RPMGLOBAL

Administration Guide

XERAS Enterprise

Version: 3.9

January 2024

Legal Information

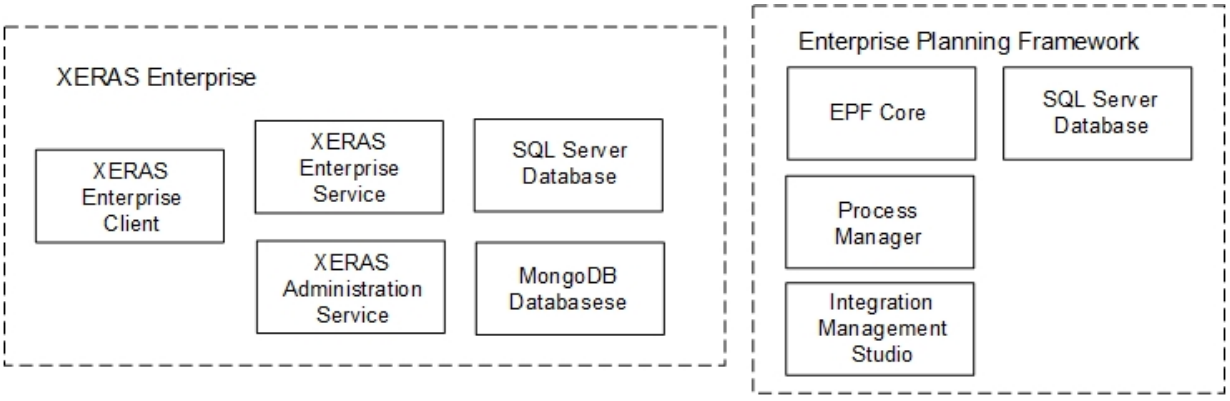
Customer Support

Contents

Introduction

This guide describes the deployment options of XERAS Enterprise into an existing system landscape using the RPMGlobal software architecture. The focus is on XERAS Enterprise and therefore does not consider the requirements and impact of other RPMGlobal products on the RPM Enterprise Planning Framework (EPF).

Solution and Application Architecture



Enterprise Planning Framework (EPF) Services

EPF is implemented with the RPMGlobal enterprise applications which utilise Microsoft SQL Server databases. Applications include:

- EPF core services
- Process Manager
- Integration Management Studio (IMS) (EPF management UI)
- SQL Server database

XERAS Enterprise Services

The RPM EPF core consists of common foundation services that are used by various RPM applications. XERAS Enterprise utilises the Base Services, Enterprise Services and BI Generation capabilities of EPF. XERAS Enterprise in turn consists of server-side components (XERAS Enterprise Service and XERAS Administration Service) and the XERAS Enterprise Client.

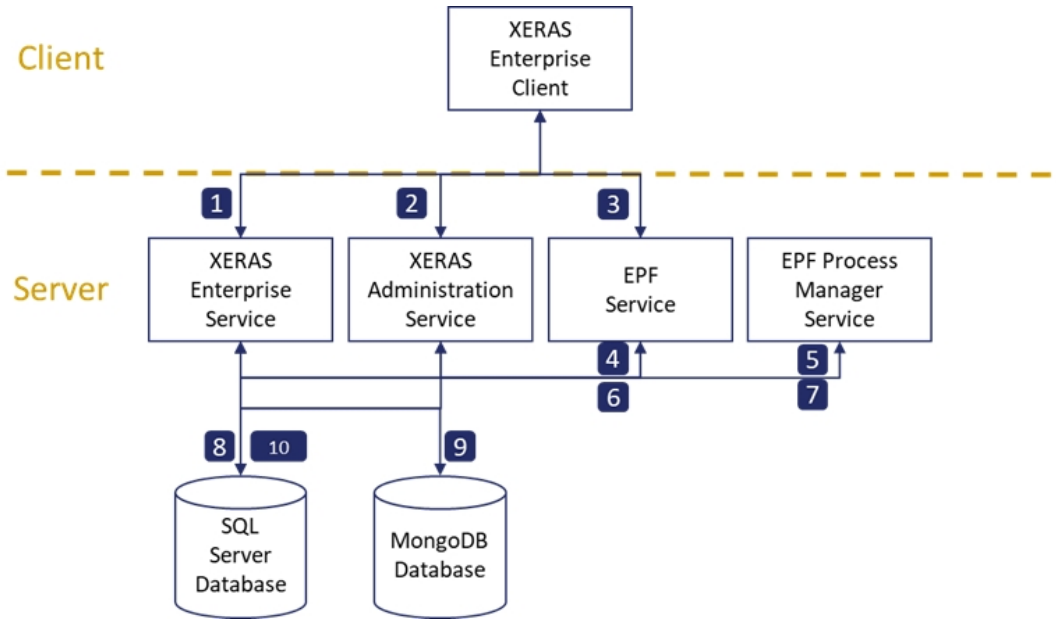
The XERAS Administration Service provides the platform, when working in conjunction with EPF, that enables XERAS Enterprise to be a multi-user enterprise application.

An XERAS Enterprise Service is created for each Construct and Use mode user, and provides XERAS Enterprise functionality including opening, loading, editing, calculating and saving of models.

XERAS Enterprise Client

The XERAS Enterprise Client user interface is used by model designers and end users. This is typically deployed on a high-end Windows desktop or laptop, however it can also run on portable devices such as Windows Surface Pro.

XERAS Enterprise data flow diagram



See the table below for details of the annotations.

Item	End Points	Description	Format	Protocol
1	XE Client XE Service	To XE Client: Data to populate working screens (for example spreadsheet cells). From XE Client: User entered data.	SOAP (XML)	HTTP or HTTPS
2	XE Client XE Administration Service	To XE Client: Data to populate working screens (for example model names, user view names, model components). From XE Client: Requests for data.	SOAP (XML)	HTTP or HTTPS
3	XE Client EPF Service	To XE Client: Data to populate working screens (for example locations, user roles, transfer definitions); User authentication and permissions token; Service endpoint connection details. From XE Client: Requests for data, user permissions.	SOAP (XML)	HTTP or HTTPS
4	XE Client EPF Service	To XE Service: Data to populate working screens (for example locations, user roles, transfer definitions); dataset records for retrieval routines. From XE Service: Requests for data; Dataset records for export routines.	SOAP (XML)	HTTP or HTTPS
5	XE Service EPF Process Manager	To XE Service: Requests for data. From XE Service: Session state.	SOAP (XML)	HTTP or HTTPS
6	XE Administration Service EPF Service	To XE Administration: Data to populate working screens (for example. locations, user roles). From XE Administration: Requests for data.	SOAP (XML)	HTTP or HTTPS
7	XE Administration Service EPF Process Manager	To XE Administration: Requests for data. From XE Administration: Session state.	SOAP (XML)	HTTP or HTTPS
8	XE Service SQL Database	To XE Service: Model configuration data. From XE Service: User entered data.	SQL	
9	XE Service MongoDB Database	To XE Service: Calculation state (Cell to cell dependency tree, Saved cell values). From XE Service: Updates to calculation state (changes to dependency tree and cell values).	MongoDB	
10	XE Administration Service SQL Database	To XE Administration: State of model components (checked-out, checked-in, active, inactive). From XE Administration: Changes to model component states.	SQL	

Enterprise integration

EPF provides an open architecture for integration with third party applications and ERP systems, including SAP ERP. This is typically achieved via SOAP Web services or JMS. In addition, the BI Generation facility of EPF enables the presentation of data in a format easily consumed by BI type applications.

EPF includes pre-built content for SAP NetWeaver Process Integration (PI/PO) 7.3 +, however any enterprise grade middleware is supported.

Installation options

XERAS Enterprise is designed to work in conjunction with EPF. Please refer to the EPF Administration Guide for EPF setup instructions. There are various installation options available to deploy XERAS Enterprise in an enterprise environment.

Single server

This is the simplest configuration and is typically implemented for Development and Test environments and smaller Production environments.

EPF core, XERAS Enterprise server-side components, Microsoft SQL Server and MongoDB are all installed on the same server.

Multiple servers

Application server and Database server

This is the recommended configuration for small to midsize Production environments.

EPF and XERAS Enterprise server-side components are installed on the Application server, and Microsoft SQL Server plus MongoDB on the Database server.

Application server, Database server, EPF server

This is the recommended configuration for midsize to larger Production environments. The XERAS Enterprise server-side components are installed on the Application server, Microsoft SQL Server and MongoDB on the Database server, and EPF on a third server.

Shared Database servers

Some organisations use shared SQL Server Database servers to minimise SQLServer licensing costs. The shared SQL Server Database server is used for both test and production database instances and managed as a production server.

While it is recommended that MongoDB and SQL Server both reside on the Database server, **a test and production MongoDB must not be deployed to a shared Database server**. Options are to either deploy a separate Database server for the production MongoDB or a separate non-production Database server for both SQL Server and MongoDB. Licensing costs for the non-production Database server may be minimised by using SQL Server Developer Edition.

Deployment in cloud environments

XERAS Enterprise can be installed in virtualised environments. Amazon Web Services and Microsoft Azure cloud implementations are supported. Where Active Directory (AD) is integrated between on-premise and cloud environments installation is straight-forward. Where there is no AD integration, it will be necessary to have a separate AD instance in the cloud environment and authentication between XERAS users (via XERAS Enterprise Client) and the server-side components will require the use of client certificates or OAuth2 cross-domain authentication.

System requirements

Following are the recommended requirements for XERAS Enterprise.

It is imperative that only RPMGlobal validated platforms are used for XERAS Enterprise production use. Validated platforms are detailed in the RPMGlobal Software Platform Matrix.

XERAS Enterprise clients and servers do not require dedicated graphics cards.

XERAS Enterprise Client

Component	Recommended
Processor	Intel i7 dual core 3 GHz CPU
Memory	16 GB
Storage	256 GB SSD #
Operating System	Windows 10 Professional 64-bit Windows 11 Professional 64-bit
Screen resolution	1920 x 1080, True Colour (32-bit), 96 dpi

XERAS Enterprise Application Server

Component	Recommended
Processor	Single threaded PassMark CPU Mark of >=2,000 and Total CPU Mark of >= 10,000
Memory	64 GB
Storage	100 GB SSD #
Operating System	Windows Server 2019 or Windows Server 2022.

XERAS Enterprise Database server

Component	Recommended
Processor	Total CPU Mark of >=10,000
Memory	64 GB (SQL Server and MongoDB) 32 GB (SQL Server only)
Storage	2 TB SSD # (SQL Server and MongoDB)
Operating System	Windows Server 2019 or Windows Server 2022.
Databases	Microsoft SQL Server 2019 Standard CU5+ MongoDB 6

- XE on servers with SSDs provide significantly better performance compared to mechanical drives.

XERAS Enterprise single server

This server is not required if using a multi-server environment.

Component	Recommended
Processor	Single threaded PassMark CPU Mark of >=2,000 and Total CPU Mark of >= 10,000
Memory	64 GB
Storage	2 TB SSD #
Operating System	Windows Server 2019 or Windows Server 2022
Databases	Microsoft SQL Server 2019 Standard CU5+ MongoDB 6

EPF server

XERAS Enterprise is designed to work in conjunction with EPF. Please refer to the EPF Administration Guide for EPF system requirements.

Although not a recommended configuration, MongoDB may also be deployed on the EPF server. If so, an additional 32 GB of memory is recommended for the EPF server.

Installation guide

XERAS Enterprise is designed to work in conjunction with EPF. Please refer to the EPF Administration Guide for the installation of EPF and the prerequisite associated system software including IMS.

Installing XERAS Enterprise 3 on the same server as XERAS Enterprise 2

XERAS Enterprise 3 can be installed on the same server machine as XERAS Enterprise 2. The steps below are required for this type of side-by-side installation.

1. Upgrade EPF to required version.

   The EPF version must be updated to match the required minimum version for XERAS Enterprise. Please refer to the Software Platform Matrix for a list of compatible software versions.

2. Upgrade XERAS Enterprise 2.

   XERAS Enterprise 2 must be upgraded to a minimum version compatible with XERAS Enterprise 3 and EPF to allow side-by-side installation.

3. Install XERAS Enterprise 3.

   It is important to install XERAS Enterprise 3 after the upgrade to XERAS Enterprise 2 to ensure that the prerequisites are in place.

Installation account

To install XERAS Enterprise 3, a user account with the following permissions on the server must be set up:

- System administration rights.
- Permission to install software.

Service account

A domain service account must be created to be used as the startup account for the XERAS Enterprise service. The account must satisfy the following requirements:

- Must be a domain-level account (not a local system account).
- Password never expires.
- Does not require password change at next logon.
- Disallow interactive logon (recommended).
- Given the Logon as a service right in the local group policy settings on the application server.
- Given write permissions to the “%programdata%\RungePincockMinarco” and "%programdata%\RPMGlobal" folders (including subfolders and files) on the application server.

SQL Server installation and configuration

It is imperative that only RPMGlobal validated platforms are used for XERAS Enterprise production use. Validated platforms are detailed in the RPM Software Platform Matrix.

XERAS Enterprise Service requires a single SQL database. This should be created prior to running the XERAS Enterprise Service installer.

Please create the XERAS Enterprise database in SQL Server Management Studio using the settings detailed below:

Property	Importance	Configuration Value
Database name	Recommended	XERAS
Initial data size	Recommended	5072 MB
Initial log size	Recommended	1024 MB
Growth setting for data	Recommended	1024 MB
Growth setting for log	Recommended	512 MB
Recovery model	Recommended	Full *
Location on disk	Recommended	RAID 5 or better on single PRIMARY file group for data and indexes. Separate database file system from the system partition. Separate log file system from the system partition.
Collation	Recommended	Latin1_General_CI_AS
Auto create statistics	Compulsory	True
Auto update statistics	Compulsory	True
Auto update statistics asynchronously	Compulsory	True
Notes	The recommended log size is based on a backup policy of, at minimum, weekly full database backups and daily transaction log backups. The backup policy is not configured on installation and must be configured by the organisation's database administrator (DBA) to align with the corporate database backup policy. The DBA must adjust the log size to align with the full backup and log backup frequency. **Failure to create an appropriate backup policy will result in unconstrained log file growth, performance degradation and eventual system failure.**	

MongoDB installation and configuration

MongoDB editions

MongoDB is available in two server editions: Community and Enterprise.

The Community edition is currently free, while the Enterprise edition is not.

MongoDB Enterprise provides various features not available in the MongoDB Community edition, but for the purpose of using MongoDB in XERAS Enterprise the Community edition is adequate.

Download links

It is imperative that only RPM validated platforms are used for XERAS Enterprise production use. Validated platforms are detailed in the RPM Software Platform Matrix.

The Community Edition of MongoDB can be downloaded from the following link:

https://www.mongodb.com/download-center/community/releases

The Enterprise Edition can be downloaded from the following link:

https://www.mongodb.com/download-center/enterprise/releases

MongoDB configuration options

MongoDB can be deployed in either the Single Node or the Multiple Node configuration.

