qualiware®
Enabling positive change

Server Installation

1 Contents

1 Introduction

Three components of QualiWare requires installers to be run directly on the server. These components are:

- QualiWare Execution Framework (QEF)
- QualiWare Lifecycle Manager (QLM)
- QualiWare SharePoint WebService (optionally)

Each of those components are installed by executing their corresponding installer packages directly on the server. All three packages requires administrative rights.

Each component requires further configuration after installation. However since this configuration often contains references to the other components, it is recommended to run all installers before starting any configuration. That way all files and folders are ready for referencing between components.
This has the added benefit that all administrative server tasks is done in one process. When completed, administrative server rights are no longer needed, and all configuration can be done from workstations, mostly through web interfaces.

The three components should be installed in the above order.

2 Installing QEF

2.1 Preface

This document describes the installation of the **QualiWare Execution Framework** (hereinafter QEF) instance onto the server.

The document assumes the reader has installed all prerequisites described in “Prerequisites” and configured database as described in “Database Guide”.

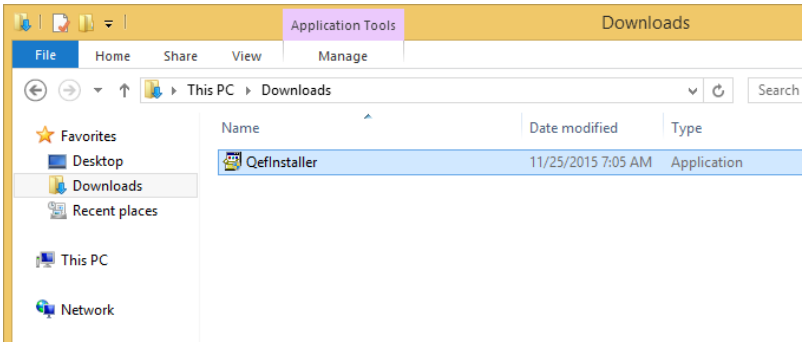
2.2 Pre-Installation Checklist

1. The current user doing installation has the Administrator rights on the local machine.
2. There is a dedicated AD account created for running QEF service (further will be referred as QEFServiceAccount).

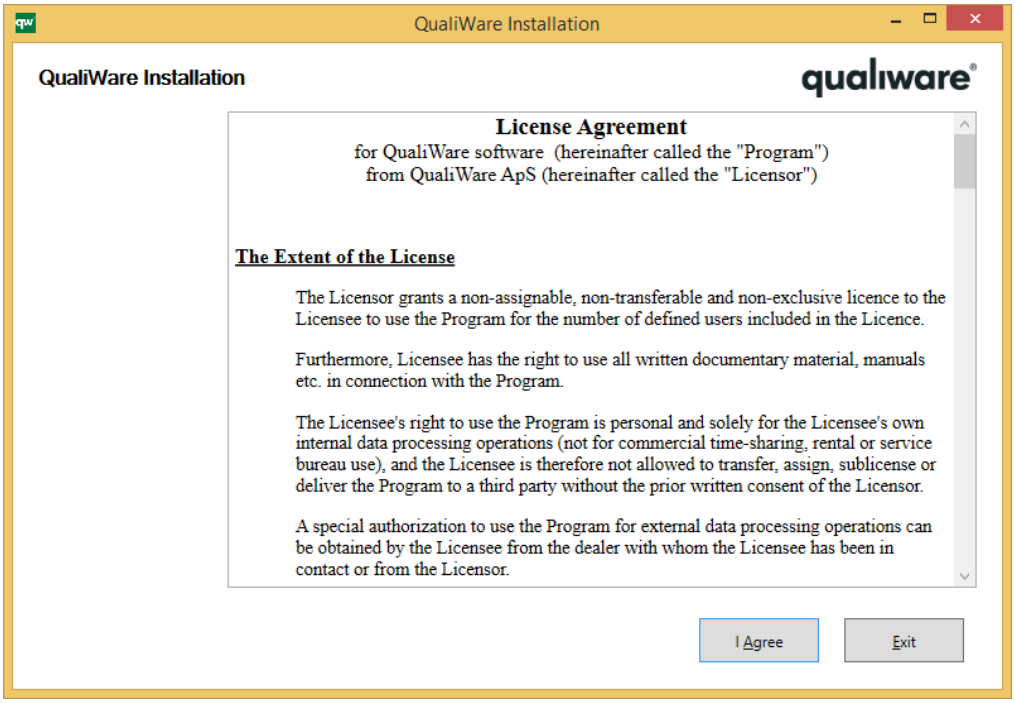
2.3 Installing QEF

2.3.1 Starting Installer

1. Run **QefInstaller.exe**.

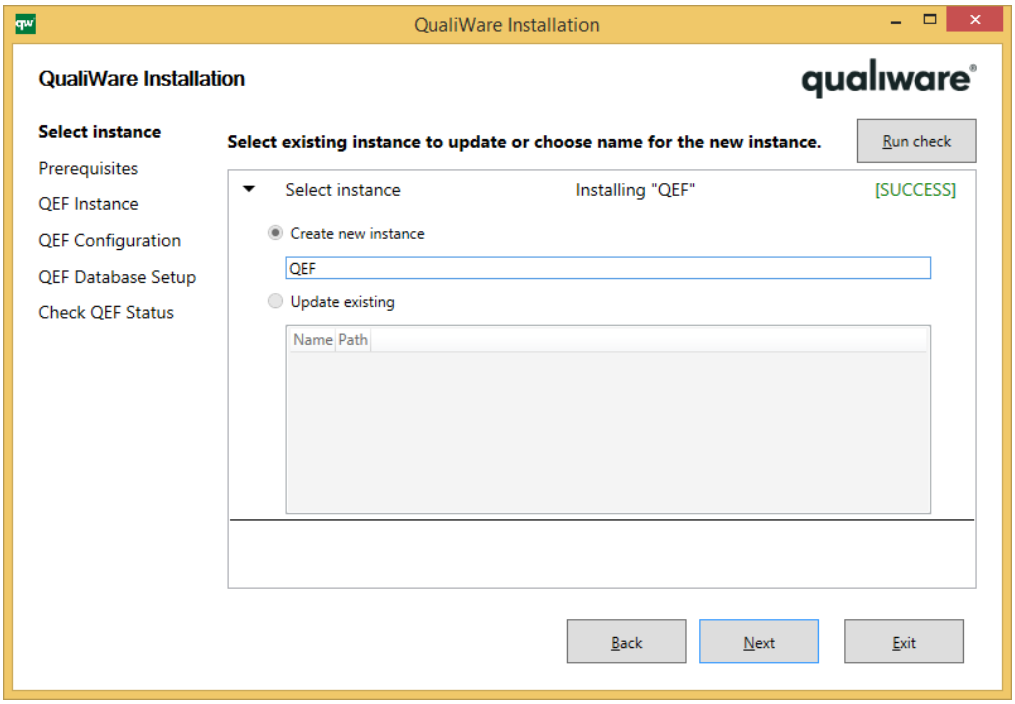


2. Read the license agreement and press **I Agree** button.



2.3.2 Instance Name

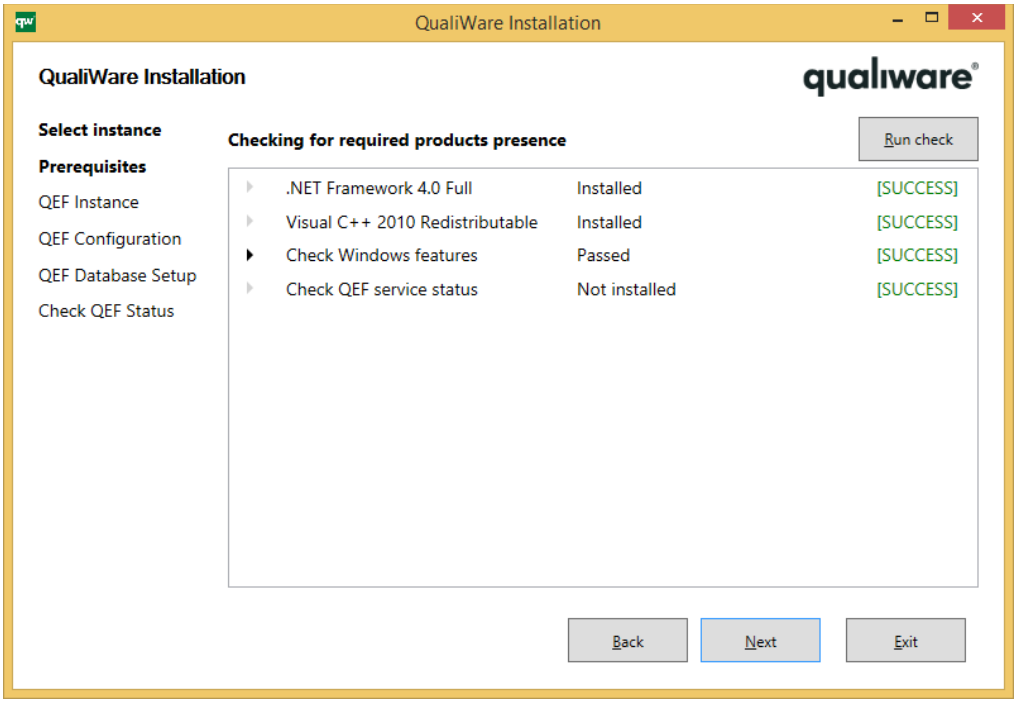
1. Check suggested instance name and edit it if necessary.



2. Press **Next**.

2.3.3 Checking Prerequisites

Ensure all prerequisite steps are in **Success** state.

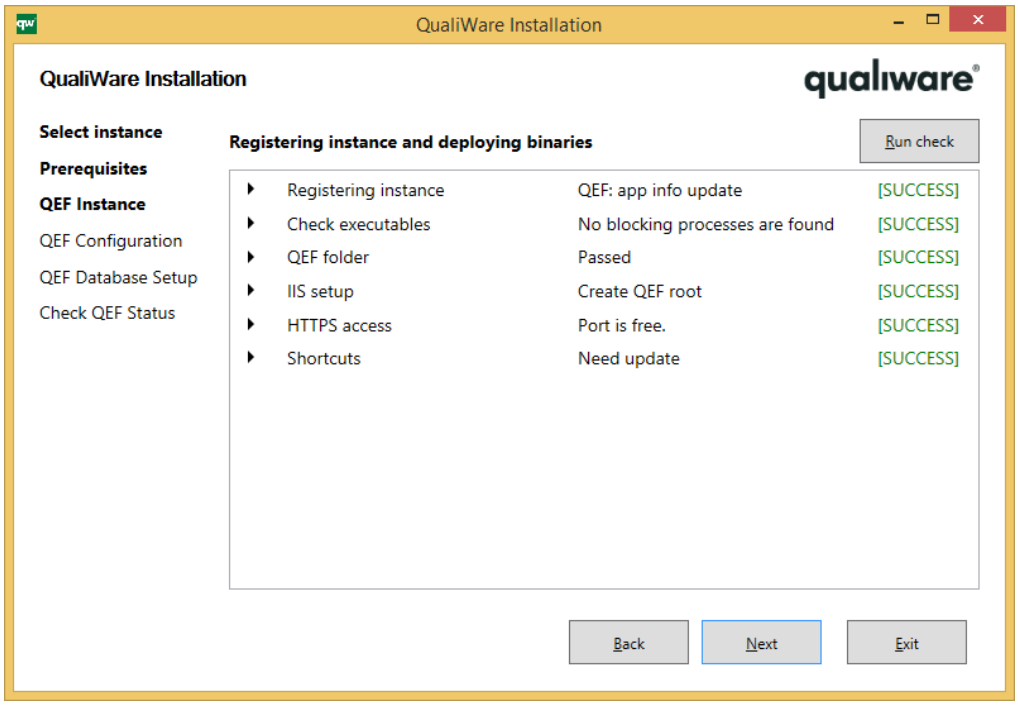


If **.NET Framework**, **Visual C++** or some **Windows Features** are not installed, follow the instructions from **Server installation - Prerequisites.** After required components are installed, press **Run check** button or restart installer.

Press **Next** button.

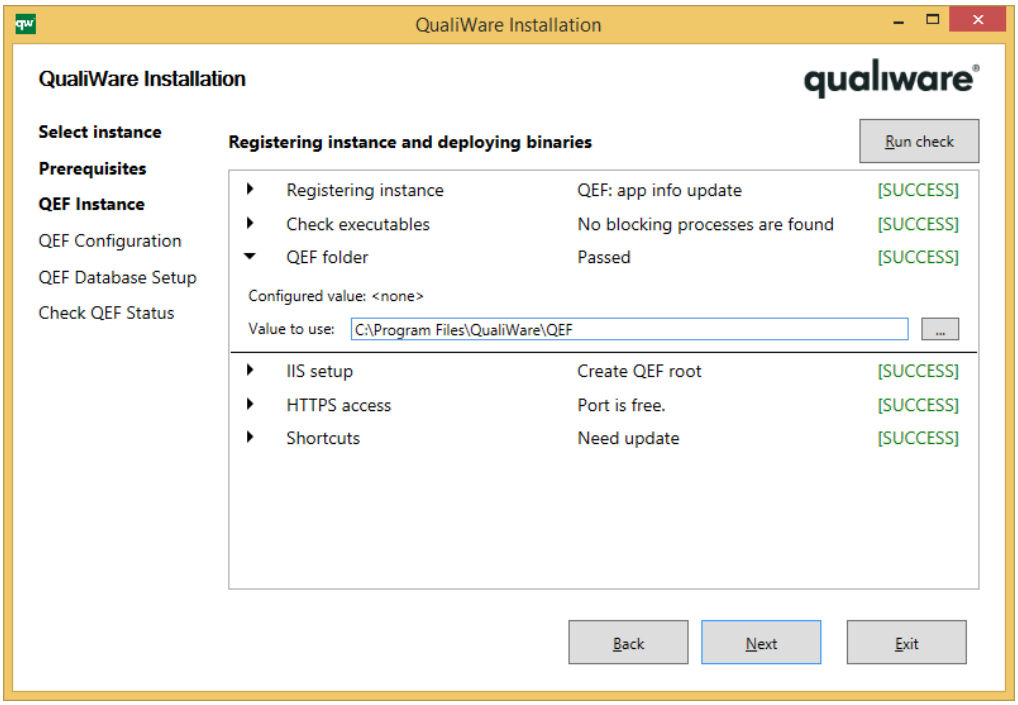
2.3.4 Registering Instance and Deploying Binaries

Check all steps are in **Success** state.

