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Installation Manual



benchmark
estimating software



Installation Manual

How to install Benchmark Estimating Software

Version 3.0 - June 2017

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The information contained in this document and the software described in this document (the "software") have been prepared with due care. The document and the software are offered to provide useful information to assist those interested in understanding the installation configurations of Benchmark Estimating Software.

Whilst every effort has been made to ensure that this document and the software are in accordance with current practice, they are not intended as exhaustive statements on the installation of Benchmark Estimating Software and its prerequisites. Benchmark Global Pty Ltd accepts no responsibility for errors in, or omissions from, the document or the software, nor work done or omitted to be done in reliance on this document or the software.

This document is designed to:

- Give you an overview of the architecture, supported environments and system requirements for Benchmark Estimating Software Version 7.8.
- Assist you in the successful installation and technical configuration of Benchmark Estimating Software Version 7.8.

Please consult the separate *User Manual* for information on how to use Benchmark Estimating Software.

Benchmark Estimating Software contact details

Australia - Sydney

Level 1, 83-89 Renwick Street,
Redfern, NSW 2016
Office Phone: +61 (0)2 8396 6555

PO Box 952,
49 Berry Street,
Nowra, NSW 2540
Office Phone: +61 (0)2 4422 3444

United Kingdom

Level 17,
111 Piccadilly,
Manchester M1 2HY
Office Phone: +44 (0)161 228 3351

Australia - Nowra

Benchmark Estimating Software web site: www.benchmarkestimating.com
[\(<https://www.benchmarkestimating.com>\)](https://www.benchmarkestimating.com)



Benchmark Support and Training

Email **Benchmark Support** (support@benchmarkestimating.com) or call:

- **Australia and New Zealand** - +61 (0)2 4422 3444
- **UK / Europe**
 - **UK** - +44 (0)161 667 1605
 - **France** - +33 (0)1 84 88 53 76

USA and Canada - 1800 469 9405

Produced in Australia

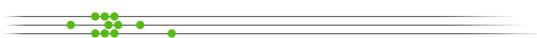


Contents

Preface	1
How this manual is organised	1
Document conventions	1
Keyboard Commands	1
Mouse Instructions	1
Benchmark Windows	1
Benchmark Fields	2
Enter Text	2
Menu Options	2
Buttons	2
Checkboxes	2
Document features	2
Notes and further information	2
Important steps or warnings	3
Additional Resources	3
User Manual	3
Online Help	3
PDF versions of all manuals	4
Installation and Technical Overview	5
Choose your database	5
Installation Configurations	6
Install with a database server across a Local Area Network (LAN)	7
Install with a database server deployed via Remote Desktop Services (RDS) or Citrix	8
Install with an SQLite database on a local computer	9
Deployment with a database server in the cloud	10
Third party software	11
Microsoft applications	11
RDS and Citrix	12
System requirements and supported environments	13
PC/laptop hosting the Benchmark Estimating Software application	13
Application Server hosting Benchmark Estimating Software	13



Server hosting SQL Server	13
Server hosting Oracle	14
Database size	14
Network	14
Virtual environments	14
Apple Macintosh and Android computers	15
Components installed during installation	15
Licensing systems	15
Unattended/Silent Installs (Advanced)	16
Database maintenance	17
<hr/>	
Database Backup	17
Backup of SQL Server or Oracle databases	17
Backup of SQLite databases	17
Benchmark's built-in Backup feature	17
Database performance	18
Database integrity checks and defragmentation	18
A special note about performance of SQLite databases	18
Troubleshooting performance	18
Installation Tasks	19
<hr/>	
Overview of Installation Tasks	19
Install Benchmark Estimating Software	19
Install Microsoft SQL Server Express	19
SQL Server Express	20
Deploy databases to the SQL Server	21
Deploy databases to your existing SQL Server	21
Required MS SQL Server Database permissions	23
Install and Configure Benchmark Estimating Software Version 7	24
Install Benchmark Estimating Software Version 7	24
Request and License Benchmark Estimating Software	26
Configure Database Connection(s)	28
Deploy the default databases onto your newly created SQL Server Express	34
SQL Server Parameters	38
Appendix A: Migrate Database from SQLite to SQL Server	39



Step 1: Backup the existing SQLite Database	39
Step 2: Restore the .bgb file to SQL Server	41
Step 3: Add a New Database Connection	42
Appendix B: Upgrade from Professional to Corporate	44
<hr/>	
Introduction	44
Setting up Regions	44
Upgrading to Corporate	45
Preparations for Conversion	45
Configure Licences	45
Installing your converted Database	46
Appendix C: Firewalls	47
<hr/>	
Terminology	47
Trusted Connection	47
SQL Server authentication	47
Desktop Firewall Settings	47
How to allow Benchmark Estimating Software with windows firewall	47
Database Server Firewall Settings	52
TCP/IP enabled	52
SQL Server Browser	53
How to allow SQL Browser with Window's firewall	53
Firewall exception for sqlservr.exe	59
How to allow SQLSERVR with windows firewall	59
Troubleshooting Error messages	64
Error Locating Server/Instance specified	64
No process is on the other end of the pipe	64
A connection attempt failed because the connected party did not properly respond after a period of time	64
Server doesn't support requested protocol	64
No connection could be made because the target machine actively refused it	65



Preface

This Preface provides an overview of how this manual is organised, guidance on which types of users should read the manual and conventions used in the manual.

How this manual is organised

This manual is organised into the following chapters:

- ***Installation and Technical Overview*** (on page [5](#))
- ***Database Maintenance*** (on page [17](#))
- ***Installation Tasks*** (on page [19](#))

Document conventions

Keyboard Commands

When you are instructed to press a key on the keyboard, the key will appear between greater than and less than signs (<>), in *upper case* letters: <CAPITALS>. When you are instructed to press two keys simultaneously, each key combination will be separated by a plus (+) sign. For example, <CTRL+1>.

Mouse Instructions

When instructed to click or select an icon or field, move the mouse pointer to the specified icon or field and click the left mouse button once. *Always use the left mouse button* unless otherwise instructed.

Benchmark Windows

Each window in Benchmark has a title at the top of the window. Where a window is referred to throughout this manual, it will be displayed in green text; for example – go to the **Administration** window.

Yellow highlighting is used throughout this document to indicate **Window names** in screen shots.

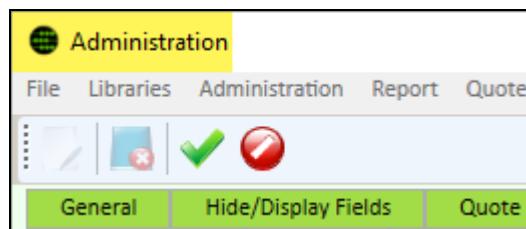


Figure 1: Window name highlighting example

Benchmark Fields

When instructed to type data into a field, or click in a field, the name of the field will be displayed in **this font style**.

Enter Text

When you need to type in text directly from the computer keyboard, this text will be displayed in **this font style**.

Menu Options

When instructed to select an option from a menu, the menu and the option will be separated by a → symbol. e.g. Administration → Codes.

Buttons

Benchmark buttons are defined in a different font. For example: Click the **Click to Recalculate** button.

Checkboxes

You can perform two actions on a checkbox:

- **Check** the checkbox
- **Clear** the checkbox

Checkboxes have two states:

- **Checked**



- **Cleared**



Document features

Notes and further information

This document is designed to cater for users of different skill levels and different job functions. Some users will require more information on particular topics or may wish to read additional information. Where more advanced or detailed information about a topic exists, this is displayed in a notes box like that shown below.



Example of a note.

This is an example of a notes box which provides more information about a topic.

Important steps or warnings

When it is necessary to highlight important points about the software and its operation, this information is included in a notes box with a warning icon, as shown below.



Example of an important topic/concept.

This is an example of a warning or very important message that should be read.

Additional Resources

User Manual

The user manual contains information about how to use *Benchmark Estimating Software* for estimators, project managers, and managers involved in the estimating process. Topics covered include:

- An introduction to estimating your direct costs
- Allocating profit and overheads to an estimate
- Generating reports for an estimate
- Producing Progress Claims and variations
- Analysing your market share.

The user manual also contains instructions on how to configure and maintain the system and data to suit your organisation. This includes setting up and maintaining your libraries, specifying system defaults (for example, default profit and overhead percentages), database management tasks and setting up user accounts.



Who should read the User Manual?

Estimators, project managers and managers involved in the estimating process.

Other personnel involved with *Benchmark Estimating Software* such as IT Administrators, senior managers and business sponsors should read the introduction section of the user manual as well as any other chapters that are relevant to them.

Online Help

Benchmark Estimating Software includes an online help system. This system provides access to all help information about *Benchmark Estimating Software*, including information on installation, setup and administration, and day-to-day use. To access the online help system you can:

1. Select the Help → Help menu
2. Or select the Help icon from the Help & Support panel in **MY Benchmark**.

PDF versions of all manuals

You can access PDF versions of all manuals from the same menus as the online help above.

Installation and Technical Overview

This chapter covers database options, system requirements and supported environments, components installed during installation, licensing and an overview of the different installation architectures.



Who should read this chapter?

The IT Administrator or persons responsible for installing the software. Some senior managers involved with *Benchmark Estimating Software* may also wish to read over some sections for a high level understanding of how *Benchmark Estimating Software* can be installed.

Choose your database



PLEASE READ

WE STRONGLY RECOMMEND YOU READ THIS SECTION AND CHOOSE THE DATABASE SYSTEM FOR YOUR BUSINESS BEFORE PROCEEDING.

The database system you choose to use with *Benchmark Estimating Software* will dictate various aspects of the installation procedure. *Benchmark Estimating Software* supports Microsoft SQL Server, Oracle and SQLite databases as described below.

Note all clients with two or more concurrent licences must use either Microsoft SQL Server or Oracle.

- **Microsoft SQL Server (SQL Server) 2005, 2008, 2012, 2014 and 2016** – This is the most common database server type used with Benchmark. Many clients already have this software installed and if so you can use your existing setup. For clients who don't have this installed, the free Express edition of SQL Server can be downloaded from Microsoft's website (<http://www.microsoft.com/sql>).
- **Oracle 11g and 12c – (Benchmark Professional and Corporate editions only)** can be used with the standard, enterprise or express editions of Oracle database. The free express edition can be downloaded from the Oracle website (<http://www.oracle.com/technetwork/products/express-edition/downloads/index.html>).
- **SQLite** – This option is designed for clients with only one user licence. It is recommended that any clients who plan to purchase more licences in near future should consider using SQL Server.