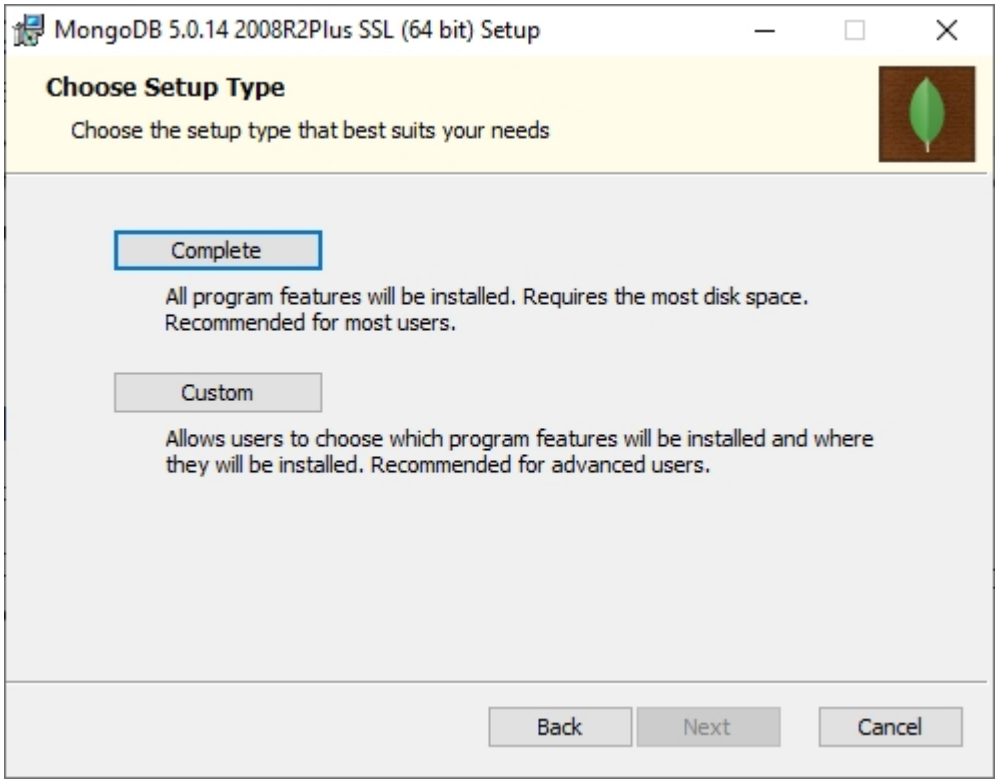
Multiple Node configuration provides data redundancy and increases fault tolerance against the loss of a single database server. However, Multiple Node configuration also requires additional hardware resources.

The default MongoDB configuration option for XERAS Enterprise is Single Node.

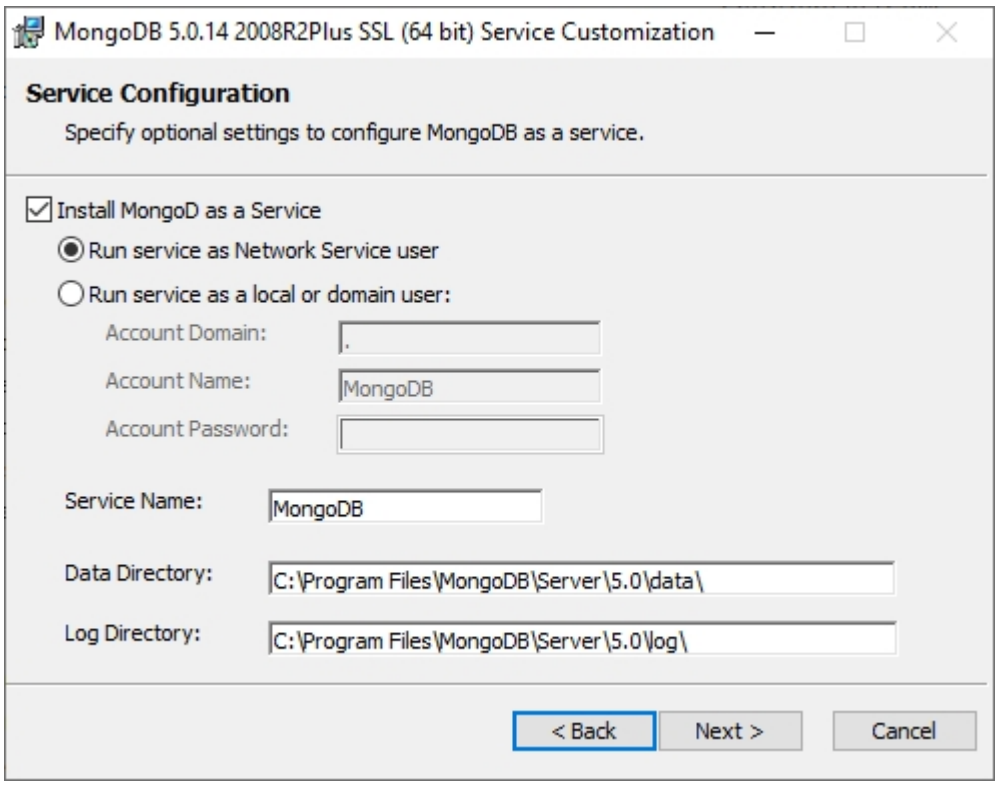
For more information refer to
https://docs.mongodb.com/manual/tutorial/install-mongodb-on-windows/

Single node configuration

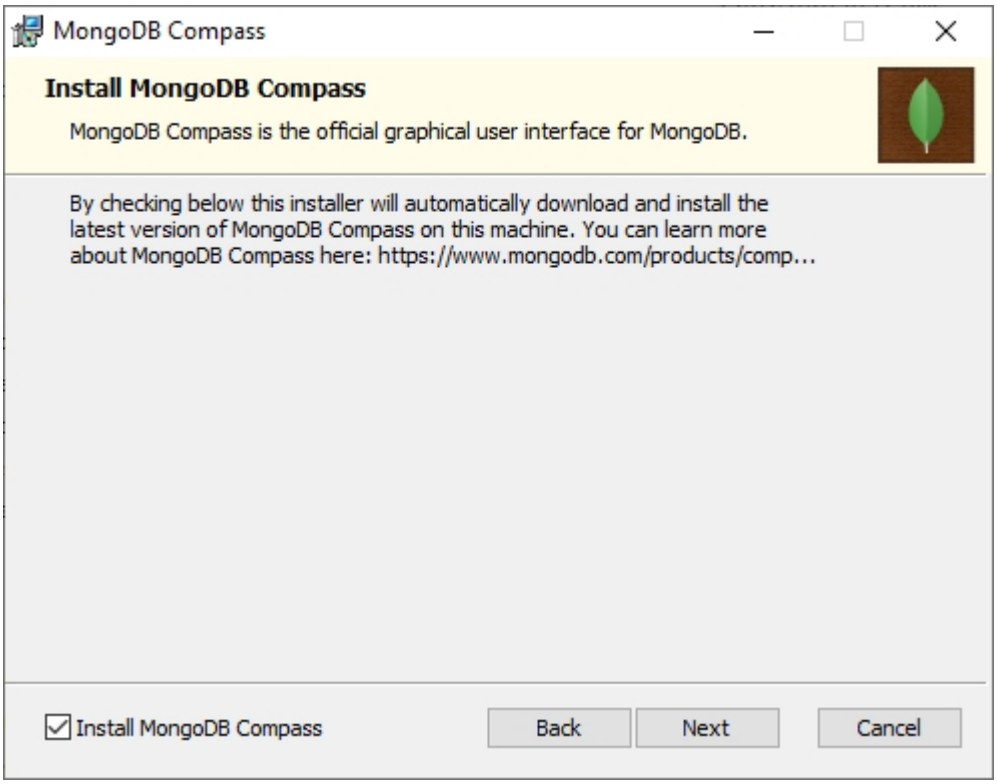
1. Go to the installer link and download the appropriate version of the MSI installer.
2. Run the .msi installer file and follow the prompts until you reach the Choose Setup Type screen. Unless you want to change the components and features that are installed, clicking the **Complete** option is recommended.



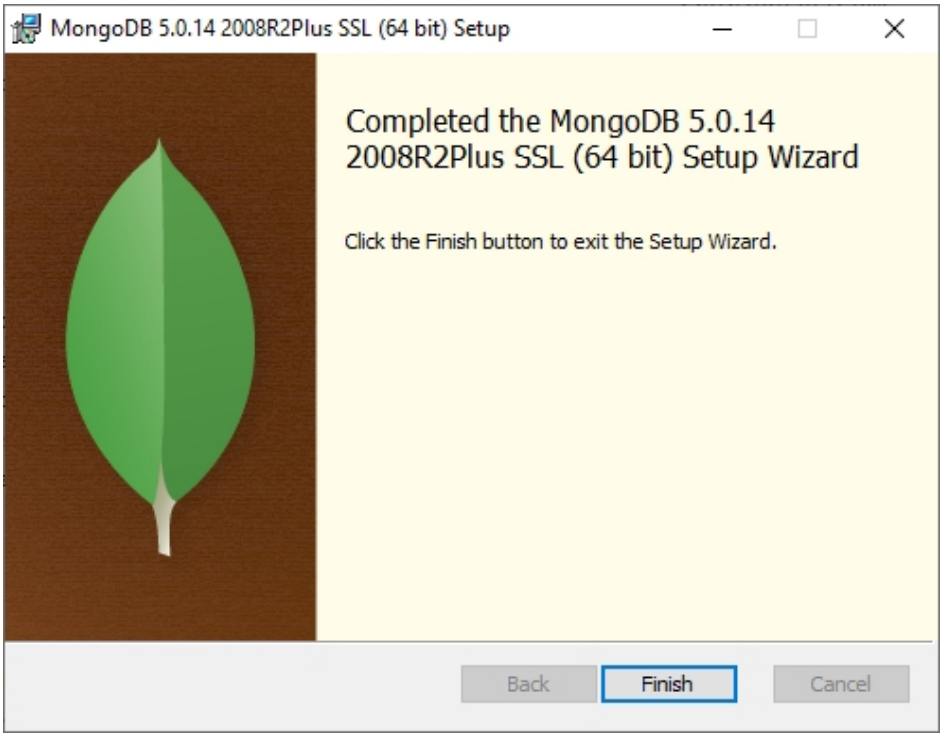
3. In the Service Configuration screen, it is recommended to leave the settings unchanged. This will install MongoDB as a Windows service, allowing it to start up automatically when Windows boots. The user the service runs under can be modified, as well as the location of the MongoDB data and logs (stored in “C:\Program Files\MongoDB\Server\5.0\” by default).



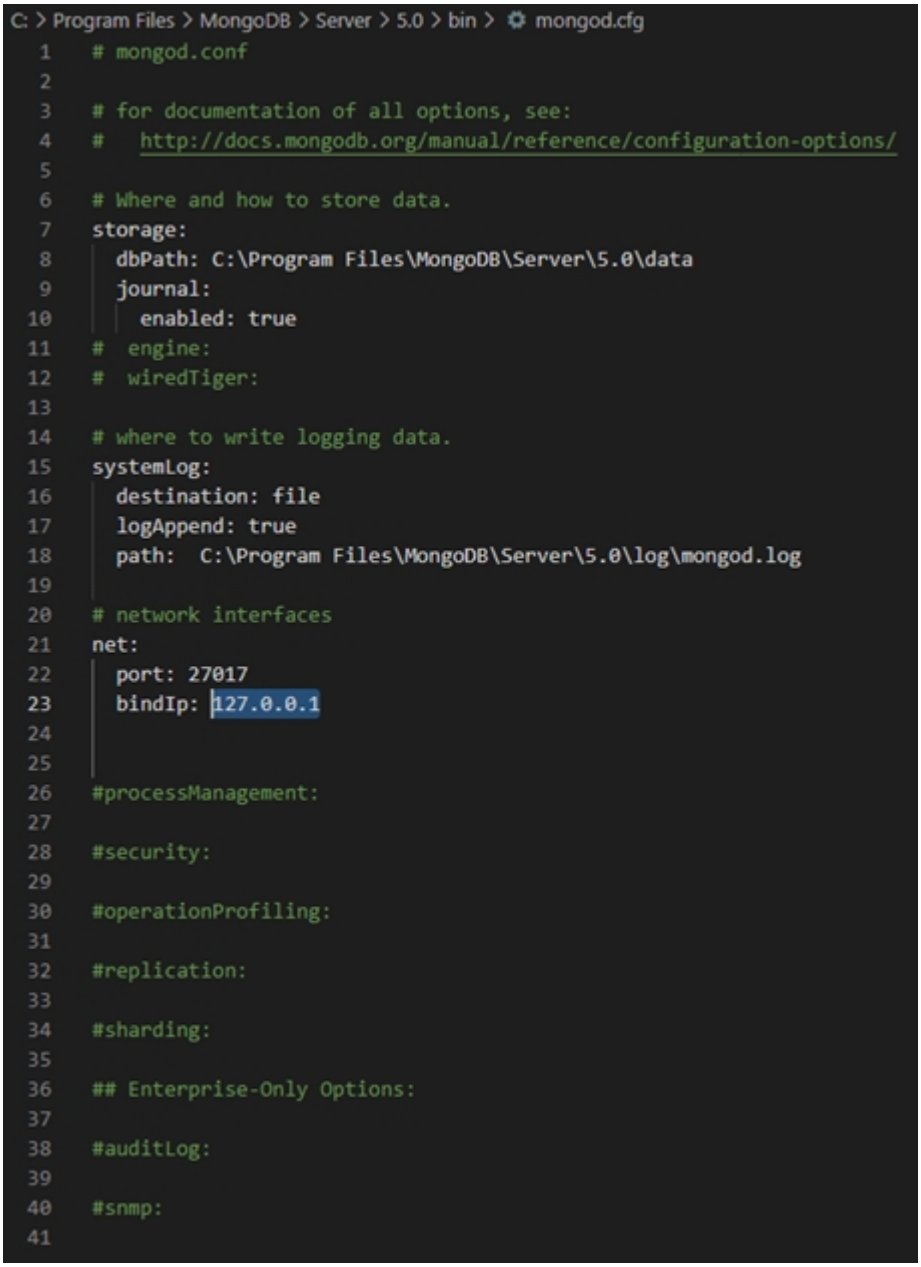
4. The next screen allows the option of installing MongoDB Compass, the official graphical user interface for interacting the MongoDB Server instance. It is not required, but can be useful for viewing, querying or modifying data in the server, and can be installed on another machine to access MongoDB server remotely if preferred.



