME' folder of SDM :
```

> NOTE: If the given path is not valid, the question about the path appears again.

```
Please write the absolute path of 'OBTHOME' folder of SDM : C:/invalid_folder
Warning: Folder C:/invalid_folder is not valid
Please write the absolute path of 'OBTHOME' folder of SDM :
```

If there is no problem with the path, the process continues with the SSL Certification.

```
Please write the absolute path of 'OBTHOME' folder of SDM : C:/SDM/OBTHOME
Selected path: C:/SDM/OBTHOME
```

4. On Linux, write the User Identifier (UID) of the SDM user.

   Finding UID

   To find the owner of the process running SDM on Linux, use the following command:

   ```
   > ps -ef | grep SDM | grep -v grep | awk '{print $1, $2, $8}'
   ```

   To find the UID using the obtained username, run the following command:

   ```
   > id -u <user>
   ```

   ```
   Please write the User Identifier (UID) of the SDM user
   UID :
   ```

5. On Linux, write the Group Identifier (GID) of the SDM user.

   Finding GID

   To find the user group using the obtained username, use the following command:

   ```
   groups <user>
   ```

   To find the GID using the group name, run the following command:

   ```
   id -g <group>
   ```

   ```
   Please write the Group Identifier (GID) of the SDM user
   GID :
   ```

   > **NOTE:** For UID and GID questions, the answer must be between 0 and 60000, including 0 and 60000. If the answer is outside this range, a warning will appear, and the user will be asked to enter a new response.
   >
   > ```
   > Warning: Please enter a number between 0 and 60000.
   > ```

6. If you want to install with the SSL protocol, press **y**. If not, press **n**.

   ```
   Do you want to use SSL protocol? (y/n) :
   ```

If you press **y**, enter the SSL keystore password

```
Enter SSL keystore password :
```

> **NOTE:** If this field is left empty and Enter is pressed, the warning `Password cannot be empty. Please try again.` will be displayed, prompting the user to enter a password again.

When the password is entered and Enter is pressed, it must confirm the SSL keystore password. The same password entered in the first field must be provided here.

If the passwords do not match, the warning `Passwords do not match. Please try again.` will be shown, returning the user to the initial password prompt where the same questions will be asked again.

```
Enter SSL keystore password : ********
Confirm your SSL keystore password : ************
Passwords do not match. Please try again.
Enter SSL keystore password :
```

If both fields contain the same password, the message `Password confirmed.` will be displayed on the screen.

```
Enter SSL keystore password : ********
Confirm your SSL keystore password : ********
Password confirmed.
```

> **NOTE:** If the response to the question `Do you want to use SSL protocol? (y/n) :` is **n**, these steps will be skipped, and the password will not be requested.

7. Go to Common Steps for Distributed and Non-Distributed Installation, below and follow the steps given.

Common Steps for Distributed and Non-Distributed Installation

1. If you want to enable the TLS 1.3 protocol, press **y** else press **n**.

```
Do you want to enable TLS 1.3 protocol? (y/n) :
```

2. 2. If you want to use self-signed certificate for environments, press **y** else press **n**.

```
Do you want to use self-signed certificate for environments? (y/n) :
```

3. Type the host IP of the machine on which SDM is installed.

```
Please write the host of SDM
Host :
```

> NOTE: If the given host is not valid, the host question will be asked again.