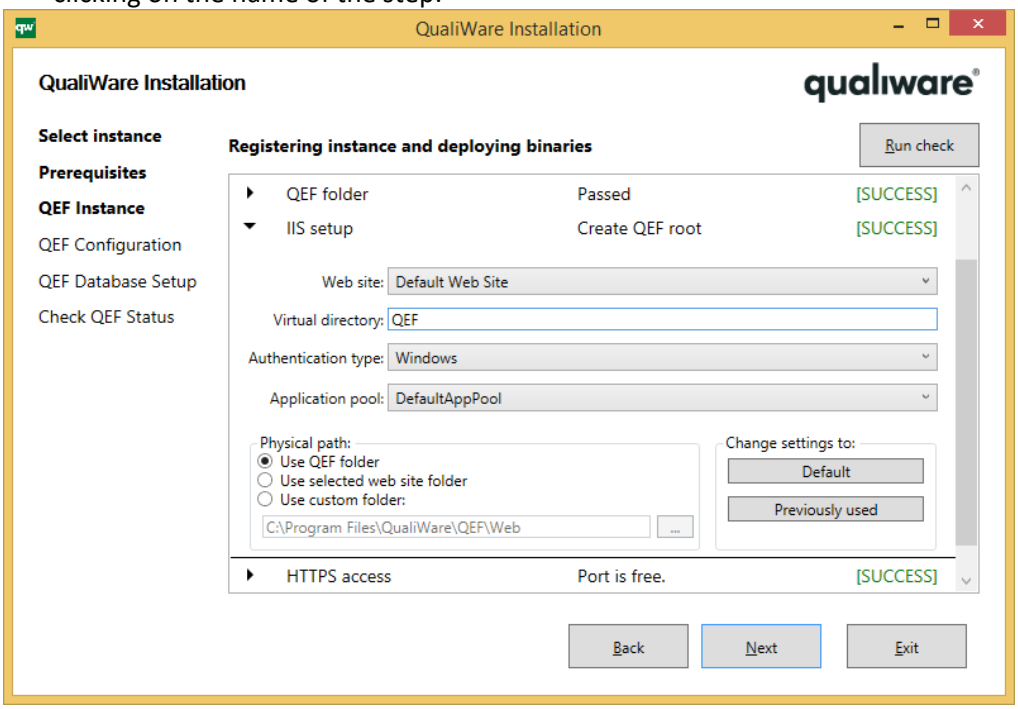


Some of the steps contain settings, which can be changed by user:

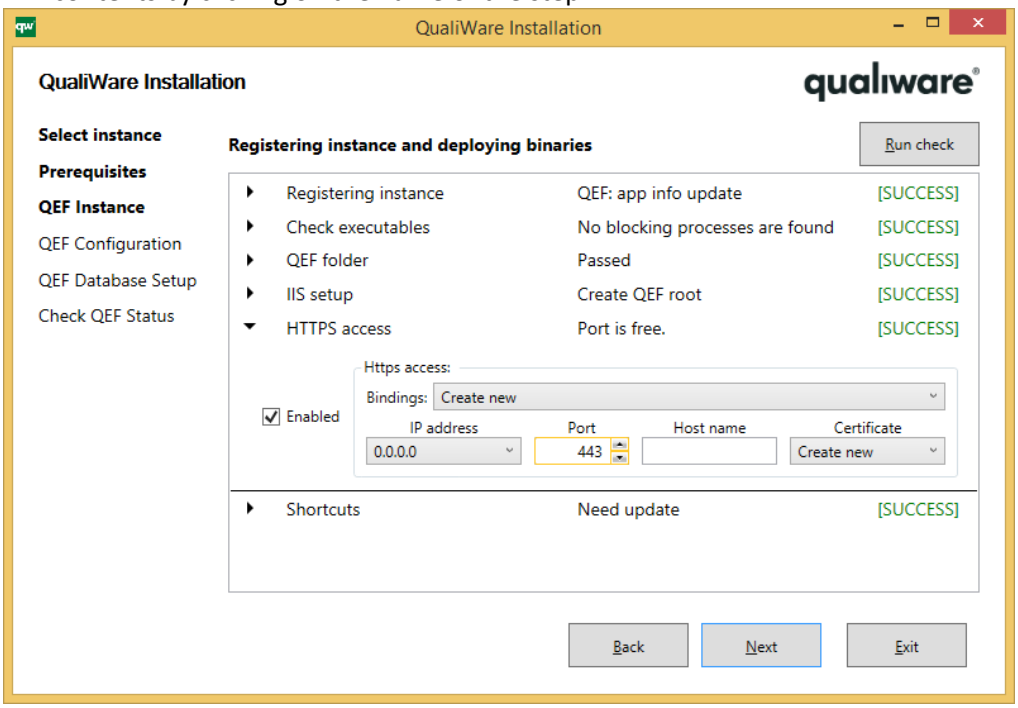
1. Path to QEF folder. Default value: **C:\Program Files\QualiWare\<Instance name>**. To change it, open the step contents by clicking on the name of the step:



2. IIS setup. Default value: all web content is stored inside QEF folder, name of virtual directory equals to instance name. To change settings, open the step contents by clicking on the name of the step:



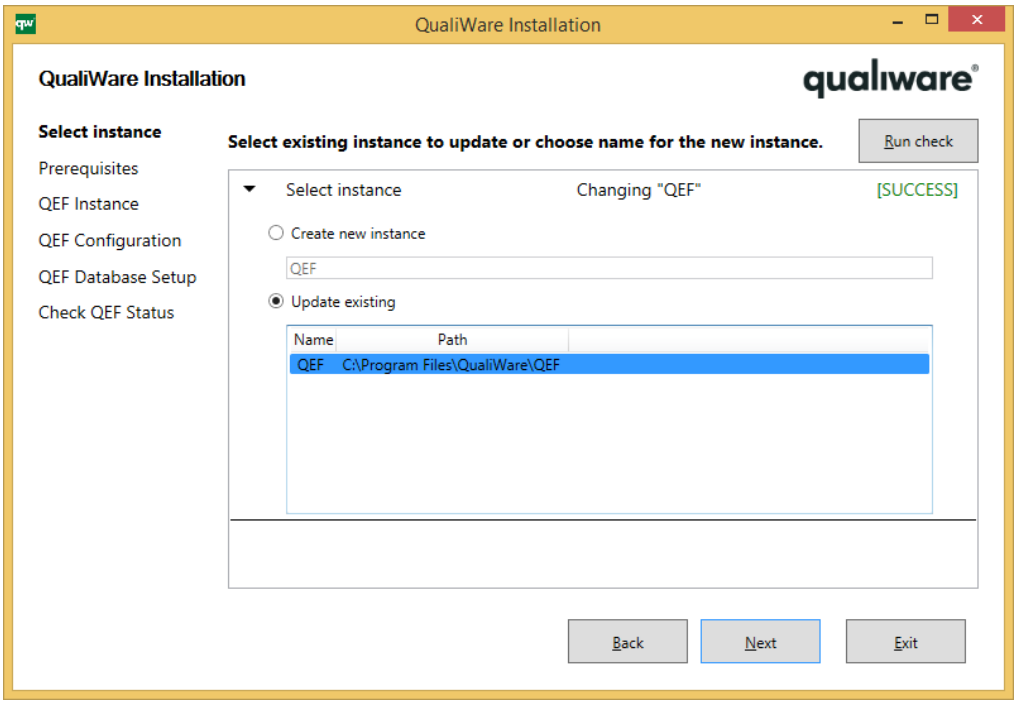
3. HTTPS access. Default value: enabled, port 443. To change settings, open the step contents by clicking on the name of the step:



4. Shortcuts. By default, shortcuts are created for all users on desktop and in start menu. To change settings, open the step contents by clicking on the name of the step.

After all settings are checked, click **Next** button.

Please note, after this stage is finished, the QEF instance is registered in Windows Registry and considered existing. In case installer is restarted by any reason, to continue configuring this instance, user must select **Update existing** option and proper item from the list of instances on the **Instance name** stage:



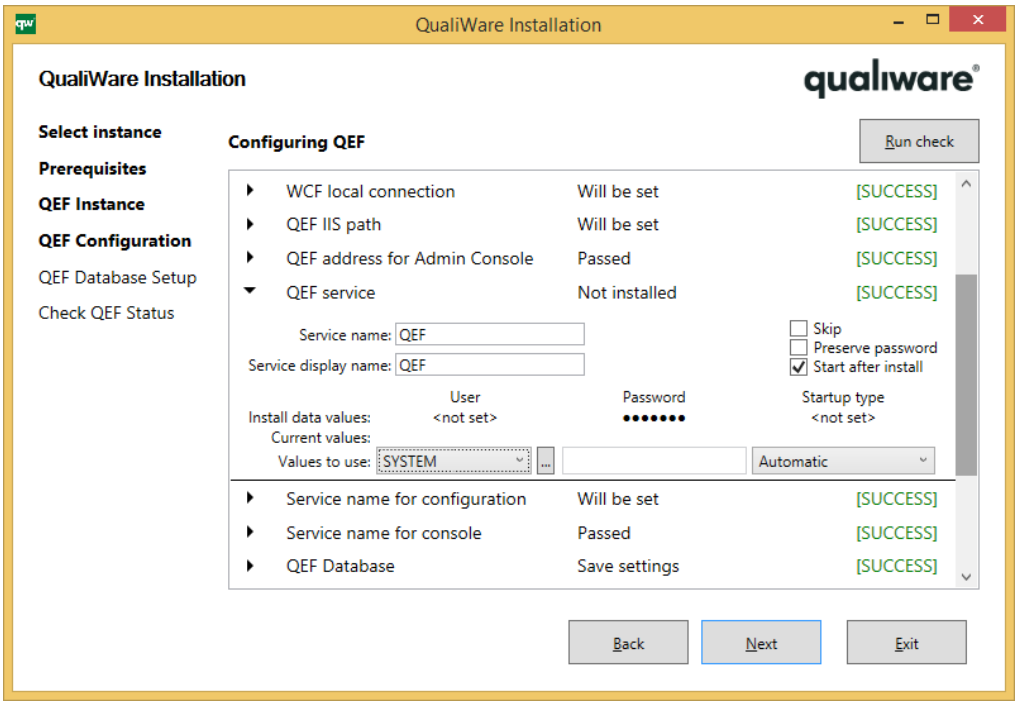
2.3.5 Configuring QEF

Most of the steps in this stage use auto-generated values based on previously selected settings or available system resources. But some of the steps require special attention:

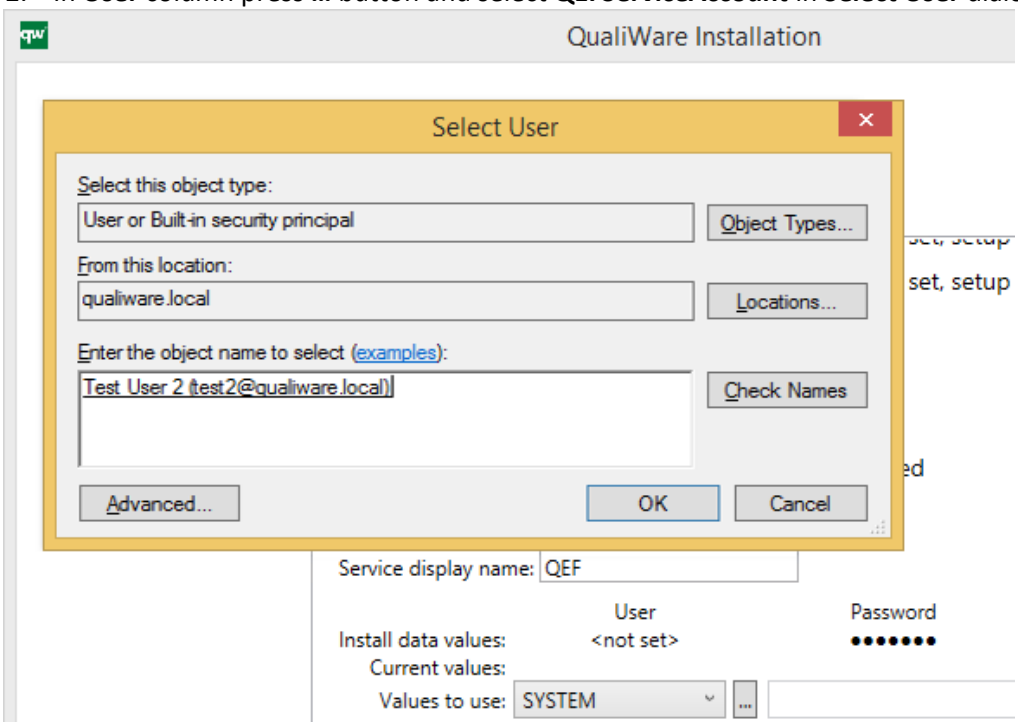
2.3.5.1 QEF Service

By default, QEF service executes under **SYSTEM** account, which is appropriate for test installations only. In production environment dedicated Active Directory account must be used for running QEF service.