5. Wait until the final screen appears in the installation.



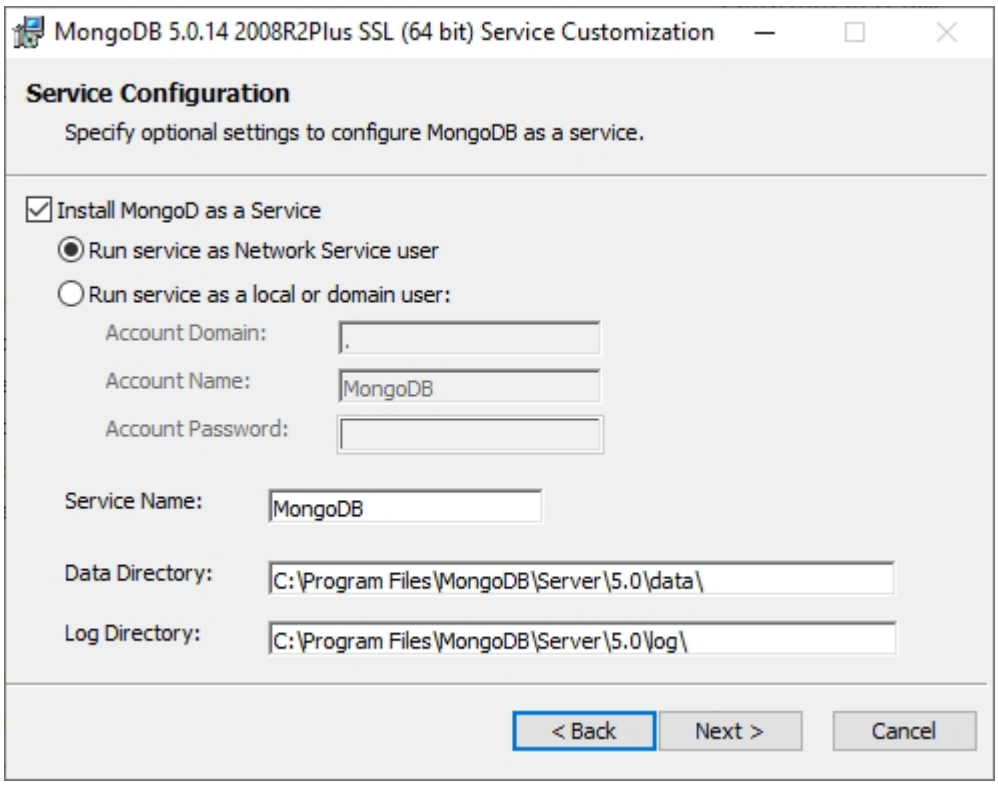
6. If MongoDB Server will not be accessed remotely, installation is complete. Otherwise proceed to the next step.
7. If MongoDB Server will be accessed remotely, it needs to be configured in the configuration file. Locate the MongoDB Server configuration file named **`mongod.cfg`**"; it is in the same directory as the installed MongoDB Server .exe files (by default **`C:\Program Files\MongoDB\Server\x.y\bin`**"). This file contains the configuration of the MongoDB Server. In **Administrator** mode, start a text editor of your choice that is **NOT** Notepad, and open the configuration file (Notepad has issues reading the configuration file).



8. Once the configuration file is open, locate the line highlighted in the screenshot. After the highlighted text 127.0.0.1, add a comma and the name of the computer MongoDB Server is installed on (for example, MY_COMPUTER_NAME).
   Save the configuration file.

```
# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1,MY_COMPUTER_NAME
```

9. Open Task Manager, click the **Services** tab, locate the service **MongoDB** and restart it. This will reload the configuration file with your modified value. Alternatively, you can restart the computer.



For more information refer to
https://docs.mongodb.com/manual/tutorial/install-mongodb-on-windows/

Multiple node configuration

Overview

A multiple node MongoDB Server configuration is referred to as a “replica set”. A replica set consists of multiple nodes maintaining identical copies of the same set of data. It requires, at a minimum, three separate machines that can communicate with each other to operate, and there should be an odd number of nodes to ensure the replica set operates smoothly. In a replica set, every write operation that is sent to the set (insert/update/delete) is replicated across all nodes, ensuring the data is identical on every MongoDB Server node.

This provides data safety, so if any of the nodes fail (power loss, network issues, hard-drive failure, and so on) the replica set continues to operate and there is no loss of data. If or when the failed nodes begin to function again, they will synchronise their set of data with the other up-to-date nodes in the replica set until they all have identical copies of the data once again. This minimises downtime and improves resiliency of the data.

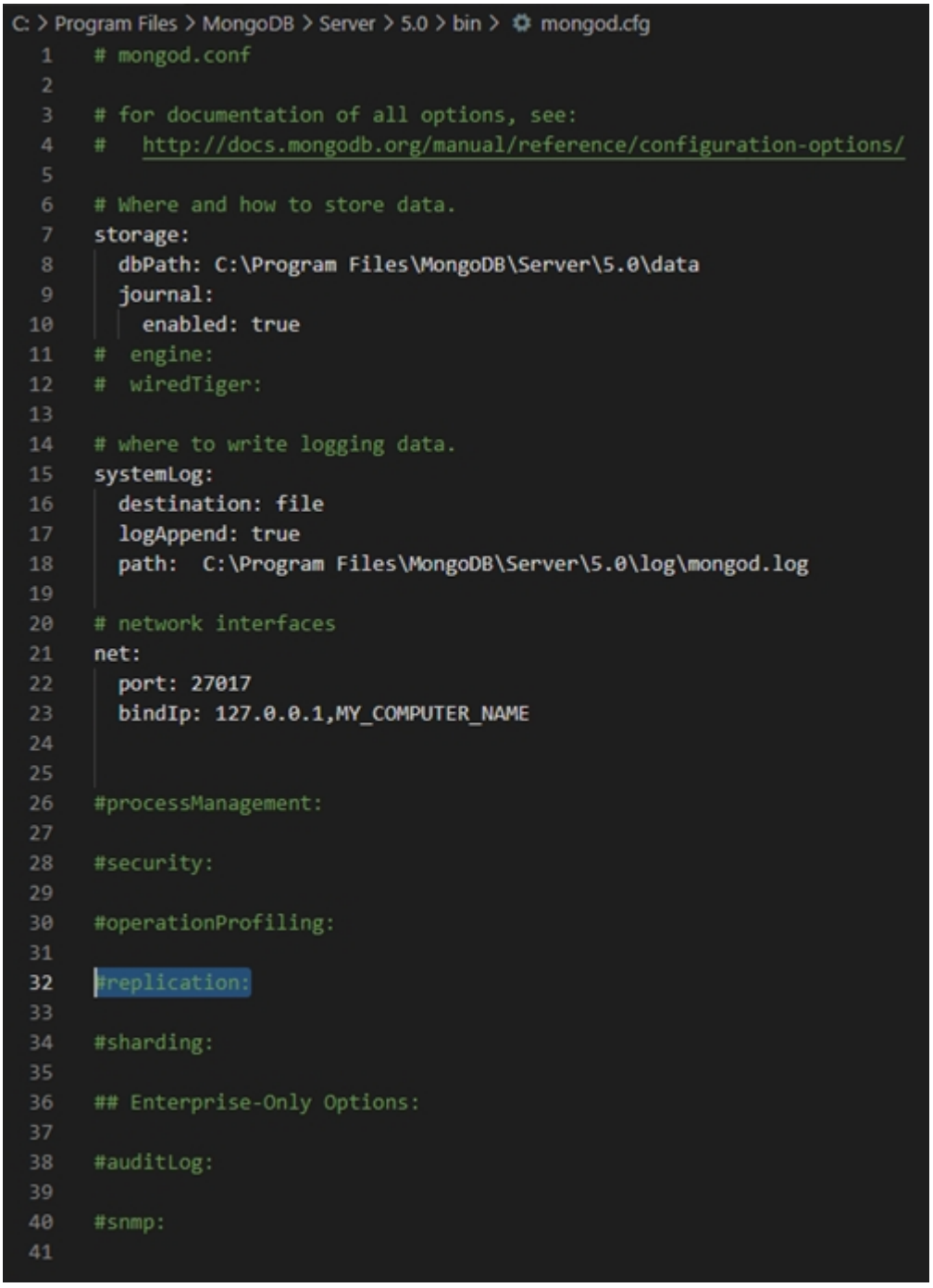
As well as providing data safety, the replica set configuration allows improved read performance through load-balancing. Because every node in the set has an identical copy of the data, a read operation can be sent to any node in the set and return the same result.

A MongoDB Server replica set is identified by a name. This name should be unique and is required to access the set.

For more information refer to https://docs.mongodb.com/manual/replication/

Installation steps

1. Installing MongoDB Server on any individual node in the replica set is identical to a single node MongoDB Server configuration, so follow the installation steps for Single Node Configuration for each node that will be part of the replica set.
2. Once MongoDB Server has been installed on all the nodes, each node must be configured to form a replica set. Locate the MongoDB Server configuration file named **`mongod.cfg`** that was modified in the installation steps for single node setup. In Administrator mode, start a text editor of your choice that is **NOT** Notepad, and open the configuration file.
3. By default, the server is not part of a replica set, but contains an unused configuration entry for specifying the replica set name the node belongs to. In the file find the line **#replication**:



4. Remove the **#** in front of **replication**: and add the following line below it:
   replSetName: "rs0" (include two spaces in front of “replSetName”).
   This specifies the name of the replica set, and must be unique. The default value **rs0** can be changed if you want to, for example, “example_replica_set”.
   Save the configuration file.
   Make the same configuration changes to every MongoDB Server node you want to add to the replica set.

```
# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1,MY_COMPUTER_NAME


#processManagement:

#security:

#operationProfiling:

replication:
  replSetName: "rs0"
```

5. For each node, open up **Task Manager**, click the **Services** tab, locate the service **MongoDB** and restart it. This will reload the configuration file with your modified value. Alternatively, you can restart the computer.
6. Once all the nodes have been successfully configured by following the previous steps, open the Command Prompt on one of the nodes and run **`mongo.exe`**. You may need to specify the full path of the executable file; it is in the same directory as the configuration file (by default, "C:\Program Files\MongoDB\Server\x.y\bin").

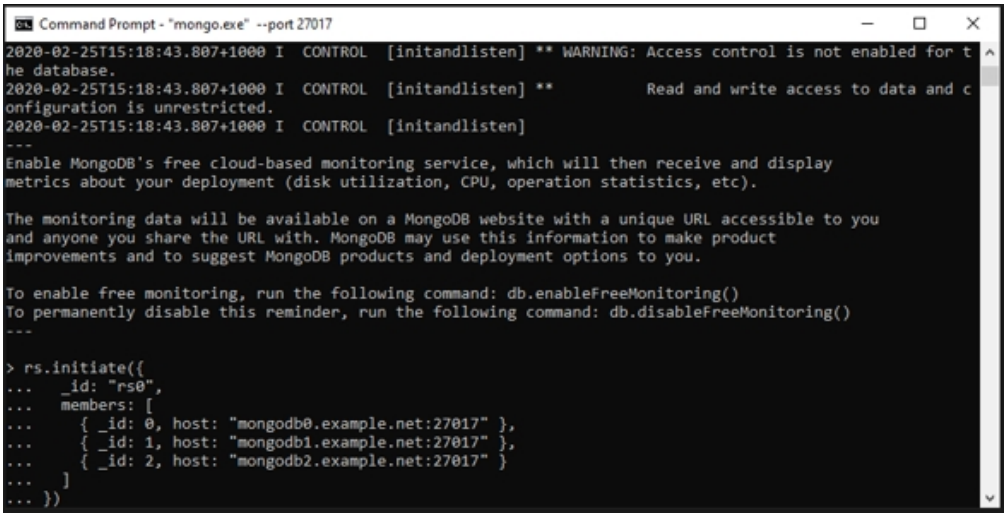
   If MongoDB was configured to use a different port from the default port 27017, this needs to be specified using **`--port PORT_NUMBER`** (for example, **`"mongo.exe" --port 27017`**).

7. In the mongo shell, run **rs.initiate()** based on the example below:

```
rs.initiate({
  _id: "rs0",
  members: [
    { _id: 0, host: "mongodb0.example.net:27017" },
    { _id: 1, host: "mongodb1.example.net:27017" },
    { _id: 2, host: "mongodb2.example.net:27017" }
  ]
})
```

   Replace the **"rs0"** value of **_id** with the unique replica set name you have specified in the configuration file of the nodes. Also, in the list of members, replace the **mongodb#.example.net** part of the host value with the machine names of the nodes that you specified in each of their configuration files. Ensure you included EVERY replica set node in the list of members.

   IMPORTANT: Run **rs.initiate()** on one and only one of the replica set nodes.



8. If that operation succeeds, then the replica set has been successfully installed, configured and initiated.

For more information refer to https://docs.mongodb.com/manual/tutorial/deploy-replica-set/

Upgrading MongoDB

Due to some vulnerabilities found in earlier versions of MongoDB, it is recommended that existing installations of MongoDB should be upgraded to a later version.

Because of major changes between versions 4.x and later versions, this upgrade requires the following steps, which are linked to more information below.

1. Backup all database data.
2. Stop the MongoDB service.
3. Make a backup of the `mongod.cfg` configuration file.
4. Move or rename the existing database data directory.
5. Repeat steps 1-4 for each replica set node.
6. Uninstall the existing installation of MongoDB.
7. Install the new MongoDB version.
8. Restore the backup of the `mongod.cfg` configuration file.
9. Restore the database data from the backup.
10. Once it is confirmed the data was restored successfully, delete the old database data directory.
11. If the MongoDB instance was configured as part of a replica set, repeat steps 6-10 for each other replica set node.
12. Recreate the MongoDB replica set if needed.

Preparation

If the MongoDB database tools are not already installed either directly on the MongoDB server or on another machine with network access to the MongoDB server, install them from https://www.mongodb.com/download-center/database-tools.

Download the MongoDB installer onto all servers that are being upgraded.

You can download the **Community Edition** of MongoDB from https://www.mongodb.com/download-center/community/releases, or download the **Enterprise Edition** from https://www.mongodb.com/download-center/enterprise/releases.

1. Backup all database data

Ensure the MongoDB utility **mongodump** is installed, either on the MongoDB server or on another machine with network access to the MongoDB server.

Using the documentation at https://www.mongodb.com/docs/database-tools/mongodump/, export all databases on the server, preferably to a different machine from the server, to minimise the chance of data loss during the upgrade. This may take sometime depending on the size of the MongoDB databases.

2. Stop the MongoDB service

Using Task Manager or Windows Services, stop the MongoDB service if it is running.

3. Make a backup of the mongod.cfg configuration file

You can skip this step if the existing MongoDB installation is using the default configuration.

If the configuration file has been modified at all, for example, to specify a custom path for the data or log directories, a custom port number, to enable authentication or authorisation, or to configure a replica set, a backup of this configuration should be made to ease the upgrade to a newer version. The default path in Windows is `C:\Program Files\MongoDB\Server\x.y\bin\mongod.cfg`

4. Move or rename the existing database data directory

This is a precaution in case the upgrade fails and needs to be rolled back. **Do not delete** this directory until it is confirmed that the upgrade succeeded. The default path (if not customised in the configuration file in Windows is `C:\Program Files\MongoDB\Server\x.y\data`.