SQLite and file synchronisation software

SQLite should not be used with any file synchronisation software/system such as Dropbox, Google Drive, Microsoft OneDrive or Microsoft Sync. Using them may corrupt the SQLite database.

Please note that if you have one licence and do choose to use SQLite initially, there are tools available to migrate your SQLite database to SQL Server or Oracle should you wish to do this in the future.



SQLite database referred to as a Portable database

The SQLite database is also referred to as a *Portable Database* within the software. This format is also used by the software for the Check Out feature; explained in more detail in the Benchmark Estimating Software user manual.



Don't use Benchmark Estimating Software over a WAN

Benchmark Estimating Software should not be used with a database server over a Wide Area Network (WAN), regardless of whether a VPN is used or not. Using Benchmark Estimating Software over a WAN will work but the performance will be slower.

Installation Configurations

Benchmark Estimating Software can be configured **On-premise**, or **In the cloud**.

On-Premise installation options:

- **Install with a database server across a Local Area Network (LAN)** (on page [5](#)) – this is the recommended configuration for a single-office environment with two or more Benchmark Estimating Software licences.
- **Install with a database server deployed via Remote Desktop Services (RDS) or Citrix** (on page [8](#)) – ideal for organisations with multiple offices and/or remote personnel, with two or more licences. In this configuration you do not need to install Benchmark on the end-user's computer/device and can therefore use Benchmark on a computer/laptop/ipad/android tablet.
- **Install with an SQLite database on a local computer** (on page [9](#)) – ideal for single user licences only.

Deployment with a database server in the cloud (on page [10](#)) – ideal for organisations with multiple offices and/or remote personnel, with two or more licences. This deployment uses RDS or Citrix within the cloud infrastructure. In this configuration you do not need to install Benchmark on the end-user's computer/device. This type of deployment enables you to use Benchmark on any of the following devices:

- Desktop computer
- Laptop
- Ipad
- Android tablet.

Install with a database server across a Local Area Network (LAN)

This is the recommended configuration for a single-office environment with two or more Benchmark Estimating Software licences.

All clients with two or more licences *must* use a database server. Benchmark Estimating Software supports both *SQL Server* and *Oracle database servers*. Clients with only one licence who plan to upgrade to two or more licences in the near future, in a single-office environment, are also recommended to use this configuration.

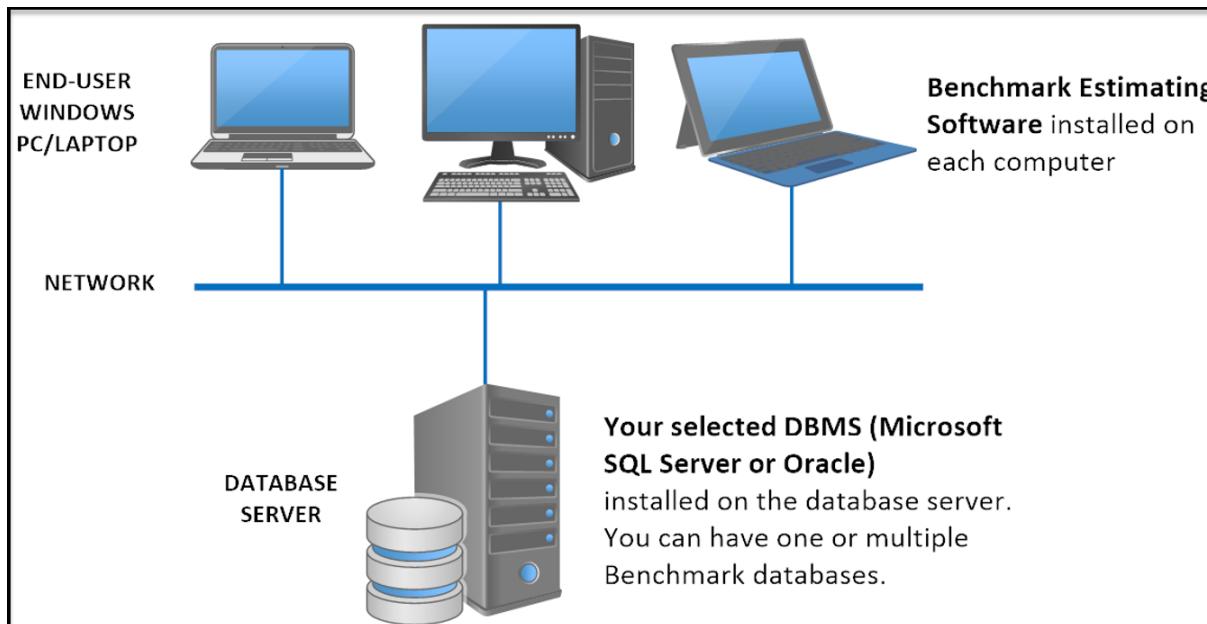


Figure 2: Installation over Network with Database Server

Install with a database server deployed via Remote Desktop Services (RDS) or Citrix

You can install Benchmark Estimating Software on an application server and deploy it to users via RDS or Citrix. This method is ideal for organisations that have multiple offices and/or remote users, and it also simplifies deployment and maintenance.

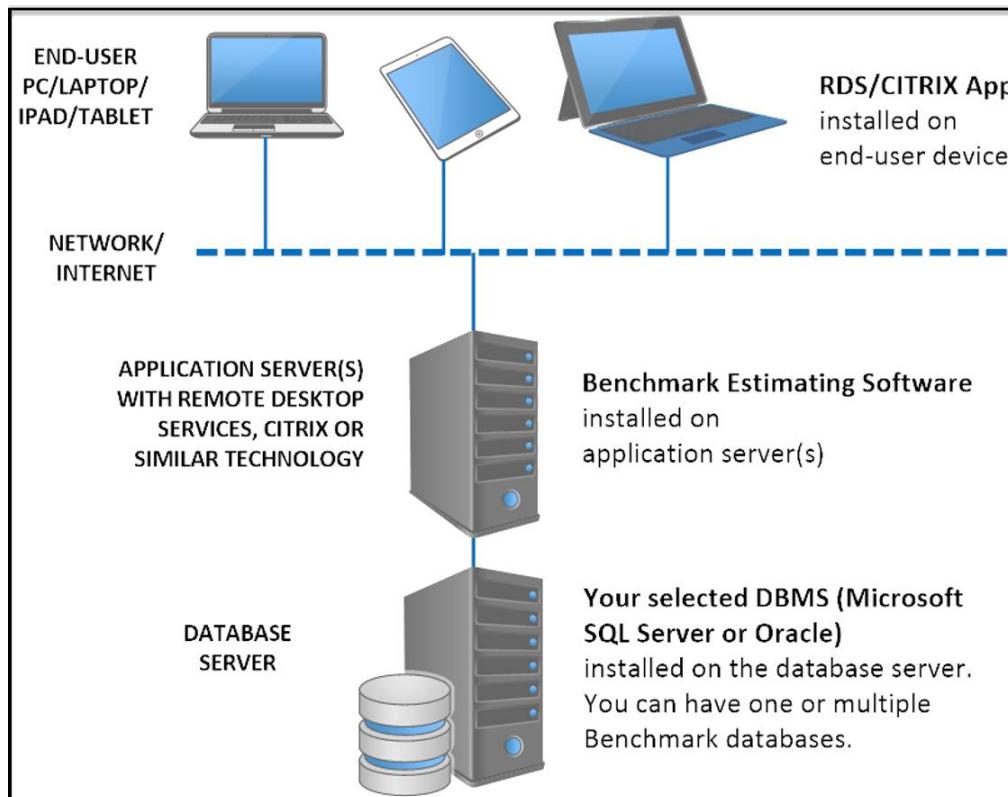


Figure 3: Installation overview using Remote Desktop Services or Citrix

Install using RDS or Citrix

The process to install and deploy Benchmark Estimating Software using RDS or Citrix is similar to that for the installation using SQL Server across a LAN. The main difference as far as the Benchmark Estimating Software application is concerned, is that it only needs to be installed on the application server(s) and not on the end-user's PC/laptop(s).

License/Configure Database connections

You only need to license and configure database connection(s) on the *server* and *not* on end-user's PCs/laptops. There is no requirement to install anything on the end-user's PC/laptop for this type of installation (except a *Remote Desktop Connection* or *Citrix connection* component – please consult your vendors of these products for more information).

Improve graphical display when using RDS/Citrix

If you are using Benchmark Estimating Software with *RDS or Citrix*, we recommend that you check the *Use Citrix or Remote Desktop Services* checkbox in the **General** tab of the **Administration** window for each database. This removes the graphical gradients, optimises the user experience and makes screen refreshes as fast as possible for this configuration. You should do this at the end of the installation process and after you have configured and opened a database.

Install with an SQLite database on a local computer

You can install Benchmark Estimating Software for use with *SQLite* on a standalone Windows PC/laptop.



SQLite database = single user

The *SQLite database* is for use by only one user. If you intend to have more than one user, please refer to **Install with a database server across a Local Area Network (LAN)** (on page [7](#)) for details on using a database server.

There are two acceptable methods when you use *SQLite* as your database:

1. Install Benchmark and the *SQLite* database on your local PC/laptop, or
2. Install Benchmark on your local PC/laptop and store your *SQLite* database on a server.

Install Benchmark and the SQLite database on your local PC/laptop

With this option, you install both Benchmark Estimating Software and the *SQLite* database on your PC/laptop, and no data is shared across a network with other computers.

You should use this option if you have a single licence and do not have a network and/or do not have a need to share the data with other users.

