The Reuse Company

SES Server:
Technical Reference Handbook

By The REUSE Company

Manage the SES ENGINEERING Studio Tool users, databases and Systems Engineering Suite high level configuration with the power and the simplicity of The REUSE Company Suite

THE REUSE COMPANY

SES SERVER: TECHNICAL REFERENCE HANDBOOK

The REUSE Company

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SES SERVER: TECHNICAL REFERENCE HANDBOOK

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Changes History:

Version	Date	Changes
1.0	October 2019	Initial version
1.1	November 2019	Added TRC DB Proxy option
1.2	February 2020	Added TRC DB Proxy connector options.
1.3	April 2021	New version for v18.5
1.4	September 2021	New Flex version update
2.0	January 2022	New version for v22
2.1	March 2022	JDK version
2.2	July 2022	New version 22.2.1 – FlexNet update
2.3	August 2023	New version v23
2.4	April 2024	New version v23.3
2.5	December 2024	New version v23.4
2.6	December 2025	New version V23.5 – New Chapter 6

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1 Architecture & Deployment

This document applies to the 23.5 version of the product.

1.1 Applications Composing Systems Engineering Suite (SES)

The Systems Engineering Suite (SES) comprises these applications:

- SES Server: the tool for the administrative process of the suite. It includes:
    - Quality Database configuration
    - SES Service
    - RQA Batch: batch process for automatic assessment
- SES ENGINEERING Studio: This tool is designed to group all Engineering Suite capabilities using only one interface. It includes:
    - Quality Management Capability
    - V&V Management Capability
    - TRACEABILITY Studio Capability
- KM – KNOWLEDGE Manager: the tool to manage the ontology.
- KM Online – KNOWLEDGE Manager: the tool to manage the ontology online.
    - Needs the KM Online Backend component.
- RAT plugin for Google Chrome, Microsoft Edge, and Mozilla Firefox enables RAT on top of any web application that manages requirements.
    - Needs the RAT API Backend component.

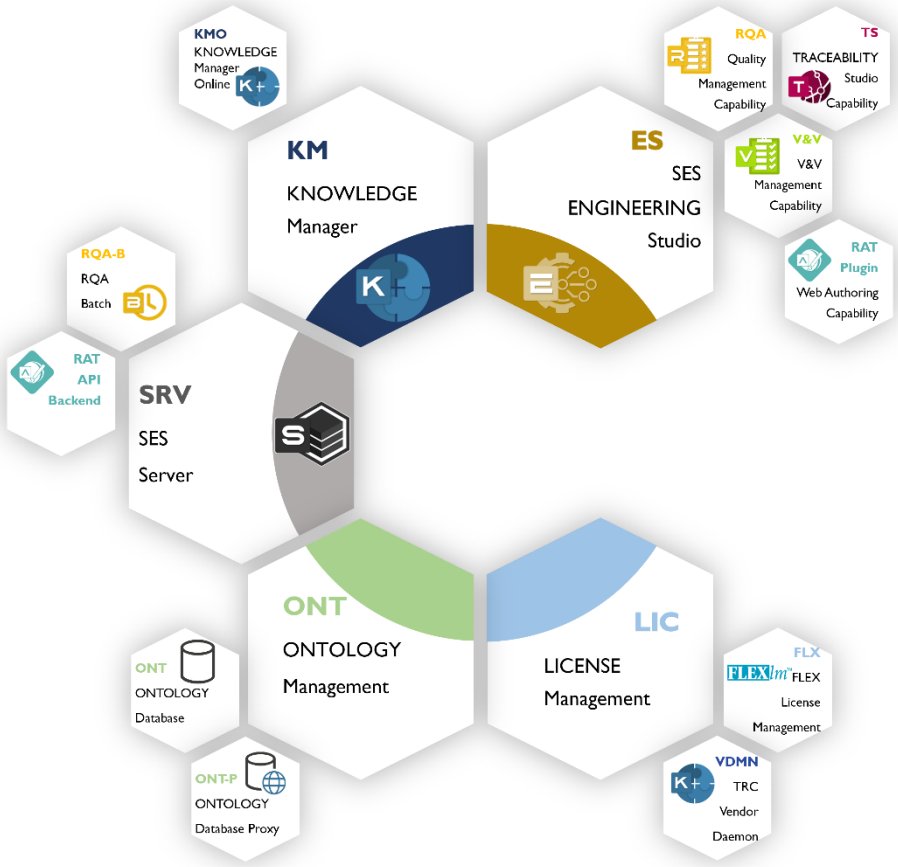

FIGURE 1

The different deployment components are described in detail below:

- **SES ENGINEERING Studio** works as a standard application. allows any systems engineer to manage different types of workproducts. From goals and high-level requirements to system or subsystem requirements, risks, verification actions
- **QUALITY Management Capability** is a feature inside SES ENGINEERING Studio. It connects to a SE workproduct through its SE Tool and configures the quality metrics and generates the quality assessment.
- **V&V Management Capability** is a feature inside SES ENGINEERING Studio. It has been designed to cover the verification and validation processes, allowing the users to design and develop their own verification and validation (V&V) actions, using different techniques and methods, including automatic rules that help the users in the V&V tasks.

- **TRACEABILITY Management Capability** is a feature inside SES ENGINEERING Studio. It connects many SE workproducts to different SE Tools and, discovers and manages the traceability links among them.
- **RAT plugin** is a plugin available in Chrome, Edge, and Firefox that enables to perform authoring in the same way performed inside ENGINEERING Studio, but on top of the web application of SE Tools.
- **RAT API Backend** is the server-side part of the RAT authoring capabilities enable for any web browser.
- **KM – KNOWLEDGE Manager** works as a standard application. It connects and manages a relational database where the ontology information is available.
- **KM – KNOWLEDGE Manager Online** is the web version of the KM – Knowledge Manager. Manages a relational database where the ontology information is available.
- **KM – KNOWLEDGE Manager Online Backend** is the backend version of the KM – Knowledge Manager Online.
- **SES Server** is a tool and a service, whose role is to gather all settings needed to configure the SES ENGINEERING Studio and to avoid configuring them individually at each workstation installation.
- **RQA Batch** is a console application managed by the SES Server, responsible for launching the off-line quality assessment.
- The **Flex License Server** is necessary for the licensing system. The **TRC licensing daemon** must be added on top of it. They all must be installed on the same server.
- A Relational Database is necessary to manage all the information and data. The tool can work with MS Access, MS SQL Server, and MySQL.
- Finally, optionally, the **Ontology database proxy** can be included in the deployment architecture to act as intermediate between the ontology database and the client applications (SES ENGINEERING Studio and KNOWLEDDGE Manager) to match deployment restrictions that may enforce not to query directly from the client applications to the ontology database.

All of them must be installed on top of Windows OS, except for the Ontology Databases which can run in other OS, provided that they are compliant with the Database Management System compatibilities expressed in the description above.

1.2 Network Communications

The communication among the different tools can follow two different approaches in regards of the connectivity to the ontology database:

1. Client / Server traditional connections, the client tools (SES ENGINEERING Studio) connect directly to the ontology database.
2. The clients retrieve the information from the ontology database using a proxy.

In the following sections the network communications will be explained in detail for both models.

1.2.1 Network Communications (Client/Server No Proxy)

The communication among the different tools and the RM Server (Requirement Management Server) follows the flow stated below:

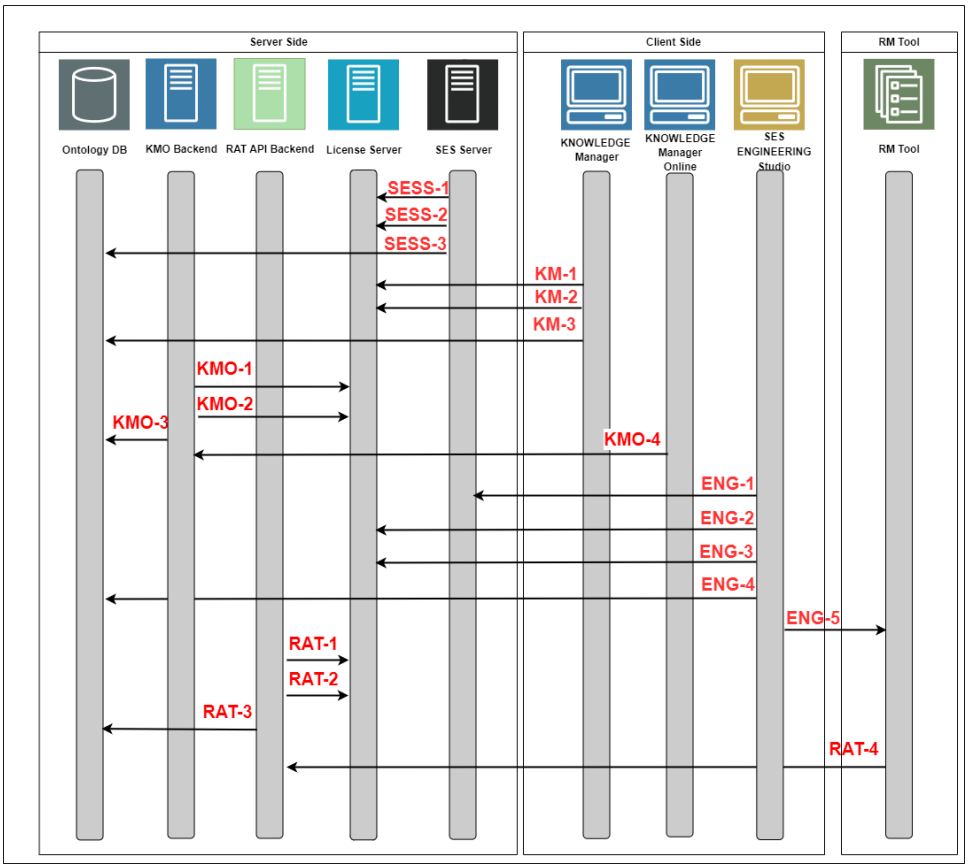

FIGURE 2

Information being transferred in each communication.

All communications are done with a ciphered RSA encryption to share information in both directions. Once received, the information is decrypted, processed, encrypted, and sent back. All communications are secured using HTTPS protocol.

The information being transferred in every transaction described in Figure 2 is as follows:

1.2.1.1 SES Server communication flows

ID	SESS-1	SESS-2	SESS-3
Type	FlexLM Server	TRC Vendor Daemon	Ontology Database Access
Source	SES Server.exe	SES Server.exe	SES Server.exe
Target	Lmadmin Service	FLEXTRC.exe	Database Service
Ports	Range of 27000-27009	Auto Set	**SQL Server:** 1433 **MySQL:** 3306
Protocol	TCP/IP	TCP/IP	TCP/IP
Information provided	MAC address	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database.
Information received	License server reachable Y/N License available Y/N	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The database provides the content of the ontology to the client application

1.2.1.2 KNOWLEDGE Manager communication flows

Flow ID	KM-1	KM-2	KM-3
Flow type	FlexLM Server	TRC Vendor Daemon	Ontology Database Access
Source	KNOWLEDGE Manager.exe	KNOWLEDGE Manager.exe	KNOWLEDGE Manager.exe
Target	Lmadmin Service	FLEXTRC.exe	Database Service
Port(s)	Range of 27000-27009	Auto Set	**SQL Server:** 1433 **MySQL:** 3306
Protocol	TCP/IP	TCP/IP	TCP/IP
Information provided	MAC address	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database.
Information received	License server reachable Y/N License available Y/N	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The database provides the content of the ontology to the client application

1.2.1.3 KNOWLEDGE Manager Online communication flows

Flow ID	KMO-1	KMO-2	KMO-3	KMO-4
Flow type	FlexLM Server	TRC Vendor Daemon	Ontology Database Access	Web Request
Source	KM Online Backend	KM Online Backend	KM Online Backend	Internet Browser
Target	Lmadmin Service	FLEXTRC.exe	Database Service	KMO Backend
Port(s)	Range of 27000-27009	Auto Set	**SQL Server:** 1433 **MySQL:** 3306	80, 443
Protocol	TCP/IP	TCP/IP	TCP/IP	HTTP, HTTPS
Information provided	MAC address	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database.	The Source send a Web Request against the provided URL where the KMO Website is listening to
Information received	License server reachable Y/N License available Y/N	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The database provides the content of the ontology to the client application	The Angular SPA content to be displayed in an Internet browser

1.2.1.4 SES Engineering Studio communication flows

Flow ID	ENG-1	ENG-2	ENG-3	ENG-4	ENG-5
Flow type	FlexLM Server	TRC Vendor Daemon	License and Ontology configuration	Ontology Database Access	RM Server Access
Source	SES ENGINEERING Studio.exe	SES ENGINEERING Studio.exe	SES ENGINEERING Studio.exe	SES ENGINEERING Studio.exe	SES ENGINEERING Studio.exe
Target	Lmadmin Service	FLEXTRC.exe	SES Server.exe	Database Service	RM Server Service
Port(s)	Range of 27000-27009	Auto Set	16555	**SQL Server:** 1433 **MySQL:** 3306	*
Protocol	TCP/IP	TCP/IP	HTTP	TCP/IP	*
Information provided	MAC address	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The source requests the HOSTNAME and Port of communication for License Server and Ontology Database	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database	The Source sends User and Password (AD or RM Tool credentials) to connect to the server.
Information received	License server reachable Y/N License available Y/N	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The source sends the HOSTNAME and Port of communication for License Server and Ontology Database	The database provides the content of the ontology to the client application	The RM Server sends back the requirements contained in the requested requirements document.

* Depends on RM service

1.2.1.5 RAT API Backend communication flows

Flow ID	RAT-1	RAT-2	RAT-3	RAT-4
Flow type	FlexLM Server	TRC Vendor Daemon	Ontology Database Access	Web Request Using the RAT Api plugin for Chrome, Firefox, or Edge
Source	RAT API Backend	RAT API Backend	RAT API Backend	Internet Browser
Target	Lmadmin Service	FLEXTRC.exe	Database Service	RAT API Backend
Port(s)	Range of 27000-27009	Auto Set	**SQL Server:** 1433 **MySQL:** 3306	80, 443
Protocol	TCP/IP	TCP/IP	TCP/IP	HTTP, HTTPS
Information provided	MAC address	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database.	The Source send a Web Request against the provided URL where the KMO Website is listening to
Information received	License server reachable Y/N License available Y/N	Same as FlexLM Server. Used as communication bridge between Flexera and SES applications	The database provides the content of the ontology to the client application	The Angular SPA content to be displayed in an Internet browser

1.2.2 Network Communications (Using Ontology Database Proxy)

The communication among the different tools is exactly the same as in the previous scenario, the only difference is that instead of the Ontology Server there is the Proxy tool, and the Proxy is the only tool that communicates with the Ontology.

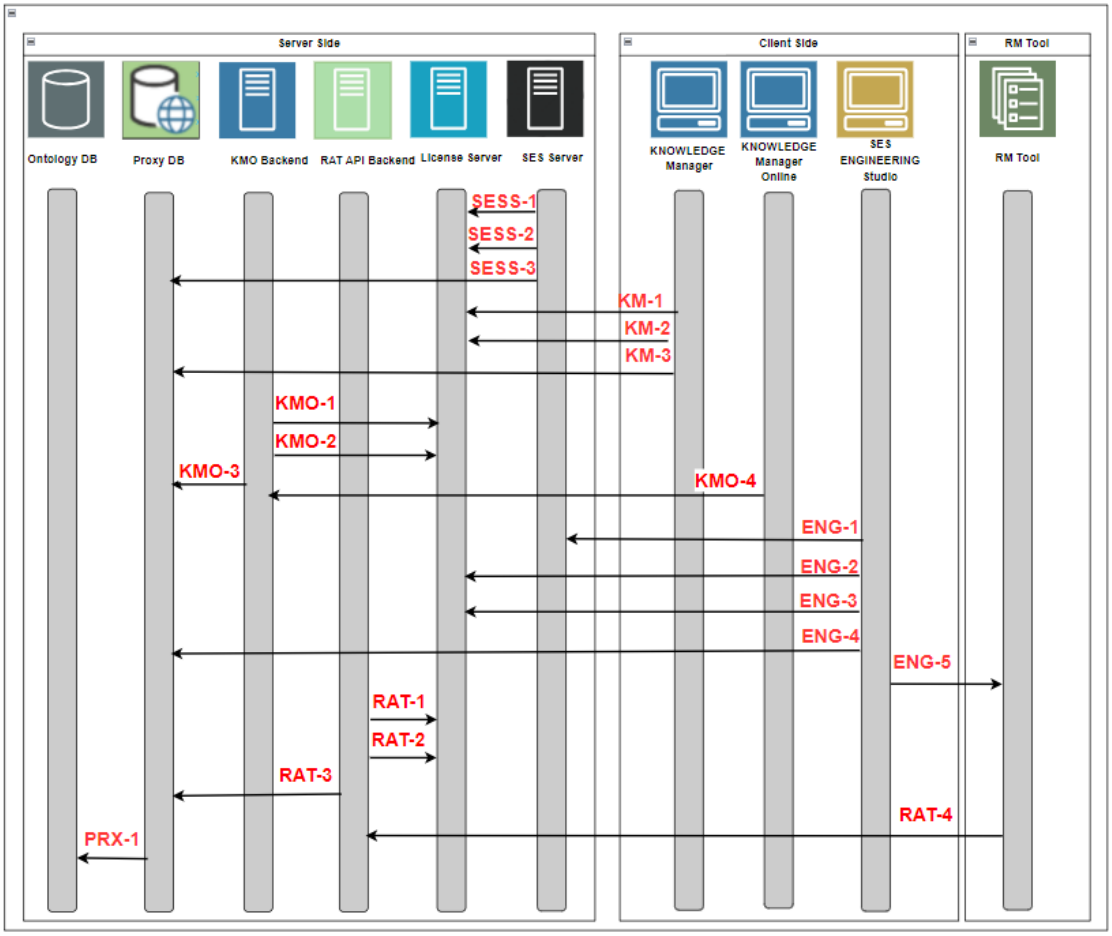

FIGURE 3

Proxy communication flows:

Flow ID	PXY-1	SESS-3	KM-3	KMO-3	ENG-4	RAT-3
Flow type	Ontology Database Access	Ontology Database Access	Ontology Database Access	Ontology Database Access	Ontology Database Access	Ontology Database Access
Source	Proxy	SES Server.exe	KNOWLEDGE Manager.exe	KM Online Backend	SES ENGINEERING Studio.exe	RAT API Backend
Target	Database Service		Proxy	Proxy	Proxy	Proxy
Port(s)	**SQL Server:** 1433 **MySQL: 3306**	Set in the proxy				
Protocol	TCP/IP	HTTP / HTTPS				
Information provided	1	The Source sends User and Password (AD or SQL credentials) to connect to the Ontology Database through the Proxy.				
Information received	2	The Proxy provides the content of the ontology to the client application.				

1.3 Deployment Scenarios

This architecture can be deployed in multiple ways depending on the installation goals, such as stand-alone installation, demonstrations, single user, proof of concept project, integration environment, production environment, etc., along with other policies such as the use of a database proxy.

The next epigraph will show the most typical deployment scenarios depending on those goals:

- **Stand-alone installation / demo installation for laptops:** it's recommended
- to install every piece of software of the suite on the laptop.

[1] The Proxy sends User and Password (AD or SQL credentials) received in its requests to connect to the Ontology Database.
[2] The database provides the content of the ontology to the proxy.

FIGURE 4

- **Stand-alone (Virtualized):** with the same approach as the stand-alone installation but having all the components in a virtualized environment or in an isolated server with Remote Desktop (RDP) Access only. This option would also be advised for non-Windows computers, as they can connect to a Virtualized Windows environment and use the tools.

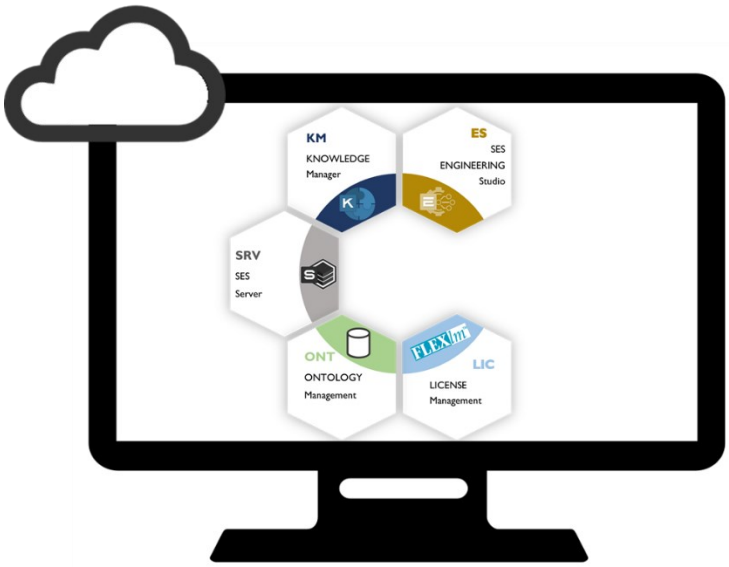

FIGURE 5

- **Production Deployment 1:** The components are installed on different computers depending on their role: Clients, Server. For this type of configuration, it is required to have internet and ports communications enabled, as there is communication between several computers. Optionally, the client and/or server tools can also be segregated in different workstations.

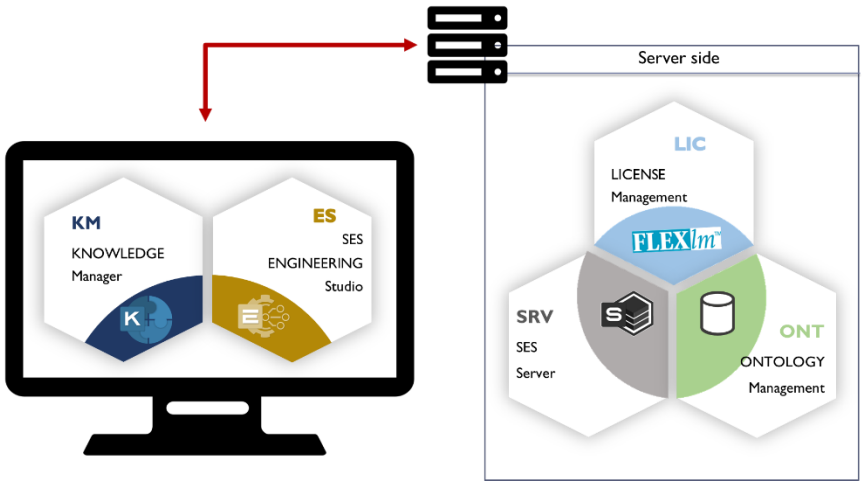

FIGURE 6

- **Production Deployment 2 (Virtualized):** Similar to the previous configuration, all the components can be separated by role, but with the server components on a Virtual environment. Optionally, the Client side of the tools can be isolated on a different virtualized environment, as long as both virtualizations can interact with each other.

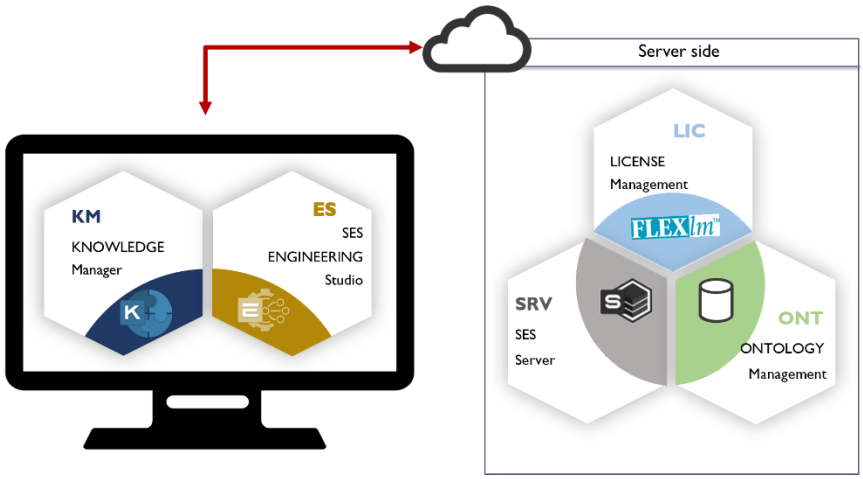

FIGURE 7

1.3.1 Considerations regarding KMO Backend installation with Active Directory

To enable Single Sign-On on KMO, the server where KMO backend is deployed on top of an Internet Information Server (IIS) must belong to the domain where the Single Sign-On users are.

The additional prerequisite is that the Active Directory (AD) controller of the domain must trust KMO backend server. To achieve this, the following set of ports and protocols must be opened in between them:

Protocol	Port(s)	AD and AD DS Usage	Type of traffic
TCP	25	Replication	SMTP
TCP and UDP	42		WINS, Windows Naming Service
TCP and UDP	53	User and Computer Authentication, Name Resolution, Trusts	DNS
UDP	67[3]	DHCP	DHCP, MADCAP
TCP and UDP	88	User and Computer Authentication, Forest Level Trusts	Kerberos
UDP	123	Windows Time, Trusts	Windows Time
TCP	135	Replication	RPC, EPM
UDP	137	User and Computer Authentication	NetLogon, NetBIOS Name Resolution
UDP	138	DFS, Group Policy	DFSN, NetLogon, NetBIOS Datagram Service
TCP	139	User and Computer Authentication, Replication	DFSN, NetBIOS Session Service, NetLogon
TCP and UDP	389	Directory, Replication, User and Computer Authentication, Group Policy, Trusts	LDAP
TCP and UDP	445	Replication, User and Computer Authentication, Group Policy, Trusts	SMB, CIFS, SMB2, DFSN, LSARPC, NbtSS, NetLogonR, SamR, SrvSvc

[3] DHCP is not a core AD DS service, but it is often present in many AD DS deployments.

TCP and UDP	464	Replication, User and Computer Authentication, Trusts	Kerberos change/set password
TCP	636	Directory, Replication, User and Computer Authentication, Group Policy, Trusts	LDAP SSL
UDP	2535[4]	DHCP	DHCP, MADCAP
TCP	3268	Directory, Replication, User and Computer Authentication, Group Policy, Trusts	LDAP GC
TCP	3269	Directory, Replication, User and Computer Authentication, Group Policy, Trusts	LDAP GC SSL
TCP	5722	File Replication	RPC, DFSR (SYSVOL)
TCP	9389	AD DS Web Services	SOAP
UDP	Dynamic	Group Policy	DCOM, RPC, EPM
TCP	Dynamic	Replication, User and Computer Authentication, Group Policy, Trusts	RPC, DCOM, EPM, DRSUAPI, NetLogonR, SamR, FRS

Source: Active Directory and Active Directory Domain Services Port Requirements

[4] DHCP is not a core AD DS service, but it is often present in many AD DS deployments.

2 Hardware & Software Requirements

2.1 Recommended Specifications

*** Version compatibility as of date: December 2024**

2.1.1 Stand-alone / Demo deployment

Operating System	**Processor**
Windows® 11 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	**Ontologies**
.NET Framework 4.8 FlexLM 11.19.4 (requires Java JDK 8 to 15) TRC Vendor Daemon Microsoft C++ Runtime 2015-2022 Redist.	MS SQL Server 2019 or later* MySQL 8.0 or later* Microsoft Access 365
Work product tools	**Virtualization Environments**
Microsoft Office 365 IBM Rational DOORS 8.3 to 9.7 PTC Windchill 13 CATIA Reqtify 14, 15 and 16 Visure Requirements 4.0 to 4.6 IBM Jazz DOORS Next Generation 7.0.2 IBM Rhapsody 9	CITRIX version 7 or later* VMWare version 12 or later* Microsoft Azure Amazon Web Services (AWS)

2.1.2 Production deployment

2.1.2.1 SES Server

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	**Virtualization Environments**
.NET Framework 4.8	CITRIX version 7 or later* VMWare version 12 or later* Microsoft Azure Amazon Web Services (AWS)

2.1.2.2 Licensing server

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	
FlexLM 11.19.4 (requires Java JDK 8 to 15) TRC Vendor Daemon Microsoft C++ Runtime 2015-2022 Redist.	

2.1.2.3 Ontology

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	**Ontologies**
Broadband internet connection	MS SQL Server 2019 or later* MySQL 8.0 or later*
	Virtualization Environments
	CITRIX version 7 or later* VMWare version 12 or later* Microsoft Azure Amazon Web Services (AWS)

2.1.2.4 KMO Backend / RAT API Backend

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
32 GB RAM	50 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	
.NET Framework 4.8 Internet Information Services (IIS) 7.0 or later* Microsoft ASP.NET Core 8.0.20 Shared Framework Microsoft .NET 8.0.20 Windows Server Hosting Microsoft Windows Desktop Runtime 8.0.20	

2.1.2.5 SES ENGINEERING Studio / KNOWLEDGE Manager

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
32 GB RAM	20 GB hard disk drive empty space after the installation
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	**Work product tools**
.NET Framework 4.8 Microsoft C++ Runtime 2015-2022 Redist.	Microsoft Office 365 IBM Rational DOORS 8.3 to 9.7 PTC Windchill 13 CATIA Reqtify 14, 15 and 16 Visure Requirements 4.0 to 4.6 IBM Jazz DOORS Next Generation 7.0.2 IBM Rhapsody 9
Virtualization Environments	
CITRIX version 7 VMWare version 12	Amazon Web Services (AWS) Microsoft Azure

2.1.2.6 KM Online / RAT Plugin for Chrome, Edge, or Firefox

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 Server 64 bit or later*	Num cores: 8
Memory	
32 GB RAM	
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	
Microsoft Edge Google Chrome Mozilla Firefox	

2.2 Minimum Specifications

*** Version compatibility as of date: December 2024**

2.2.1 Stand-alone / Demo deployment

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 / 2022 Server 64 bit or later*	Num cores: 4
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 500 GB hard disk drive in RAID)
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	**Ontologies**
.NET Framework 4.8 FlexLM 11.19.4 (requires Java JDK 8 to 15) TRC Vendor Daemon Microsoft C++ Runtime 2015-2022 Redist.	MS SQL Server 2019 or later* MySQL 8.0 or later* Microsoft Access 365
Work product tools	**Virtualization Environments**
Microsoft Office 365 IBM Rational DOORS 8.3 to 9.7 PTC Windchill 13 CATIA Reqtify 14, 15 and 16 Visure Requirements 4.0 to 4.6 IBM Jazz DOORS Next Generation 7.0.2 IBM Rhapsody 9	CITRIX version 7 or later* VMWare version 12 or later* Microsoft Azure Amazon Web Services (AWS)

2.2.2 Production deployment

2.2.2.1 SES server

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 / 2022 Server 64 bit or later*	Num cores: 4
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	**Virtualization Environments**
.NET Framework 4.8	CITRIX version 6.5 VMWare version 5 Microsoft Azure Amazon Web Services (AWS)

2.2.2.2 Licensing server

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 / 2022 Server 64 bit or later*	Num cores: 4
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	
FlexLM 11.19.4 (requires Java JDK 8 to 15) TRC Vendor Daemon Microsoft C++ Runtime 2015-2022 Redist.	

2.2.2.3 Ontology

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2016 / 2019 / 2022 Server 64 bit or later*	Num cores: 4
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	**Ontologies**
Broadband internet connection	MS SQL Server 2014 to 2019 or later* MySQL 8.0 or later*

2.2.2.4 KMO Backend / RAT API Backend

Operating System	**Processor**
Windows® 10 64-bit or later* Windows 2019 / 2022 Server 64 bit or later*	Num cores: 8
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation (Recommended 512 GB hard disk drive in RAID)
Internet	
Broadband internet connection	
Components	
.NET Framework 4.8 Internet Information Services (IIS) 7.0 or later* Microsoft ASP.NET Core 8.0.20 Shared Framework Microsoft .NET 8.0.20 Windows Server Hosting Microsoft Windows Desktop Runtime 8.0.20	

2.2.2.5 SES ENGINEERING Studio / KNOWLEDGE Manager

Operating System	**Processor**
Windows® 10 64-bit or later*	Num cores: 4
Memory	**Storage**
16 GB RAM	20 GB hard disk drive empty space after the installation
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	**Work product tools**
.NET Framework 4.8 Microsoft C++ Runtime 2015-2022 Redist.	Microsoft Office 365 IBM Rational DOORS 8.3 to 9.7 PTC Windchill 13 CATIA Reqtify 14, 15 and 16 Visure Requirements 4.0 to 4.6 IBM Jazz DOORS Next Generation 7.0.2 IBM Rhapsody 9
Virtualization Environments	
CITRIX version 7 or later* VMWare version 12 or later* Amazon Web Services (AWS) Microsoft Azure	

2.2.2.6 KM Online / RAT Plugin for Chrome, Edge, or Firefox

Operating System	**Processor**
Windows® 10 64-bit or later*	Num cores: 4
Memory	
16 GB RAM	
Internet	**Resolution**
Broadband internet connection	1920x1080 minimum display resolution
Components	
Microsoft Edge Google Chrome Mozilla Firefox	

2.3 Compatible Database Management Systems

The Systems Engineering Suite (SES) relies on working with an Ontology Database, which can be held in different database management systems (DBMS) such as:

FIGURE 8

- MySQL: MySQL is a full-featured relational database management system (RDBMS) that competes with the likes of Oracle DB and Microsoft's SQL Server. MySQL is sponsored by the Swedish company MySQL AB, which is owned by Oracle Corp.
- Microsoft SQL Server: Microsoft SQL Server is a relational database management system developed by Microsoft.
- Microsoft Office ACCESS: Microsoft Access is a pseudo-relational database engine from Microsoft. It is part of the Microsoft Office suite of applications that also includes Word, Outlook, and Excel, among others.

2.4 Known Incompatibilities

We are aware of the following incompatibilities with other tools and formats:

- There is an incompatibility of our Software with .Net Monitoring tools such as Dynatrace, as these kind of applications blocks the execution of our software.

3 Licensing Guide

3.1 Introduction

This guide will assist you on how to download and install the FlexLM License Service needed for the Systems Engineering Suite licensing as well as some Troubleshooting steps to guide you on how to solve the issues you may have.

3.2 Licensing Applications

Systems Engineering Suite (SES) uses licenses based on the FlexLM licensing system for each of its products.

There are two different commercial models, depending on customer needs, for licensing the Suite:

- The first model is the **yearly subscription**, where the suite tools are licensed for a year. Updates can be downloaded while the subscription is active.
- The second model is **the perpetual model**. In it, the tools, once purchased, are licensed forever; together with a one-year Support & Maintenance (S&M) contract. While S&M active updates can be downloaded from TRC website, it is also possible to extend the S&M contract after the first one.

For both models, FlexLM allows you to have two different types of licenses:

- **Nodelocked**: The license can only be executed in a given machine as many times as needed.
- **Floating**: the license can be executed in some machines at the same time, provided that the number of concurrent instances of the application does not exceed the maximum number of available licenses for the application.

For more details about these models and the price list, please contact us at sales@reusecompany.com. This guide will explain to you how to install the three of them and to ask for a license key.

In any of these models, there are two pieces of the Systems Engineering Suite (**FlexLM License Server** and the **TRC Vendor Daemon**) that **must be installed on the same server** and should run a **Windows Server** operating system.

3.2.1 Installation

3.2.1.1 Downloads

First, download the Flex License Server (tagged as FlexLM Server in the download page) and the TRC Vendor Daemon from the TRC website.

Use your browser to access https://resources.reusecompany.com/downloads and find there the version of the product licensed. Ask our support service if you need help to find it.

3.2.1.2 Flex License Server

Once the Flex License Server has been downloaded, execute the Flex License Server installer (file name: lmadmin-x64) with administrator rights. This document will guide you through the different steps of the installation wizard.

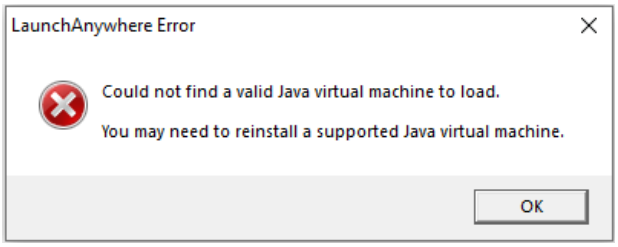

FIGURE 9

If this error message appears while installing the Flex License Server tool, it indicates that no Java installation has been found in the system.