```
Please write the host of SDM
Host : ***
Warning: Input does not match the expected format
Host :
```

4. Type the port of the machine on which SDM WebConsole is running. Port can vary according to if SSL protocol is enabled for SDM or not.

    > **NOTE:** The valid port range is 0-65535. If the given port is not valid, the port question will be asked again.

    ```
    Please write the port of SDM
    Port : 80000
    Warning: Input does not match the expected format
    Port :
    ```

    > **NOTE:** If a valid port is given, a URL is created based on host IP and port number and SSL protocol enablement. curl command is executed to check if the URL is reachable or not. If the response is unsuccessful, the installation returns to the host step.

    ```
    Port : 8000

    Selected URL: https://192.168.185.197:8000
    Checking if https://192.168.185.197:8000 is reachable...
    https://192.168.185.197:8000 is not reachable or active.

    Please write the host of SDM
    Host :
    ```

    ```
    Host : 192.168.185.197

    Please write the port of SDM
    Port :
    ```

5. Type the server name of the current machine (It can be the IP address or DNS name).

    ```
    Please write the server name of current machine (It can be IP address or DNS name)
    Server Name : 20.166.251.57
    ```

    Type the server name again to confirm.

    ```
    Please write the server name of current machine (It can be IP address or DNS name)
    Server Name : 20.166.251.57
    Given Server Name: 20.166.251.57
    ```

    Press y to confirm the given server name.

    ```
    Please write the server name of current machine (It can be IP address or DNS name)
    Server Name : 20.166.251.57
    Given Server Name: 20.166.251.57
    Do you confirm the given server name? (y/n) : y
    ```

    If an invalid value is entered, a warning message will be displayed, and the Server Name will be requested again.

    SDG Engine installation starts like in the below figure.

In case of issues with the ownership and permissions of the TLS 1.3 certificate files, the following commands can be used to adjust them:

- On Linux, replace UID and GID with the values entered during installation.
- On Windows, 1000 can be used in place of UID and GID.

```
docker exec -it sdg-api-1 bash -c "chown <UID>:<GID>
/app/extensions/certificates/<environment_name>/* && chmod 0600
/app/extensions/certificates/<environment_name>/*"
```

```
docker exec -it celery_worker bash -c "chown <UID>:<GID>
/app/extensions/certificates/<environment_name>/* && chmod 0600
/app/extensions/certificates/<environment_name>/*"
```

Setting Time Zones for SDG Engine Containers

Follow the steps below to change the time zone of SDG containers based on the time zone of the machine where SDM is installed.

1. Open a command line/terminal.

2. Run the following command to obtain the necessary container IDs: `> docker ps -a`

   Identify the container ID for `<sdg-api-1 id>`.

3. Use the following command to enter the container:

   `> docker exec -it <sdg-api-1 id> /bin/bash`

4. Inside the container, run the following command to reconfigure the time zone:

   `> sudo dpkg-reconfigure tzdata`

5. Select the appropriate time zone from the list provided. Make sure that the prompted Local time is the same with the SDM-installed machine.

6. To exit the container, use the following command: `> exit`

7. Restart the Docker container to apply the changes: `> docker restart <sdg-api-1 id>`

8. Follow the steps (steps 1 to 7) for the following containers as well: `celery_worker`.

Follow the steps below to change the time zone of `kafein-tdm-service` container:

1. Open a command line/terminal.

2. Use the following command to enter the container:

   `> docker exec -u 0 -it kafein-tdm-service /bin/bash`

3. Inside the container, run the following commands to reconfigure the time zone. Write the appropriate time zone to TZ variable. Time zone example: Europe/Istanbul

   `> export TZ=<time zone of SDM-installed machine>`

   `> ln -sf /usr/share/zoneinfo/$TZ /etc/localtime`

   `> echo "$TZ" > /etc/timezone`

4. Run the following command to check the time. Make sure that the prompted time is the same with the SDM-installed machine.

   `> date`

5. To exit the container, use the following command:

   `> exit`

6. Restart the Docker container to apply the changes:

   `> docker restart kafein-tdm-service`

Follow the steps below to change the time zone of kafein-tdm-ui container:

1. Open a command line/terminal.

2. Use the following command to enter the container:

   `> docker exec -u 0 -it kafein-tdm-ui /bin/sh`

3. Inside the container, run the following commands to reconfigure the time zone. Write the appropriate time zone to TZ variable. The time zone must be in the **Europe/Istanbul** format.

   `> export TZ=<time zone of SDM-installed machine>`

   `> cp /usr/share/zoneinfo/$TZ /etc/localtime`

   `> echo "$TZ" > /etc/timezone`

4. Run the following command to check the time. Make sure that the prompted time is the same with the SDM-installed machine.

   ```
   > date
   ```

5. To exit the container, use the following command: `> exit`

6. Restart the Docker container to apply the changes: `> docker restart kafein-tdm-ui`

Now, the time zone of the SDM-installed machine within the specified Docker container should be configured according to your selection.

TDM WEB and SDG Engine Uninstallation

TDM WEB Uninstallation

To uninstall TDM WEB, follow the steps given below.

1. Stop **SDM WebConsole**.

2. Open a terminal/command prompt.

3. Go to folder `<SDM_install_dir>/temp/Uninstaller`

4. Run the command `<SDM_install_dir>/jre/bin/java -jar uninstaller.jar`

SDG Engine Uninstallation

To uninstall SDG Engine, follow the steps given below.

1. Find and download the `SDGUninstaller.bat` file for Windows or `SDGUninstaller.sh` file for Linux from the **SDG_Installation** folder.

2. Open the command line or terminal and check if Docker is running by the command given below.

   For Windows: `> docker ps`

   For Linux: `> sudo docker ps`

   ```
   error during connect: this error may indicate that the docker daemon is not running: Get "
   http://%2F%2F.%2Fpipe%2Fdocker_engine/v1.24/containers/json": open //./pipe/docker_engine:
   The system cannot find the file specified.
   ```

   If you see a message like above, run Docker.

3. Go to the folder where SDGUninstaller.bat/SDGUninstaller.sh was downloaded from the command line.

4. Run the command given below.

   For Windows: `> SDGUninstaller.bat`