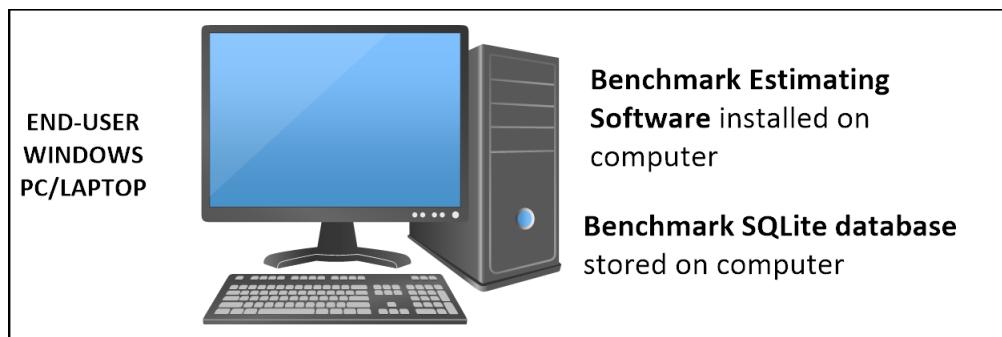


Figure 4: Local Installation using SQLite on one computer

Install Benchmark on your local PC/laptop and store your SQLite database on a server

You should use this installation configuration if you have only one Benchmark licence, but have a network and central file server, and/or have a need to share the data with other users.

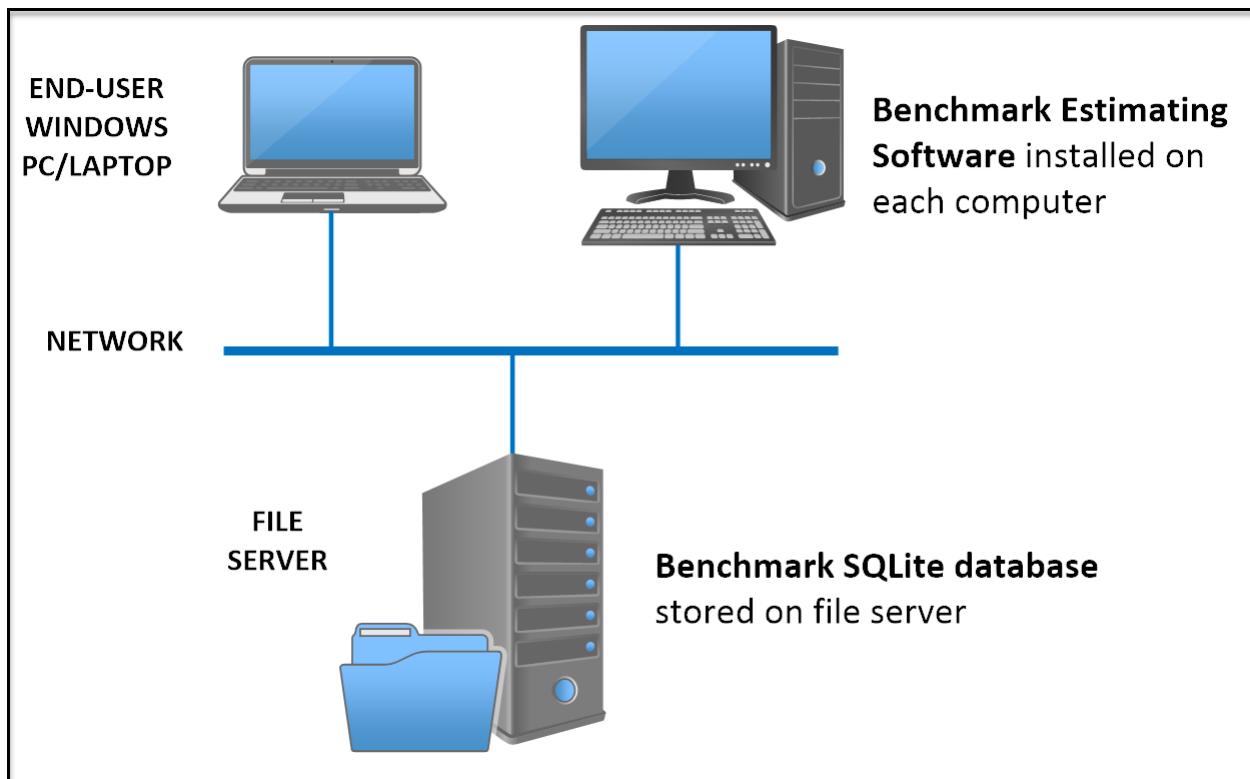


Figure 5: Local Installation using SQLite on network



One licence limitation

Note: With one licence, only one person can access the database at a time.

Deployment with a database server in the cloud

Deployment with a database server in the cloud – ideal for organisations with multiple offices and/or remote personnel, with two or more licences. This uses RDS or Citrix within the cloud infrastructure. In this configuration you do not need to install Benchmark on the end-user's computer/device. This type of deployment enables you to use Benchmark on any of the following devices:

- Desktop computer
- Laptop
- Ipad
- Android tablet.

There are two main tasks involved when you install Benchmark Estimating Software "in the cloud":

1. Install and configure Benchmark Estimating Software using *Infrastructure as a Service (IaaS)*. This requires *RDS* or *Citrix* and the setup is like deploying Benchmark via *RDS* or *Citrix*, as documented in **Install using RDS or Citrix** (on page 8).

The main difference is you are using "cloud" infrastructure not your own on-site infrastructure.

1. Configure your "cloud" infrastructure – this could be a bespoke setup or using a commercial service such as *Microsoft Azure* or *Amazon Web Services* for example. Please consult with your IT Administrator to set this up for you based on your business needs.

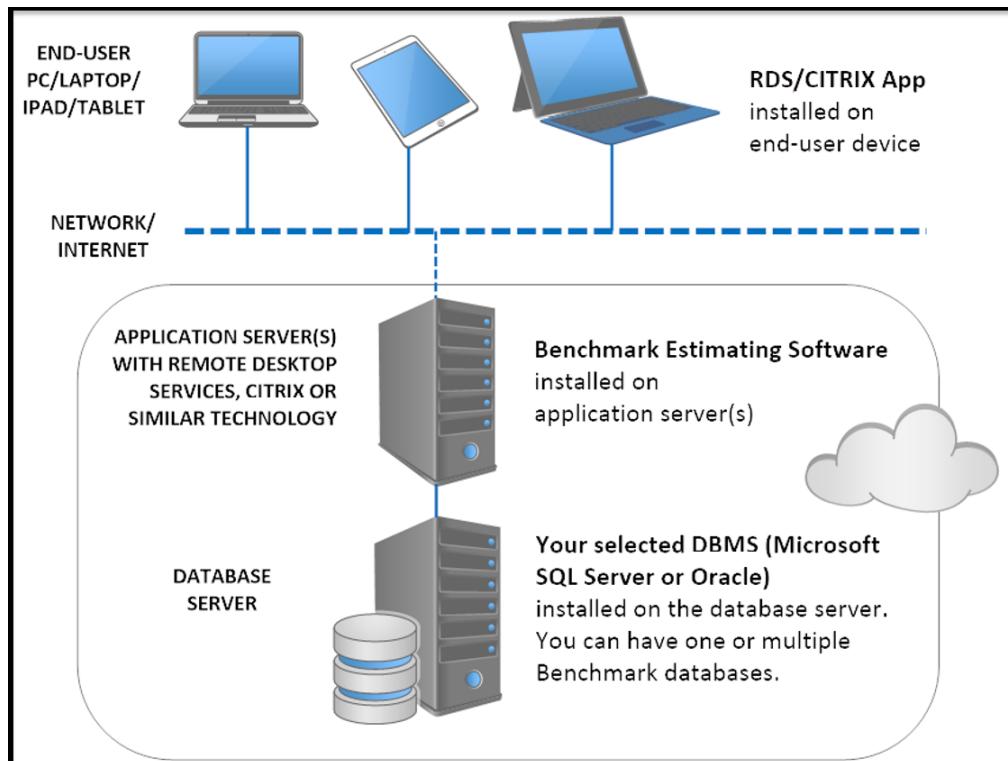


Figure 6: Installation overview in the cloud

Third party software

Microsoft applications

Benchmark Estimating Software can export to *and automatically open* the following 3rd party software:

- Microsoft Word
- Microsoft Outlook
- Microsoft Excel
- Microsoft Project.

For these exports to *fully function* you need to install them on the same computer/application server that has Benchmark Estimating Software installed. *Read below for further information about each export feature and possible workarounds/exceptions.*



Microsoft component installation

This manual does not cover installation of any of these Microsoft components. Please consult Microsoft about the licensing and installation of Microsoft products.

Use the export to Excel features

Benchmark Estimating Software can create Excel .xls and .xlsx files that you can open with Microsoft Excel. These features use the third-party component *Spreadsheet Gear*, which is also capable of viewing and editing Excel workbooks without Microsoft Excel being installed.

This means **you do not need Microsoft Excel installed** to view and save most of the Excel exports from Benchmark Estimating Software.

Use the export to Microsoft Project features

You can export a Benchmark Estimating Software project to *Microsoft Project* as an *.xml file*. If *Microsoft Project* is installed, Benchmark can open it automatically, however, the *.xml* file can also be saved and opened in Microsoft Project on another computer.

This means that *you don't need to have Microsoft Project installed* on the same computer/application server to use this feature.

Use the Microsoft Word Template feature

The Microsoft Word Template feature will create and open a document in *Microsoft Word*. Microsoft Word **must be** installed on the computer/application server where Benchmark is installed for this feature to work.

Use the export to Microsoft Outlook feature

Benchmark can send emails via Microsoft Outlook. To use this feature Microsoft Outlook **must be** installed on the computer/application server where Benchmark is installed.

Benchmark Estimating Software also offers an SMTP email feature to send emails if you do not have Outlook installed.

RDS and Citrix

This manual does *not* cover the installation or configuration of *RDS or Citrix*; clients should consult the documentation provided by the respective vendors for further information on the installation and configuration of these systems.

As mentioned above, if you are using *RDS or Citrix* to deploy Benchmark Estimating Software, you may also need to install the relevant Microsoft applications above depending on your business needs.

System requirements and supported environments

PC/laptop hosting the Benchmark Estimating Software application

The system requirements for the end-user PCs/laptops that have Benchmark Estimating Software installed are below.

Operating system	Vista, Windows 7, Windows 8, Windows 10
Processor	2.0 GHz *
Memory (RAM)	4GB *
Disk space	500MB ^
Screen resolution	1024 x 768

* Minimum recommended.

^ This disk space is for all installed components, some of which you may already have installed on your computer. It also does not take into account database size if you install this locally.