5. Repeat steps 1-4 for each replica set node

If MongoDB is deployed as a replica set, steps 1-4 need to be repeated for each replica set node before proceeding with the next steps.

6. Uninstall the existing installation of MongoDB

Once all the required backups have been created to ensure no data is lost, the current MongoDB version can be completely uninstalled.

7. Install the new MongoDB version

Run the installer and follow the steps until the new version has been successfully installed and ensure its service is running. If any customisation of the configuration is needed this can be done while running the installer, otherwise the backup of the `mongod.cfg` configuration file can be restored after installation.

8. Restore the backup of the mongod.cfg configuration file

You can skip this step if the previous MongoDB installation was using the default configuration.

If the previous MongoDB installation wasn't using the default configuration file, stop the MongoDB service that should be running, locate the **`mongod.cfg`** configuration file (by default it should be in the same directory as the **`mongod.exe`** executable file **`C:\Program Files\MongoDB\Server\x.y\bin\mongod.cfg`**), and rename it to allow rolling back if there is an issue with the backup file).

Copy the backup configuration file to the same directory, renaming it to **`mongod.cfg`** if required.

Once the backup configuration file has been restored, start the MongoDB service again and test that you are able to connect to it (either using the **`mongo.exe`** shell utility or **MongoDB Compass**.

9. Restore the database data from the backup

The data directory cannot be replaced with the old directory that was moved, as the data format has changed between versions.

Ensure the MongoDB service is running, the MongoDB utility **mongorestore** is installed on the machine containing the database data backup exported by **mongodump**, and ensure this machine has network access to the MongoDB server.

Using the documentation at https://www.mongodb.com/docs/database-tools/mongorestore/, import the backup data into MongoDB. This may take some time depending on the size of the MongoDB databases at the time of export.

Once completed confirm the data was imported (either using the **`mongo.exe`** shell utility or **MongoDB Compass**). Unless the previous version of MongoDB was empty there should be some new databases, specifically some with names starting with **xeras_**.

10. Delete the old database data directory

When it has been confirmed that the upgrade was successful, and no rollback is needed, the old database data directory that was moved prior to the upgrade can be deleted.

11. Repeat the previous steps 6-10 for each other replica set node

Each node in the replica set must be upgraded before the replica set is reconnected. For each replica set node follow steps 6-10 to upgrade it.

12. Recreate the MongoDB replica set if needed

If a MongoDB replica set has been upgraded, the replica set configuration may need to be recreated to allow the nodes to connect. Follow the other instructions in this guide for doing so.

MongoDB authentication and authorisation (optional)

A MongoDB instance can be secured by creating a user with a username and password and assigning the user roles for access control.

User creation and the assigning of roles is done using the MongoDB shell utility, either before authorisation is enabled or by connecting using the credentials of an existing MongoDB user with permission to create new users.

1. Open up the Command Prompt on the server MongoDB is installed on and run **`mongo.exe`**. You may need to specify the full path of the executable file; it is in the same directory as the configuration file (by default, C:\Program Files\MongoDB\Server\x.y\bin.

2. In the mongo shell, run the following commands to create a user with the assigned roles required for XERAS Enterprise to use the MongoDB (replacing **username** with the actual username).

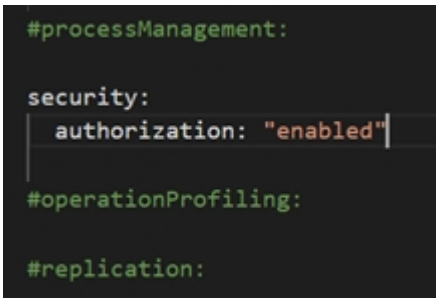
```
use admin
db.createUser(
{
  user: "username",
  pwd: passwordPrompt(),
  roles: [ "dbAdminAnyDatabase", "readWriteAnyDatabase" ]
}
)
```

3. Alternatively, if a MongoDB user has already been created, run the following command in the mongo shell to assign the roles requires for XERAS Enterprise to use MongoDB (replacing **username** with the existing username).

```
db.grantRolesToUser(
"username",
[
   "dbAdminAnyDatabase", "readWriteAnyDatabase"
]
)
```

4. Locate the MongoDB server configuration file named **mongo.cfg**; it is in the same directory as the installed MondoDB server .exe files (by default C:\Program Files\MongoDB\Server\x.y\bin). In **Administrator** mode, start a text editor of your choice and open the configuration file.
5. In the file, find the line **#security:**
6. Remove the **#** in front of security: and add the following line below it:

   authorization: "enabled" (include two spaces in front of authorization).

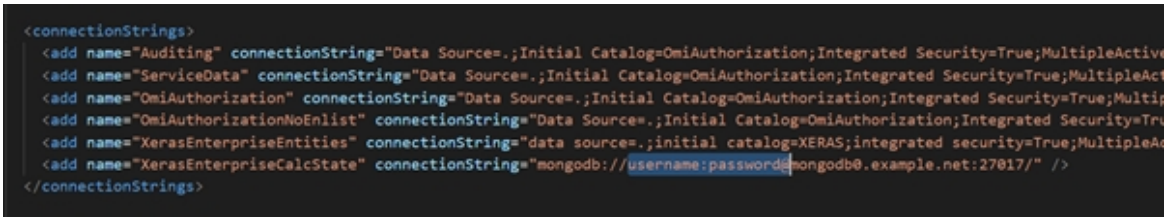


   Save the configuration. This enables authorisation on MongoDB, and once it is restarted, access to MongoDB from XERAS Enterprise will require credentials and the specified roles assigned.

7. Open **Task Manager**, click the **Services** tab, locate the service **MongoDB** and restart it. This will reload the configuration file with your modified value. Alternatively, you can restart the computer.

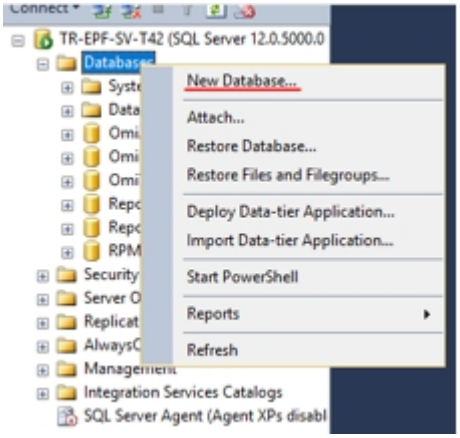
   For more information refer to
   https://docs.mongodb.com/manual/tutorial/install-mongodb-on-windows/

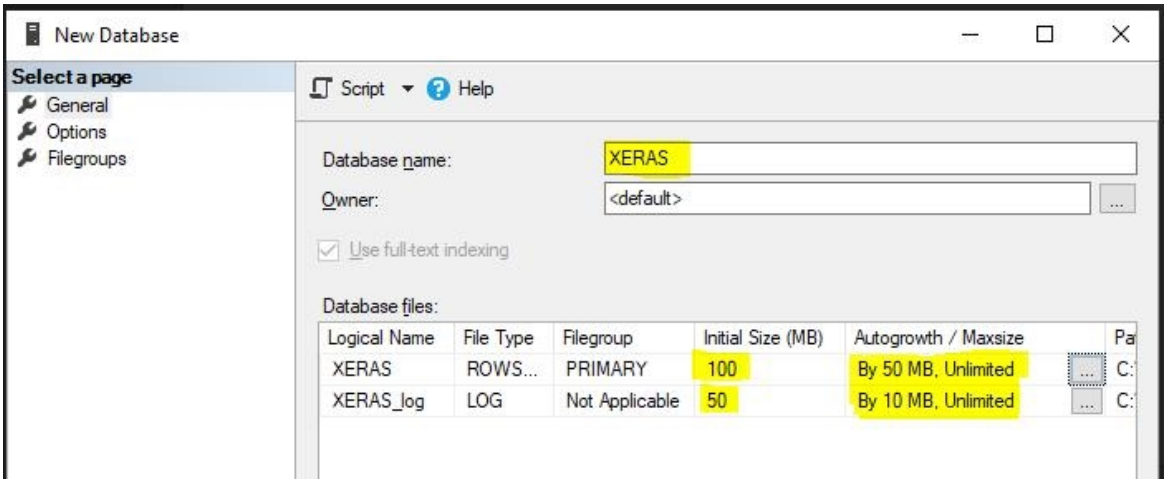
8. In **Program Files**, locate the configuration file names XERAS EnterpriseService.exe.config, located in the same directory as the service executable file XERAS Enterprise.exe. In **Administrator** mode, start a text editor of your choice, and open the configuration file.
9. In the file, find the connection string named **`XerasEnterpriseCalcState`**. In the connection string value specify the **username** and **password** of the configured user as shown below.



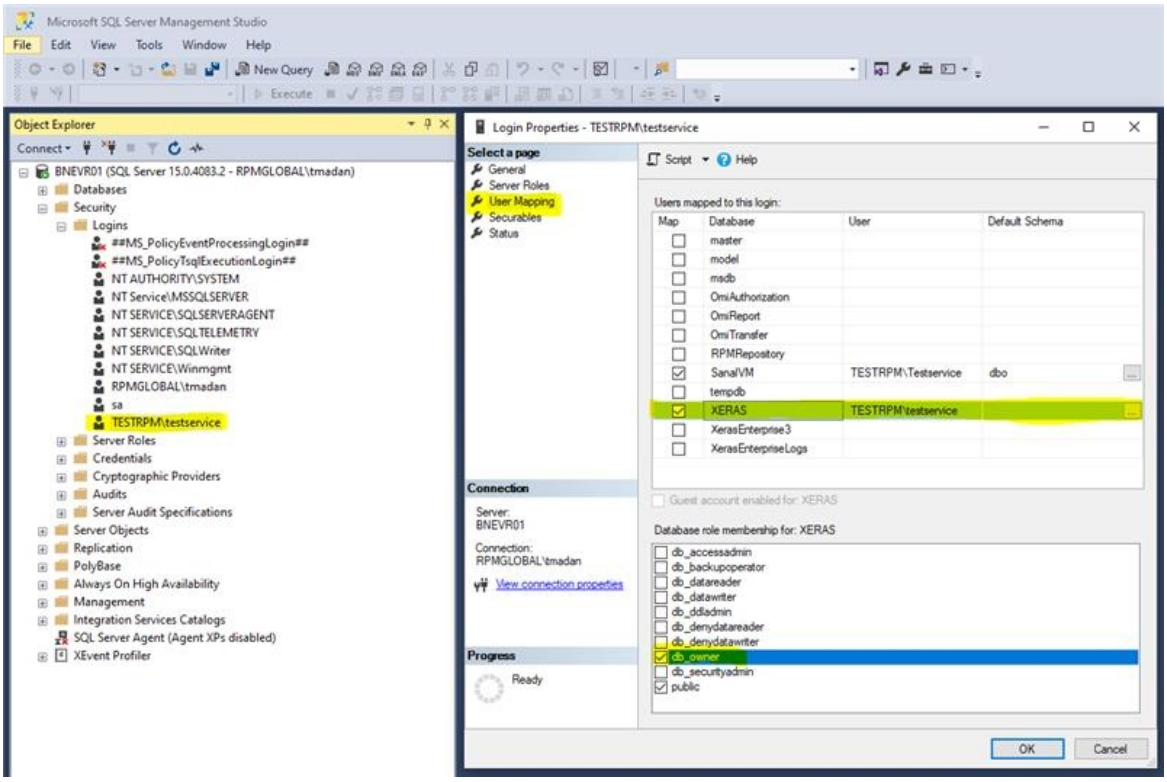
XERAS Enterprise Database creation and configuration

1. Open SQL Server Management Studio.
2. Create the XERAS Enterprise database. Please note the names can be chosen by the user.
3. Provide database file sizes.





4. Assign server roles and permissions.



Admin Service installation and configuration

Prerequisite

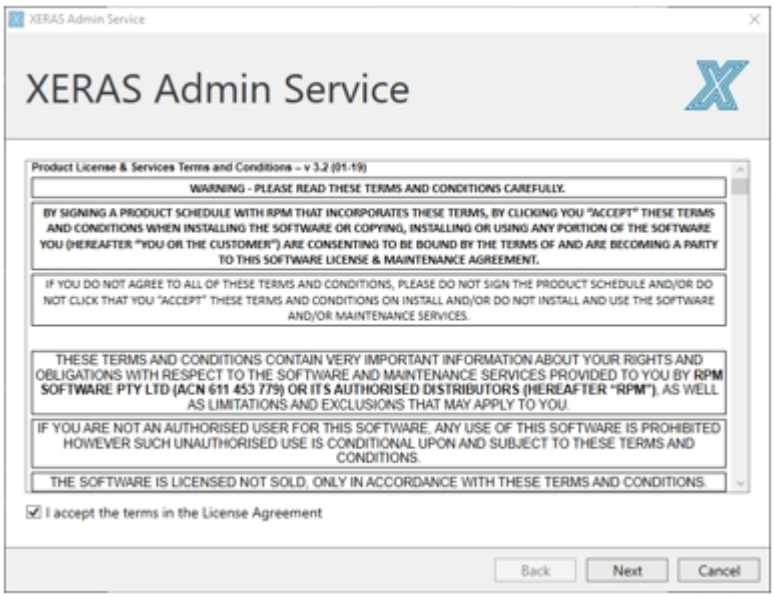
If the Admin Service is to be installed on a different server from EPF, the EPF Process Manager needs to be installed. Details can be found in the EPF Administration Guide.

The XERAS Enterprise database also needs to have been created and configured prior to the installation, including necessary roles and permissions.

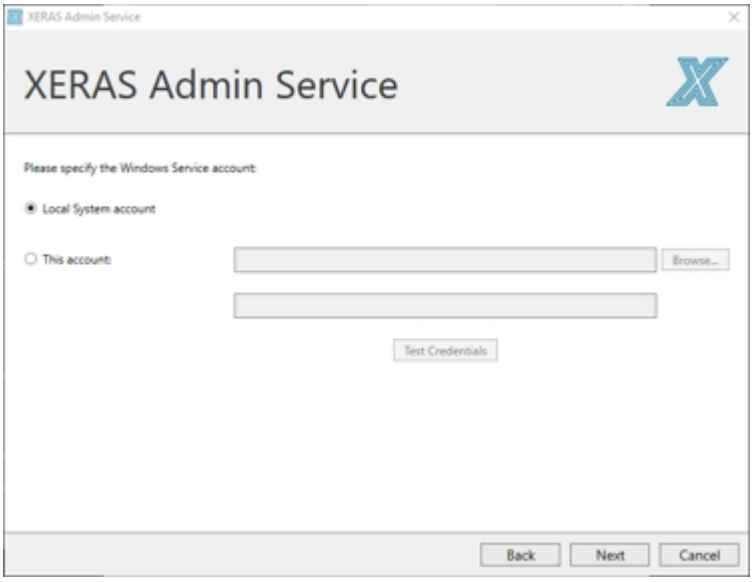
Installation steps

1. Run the XERAS Administration Service Installer with the user having admin permissions.

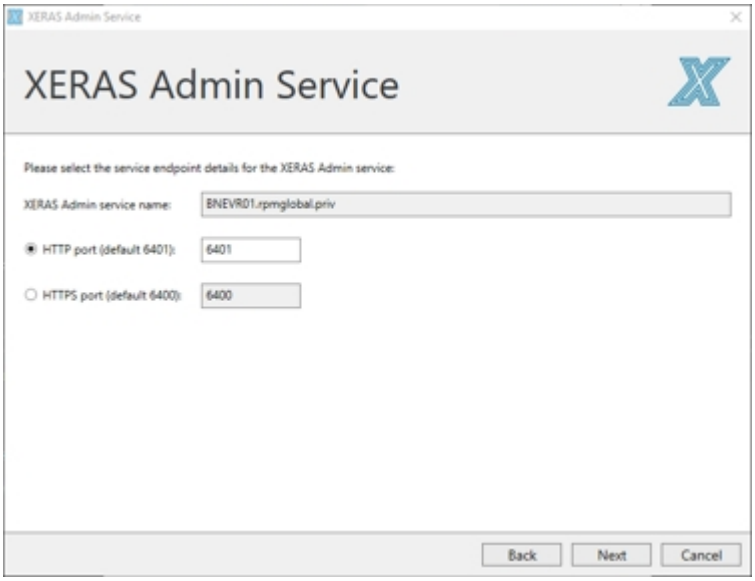
2. Read and accept the End User License Agreement to continue with the installation.