```
C:\Users\Kafein\Desktop\sdg_installation>SDGUninstaller.bat
####### Synthetic Data Generation (SDG) Engine 24.2 Uninstallation #######

Stopping container: sdg-api-1
sdg-api-1
Removing container: sdg-api-1
sdg-api-1
Removed container: sdg-api-1
Stopping container: celery_worker
celery_worker
Removing container: celery_worker
celery_worker
Removed container: celery_worker
Stopping container: rabbitmq
rabbitmq
Removing container: rabbitmq
rabbitmq
Removed container: rabbitmq
Stopping container: tdm-api
tdm-api
Removing container: tdm-api
tdm-api
Removed container: tdm-api

Removing image: rabbitmq:3.12-management
Untagged: rabbitmq:3.12-management
Deleted: sha256:feba55029c91e5cb7d64199b8302e952e7c2647a9a2c3215bc7dc6385f430a56
Deleted: sha256:b02338bf51ac67c6ccddbc336107002aaaeb158212f3cf0c8507d1473d311c7b
Deleted: sha256:16c0db8f68513e444764508885e5a0d15f68580f1cc7f9b357bd52ff26e46ee5
Deleted: sha256:9514fded7f796d33c84b928b6d67d5cf355c4e48a8851b2692ec699d4601a9d6
Deleted: sha256:0f3f872288492330c4d09e30e9652de91c573c1955fa8cea306daf6b6cdcab9d
Deleted: sha256:aeaaf5e84d398ba26338f15decee6c4b7aa1768f93a057e2b12caf964bf0d344
Deleted: sha256:ff942032ce367083f553d74e3549f14c482406b17e09280759ec417913528346
Deleted: sha256:f03fd4cc7611cb07cd7e358c1ceaa57e9db50b0da50309dec9589ddd66ce5aff
Deleted: sha256:4ade8c9980237e6ac359e30c938a032067fc24c65d39bd2d4e357987fa00deec
Deleted: sha256:d544ae1e9914ffdc6b8d708a6d668b9b8dc6559c84173f58ebb4072201e11d34
Deleted: sha256:7f06304d8646b3c5765feec36bbfecc99e0e2ceed4dfc7aacb28c760f1e50945
Deleted: sha256:59c56aee1fb4dbaeb334aef06088b49902105d1ea0c15a9e5a2a9ce560fa4c5d
Removing image: kafein/sdg:24.2
Untagged: kafein/sdg:24.2
Deleted: sha256:7d332666bedd1f537b824fdec77f1562dd6d3a77cc306216532da6b18ec4e57b
Deleted: sha256:d4706e0aae086bbcf342a482a3d985aeb7d9c9e814f49528115cd1c0d99936fd
Deleted: sha256:4570a4c6f1239bc91a48f133938f150e21abc1c603c534879134aa628c31d22c
Deleted: sha256:2bab81522f5594f5327e3dc50ef9ac622e869edb1d0d44970f5efc328f81e129
Deleted: sha256:87704dba3068e46548481d675daea73aeb40cf9969207b3f4142234ade0547ed
Deleted: sha256:e66ee7cefe98a7656d06e37c419d5668dc35fcbce52886c121382d534d1e163f
Deleted: sha256:457df3c67e7245c564934fff0f382f8f372c38203e90595c40294f1dd5bbe932
Deleted: sha256:80e86290e638ac007a500fb10c526f1011ca167fa79a56258f12aadcbb69770d
Deleted: sha256:e27931725d4a5ff6f6381a52fca1bd9062a526c980b36aea2be715b319bcdcca
```