Application Server hosting Benchmark Estimating Software

The system requirements for an application server when deploying Benchmark Estimating Software via Remote Desktop Services (RDS) or Citrix are:

Operating system	Small Business Server, Standard and Enterprise; Windows Server 2003, 2003 R2, 2008, 2008 R2, 2012, 2012 R2, 2016 versions.
Processor	2.4 GHz *
Memory (RAM)	4GB *
Disk space	500MB ^
Screen resolution	1024 x 768

*Minimum recommended. The processor and RAM requirements do though depend on various factors such as the number of users accessing the application at any one time, the type of operations your users will do within Benchmark, the operating system, and other applications that may be utilising the resources of the application server.

^ This disk space is for all installed components, some of which you may already have installed on your computer. It also does not take into account database size if you install this locally.

Server hosting SQL Server

The following requirements are recommended for the server hosting SQL Server:

Operating system	Windows Vista, Windows 7, Windows 8, Windows Server 2003, 2003 R2, 2008, 2008 R2, 2012, 2012 R2, 2016.
Microsoft SQL Server	2005, 2008, 2012, 2014, 2016 editions (Express, Standard or Enterprise).
Processor	2.4GHz*
Memory (RAM)	4GB*
Disk space	4GB

*Minimum recommended. The processor and RAM requirements depend on various factors such as the number of users, the operating system, and other applications that may be utilising the resources of the server.

Server hosting Oracle

Benchmark Estimating Software is compatible with Oracle 11g & 12c. Oracle server setup is not covered in this manual. Please refer to Oracle's website for installation documentation.

Database size

The size of your Benchmark Estimating Software database will vary depending on the use of the application and number of users. No two companies are the same and one company with 10 concurrent users may have a very different database size to another company with 10 concurrent users.

Our largest enterprise grade customers, some with over 100 users, have a database around 10GB after many years. That said their database may be larger or smaller than another company with over 100 users. It relates to the way your data is set up, the features you use, number of users, as well as the number of estimates created.

Benchmark Estimating Software also has a Documents feature which allows documentation related to estimates (that is, drawings, photos, PDFs, etc.) to be attached to an estimate. If this feature is used, these documents are not stored within the Benchmark database; they are stored on a File Server in a location that is configured by the Benchmark Administrator.

Network

When using Benchmark Estimating Software across a *Local Area Network (LAN)*, we recommend a *minimum of a 100Mbps* network.

For *RDS* or *Citrix* deployments with the application and database hosted on separate servers, we recommend a *1,000Mbps (1Gbps)* network between the servers.

Virtual environments

Benchmark Estimating Software is supported in virtual servers/environments.

Apple Macintosh and Android computers

Benchmark Estimating Software has been developed using Microsoft .NET which is specific to the Windows operating system. This means that Benchmark can only be *installed* on a computer that has the Windows operating system. Whilst *emulator* software programs exist to run Windows software on non-Windows machines, this is not a supported environment for running Benchmark Estimating Software.

You can use Benchmark Estimating Software via an Apple computer or an Android tablet, by using RDS or Citrix deployment configurations. These are documented in **Installation Configurations** (on page [6](#)).

Components installed during installation

The downloadable installation package contains all pre-requisites except the actual database server. The prerequisites will be installed as part of the installation process if required.

The list of pre-requisite components that may be installed during the installation process is contained below:

1. Microsoft .NET Framework 4.5.1
2. SAP Crystal Reports runtime engine for .NET Framework (32-bit) Version 13.0.12.1494

Pre-requisites (a) and (b) may require manual installation on restricted server environments such as Windows Server and other locked down environments. Please contact your IT administrator to install these pre-requisites if required.

1. Windows Installer Version 4.5. This may require a service pack depending on your Operating System. For example, Windows Server 2003 requires at least Service Pack 1.

These third party software systems are protected by their own licensing conditions; please refer to the End User Licence Agreement for information on the licensing and restrictions that apply to these third party systems.



Sample and blank databases.

The installer can also install sample databases and a blank database onto SQL Server. These databases are discussed in the relevant section of this manual. For sample databases for Oracle please contact Benchmark Estimating support.

Licensing systems

Benchmark Estimating has two types of licences that can be purchased; a Concurrent Licence or an Enterprise Licence.

1. **Concurrent** licences allow Benchmark Estimating Software to be installed on unlimited computers/servers. The number of users however, that can use the product at any one time is restricted by how many concurrent licences have been purchased.

2. **An Enterprise** licence allows unlimited installations and unlimited use of Benchmark Estimating Software within the licensed organisation. There is no restriction on how many users can access the product at any one time.

Regardless of the licensing system you have purchased, the installation options and instructions described in this manual are consistent across the different licensing systems.

For more details on the licensing terms and conditions please consult the End User Licence Agreement (EULA) which is displayed during the installation process and can also be obtained from within Benchmark Estimating Software in the Help → [About](#) window.

Unattended/Silent Installs (Advanced)

Benchmark Estimating Software can be installed without any user interaction. The two possible methods are:

1. Unattended (no user interaction, but progress is shown)
2. Silent (no user interaction and no progress display).

These installation methods allow the software to be installed to an end user, across the network, without any user interaction.

To perform an unattended installation, please use the command line

```
Setup.exe /V"/gb"
```

To perform a silent installation, please use the command line

```
Setup.exe /V"/qn"
```

Anything specified after the /V is passed through to the underlying MSI. Therefore, to add other features you would specify them inside the speech marks. An example is

```
Setup.exe /V"/qb- ALLUSERS=1"
```

This would install Benchmark Estimating Software with a basic user interface, with no user interaction and make it available for all users on the destination computer.

Database maintenance

This chapter covers critical database tasks such as database backup and database performance monitoring.



Who should read this chapter?

The IT Administrator or persons responsible for installing the software and maintaining the database.

Database Backup



Database Backups

Backup of Benchmark Estimating Software databases is the responsibility of each company using the system.

Backups should be done at regular intervals as decided by each customer.

Backup of SQL Server or Oracle databases

Backups can be done automatically from within SQL Server Standard or Enterprise editions and from within Oracle database.

Please consult with your IT Department / Provider for more information.



Free edition limitations

Some of the free editions of SQL Server do not have automatic backup facilities and they must be backed up manually or by using Windows scheduling to perform the backup.

Backup of SQLite databases

SQLite databases can be backed up by one of two means:

1. Using Benchmark's built-in Backup feature (see below), or
2. By copying and renaming the database (.bp7) file through Windows Explorer (that is, just as you would copy any normal file on your computer).

Benchmark's built-in Backup feature

Benchmark Estimating Software includes a database backup function found via File → Utilities → Backup data. This type of backup is only recommended for small databases under 2GB in size. For databases larger than 2GB, third party database tools should be used to backup, migrate and restore Benchmark Estimating Software databases.

Database performance

Database performance for any multi-user business critical database application like Benchmark Estimating Software, is an important aspect. If a database is not maintained and/or tweaked, especially for larger clients with large amounts of data, performance may deteriorate and this may impact the response time for users.

For larger enterprises, the skills of a specialist Database Administrator (DBA) can be very useful to ensure optimum performance for your company based on its use of Benchmark Estimating Software.

Database integrity checks and defragmentation

Benchmark Estimating Software has an built-in Integrity Check feature. You can run this by clicking File → Utilities → Check Data Integrity. If you find errors, please contact Benchmark Support as these should be fixed as soon as possible. We recommend you set this as a regular maintenance activity every few months.

Additionally, our Support Team can provide you with SQL scripts to check the index defragmentation of your database, should you be experiencing issues. This may help but is by no means a guarantee to resolve issues.

A special note about performance of SQLite databases

SQLite databases (designed for single users) are not designed to handle large amounts of data. Should you experience performance issues in an SQLite database you should consider creating a new database (File → Utilities → Backup data no Projects) and then restoring this or moving to a configuration using a SQL Server or Oracle Database server. Refer to **Step 2: Restore the .bgb file to SQL Server** (on page [41](#)).

Troubleshooting performance

If the performance of Benchmark Estimating Software seems slow, there are various aspects that could be impacting this. Some of these will be outside of Benchmark's domain (for example other business systems consuming resources and/or inadequate hardware). Please contact **Benchmark Support** (support@benchmarkestimating.com) if you need assistance/guidance.

Installation Tasks

This chapter provides step by step instructions for the various tasks required to install and configure *Benchmark Estimating Software*. This should be read in conjunction with *Installation and Technical Overview* (on page [5](#)).



Who should read this chapter?

The IT Administrator, or persons responsible for installing the software, should read the sections of chapter two that are relevant to their business.

Overview of Installation Tasks

The Installation tasks contained within this chapter cover all types of users, those with and without SQL Server already installed, and also those clients with a single licence who will be using SQLite as their main database.



If you haven't already read Chapter One, **you must do this now** so that you know which installation architecture suits your business and also which of the following installation tasks you need to undertake.

The tasks contained below start with those related to SQL Server as this is the typical installation architecture with Benchmark Estimating Software Version 7.

Install Benchmark Estimating Software

Summary steps to install Benchmark Estimating Software:

1. Determine database type to be used (*Choose your database* (on page [5](#))).
2. If required, *Install Microsoft SQL Server Express* (on page [19](#)).
3. Deploy databases to the SQL Server.
 - a. *Deploy databases to the SQL Server* (on page [21](#)).
 - b. *Deploy databases to your existing SQL Server* (on page [21](#)).
4. Configure firewall – refer to *Desktop Firewall Settings* (on page [47](#))
5. *Install and Configure Benchmark Estimating Software Version 7* (on page [24](#)).
6. License Benchmark Estimating Software - refer to *Install Benchmark Estimating Software Version 7* (on page [24](#)).
7. *Configure Database Connection(s)* (on page [28](#)).

Install Microsoft SQL Server Express

Follow these instructions to install Microsoft SQL Server Express.

If you do not own a standard or enterprise edition of Microsoft SQL Server, then you can use free Microsoft SQL Server 2005, 2008, 2012, 2014 or 2016 Express editions. The latest version can be found within Microsoft's website (<http://www.microsoft.com/sql>).

If you already own SQLServer, you can use your existing SQL Server and proceed to **Deploy databases to your existing SQL Server** (on page [21](#)) in line with the recommended system requirements in **System requirements and supported environments** (on page [13](#)).

If you plan to use SQL Server Express, *you should check to ensure that the express version of SQL Server satisfies your business needs.* Based on the SQL Server Express datasheet at the time of printing this manual, some limitations of the Express edition are that it can only utilise 4 cores, can only utilise up to 1GB of RAM and the maximum database size is 10GB.