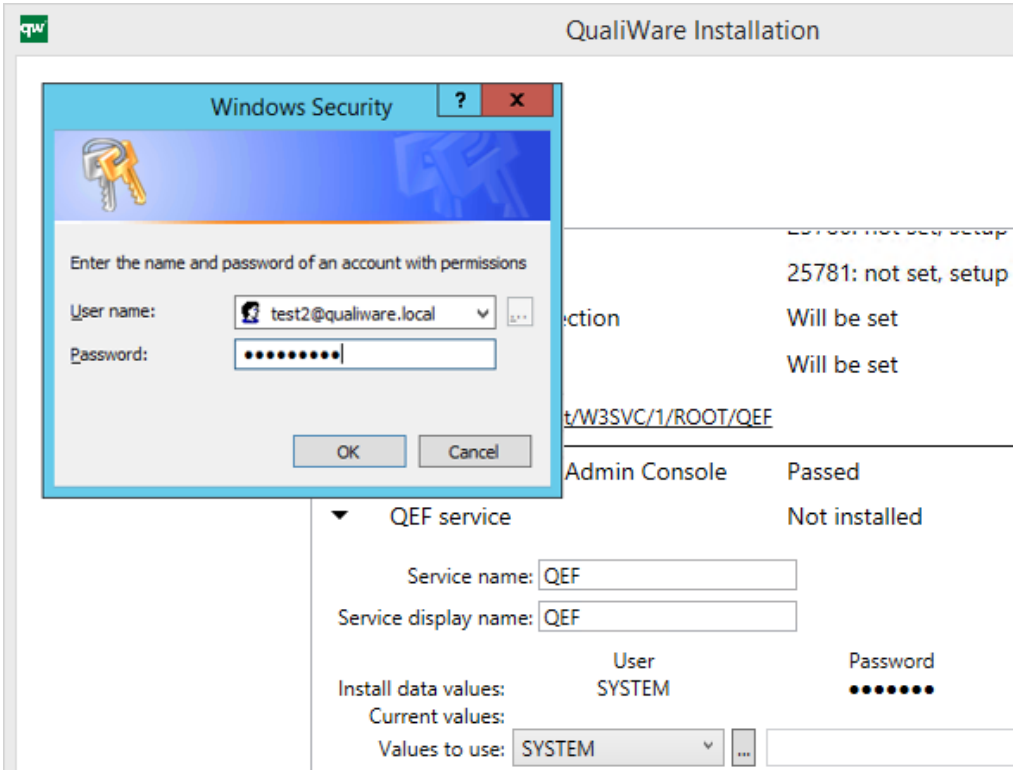
1. To change account, open the step contents by clicking the name of the step:



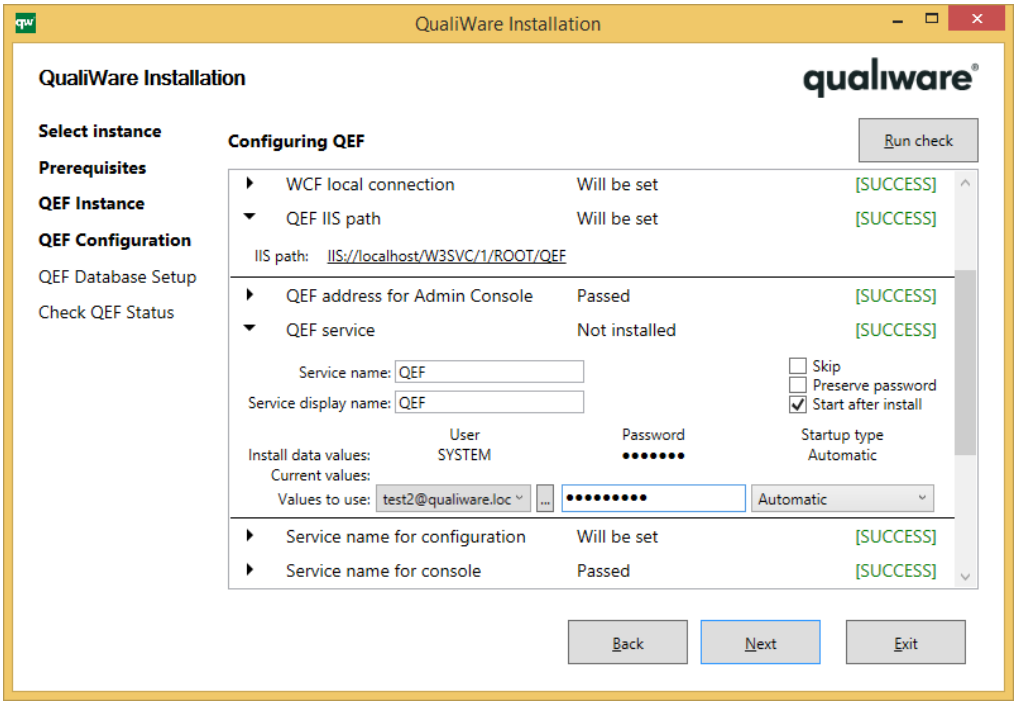
2. In **User** column press **…** button and select **QEFServiceAccount** in **Select User** dialog:



3. In **Windows Security** dialog type the password for the selected account:



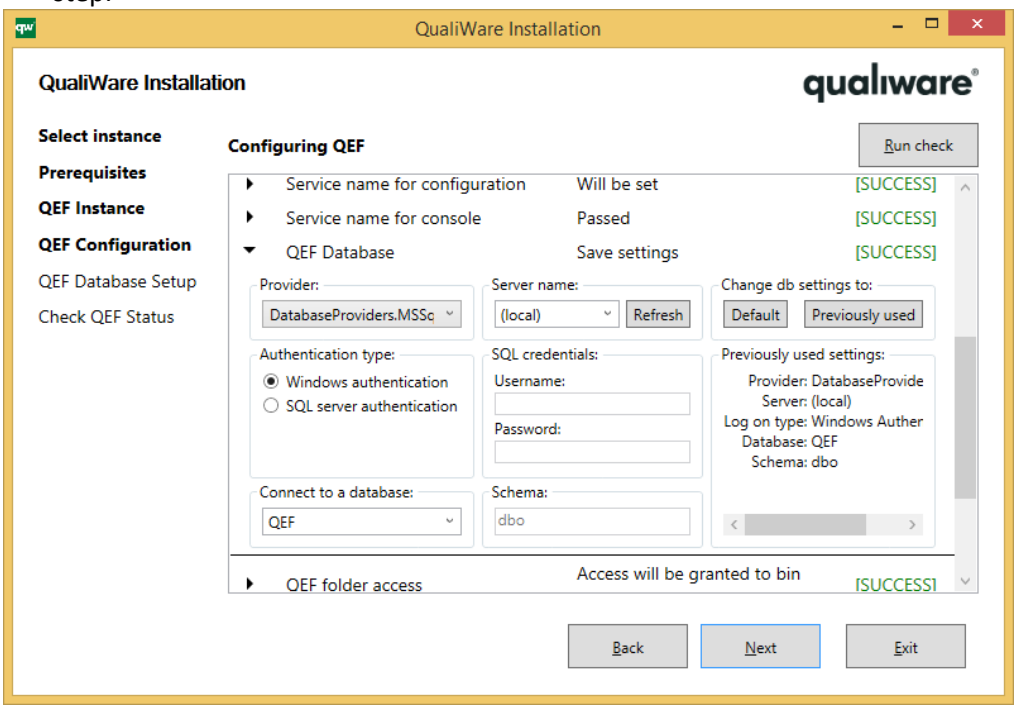
4. If **Windows Security** window did not appear, ensure correct password is typed in **Password** column:



2.3.5.2 QEF Database

By default, QEF database is placed on (local) MS SQL server instance, which is appropriate for test installations only. In production environment standalone SQL server must be used.

1. To change database settings, open the step contents by clicking on the name of the step:

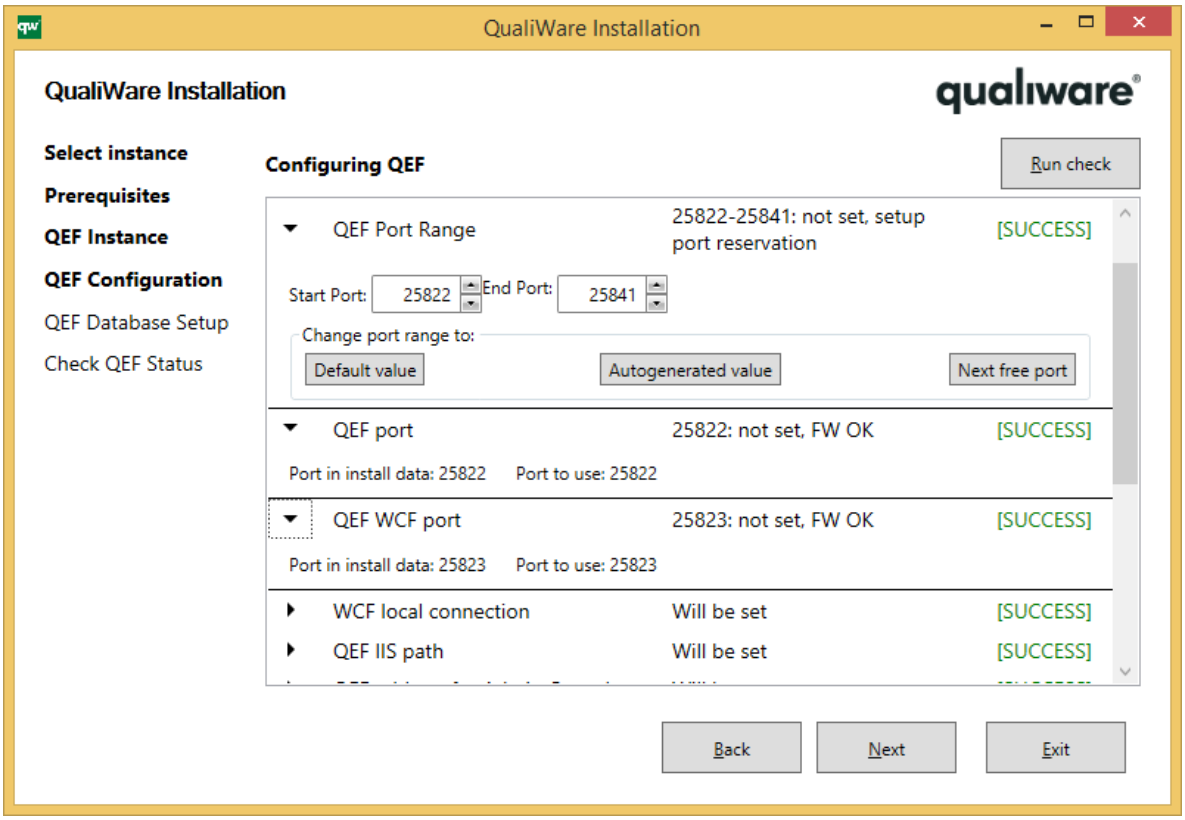


2. Set correct server name, database name and authentication type. In case **Windows authentication** is selected, QEF will access database using **QEFServiceAccount** credentials.

After all settings are checked, press **Next** button.

2.3.5.3 QEF Ports selection and Firewall Setup (optional)

QEF communicates with clients by TCP-based protocol, which requires two TCP ports to be opened for listening for QEF itself, and some amount for its modules depending on their configuration. By default, installer automatically selects first twenty free ports starting from 25780. If automatically generated values are not acceptable by any reason, port numbers can be set manually in **"QEF Port Range"** step (open the step contents by clicking on the name of the step):



NOTE: Previous versions contained "**QEF port**" and "**QEF WCF port**" steps which are now superseded by "**QEF Port Range**" step. The latter specifies whole range of steps which are to be used by QEF and its modules.

In most cases the local server, QEF installed into, is protected by some kind of firewall. QEF installer supports automatic configuration of Windows firewall which installed on the local server. If server is protected by remote firewall or third-party local firewall, configuration must be done manually: incoming TCP connections on port numbers from **"QEF Port Range"** step must be allowed for **Qef.exe** application.

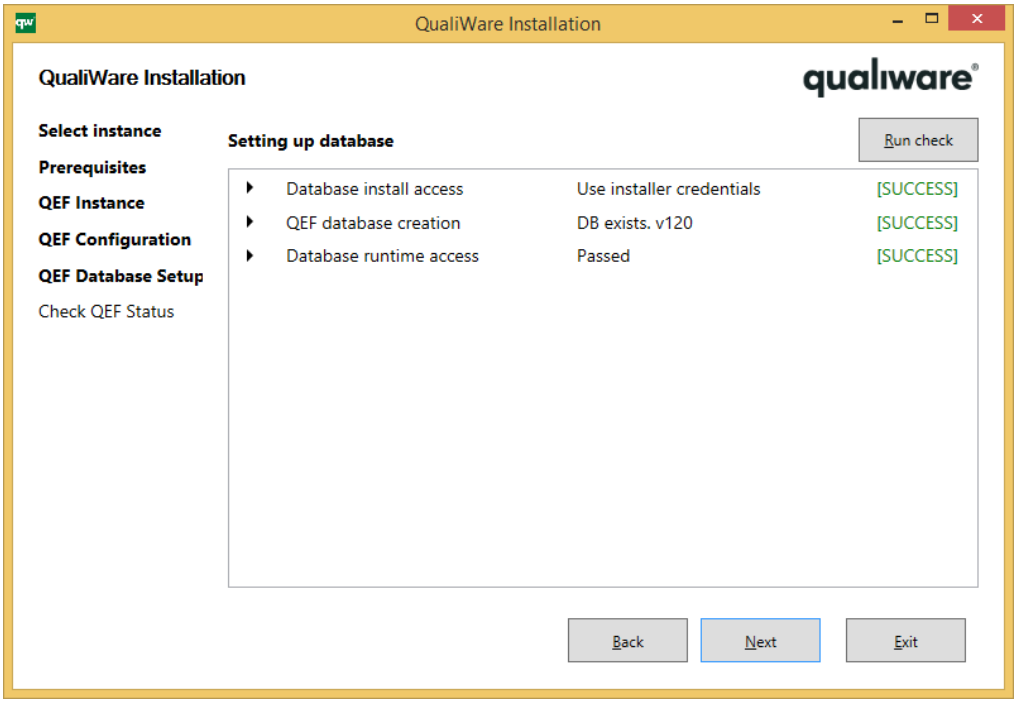
By default QEF and its modules use non-registered ports which may be taken by any other application on the system. To prevent this from happening, installer will reserve ports with the operating system if it is possible.

2.3.6 Setting up Database

This stage ensures database presence on server, checks database schema version and permissions for **QEFServiceAccount** to access database. There are three scenarios which differ by SQL server access rights available at installation time.