```
rabbitmq
Removed container: rabbitmq
Stopping container: tdm-api
tdm-api
Removing container: tdm-api
tdm-api
Removed container: tdm-api

Removing image: rabbitmq:3.12-management
Untagged: rabbitmq:3.12-management
Deleted: sha256:feba55029c91e5cb7d64199b8302e952e7c2647a9a2c3215bc7dc6385f430a56
Deleted: sha256:b02338bf51ac67c6ccddbc336107002aaaeb158212f3cf0c8507d1473d311c7b
Deleted: sha256:16c0db8f68513e444764508885e5a0d15f68580f1cc7f9b357bd52ff26e46ee5
Deleted: sha256:9514fded7f796d33c84b928b6d67d5cf355c4e48a8851b2692ec699d4601a9d6
Deleted: sha256:0f3f872288492330c4d09e30e9652de91c573c1955fa8cea306daf6b6cdcab9d
Deleted: sha256:aeaaf5e84d398ba26338f15decee6c4b7aa1768f93a057e2b12caf964bf0d344
Deleted: sha256:ff942032ce367083f553d74e3549f14c482406b17e09280759ec417913528346
Deleted: sha256:f03fd4cc7611cb07cd7e358c1ceaa57e9db50b0da50309dec9589ddd66ce5aff
Deleted: sha256:4ade8c9980237e6ac359e30c938a032067fc24c65d39bd2d4e357987fa00deec
Deleted: sha256:d544ae1e9914ffdc6b8d708a6d668b9b8dc6559c84173f58ebb4072201e11d34
Deleted: sha256:7f06304d8646b3c5765feec36bbfecc99e0e2ceed4dfc7aacb28c760f1e50945
Deleted: sha256:59c56aee1fb4dbaeb334aef06088b49902105d1ea0c15a9e5a2a9ce560fa4c5d
Removing image: kafein/sdg:24.2
Untagged: kafein/sdg:24.2
Deleted: sha256:7d332666bedd1f537b824fdec77f1562dd6d3a77cc306216532da6b18ec4e57b
Deleted: sha256:d4706e0aae086bbcf342a482a3d985aeb7d9c9e814f49528115cd1c0d99936fd
Deleted: sha256:4570a4c6f1239bc91a48f133938f150e21abc1c603c534879134aa628c31d22c
Deleted: sha256:2bab81522f5594f5327e3dc50ef9ac622e869edb1d0d44970f5efc328f81e129
Deleted: sha256:87704dba3068e46548481d675daea73aeb40cf9969207b3f4142234ade0547ed
Deleted: sha256:e66ee7cefe98a7656d06e37c419d5668dc35fcbce52886c121382d534d1e163f
Deleted: sha256:457df3c67e7245c564934fff0f382f8f372c38203e90595c40294f1dd5bbe932
Deleted: sha256:80e86290e638ac007a500fb10c526f1011ca167fa79a56258f12aadcbb69770d
Deleted: sha256:e27931725d4a5ff6f6381a52fca1bd9062a526c980b36aea2be715b319bcdcca
Deleted: sha256:2364a6fc0edc66308c047158a6c7d0ffc29d5979a462fe89a0138e2b5f931aa2
Deleted: sha256:b55ff4d1eb4dd15edbc9ffc15b1bd5771cd09c371b0e7c44cbcbd5c5f62ec76a
Deleted: sha256:e2ef8a51359d088511d34c725305c220294a1fcd5fe5e5dbe4d698c7239ce2c9
Removing image: kafein/tdm-api:24.2
Untagged: kafein/tdm-api:24.2
Deleted: sha256:3c06294658a36e0dc3c8abd16e94c5b6776462fd45c21d0ad0ed00c0c295dc9e
Deleted: sha256:793c1e6d59c64baa23a119cac18fb3ced3abbe0d6a75c9800d5d82a2dfa6e26a
Deleted: sha256:05600f6b561370016026b75f220386a2945cc508b93e7e45250c6575f09f051b
Deleted: sha256:fee82743d30607e6429a4c6709df7f5ef48d96d8e69aae6655ac508f0e268af3
Deleted: sha256:0a0c271db733a6b9bdcff3c7f37a7fab0093a35bc2027350b3faafc0f0611596
Deleted: sha256:23afdf86973913e7aceaa167135be2bb7b40c13ed1ec56d2ebf99069296c3726
Deleted: sha256:b21c32065eaf63c124069d5ff9003b9b5af8f9987fbabf3a5a1380ab3fb5ab2d