SQL Express RAM limitations

Because SQL Server will try to put the entire database into RAM, if your database is larger than 1GB you should consider upgrading to the standard version of SQL Server.

For more information, refer to the Microsoft website:
(<https://www.microsoft.com/en-au/sql-server/>)

If you do not wish to use SQL Server Express you can install other versions and editions of SQL Server as defined in **Server hosting SQL Server** (on page [13](#)).

SQL Server Express



SQL Server on Windows Small Business Server

Windows Small Business Server does not allow deployment of SQL Server using these command line parameters. The installation of SQL Server on a Small Business Server will need to be done manually. Please consult Microsoft documentation for installation information.

To install SQL Server Express *on your database server*:

1. Download the appropriate edition of SQL Server Express for your server. (For SQL Server 2014 and above you will need to execute the file so it extracts to a random directory and call the `setup.exe` file).
2. Move the downloaded file to a convenient location on the server e.g. "c:\".
3. Open the command prompt with administrative privileges. (Open the windows Start menu and in the run field enter `cmd` and click enter if logged in as the administrator.)
4. Invoke the name of the file you downloaded with these command line arguments: (Copy this text below and right click → paste in the command prompt)

```
/ACTION=Install /FEATURES=SQLEngine /INSTANCENAME=Benchmark
/SQLSVCAccount="NT AUTHORITY\Network Service"
/SQLSYSADMINACCOUNTS="NT AUTHORITY\Network Service"
/AGTSVCAccount="NT AUTHORITY\Network Service"
/SECURITYMODE="SQL" /TCPENABLED="1"
/BROWSERSVCSTARTUPTYPE="Automatic" /SAPWD="bENCHM@RK789"
/QS /HIDECONSOLE="true" /ERRORREPORTING="1"
/IACCEPTSQLSERVERLICENSETERMS
```

Your command prompt should look similar to:

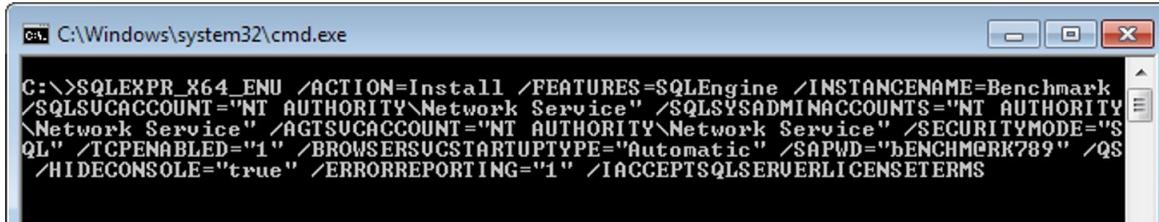


Figure 7: Command Line for SQL Server Installation

1. The SQL Server package will automatically unzip itself and then execute with the command line parameters. The installation is automatic and will not ask for any further input.
2. If the process completed successfully (approximately 15 to 30 minutes) you should have SQL Server installed on the server or desktop/laptop. Consult Benchmark Estimating Support or Microsoft documentation and forums if there are issues.

Deploy databases to the SQL Server

Deploy databases to your existing SQL Server



Administration knowledge needed

The IT Administrator or person who knows the instance name, administrator login and password of the existing SQL Server will need to perform this installation.

This section is for clients who have an existing SQL Server and who now wish to install the sample and/or blank databases included with Benchmark Estimating Software onto their existing SQL Server.

To install the sample and/or blank databases from the Benchmark Estimating Software installer, *on the server where SQL Server is already installed*:

1. Execute (double click on) the Benchmark Estimating Software *Complete.exe* file downloaded from the web.
2. Click **Next**.
3. In the **Licence Agreement** window, read the licence agreement and select the radio option I accept the terms in the licence agreement if you accept the terms of the agreement. Click **Next**.
4. Optionally enter your *Name* and *Organisation* details in the **Customer Information** window, and click **Next**.

5. In the **Setup Type** window, select the Custom check box and click **Next**.
6. In the Custom Setup window. Select SQL Server Database – Custom Server and click the X to open the menu and select This feature, and all subfeatures, will be installed on local hard drive to have the databases created onto the SQL Server.

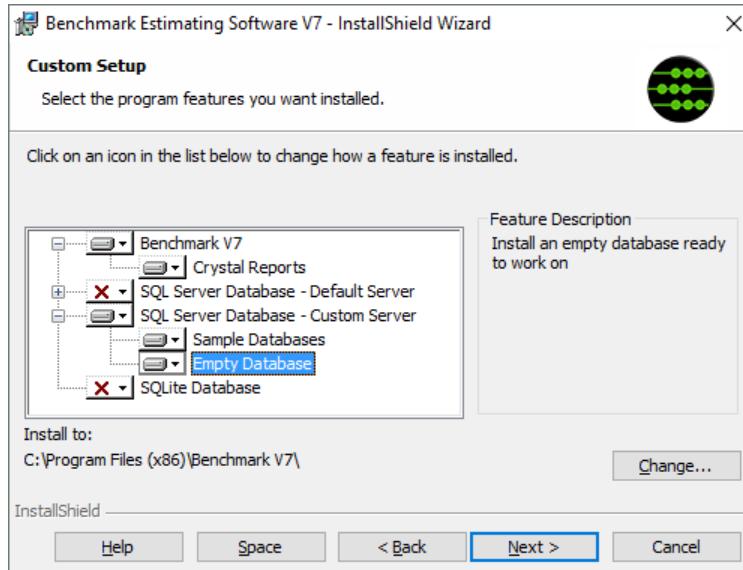


Figure 8: Benchmark Installation - Custom Server Deployment of Databases

1. Click **Next**.
2. In the **Database Server** window, you are required to enter the parameters for your existing SQL Server. You will need to enter in your database server in the format "**server\sql instance name**" as well as the connection type with Login ID and Password if server authentication is used. *(local) translates into the current machine you're running the installation on.*

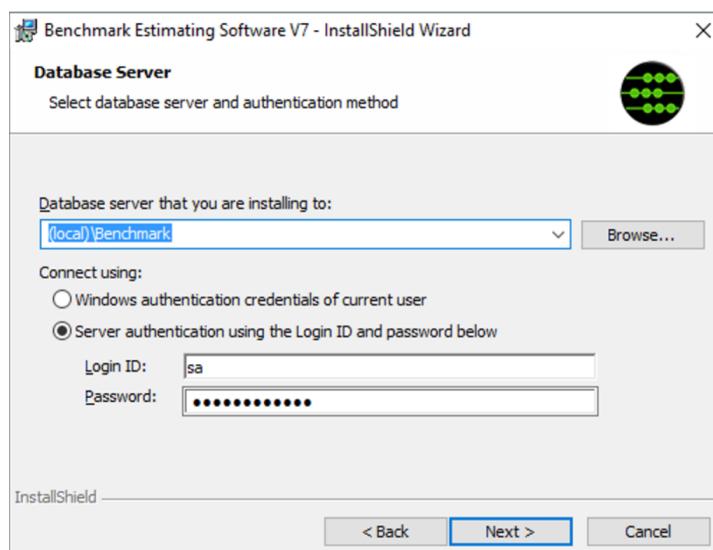


Figure 9: Benchmark Installation - Database Server Login Details

1. Check that all the parameters for your SQL Server are correct and click **Next**.
2. Click **Install** to commence the installation of the databases.



Firewall Access

SQL Server, SQL Browser service and the Benchmark Estimating Software application will require access through any existing firewalls. For details see [Appendix C: Firewalls \(on page 47\)](#).

Required MS SQL Server Database permissions

A Benchmark Estimating Software database connection can use either Windows authentication or SQL server authentication. If you do not use the default **sa** username you install Microsoft **SQL Server Express** (on page [20](#)) or you intend to use an existing SQL Server, then specific users can be setup for a SQL Server. The users will require the following permissions to Benchmark Estimating Software SQL databases:

- db_datareader – required to read data from the database
- db_datawriter – required to write data to the database
- db_ddladmin – required to update the database structure for new versions of Benchmark Estimating Software.

When using Microsoft SQL Server Management Studio (not provided) a typical user mapping will look like the following example;

1. Open Microsoft SQL Server Management Studio and log in to the instance being used for the Benchmark Estimating Software databases.
2. Select the Security → Logins and select the User to edit or right-click and add a new user.
3. Select User Mapping.

4. Select the databases the user needs access to and select roles: db_datareader, db_datawriter, db_ddladmin and public.

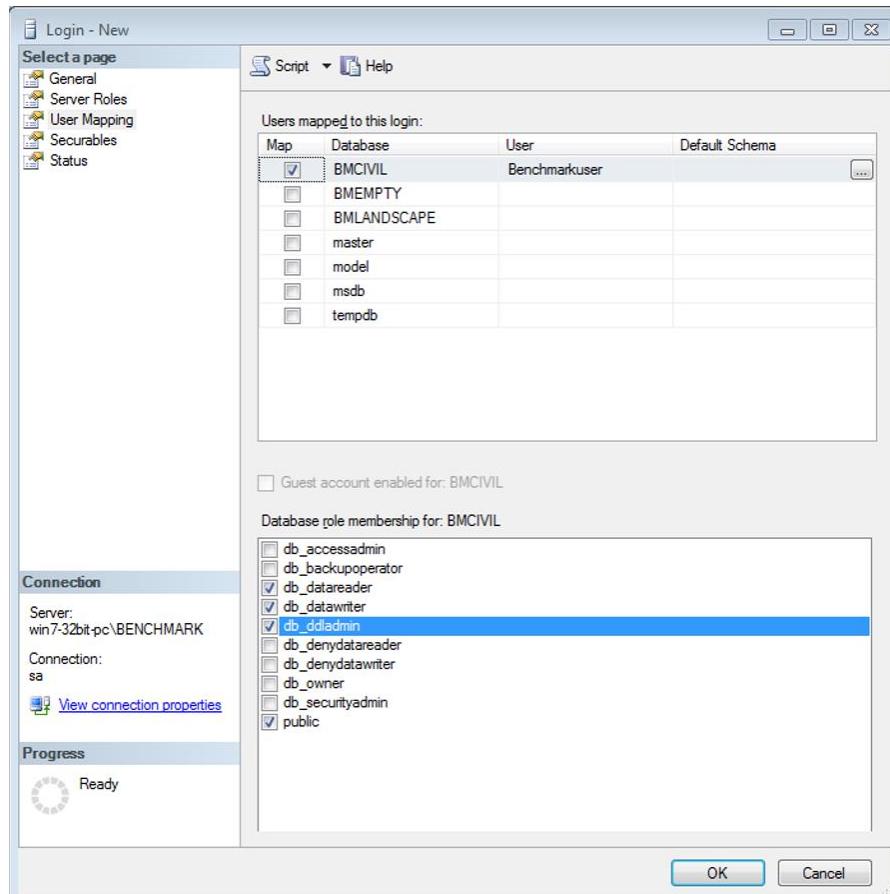


Figure 10: Benchmark Installation - SQL Management Studio Security

1. Click **OK** and close Microsoft SQL Server Management Studio.

Install and Configure Benchmark Estimating Software Version 7

Installing and configuring Benchmark Estimating Software version 7 on each laptop/PC/server involves three steps which are completed in this order:

1. Installing the Benchmark Estimating Software application and its pre-requisites.
2. Licensing the software.
3. Configuring the Database Connection(s).