The Flex License Server documentation indicates that **Java Runtime Environment (JRE)** or **Java Development Kit (JDK)** from **version 11 to 23** is needed.

There are several options to fulfil this requisite:

- The official Oracle Java JRE and JDK
- Amazon Corretto: a no-cost, multiplatform, production-ready distribution of OpenJDK by Amazon.
- Eclipse Temurin, formerly known as AdoptOpenJDK: is the OpenJDK distribution by Adoptium Working Group.
- There can be or appear other OpenJDK distributions that might support this requisite.

The official Oracle Java JRE and JDK can be downloaded from the Oracle website. We recommend JDK 11.0.13 and using the Windows x64 download link.

Any official Oracle JRE or JDK version download will require to create an account in the Oracle cloud, just follow the instructions provided in the Oracle web to do so, it's free and it only requires a valid email address.

If you don't want to register on the Oracle cloud, any other OpenJDK distribution compatible with Java version 11 to 23 can be useful. If after installing such version of the OpenJDK alternative distribution, the Flex License Server installer is launched and its installation wizard appears, it means that such version of the OpenJDK distribution installed is valid, if it does not appear, then you have to uninstall such version of OpenJDK of that distribution and look for another version that is compatible.

A table of compatibility as April 2024 of those mentioned alternative OpenJDK distribution is shown in the following sections.

If the error does not appear, means that you have a valid JRE or JDK, just skip the following section and go to the next section: 3.2.1.2.4.

3.2.1.2.1 INSTALLATION OF THE JDK 11.0.3 FROM ORACLE WEBSITE

First of all, click on *the Create Account* button:

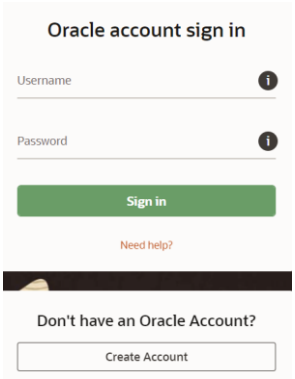

FIGURE 10

Then provide the information required with a valid email address and a suitable password matching the rules shown on the form. Finally, fill in any other information and click on the *Create Account* button.

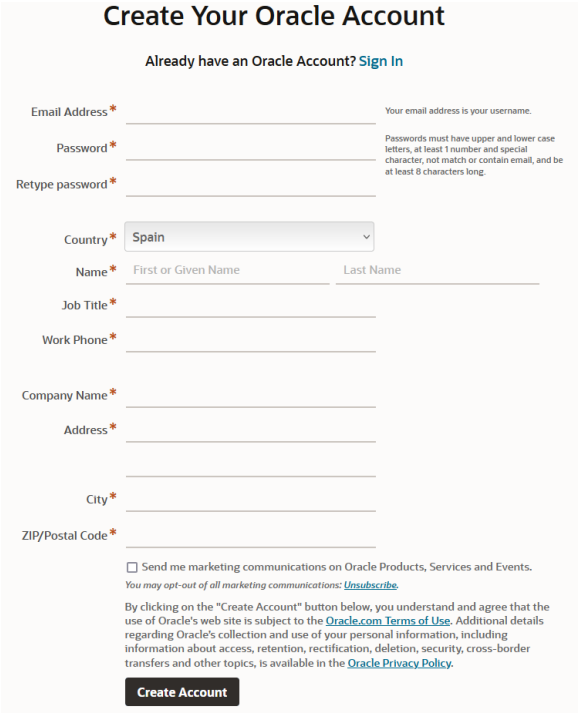

FIGURE 11

An email will be sent to the address provided on the form and a confirmation page will be displayed.

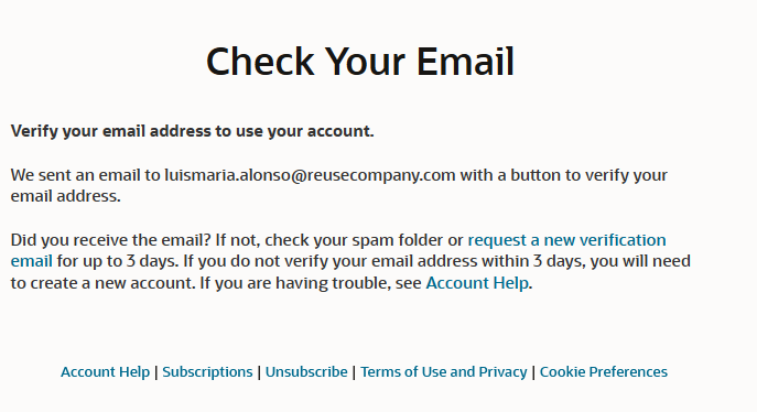

FIGURE 12

Open your inbox and you will find it. Inside the text of the email there will be a button with the title *Verify your email address*. Click on it.

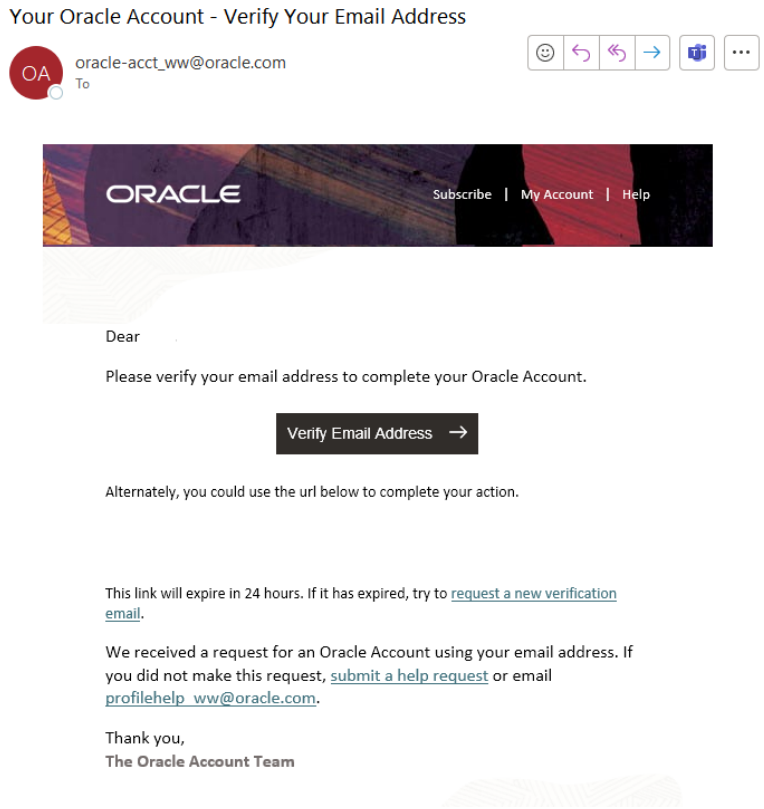

FIGURE 13

An Internet browser will be opened showing that the validation has been successfully performed. Just click on the *Continue* button.

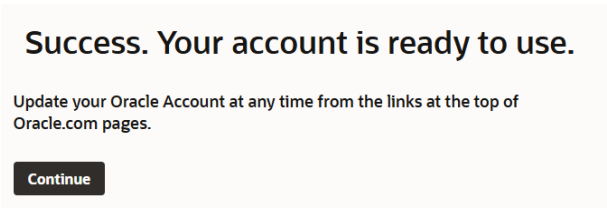

FIGURE 14

Then, try the Windows x64 download link again, the login webpage will be prompted again in a new Internet browser explorer (or tab).

Just provide the username and password provided on the registration from and click on “Sign in”. The download shall start immediately.

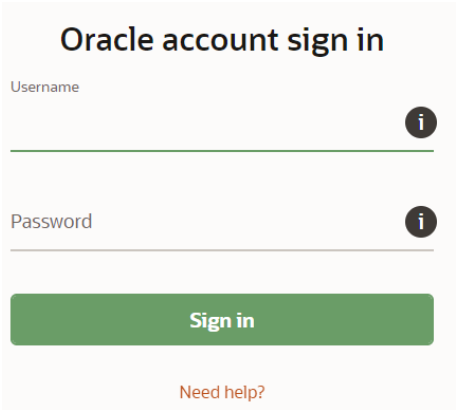

FIGURE 15

Then the binary file will be ready on your download folder, just execute it.

The following wizard will appear to gather all the necessary input parameters.

- Welcome window: just click on the *Next* button.

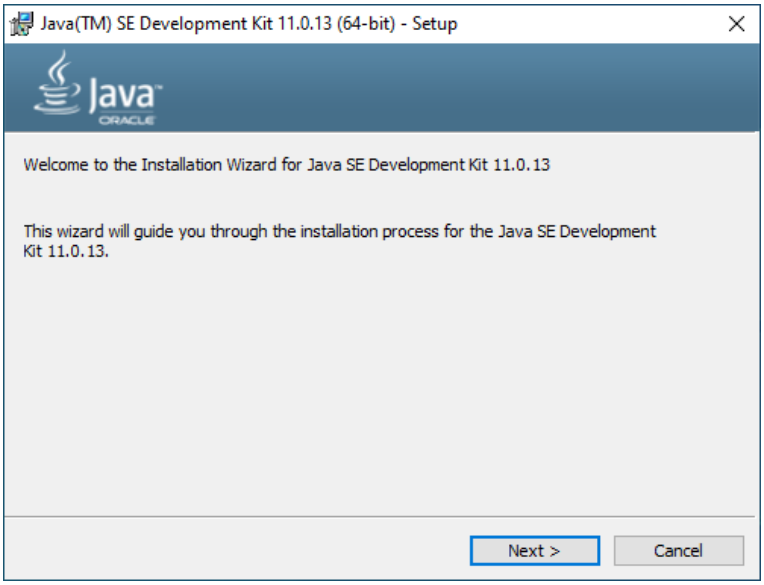

FIGURE 16

- Destination folder: if the default destination folder is not suitable, please select another one by clicking on the Change button, otherwise leave it as it is. Then, click on the *Next* button.

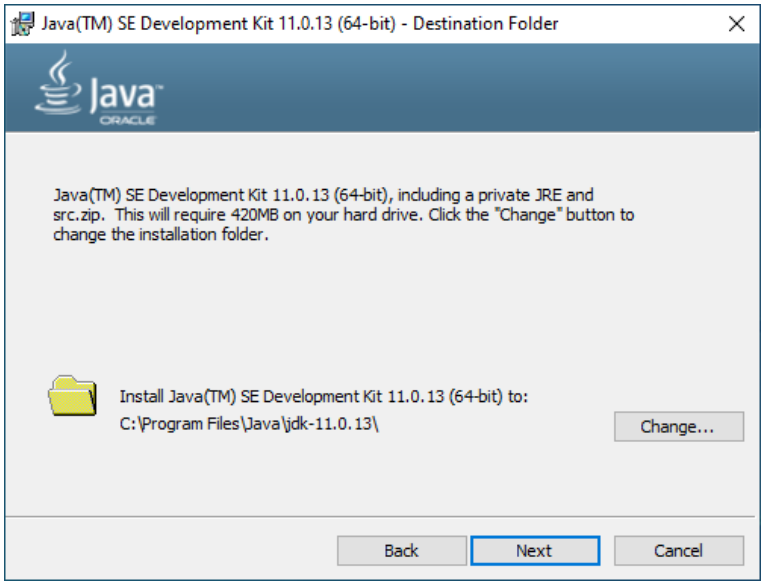

FIGURE 17

- Progress window: this window will notify the progress of the installation; no action is required until it closes.

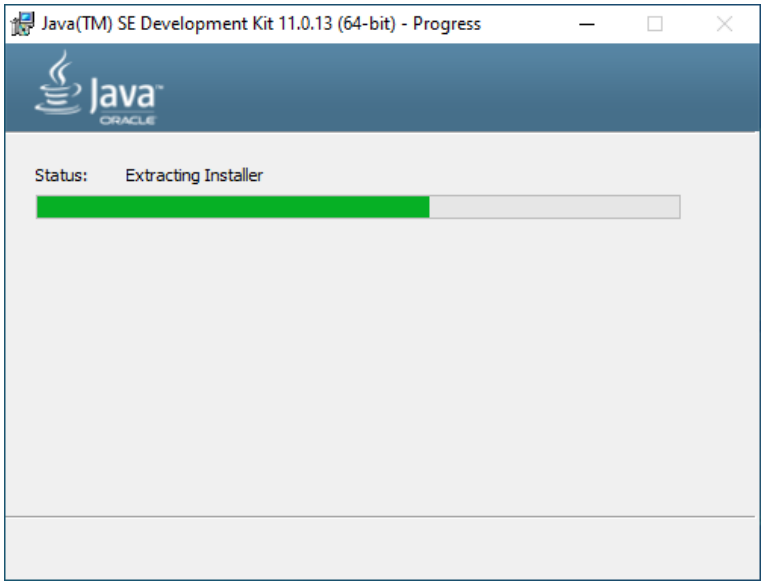

FIGURE 18

- Complete window: this window will show the result of the installation process, hopefully it finishes successfully, then just click on the *Close* button.

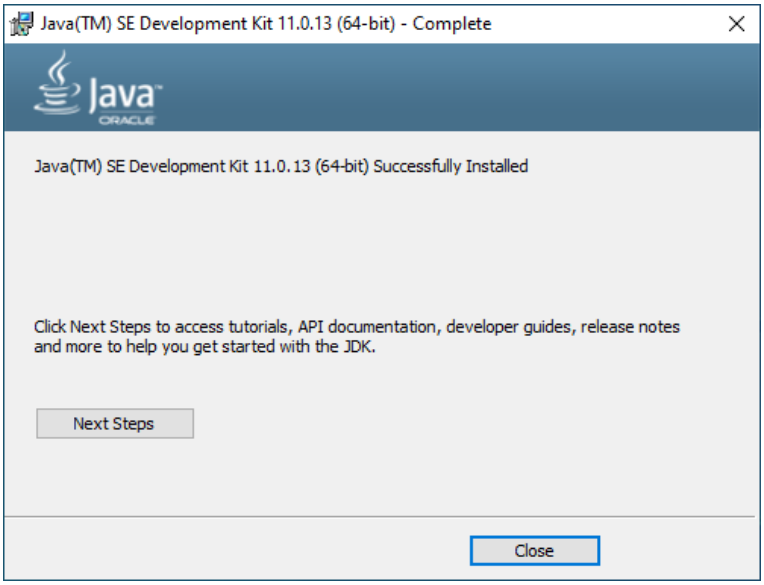

FIGURE 19

Finally, we are ready to run the Flex installation again once done.

3.2.1.2.2 INSTALLATION OF THE JDK FROM AMAZON CORRETTO (WINDOWS X64)

Amazon Corretto – Table of compatibility as December 2024.

Version	Latest release	Compatibility	Previous releases compatibility
V22	22.0.0.36.2	Not compatible	Not compatible in any release
V21	21.0.2.13.1	Not compatible	Not compatible in any release
V17	17.0.10.7.1	Not compatible	Compatible until 17.0.7.7.1
V11	11.0.22.7.1	Not compatible	Compatible until 11.0.19.7.1
V8	8.402.08.1	Compatible	Download link

After download, the selected compatible version of Amazon Corretto, just install it by double clicking on the installation file package.

The following wizard will appear to gather all the necessary input parameters.

- Welcome window: just click on the *Next* button.

FIGURE 20

- Custom setup: if the default destination folder is not suitable, please select another one by clicking on the Change button, otherwise leave it as it is. Then, click on the *Next* button.

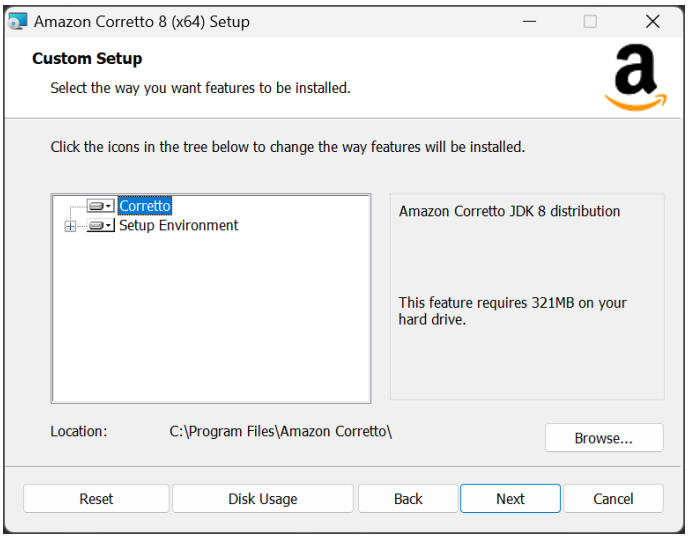

FIGURE 21

- Ready to install window: this window is the last step before installation, just click on the *Install* button.

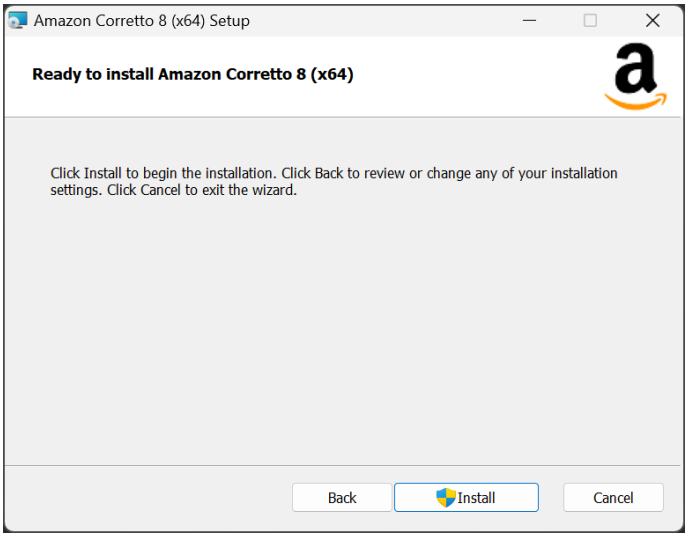

FIGURE 22

- Progress window: this window will notify the progress of the installation; no action is required until it closes.

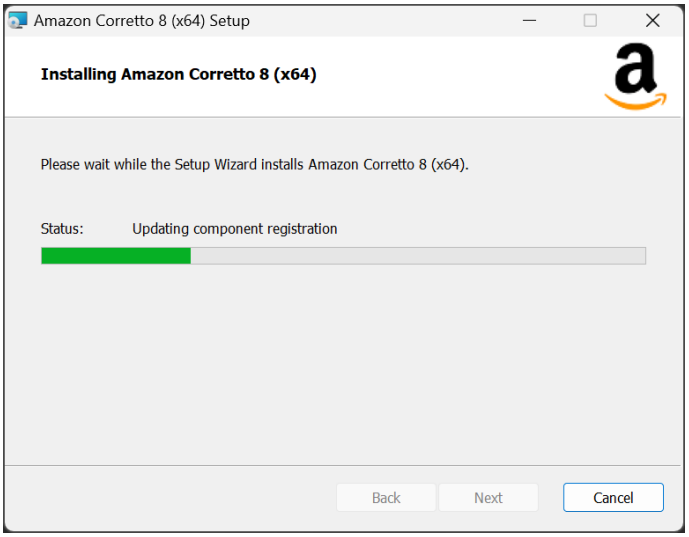

FIGURE 23

- Complete window: this window will show the result of the installation process, hopefully it finishes successfully, then just click on the *Finish* button.

FIGURE 24

Finally, we are ready to run the Flex installation again once done.

3.2.1.2.3 INSTALLATION OF THE JDK FROM ECLIPSE TEMURIN (WINDOWS X64)

Eclipse Temurin – Table of compatibility as December 2024.

Version	Latest release	Compatibility	Previous releases compatibility
V22	22+36	Not compatible	Not compatible in any release
V21	21.0.2+13	Not compatible	Not compatible in any release
V20	20.0.2+9	Not compatible	Version 20 compatible from release 20+36 until 20.0.1+9
V19	19.0.2+7	Compatible	
V18	18.0.2.1+1	Compatible	
V17	17.0.10+7	Not compatible	Version 17 compatible from release 17.0.1+12 until 17.0.7+7
V16	16.0.2+7	Compatible	
V11	11.0.22+7	Not compatible	Version 11 compatible from release 11.0.12+7 until 11.0.19+7. Later* release 11 than 11.0.20+8; 11.0.21+9; 11.0.22+7 are not compatible
V8	8.0.402+6	Compatible	

After download, the selected compatible version of Eclipse Temurin, just install it by double clicking on the installation file package.

The following wizard will appear to gather all the necessary input parameters.

- Welcome window: just click on the *Next* button.

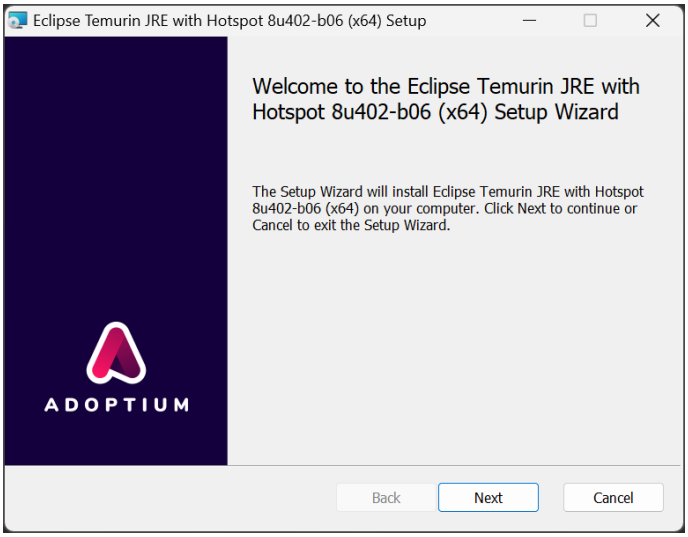

FIGURE 25

- Custom setup: if the default destination folder is not suitable, please select another one by clicking on the Change button, otherwise leave it as it is. Then, click on the *Next* button.

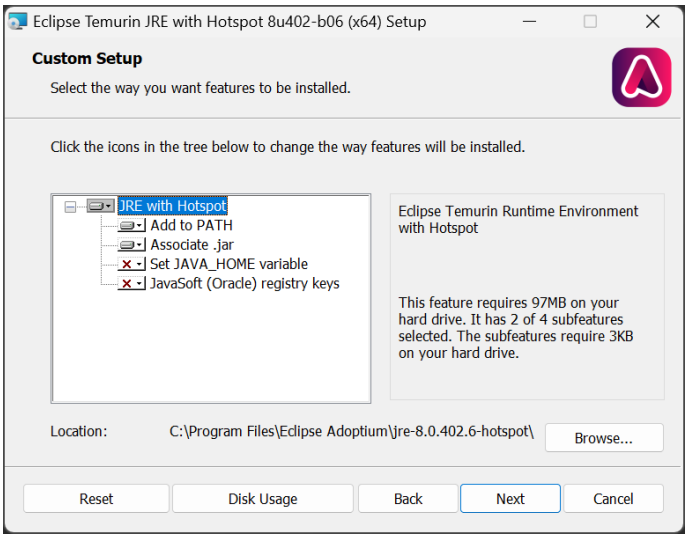

FIGURE 26

- Ready to install window: this window is the last step before installation, just click on the *Install* button.

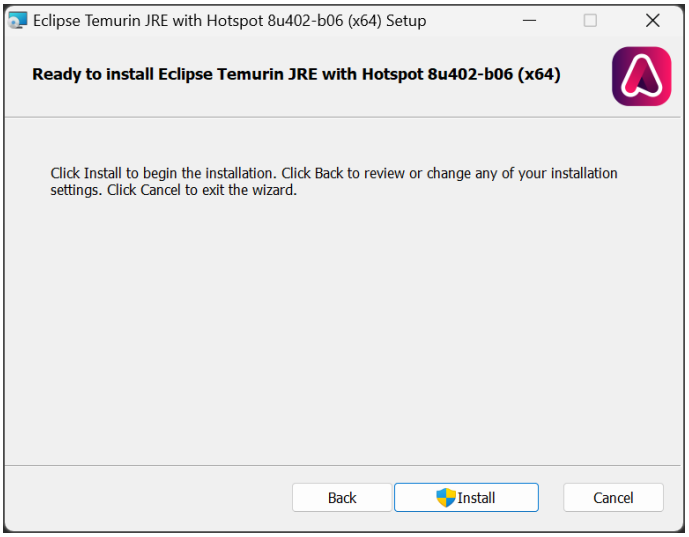

FIGURE 27

- Progress window: this window will notify the progress of the installation; no action is required until it closes.

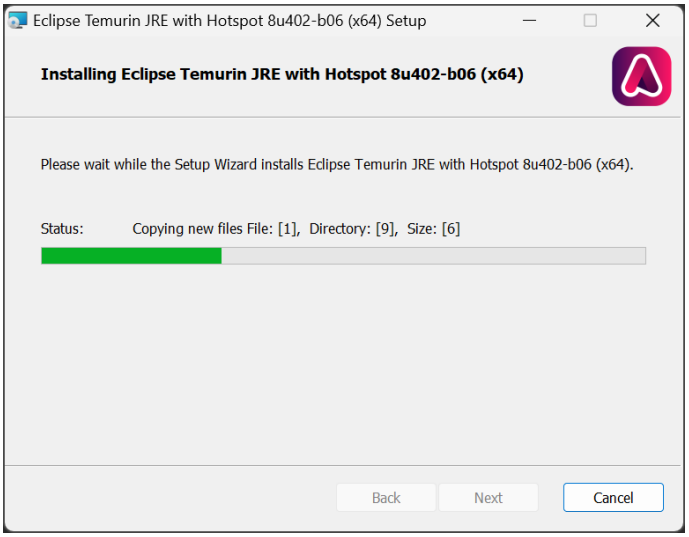

FIGURE 28

- Complete window: this window will show the result of the installation process, hopefully it finishes successfully, then just click on the *Finish* button.

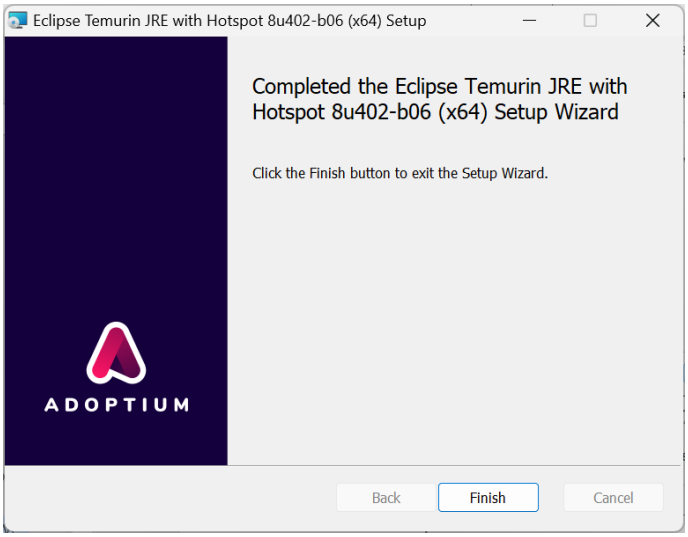

FIGURE 29

Finally, we are ready to run the Flex installation again once done.

3.2.1.2.4 INSTALLATION OF FLEX LICENSE SERVICE

Once we have the valid JDK we can proceed to execute the Flex License Server installer.

Once launched the following wizard will guide you through the installation process gathering all the parameters needed.

- *Introduction*: this window will introduce all the actions to be performed while installing the FlexLM License Server application, please read the instructions and click on the *Next* button.

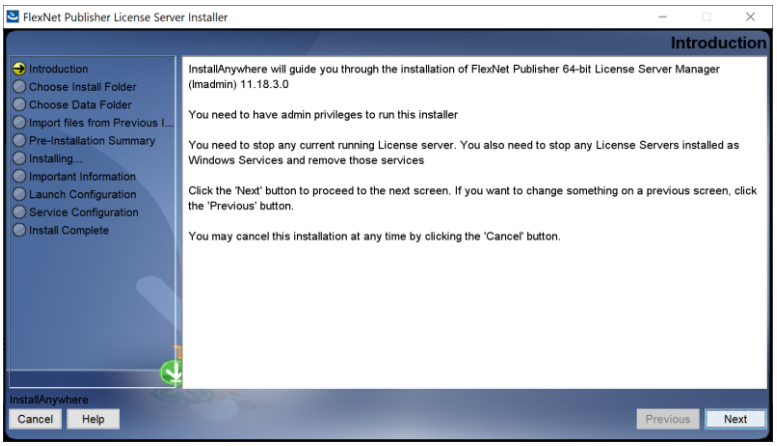

FIGURE 30

- *Choose Install folder*: In this window, you can select the location where the application is going to be installed. By default, it will be suggested to install the application in your "Program files". The pre-set value is "`C:\Program Files\FlexNet Publisher 64-bit License Server Manager`",

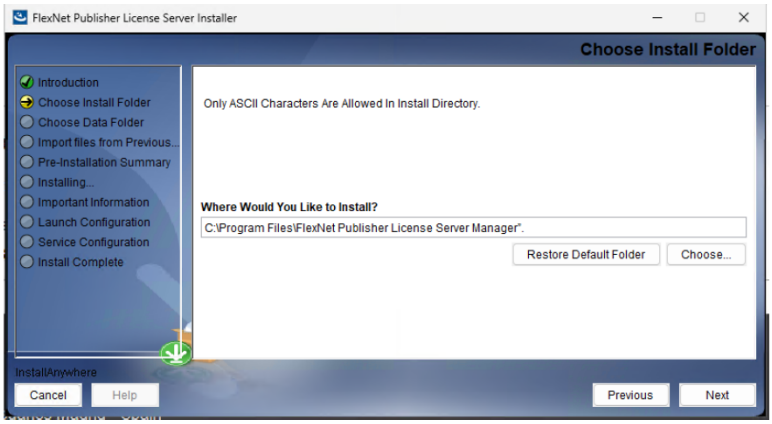

FIGURE 31

so, to match our configuration, it should be changed to "`C:\Program Files\FlexNet Publisher License Server Manager`".

You can choose any other destination, either by typing it in the textbox or by clicking on the *Choose…* button at the bottom right-hand side of the location textbox and navigating through your computer storage system to find the suitable location for it. When the path is selected, just click on the *Next* button.

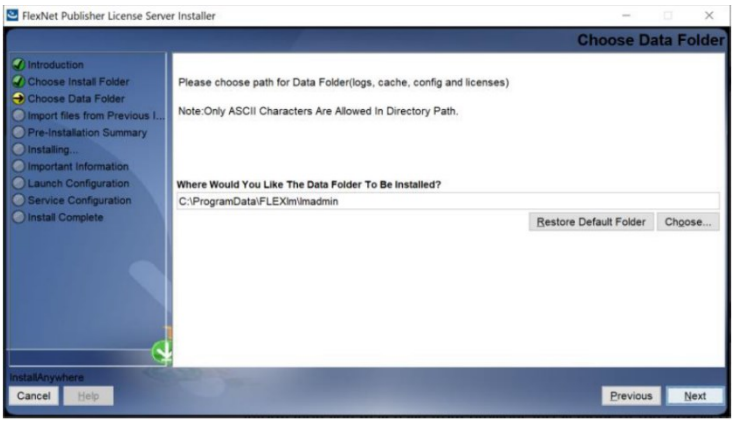

FIGURE 32

- This version allows to change the location where the license data can be imported. By default, it contains the following path "C:\ProgramData\FLEXlm\lmadmin". You can choose any other destination, either by typing it in the textbox or by clicking

on the *Choose…* button at the bottom right-hand side of the location textbox and navigating through your computer storage system to find the suitable location for it. When the path is selected, just click on the *Next* button.

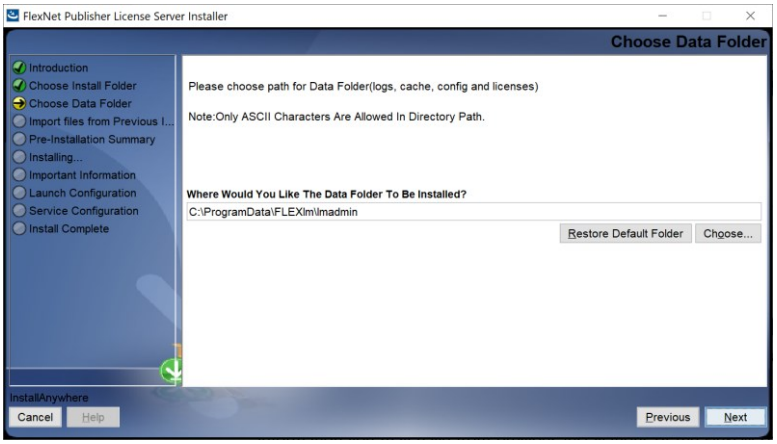

FIGURE 33

- *Import files from previous installations*: in this window you can select to recover the information you may have from previous installations of the FlexLM server. If it is the first time you are installing this Server, please click on the *Next* button, as there is no previous information that corresponds to a reinstallation.

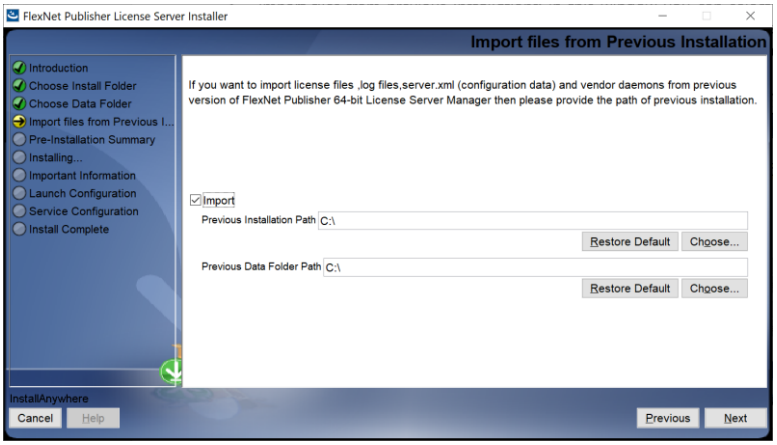

FIGURE 34

- *Pre-Installation Summary*: This is the last step before installing the application in your system. It holds a description of the parameters compiled through this installation wizard. If one or more of the parameters is not right for your installation, please click on the *Previous* button repetitively until you reach the

step to reconfigure your selections. When all the parameters are correct, please click on the *Install* button.

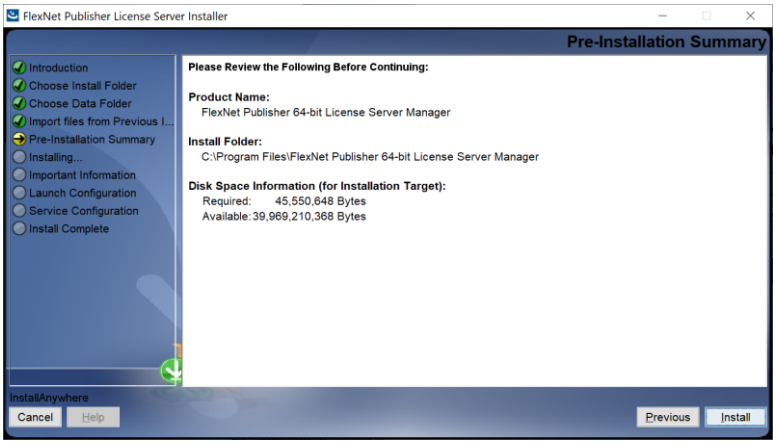

FIGURE 35

- *Installing*: this window requires no user interaction, as it waits until the installation is complete. In case the installation must be halted, click on the *Cancel* button. Otherwise, please wait until the process is finished and the wizard will proceed automatically to the next step.