2.3.6.1 Current User (installer) has Enough Rights to Manage Database

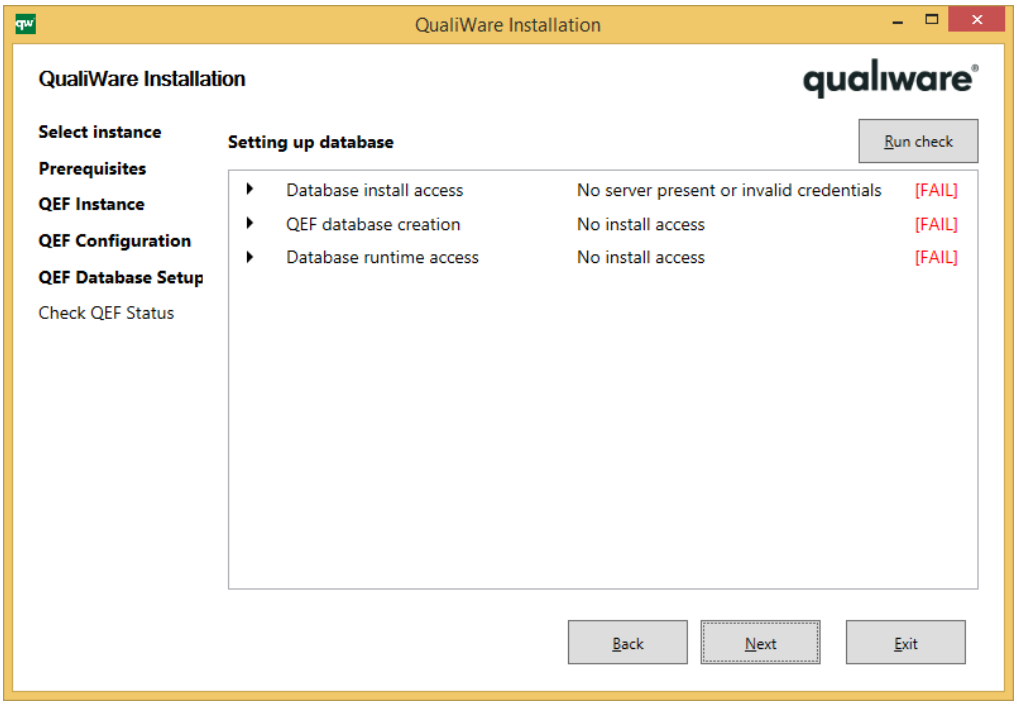
In this case all database management steps will be done automatically: database will be created, if not exists, or it will be updated if schema is old, access rights to use database will be granted to **QEFServiceAccount**, if necessary.



In case all steps are in **Success** state, press **Next** button.

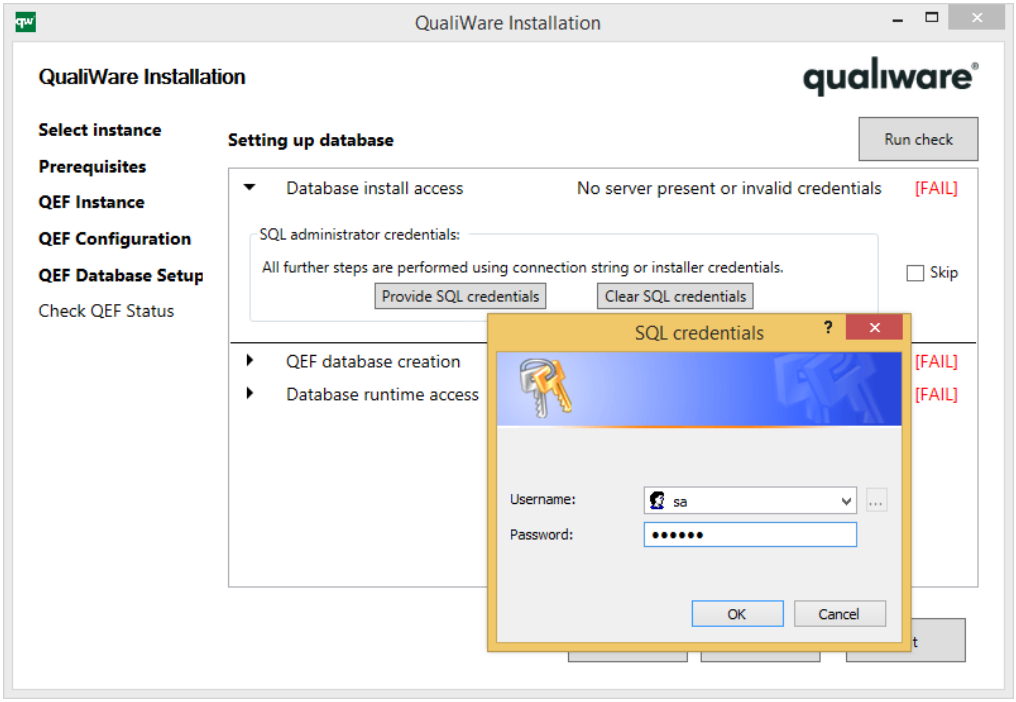
2.3.6.2 SQL Credentials with Enough Rights are Available at Install Time

In case installer doesn't have access to server, **Database install access** step will be in **Fail** state with message "No server present or invalid credentials":

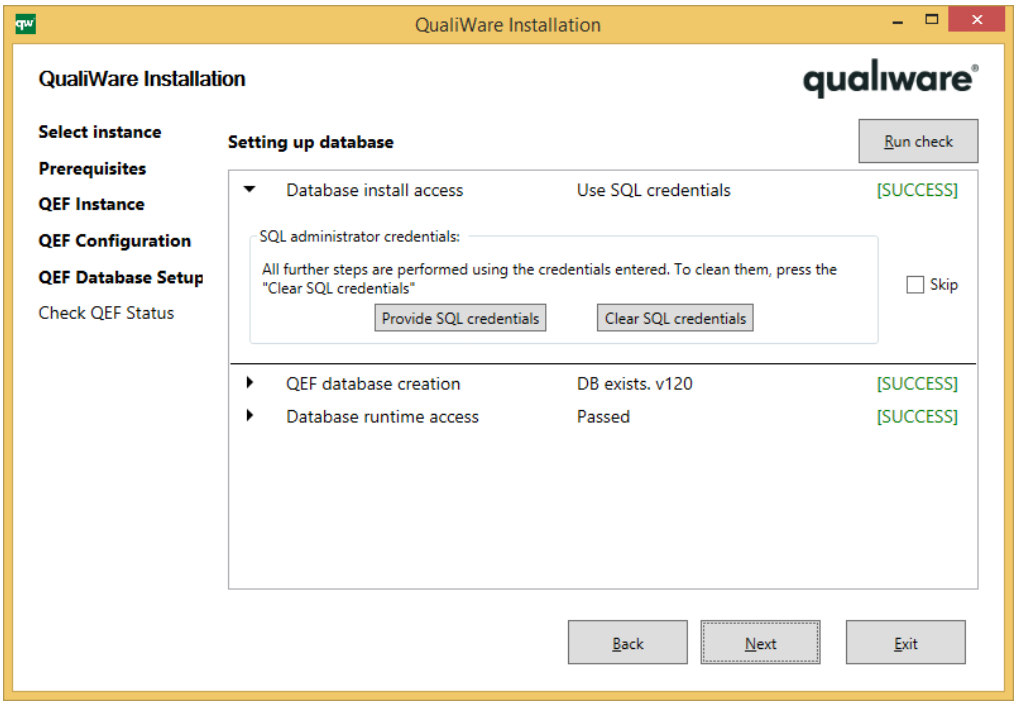


One-time SQL credentials can be used to configure SQL server:

1. Open the **Database install access** step contents by clicking on the name of the step.
2. Press button **Provide SQL credentials**.
3. In **SQL credentials** dialog set login, password and press **OK** button:



4. After changing SQL credentials you need to recheck status of the stage. Press **Run check** button. If provided credentials are valid, status of all steps will change to **Success**:



Please note that only SQL credentials can be used in this scenario, **SQL authentication** must be enabled on the server. No Windows (Active Directory) credentials can be used here.

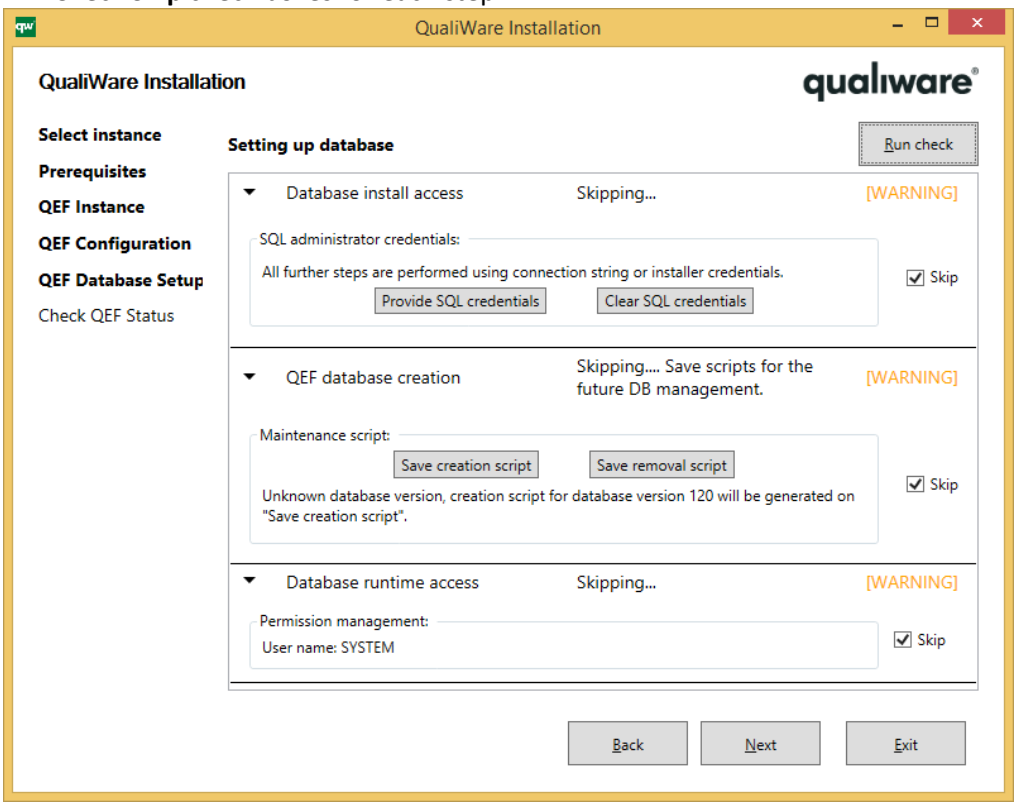
5. Press **Next** button.

2.3.6.3 No Admin Access to SQL Server

In some cases nobody can change server configuration except SQL administrators. In this case the stage looks like in the previous scenario: the **Database install access** step is in the **Fail** state with message “No server present or invalid credentials”.

To continue with installation:

1. Open the contents of all steps by clicking on their names.
2. Check **Skip** check boxes for each step:



3. In the **QEF database creation** step press **Save creation script** button and save SQL script file to appropriate location.
4. Send saved script to SQL administrator along with database name and name of **QEFServiceAccount**, which must be granted access to newly created database. Steps for SQL administrator:
    a. Create empty database with required name.
    b. Run provided SQL script to create schema objects.
    c. Ensure provided account has access to created database.

In case of using MS SQL Server, following permissions must be granted:

'DATABASE CONNECT'
'DATABASE DELETE'
'DATABASE EXECUTE'
'DATABASE INSERT'
'DATABASE SELECT'
'DATABASE UPDATE'

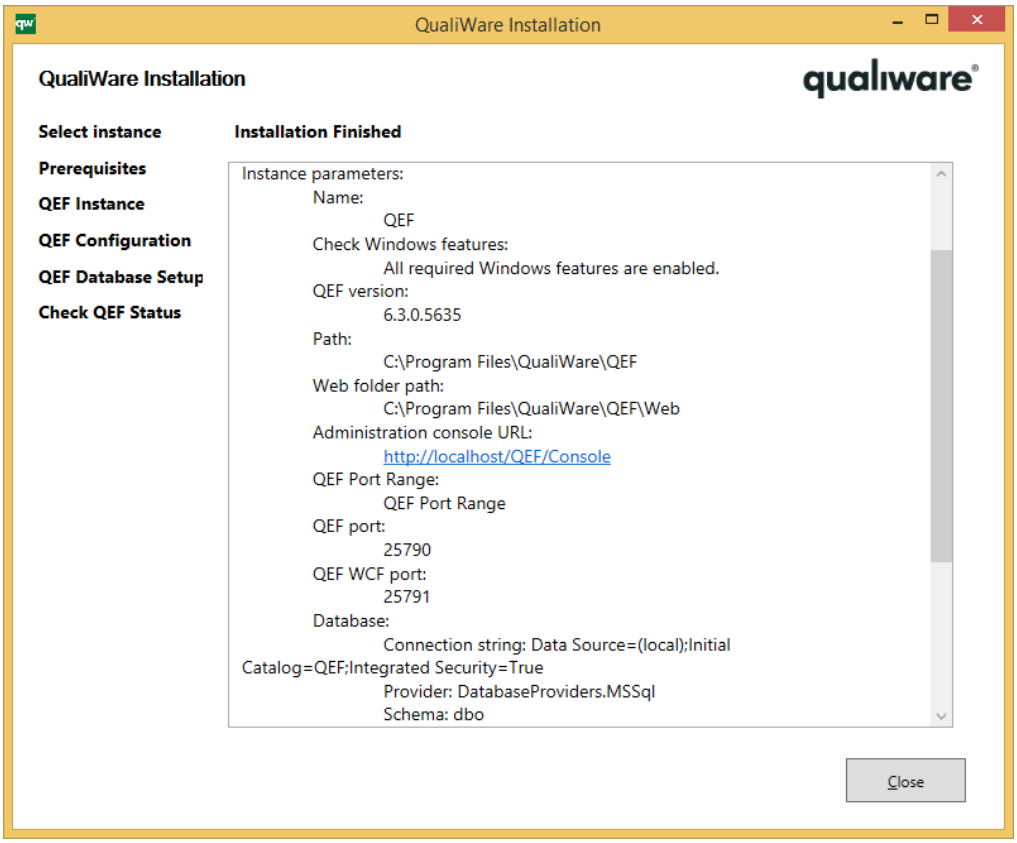
5. Wait for SQL administrator to confirm database creation. Press **Next** button.