These three steps need to be performed on each of the PC/laptop/servers on which Benchmark Estimating Software is to be installed. Please refer to **Installation and Technical Overview** (on page 5) for details on the different installation architectures.

Install Benchmark Estimating Software Version 7

To install the Benchmark Estimating Software version 7 on a PC/laptop/server:

1. Execute the Benchmark Estimating Software Complete.exe file downloaded from the web.
2. Click **Next**.
3. In the **Licence Agreement** window, read the licence agreement and select the radio option I accept the terms in the licence agreement if you accept the terms of the agreement. Click **Next**.
4. Optionally enter your *Name* and *Organisation* details in the **Customer Information** window, and click **Next**.
5. In the **Setup Type** window, select the Complete or Custom check box to suit your business. Guidance on which one to select is as follows:
 - a. Complete – Selecting Complete will install Benchmark V7 and sample SQLite databases on the target computer. If you do not want to install sample SQLite databases click Custom and follow the steps below.



SQL Server and central database

For those using SQL Server with a central database, and assuming you are not using Remote Desktop Services or Citrix, you may still want to install the SQLite databases on each end-user's PC/laptop as they can be used for learning purposes.

- a. Custom – Select Custom and click **Next**. In the Custom Setup window, click on the SQLite Database option and select menu option This feature will not be available, so that you end up with the following feature status (as you can see only Benchmark V7 is selected to be installed).

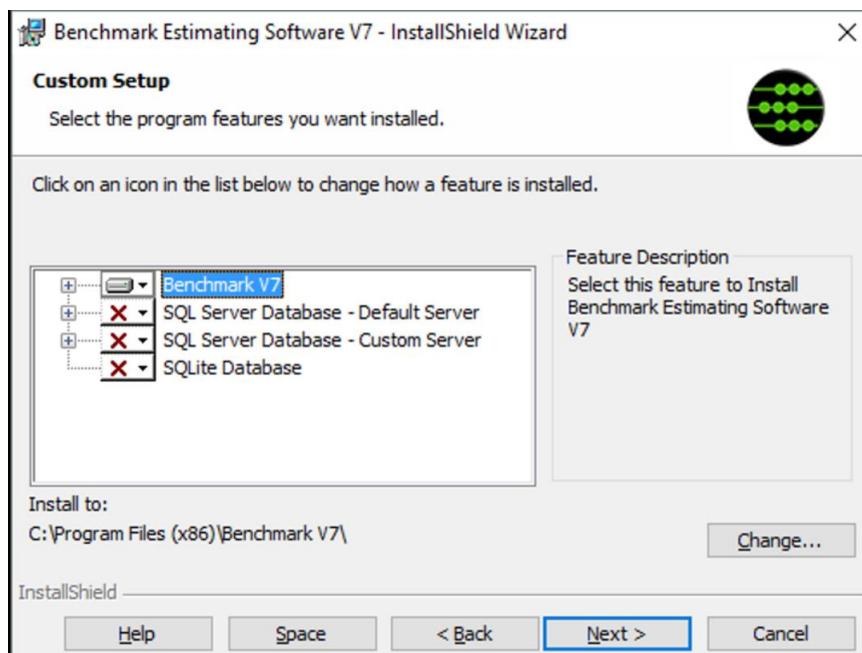


Figure 11: Benchmark Installation - Custom Setup of Benchmark only

1. Click **Next**.

2. Click **Install** to commence the installation of Benchmark Estimating Software version 7. This may take several minutes depending on what pre-requisite software already exists on the computer.
 - a. Microsoft .NET 4.5.1 may require a restart.
 - b. Crystal Reports runtime will take a few minutes to install.

Request and License Benchmark Estimating Software

Licensing for Benchmark Estimating Software is either on a concurrent basis or for an enterprise. Regardless of the licensing system you have purchased, you can install and licence the Benchmark Estimating Software on unlimited PCs/laptops/servers in your organisation based on the terms and conditions in the End User Licence Agreement.

For each PC/laptop/server on which you install Benchmark Estimating Software version 7, you will need to request and install a Licence File. Each Licence File is unique to the computer it is installed on, the number of licences owned by your organisation and the product you have purchased.

To request and install a Licence File after installing:

1. Open Benchmark Estimating Software version 7.
2. The very first time you open Benchmark Estimating Software you will be asked to install a Licence File. You will be prompted with the following window (note if you have installed a trial version previously you may not see this message and may need to Reserialise instead):

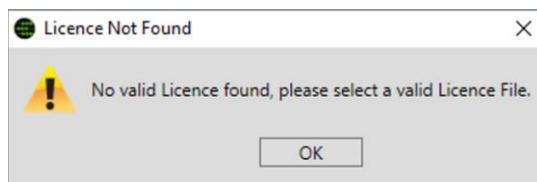


Figure 12: Benchmark - Licence not found message

1. Select **OK**.

2. The **Licence Information** window will be displayed.

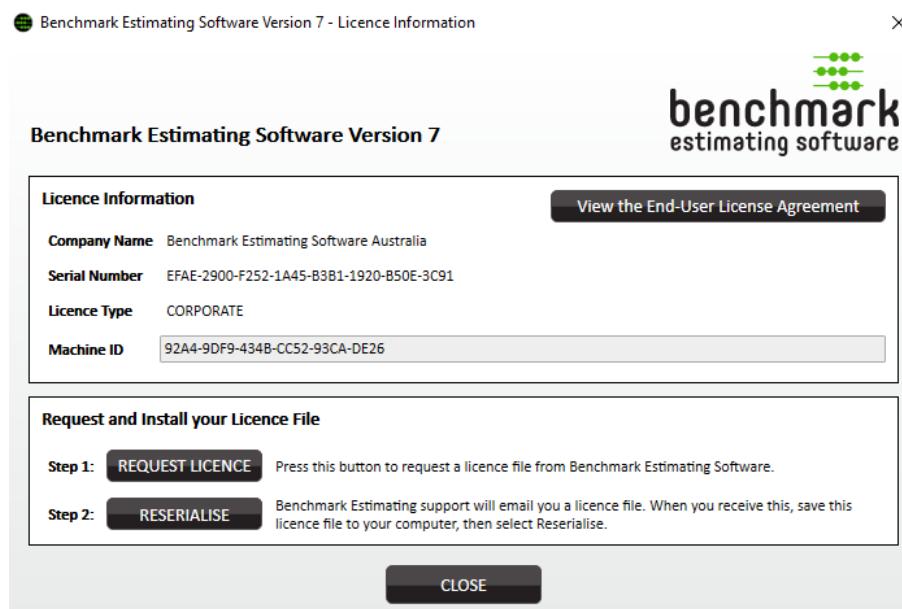


Figure 13: Licence Information window

1. Select **Request Licence** to open the **Licence Request Info** window.

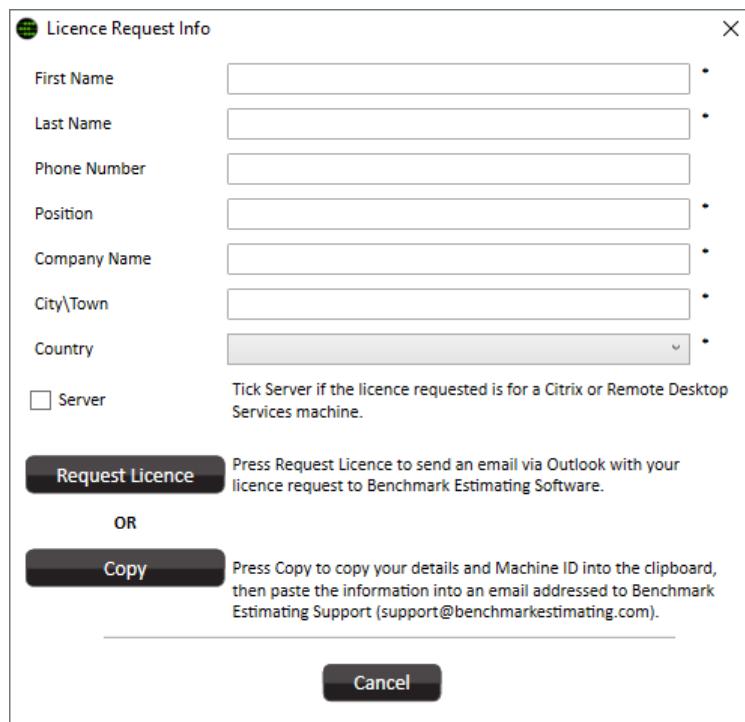


Figure 14: Licence Request Info window

Enter your details and select the **Request Licence** button. The **Request Licence** button requires Microsoft Outlook to be installed and setup for the current user on the same computer where Benchmark Estimating Software is installed. If you do not have Outlook installed on the computer, select **Copy** once all the fields with a * have been entered and then paste the clipboard data into an email addressed to (support@benchmarkestimating.com). If your request is received within normal working hours, your Licence File will be issued to you promptly following verification.