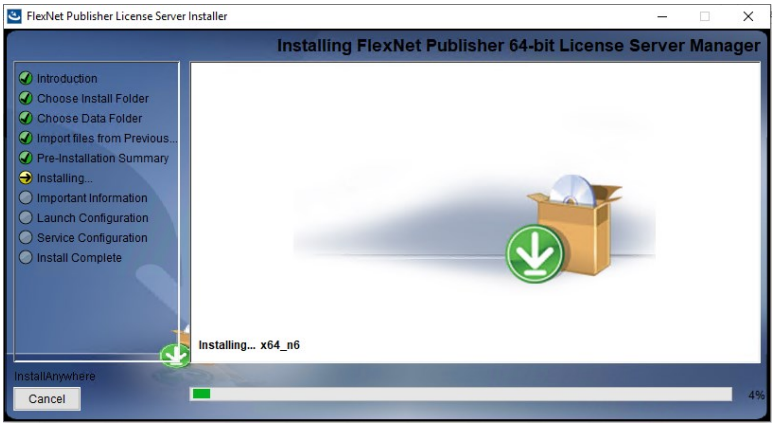

FIGURE 36

- *Install Visual C++ 2015-2022 Redistributable Package*: VERY IMPORTANT: check to install dependencies for Visual C++ 2015-2022 Redistributable Package. Then click on the *Next* button.

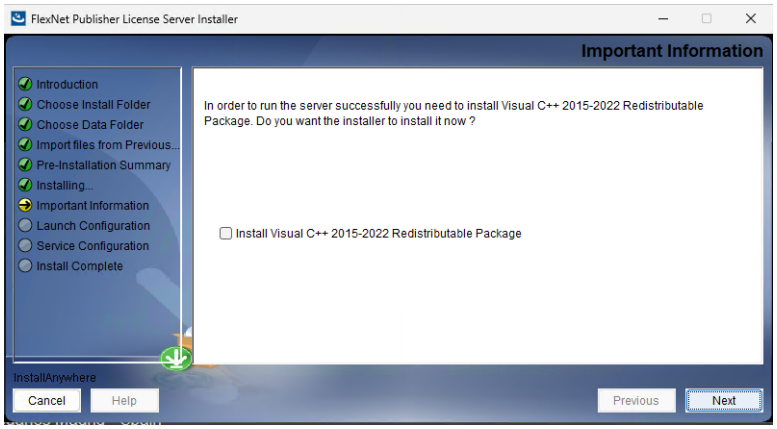

FIGURE 37

- *Visual C++ Redistributable Package Setup*: Another small wizard (as shown below) will appear if the package was not previously installed. If so, please walk through it until you reach the following "Setup Complete" Window. On either of the situations, click on the *Close* button at the bottom to finalize the process.

FIGURE 38

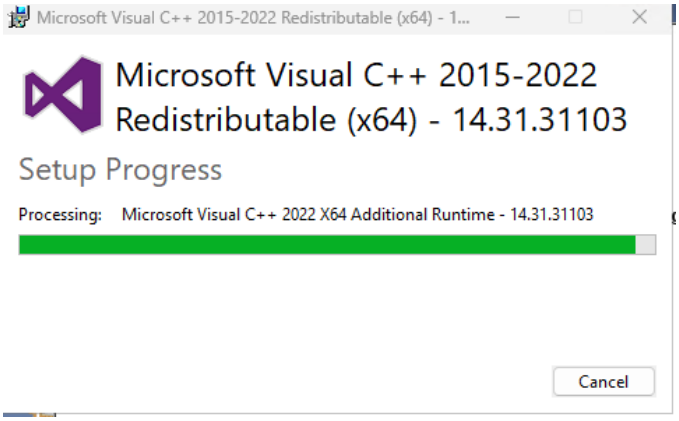

FIGURE 39

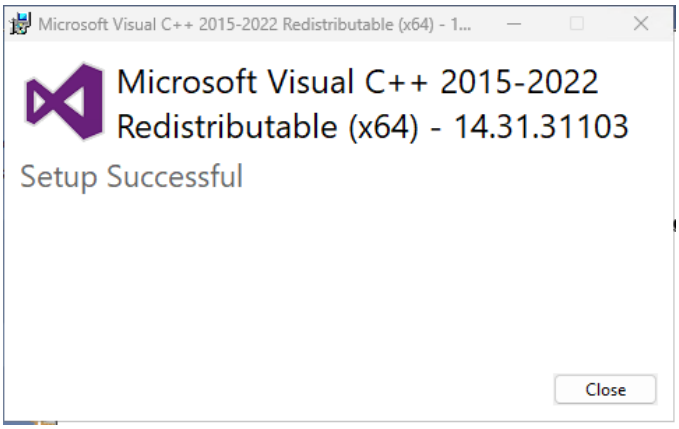

FIGURE 40

If you get the error below it means that another version of this product is already installed. The installation of this version cannot continue. To configure or remove the existing version of this products, use Add/Remove Programs on the Control Panel. or cancel this installation.

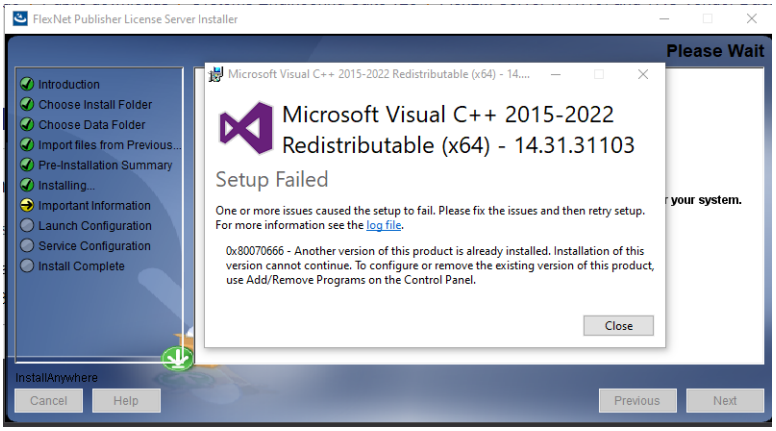

FIGURE 41

- *Launch configuration*: this window allows configuring the administration web interface port **(default port: 8090)** and license server port **(default port: 27000)**. Please take these parameters into account:
    - The HTTP Port Number will be essential to request a license from TRC. The license for the SES tools is generated using the machine's Host ID, which can be retrieved from http://localhost:8090. If you select another port, the URL for this application will change to the http://localhost:<HTTP port number> that you enter for the first field in this form.
    - The License Server Port Number: this is the port number you will have to use later* to configure the SES licenses in the SES Server installation.

Both ports can be changed later* via the administration application that will be available through the URL explained in the first point: `http://localhost:<HTTP port number>`

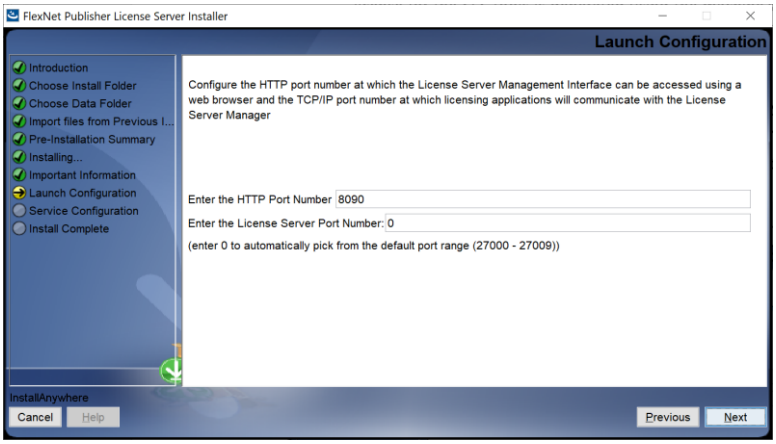

FIGURE 42

Then you can configure other timeout parameters of the service as shown in the next figure. Unless you have any special consideration about your network latency or other issue, it is not advisable to change any of these parameters. Click on the *Next* button to continue.

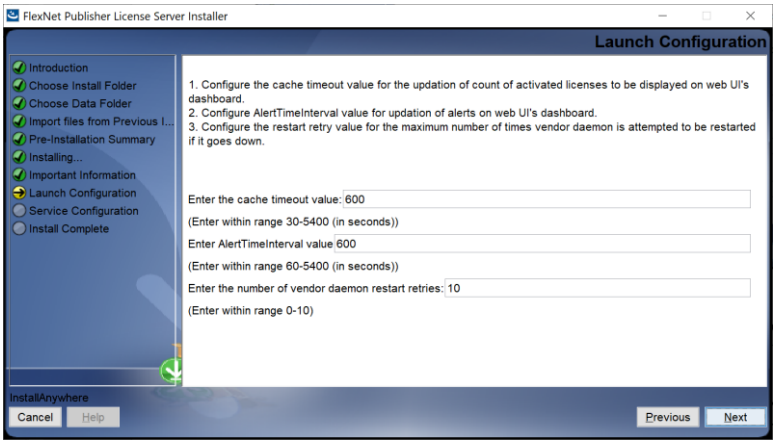

FIGURE 43

- *Service configuration*: THIS STEP IS IMPORTANT, if it is not configured as explained here, the FlexLM will not work properly. So please read the next paragraphs carefully.

  First, before anything else, **check the 'Run as service' option**.

  Then, decide which is the name of the FlexLM service to be registered on your machine. If there is no other FlexLM service running on this machine, we recommend keeping the **lmadmin** name because you will find some troubleshooting information where this name must be located inside a list of

services. If you already have another FlexLM service running on this machine (for example, an older version of the FlexLM License Server) please type another name and remember it.

NOTE: As mentioned in the previous paragraph, you can install as many FlexLM License Servers as you wish in the same machine, the only thing to consider is that they shall be listening to different ports and have different service names.

We recommend keeping the 'Number of seconds to delay on system restart' parameter as it is by default: 0.

Then click on the *Next* button.

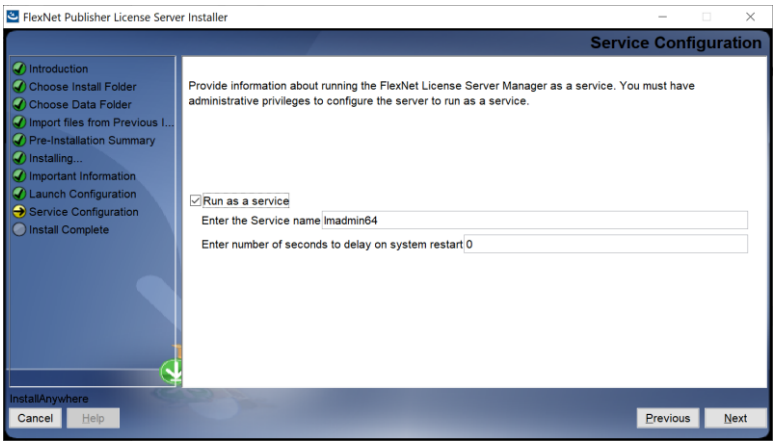

FIGURE 44

Start the service. If it does not start, go to PC services administration, and start it manually as shown in section 3.2.3.4.

- *Installing service and installing*: this window does not require user interaction, as it waits until the installation is completed.
- *Installation complete*: in this window the output of the service configuration process is shown, typically with success. In such case just click on the *Done* button.

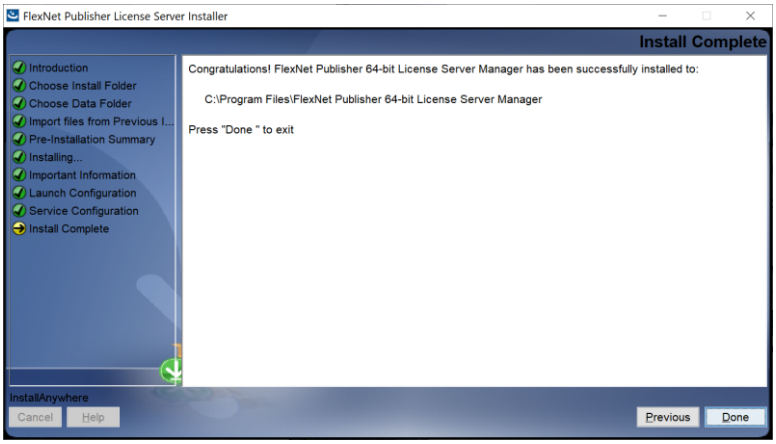

FIGURE 45

3.2.1.3 TRC Vendor Daemon

First, download the TRC Vendor Daemon installer from TRC website. *Your choice must match with the one selected for the Flex License server*, otherwise it will not work.

There are two ways to install TRC Vendor Daemon:

- The most typical one is executing the installer with administration rights. The installation wizard will guide you to provide all the necessary parameters to perform the installation and at the end, the tool will be installed.
- There is another possibility; to install it from the command line where all the parameters are provided beforehand, and the installation will be done without any further user interaction.

3.2.1.3.1 TRC VENDOR DAEMON INSTALLATION WITH THE INSTALLATION WIZARD

To start, execute the selected TRC Vendor Daemon installer on the same machine where the FlexLM License Server is installed.

- *Select Setup Language*: this first window allows selecting the language of the installation wizard. You can choose between English and Spanish.

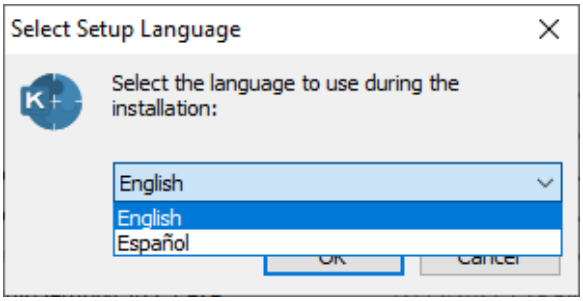

FIGURE 46

- *Welcome*: this window will introduce all the actions to be performed while installing the TRC License Vendor Setup (also known as TRC Vendor daemon) application, please read the instructions and click on the *Next* > button.

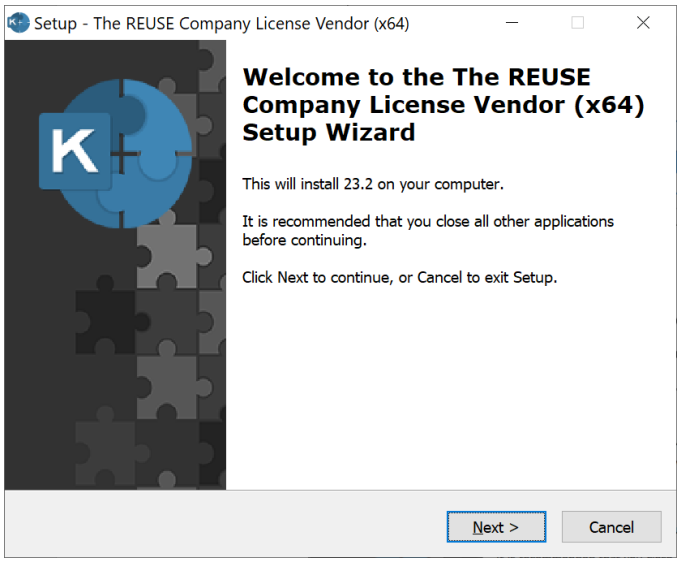

FIGURE 47

- *Select the Flex License Manager Folder*: this window allows you to select the location where the application is going to be installed.

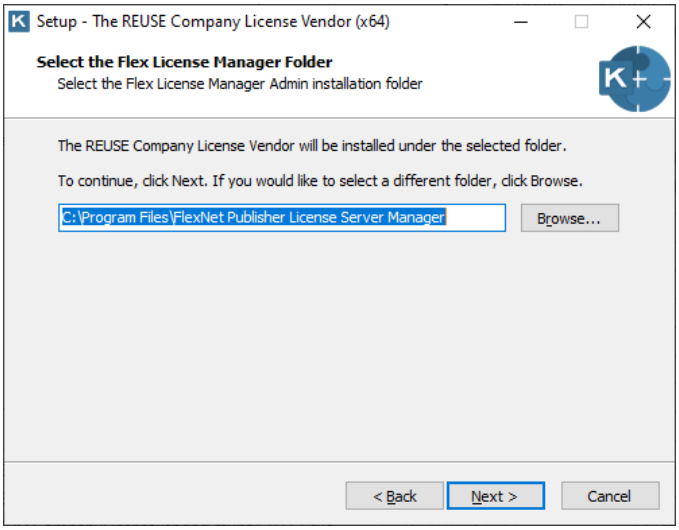

FIGURE 48

- *Select Start Menu Folder*: this window allows you to select the location where the start menu shortcuts to the application will be created. By default, the installer proposes to create them under the folder "The REUSE Company" and the subfolder with the name of the application. Click *Next* >.

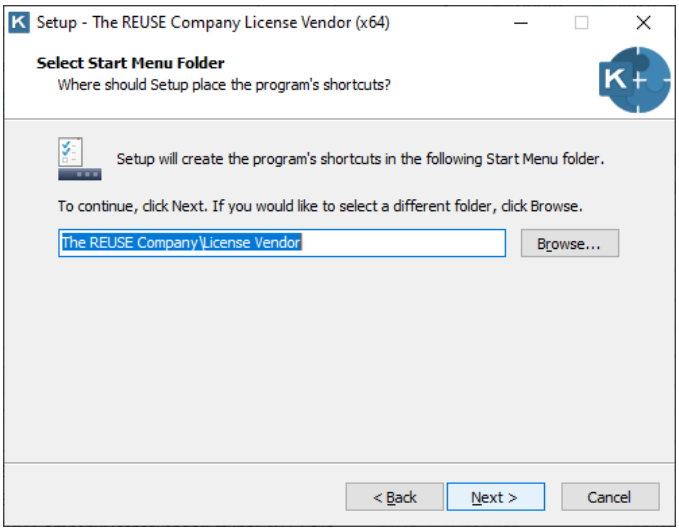

FIGURE 49

- *Ready to Install*: this is the last step before installing the application in your system. It holds a description of the parameters compiled through this installation wizard. If one or more of the parameters is not right for your installation, please click "< Back" until you reach the corresponding step to

reconfigure your choices. When all the parameters are correct, please click on the *Next* > button.

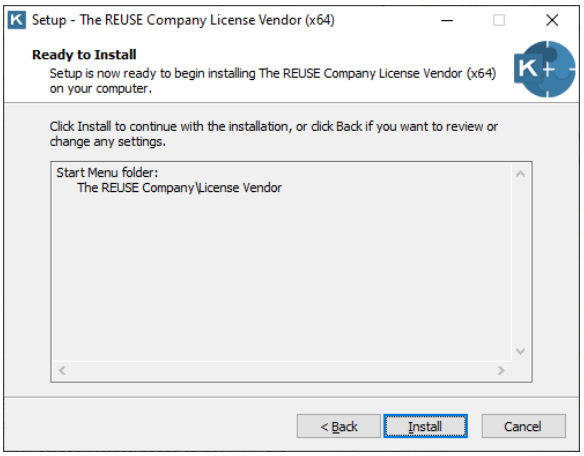

FIGURE 50

- Completing the TRC License Vendor Setup Wizard: this window notifies you when the installation has finished successfully. Please click on the *Finish* button and the installation process will be complete.

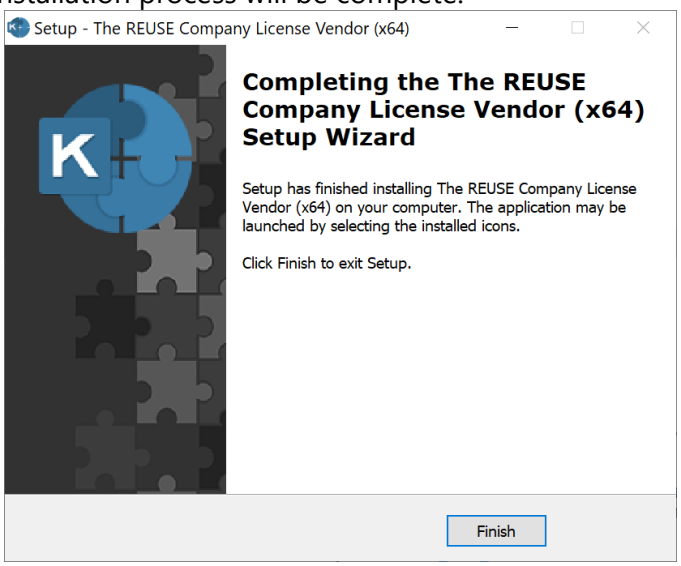

FIGURE 51

3.2.1.3.2 TRC VENDOR DAEMON INSTALLATION IN SILENT MODE

To install TRC Vendor Daemon in silent mode, the command line with parameters to install it is like this:

```
<Filename>.exe /verysilent
```

IMPORTANT NOTE: Remember to open the command line window with administration rights, before executing the previous command.

3.2.2 License Setup

At this moment, the FlexLM License Server is ready to open and receive license files. For this purpose, open a web browser and go to http://<server>:8090 to open the management interface. Click on the *Administration* tab (up-right).

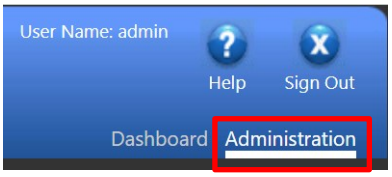

FIGURE 52

If the administration webpage does not appear, please go to the Troubleshooting section of this chapter and check the following topics:

1. "License Server is down or not responding" problem
2. Unable to start the FlexLM License Service

Once the service is running the administration website will be displayed.

The **default credentials** are the word 'admin' for User and Password (it will prompt changing the default login the first time). Copy and send the System Information to ***licensing@reusecompany.com*** to generate the license file.

NOTE: Please do not send screenshots because it will complicate generating the license, the information from your server must be introduced manually in our system and it is prone to provoke typing errors. Thus, please copy the plain text and send it to us to the mentioned above email address. Thank you for understanding and we can help you in a more efficient way.

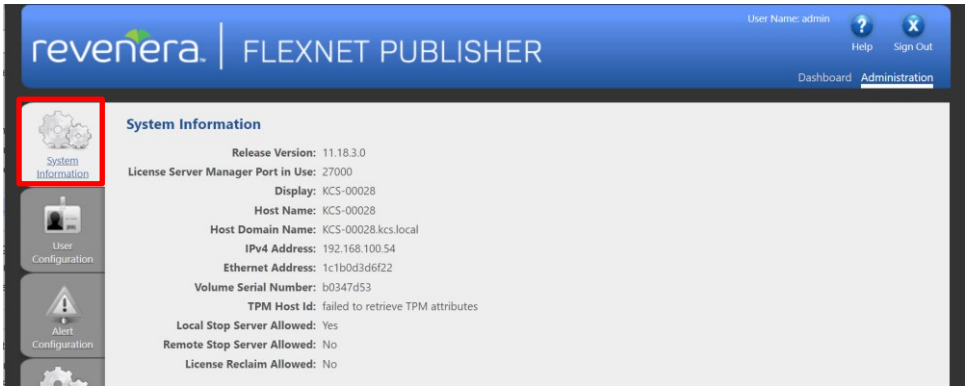

FIGURE 53

NOTE: Even if the previous steps are fully done, The REUSE Company reserves the right to not provide the license file if they consider so.

The license file will be provided with the same email address. Save the license file on your PC and import it to the FlexLM License Server. Import the license file to the Vendor Daemon Configuration tab.

FIGURE 54

Click on *Browse…*, to look for the provided license location. Once located, click on *Import License* to load the file into the FlexLM system.

FIGURE 55

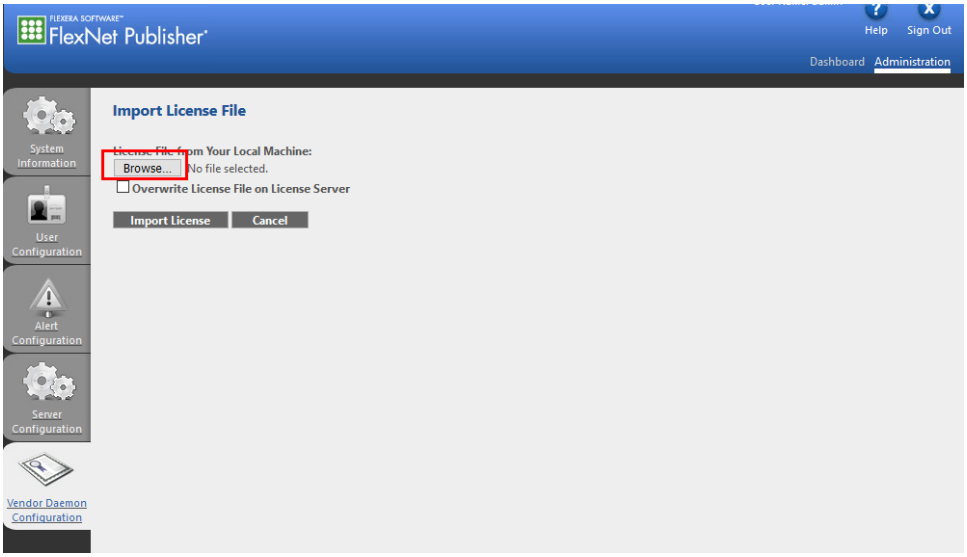

FIGURE 56

NOTE: Please check the option Overwrite License File on License Server in case you had loaded previous TRC license files in the past.

Restart the Vendor Daemon.

3.2.3 Troubleshooting

3.2.3.1 What to do when forgetting FlexLM Administration credentials

In case of forgetting the administration login credentials, it is necessary to reinstall the FlexLM. Thus, it is recommended to create more than one administrator user.

3.2.3.2 Which ports are used by FlexLM?

FlexLM License Server has its own port, defined in the installation wizard. The default server port is not only a port but a range between 27000 and 27009.

The Vendor Daemon has its own port as well. However, there is not a predefined default port, so it could change every time the Daemon restarts.

Both ports (or ranges) need to be fully accessible from the rest of the tools installed in any domain PCs!

It is possible to manage those ports:

To manage the FlexLM License Server port, open a browser and insert the following: http://localhost:8090. Click on the *Administration* tab, provide your credentials and then go to the *Server Configuration* tab.

FIGURE 57

To manage the Vendor Daemon port: Within the *Administration* tab, go to Vendor Daemon Configuration. Open the Daemon of the port you want to manage.

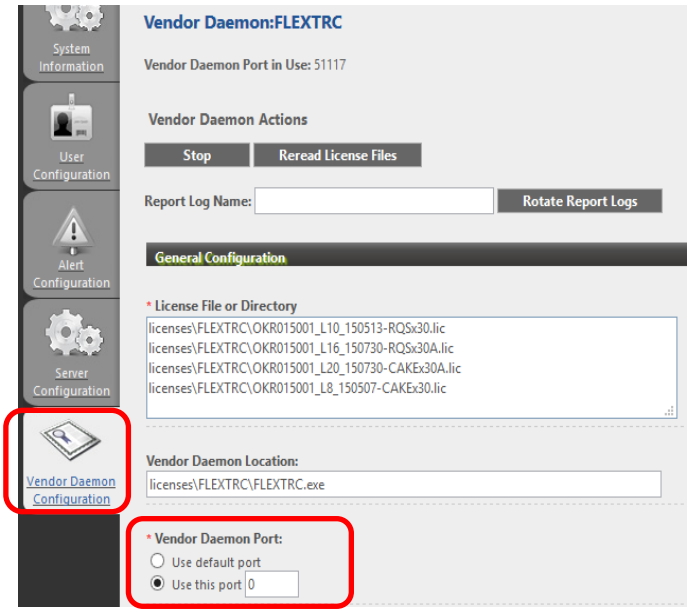

FIGURE 58

You can also inspect log files for each component.

Log file for the FlexLM License Server

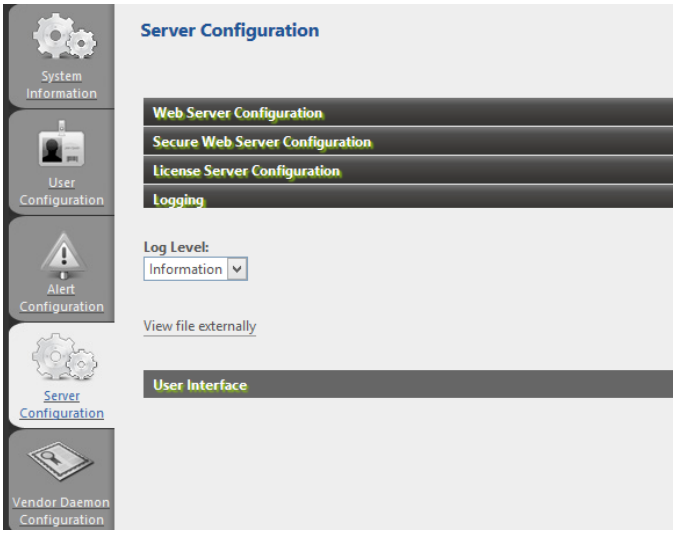

FIGURE 59

Log file for the Vendor Daemon

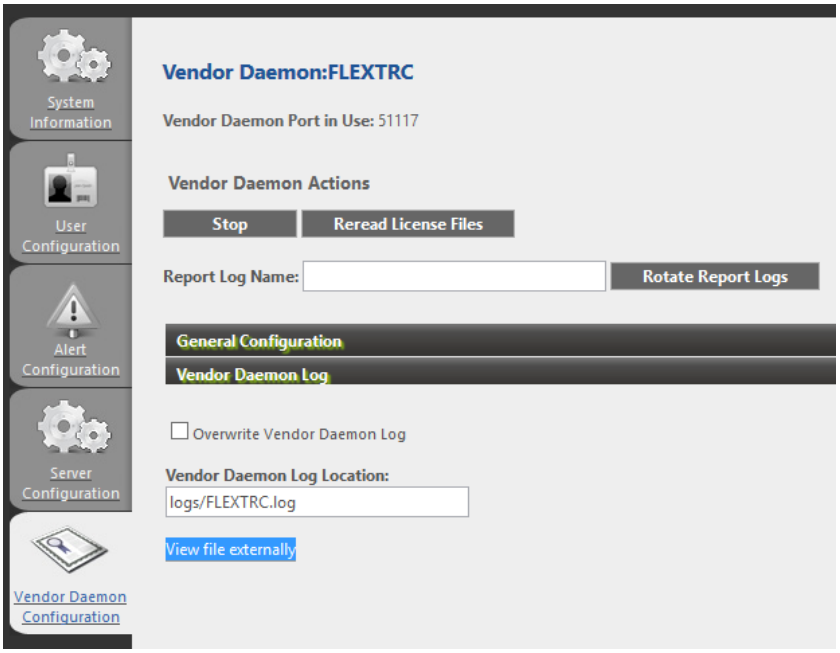

FIGURE 60

The FlexLM License Service is fully installed and ready to use.

3.2.3.3 "License Server is down or not responding" problem

Sometimes you can find this problem, especially when deploying everything on the same computer: licensing and the SES tools and especially on laptops, as they can get suspended or hibernated when closing the lid.

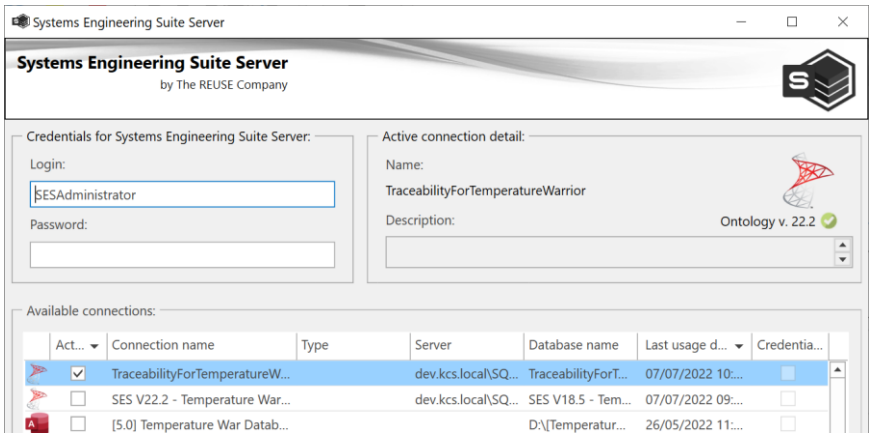

FIGURE 61

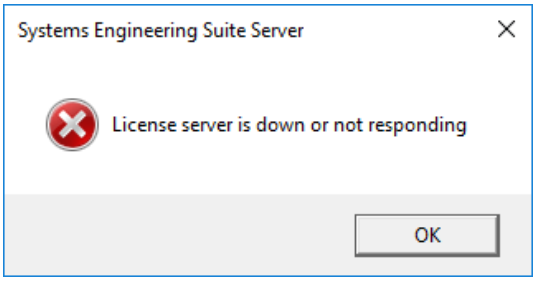

FIGURE 62

If it is not working correctly, please check that the parameters (Server name and Port) are properly set by clicking on "Test connection with SES Server" button in the "Configure Server" option of RQA/RAT, or if you are not able to connect in the SES Server application, then please access the machine where the FlexLM service is installed and follow this checklist to find the problem:

1. Check that the FlexLM Service is running: If you did not change the service name when installing the FlexLM there should be a service whose name is **lmadmin** or **lmadmin64** running on that machine, if you did, just look it up by the name you gave it when installing.

   You can see it by opening the Windows Task Manager and navigating to the *Service* tab. Check that the FlexLM service is running. If not, then start.

If the service is not able to start, please check the next topic in the troubleshooting. Test if the problem has been solved by going back to the SES Server or the QUALITY Management capability and try to log in or connect respectively.

If it is not on the list, then please go to the top of this manual and install the FlexLM service on this machine.