Uninstallation completed

C:\Users\Kafein\Desktop\sdg_installation>
```

For Linux: > bash SDGUninstaller.sh

```
######## Synthetic Data Generation (SDG) Engine 24.2 Uninstallation ########

Stopping container: sdg-api-1
sdg-api-1
Removing container: sdg-api-1
sdg-api-1
Removed container: sdg-api-1
Stopping container: celery_worker
celery_worker
Removing container: celery_worker
celery_worker
Removed container: celery_worker
Stopping container: rabbitmq
rabbitmq
Removing container: rabbitmq
rabbitmq
Removed container: rabbitmq
Stopping container: tdm-api
tdm-api
Removing container: tdm-api
tdm-api
Removed container: tdm-api
```

```
Removing image: rabbitmq:3.12-management
Untagged: rabbitmq:3.12-management
Deleted: sha256:feba55029c91e5cb7d64199b8302e952e7c2647a9a2c3215bc7dc6385f430a56
Deleted: sha256:b02338bf51ac67c6ccddbc336107002aaaeb158212f3cf0c8507d1473d311c7b
Deleted: sha256:16c0db8f68513e444764508885e5a0d15f68580f1cc7f9b357bd52ff26e46ee5
Deleted: sha256:9514fded7f796d33c84b928b6d67d5cf355c4e48a8851b2692ec699d4601a9d6
Deleted: sha256:0f3f872288492330c4d09e30e9652de91c573c1955fa8cea306daf6b6cdcab9d
Deleted: sha256:aeaaf5e84d398ba26338f15decee6c4b7aa1768f93a057e2b12caf964bf0d344
Deleted: sha256:ff942032ce367083f553d74e3549f14c482406b17e09280759ec417913528346
Deleted: sha256:f03fd4cc7611cb07cd7e358c1ceaa57e9db50b0da50309dec9589ddd66ce5aff
Deleted: sha256:4ade8c9980237e6ac359e30c938a032067fc24c65d39bd2d4e357987fa00deec
Deleted: sha256:d544ae1e9914ffdc6b8d708a6d668b9b8dc6559c84173f58ebb4072201e11d34
Deleted: sha256:7f06304d8646b3c5765feec36bbfecc99e0e2ceed4dfc7aacb28c760f1e50945
Deleted: sha256:59c56aee1fb4dbaeb334aef06088b49902105d1ea0c15a9e5a2a9ce560fa4c5d
Removing image: kafein/sdg:24.2
Untagged: kafein/sdg:24.2
Deleted: sha256:7d332666bedd1f537b824fdec77f1562dd6d3a77cc306216532da6b18ec4e57b
Removing image: kafein/tdm-api:24.2
Untagged: kafein/tdm-api:24.2
Deleted: sha256:3c06294658a36e0dc3c8abd16e94c5b6776462fd45c21d0ad0ed00c0c295dc9e
Deleted: sha256:793c1e6d59c64baa23a119cac18fb3ced3abbe0d6a75c9800d5d82a2dfa6e26a
Deleted: sha256:05600f6b561370016026b75f220386a2945cc508b93e7e45250c6575f09f051b
Deleted: sha256:fee82743d30607e6429a4c6709df7f5ef48d96d8e69aae6655ac508f0e268af3
Deleted: sha256:0a0c271db733a6b9bdcff3c7f37a7fab0093a35bc2027350b3faafc0f0611596
Deleted: sha256:23afdf86973913e7aceaa167135be2bb7b40c13ed1ec56d2ebf99069296c3726
Deleted: sha256:b21c32065eaf63c124069d5ff9003b9b5af8f9987fbabf3a5a1380ab3fb5ab2d