1. When you receive the Licence File from Benchmark Estimating Software, save it to your computer.
2. Open the **Licence Information** window and select the **Reserialise** button. You can do this from three locations:
 - a. Open Benchmark Estimating Software then from the **DATABASE CENTRE** window, select **Advanced**, then the **Reserialise** button.
 - b. Open Benchmark Estimating Software and open a database:
 - c. Within the **MY Benchmark** window select **Reserialise** from the Help & Support panel, or
 - d. Select **Help → Reserialise**.
3. Browse and select the Licence File emailed to you.
4. You will be notified that the Licence File has been installed successfully. If not please contact Benchmark Estimating Software support for help at (support@benchmarkestimating.com).

Configure Database Connection(s)

A database connection refers to settings saved for a database. Each database connection corresponds to one database. You can have one or multiple databases (and corresponding database connections) which will depend on your business structure.

Add a Database connection

To add a new database connection:

1. Open Benchmark Estimating Software.

2. From the **DATABASE CENTRE** window, select Add a New Database Connection.
The following window will be displayed:

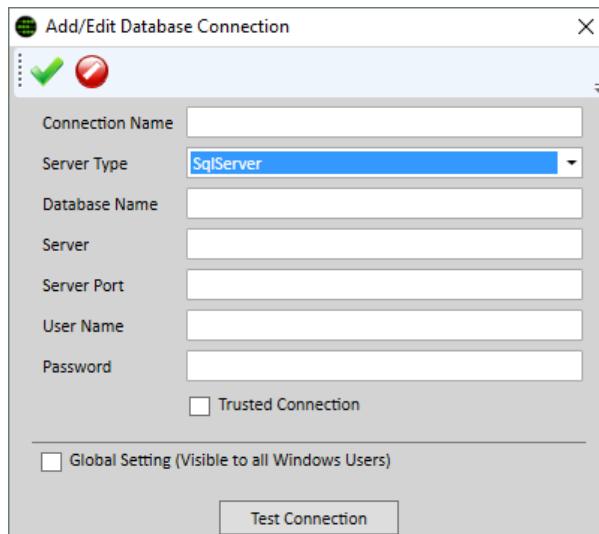


Figure 15: Add/Edit Database Connection window

1. Enter the details of the Database Connection, using the following as guidance. The steps differ depending on which type of database you are using.

a. **SQLite**

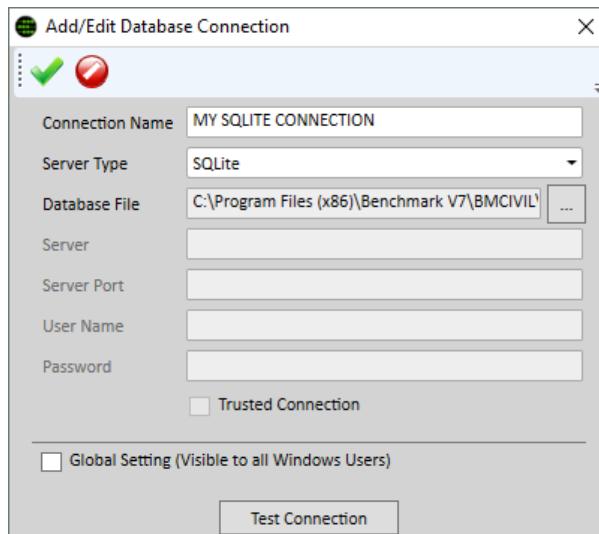


Figure 16: Add an SQLite DB connection

Option	Description
Connection Name	Enter a name for the database connection. This can be whatever you wish and is what will appear in the DATABASE CENTRE window under the Existing Database Connections heading.
Server Type	Select SQLite from the drop-down list. When you do this most of the fields in this window will be greyed out and are not required for SQLite.

Option	Description
Connection Name	Enter a name for the database connection. This can be whatever you wish and is what will appear in the DATABASE CENTRE window under the Existing Database Connections heading.
Database File	Select the  button to the right of this field and browse to find the SQLite database. This database will have a .bp7 file extension.
Server	Not required for SQLite
Server Port	Not required for SQLite
User Name	Not required for SQLite
Password	Not required for SQLite
Trusted Connection	Not required for SQLite
Global Setting	Check this box only if you want this database connection to be available to all users. Typically used for Remote Desktop Services or Citrix setups.

Table 1: Database Connection Settings for SQLite

a. Microsoft SQL Server

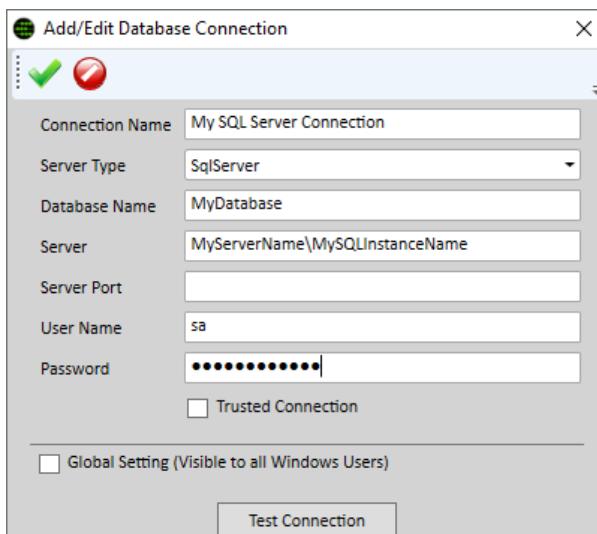


Figure 17: Add an SQL Server Database Connection

Option	Description
Connection Name	Enter a name for the database connection. This can be whatever you wish and is what will appear in the DATABASE CENTRE window under the Existing Database Connections heading
Server Type	Select SqlServer from the drop-down list.

Option	Description
Connection Name	Enter a name for the database connection. This can be whatever you wish and is what will appear in the DATABASE CENTRE window under the Existing Database Connections heading
Database Name	This is the name of your database as it is stored in your company's SQL Server. It can be the same or different to the Connection name. ¹
Server	This is the name of your SQL Server. ² You may need to enter the instance name such as SQLServerName\SQLInstanceName or just SQLServerName if the default MSSQLServer instance is used. If you know the specific port number you can enter it into this field as SQLServerName,port\SQLInstance or just SQLServerName,port (Note that SQL Server uses a comma and not a semicolon)
ServerPort	If the SQL Server is using a specific port (due to firewall restrictions for example), enter this port here ³ Named SQL Server instances are setup to use a dynamic port by default.
User Name	This is the user name for the relevant account for your SQL Server. ⁴
Password	This is the password for the relevant account for your SQL Server. ⁴
Trusted Connection	Click Use Trusted Connection if you can use Windows authentication. (Note that this will only work if the current logged in Windows account has been mapped to the database either during installation or by a SQL Server Administrator).
Global Setting	Check this if you want this database connection to be available to all users of the computer. Typically used for Remote Desktop Services or Citrix setups.

Table 2: Database Connection Settings for SQL Server



¹ Sample and blank databases. The sample/blank SQL Server databases installed from the complete installer have the following Database Names. If you installed these databases and you wish to add a database connection for them, use the following names in the *Database Name* field.

- **BMCIVIL**
- **BMLANDSCAPE**
- **BMEMPTY**

BMCIVIL and BMLANDSCAPE can be used as starting points for Civil and Landscaping clients respectively. BMEMPTY should be used for anyone who wishes to start with a blank database.

²Server name. The name of your SQL Server will be specific to your server's computer name. If you already had SQL Server installed then you will need to enter the SQL Server name specific to your installed SQL Server. If you are using the SQL Server Express installed from *SQL Server Express* (on page [20](#)), the server name should be **SQLServerName\BENCHMARK**. You will need to determine the **SQLServerName**; this can be found in the Control Panel → System window. If you are using a pre-existing installation of SQL Server then contact your System Administrator for the server name\instance name.

³Server port. Depending on your operating system and firewall settings, SQL Server connections may be blocked by default by your firewall. If your connection fails this may be the cause and to rectify this you will need to seek advice from your IT/Network administrator.

⁴User Name and Password. If you are using the SQL Server Express installation (*SQL Server Express* (on page [20](#))), the following details should be used:

User Name = sa

Password = bENCHM@RK789

a. Oracle

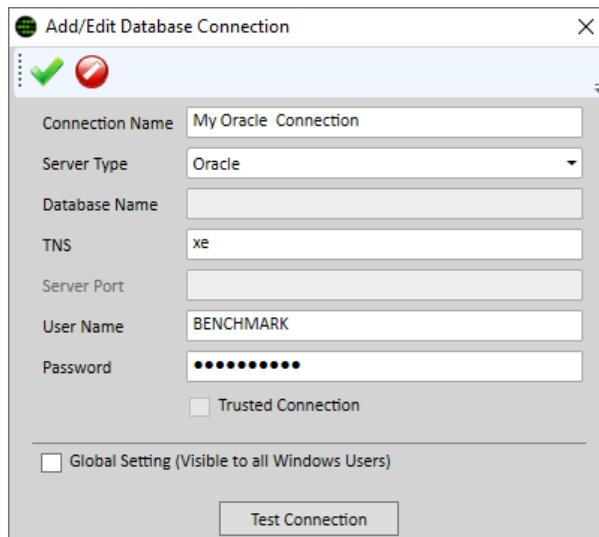


Figure 18: Add an Oracle Database Connection

Option	Description
Connection Name	Enter a name for the database connection. This can be whatever you wish and is what will appear in the DATABASE CENTRE window under the Existing Database Connections heading
Server Type	Select Oracle from the drop-down list.
Database Name	N/A
TNS	This is defined in the <i>tnsnames.ora</i> file. Request this from your Systems Administrator.
Server Port	N/A
User Name	This is the user name of the user defined on the Oracle server which has access to the table space where the database is deployed.
Password	This is the password for the relevant user account for your Oracle Server.
Trusted Connection	Click <i>Use Trusted Connection</i> if you can use Windows authentication. (Note that this will only work if the current logged in Windows account has been mapped to the master database either during installation or by the Oracle Database Administrator).
Global Setting	Check this if you want this database connection to be available to all users of the computer. Typically used for Remote Desktop Services or Citrix setups.

Table 3: Database Connection Settings for Oracle



See **Required MS SQL Server Database permissions** (on page [23](#)) for more details on setting up a new user or editing an existing user to have access to a Benchmark Estimating Software database on SQL Server.