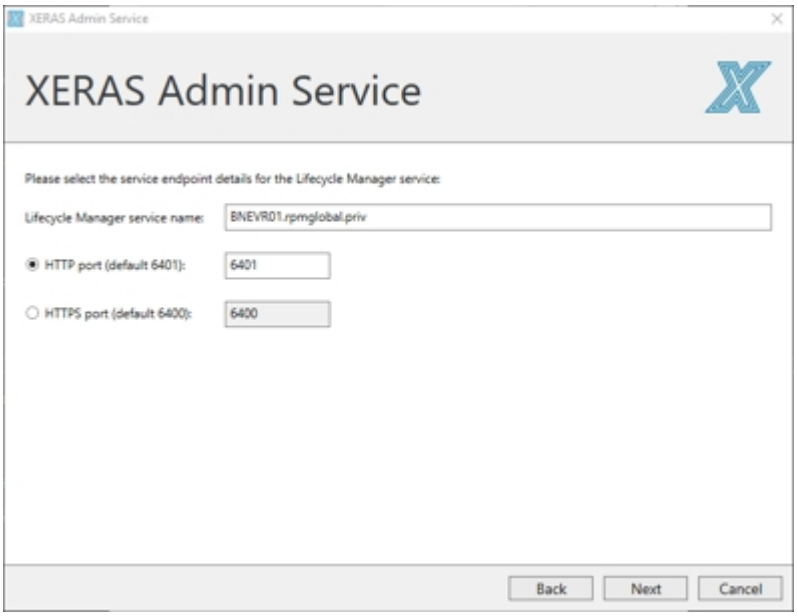
3. Select the account on which XERAS Administration Service will run.



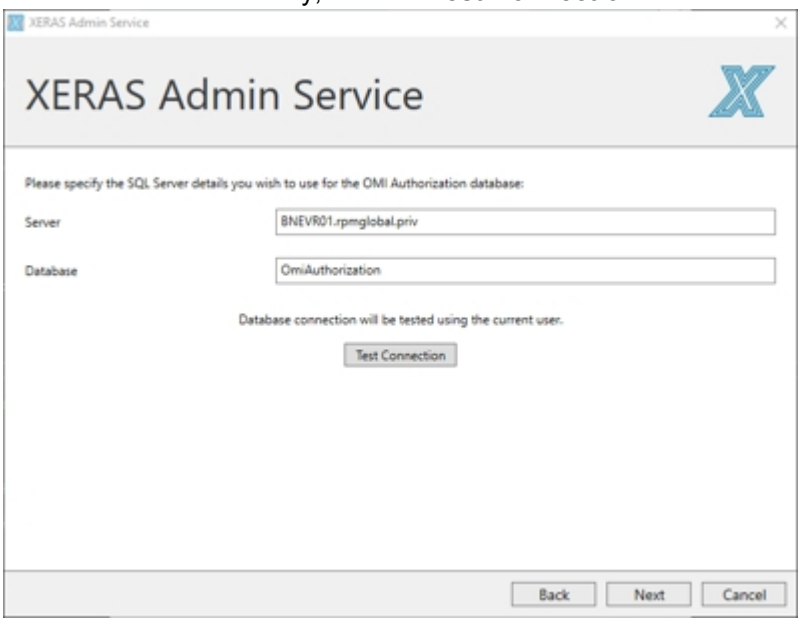
4. Select the server endpoint details for the XERAS Administration Service.



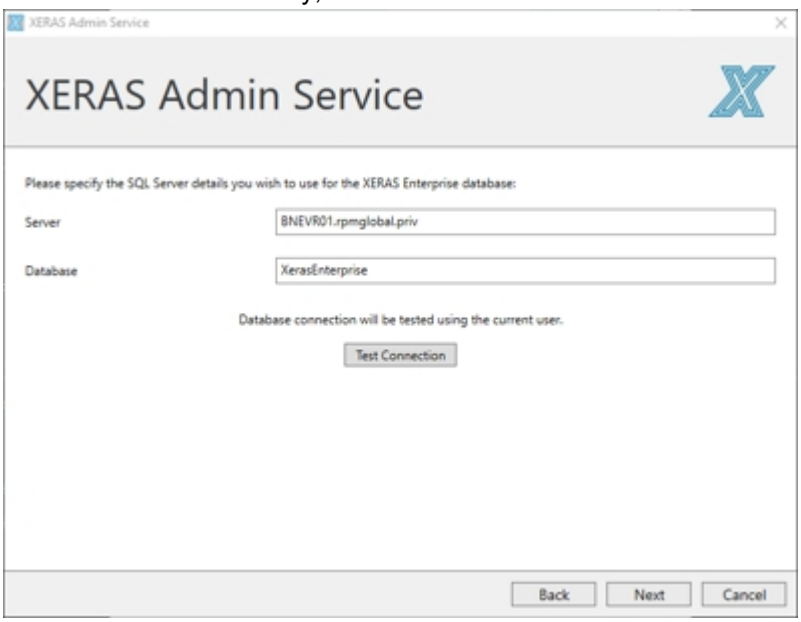
5. Select the servier endpoint details for EPF. See the EPF Administration Guide for the installation details.



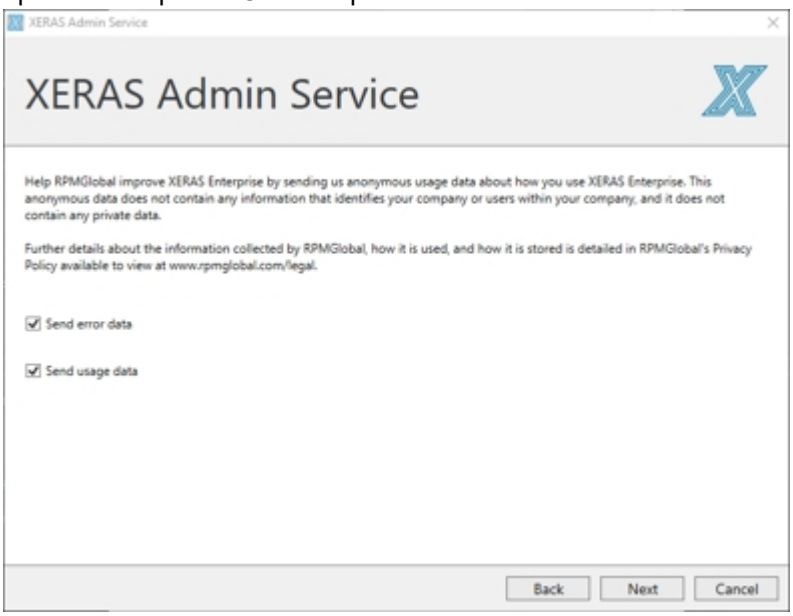
6. Specify the SQL Server details for the OMI Authorisation database. If you want to make sure that the connection works correctly, click the **Test Connection** button.



7. Specify the SQL Server details for the XERAS database. If you want to make sure that the connection works correctly, click the **Test Connection** button.



8. Choose the option for sending anonymous usage data. It is recommended that you select the options to help RPMGlobal improve the software.



9. Review the settings and click **Install** to start the installation.

Software licensing

XERAS Enterprise client software requires a license, XERAS Enterprise server software does not require a license. The first time you use the XERAS Enterprise client you will be required to specify a license using RPM Client License Manager. Please contact RPM Customer Support if you have not received your product license.

Enterprise Service installation and configuration

Prerequisites

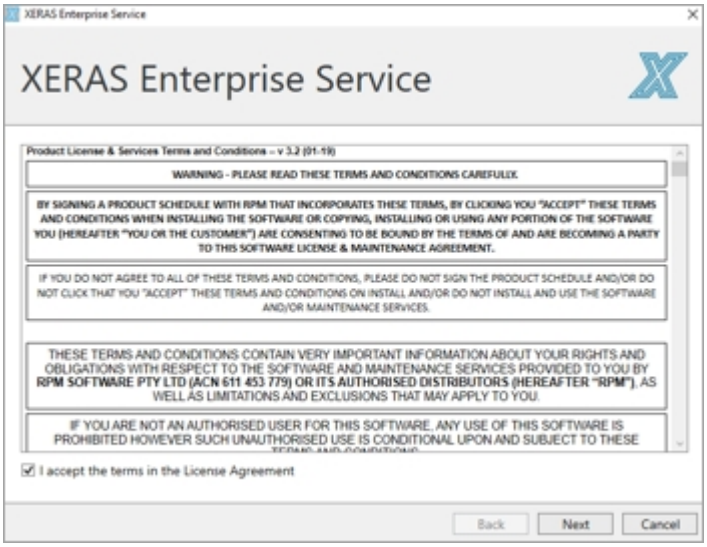
If the XERAS Enterprise Administration Service is to be installed on a different server from EPF, the EPF Process Manager needs to be installed. Details can be found in the EPF Administration Guide.

The XERAS Enterprise database also needs to have been created and configured prior to the installation, including necessary roles and permissions.

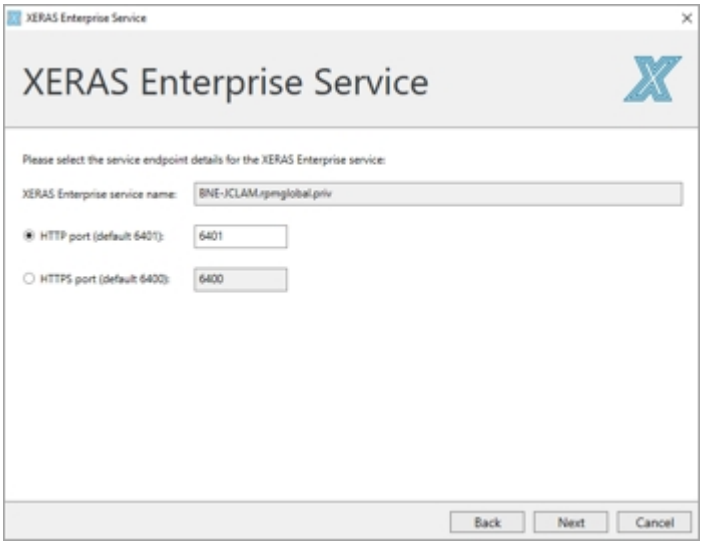
Installation steps

1. Run the Enterprise Service installer using the service account with system administration permissions.

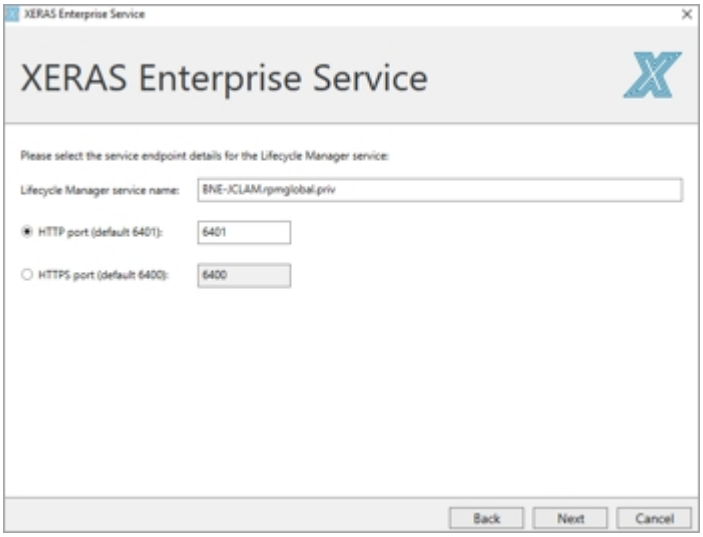
2. Read and accept the End User License Agreement to continue this installation.



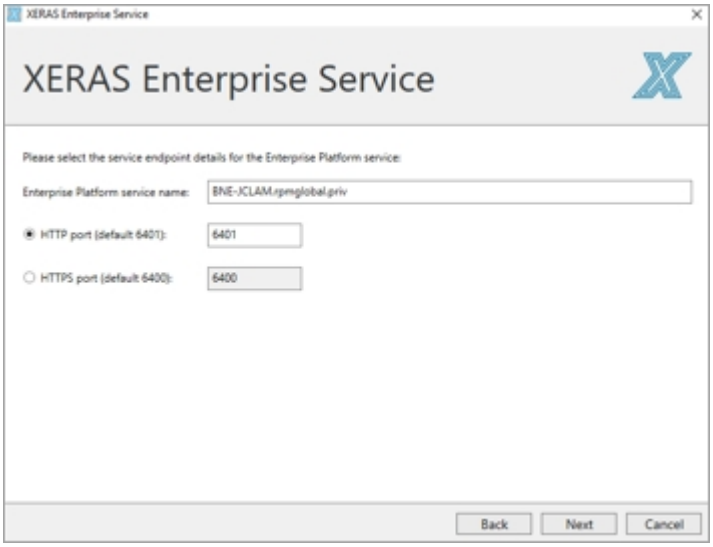
3. Select the server endpoint for the XERAS Enterprise Service.