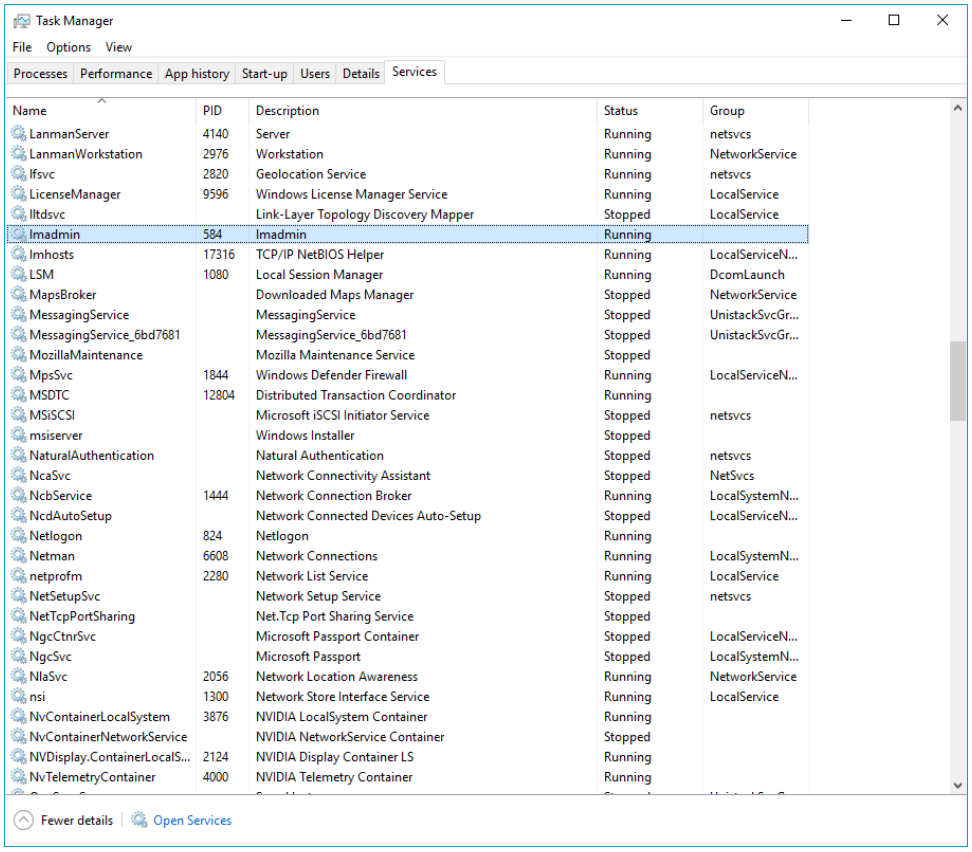

FIGURE 63

2. Check that the license and the TRC Daemon are working properly; to do this, FlexLM License Server includes a web interface available at the URL: http://<Server>:<WebInterfacePort>

   Typically, if you do not change any default parameter in the installation, this URL will look like this: http://localhost:8090.

a. Open a web browser with your suitable URL and go to the *Administration* tab (top-right corner)

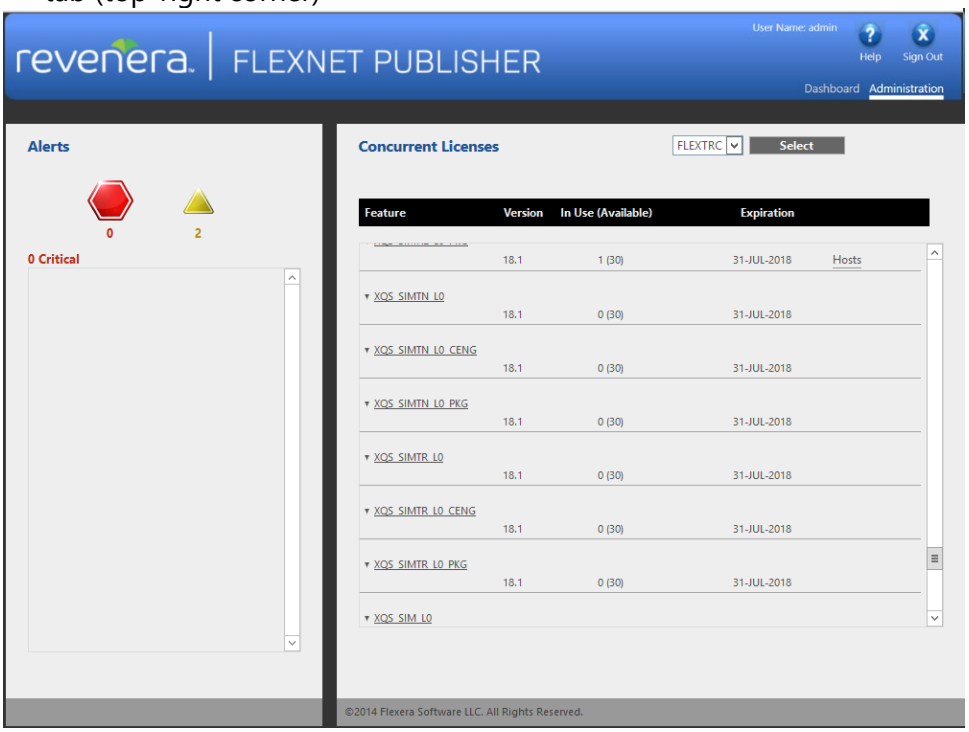

FIGURE 64

b. Use the login and password you set up when installing the license in that tab.
IMPORTANT: In case of forgetting the administration login credentials, it is necessary to reinstall the FlexLM. Thus, it is recommended to create more than one administrator user at installation time.

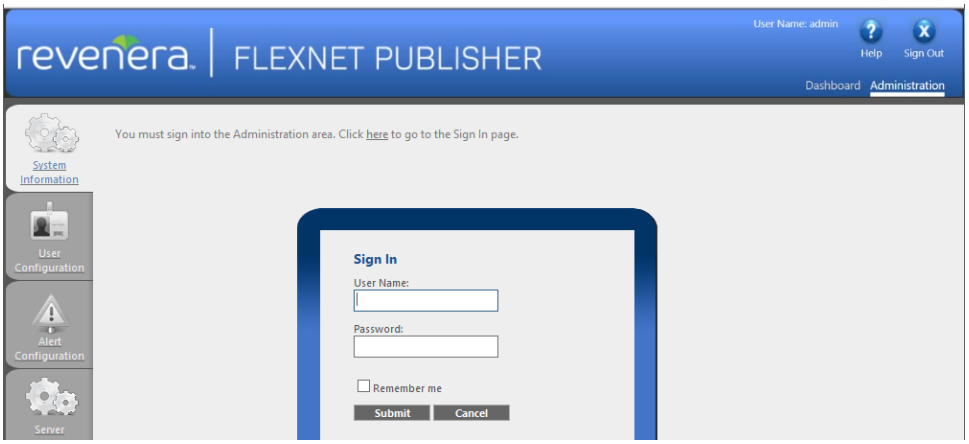

FIGURE 65

c. You should be able to get it and see a screen like the following one:

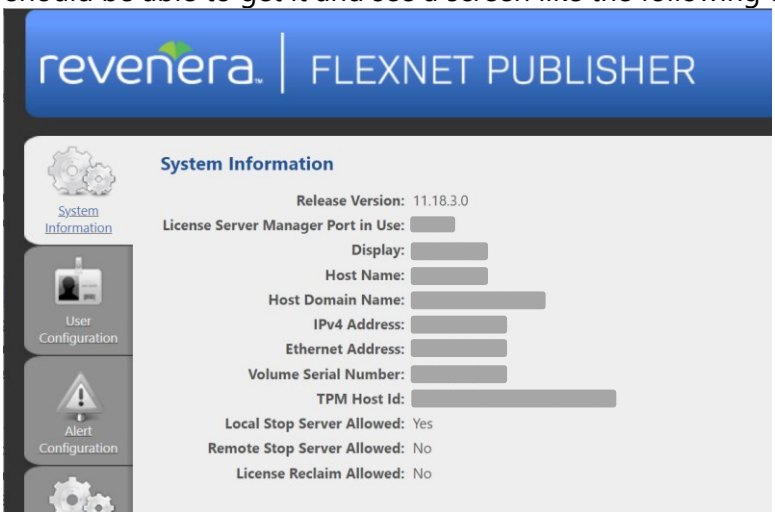

FIGURE 66

d. Go to the *Vendor Daemon Configuration* tab on the bottom left corner of the webpage

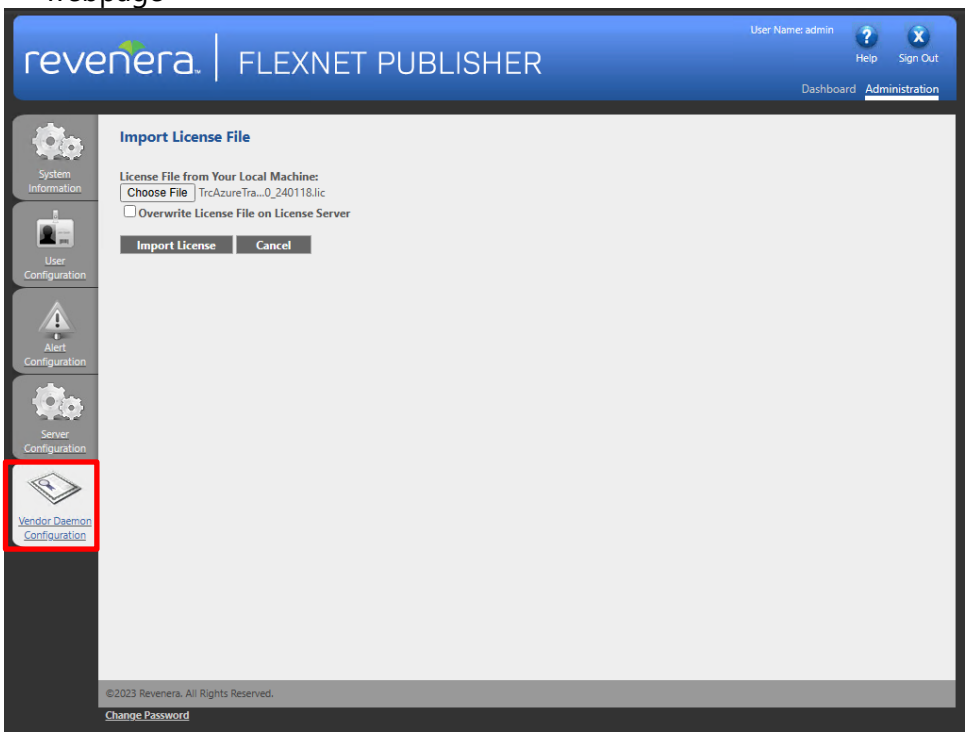

FIGURE 67

FIGURE 68

e. Check that FLEXTRC daemon STATUS is UP. If it is DOWN, then click on the **Administer** link of the FLEXTRC daemon row. If the license does not appear, refer to section 3.2.2.

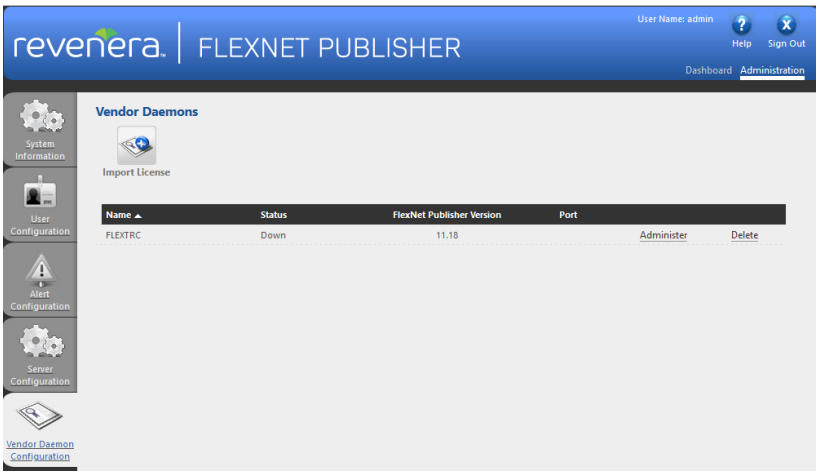

FIGURE 69

f. Click on the START button

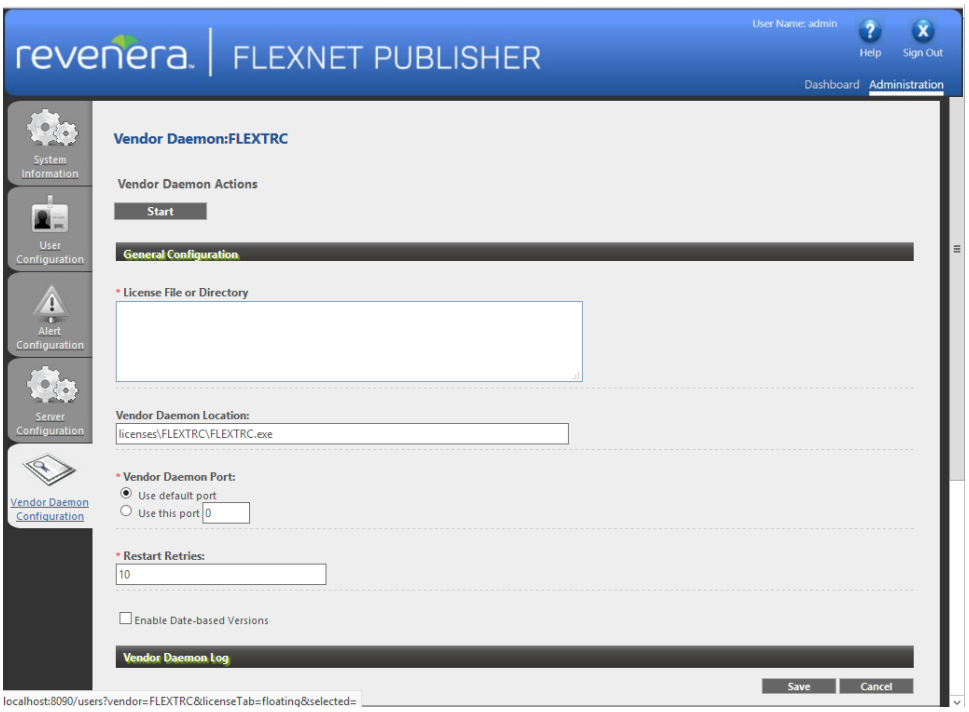

FIGURE 70

g. It will return to the previous screen with the message shown in the top right screenshot.

   If you refresh the page some moments later*, it will show that FLEXTRC daemon is UP then we have succeeded in fixing things or if it's DOWN we have to continue investigating what is going on.

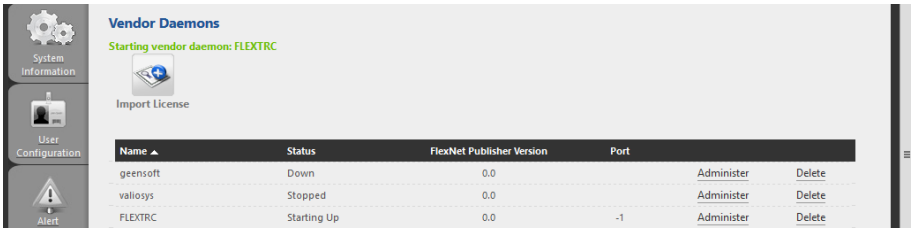

FIGURE 71

FIGURE 72

h. If the FLEXTRC daemon returns to DOWN status, we have to check what is going on in the daemon log file you can find in the **Administer** link of the daemon row.

   Go to the Vendor Daemon Log section of the page and click in the link "View file externally".

   Then a Notepad will open, if you scroll to the bottom, you will identify the reason the daemon is not running.

   The most typical thing is that the licenses have expired and there is nothing to listen to, so the daemon is stopped.

   The solution for this problem is to ask for new licenses at licensing@reusecompany.com

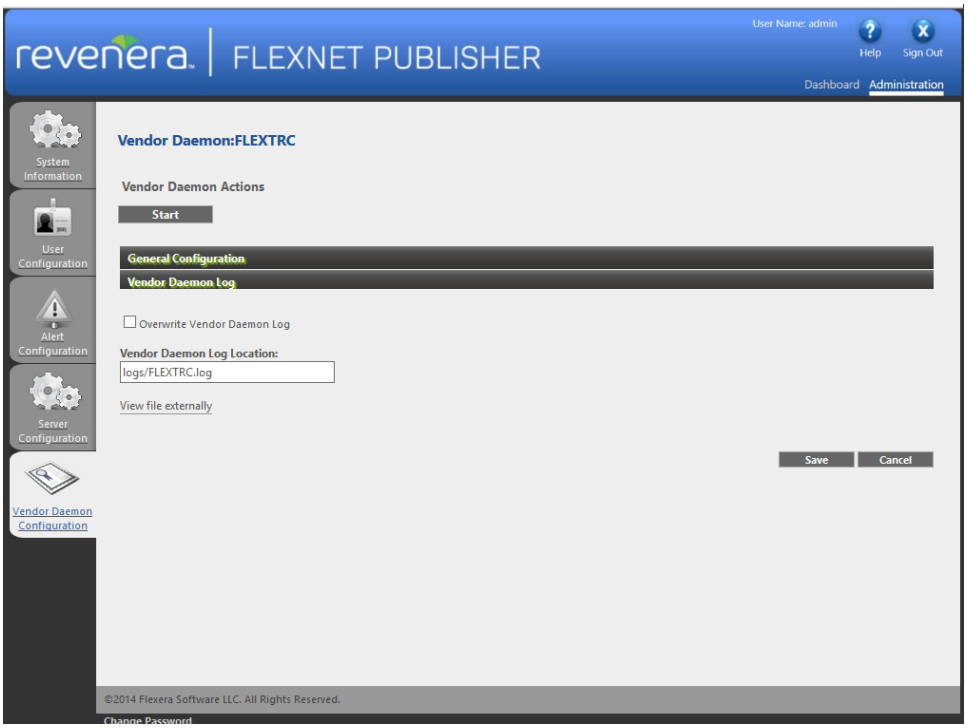

FIGURE 73

i. If you have still the problem after reviewing all these items, maybe there is a network configuration problem between the SES Server and the FlexLM server. It can be due to firewalls or any wrong port configuration. Revise the following tips:

   i. FlexLM License Server has its own port, defined in the installation wizard

      1. Default server ports: 27000 - 27009

   ii. The Vendor Daemon has its own port as well

      1. There is not a predefined default port, so it could change every time the Daemon restarts

   iii. Both ports (or port ranges) need to be fully accessible from the rest of the tools installed on any domain PCs!

3.2.3.4 Unable to start the FlexLM License Service

This problem appears when the FlexLM does not have the suitable configuration to run, we have not found the reason why but sometimes after a fresh installation of the FlexLM License Server it's unable to start. Please check these steps to solve the issue:

1. Check that the FlexLM Service is running: If you did not change the service name when installing the FlexLM there should be a service whose name is **lmadmin** running on that machine, if you did, just look it up by the name you gave it when installing.

   You can see it by opening the Windows Task Manager and navigating to the Service tab. Check that the FlexPLM service is running. If not, then start it.

2. The service will try to start, but it will not be able to…

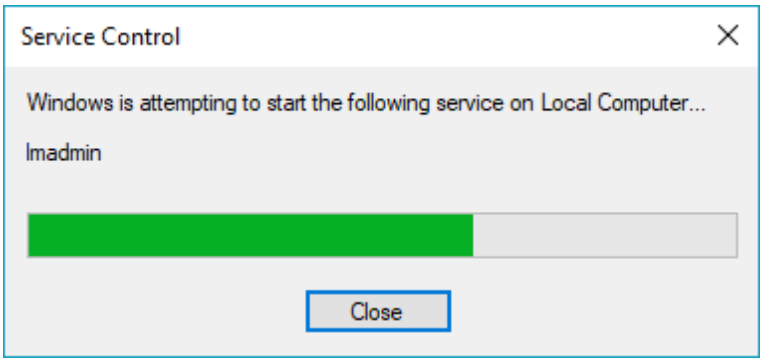

FIGURE 74

3. Check the Log On configuration in the Services Management Console, by going to the Start Menu and typing 'services. MSc' select the *Service* option we have as Best Match by clicking with the right button of the mouse and selecting *Run as Administrator*, provide your administration credentials and the management console will open:

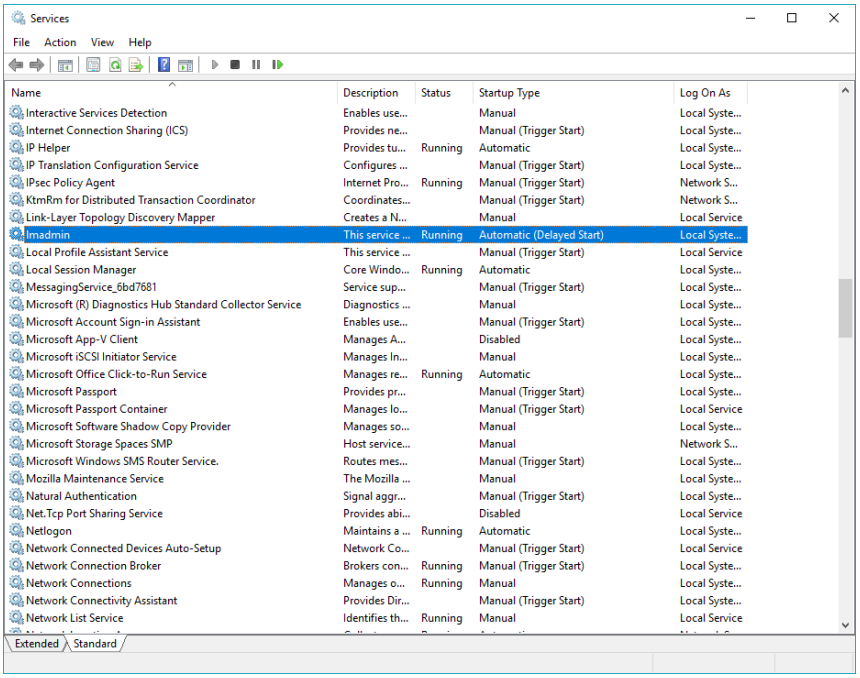

FIGURE 75

4. Right-click with the mouse on the service line and select *Properties*:

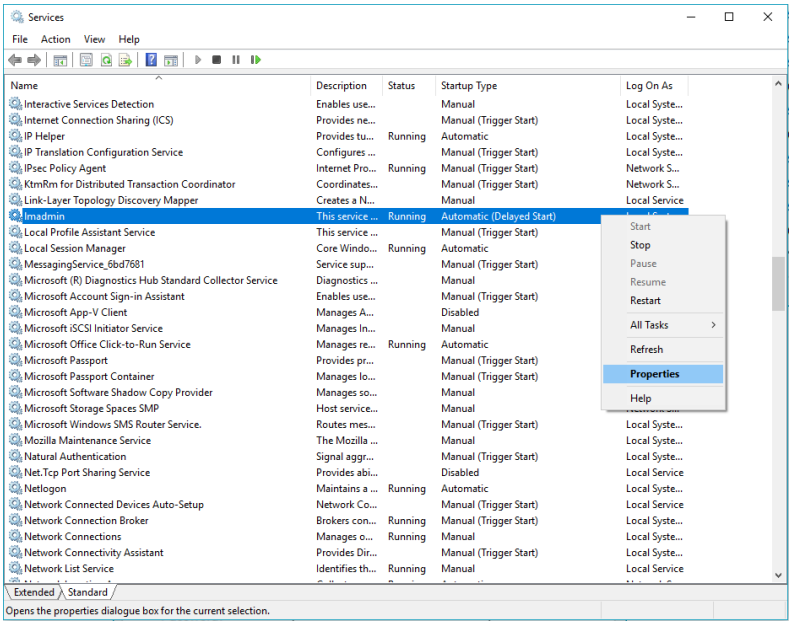

FIGURE 76

5. Then in the *Properties* window go to the *Log On* tab Your configuration will look like this:

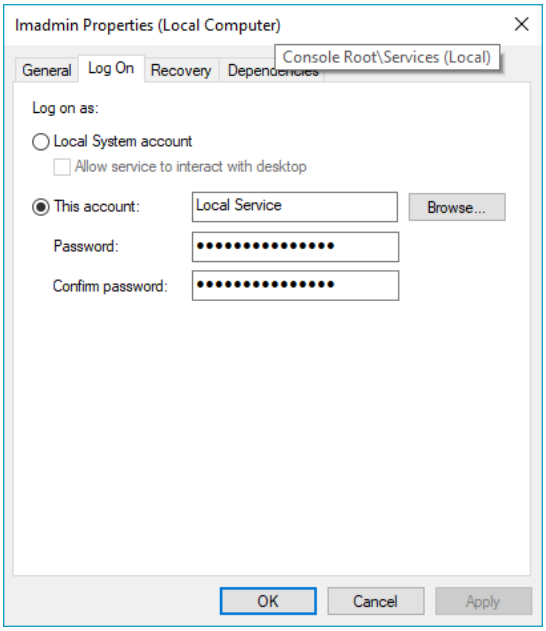

FIGURE 77

6. Change the option and select 'Local System account' as shown in the next figure. Then click on the *OK* button.

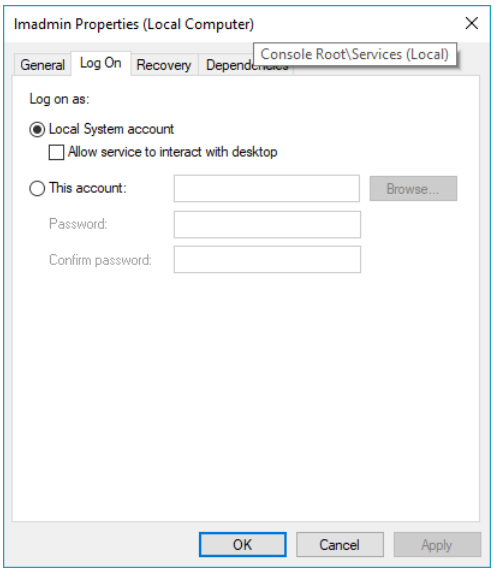

FIGURE 78

7. Task Manager highlighting the FlexLM (lmadmin) service properties - Log on tab (II)Then go back to the list and select the service again, click with the right button of the mouse and in the context menu click the *Start* option.

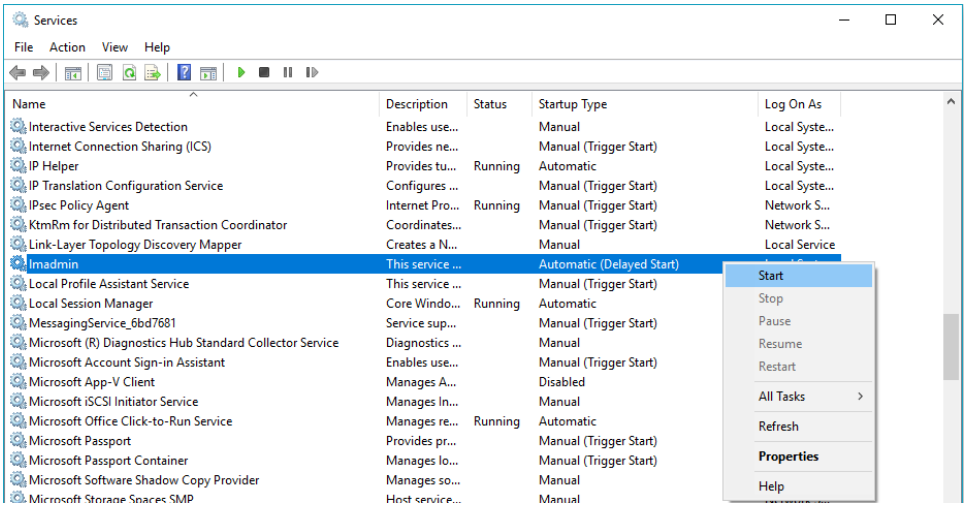

FIGURE 79

8. The service now will be started normally.

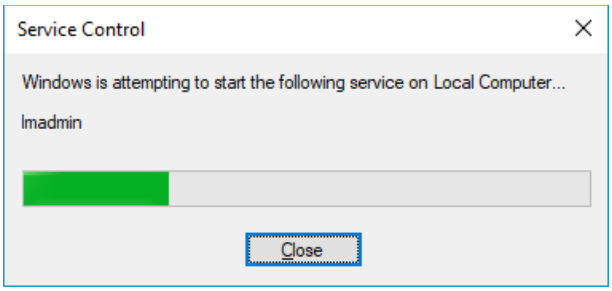

FIGURE 80

9. Your FlexLM License Server is up and running so you can continue using the Systems Engineering Suite.

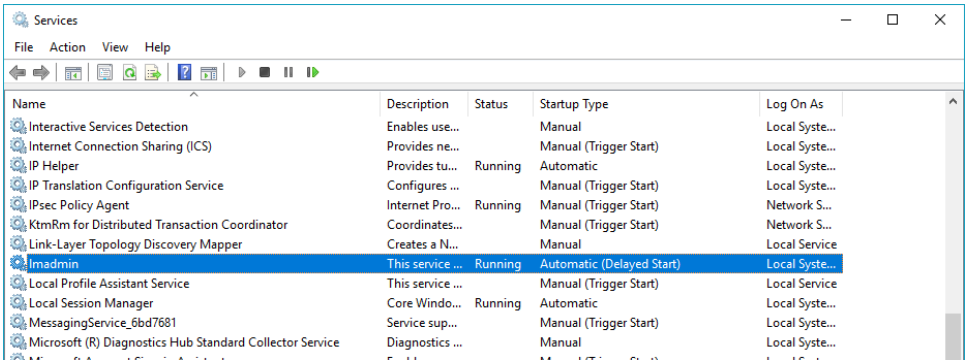
Services
File Action View Help
Name
Description
Status
Startup Type
Log On As
Interactive Services Detection
Enables use...
Manual
Local Syste...
Internet Connection Sharing (ICS)
Provides ne...
Manual (Trigger Start)
Local Syste...
IP Helper
Provides tu...
Running
Automatic
Local Syste...
IP Translation Configuration Service
Configures ...
Manual (Trigger Start)
Local Syste...
IPsec Policy Agent
Internet Pro...
Running
Manual (Trigger Start)
Network S...
KtmRm for Distributed Transaction Coordinator
Coordinates...
Manual (Trigger Start)
Network S...
Link-Layer Topology Discovery Mapper
Creates a N...
Manual
Local Service
lmadmin
This service ...
Running
Automatic (Delayed Start)
Local Syste...
Local Profile Assistant Service
This service ...
Manual (Trigger Start)
Local Service
Local Session Manager
Core Windo...
Running
Automatic
Local Syste...
MessagingService_6bd7681
Service sup...
Manual (Trigger Start)
Local Syste...
Microsoft (R) Diagnostics Hub Standard Collector Service
Diagnostics ...
Manual
Local Syste...

FIGURE 81

4 Ontology Database Restoration

4.1 Introduction

This chapter will instruct you on downloading and restoring the Systems Engineering Suite Ontology Database provided by The REUSE Company, for each language you want your work-products to be assessed.

The Systems Engineering Suite works with a database that is not provided with the installers. This database can be restored on several Database Management systems (DBMG):

- Access
- SQL Server
- MySQL

We suggest using a MS Access database for demos, because there will not be any need to install anything that's not provided with a Windows installation combined with an SQL Server or MySQL for more robust and important installations rather than a demo.

IMPORTANT NOTE: MS Access databases ARE NOT AN OPTION when the plugin needed for your Systems Engineering Tool, where RAT – AUTHORING Tool is going to be installed as a plugin, is installed in a 64-bits version. The reason behind this is that Windows does not provide connectivity in 64-bits to the MS Access database, but it does when the processes are running in 32-bits mode. For these cases you shall use any other option.

Before proceeding, you need to know at which of the two situations:

1. You are new to the SE Suite tools or want to discard a previously managed database for a new one.
2. Upgrade your existing database content and structure to the latest version.

For the first situation, you just need to select the type of DBMG Server that you want to use and navigate to 4.2 Create a New Database from a Backup or Dump – Database Restoration, to configure it.

Otherwise, if you are upgrading your current existing database, we provide a tool called TRC Migration Tools, which is available on TRC Website, that performs all the necessary changes to keep the structure and data up to date. (See Section 3.3 "Use of DB

Migration Tool" in the *KM – KNOWLEDGE Manager: Technical Reference Handbook*, for more information on the process).

4.2 Create a New Database from a Backup or Dump – Database Restoration

Depending on your needs, select a DBMG and then download a suitable version, backup or dump, of the database from our website.

VERY IMPORTANT NOTE: it is not enough to go to the DMBG Server (e.g., SQL Server or MySQL server installation) and create an empty database or schema, it has to have the table, views, etc. In general, it must have the predefined structure and also the contents, an empty database with the suitable structure is not able to assess any work-product.

Another important parameter to consider is the language to assess the work-products, not to be confused with the Graphical User Interface (GUI) language, that will be always in English.

The selection of the database to understand, for example French, will determine that even if the application GUI is in English, the assessment or your requirements will be done in French.

The list of available ontology languages is:

- English
- French
- Spanish
- German
- Swedish
- Italian
- Japanese (to be released)

Then, considering these parameters, we can move to the next section.

4.2.1 Download Suitable Version from TRC Website

As you may know at this point, the Suite is fully operative with different database management systems (DBMG) (MS ACCESS, SQL Server and MySQL) and it supports assessments in many different languages (see table below).

To have the latest version of the database structure and data, it is possible to request it at the next web address:

https://resources.reusecompany.com/systems-engineering-suite-v23/

Here, the user must give the contact details and choose from these Database Management Systems:

- SQL Server
- MySQL
- MS Access 64-bits
- MS Access 32-bits

And the next languages:

- Dutch
- English
- French
- German
- Italian
- Japanese
- Norwegian
- Spanish
- Swedish

After receiving the download, you can proceed to its restoration in the suitable DBMG. See the next section.

4.2.2 Database Restoration

Depending on the DBMG system selected you will have to perform different steps to restore the file, backup or dump and create the suitable Ontology database instance.

4.2.2.1 Microsoft Access

MS Access is the easiest database management system to manage because it is just as simple as unzipping the file downloaded from our website and saving it in a suitable location in your computer or in the server.

The only things to consider are:

- For those deployments that will be done completely (all the SES applications) in a single computer, you can work at any location in your computer where the current user has **reading and writing rights.**
- For the rest of the deployments, where the pieces are working together through the network, the database shall be placed in a shared location in the network with reading and writing rights for all those users who are going to use the application. The typical thing is that the database is configured in SES Server using a Network URL.
    - E.g., \\myservername.mydomain\my shared resources for SES\SES database v22.1 (English).mdb

4.2.2.2 Microsoft SQL Server

Microsoft SQL Server is a useful tool to manage the SES Ontology Database, on TRC website you can download the suitable backups to restore in a given MS SQL Server instance. Thus, it is necessary that you have previously an instance of SQL Server up and running, otherwise you must install it.

If you do not have SQL Server Management Studio installed with your SQL Server instance, we recommend installing it, all the steps needed to restore the database backup are going to be guided with the help of this application. Then, you have to copy the backup downloaded from the website to the machine where the SQL Server instance is running. Then start the SQL Server Management Studio and provide your credentials, they can be SQL Server Authentication or Windows authentication, depending on your SQL Server instance parameters:

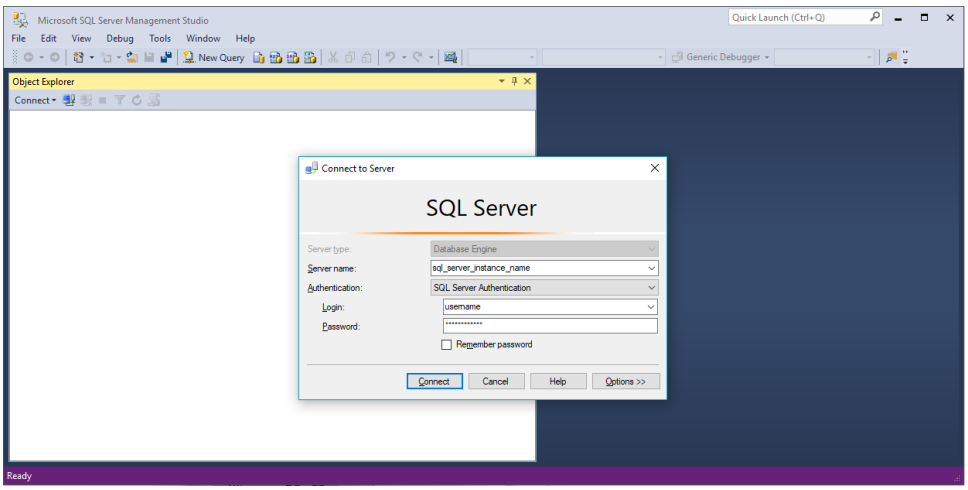

FIGURE 82

4.2.2.2.1 RESTORATION STEPS

Once you are logged in, move the mouse over the Database node in the Object Explorer, right-click it and select in the contextual menu the *Restore database…* option.