2.3.7 Starting QEF Service

The last stage will start QEF service, if **Start after install** checkbox was checked in **QEF service** step. Press **Next** button.

2.3.8 Finishing Installation

After finishing all stages, installation summary will be shown:



Open QEF Administration Console by clicking on its URL in summary.

Press **Close** button.

3 Firewall Configuration

3.1 Preface

QualiWare Execution Framework (hereinafter QEF) communicates with its modules and clients using remoting technologies. These are .NET Remoting and WCF.

This document describes configuration of firewall for QEF, **QualiWare Integration Server** (hereinafter, **QIS**) and **QualiWare Lifecycle Manager** (hereinafter, **QLM/QEI**) instances.

The document assumes the reader installed all prerequisites described in the **Server Installation - QEF Installer** and **Server Installation - QLM Installer** documents.

3.2 General Information

There are three types of ports used for communicating between QEF and its modules: HTTP, .NET Remoting and WCF.

The ports for HTTP are defined by IIS and by default are 80 for HTTP and 443 for HTTP Secure.

The ports for .NET Remoting and WCF must be unique system-wide and be in the range 1024-49151 (ports in the range 1-1023 are well-known ports and cannot be used). This implies that ports used for .NET Remoting cannot be used for WCF and vice versa.

QEF and QIS open one port each for .NET Remoting and WCF for listening and all these four ports must be able to receive incoming requests.

QLM/QEI opens one port for listening and this port must be able to receive incoming requests.

Give these ports the following names:

- **HTTP_port** – port that IIS opens to receive incoming requests. Default values are **80** for HTTP and **443** for HTTP Secure. To change it, please refer to the documentation on IIS.

- **QEF_port** and **QEF_WCF_port** – ports that **QEF** opens for .NET Remoting and WCF for listening to receive incoming requests. Default values are **25780** and **25790** respectively. These ports can be configured during **QEF** installation or upgrade. For more information, see the **QEF ports selection and firewall setup (optional)** section in the **Server Installation – QEF Installer** document.

  Note: Do not change the **Qef.exe.config** file manually, because the changes will be overwritten when QEF installer is run for the given instance the next time!

- **QIS_port** and **QIS_WCF_port** – ports that QIS opens for .NET Remoting and WCF for listening to receive incoming requests. By default the first available ports are used. To make them static **Instance.config** should be modified:

  <**configuration**>

```
…
<settings>
  …
  <add key="port-remoting" value="25980" … />
  <add key="port-wcf" value="25990" … />
```

The **Instance.config** file is found in following location:

{QEF Installation Directory}\Modules\QualiWare Integration Server\6.3

{QEF Installation Directory} is configured during QEF installation. For more information, see the **Registering Instance and Deploying Binaries** section in the **Server Installation – QEF Installer** document.

- **QLM_port** – port that QLM opens for listening to receive incoming requests. By default the first available port is used. To make it static **qwc32.exe.config** should be modified:

```
<configuration>
  …
  <system.runtime.remoting>
    <application name="QLM">
      <channels>
        <channel ref="tcp" port="0" … >
```

qwc32.exe.config file is found in the following location:

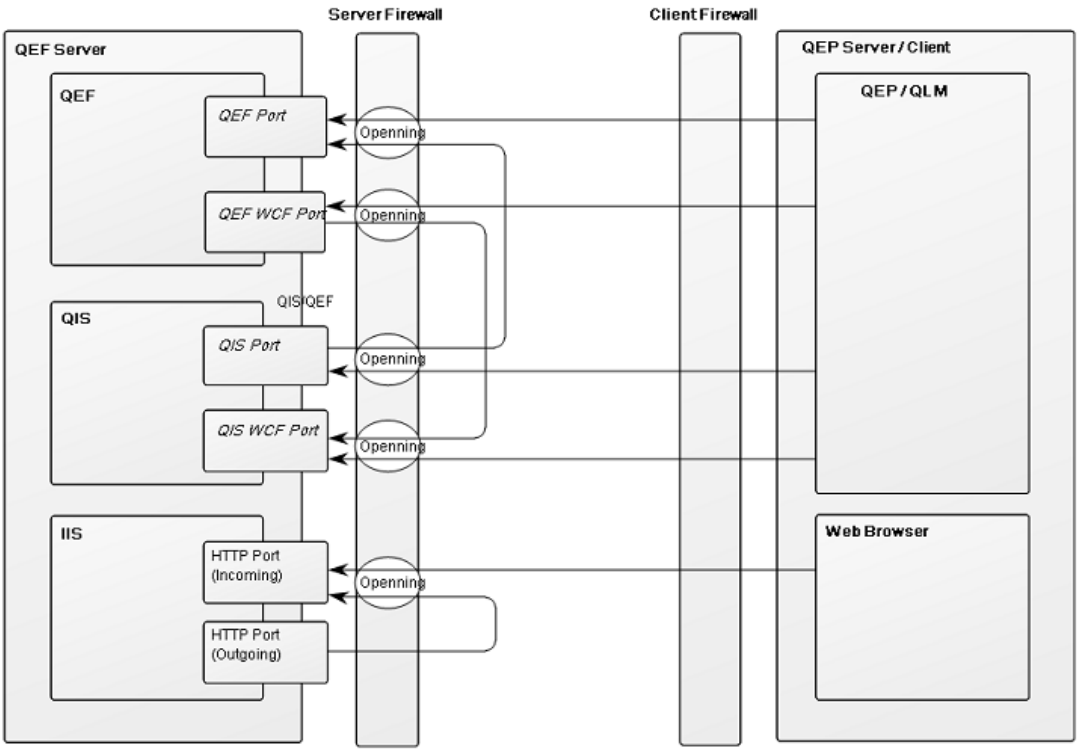
{QLM installation directory}\models

{QLM installation directory} is configured during QLM installation. For more information, see the **Installing Files** section in the **Server Installation – QLM Installer** document.

Note: Static port may prevent QLM usage on Terminal solutions like Citrix and Microsoft Terminal Server.

In general there are two possible configurations:

1. Firewall is running either on server or on server and client computers. In this case it is possible to allow all required communication for an application instead of specifying exact port number.
2. Firewall computer is located between server and client and is running on a separate computer/device. Combination of server and client firewall settings is required. Certain port numbers will be used.



The figure shows how communication is initiated between client and server and where server has to be open for incoming requests. If firewall does not allow outgoing requests by default, firewall on both server and client must be configured for this as well.

3.3 Configuration

3.3.1 Firewall as External Device

These rules must be defined on firewall:

- Server must be able to receive incoming requests from dynamic port of any client computer on **HTTP_port**;
- Server must be able to send outgoing requests from dynamic port to all client computers on **QLM_port** (both QEF and QIS require this).
- Server must be able to receive incoming requests from dynamic port of any client computer on **QEF_port, QEF_WCF_port, QIS_port** and **QIS_WCF_port**.

3.3.2 Firewall Installed on the Server and/or Client

3.3.2.1 Server configuration

- **HTTP_port** must be open for incoming requests coming from client computers;
- **QEF_port, QEF_WCF_port** must be open for incoming requests coming from client computers;

- **QIS_port, QIS_WCF_port** must be open for incoming requests coming from client computers;
- **Qef.exe** must be able to send outgoing requests to all client computers.
- **Qis.Module.exe** must be able to send outgoing requests to all client.

3.3.2.2 Client configuration

- **HTTP_port** must be open for outgoing requests to the server where QEF is installed;
- **QLM_port** must be open for incoming requests coming from the server where QEF is installed;

qwcd32.exe must be able to send outgoing requests to server where QEF is installed to each **QEF_port, QEF_WCF**

3.4 Configuration in Azure

3.4.1 Prerequisites

3.4.2 Endpoints configuration

Just make sure all the **QEF_port, QEF_WCF_port, etc** configured as Azure endpoints and point/map to an appropriate application server (where QEF and all the modules are installed) virtual machine (VM) ports.

Refer the following for more details: https://azure.microsoft.com/en-us/documentation/articles/virtual-machines-windows-classic-setup-endpoints/

3.4.3 Server and client applications configuration

Azure specifics is that normally VM in Azure is not included to an on-premise AD domain and thus some default .Net Remoting security settings in configuration files (configs) become incorrect. These are **secure=”true”** and **tokenImpersonationLevel=”impersonation”**. They should be removed.

Also, due to Azure networking, especially if QLM is needed to be registered as an Azure Remote Application, the following option should be added to every service config (QEF and exe-modules): **machineName=”contoso.cloudapp.net”**, where contoso.cloudapp.net is the publicly visible and accessible Azure gateway DNS name configured in Azure Portal.

So, typical .Net Remoting settings in a config for Azure will look like the below:

```
<configuration>
  …
  <system.runtime.remoting>
    <application name="QEF">
      <channels>
        <channel ref="tcp" useIpAddress=”false” port="25780"
machineName=”AppServerGW.cloudapp.net”>
```

Please note that client configs (web modules and QLM) also should not contain neither default security settings nor the **machineName** setting:

```
<configuration>
 …
 <system.runtime.remoting>
  <application name="QLM">
   <channels>
    <channel ref="tcp" useIpAddress=”false” port="0">
```

Refer to the following link to know more about the Azure VNET and Azure Remote Apps:
https://azure.microsoft.com/en-us/documentation/articles/remoteapp-planvnet/

4 SharePoint WebService

4.1 Preface

This document describes installation of SharePoint Web Services, which enhance QualiWare Document Connector (hereinafter QDC) functionality. Installation of SharePoint Web Services is not required in order to successfully run QDC.

4.2 Prerequisites

The document assumes that SharePoint Server is installed, user has access to the server and is a farm administrator.

4.3 Supported Servers

Supported server operating systems: Windows Server 2008, Windows Server 2008 R2, Windows Server 2012, Windows Server 2012 R2.

Supported SharePoint Servers: SharePoint Server 2010, SharePoint Server 2013.

NOT COMPLETED

5 OLE DB Provider

5.1 Preface

QIS OLE DB Provider allows external applications such as Microsoft Excel, Crystal Reports and others connect to and use QIS repository data to create reporting solutions via standard SQL-like interface.

This document describes steps necessary to install, configure and use QIS OLE DB Provider.

5.2 Prerequisites

In order to install the provider, the following prerequisites must be met:

- Visual C++ Redistributable (msvcp120.dll) is installed.
- QEF is installed and running;
- QIS module is installed and running;
- User has administrative access to the local system.

5.3 Installing Visual C++ Redistributable

Before QIS OLE DB Provider can be registered, Visual C++ Redistributable must be installed. Follow the steps to install it:

1. Download Visual C++ Redistributable from the following location:

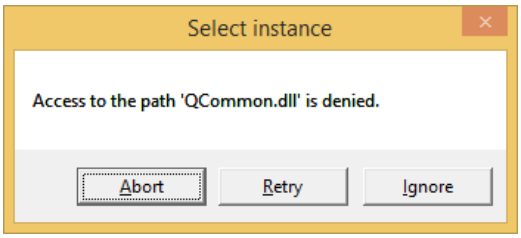
   https://www.microsoft.com/en-us/download/details.aspx?id=40784

   Note: Both 32-bit and 64-bit versions of Visual C++ Redistributable must be installed.

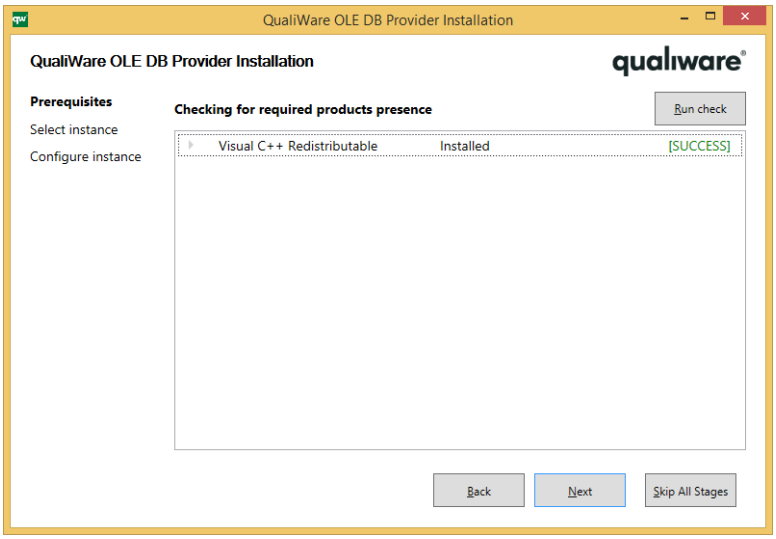
2. Use default settings during installation.

5.4 Installing QIS OLE DB Provider

1. Run **QOle.Provider.exe**.
   Note: If OLE DB Provider is already installed and Excel is running, the following error message will be shown:

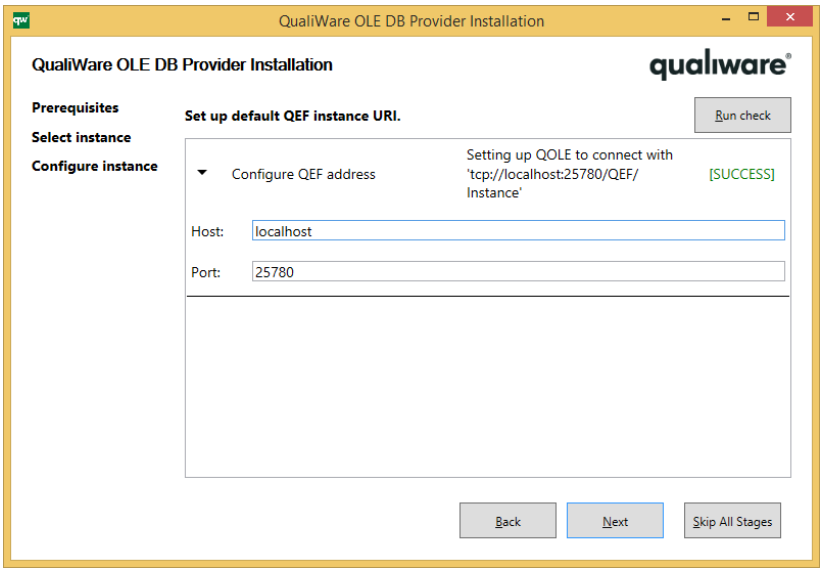
   Close Excel and press **Retry**.
2. Read the license agreement and press **I Agree**.
3. Ensure all prerequisites are in **Success** state and click **Next**.