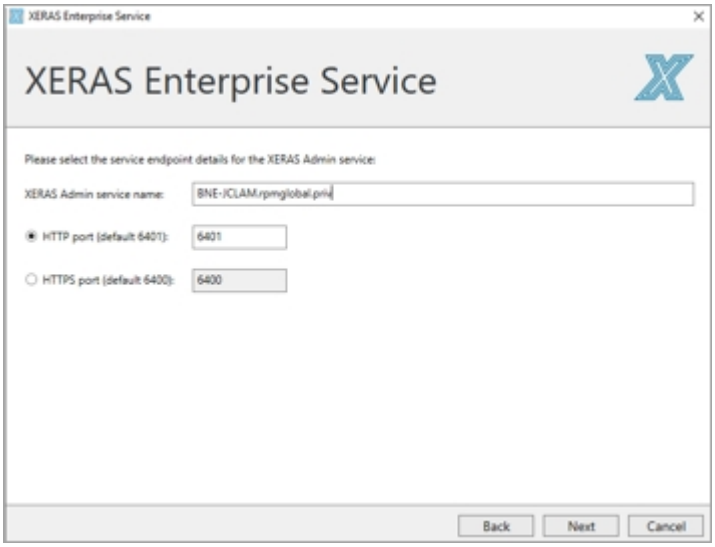
4. Select the server endpoint details for EPF. See the EPF Administration Guide for the installation EPF.



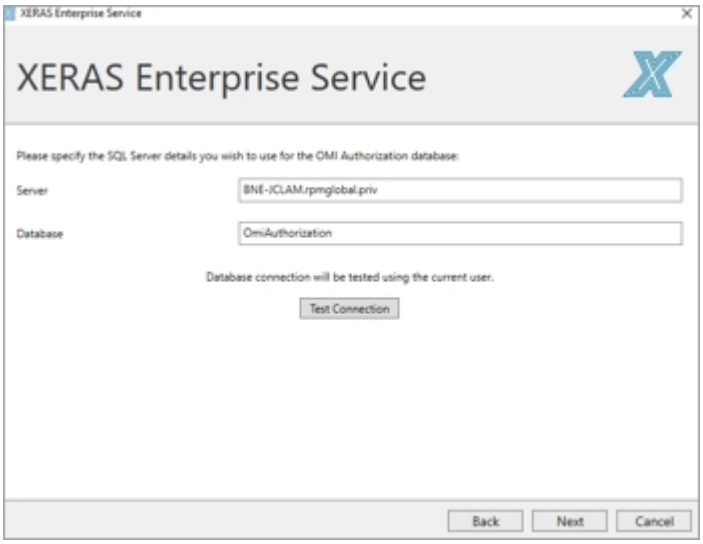
5. Select the server endpoint details for the Enterprise Platform Service.



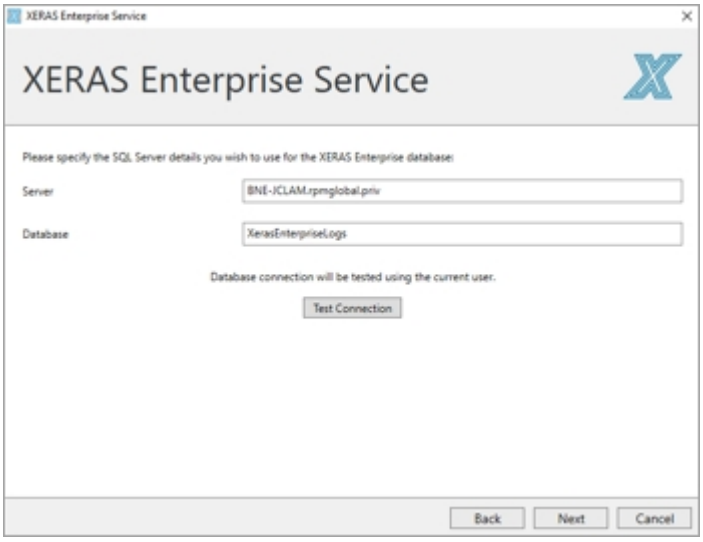
6. Select the server endpoint details for the XERAS Administratiion Service.



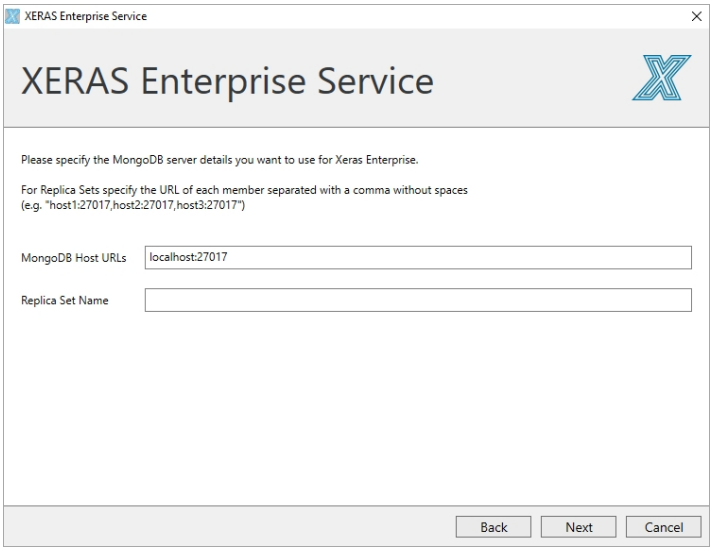
7. Specify the SQL Server details for the OMI Authorisation database (part of EPF). If you want to make sure that the connection works correctly, click **Test Connection**.



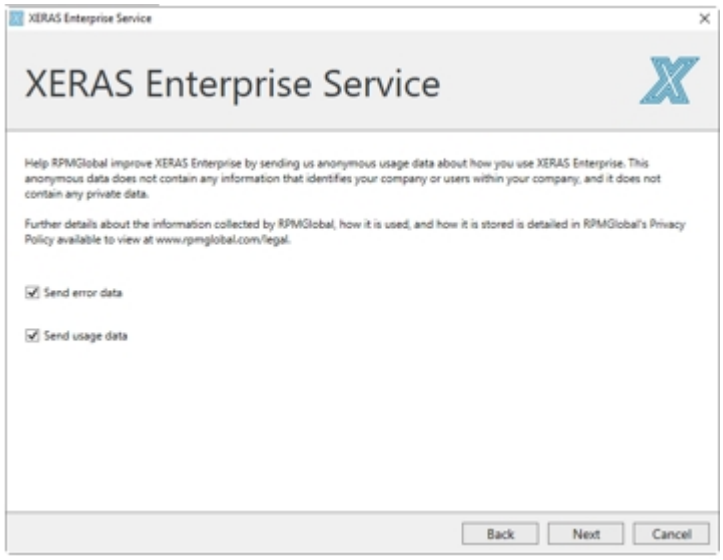
8. Specify the SQL Server details for the XERAS database. If you want to make sure that the connection works correctly, click **Test Connection**.



9. Specify the MongoDB Server details for the XERAS Enterprise Service.



10. Choose the options for sending anonymous usage data. It is recommended that you select the options to help RPMGlobal improve the software.



11. Click Install to start the installation.
12. Use IMS to make the change described in the **Troubleshooting** section for **Enterprise service intermittently does not start**.
13. Restart the XERAS Enterprise servers.

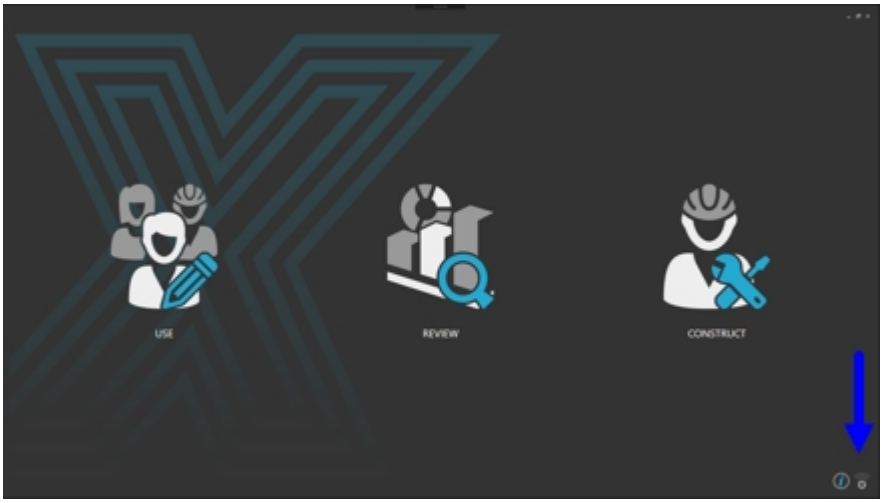
Installing XERAS Enterprise Client

Please run the XERAS Enterprise Client 3.9 x64 (3.9.xx.x).exe installation file and follow the instructions in the installation wizard.

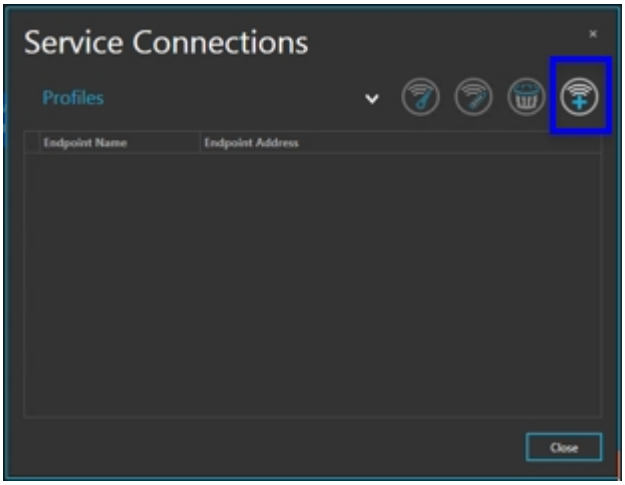
Configure XERAS Enterprise Client service connections

Service connections need to be configured for XERAS Enterprise to locate the services and open the model. Follow these steps to configure the connections:

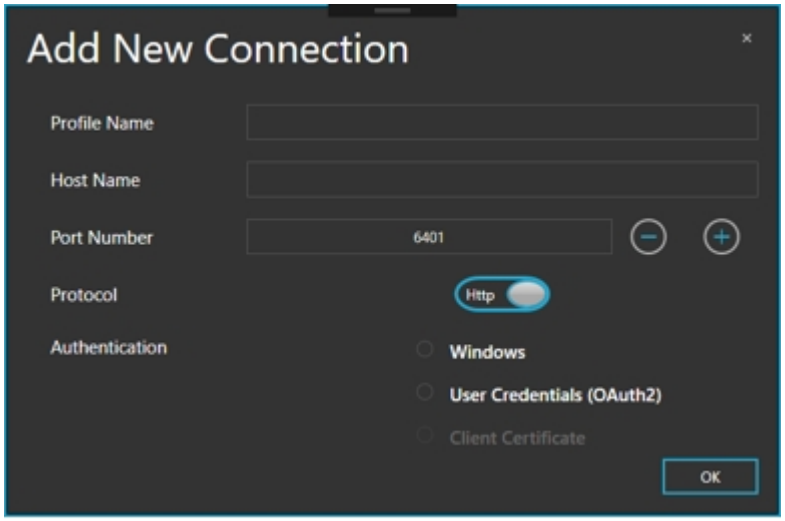
1. Open XERAS Enterprise.
2. Click the button at the bottom right corner of the main screen to open the Service Connections window.



3. Click the **New Connection** button at the top right corner of the Service Connections window to add a new connection.

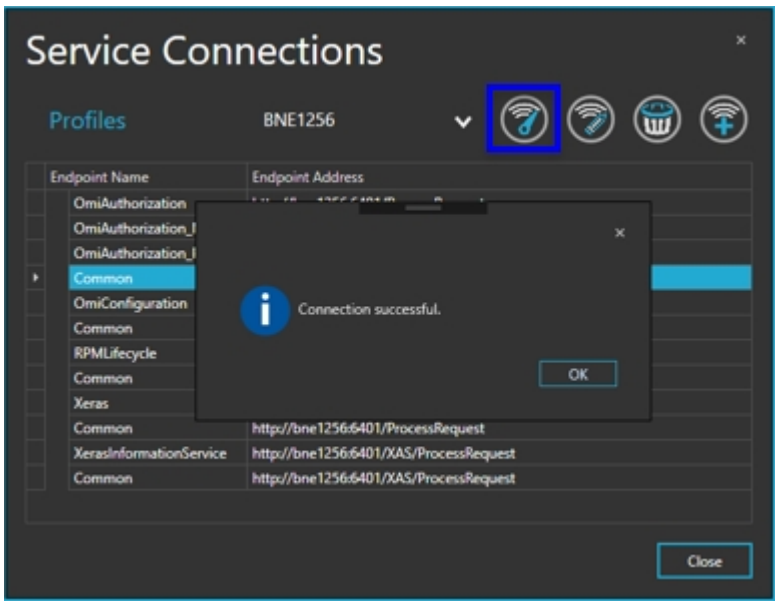


4. Add a new connection.



   - Enter a **Profile Name** to identify the set of connection settings.
   - Enter in the **Host Name** field the URL of the server on which EPF has been installed.
   - Enter the **Port Number**, **Protocol** and the **Authentication** method.

5. After the new connection has been set up successfully, the profile name should display in the Profiles drop-down list. You can select the profile and any end point, and click the **Test Connection** button to test that the connections to the end points are working correctly.



Technical administration of XERAS Enterprise

For non-SaaS implementations of XERAS Enterprise, technical administration, including SQL Server Database Administration, is the responsibility of customer personnel.

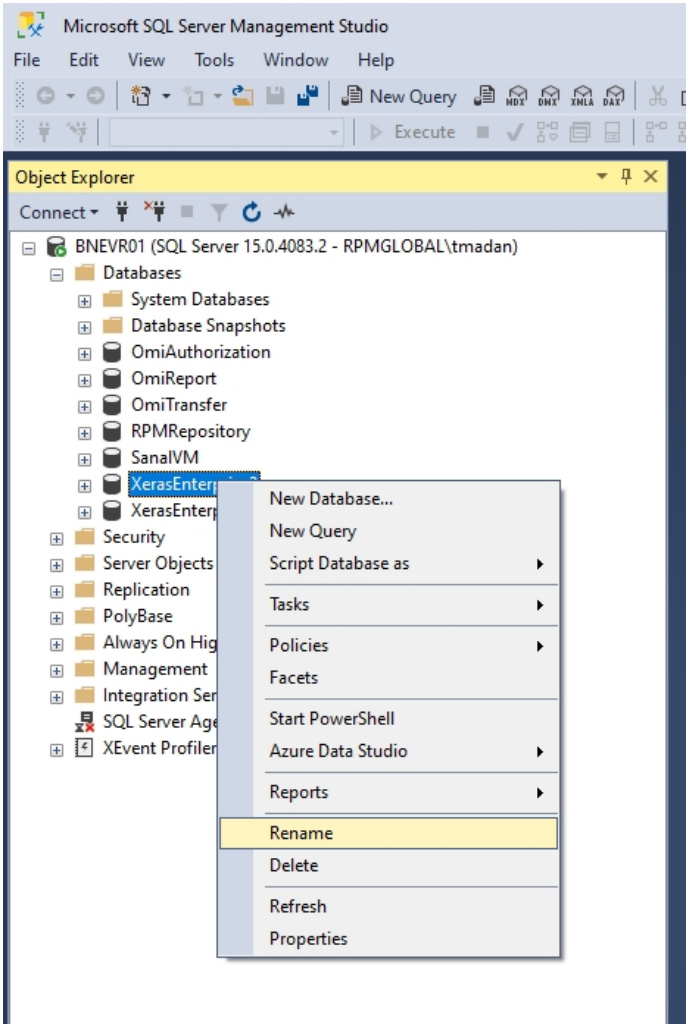
The Administration mode within the XERAS Enterprise client provides the ability to undertake tasks that may from time to time be required for the efficient ongoing operation of XERAS Enterprise, including the cancellation of User View checkouts.