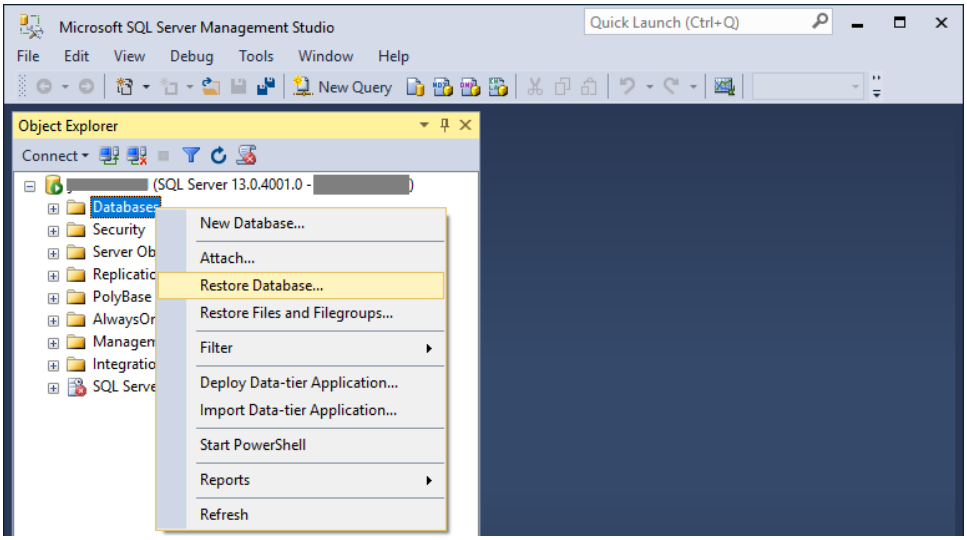

FIGURE 83

The following window will appear,

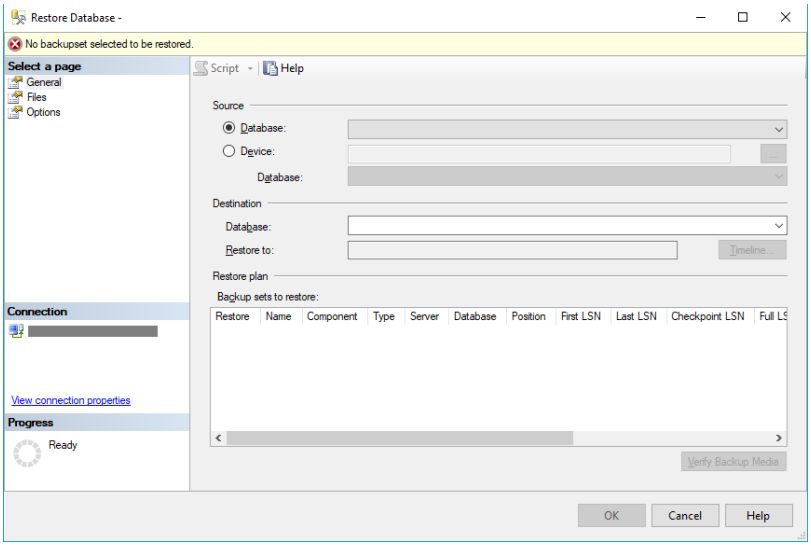

FIGURE 84

Select the "Device" option and then click on the "…" button at the end of the line. The following window will appear:

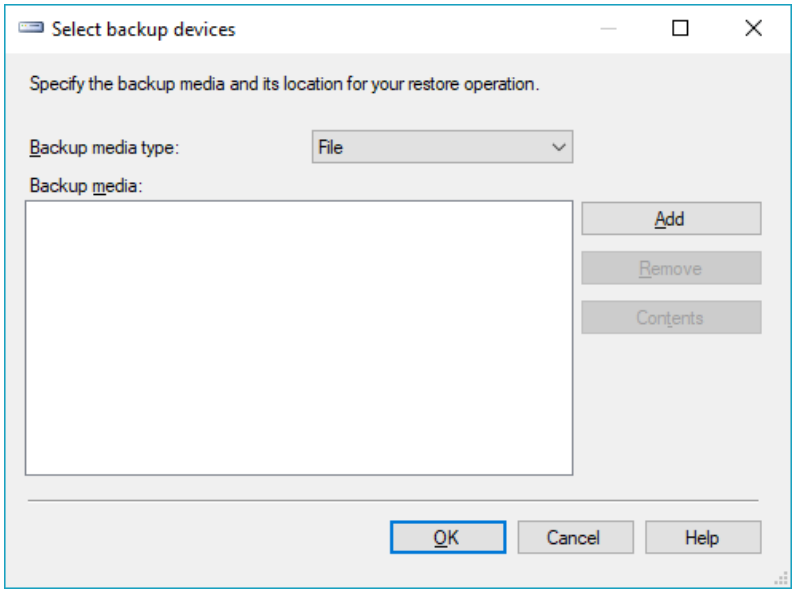

FIGURE 85

Here, select *File* as it is set by default then click on the *Add* button. Another window will appear (this is the last one, no more pop-up windows):

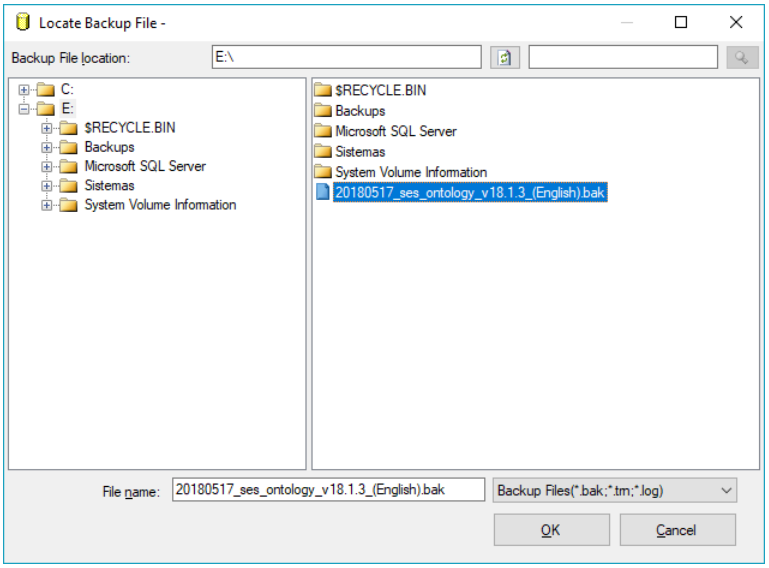

FIGURE 86

Then, select the backup on the server file system, as shown in the previous figure and then click on the *OK* button. Then the previous pop-up window will show your backup selection. Then click on the *OK* button again.

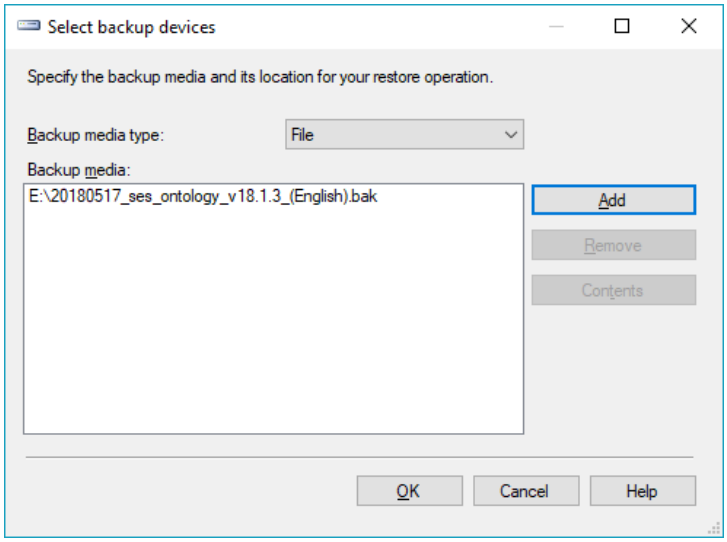

FIGURE 87

Then we are back in the first window of the restoration wizard. Be sure that the *Restore* checkbox on the backups set to restore is checked. Then check that the *Database* drop down list below the *Device* option is filled up with the new database name, as shown in the next figure. In some older versions of SQL Server Management Studio, it is possible to change the name for the desired one, in order to avoid name collision with an already existing database. If no problem is found when clicking on the *OK* button you do not have to use the *File* or the *Options* tab on the left-hand side of the window. Then click on the *OK* button.

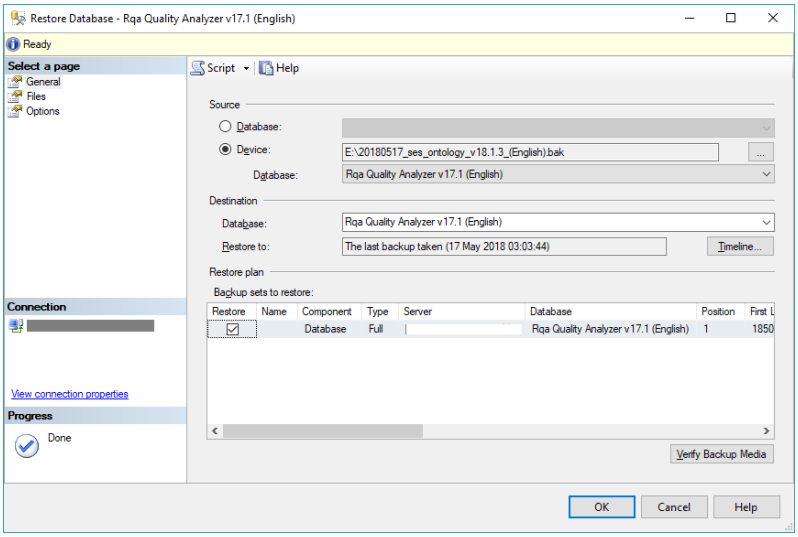

FIGURE 88

The restoration wizard starts to restore the database in the SQL Server instance. You do not need to do anything at this step, just wait for it to return a result of the process.

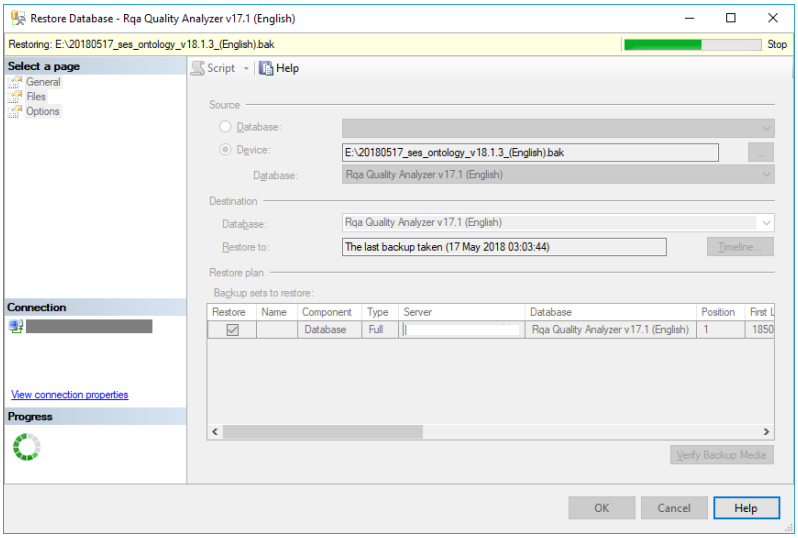

FIGURE 89

When the restoration wizard finishes, the output is displayed in a message box. If it has been successful, it prompts the following message. Click *OK*.

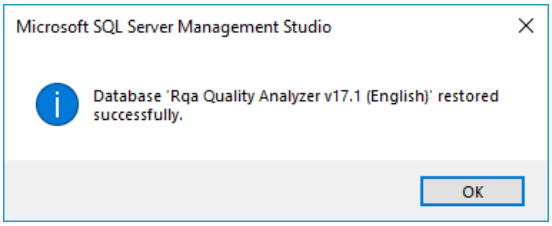

FIGURE 90

Otherwise, it will show us the error found. Read it carefully and change the necessary options in the previous step to solve them.

When the backup is restored successfully, there will be a new node, under the Database node, in the Object explorer. We are not finished yet with the restoration, now it is the time to deal with the credentials to log in into the database.

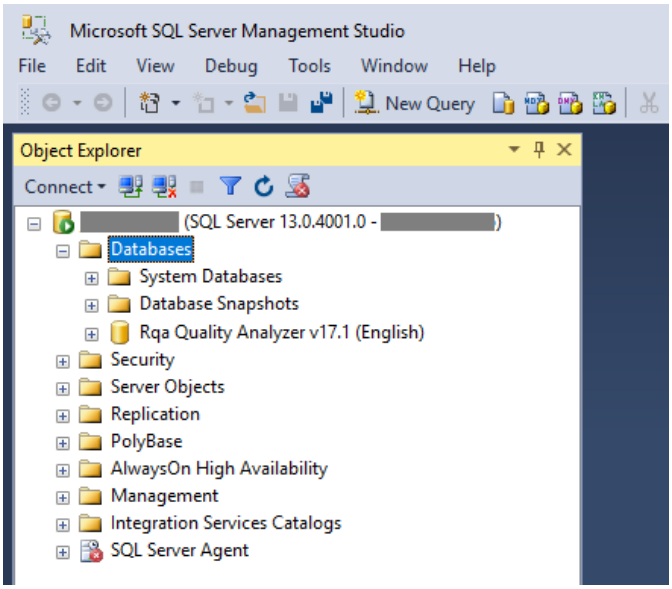

FIGURE 91

4.2.2.2.2 USER MANAGEMENT IN SQL SERVER

Now you must perform a user configuration in two different steps:

- First you have to create a new login in the SQL Server instance, it can be based on Windows or in SQL Server Authentication system.
- Then, you link the login with a new user in the restored database.

To perform the login creation, collapse the "Database" node and expand the "Security" node, then select the "Logins" node under the "Security" node and right-click on it. A contextual menu will open with several options, select *New login…*

In the following window you will set up all the parameters for the new login. You have two options:

- Create the login using Windows Authentication. The login is linked with the item (group or user) selected from the Active Directory and given a name for the login (we recommend for this case using the format domain\name, later* it will be easier to distinguish the type of user without opening its properties in the lists).
- Create a new SQL Server user not linked with anything else.

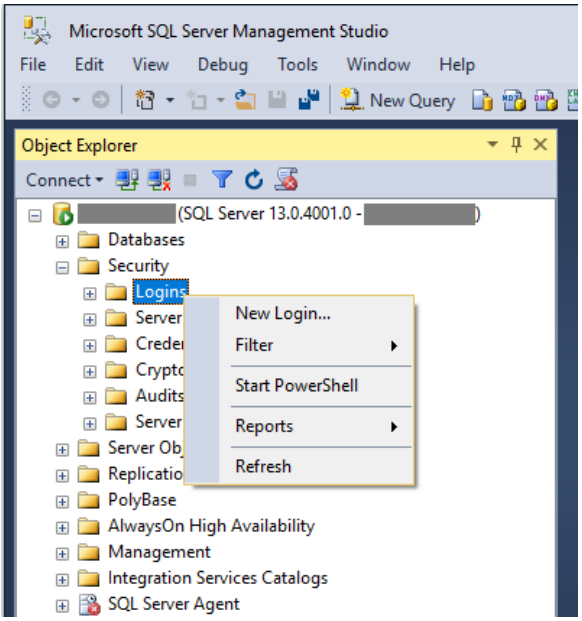

FIGURE 92

The discussion here is what is the best option. For demos and installations, where everything is in a local environment, it is a better solution to create only one SQL Server user and use these credentials.

For bigger installations, such as corporative deployments, the option of Windows Authentication in cooperation with Active Directory is also a good option. In this case we recommend not to create a user for each Windows User because it will be time consuming to manage this user list, instead, we recommend creating the login linked to an Active Directory group, and then, only by managing the Active Directory users belonging to that Active Directory group you are also managing the access to the SQL Server database. it is also possible to use a shared SQL Server user for all the configuration, it only depends on the connection architecture and the policies of each company.

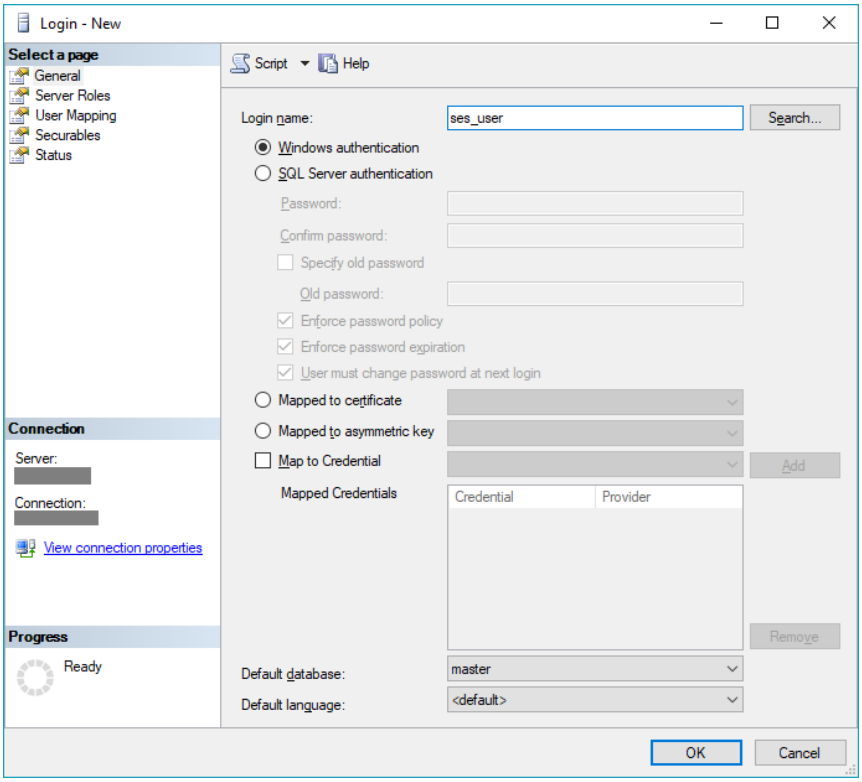

FIGURE 93

In the case of selecting Window Authentication, just click on the *Search…* button on the right and in the following window, select the type of object to find in the Active Directory to be linked with the new login by using the *Locations…* button. Then, enter the name or a part of the name of the object to be linked in the textbox at the bottom of the window. Then click on *Check Names* to confirm that the object is found in the Active Directory. If so, the name will be completed and underlined, otherwise an Active Directory browser will pop-up. In this case, look up the desired one and click on *OK*. In this window, also click on the *OK* button.

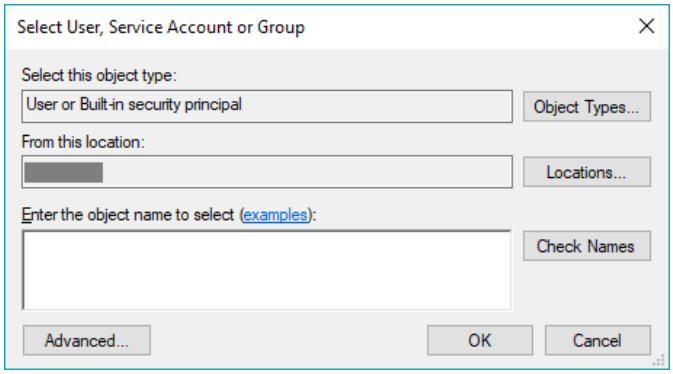

FIGURE 94

If the SQL Server user option is selected, write a unique login name in the textbox on the top of the form and introduce a password in the two textboxes in the middle of the button.

In this case, we recommend unchecking the option "User must change password at next login" to avoid having to log in with the new user and to change the password again.
Then click on the *OK* button.

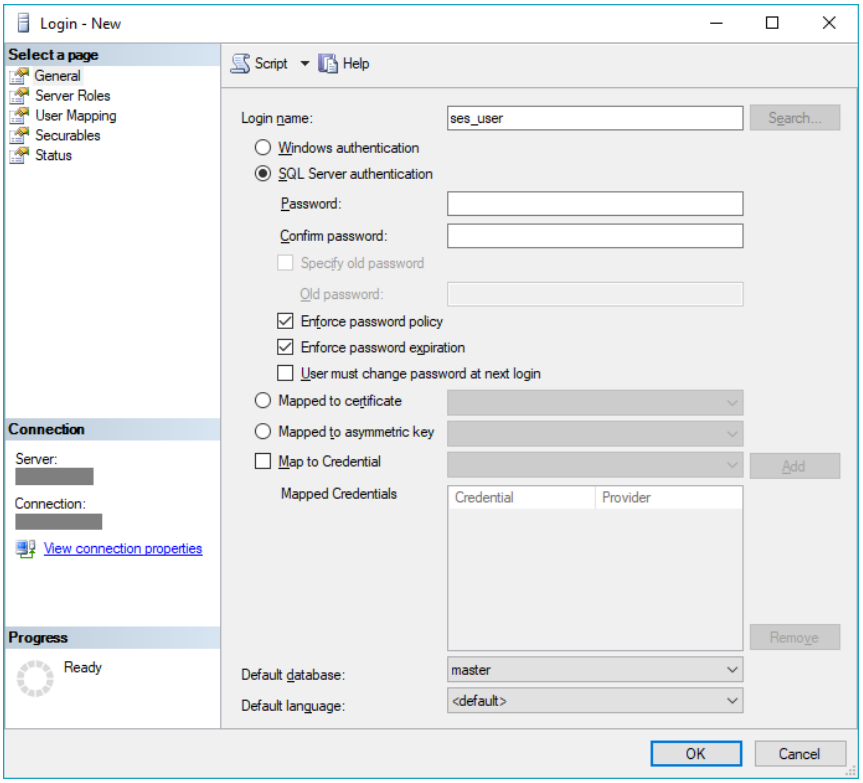
Login - New
Select a page
General
Server Roles
User Mapping
Securables
Status
Script
Help
Login name:
ses_user
Search...
Windows authentication
SQL Server authentication
Password:
Confirm password:
Specify old password
Old password:
Enforce password policy
Enforce password expiration
User must change password at next login
Mapped to certificate
Mapped to asymmetric key
Map to Credential
Add
Mapped Credentials
Credential
Provider
Remove
Default database:
master
Default language:
<default>
Connection
Server:
Connection:
View connection properties
Progress
Ready
OK
Cancel

FIGURE 95

Now when the login has been created, the only thing left to do is to associate the login with a user in the just restored database. Collapse the "Security" node and expand the "Databases" node and then your restored database node. Once opened, look up for the "Security" node *inside your database node* and open it. Right-click on the *Users* node and select *New user…* on the contextual menu that will be opening.

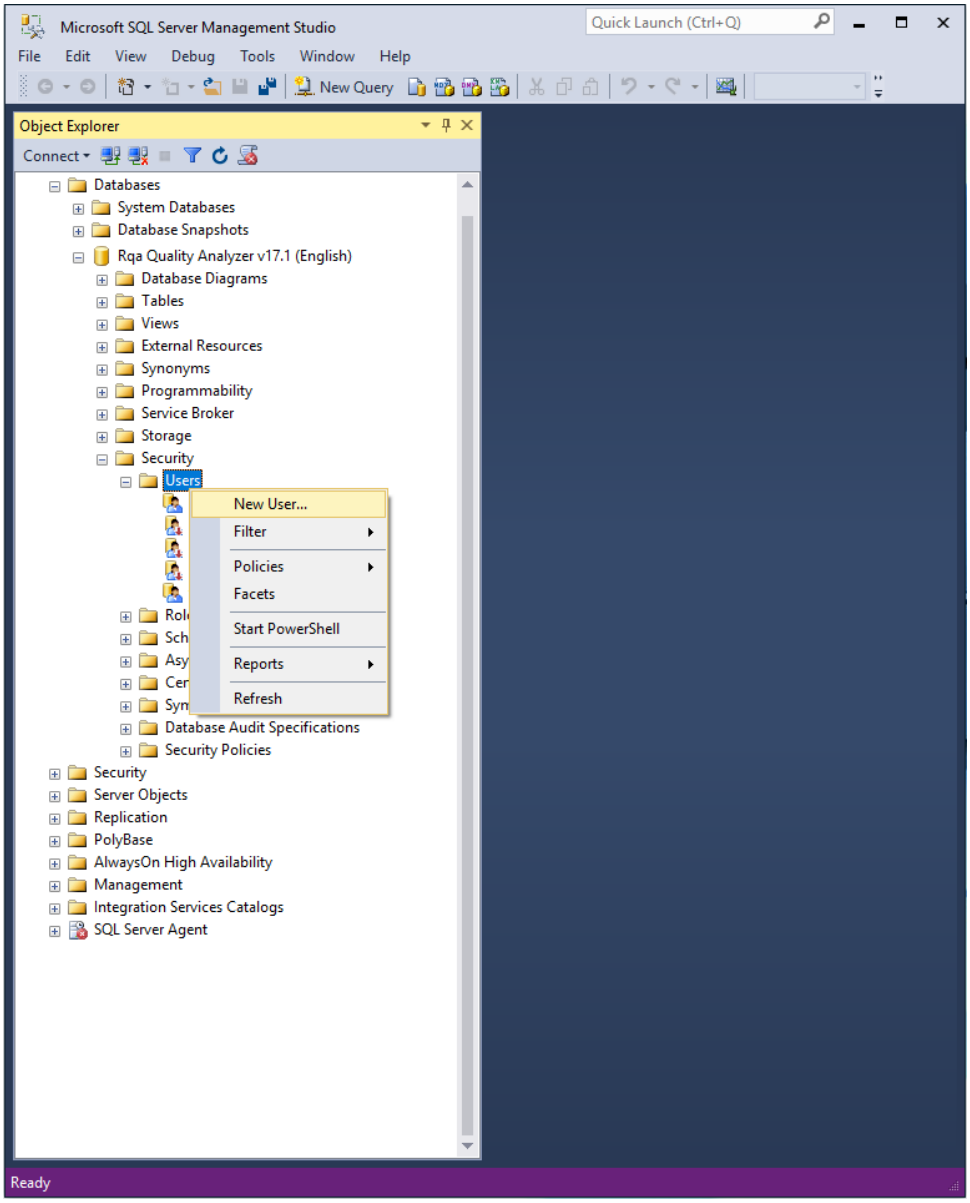

FIGURE 96

In this new window you must select the type of user defined in the new login: Windows User or SQL Server user. Then type the new Username in the first textbox. We recommend using the same name as the login.

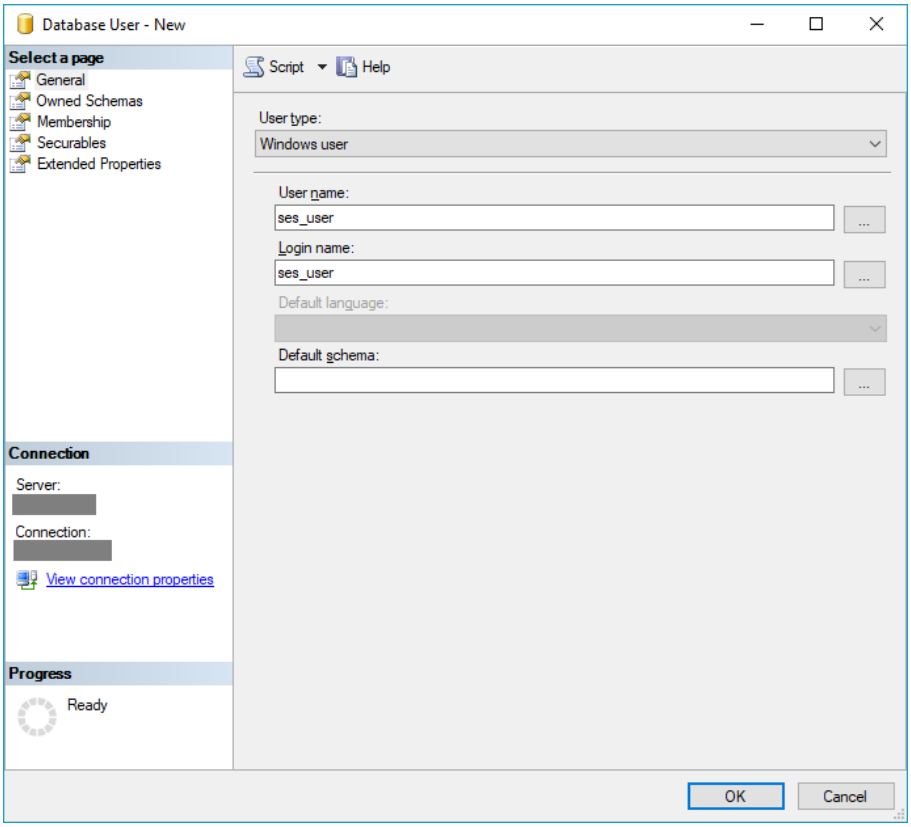

FIGURE 97

In the case of Windows User, use the "…" button besides the login name to look it up among all the Logins as explained in the creation of the new Login, in the SQL Server instance. Then click on the *OK* button.

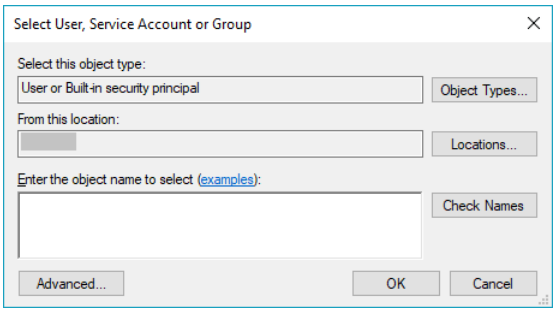

FIGURE 98

In the case of SQL Server user, use the same login name you have created as SQL Server login in the previous step. Then click on the *Membership* tab.

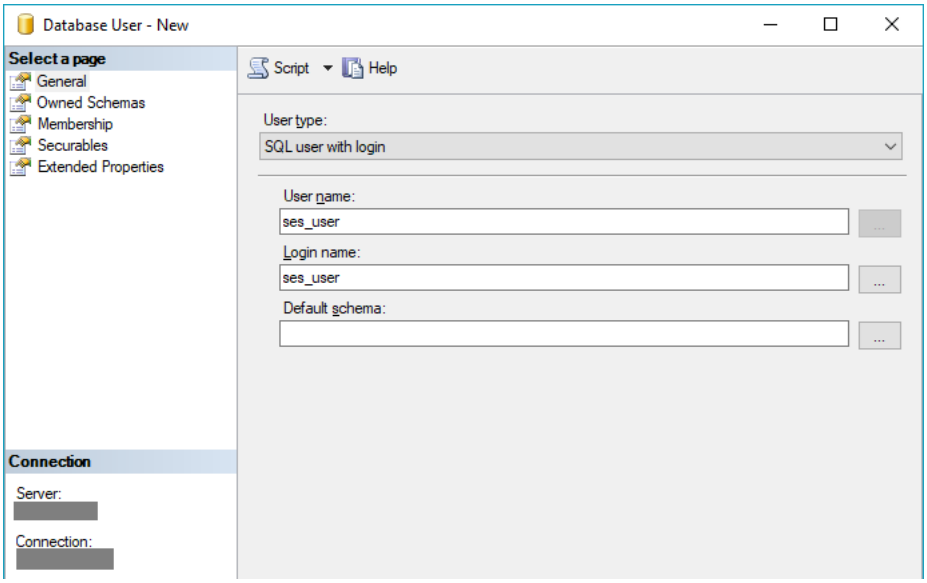

FIGURE 99

In the membership tab, you have to give rights to the user to be created, the required permissions to connect to the SES Ontology database are db_datareader and db_datawriter, thus we check those permissions for this user. Then we click on the *OK* button to confirm the creation of the user for the database instance.

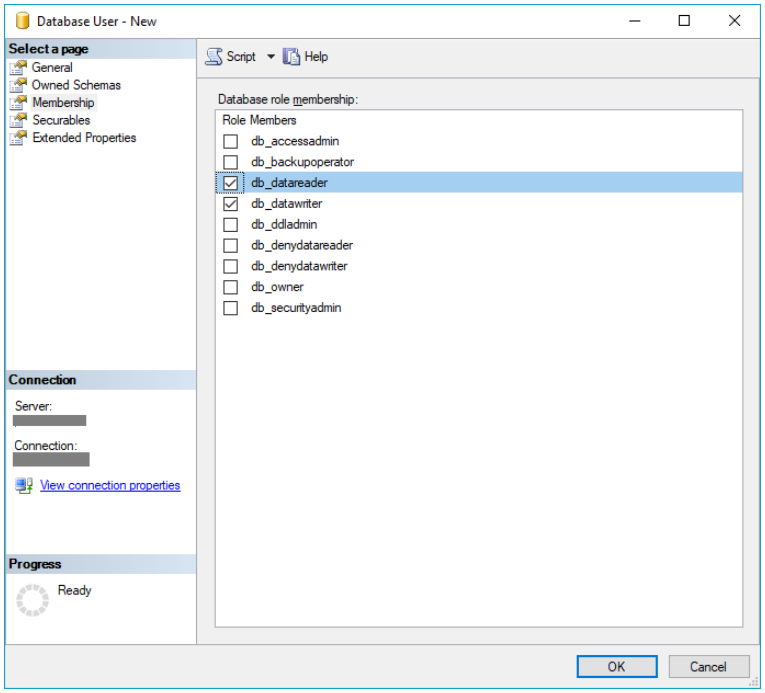

FIGURE 100

Back in the main window of SQL Server Management Studio, under the database instance, in the "Security" and "Users" node, the new user is shown.

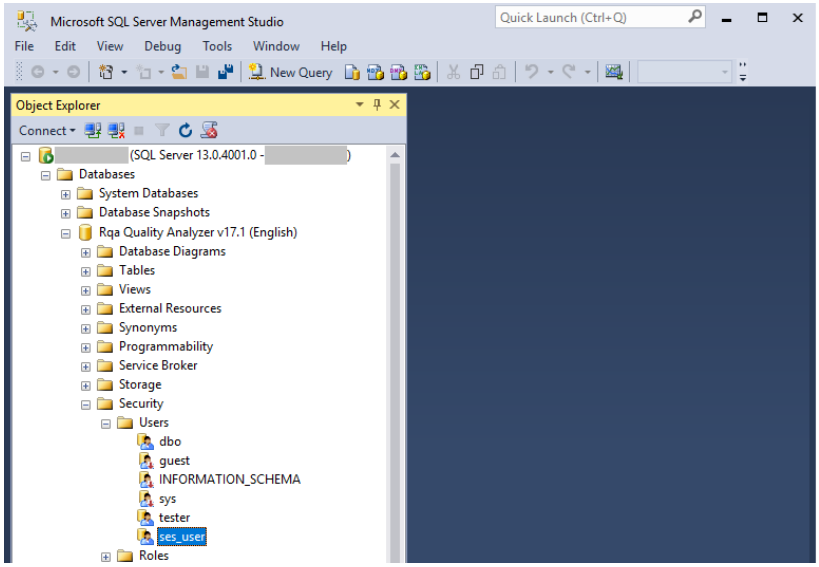

FIGURE 101

Then we are done, now you can procced to install the next piece of Systems Engineering Suite (SES) in your deployment.

4.2.2.3 MySQL

MySQL is a very good system to manage the SES Ontology Database. On TRC website you can download the suitable dump to restore in each MySQL server. Thus, it's necessary that you have previously an instance of MySQL server and it's up and running or, otherwise you must install it.

If you don't have MySQL Workbench installed with your MySQL Server instance, we recommend installing it. All the steps needed to restore the database backup are going to be guided with the help of this application.

Then you have to copy the dump downloaded from our website to the machine where the MySQL Server instance is running.

VERY IMPORTANT WARNING FOR MYSQL DEPLOYMENTS ON NON-WINDOWS OPERATING SYSTEMS: when using MySQL on top of a Linux distribution, there is a problem of case sensitivity, table names are checked by default to be in the same casing as in the queries and this will provoke a problem in the Suite. So please revise the installation in this case to behave as case insensitive.

It can be checked in the MySQL Workbench's MANAGEMENT tab, under Status and System variables. Inside it, look up for "lower_case_table_name", then if the value is 1 it is fine, otherwise you have to change it. Unfortunately, it cannot be done inside MySQL Workbench, it has to be done in the MySQL server editing the configuration file. You will find an example of changing this configuration for a given Linux distribution here. For other distributions, please check it in the MySQL manual for that distribution.

Here is a snapshot of the MySQL Workbench showing the current status of the lower_case_table_name variable with a compatible value (1) for the Systems Engineering Suite.