Uninstallation completed
```

Troubleshooting

Problems that may be encountered during the installation process are explained in this section with their possible solutions.

Issue

The old Docker Engine Container have not been deleted.

Solution

1. Type 'docker ps' into the terminal.

2. The NAMES column of the returned table contains the 'sdg api 1' line. Copy the CONTAINER ID of this line.

3. Paste CONTAINER ID to the relevant place in the Docker by executing the 'docker rm f <CONTAINER ID>' command in the terminal. This command deletes the old docker container.

Issue

The old Docker Engine image have not been deleted.

Solution

1. Type 'docker ps' into the terminal.

2. The NAMES column of the returned table contains the 'sdg api 1' line. Copy the IMAGE of this line.

3. Paste IMAGE to the relevant place in the Docker by executing the 'docker rmi f <IMAGE>' command in the terminal. This command deletes the old docker image.

4. Restart the Docker Engine.

5. Run the setup again.

Issue

Port 4101 may not be available.

Solution

Port 4101 should not be in use as the application uses port 4101.

1. Detect and terminate the other application using port 4101.

2. Restart the Docker Engine.

3. Run the setup again.

Issue

Installation can be stuck in 'Loading new image'.

Solution

1. Restart the Docker Engine.

2. Run the setup again.

Issue

Installation can be stuck in 'Running new container'.

Solution

1. Restart the Docker Engine.

2. Run the setup again.

Issue

"Connection Error" in Synthetic Flow List Management.

Solution

Make sure Docker Engine is running.

Issue

When TDM is opened, "Exception while executing a Groovy script" error is appeared.

Solution

$ cp .. /SDM~/obt/webconsole/apache tomcat/webapps/WebConsole/WEB INF/classes/sql.properties .. /SDM~/OBTHOME/extensions

Make sure you run this command during the installation and check that it works properly.

Issue

When SDG is configured to work with TLS 1.3 protocol which is using self-signed certificates, a full reinstallation is required to disable this feature.

Solution

To disable self-signed certificates without reinstallation,

1. Modify the `../extensions/sdg_config.properties` file by changing the parameter `SELF_SIGNED_ENABLED=true` to `SELF_SIGNED_ENABLED=false`.

2. Restart the `sdg-api-1` and `celery_worker` containers.

To enable self-signed certificates:

1. Reverse the change by setting `SELF_SIGNED_ENABLED=false` to `SELF_SIGNED_ENABLED=true`.

Issue

When SDG was configured to connect to a PostgreSQL database with TLS 1.3, reinstallation was required to modify the TLS 1.3 settings.

Solution

To disable the TLS configuration without reinstallation:

1. Modify the `../extensions/sdg_config.properties` file by changing the parameter `TLS_ENABLED=true` to `TLS_ENABLED=false`.

2. Restart the `sdg-api-1` and `celery_worker` containers.

To enable TLS:

1. Reverse the change by setting `TLS_ENABLED=false` to `TLS_ENABLED=true`.

Additionally, copy the database certificates (`server.crt` and `server.key`, without changing the filename) into the `<SDM_install_dir>/OBTHOME/extensions/certificates` directory. Make sure the certificates are owned by the appropriate user, with read and write permissions granted only to the owner, and no access for group or other users.

Issue

If the **SDM Admin Password** is entered incorrectly on the **User Data** page during the TDM Web installation, TDM will not be able to connect to SDM.

Solution

To resolve this issue without needing to reinstall, follow the steps below:

1. Go to `TDM_Installation/Utils` directory.

2. Download `encryptUtil.jar`.

3. Go to `TDM_Installation/Utils` directory, open command line.

4. Run the following command with the right SDM Admin password.

   ```
   > java -jar encryptUtil.jar encrypt=<Admin_Password>
   ```

5. You will see the encrypted version of the password in the command line:

   ```
   Encrypted: <EncrytedAdminPassword>
   ```

6. Copy the value of **<EncryptedAdminPassword>** and paste it into the `api-key-user-password` variable in the `application.properties` file located at `<SDM_install_dir>/OBTHOME/extensions`.