4. Select existing instance or choose path for new instance and click **Next**.

   SCREENSHOT MISSING!!!

5. Edit **Host** and **Port** (where QEF is installed) if necessary and click **Next**.

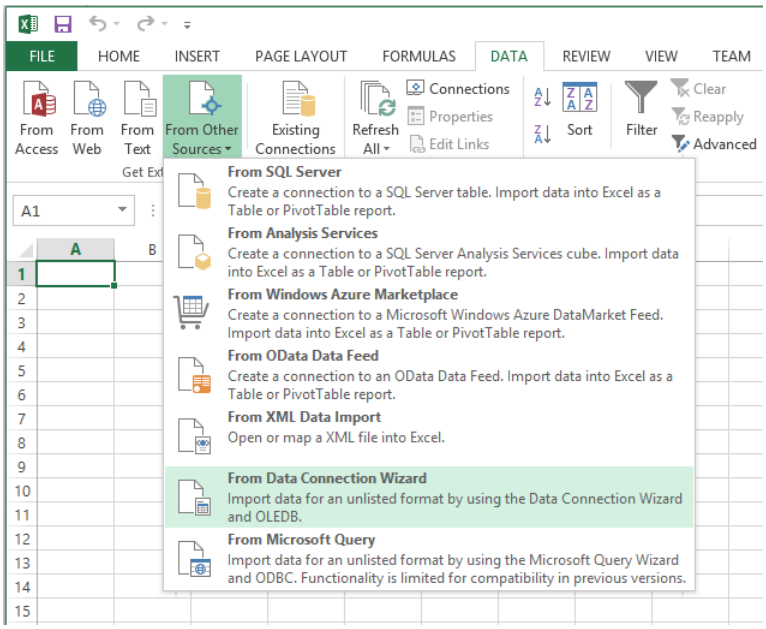


6. Installation summary is shown.

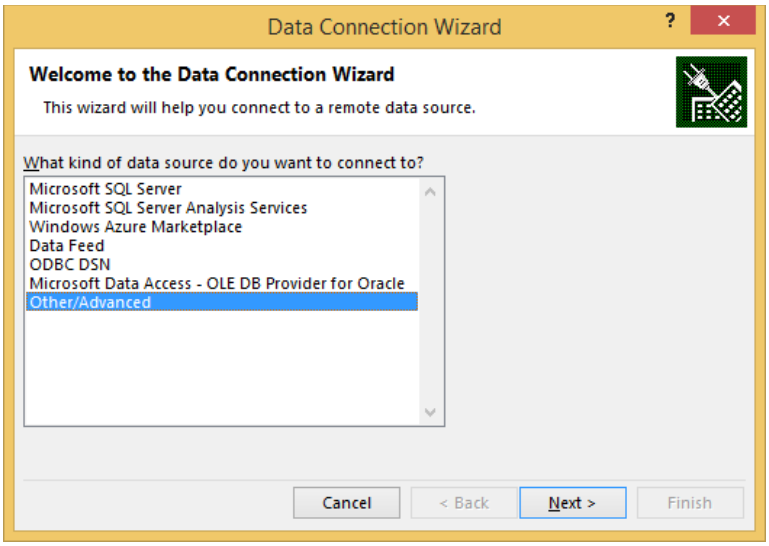
5.5 Using QIS OLE DB Provider from Microsoft Excel

To configure and use QIS OLE DB Provider from Microsoft Excel, follow the steps:

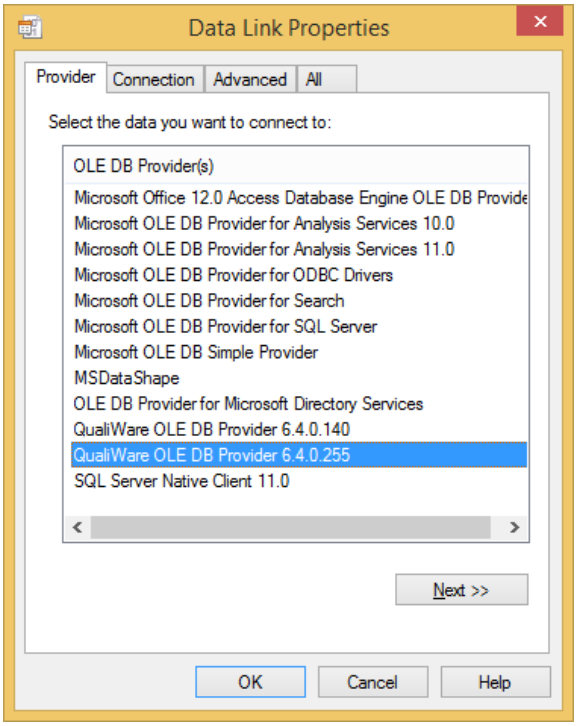
1. Start **Microsoft Excel**.
2. Select **DATA** -> **From Other Sources** -> **From Data Connection Wizard**.



3. Select **Other/Advanced**.



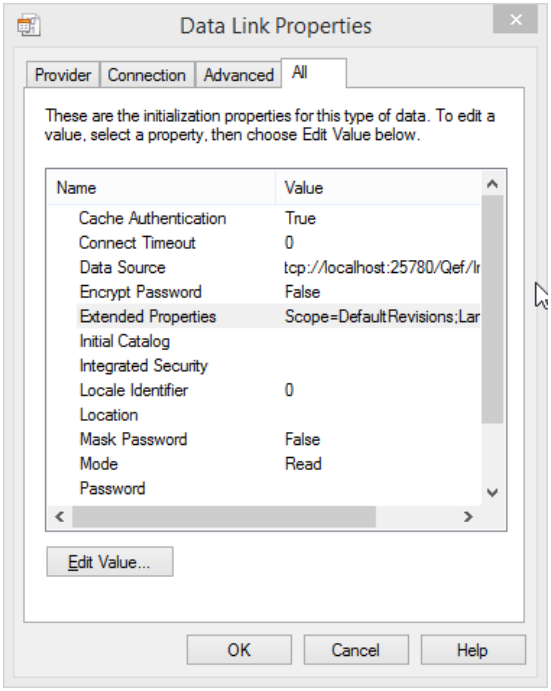
4. Select **QualiWare OLE DB Provider.**

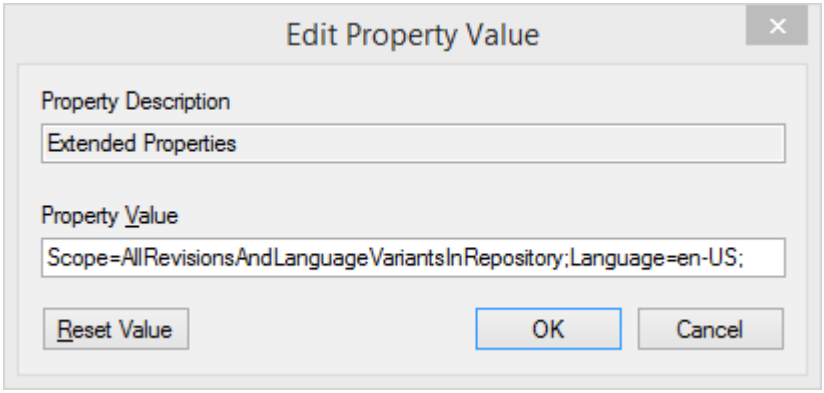


5. Enter the following information:

- Data Source: QEF address.
- Authentication: enter User name and Password for specific user or select Windows NT Integrated security.
- Enter the initial catalog to use: repository and configuration.

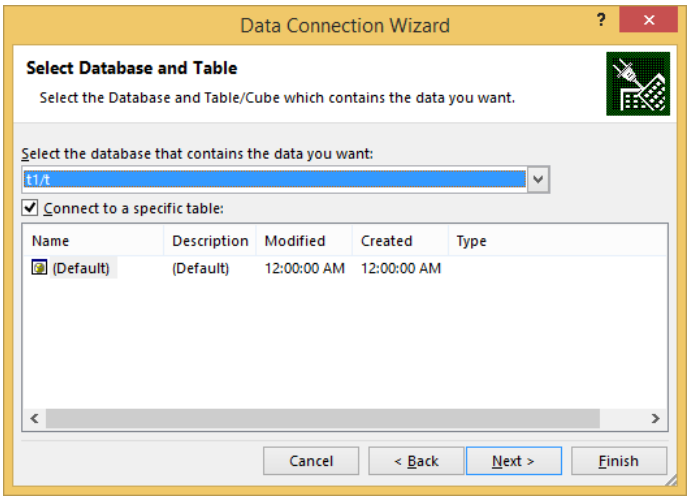
6. If **Scope/Language** needs to be changed, go to **All** tab and specify necessary information in the **Extended Properties** field:



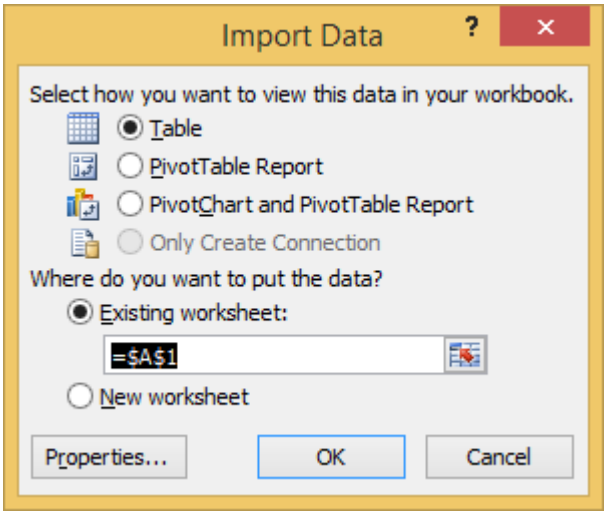


Refer to Scope and language settings for info on values for these fields.

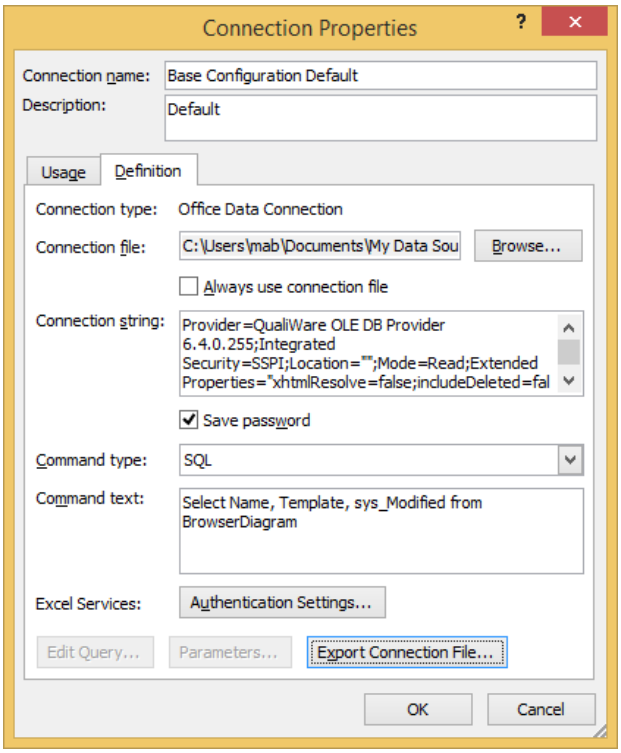
7. Click **OK** and **Finish**.



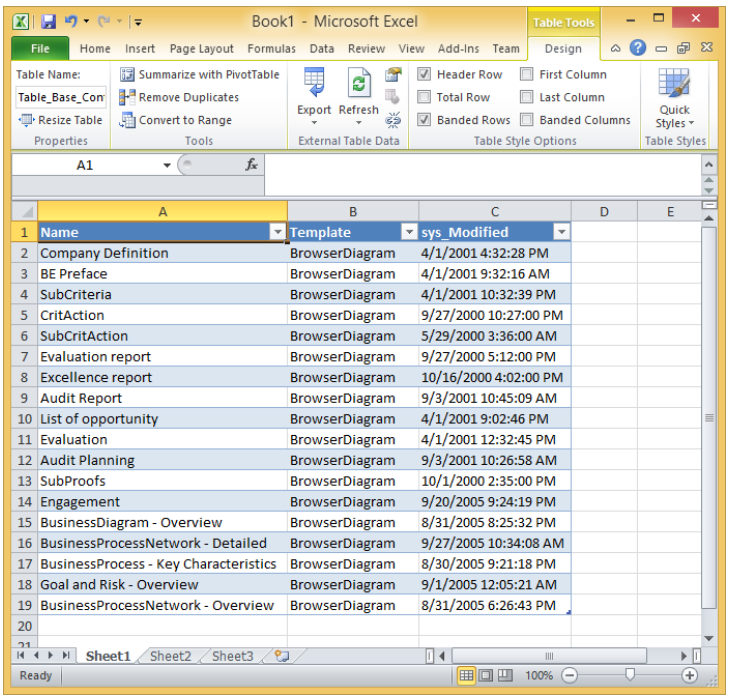
8. Click **Properties… -> Definition.**



9. Check **Save Password.**
10. Select **Command Type** -> **SQL**.
11. Enter **command text**.

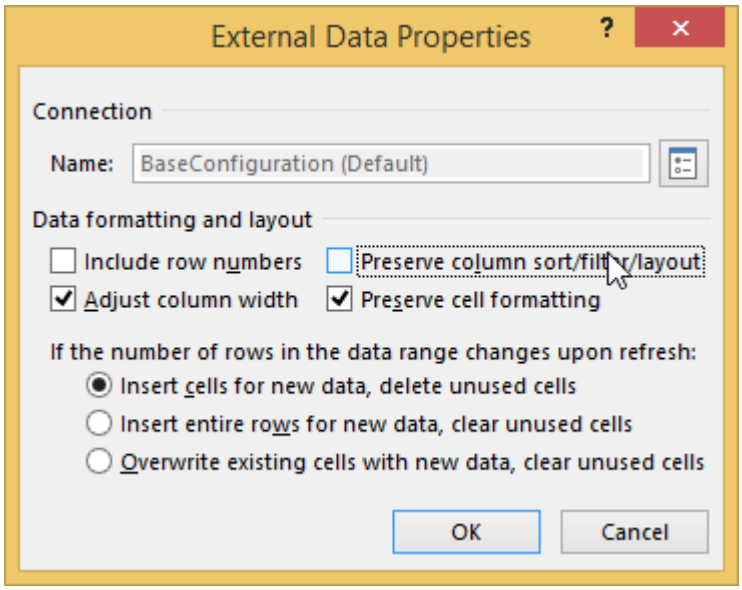


12. Click **OK**. The data will be exported into Excel:



NOTE: In case displayed results table has incorrect column order, perform the following:

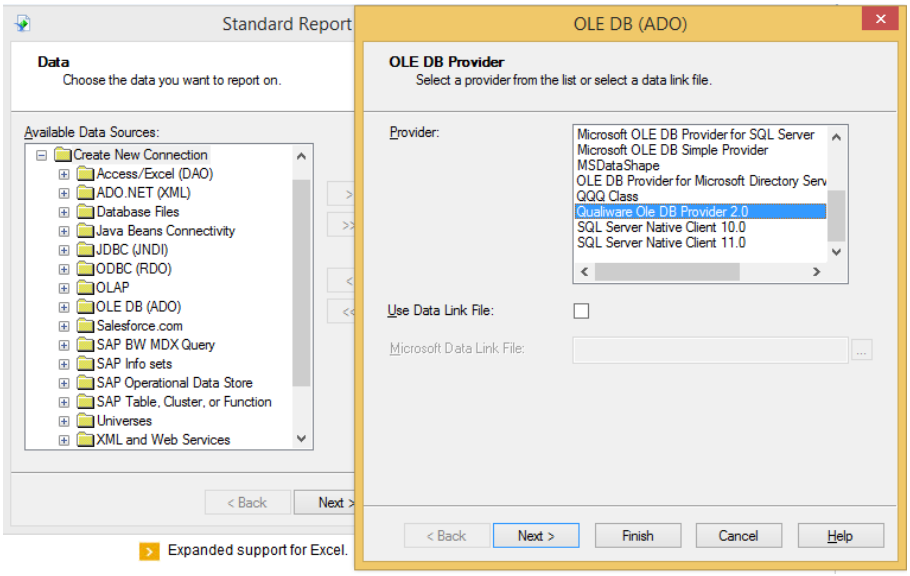
1. Go to **Data** tab.
2. Click **Properties**.
3. Uncheck **Preserve column sort/filter/layout.**
4. Click **Refresh.**



5.6 Using QIS OLE DB Provider from Crystal Reports

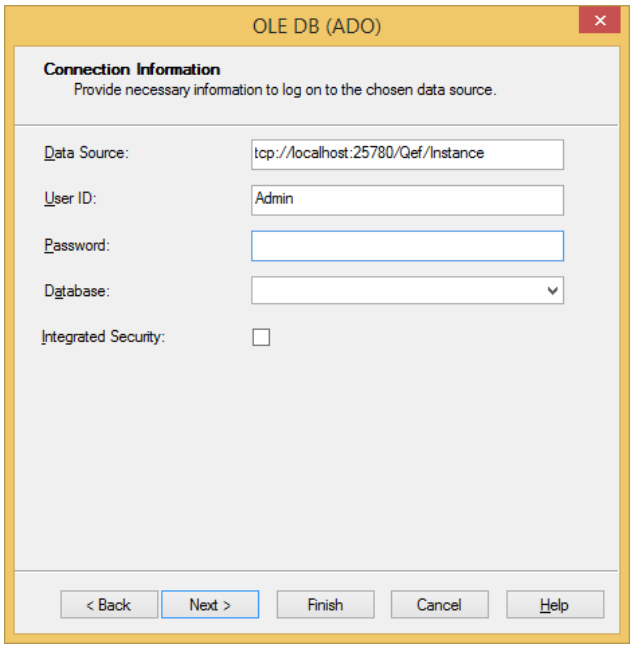
To configure and use QIS OLE DB Provider from Crystal Reports, follow the steps:

1. Start **Crystal Reports**.
2. Start **Report Wizard**.
3. Click **Create New Connection** -> **OLE DB (ADO)**.
4. Select **QualiWare OLE DB Provider**.



5. Specify connection information:

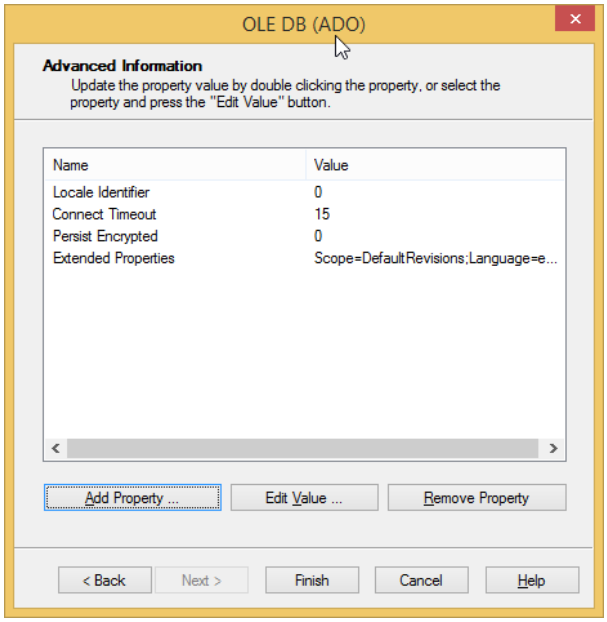
- Data Source: QEF address.
- Authentication: enter User ID and Password for specific user or select Integrated Security.
- Database: repository and configuration.



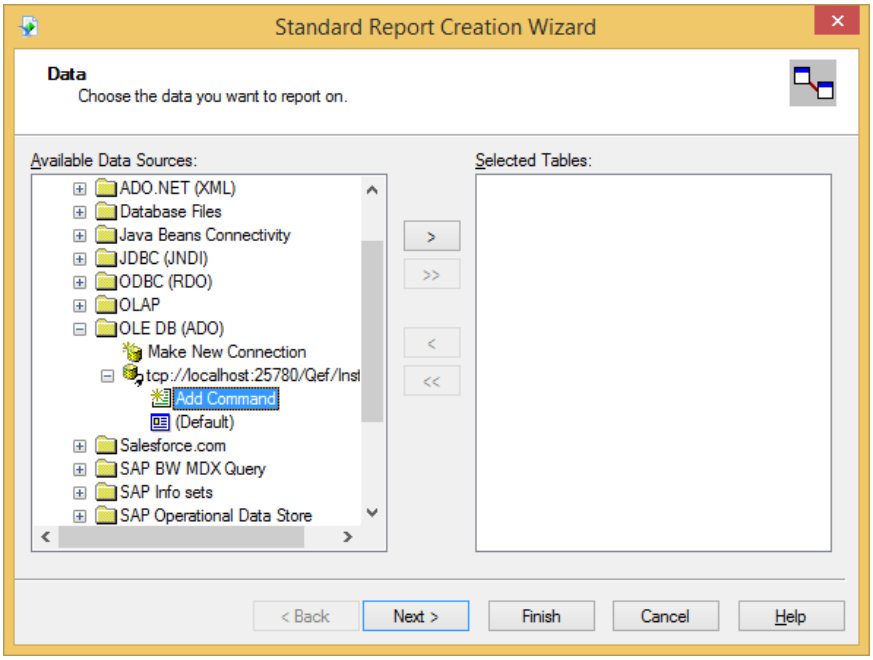
6. Click **Next.**
7. In case non-default language and/or scope should be set, perform the following steps:
   a. Click **Add property**.

b. Set **Property** to “Extended Properties” and Value to “Scope={scope};Language={lang};” where {scope} and {lang} are desired scope and language. Refer to Scope and language settings for info on values for these fields.

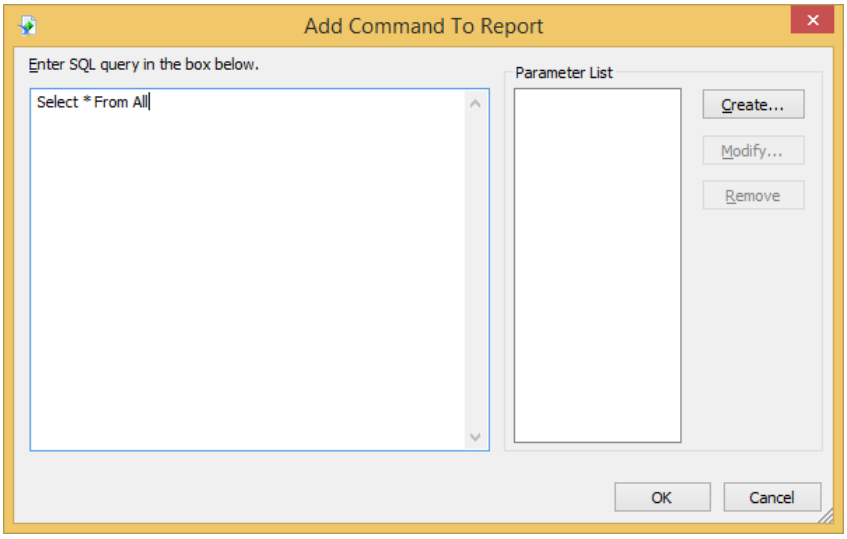
c. Click **OK**.



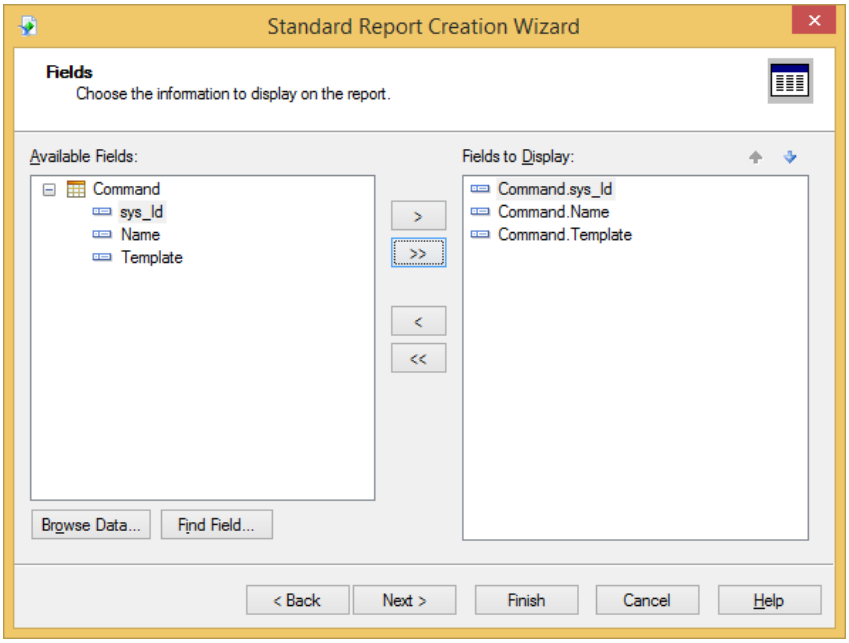
8. Click **Add Command**.

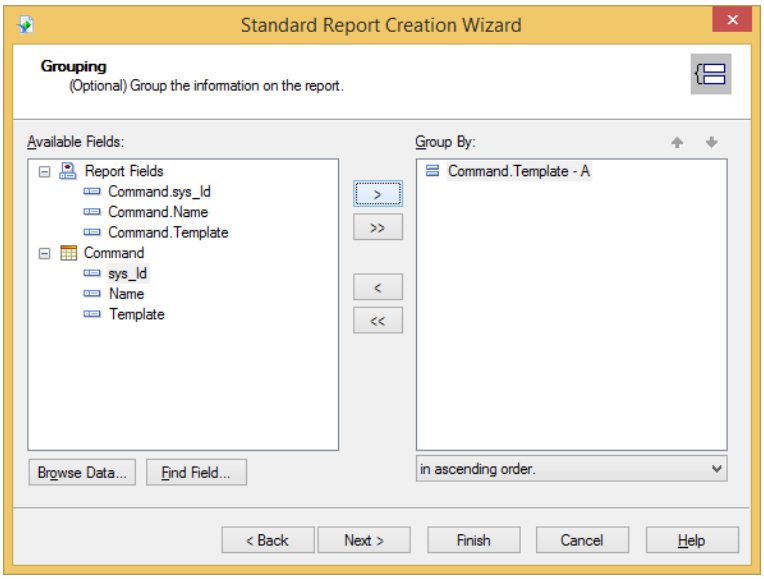


9. Enter **command text**.

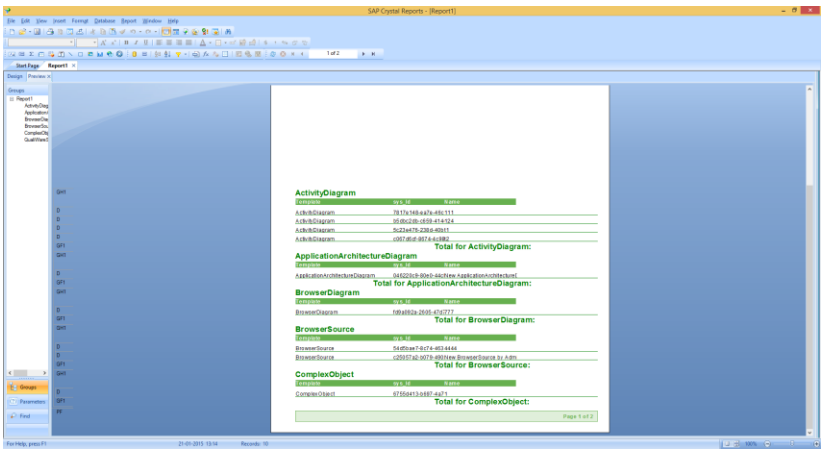


10. Click **OK**.
11. Add **Report Properties** needed.





12. Click **Finish**.
13. The data should be present in your report (if any is available).



5.7 Scope and language settings

Possible values for Scope:

- DefaultRevisions
- AllRevisionsInCurrentLanguage
- DefaultRevisionsAndLanguageVariants
- AllRevisionsAndLanguageVariants
- AllRevisionsAndLanguageVariantsInRepository

Default values for Scope “DefaultRevisions”, for language - default language.