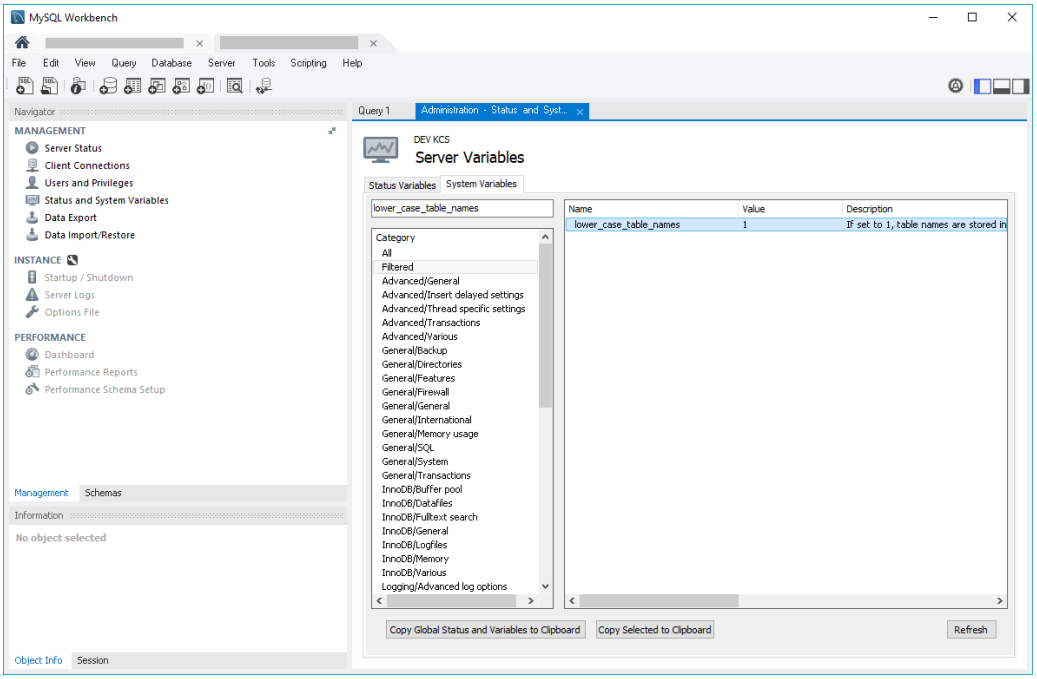

FIGURE 102

Then start the MySQL Workbench, and create a new connection to your MySQL server instance by clicking in the "+" button besides the title "MySQL Connections":

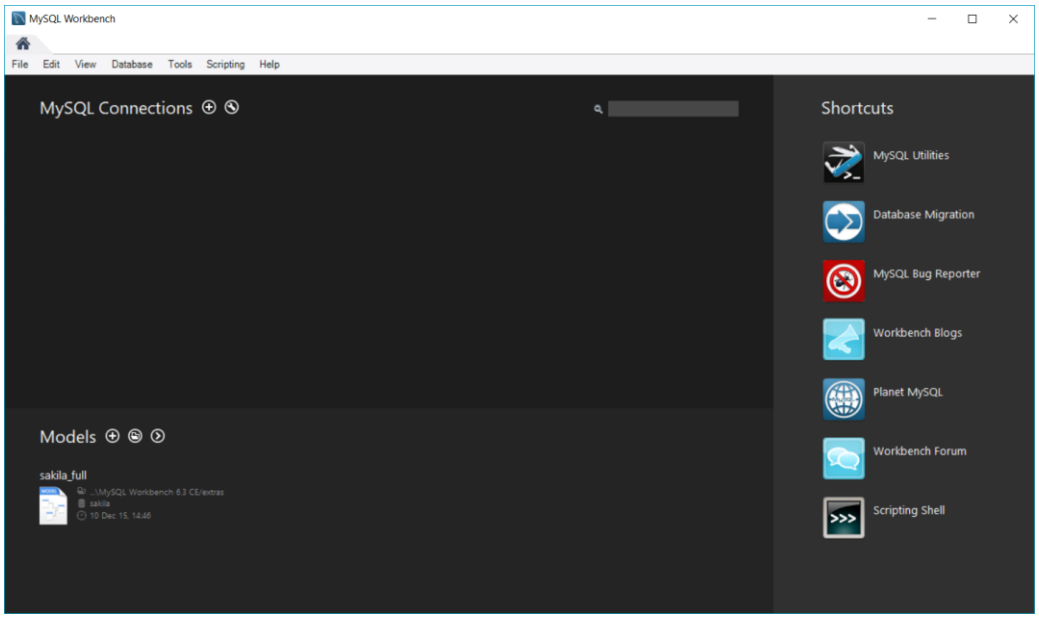

FIGURE 103

Then, the "Setup New Connection" window will appear. Here you will have to provide a name for the connection, then go to the "Parameters" tab, in the "hostname" field please fill it up with the server's name where you have installed MySQL server, if the workbench is installed in the same machine you can use "localhost" or the "127.0.0.1" as shown in the following figure. Then choose the port, the default one is the 3306 as shown in the following figure, but if in the installation of the server it was decided to change to another one then here you have to provide that other one. Finally, provide the credentials to be able to log in: first the username in the next field and then the password, you can decide to store it in the vault … by clicking in the button with that name and entering it or just providing it when logging and not storing it. Now it is time to test the connection by clicking on the "Test connection button". If everything goes fine, you will receive a message stating that the connection is successful, and you can click on the *OK* button. Otherwise, correct the parameters to be able to log in, then test it and click again on the *OK* button.

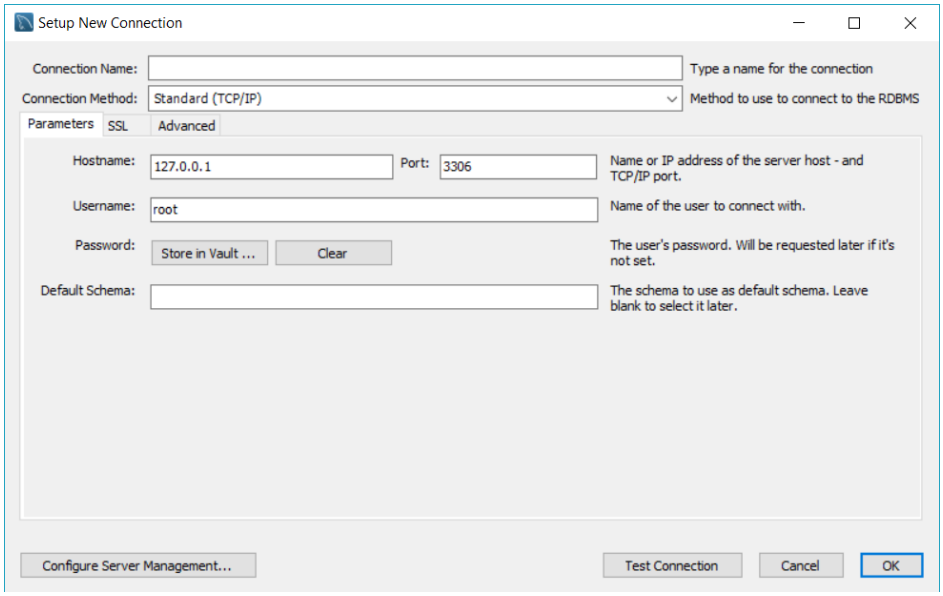

FIGURE 104

Then, the new connection will appear in the main window. Just click on it and if necessary, provide the password.

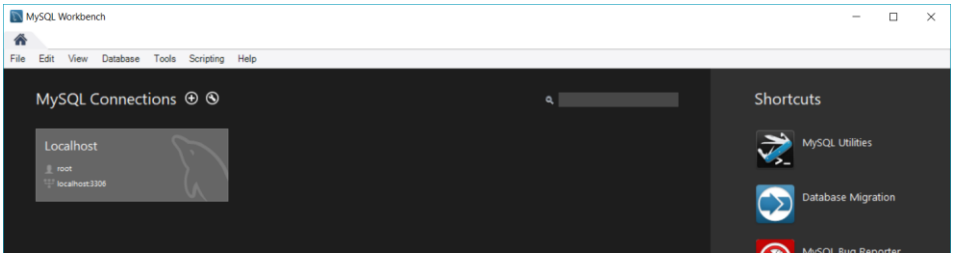

FIGURE 105

Then a new tab will be opened allowing to restore the downloaded dump to a new schema in our server instance.

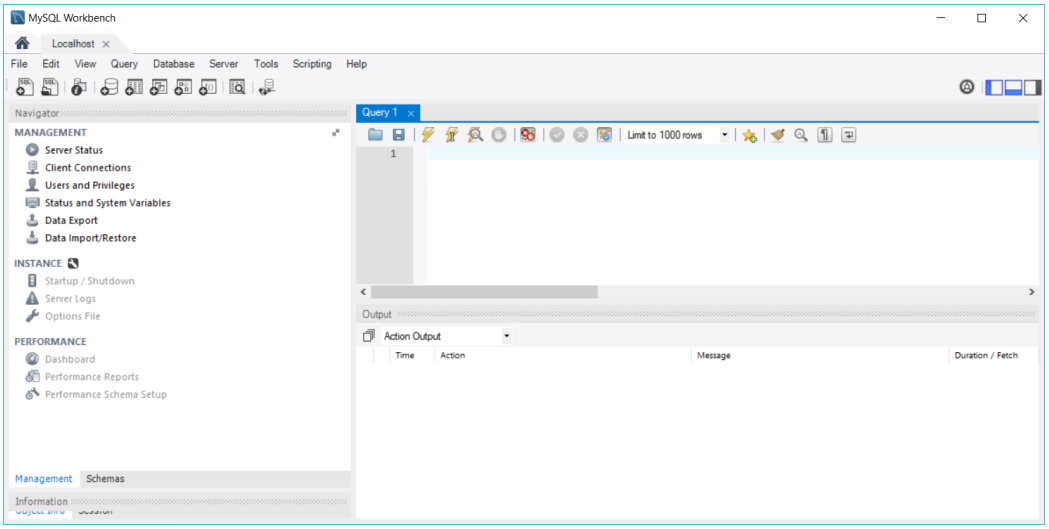

FIGURE 106

Now you are ready to review all the necessary steps to restore the dump and configure the MySQL credentials to create the connection from the SES applications

4.2.2.3.1 RESTORATION STEPS

To restore the MySQL dump you have downloaded from the TRC Website:

Go to the “Data import/Restore” option in Management options and click on it.

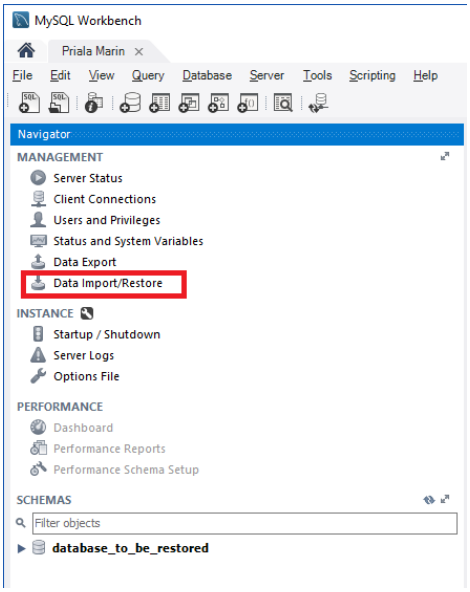

FIGURE 107

Then select the "Import from Self-Contained file" option to restore the database from the downloaded dump. Once the option is selected, click on the "..." button at the end of the line and browse for the dump in your file system.

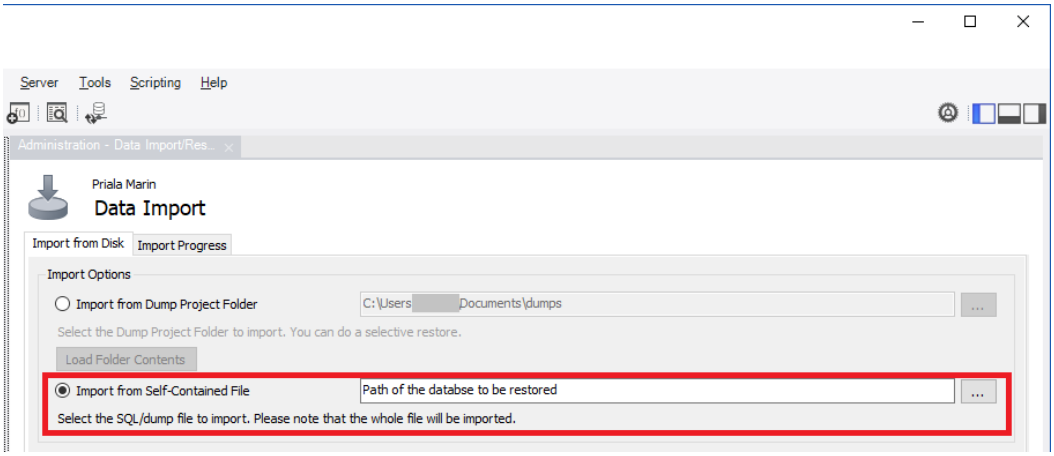

FIGURE 108

Once the dump file has been selected, select the name of the schema of the database where you want to restore it.

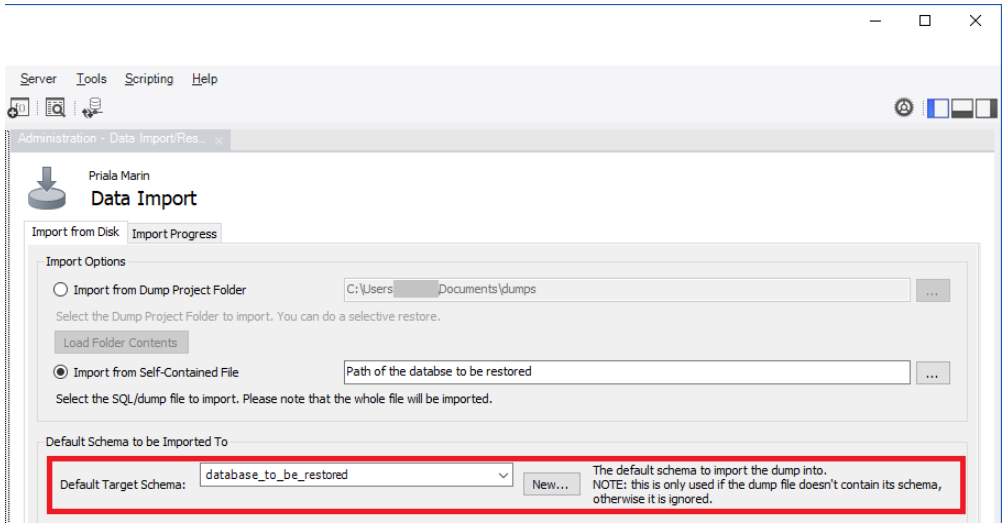

FIGURE 109

As the note says, this parameter is ignored if the dump also contains the schema information to be restored into. For this later* case, you can always edit your dump file with a text editor and change the schema to be used.

For example, in the following figure, the name of the database is "SES Ontology v18.1 (English)" if you want to change it just find all instances and replace them by the new name and save the changes before proceeding to restore it in the next step.

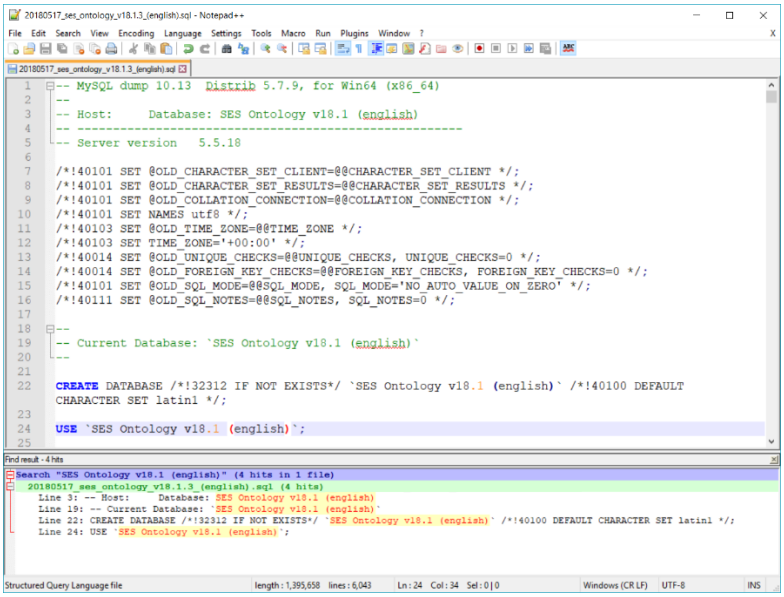

FIGURE 110

Then select the restoration you want to perform. You can choose between:

- Dump Structure and Data: This option will restore all the information in the database.
- Dump Data Only: This option would restore only the data if the schema selected in the previous step has the same schema.
- Dump Structure Only: This option will restore only the structure of the database and will remove all data of the Target Schema selected.

In this case, you must select the first option *Dump structure and Data*.

Finally, click on *Start Import*.

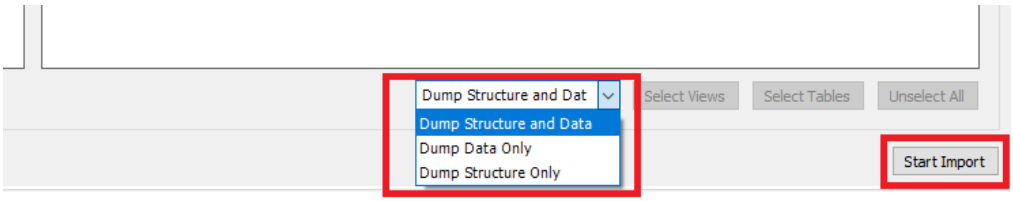

FIGURE 111

The restoration wizard starts to restore the schema in the MySQL server instance. You do not need to do anything at this step, just wait for it to return a result of the process.

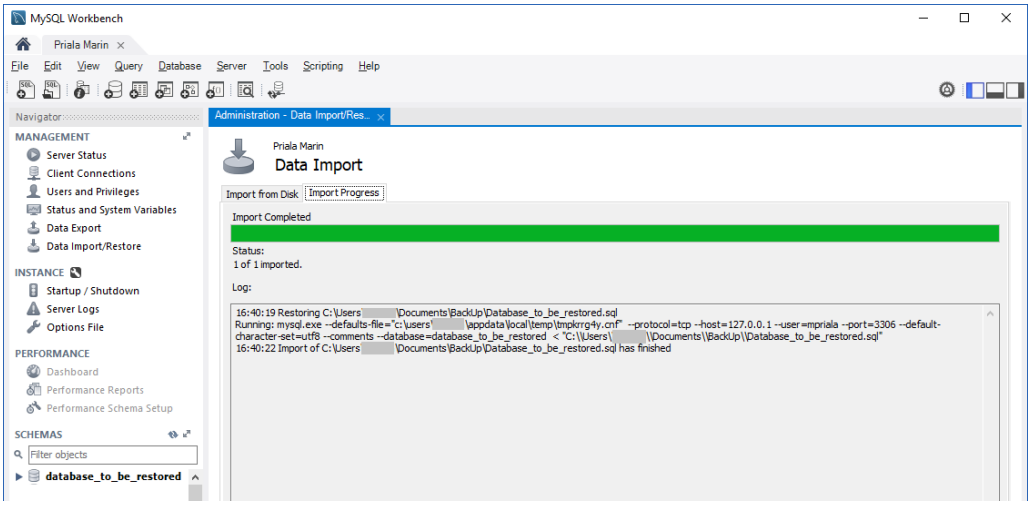

FIGURE 112

Now, in the left-hand side of the Workbench in the SCHEMAS section at the bottom, if you click on the *Refresh* button (the one with two arrows pointing to each other

besides de label "SCHEMAS") you will be able to see that the new schema has been created and it's ready to be used.

4.2.2.3.2 USER MANAGEMENT IN MYSQL

Now that we have restored the dump in a new MySQL schema, the only thing left to do, for the sake of security, is to create another MySQL user to allow the SES applications to access this schema, only with reading and writing rights. To do that, in the top left corner of the window, under the "MANAGEMENT" options, click on the "User and privileges" option.

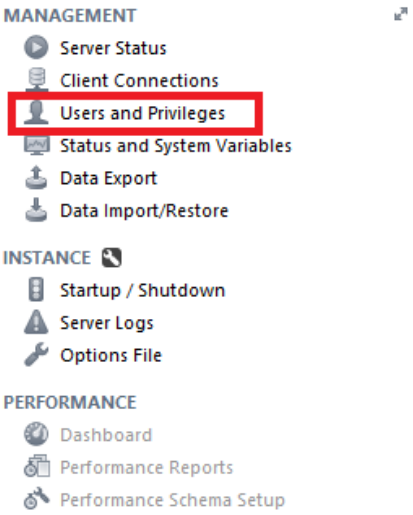

FIGURE 113

Once selected, on the right-hand side the tab for "Users and Privileges" will be opened for the current MySQL server instance. Just click on the "Add account" button on the bottom left corner of this tab.

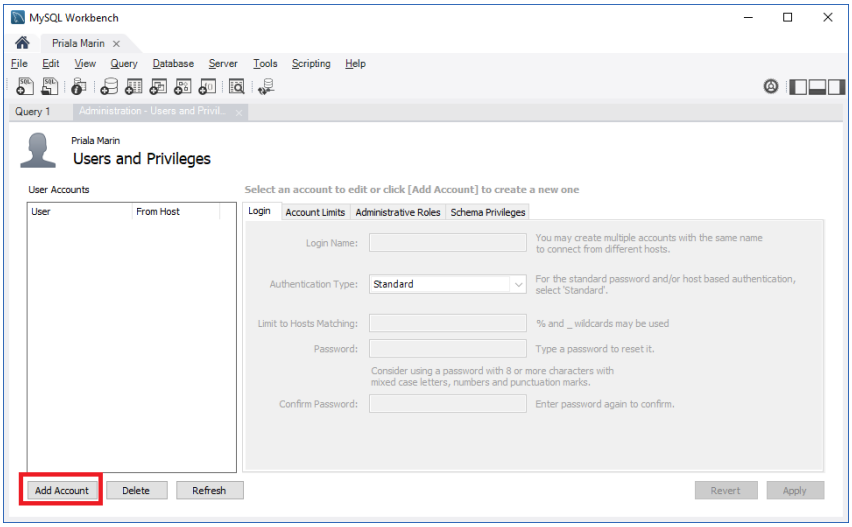

FIGURE 114

Then, in the list of users there will be a new one whose name is "newuser". You have to rename it with the desired name, then provide the list of hosts where the connection can be started or just simply type '%' as a wildcard meaning that the user can connect from any location (able to reach the server). Then type a valid password in the next textbox and confirm it in the following on. Before clicking on the *Apply* button on the bottom right corner of the tab, click on the *Schema Privileges* tab.

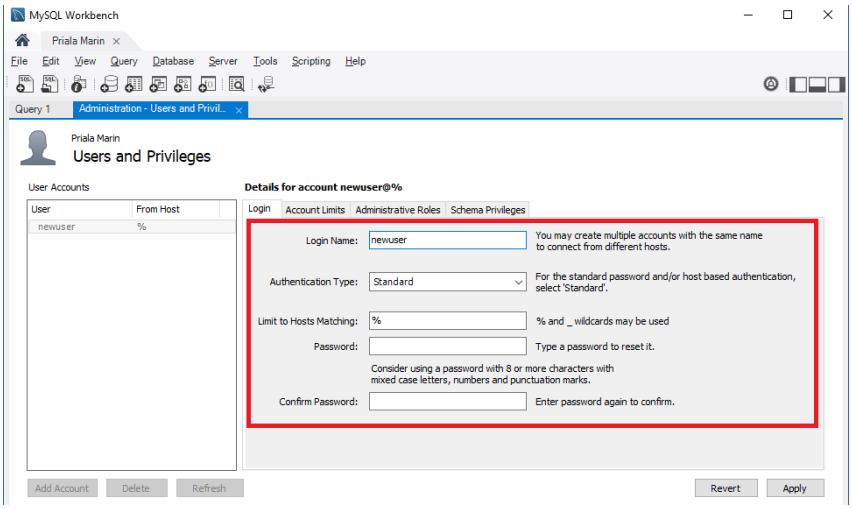

FIGURE 115

In this tab you have to assign the permissions for this new user to the SES Ontology schema that you have just restored. To do that, click on the *Add Entry...* button on the right-hand side of the tab.

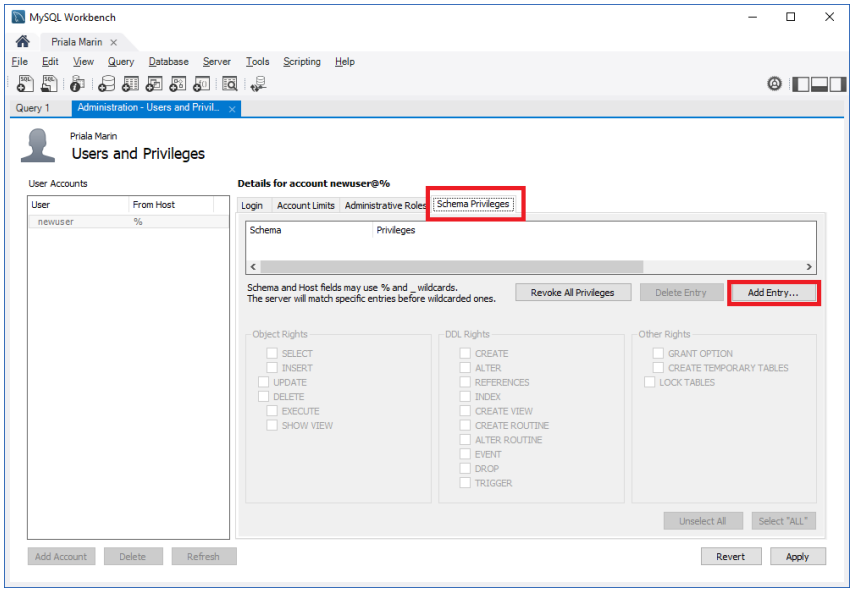

FIGURE 116

A new pop-up window will open asking for the schema or schemas to give permissions to. You must select the last option, *Selected schema*, and then in the drop-down list besides this option choose the SES Ontology schema we have just restored.

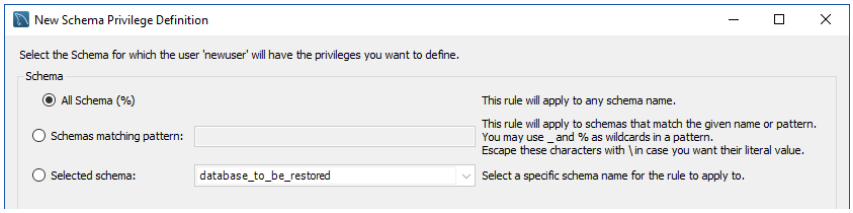

FIGURE 117

Then, back in the "Users and Privileges" tab, the only thing left to do is assign the permissions for that user and that schema. Just select all the permissions shown in the next figure inside the red box.

- SELECT
- INSERT
- UPDATE
- DELETE
- EXECUTE
- SHOW VIEW

- LOCK TABLES

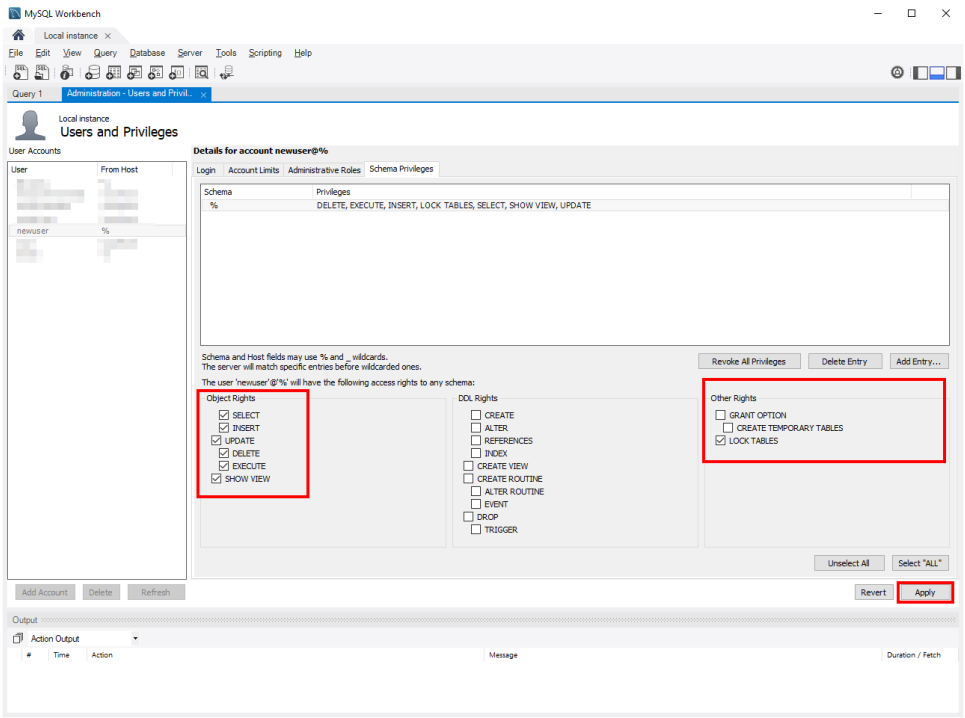

FIGURE 118

And that's it, no more permissions to be granted, just click on the *Apply* button and you have finished the restoration of the MySQL dump in your MySQL server instance.

5 SES Server Installation Guide

5.1 Introduction

The Systems Engineering Suite (SES) Server is the tool designed to gather all the configuration parameters of the SES tools so, when installing them, they do not have to go through the same configuration process after installation. This tool must be installed just after installing the license parts: **FlexLM** and **TRC Vendor Daemon**.

This centralized configuration also allows to control the current status of all the parameters from all the installations at the same time.

The SES Server is composed of two different pieces of software:

- SES Server
- RQA Batch

They can be installed together or separately, to avoid competing for the CPU between SES Server and the RQA Batch when the latter is running all the assessment tasks. The installation steps for both options are the same, except that for the latter, you also must install the RQA – QUALITY Studio Batch, as described in the *RQA Batch Installation and Setup Guide* document, after installing the SES Server.

5.2 SES Server Installation

There are two ways to install SES Server:

- The most typical one is executing the installer with administration rights. The installation wizard will guide you to provide all the necessary parameters to perform the installation and at the end, the tool will be installed.
- There is another possibility; to install it from the command line where all the parameters are provided beforehand, and the installation will be done without any further user interaction.

5.2.1 Download

First, download the SES Server installer from TRC website. Use your browser to access https://resources.reusecompany.com/downloads. Ask our support service if you need help to find it.

5.2.2 SES Server Installation with the Installation Wizard

To start, execute the installer with administration rights. This document will guide your through the different steps of the installation wizard.

- *Select Setup Language*: in this first window you can select the language of the installation wizard. You can choose between English and Spanish.

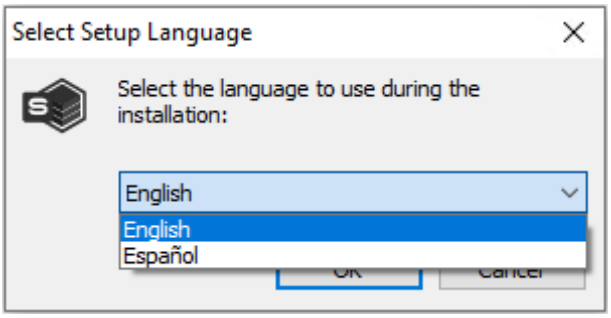

FIGURE 119

NOTE: This language selection is not the language that the SES Server user interface will have. The SES Server user interface language will rely on your Operating System language. You can always change it in the Options button of the login window or in the File menu of the SES Server main window.

- *Welcome*: this window will introduce all the actions to be performed while installing the SES Server application, you only have to read the instructions and click on the "Next >" button.

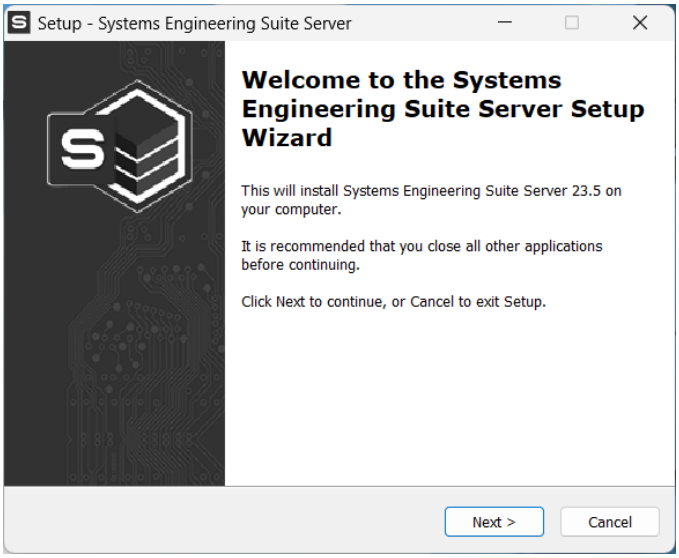

FIGURE 120

- *License Agreement*: this window will show the license agreement you will need to accept if you want to use the application. Please read it carefully before accepting it, then select the first option below the text and then click on the "Next >" button. However, if you do not agree just click on the "Cancel" button, it will forcefully finish the installation wizard and it will not install the application.

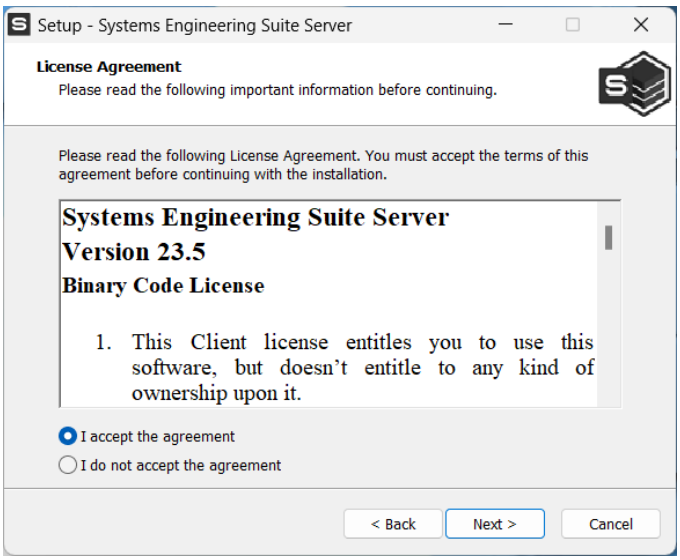

FIGURE 121

- *License Server*: this window prompts for the licensing information needed to run the application. Consider the FlexLM installation and your deployment scenario to fill up this window.
    - In the *License Server* field enter the machine name or IP address where the FlexLM is installed.
    - In the *Port* field enter the PUBLIC port of the FlexLM service you have defined during the installation of FlexLM in Section 3.2.1.2.

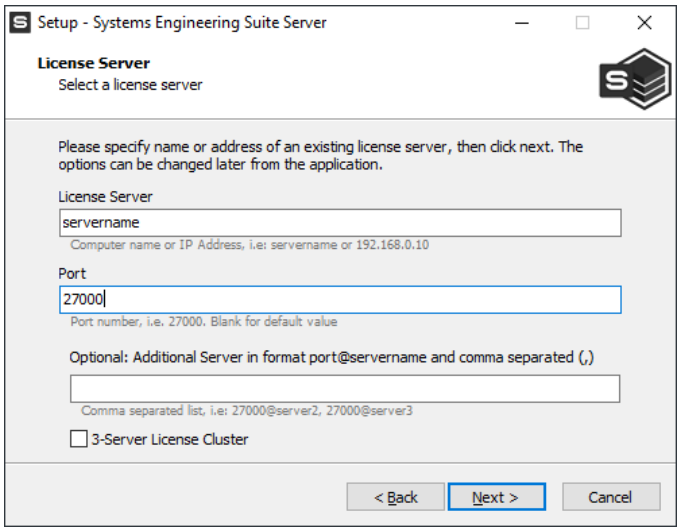

FIGURE 122

- *Optional*: This field can be used with two different purposes:
    - FlexLM High-availability: In installations that need to have high-availability, the FlexLM consists in a 3-Server License Cluster-installation (also known as a triad-installation): the FlexLM service is installed in three different servers, one of them is the master, and the rest are slaves but all of them are capable of grating licenses in any case: when all the three services are working properly or when one of the three is down. Keep in mind that all of them are holding the same license file.

      The way to fill up this form, is to fill in the 'License Server' and 'Port' fields on the top of the window with the information from the Master FlexLM server and in this 'Optional: Additional Server' field you have to fill in with the same information, but this time related to all the slave FlexLM servers in the form of "port2@servername2, port3@servername3".

You must also check the "3-Server License Cluster" checkbox.