Please also refer to the Administration Mode section of the XERAS Enterprise Help.

Changing the Database name

The steps below are required to update the XERAS Enterprise database name after installation. In this example, the database name is changing from XERAS Enterprise to XERAS.

1. Change the database name in SQL Server.
    a. Open SQL Server Management Studio. Right-click on the database name and select **Rename**.

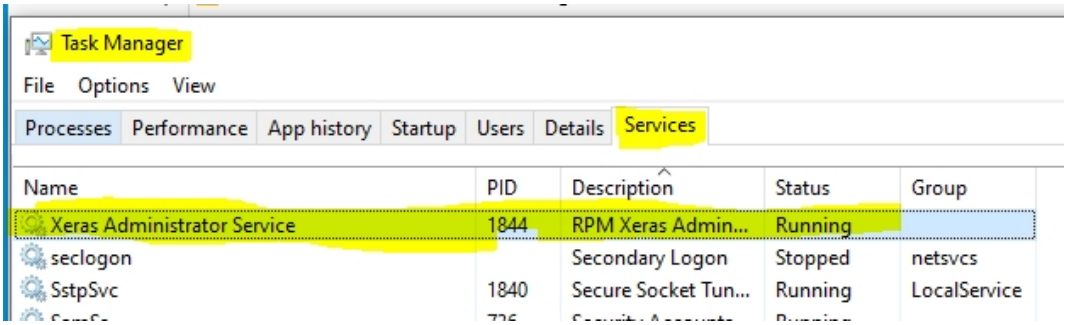


    b. Restart SQL Server after updating the database server.

2. Modify the XERAS Enterprise configuration file.
    a. Using **File Explorer**, open C:\Program Files\RPMGlobal\XERAS Enterprise Service\XERAS Enterprise Service.exe.config.
    b. Change the initial catalog value from **XerasEnterprise** to **XERAS**.

```
<add name="XerasEnterpriseEntities" providerName="System.Data.SqlClient"
connectionString="data source=BNE1256.rpmglobal.priv;initial
catalog=XERAS;integrated security=True;MultipleActiveResultSets=True"/>
```

    c. **Save** and **Close** the configuration file.
3. Modify the XERAS Administrator Service configuration.
    a. In **Task Manager**, click the **Services** tab and **stop** the XERAS Administrator Service.



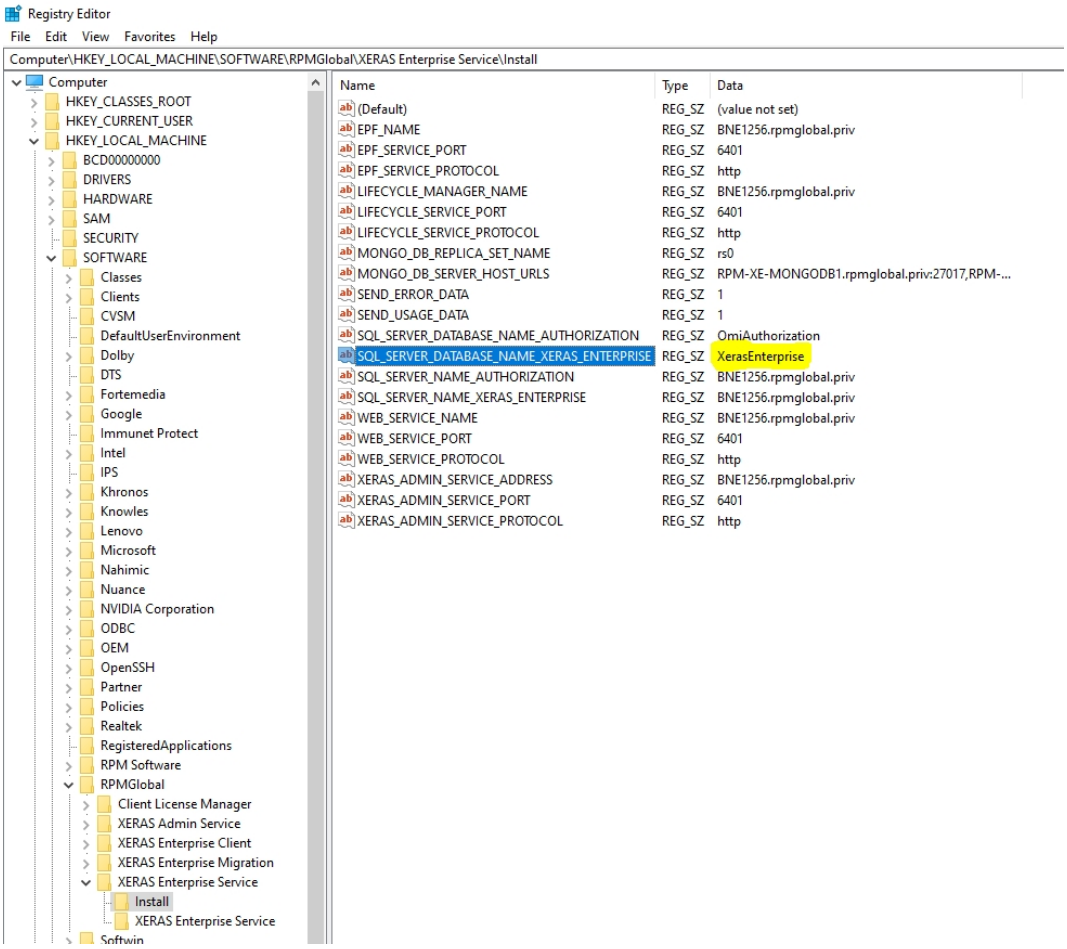
    b. Open C:\Program Files\RPMGlobal\XERAS Admin Service\XERAS Admin Service.exe.config.
    c. Change the initial catalog value from **XerasEnterprise** to **XERAS**.

```
<add name="XerasEnterpriseEntities" providerName="System.Data.SqlClient"
connectionString="data source=BNE1256.rpmglobal.priv;initial
catalog=XERAS;integrated security=True;MultipleActiveResultSets=True"/>
```

    d. **Save** and **Close** the configuration file.
    e. Restart the XERAS Administrator Service.
4. Update the installer settings.

a. Open the Registry by running **Regedit**.

b. Navigate to HKEY_LOCAL_MACHINE\SOFTWARE\RPMGlobal\XERAS Enterprise Service\Install.



c. Change the value of SQL_SERVER_DATABASE_NAME_XERAS_ENTERPRISE from **XerasEnterprise** to **XERAS**.

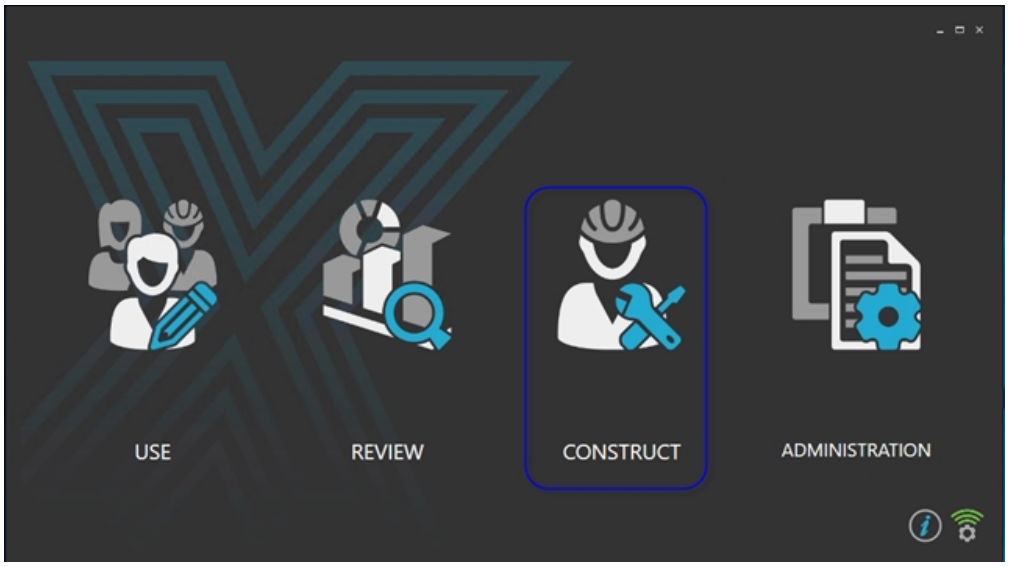
d. **Save** and **Close** the registry.

Installation verification

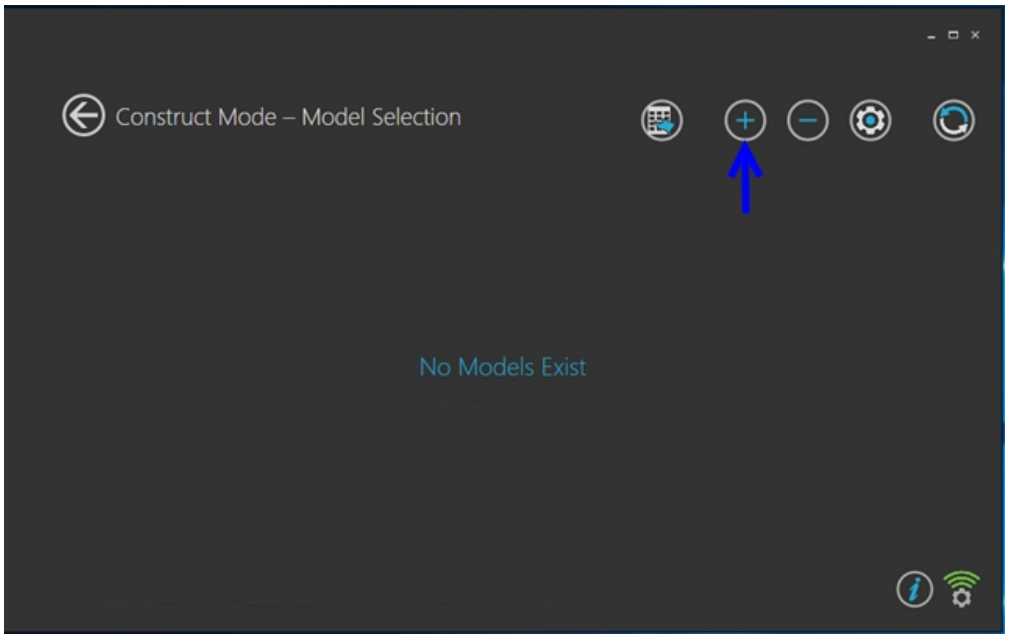
Installation verification requires the XERAS Enterprise Client to be installed and licensed.

It is a requirement to create and check the connection between the server and the client as described in Configure XERAS Enterprise Client service connections.

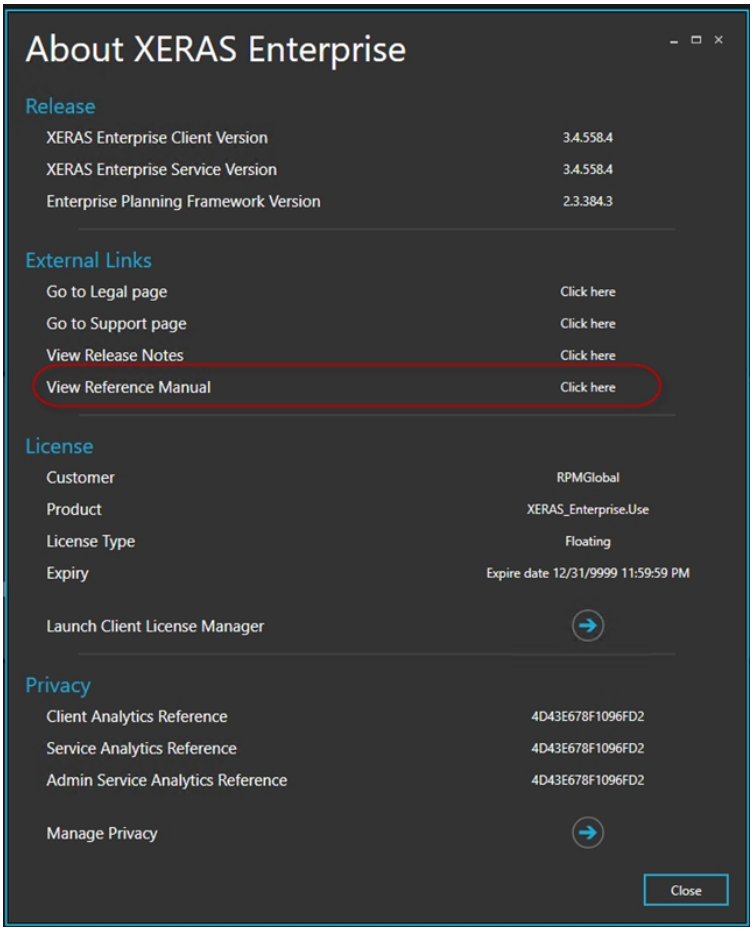
1. Open **Construct mode**.



2. Create a test model.



3. Open the model and create a template, a structure and a spreadsheet. View the reference manual for details on how to create and add values.



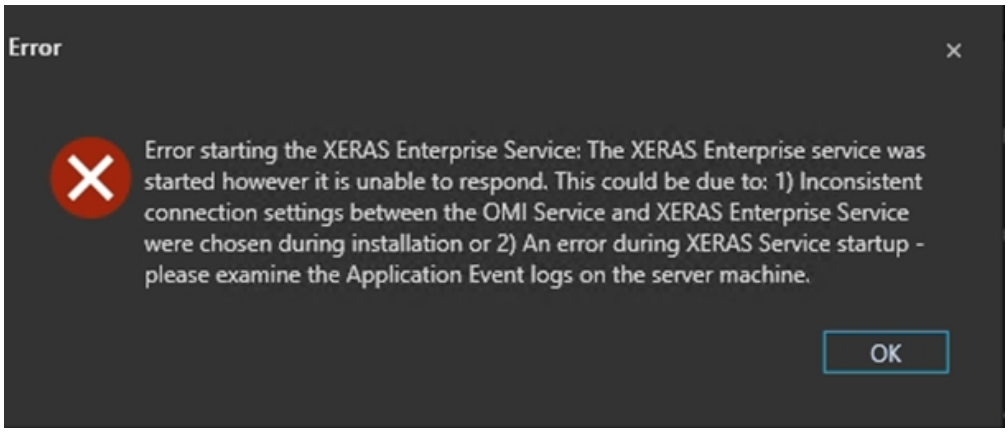
4. **Save** the model, calculate and save values, then close and reopen the model.
5. Check the previously created components and data are intact.
6. Close and Delete the model to bring the setup back to its original state.