To set scope and language settings, OLE DB “Extended Properties” value should be initialized in the following way:

Scope={scope};Language={lang}

where {scope} is one of the possible scope values and {lang} is the desired language.

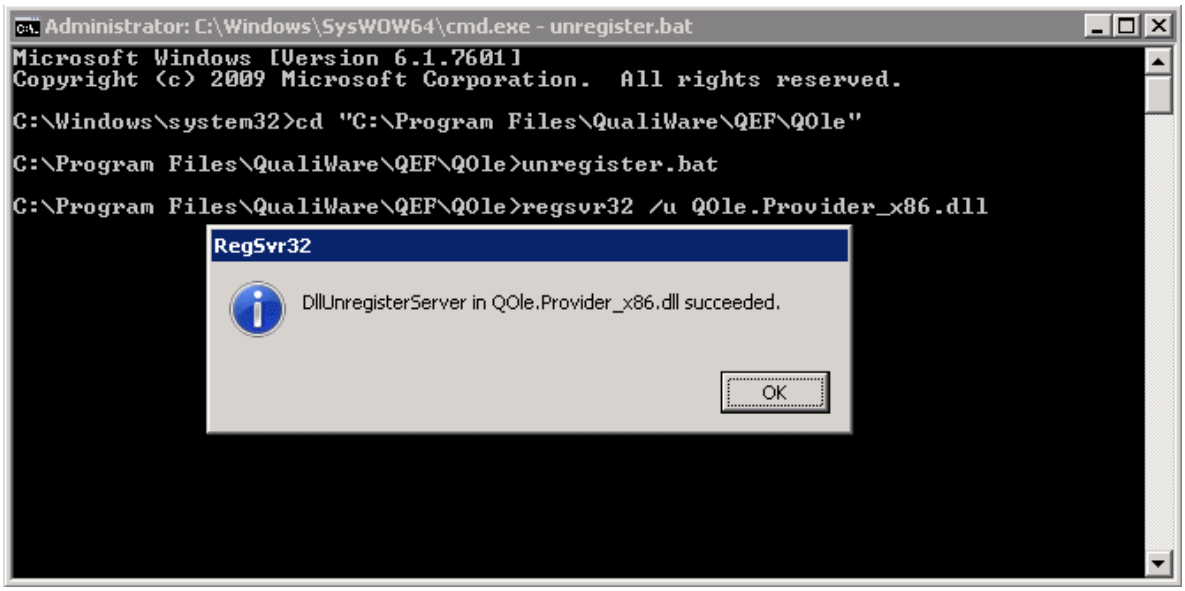
Example:

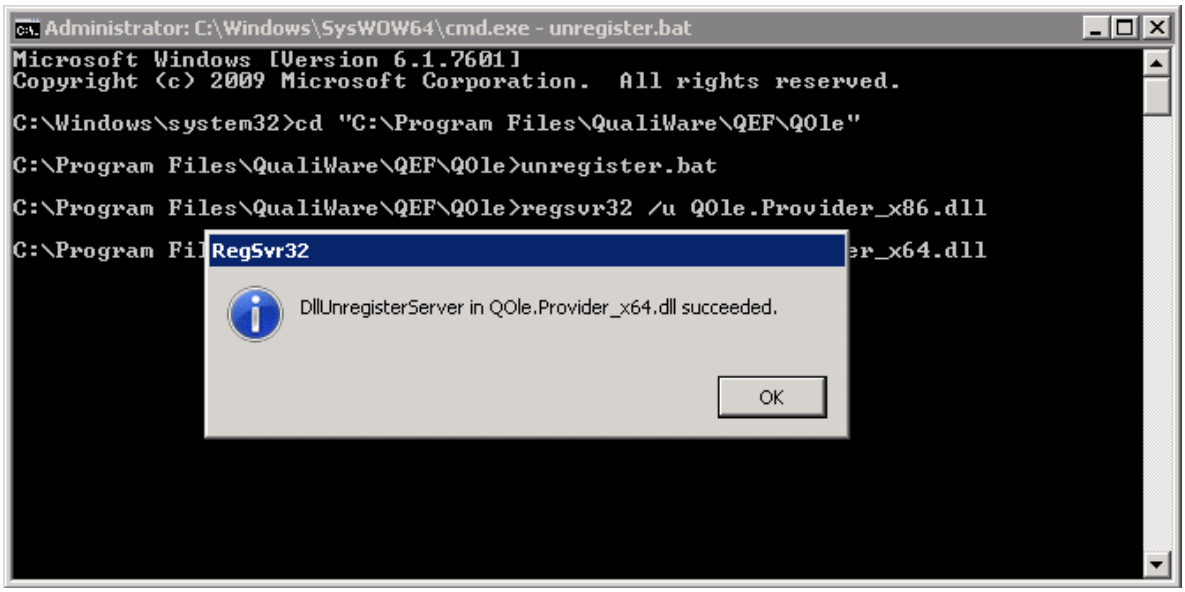
Scope=DefaultRevisions;Language=en-US;

5.8 Uninstalling QIS OLE DB Provider

To uninstall QIS OLE DB Provider, follow the steps:

1. Run command prompt as administrator.
2. Go to the folder with QIS OLE DB Provider files.
3. Run **unregister.bat** file. After the command is executed 32-bit and 64-bit versions QIS OLE DB Provider will be unregistered.





Note: For more information, read **Readme.txt** from the same location.

4. Delete QIS OLE DB Provider files.

5.9 Appendix A: Quick QSQL reference

Textual QSQL queries are used to obtain data from the provider. Below are examples of QSQL textual queries and supported expressions. For a full list of supported QSQL textual queries, refer to Appendix B: Full list of support QSQL textual queries.

SELECT clause

Query	Comments
SELECT * FROM All	Returns predefined attributes sys_ObjectId, sys_RevisionId, sys_RepositoryId from all objects in the configuration.
SELECT o.* AS col_0 FROM BacklogItem o	Aliases
SELECT o.* AS col_0 FROM BacklogItem:Special:QualiWare o	Specific template with namespace
SELECT ts.* AS col_0 FROM TemplateSet(Person,Activity,BusinessProcess)	Template Set

SELECT DISTINCT ts.* AS col_0 FROM TemplateSet(Person,Activity,BusinessProcess) ts WHERE ts.AllAttributes LIKE '%qaaaaa%'	Distinct
SELECT bi.* AS col_0 FROM BacklogItem bi WHERE bi.Complexity = '1' ORDER BY bi.Name	Sort and Filter
SELECT TOP 10 o.* AS col_0 FROM BacklogItem o ORDER BY o.Name	Top
SELECT o.* AS col_0 FROM BacklogItem o ORDER BY o.Name OFFSET 20 ROWS FETCH NEXT 10 ROWS ONLY	Skip (returns 10 records, skipping 20)
SELECT DISTINCT bi.* AS col_0 FROM BacklogItem bi LEFT JOIN Task t ON t.sys_ObjectId = bi.Tasks	Distinct
SELECT [all].* AS col_0 FROM All all WHERE all.Template = 'Person' ORDER BY all.Name	Returns ordered by name list of Person objects
SELECT list.* AS col_0 FROM REVISION LIST('9d17469f-91c5-40be-8781-981cbc0003c4','aecc3b48-9f5b-4289-99e7-b7de3d007bcc','92974222-fce2-4b5a-83f0-7c4282f369d6','14decd2b-2ad0-457c-b0b7-f8748e9fcd10') OF Person list	Object List (returns predefined attributes of person objects from the list)

WHERE clause

Clause	Comments
SELECT o.* AS col_0 FROM BacklogItem o WHERE CAST(o.Id as int) BETWEEN 4000 AND 4100	BETWEEN
SELECT o.* AS col_0 FROM BacklogItem o WHERE CAST(o.sys_Created AS DATETIME) >= CAST('2011-01-01' AS DateTime) AND CAST(o.sys_Created AS DATETIME) <= CAST('2011-12-31' AS DateTime)	Date-time filtering

SELECT o.* AS col_0 FROM BacklogItem o WHERE CAST(o.Id as int) IN (4161, 4203) SELECT o.* AS col_0 FROM BacklogItem o WHERE CAST(o.sys_ObjectId as VARCHAR) in ('f09d4450-e0fd-45fa-aa0a-38a57632762c', '0071a04d-c27f-4e0e-a48a-7f68112da7b5')	IN
SELECT o.* AS col_0 FROM BacklogItem o WHERE o.Name LIKE '%change%' SELECT o.* AS col_0 FROM BacklogItem o WHERE o.Name like '[QS]%' SELECT o.* AS col_0 FROM BacklogItem o WHERE o.Name like '[q-u]%' SELECT o.* AS col_0 FROM BacklogItem o where o.Name like 'Q[^LE]%'	LIKE
SELECT o.* AS col_0 FROM BacklogItem o WHERE 4000 < CAST(o.Id AS int) SELECT o.* AS col_0 FROM BacklogItem o WHERE o.Complexity = '' SELECT o.* AS col_0 FROM BacklogItem o WHERE o.Name <= 'abc' SELECT o.* AS col_0 FROM BacklogItem o WHERE o.sys_Created >= '2010.04'	>, <, >=, <=, =, <>
SELECT o.* AS col_0 FROM BacklogItem o WHERE o.IsFrozen = true or NOT(o.IsFrozen = true)	true, false
SELECT o.* AS col_0 FROM BacklogItem o WHERE o.sys_ModifiedBy = 'Jahn Smith' AND NOT(o.sys_CreatedBy = 'Smith John' OR o.IsFrozen = true)	OR, AND
SELECT Name, Template, MatchField FROM All WHERE AllAttributes LIKE '%Analyse%' OR AllAttributes LIKE '%Analyze%' ORDER BY Template, Name	AllAttributes in Where MatchField returns attribute name for matched attribute in where clause.

CAST

Clause	Comments
SELECT CAST (bi.Description AS XhtmlText) AS col_0 FROM BacklogItem bi	Standard casting types VARCHAR, DATETIME, BIT, INT, XHTML
SELECT CAST (bi.ReportedBy AS SingleLink) AS col_0 FROM BacklogItem bi SELECT CAST (bi.Tasks AS MultiLink) AS col_0 FROM BacklogItem bi SELECT CAST (bi.ApprovalDate AS QDateTime) AS col_0 FROM BacklogItem bi SELECT CAST (bi.Id AS PlainText) AS col_0 FROM BacklogItem bi	QIS casting types AttributeValue, SingleLink, MultiLink, QDateTime, PlainText,
SELECT bi.sys_Language, CAST(bi.sys_Language AS VARCHAR) AS strLang, CAST(bi.sys_Created AS VARCHAR) as sys_Created, bi.sys_Created AS typedCreated FROM BacklogItem bi	CAST in SELECT
SELECT bi.sys_Language, CAST(bi.sys_Language AS VARCHAR) AS strLang, CAST(bi.sys_Created AS VARCHAR) as sys_Created, bi.sys_Created AS typedCreated FROM BacklogItem bi SELECT o.* AS col_0 FROM BacklogItem o WHERE CAST(o.ApprovalDate AS DateTime) = CAST('23.02.2009 13:08:00' AS DATETIME)	CAST in WHERE
SELECT bi.* AS col_0 FROM BacklogItem bi ORDER BY CAST(bi.Id AS int), bi.Name	CAST in ORDER

Join

Clause	Comments

SELECT DISTINCT bi.* AS col_0 FROM BacklogItem bi JOIN Task t ON bi.Tasks = t.sys_ObjectId SELECT DISTINCT bi.* AS col_0 FROM BacklogItem bi JOIN Task t ON t.sys_ObjectId = bi.Tasks JOIN Milestone m ON m.sys_ObjectId = bi.Milestone WHERE t.Name LIKE '%nt'	

AttributeChain

Clause	Comments
SELECT bi.MoreInfoFrom.Name AS col_0 FROM BacklogItem bi	In SELECT
SELECT bi.* AS col_0 FROM BacklogItem bi WHERE bi.MoreInfoFrom.Name <> ''	In WHERE
SELECT bi.* AS col_0 FROM BacklogItem bi WHERE CAST(bi.MoreInfoFrom AS SingleLink) <> '' ORDER BY bi.MoreInfoFrom.Name, bi.Name	In ORDER BY

Relations

Clause	Comments
SELECT backward.* AS col_0 FROM BacklogItem bi BACKWARD JOIN backward ON bi.AllAttributes = backward.sys_ObjectId SELECT bi.Name AS Name, bi.Links.Backward AS AllBackward, , bi.Links.Forward AS AllForward FROM BacklogItem bi ORDER BY bi.Name	Backward, Forward
SELECT bi.Name AS Name1, t.Name AS Name2 FROM BacklogItem bi CROSS JOIN Task t WHERE bi.ReportedBy = t.Responsible ORDER BY bi.Name, t.Name	Cross Join
SELECT bi.Graphical.Contains.Graphical.Contained.Name FROM StateDiagram bi	Graphical Relations: • Contains\Contained • Framed\FramedBy

SELECT recipients.* AS col_0 FROM State bi GRAPHICAL SENDSTO JOIN recipients ON recipients.sys_ObjectId = bi.AllAttributes SELECT DISTINCT recipients.Name FROM State bi GRAPHICAL JOIN recipients ON recipients.sys_ObjectId = bi.AllAttributes ORDER BY recipients.Name (all graphical relations) SELECT contains.* AS col_0 FROM StateDiagram bi GRAPHICAL CONTAINS JOIN contains ON bi.AllAttributes = contains.sys_ObjectId SELECT bi.Graphical.SendsTo.Graphical.ReceivesFrom.Graphical.SendsTo.Name AS N1, bi.Graphical.SendsTo.Graphical.ReceivesFrom.Name AS N2 FROM State bi	• Sends\SendsTo • Receives\ReceivesFrom,

5.10 Appendix B: Full list of support QSQL textual queries

A full list of supported QSQL textual queries, extracted from Unit Tests, can be found in the following location:

https://coe.qualiware.com/wp-content/uploads/2020/02/QsqlTextualQueries.txt