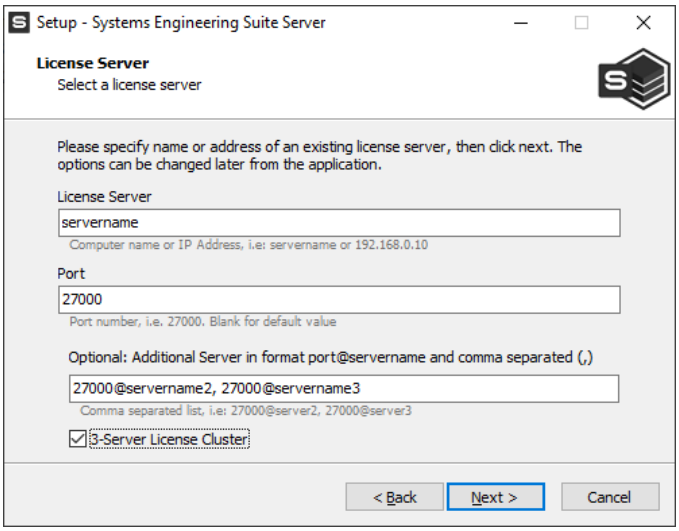

FIGURE 123

- *Several independent FlexLM services*: In case of serving different licenses in different servers, you can select this option to set the list for additional FlexLM services so that when one of them is not available or does not have licenses to server for the application, it tries to request the license from the next one. To add additional FlexLM slave servers, just add the information for each one in this way ("port@servername") and join them by comma (,).

  For this option DO NOT check the "3-Server License Cluster" checkbox.

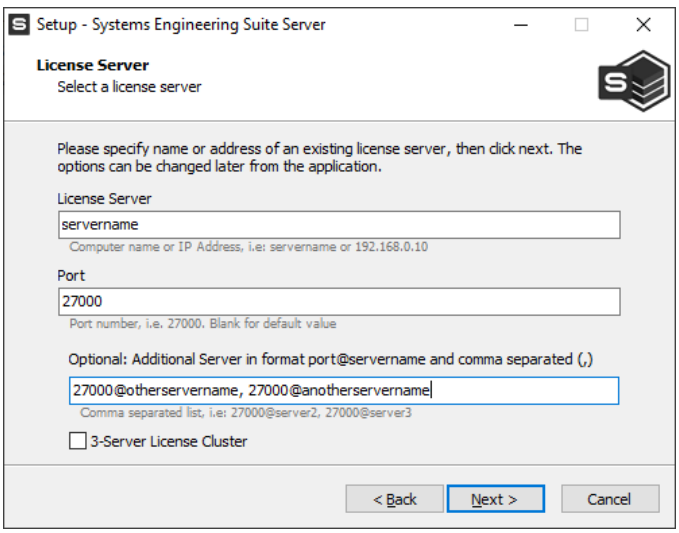

FIGURE 124

- *Security permission:* This window allows you to define the permissions that the users working with SES ENGINEERING Studio.

  If you select *Allow to execute functionality*, this means that every user will be allowed to perform every action possible in SES ENGINEERING Studio.

  Otherwise, if you select *Do not allow to execute functionality*, the actions will be limited, and the administrator will have to define the users allowed to perform each action.

  NOTE: This option can be configured later on, inside the SES Server application.*

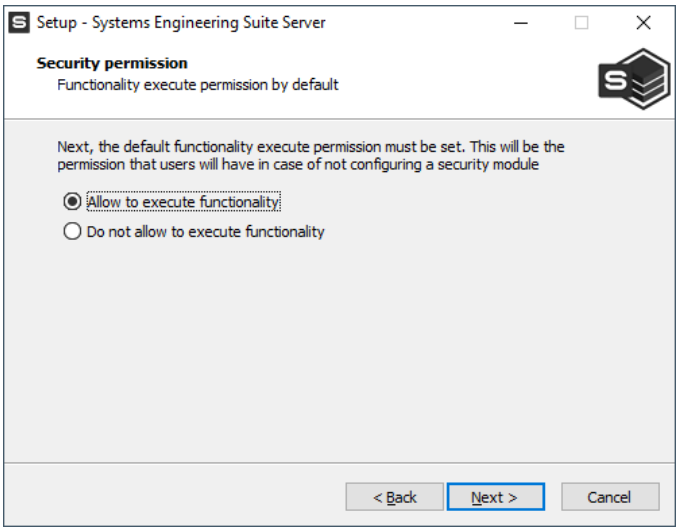

FIGURE 125

- *Service Port:* this window shows the port number "16555" by default. Don't change it. Just click "Next >" to advance.

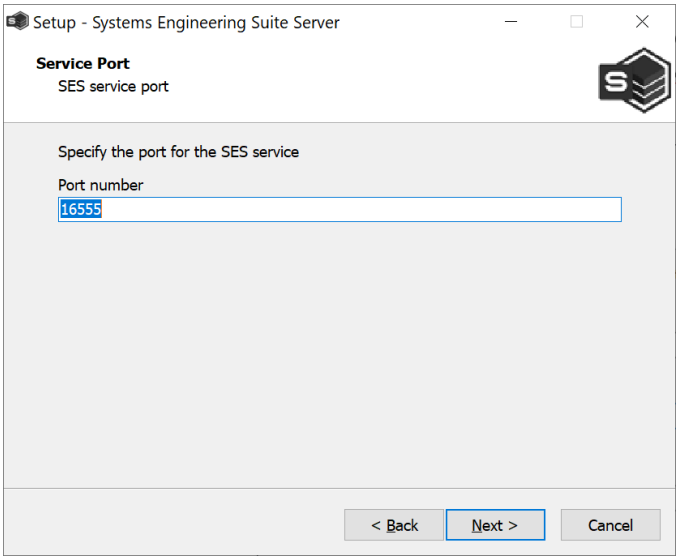

FIGURE 126

- *Select Destination Location*: in this window you can select the location where the application is going to be installed. By default, it will suggest installing the application in your "Program files" folder under the folder "The REUSE Company" and the subfolder with the name of the application. But you can choose any other destination, either by typing it in the textbox or by clicking on the "Browse" button on the right-hand side of the location textbox and navigating through your computer storage system to find the suitable location for it. When the path is selected, just click on the "Next >" button.

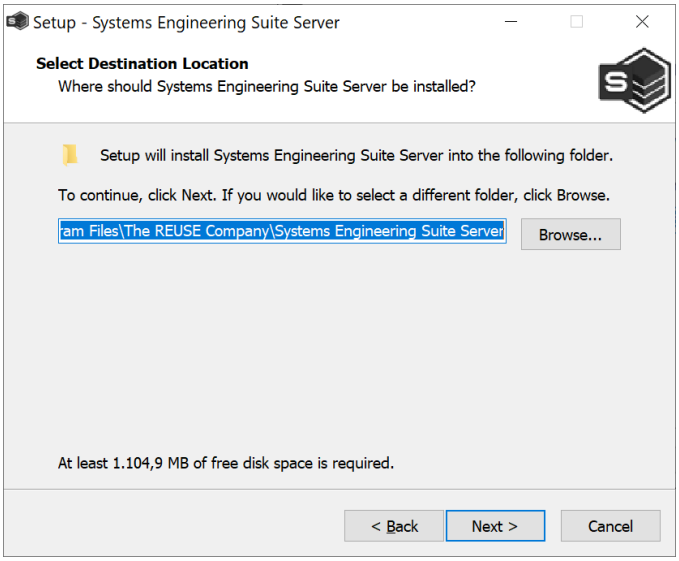

FIGURE 127

- *Select Start Menu Folder*: in this window you will be able to select where in your start menu the shortcuts to the application must be created. By default, the installer proposes to create them under the folder "The REUSE Company" and the subfolder with the name of the application:

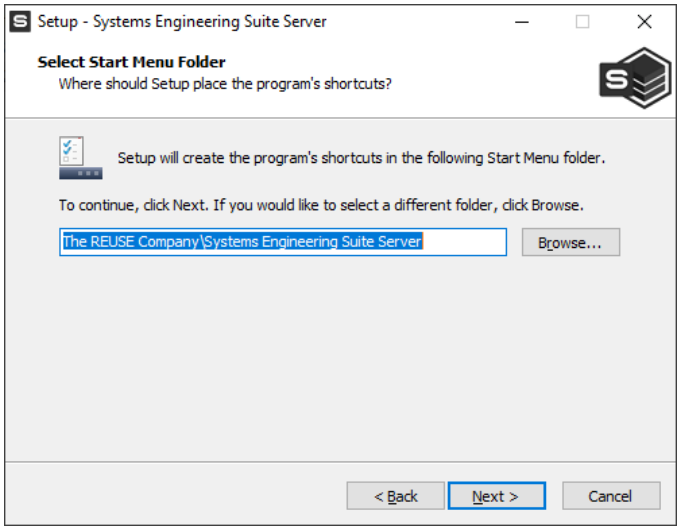

FIGURE 128

- *Ready to Install*: this is the last step before installing the application in your system. It holds a description of the parameters compiled through this installation wizard. If one or more of the parameters is not right for your installation, just click on the "< Back" button repetitively until you reach the step to reconfigure your selections. When all the parameters are correct, just click on the "Next >" button.

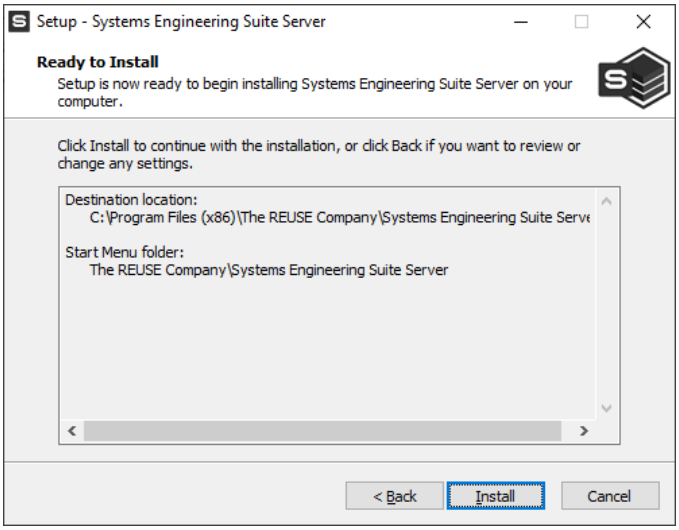

FIGURE 129

- *Installing*: in this window you do not have to do anything but wait until the installation is complete. Just in case you must cancel the installation, click on the "Cancel" button. Otherwise wait until the process is finished and the wizard will move automatically to the next step.

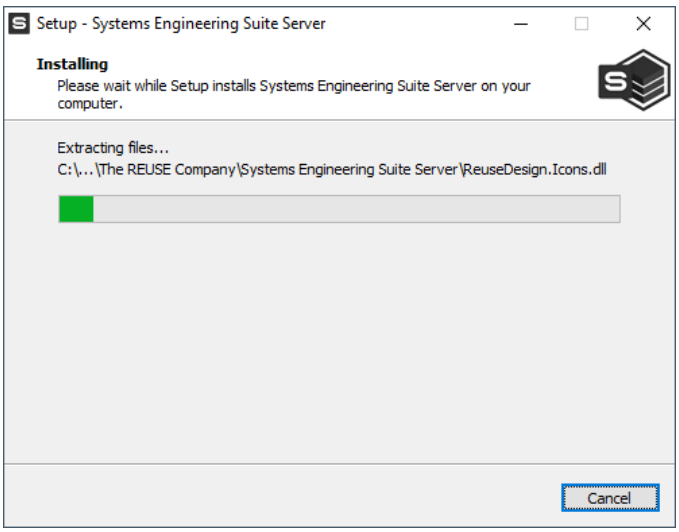

FIGURE 130

- *Completing the SES Server Setup Wizard*: this window appears to notify you when the installation has finished successfully. Just click on the "Finish" button and you will have finished installing the application.

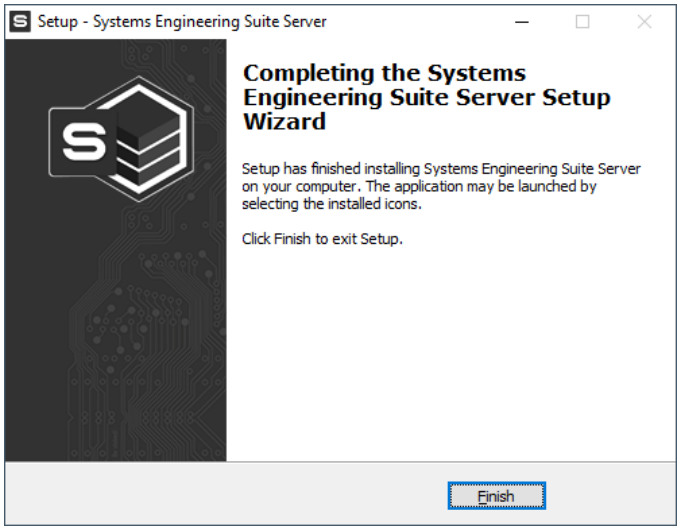

FIGURE 131

5.2.3 SES Server Installation in Silent Mode

Either for SES Server whether including RQA Batch or not, the command line with parameters to install it is:

```
<FileName>.exe /verysilent /dir="D:\REUSE \SesServerCustom"
    /GROUP="SES Custom Group" /licenseserver localhost
                    /licenseport 22334
/additionalLicenseServers="luna,marte,venus" /licenseCluster 1
          /securitypermission 1 /servicePort 55333
```

NOTE: ***Remember to open the command line window with administration rights, before executing the previous command.***

The mandatory parameters are**:**

- `/verysilent:` installation mode
- `/dir="C:\custom\path\to\install\<install_app>"`
- `/group="<group_folder_name_windows>"`
- `/licenseServer:` FlexLM License Server hostname
- `/licensePort:` FlexLM License Server port

And the optional parameters for FlexLM high-availability mode are:

- `/additionalLicenseServers:` additional FlexLM servers `<port@servername>` in format and split by comma character `(',')`
- `/licenseCluster:` indicates FlexLM architecture according to:
    - `0:` set of non-related FlexLM servers

    - `1`: high-availability and fault-tolerant FlexLM 3-server cluster (triad)
- `/securitypermission`:
    - `0`: Not allow to execute the functionality
    - `1`: Allow to execute the functionality
- `/serviceport`: Here is selected the port for the SES Server; by default, it is 16555

5.3 SES Setup in SES Server

Now, the best option is to go through the configuration of all the parameters of the Systems Engineering suite. To do that, open the just installed SES Server and the Login form will show up.

Here, we will find some steps to proceed before being able to log in. First you must connect to a SES Ontology database.

There is a list of available connections. Here, the connection can be managed and there can be as many connections as desired, but only one active at a time.

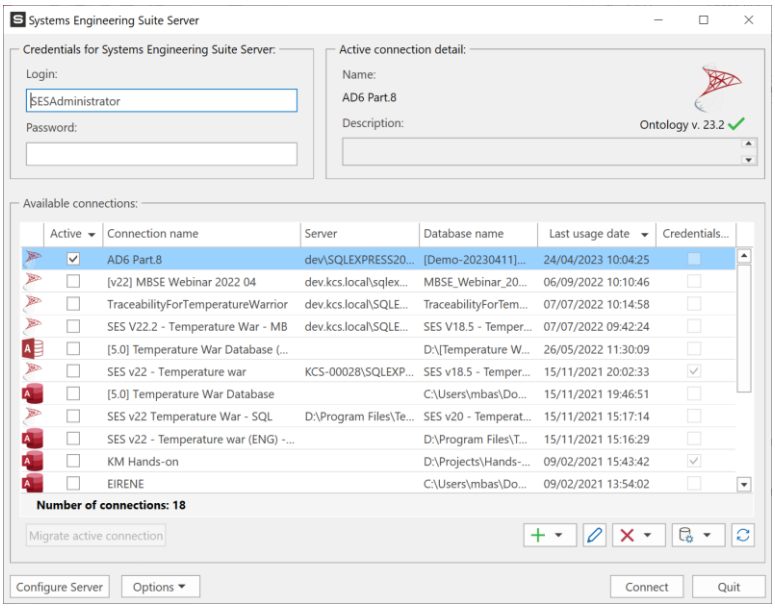

FIGURE 132

When you open this list for the first time, it is going to be empty, thus, now it is the time to add the first connections. For this, you can either:

1. Right-Click on the blank space from the *Available connections*; a contextual menu will pop-up with several options to manage connections to the database

2. Click on the buttons at the bottom right corner of the connection list.

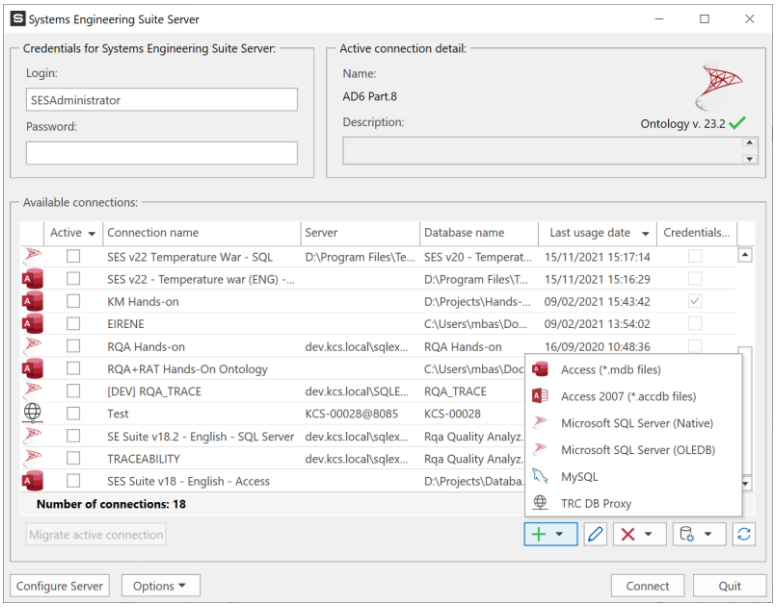

FIGURE 133

From the list, choose the suitable connection type to create it:

- MS Office Access
    - Access MBD file (compatible with 32 bits tools)
    - Access ACCDB file (compatible with 64 bits tools)
- Microsoft SQL Server:
    - Two different drivers
        - Native driver (support bulk inserts)
        - OleDb for SQL Server driver (does not support bulk insert)
    - When possible, it is better for performance to use the Native driver because it will be faster when assigning metrics to modules, updating baselines, assessing workproduct correctness, etc.
    - OleDb for SQL does not support Secure connection, so no Proxy connection can be set from it.
- MySQL
- TRC DB Proxy

In the following sections, we are going to describe how to set up a connection to an Ontology database depending on the type of database management system selected for your deployment:

5.3.1 Connection to a Microsoft Access Database

Right-click on the list and the 'Add connection' option and choose Microsoft ACCESS.

A new window will pop-up. Select only the path where the database is stored. Important:

- For a single machine installation, local paths are valid.
- For multiple machine installation, network paths must be also provided.

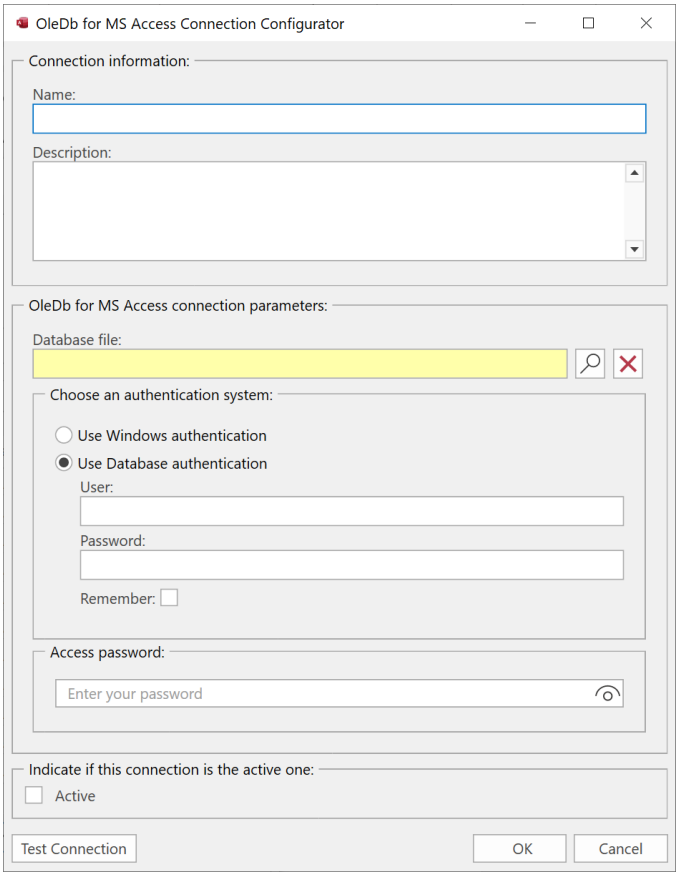

FIGURE 134

Type your Login and Password, if it is protected with any, and set the connection as "Active" to use this database in this moment.

NOTE: If the 'Remember' option is not checked, SES ENGINEERING Studio will ask for the database credentials on every connection attempt.

Test Connection before clicking on *Accept* to check that the connection can be properly done.

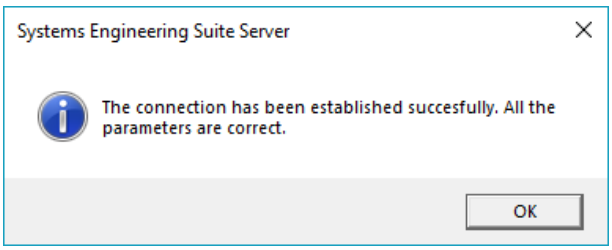

FIGURE 135

Finally click on 'Accept' and the connection will be created.

IMPORTANT: Microsoft does not provide Microsoft ACCESS drivers for tools in 64 bits version. In this term, RAT – AUTHORING Tool Plugin for IBM Rational DOORS will not be possible if the version installed is 64 bits. In this case, we recommend using a different database manager and connection, such as Microsoft SQL Server or MySQL.

Click on *Test Connection* before clicking on *OK* to check that the connection can be properly done.

5.3.2 Connection to a Microsoft SQL Server Database

Right-click on the list and the 'Add connection' option and choose Microsoft SQL Server. A new window will pop-up.

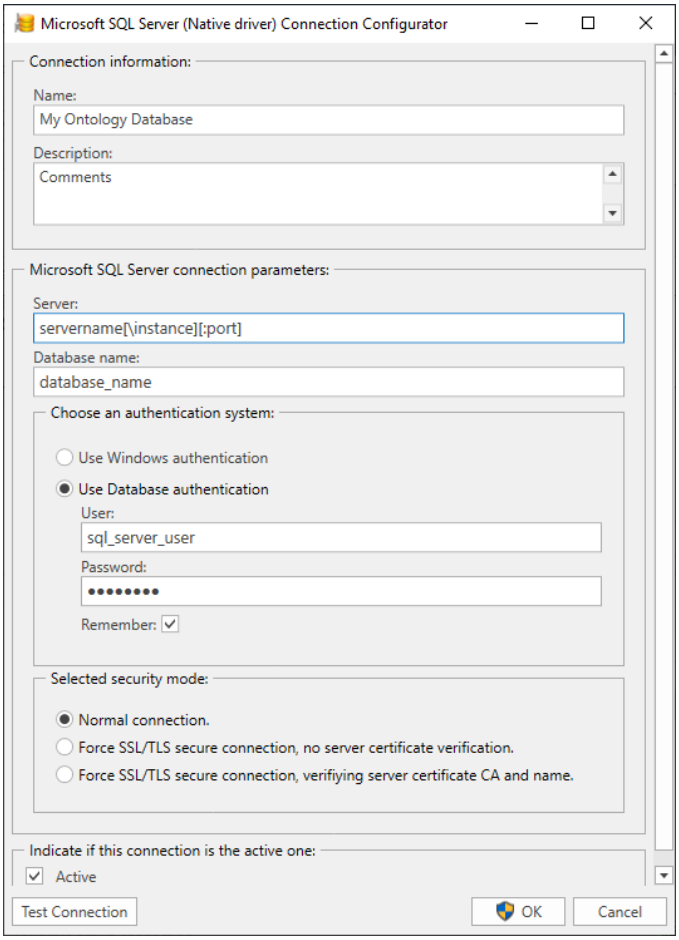

FIGURE 136

Select the SQL Server hostname and the database name.

NOTE: To set a specific SQL Server instance, add a backslash character ('\') and the instance name followed by the hostname (e.g.: <hostname>\<instance>)

NOTE: SES Server automatically connects to the default SQL Server port. However, it is possible to set a custom port by adding a colon character (':') and the port number followed by the hostname (e.g.: <hostname>:<port> or <hostname>\<instance>:<port>)

Depending on the configuration set on how to log into SQL Server, type the SQL Server Login and Password or select Windows authentication: Finally, set the connection as "Active" to use this database in this moment.

NOTE: If the 'Remember' option is not checked, SES ENGINEERING Studio will ask for the database credentials on every connection attempt.

NOTE: Windows Authentication uses the NT AUTHORITY\SYSTEM user as bridge to communicate between our Proxy Manager Service and the SQL Server Database. Please make sure that this user has the required Read and Write permissions over the required databases.

Click on *Test Connection* before clicking on *OK* to check that the connection can be properly done.

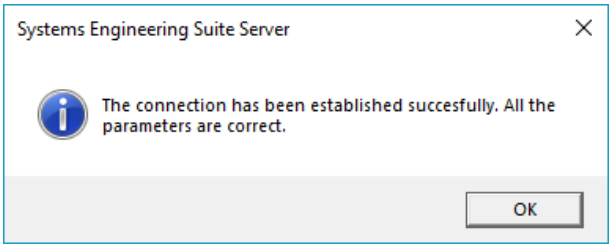

FIGURE 137

Finally click on 'OK' and the connection will be created.

5.3.3 Connection to a MySQL Schema

Right-click on the list and the 'Add connection' option and choose MySQL. A new window will pop-up.

Select the MySQL hostname and the Database schema.

NOTE: SES Server automatically connects to the default MySQL port. However, it is possible to set a custom port by adding a colon character (':') and the port number followed by the hostname (e.g.: <hostname>:<port>).

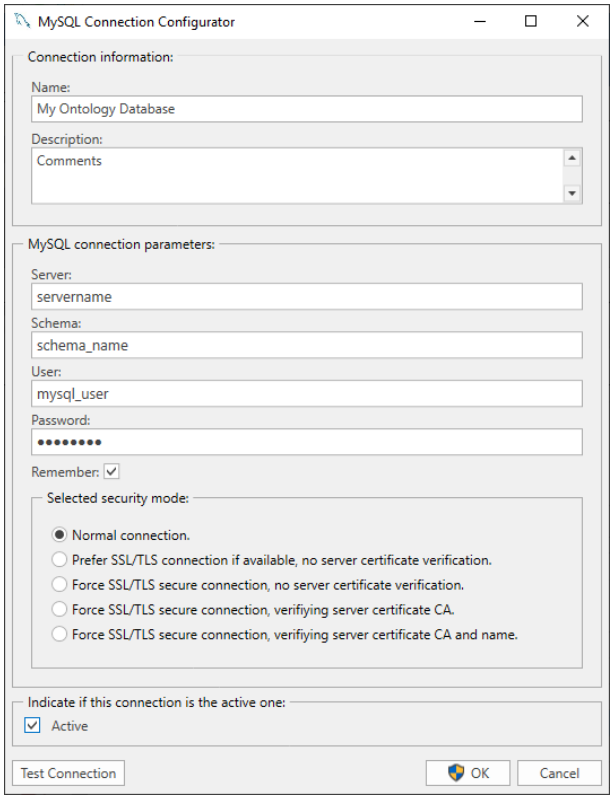

FIGURE 138

Type the MySQL Login and Password and set the connection as "Active" to use this database in this moment.

NOTE: If the 'Remember' option is not checked, SES ENGINEERING Studio will ask for the database credentials on every connection attempt.

Click on *Test Connection* before clicking on *OK* in order to check that the connection can be properly done.

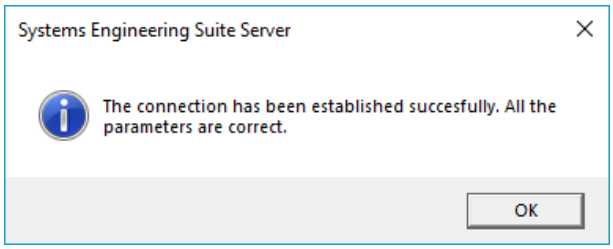

FIGURE 139

Finally click on *OK* and the connection will be created.

VERY IMPORTANT WARNING FOR MYSQL DEPLOYMENTS ON NON-WINDOWS OPERATING SYSTEMS: when using MySQL on top of a Linux distribution, there is a problem of case sentivity, tables names are checked by default to be in the same casing as in the queries and this will provoke a problem in the Suite. So please revise the installation in this case to behave as case insensive.

It can be checked in the MySQL Workbench in the MANAGEMENT tab, under Status and System variables, then in System Variables look up for "lower_case_table_name", then if the value is 1 it's fine, otherwise you have to change it. Unfortunately it cannot be done inside MySQL Workbench, it has to be done in the MySQL server editing the configuration file. You will find an example of changing this configuration for a given Linux distribution here. For other distributions, please check it in the MySQL manual for that distribution.

Here is a snapshot of the MySQL Workbench showing the current status of the lower_case_table_name variable with a compatible value (1) for the Systems Engineering Suite.

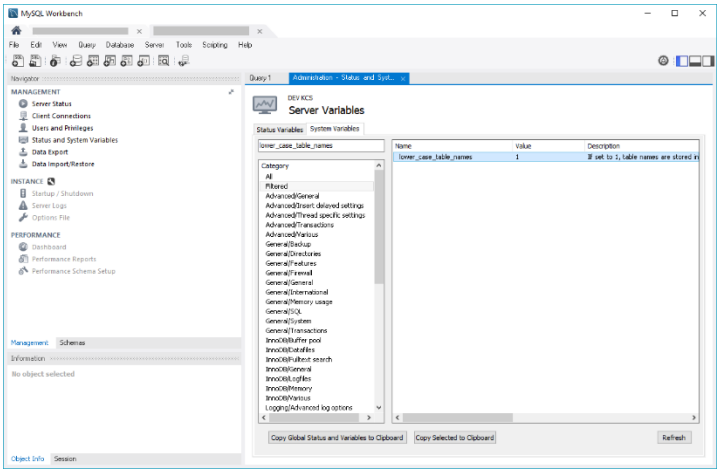

FIGURE 140

5.4 Log In

Now SES Server is ready to be launched. Provide the SES Server user credentials:

- User: SESAdministrator
- Password: AdminAdmin

NOTE: these credentials can be changed inside SES Server after login.

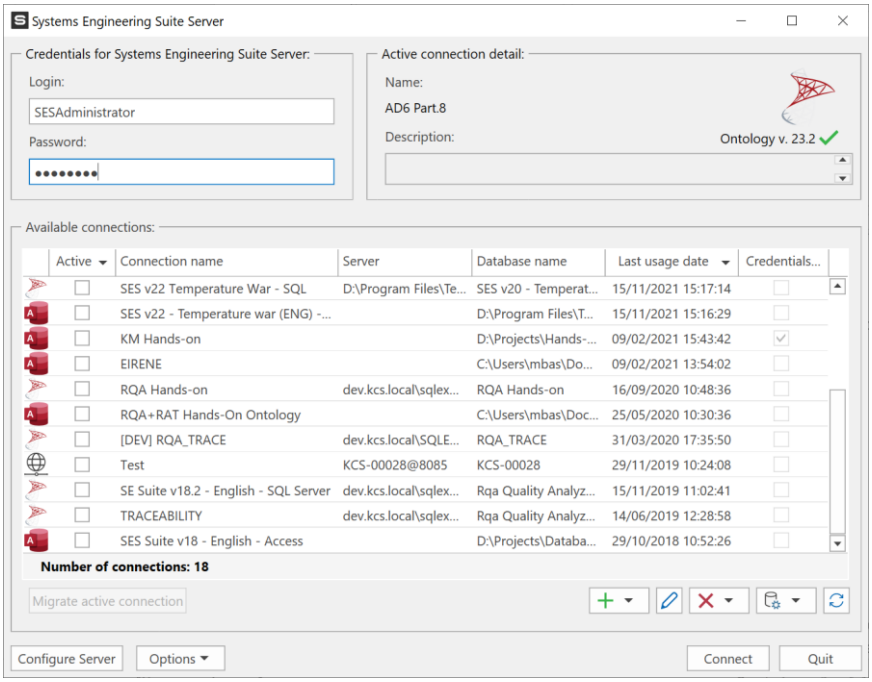

FIGURE 141

If everything is fine the main SES Server window shall be prompted.

However, there can be many different types of errors, the most typical is that the "License server is down or not responding."

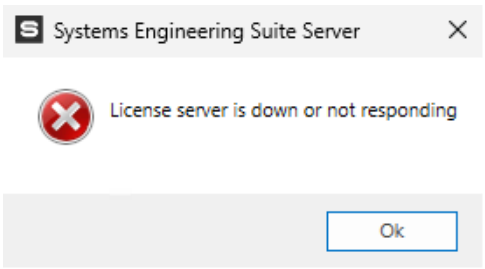

FIGURE 142

This can be caused by a wrong license server configuration in the installation steps. Imagine the case that instead of typing 'server12' you have typed 'server21' to this moment. You can check which is the current license server configuration by clicking on the *Configure Server* button at the bottom of the log in window:

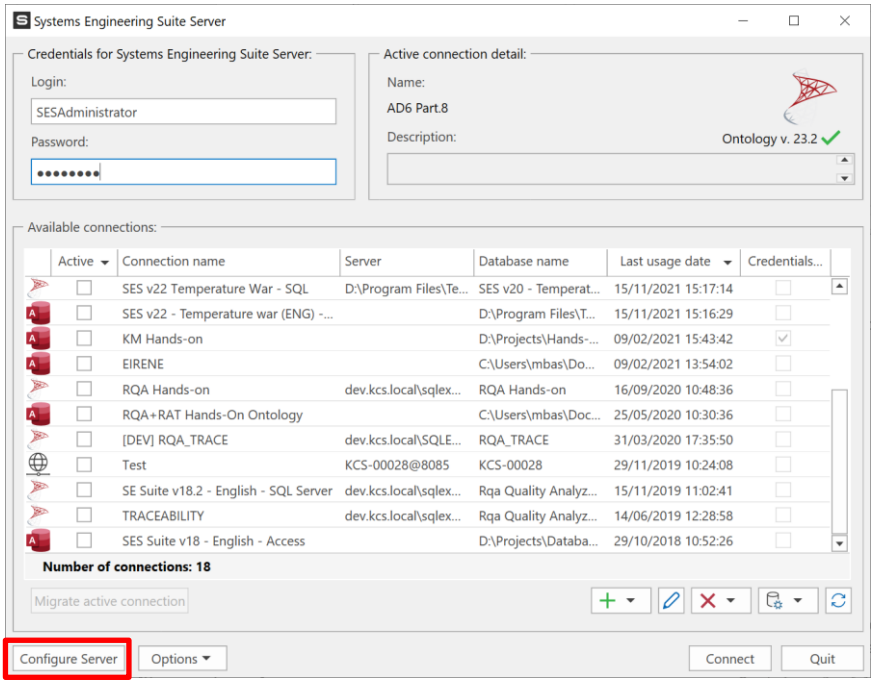

FIGURE 143

Click on the *Configure Server* button to change the current FlexLM License Server address and port and other options.

1. Check the Server Licensing option in any case and enter a valid FlexLM License Server address and port as shown in the following figure.

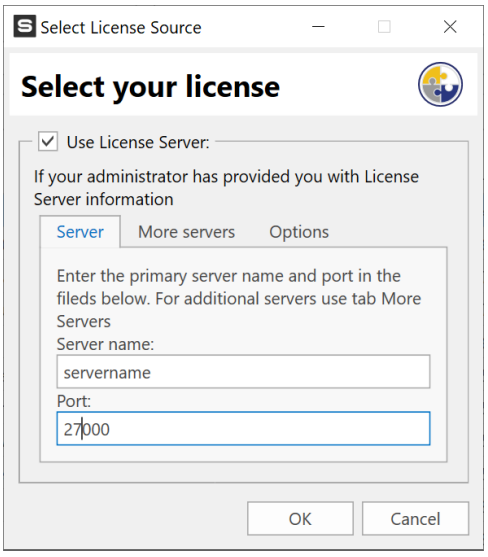

FIGURE 144

2. Depending on your FlexLM installation, you can check the 3-Server FlexLM License Cluster configuration or the Additional FlexLM Servers in the “More Servers” tab of the FlexLM configuration window. The behaviour is exactly the same as described in the installation procedure for SES server in the ‘License Server’ step.