Troubleshooting

The following sections describe common problems detected when verifying a XERAS Enterprise installation or troubleshooting a problem with a previously healthy XERAS Enterprise installation.

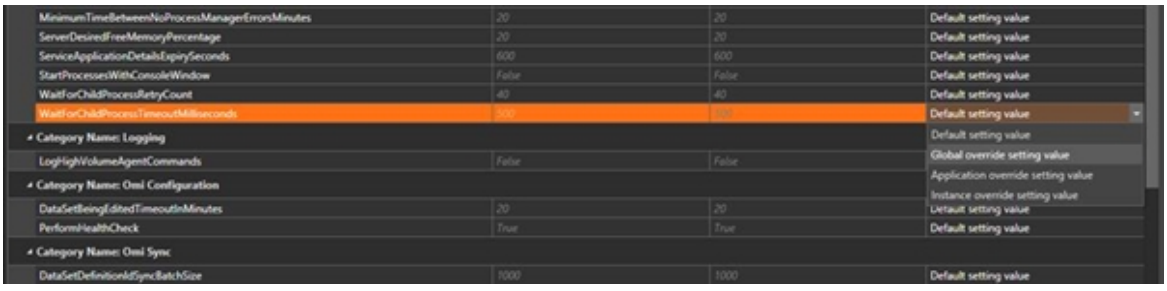
Enterprise service intermittently does not start

The screenshot below is a very generic error message reported to the user when the service fails to start.



If this error message is seen intermittently, it is recommended to change the following settings using Integration Management Studio version 2.4.1 and above.

1. Open **Integration Management Studio**.
2. Navigate to the **Application Monitor** tab.
3. Under OMI, select ApplicationEvent Raiser.
4. Switch to the **Configuration** tab, which is under **Service Settings** on the right side.
5. Scroll down to the **Lifecycle** category.
6. Modify **Setting Value Level** to **Global override setting Value** for *WaitForChildProcessTimeoutMilliseconds* and *WaitForChildProcessRetryCount*.

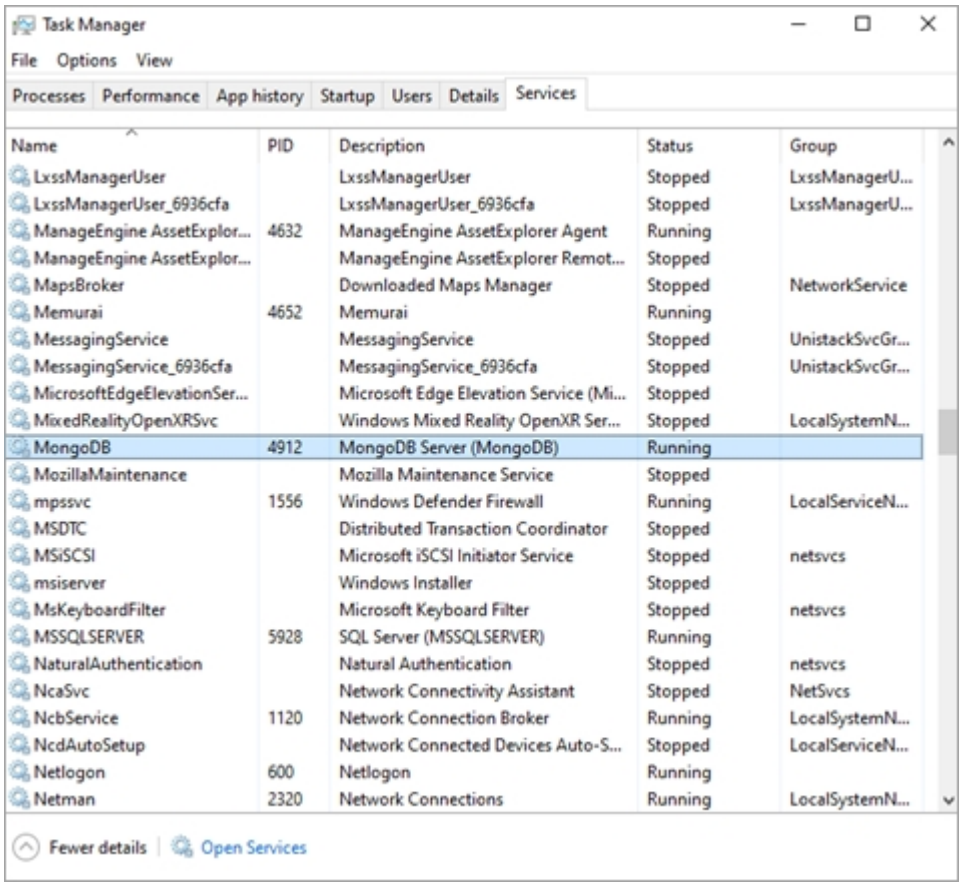


7. Change **Configured** value for *WaitForChildProcessTimeoutMilliseconds* to **750**.
8. Change **Configured** value for *WaitForChildProcessRetryCount* to **80**.
9. **Save** the changes.
10. Restart RPMOmiService and RPMSyncService.

MongoDB not started

MongoDB is installed as a Windows Service and should be set to start automatically. Task Manager can be used to quickly verify that MongoDB is started.

If MongoDB is not started, it may be started manually using Windows Services.



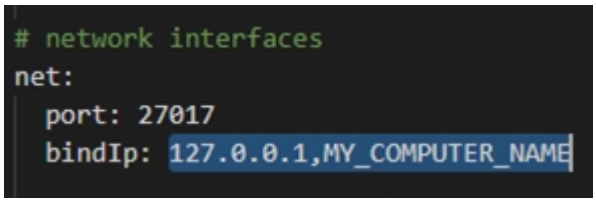
Cannot connect to MongoDB

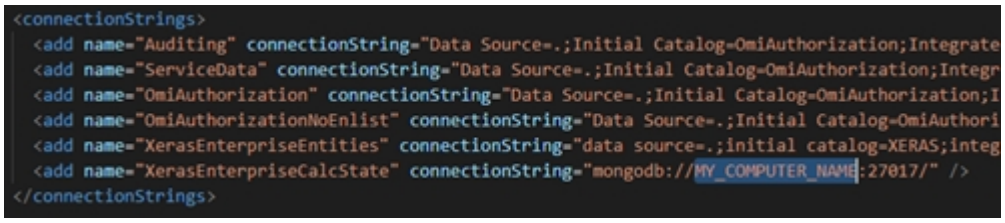
Confirm the port number in the connection string in XERAS Enterprise Service's configuration file (XERAS Enterprise Service.exe.config) matches the port number specified in MongoDB's configuration file (**`mongod.cfg`**):

```
# network interfaces
net:
  port: 27017
  bindIp: 127.0.0.1,MY_COMPUTER_NAME
```

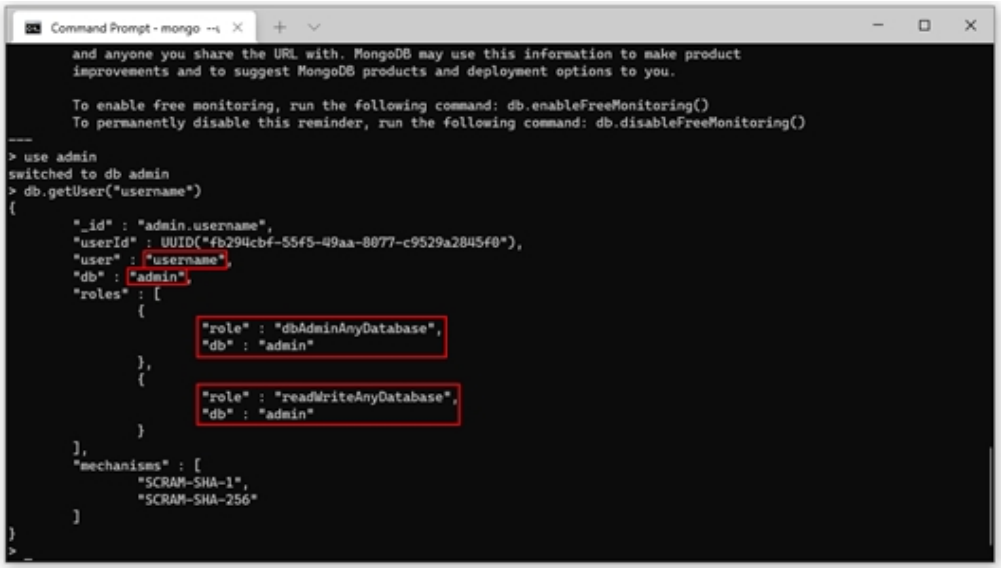
```
<connectionStrings>
  <add name="Auditing" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrated
  <add name="ServiceData" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrat
  <add name="OmiAuthorization" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Inte
  <add name="OmiAuthorizationNoEnlist" connectionString="Data Source=.;Initial Catalog=OmiAuthorizat
  <add name="XerasEnterpriseEntities" connectionString="data source=.;initial catalog=XERAS;integrat
  <add name="XerasEnterpriseCalcState" connectionString="mongodb://MY_COMPUTER_NAME:27017/" />
</connectionStrings>
```

Confirm the IP address or host name used to connect to MongoDB in the connection string in XERAS Enterprise Service's configuration file has been specified in the **`bindIp`** section in the MongoDB's configuration file:

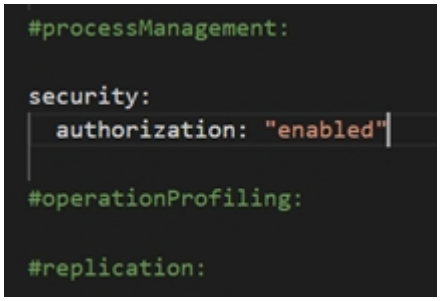




Confirm a MongoDB user has been created in the **`admin`** database with the roles **`dbAdminAnyDatabase`**, **`readWriteAnyDatabase`**:



Confirm authorisation has been enabled in MongoDB's configuration file (**`mongod.cfg`**):



If authorisation is not enabled, add the setting as shown in the screenshot above to the configuration file, save the file, and restart MongoDB.

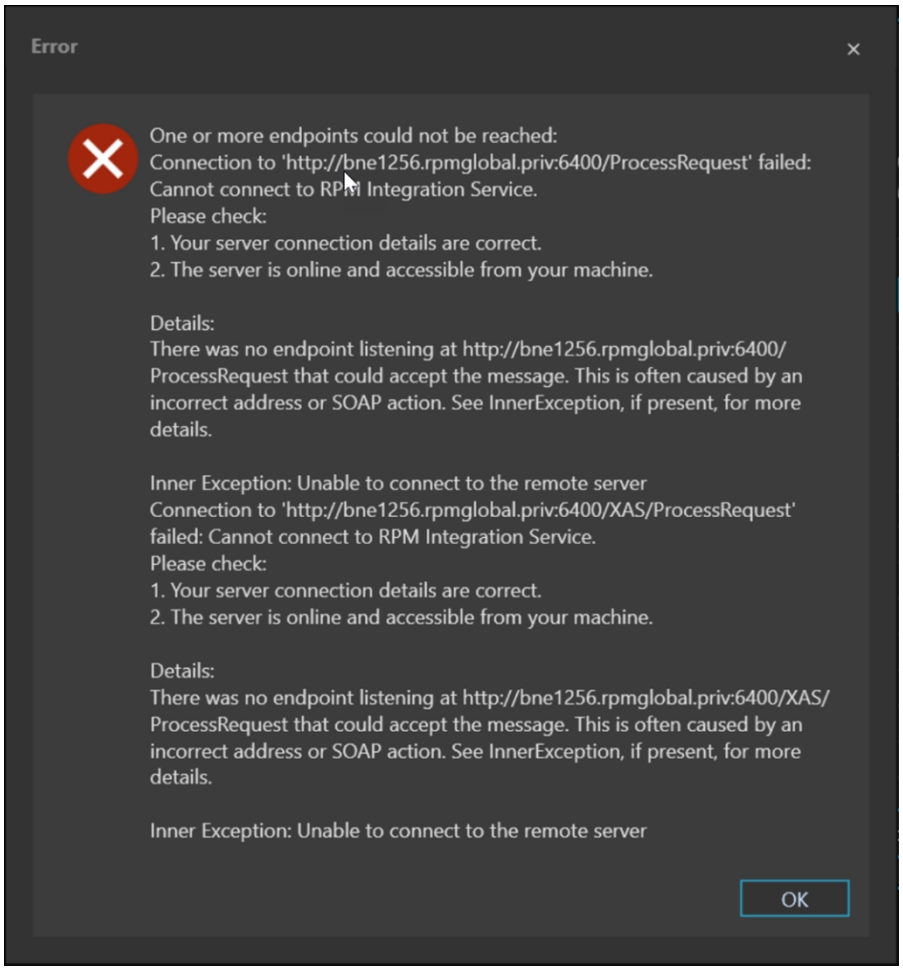
Confirm the username and password have been specified in the connection string in the XERAS Enterprise Service configuration file:

```
<connectionStrings>
  <add name="Auditing" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrated Security=True;MultipleActive
  <add name="ServiceData" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrated Security=True;MultipleAc
  <add name="OmiAuthorization" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrated Security=True;Multi
  <add name="OmiAuthorizationNoEnlist" connectionString="Data Source=.;Initial Catalog=OmiAuthorization;Integrated Security=Tr
  <add name="XerasEnterpriseEntities" connectionString="data source=.;initial catalog=XERAS;integrated security=True;MultipleA
  <add name="XerasEnterpriseCalcState" connectionString="mongodb://username:password@mongodb0.example.net:27017/" />
</connectionStrings>
```

Confirm if the appropriate Network configuration is done in accordance with what is mentioned in the MongoDB Network configuration (Azure/Local VM) section.

XERAS Enterprise Client unable to access the Server

The screenshot below is an example of a connection error between the XERAS Enterprise client and EPF service.



The client accesses the server via TCP port 6400 (HTTPS) or 6401 (HTTP).

If there is a firewall between the client and the server, the firewall will need to be configured appropriately for the protocol being used.

Managing logging

The XERAS Administration Service provides multiple levels of logging equivalent to EPF. The default is Error.

The XERAS Enterprise Service currently only logs Errors.

Maximum number of XERAS Enterprise sessions reached

EPF contains a default setting that limits the number of service instances per server. Once this limit is reached, XERAS Enterprise will not be able to start a new session when checking out a user view or opening a model in Construct mode.

Here is how to configure the session limit in EPF:

1. Open EPF Integration Management Studio (IMS).
2. Click **Application Manager**.
3. Click the **OMI** application.
4. On the right of the screen, click the **Configuration** tab.
5. Scroll down to find the **MaximumNumberOfServiceInstancesPerServer** row.
6. Change the **Setting Value Level** column, to **Global Override Setting Value**.
7. In the **Configured** column, change the number of service instances from 25 to the number you want, for example, 50.
8. Click **Save**.
9. Click **Commit**.

You may need to restart the EPF server after making these changes.