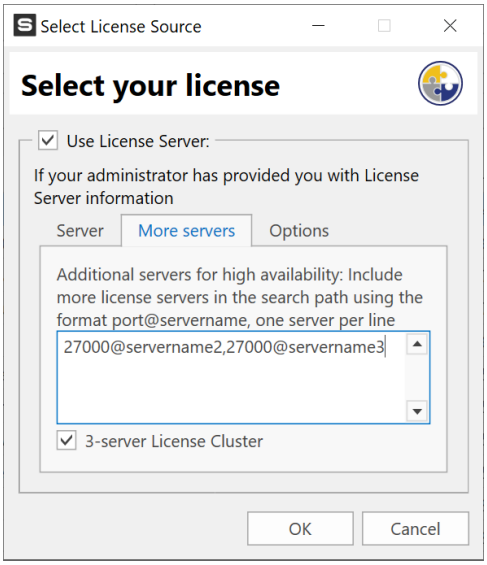

FIGURE 145

3. Finally, in case you are having network problems to reach the FlexLM server due to restricted connection availability or a high volume of requests to the FlexLM server, you can increase the timeout for the SES application license checking period. You can select a timeout between 200 ms and 3000 ms (3 seconds) maximum.

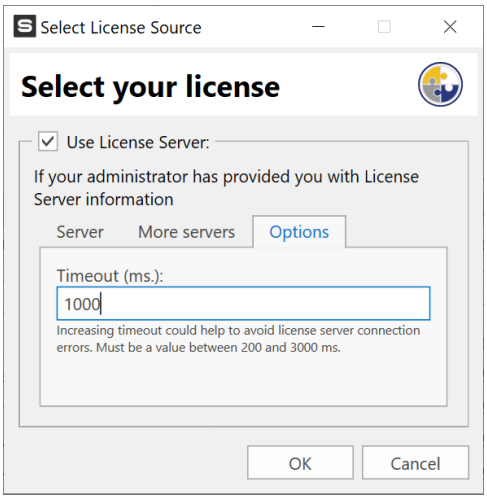

FIGURE 146

When the FlexLM configuration update is finished, just click on the *OK* button and then the following message will appear:

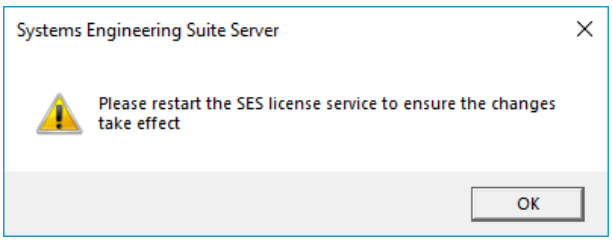

FIGURE 147

This means that, to ensure that the SES Server is updated you must restart the SES license service (installed along SES Server, in this very same machine; **NOT to be confused with the FLEXLM Service**). This can be done in two different ways:

- To do this, you have to go to the Windows Task Manager, then go to the 'Services' tab, then look up "QRLicenceService" under the Name column or "SE Suite Tools License Service" in the Description column, then click with the right button of the mouse on that line and select 'Restart'. The service will be stopped and restarted, and we can try to log in again.

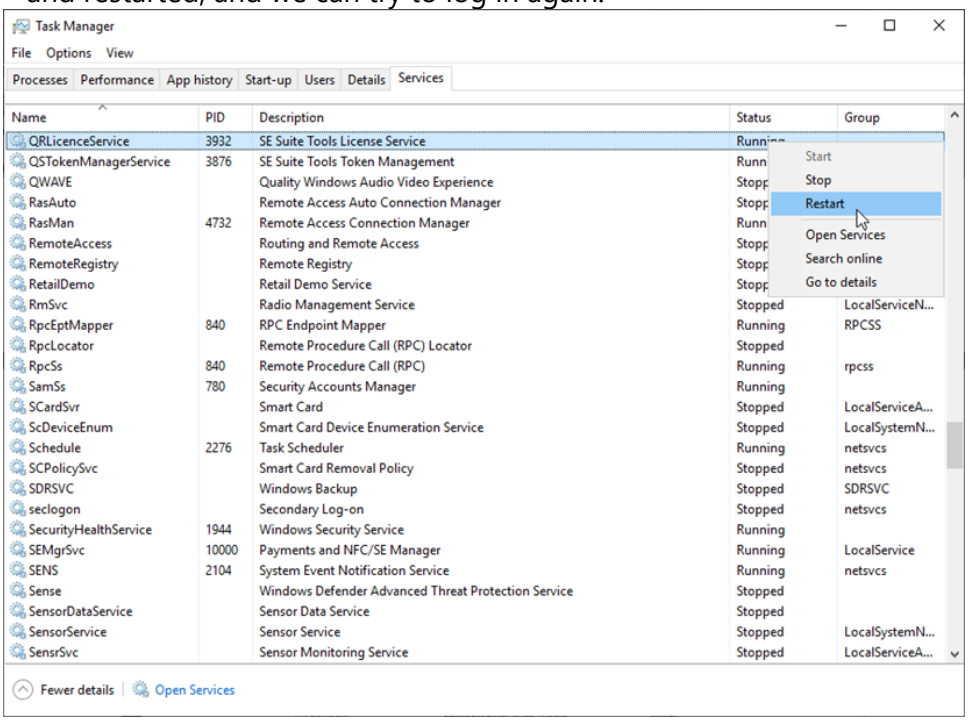

FIGURE 148

- Another option for previous versions of Windows, when this tab is not included in the Task Manager, but you can find this list in the Service Manager window, to open it, press Windows + R and the command window will appear:

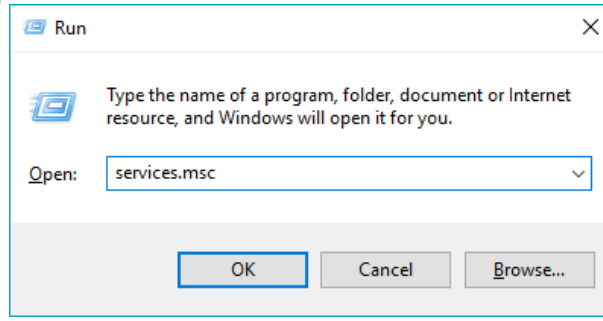

FIGURE 149

Type there 'services.msc' as shown in the previous figure.

Then, the Service Management Console will appear, look for the "SE Suite Tools License Service" service, select its line and right-click with the mouse. A contextual menu will appear, on it, select *Restart*. The service will be stopped and started and we can try to log in again.

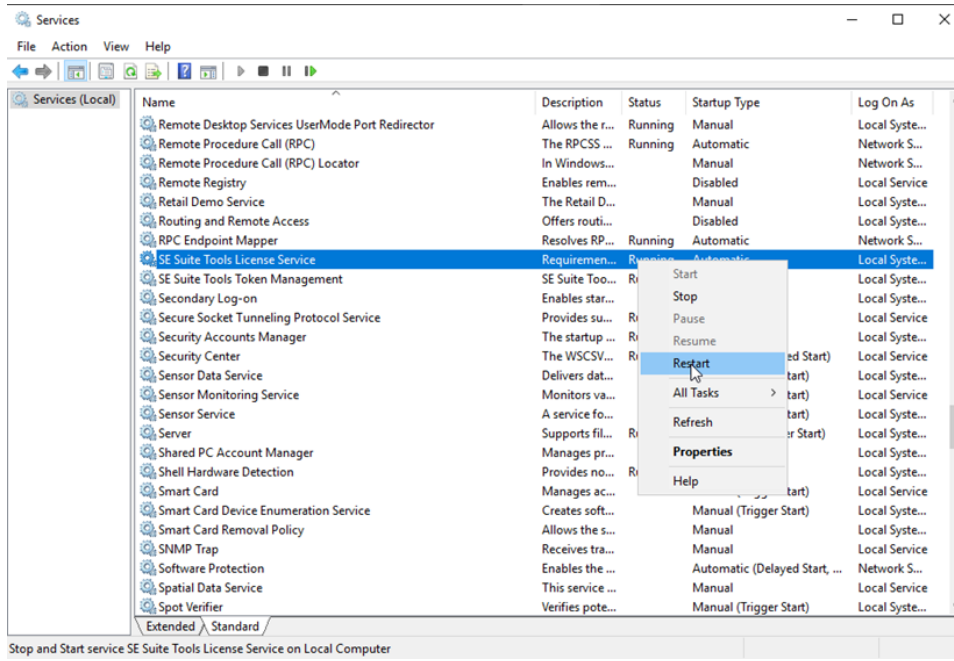

FIGURE 150

- Another possibility when clicking on the *OK* button of the FlexLM configuration window, is that if our SES license service installed along SES Server is not

running for any given reason then the warning message that will appear will be the following:

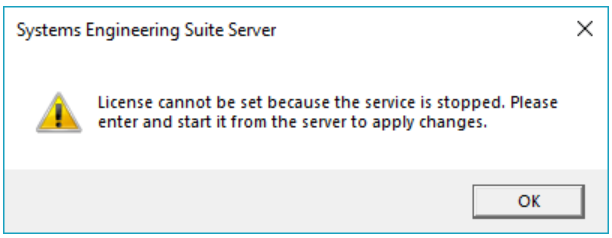

FIGURE 151

This means you have to manually start the SES Service. You can do as described for the previous problem (either using the Task Manager or the Services Management Console) and then you have to open in SES Server the FlexLM configuration by clicking again on the *Configure Server* button. There, you can change your FlexLM configuration again, and when saving it, this time, the message to appear is the one warning to restart the SES Service to have all the SES applications updated with the changes. Then you can proceed to log in to the SES Server and go to the main window.

5.5 Main Window

5.5.1 Licensing

The first tab of the SES Server shows all license-related information: source, messages, expirations and total number of licenses by product. The license info is requested by the SES license service to the Flex License Server.

You can also stop and start the SES Licensing Service on the top-right corner (administration rights needed for this activity).

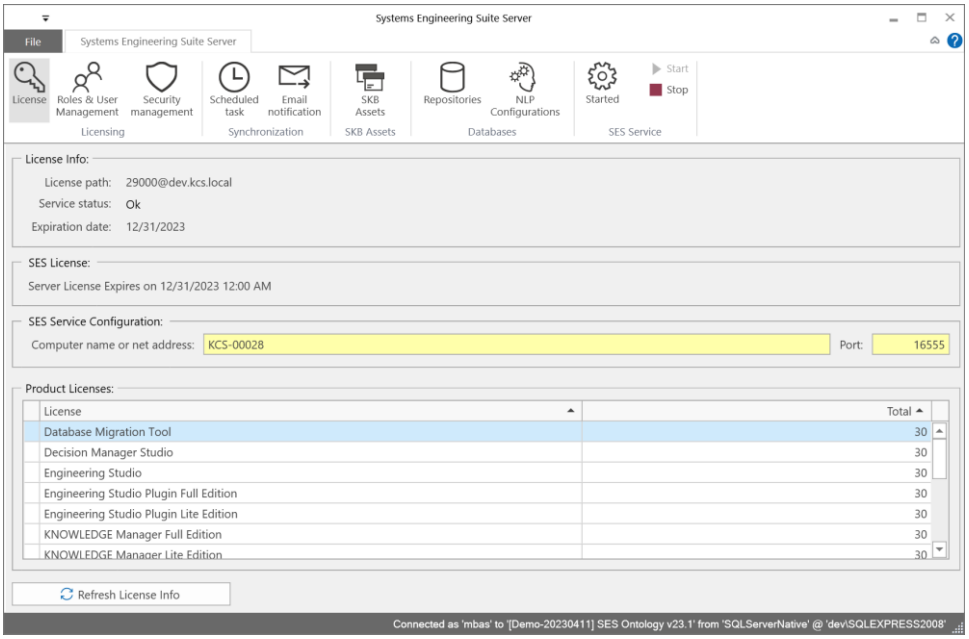
Systems Engineering Suite Server
File
Systems Engineering Suite Server
License
Roles & User Management
Security management
Licensing
Scheduled task
Email notification
Synchronization
SKB Assets
SKB Assets
Repositories
NLP Configurations
Databases
Started
Start
Stop
SES Service
License Info:
License path: 29000@dev.kcs.local
Service status: Ok
Expiration date: 12/31/2023
SES License:
Server License Expires on 12/31/2023 12:00 AM
SES Service Configuration:
Computer name or net address: KCS-00028
Port: 16555
Product Licenses:
License
Total
Database Migration Tool 30
Decision Manager Studio 30
Engineering Studio 30
Engineering Studio Plugin Full Edition 30
Engineering Studio Plugin Lite Edition 30
KNOWLEDGE Manager Full Edition 30
KNOWLEDGE Manager Lite Edition 30
Refresh License Info
Connected as 'mbas' to '[Demo-20230411] SES Ontology v23.1' from 'SQLServerNative' @ 'dev\SQLEXPRESS2008'

FIGURE 152

6 RQA Batch

6.1 How to install RQA Batch Standalone

6.1.1 Download

First, download the RQA Batch installer from TRC website. Use your browser to access https://resources.reusecompany.com/downloads. Ask our support service if you need help to find it.

6.1.2 RQA Batch Installation with the Installation Wizard

Select Setup Language: in this first window you can select the language of the installation wizard. You can choose between English and Spanish.

Select the language preferred and click on "Ok".

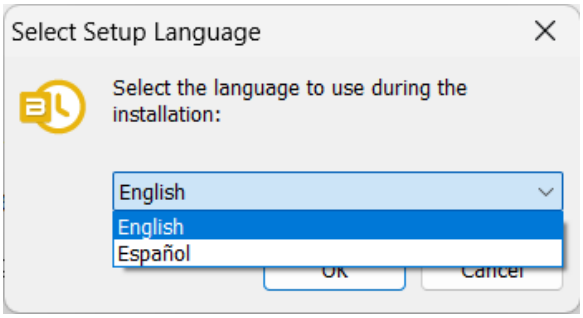

FIGURE 153

NOTE: This language selection is not the language that the SES Server user interface will have. The SES Server user interface language will rely on your Operating System language. You can always change it in the Options button of the login window or in the File menu of the SES Server main window.

Welcome: this window will introduce all the actions to be performed while installing the SES Server application, you only have to read the instructions and click on the "Next >" button.

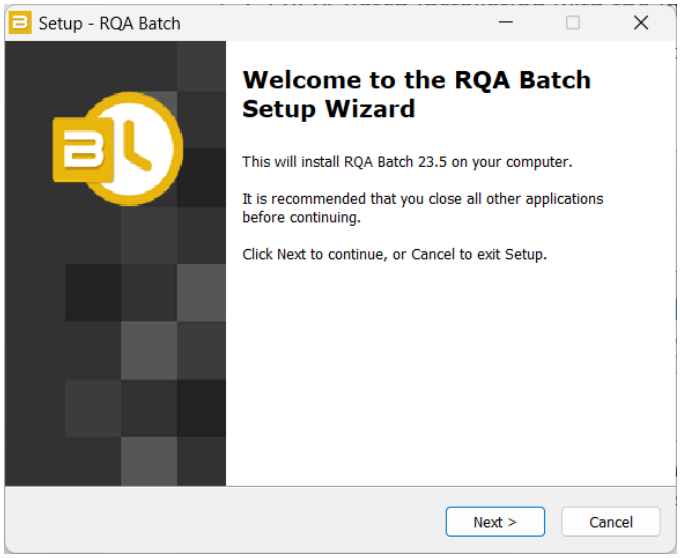

FIGURE 154

License Agreement: this window will show the license agreement you will need to accept if you want to use the application. Please read it carefully before accepting it, then select the first option below the text and then click on the "Next >" button. However, if you do not agree just click on the "Cancel" button, it will forcefully finish the installation wizard and it will not install the application.

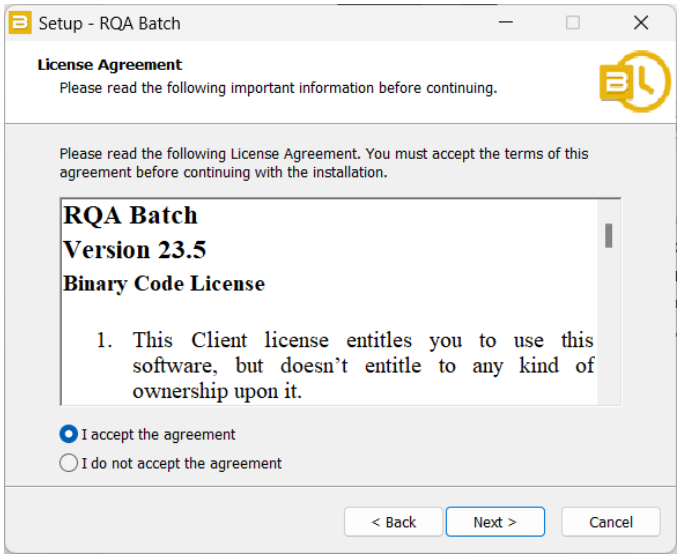

FIGURE 155

Systems Engineering Suite Server: as described in Section 5.2.2, the SES application will rely on the configuration established in SES Server, so the one and only parameter

needed in SES ENGINEERING Studio is where the SES Server is. In this window it will ask for the SES Server computer name or IP address and its port: 16555.

NOTE: it's not possible to change this port when installing SES Server, thus the port configuration here must be 16555.

When these fields are fulfilled, click on the "Next >" button.

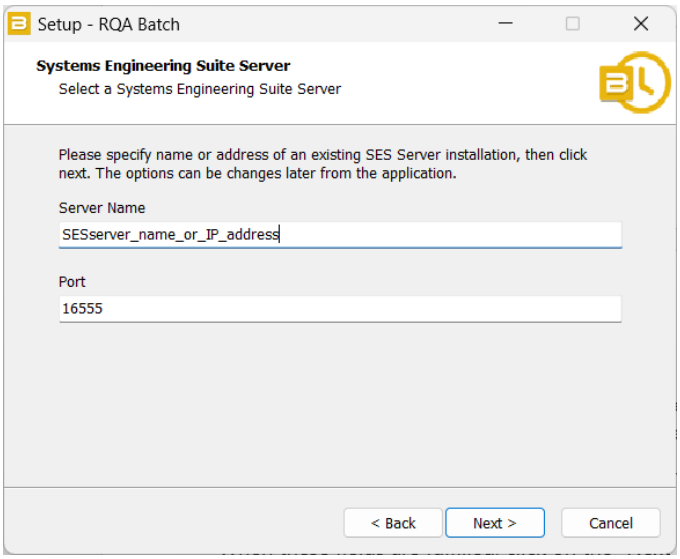

FIGURE 156

Select Destination Location: in this window you can select the location where the application is going to be installed. By default, it will suggest installing the application in your "Program files" folder under the folder "The REUSE Company" and the subfolder with the name of the application. But you can choose any other destination, either by typing it in the textbox or by clicking on the "Browse" button on the right-hand side of the location textbox and navigating through your computer storage system to find the suitable location for it.

When the path is selected, just click on the "Next >" button.

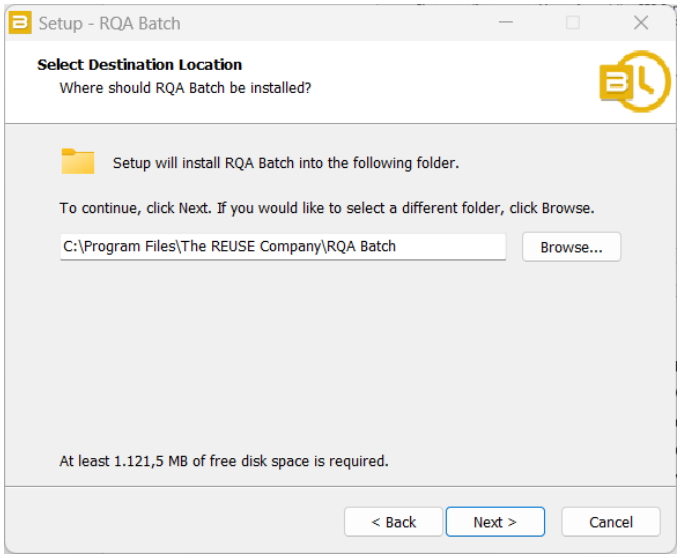

FIGURE 157

Select Start Menu Folder: in this window you will be able to select where, in your Start menu, the shortcuts to the application must be created. By default, the installer proposes to create them under the folder "The REUSE Company\RQA Batch".

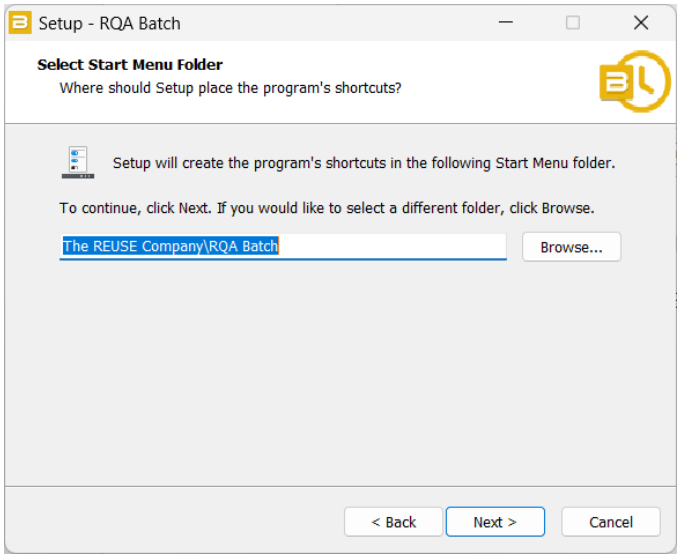

FIGURE 158

Ready to Install: this is the last step before installing the application in your system. It holds a description of the parameters compiled through this installation wizard. If one or more of the parameters are not right for your installation, just click on the "< Back" repetitively until you reach the step to reconfigure your selections.

When all the parameters are correct, just click on the "Install" button.

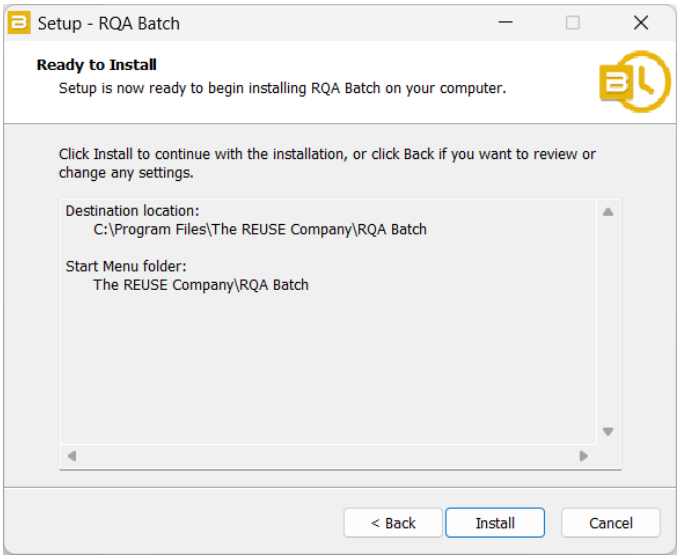

FIGURE 159

- *Installing*: in this window you do not have to do anything but wait until the installation is complete. Just in case you must cancel the installation, click on the "Cancel" button. Otherwise wait until the process is finished and the wizard will move automatically to the next step.

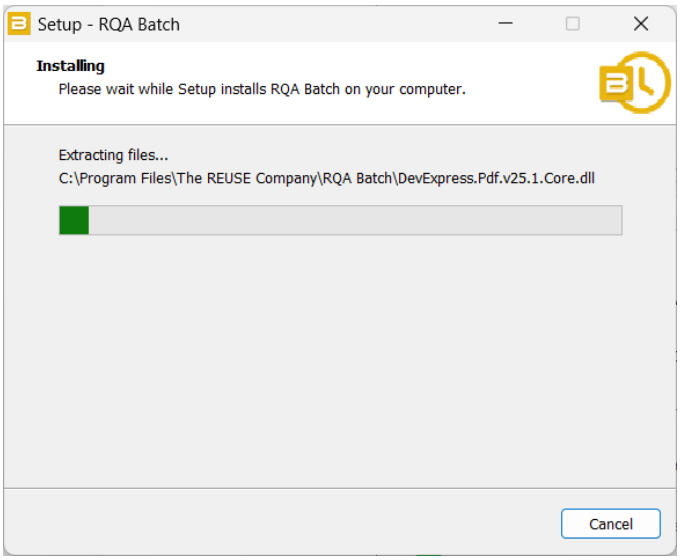

FIGURE 160

- *Completing the RQA Batch Setup Wizard:* this window appears to notify you when the installation has finished successfully. Just click on the "Finish" button and you will have finished installing the application.

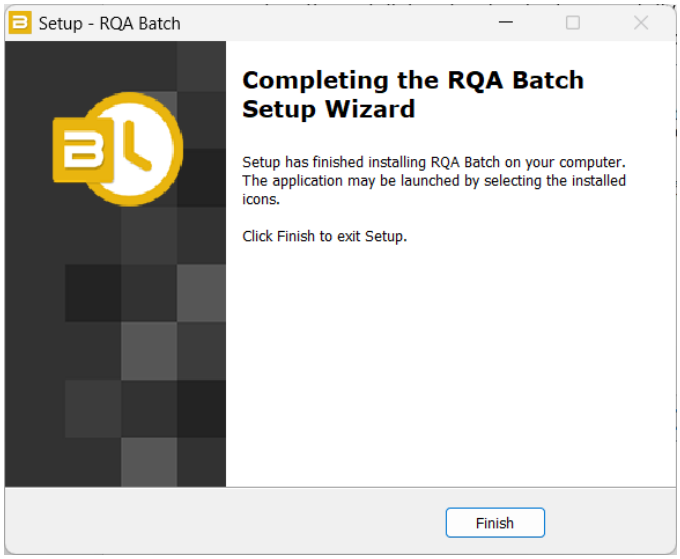

FIGURE 161

6.2 Configuration of synchronizer - RQA Batch

Automatic assessment from RQA Batch not being performed.

6.2.1 Scheduler (SES Server)

In case of not having correctly set the automatic quality assessment, the first step would be **scheduling a task** on the Synchronizer, you can do it from SES Server, choose the database you need, connect to it, and go to Synchronization / Schedule tasks. Here you have a simple way of programming an RQA Batch task for automatic assessment and configure if you want to delete the computed quality or not, the hour and periodicity (by days).

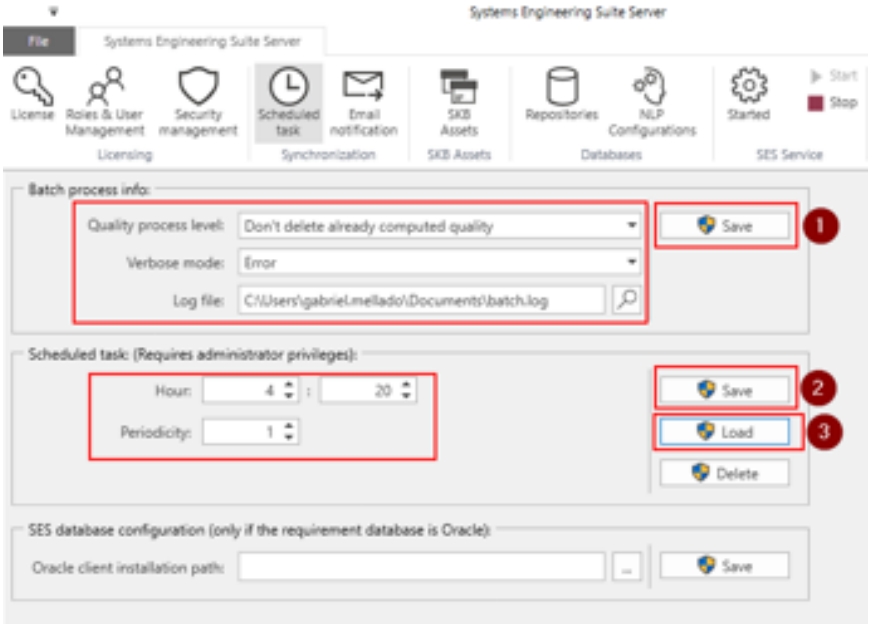

FIGURE 162

6.2.2 Task Scheduler (Windows)

If you want more options and params to configure your batch task, you can go to **Task Scheduler** and find it after creating it in SES Server.

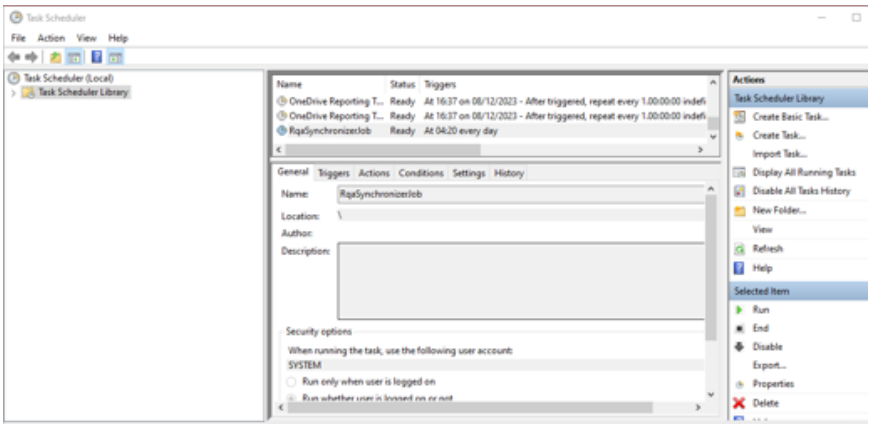

FIGURE 163

Also, you will have to allow automatic assessment, and check some options in Worksheets>Module Configuration:

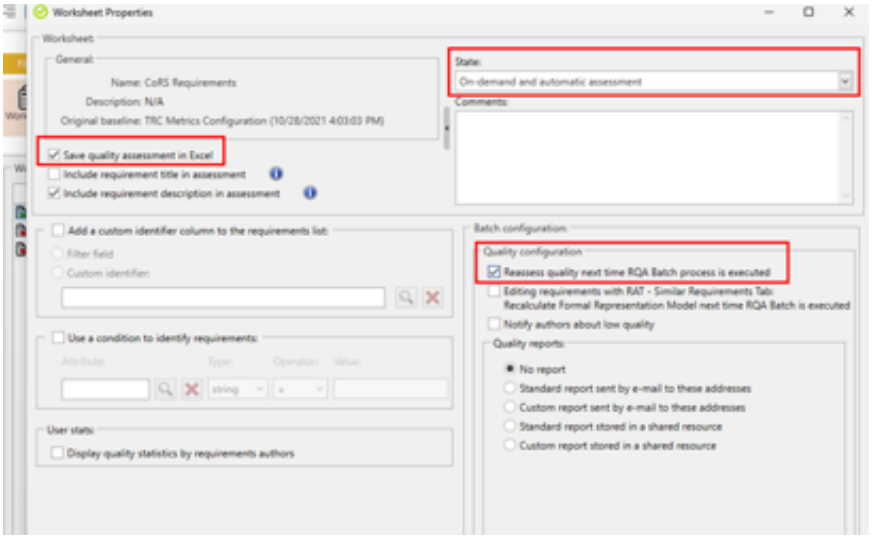

FIGURE 164

In addition to last steps, you could also need to **configure credentials for the connection** from your RQA project to repository through SES Server,

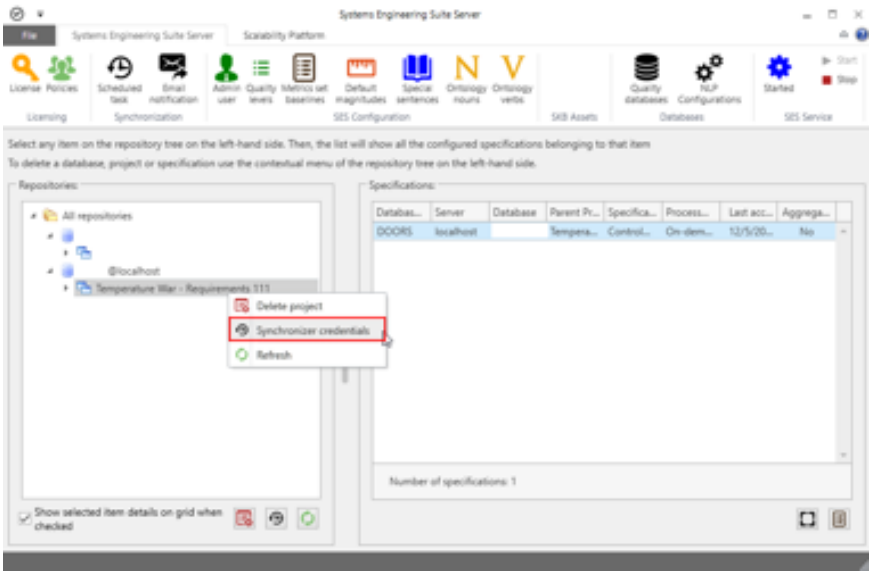

FIGURE 165

Also, it could be required to check the same parameters in **Module properties** needed to allow quality automatic assessment also from there, in SKB Assets page in ribbon:

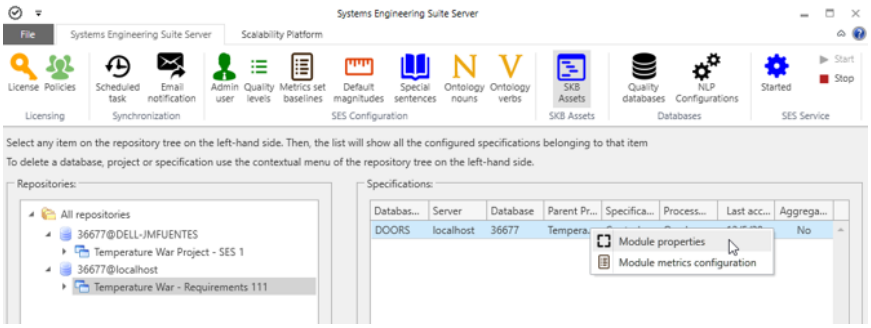
Systems Engineering Suite Server
File
Systems Engineering Suite Server
Scalability Platform
License
Policies
Scheduled task
Email notification
Admin user
Quality levels
Metrics set baselines
Default magnitudes
Special sentences
Ontology nouns
Ontology verbs
SKB Assets
Quality databases
NLP Configurations
Started
Start
Stop
Licensing
Synchronization
SES Configuration
SKB Assets
Databases
SES Service
Select any item on the repository tree on the left-hand side. Then, the list will show all the configured specifications belonging to that item
To delete a database, project or specification use the contextual menu of the repository tree on the left-hand side.
Repositories:
All repositories
36677@DELL-JMFUENTES
Temperature War Project - SES 1
36677@localhost
Temperature War - Requirements 111
Specifications:
Databas...
Server
Database
Parent Pr...
Specifica...
Process...
Last acc...
Aggrega...
DOORS
localhost
36677
No
Module properties
Module metrics configuration

FIGURE 166

The REUSE Company

The REUSE Company is an organization specialized in the application of Semantic Representation and Analysis Technologies to a wide range of industries (Aerospace, Defense, Automotive, Naval, Health, ...). Our customers are usually (but not limited to) safety-oriented organizations.

Our focus is on System/Software Reuse, Traceability and Quality applied to all types of work-products throughout the whole SE lifecycle (requirements, SysML Models, physical models, tests cases, data results, manuals, natural language descriptions, fault trees, etc.). The integration of tools and technology from The REUSE Company facilitates the representation, analysis and exploitation of knowledge allowing for a knowledge-centric system engineering approach.
Our mission is to promote system/software and knowledge reuse within any organization, by offering processes, methods, tools, and services that make it possible. We offer technology that is fully integrated within the organization's production chain.