1. Select the **Test Connection** button to test the connection. If the connection is unsuccessful one of the parameters specified may be incorrect; please review and correct these where necessary and try again. See **Appendix C: Firewalls** (on page [47](#)) for network issues with connections to a database server)
2. When finished select **OK** to save the connection settings. Your database connection will now be saved in the list of available Database Connections.

Repeat these steps above if you have multiple databases.

Deploy the default databases onto your newly created SQL Server Express

1. Execute (double click on) the Benchmark Estimating Software Complete.exe file downloaded from the web.



Figure 19: Benchmark Initial screen

1. Click **Next**.

2. In the **Licence Agreement** window, read the licence agreement and if you agree to the licence terms, select the radio option **I accept the terms in the licence agreement**.

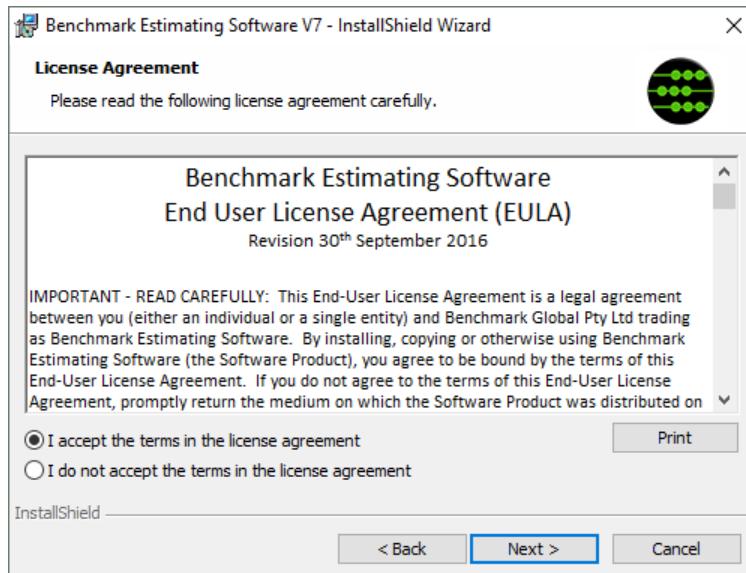


Figure 20: Benchmark Installation - setup type

1. Click **Next**.
2. Optionally enter your *Name* and *Organisation* details in the **Customer Information** window, and click **Next**.

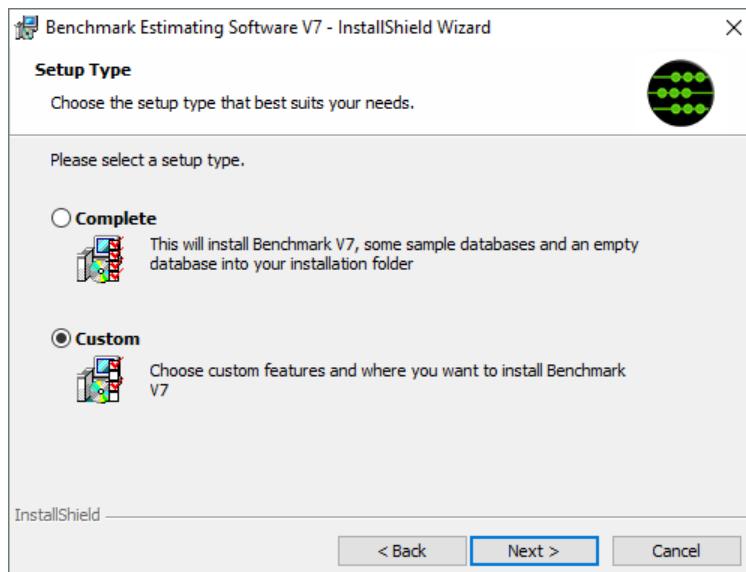


Figure 21: Benchmark Installation - setup type

1. In the **Setup Type** window, select the **Custom** check-box and click **Next**.

2. You will now be in the **Custom Setup** window as shown below:

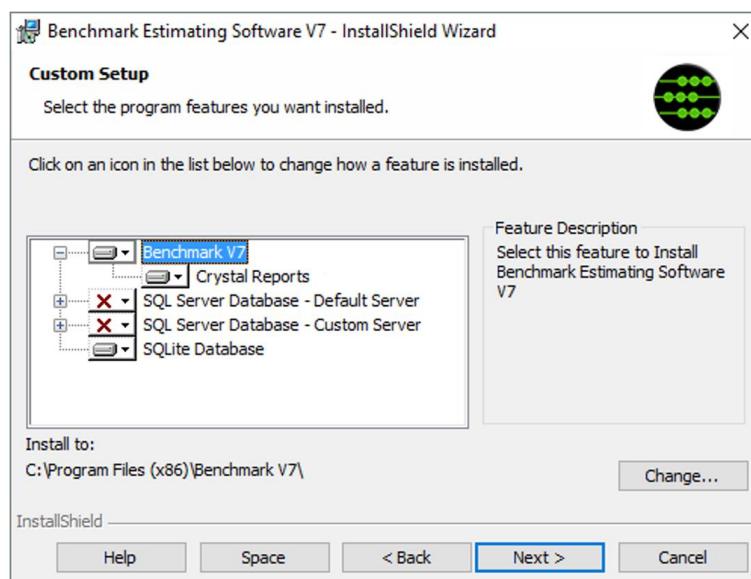


Figure 22: Benchmark Installation - Initial Custom setup

1. Select SQL Server Database – Default Server and click the X to open the menu and select This feature, and all sub features, will be installed on local hard drive to have the databases created onto the SQL Server.

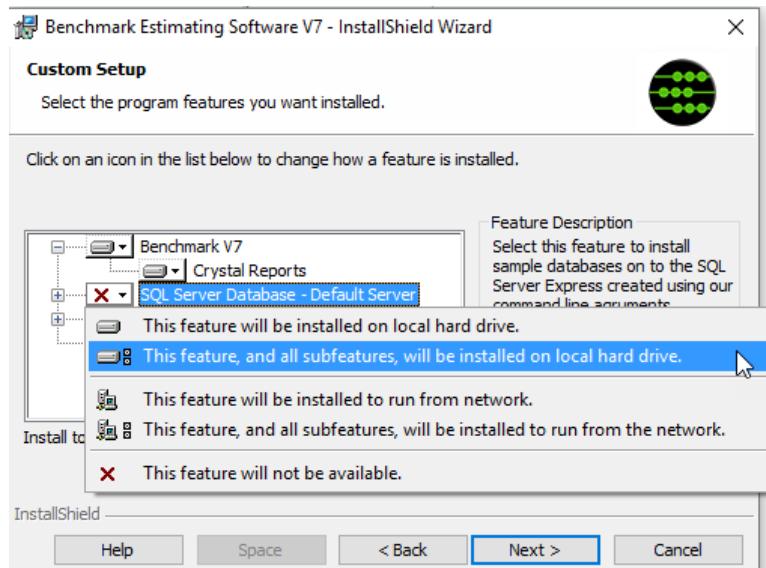


Figure 23: Benchmark Installation - How to Select the Default Server Option

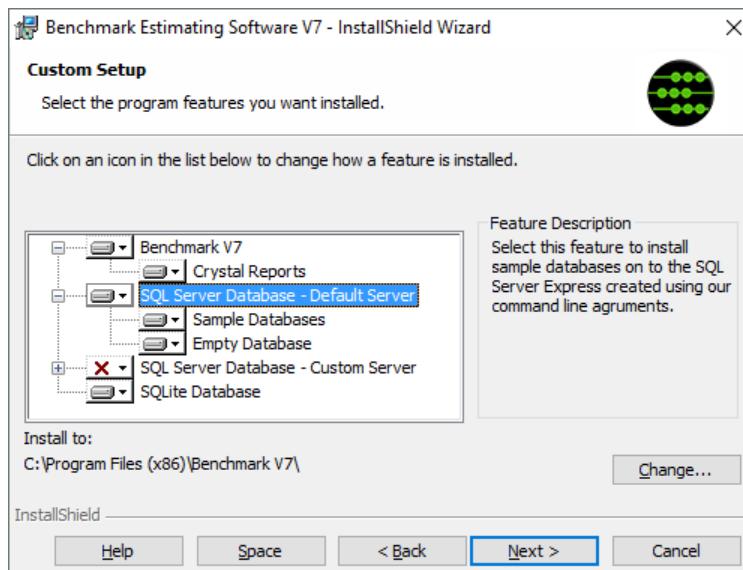


Figure 24: Benchmark Installation - Custom Setup Window to Deploy Databases



Install empty database

It is highly recommended that the **empty database** be installed during this process, especially for organisations that do not have local IT support and/or the experience/skills involved with MS SQL.

The **sample databases** can be beneficial to Civil and Landscaping clients to use as a starting point for their business, and can also be used for learning/testing purposes for other types of businesses.

1. Click **Next**.
 2. Click **Install** in the Ready to Install the Program window.
 3. The databases will now be deployed to the SQL Server Express edition installed in **SQL Server Express** (on page [20](#)).
-



Firewall configuration

The firewall on the database server will need to be configured to allow the SQL Server and SQL Browser services to communicate with installations of Benchmark Estimating Software through the network. For details see **Appendix C: Firewalls** (on page [47](#)).

SQL Server Parameters

If you install SQL Server using our command line parameters (**SQL Server Express** (on page [20](#))), the SQL database will be created with the following user login/password by default:

- Username = sa
- Password = bENCHM@RK789

The name of the SQL Server Instance is **BENCHMARK**.

This above information is also used when configuring database connections within the **Database Centre** via Add a New Database Connection. Refer to **Add a Database connection** (on page [28](#)).

Appendix A: Migrate Database from SQLite to SQL Server

This process is for users who want to convert a Benchmark Estimating Software Version 7 database from SQLite to SQLServer. Benchmark recommends that the IT Administrator performs the following steps.

Step 1: Backup the existing SQLite Database

1. Open Benchmark Estimating Software.
2. In the **DATABASE CENTRE** window, from the existing database connections list select the SQLite database to be converted.
3. Open the Database by double clicking on it.
4. Login as a user that is an administrator (or someone who has access to backup data; this access is set in the estimator library in Benchmark Estimating Software).
5. The default administrator credentials for a Benchmark Estimating Software database are as follows, however, these may no longer be correct for your database if you have altered them (as recommended for your own security):

USER NAME: MAIN

PASSWORD: (no password)

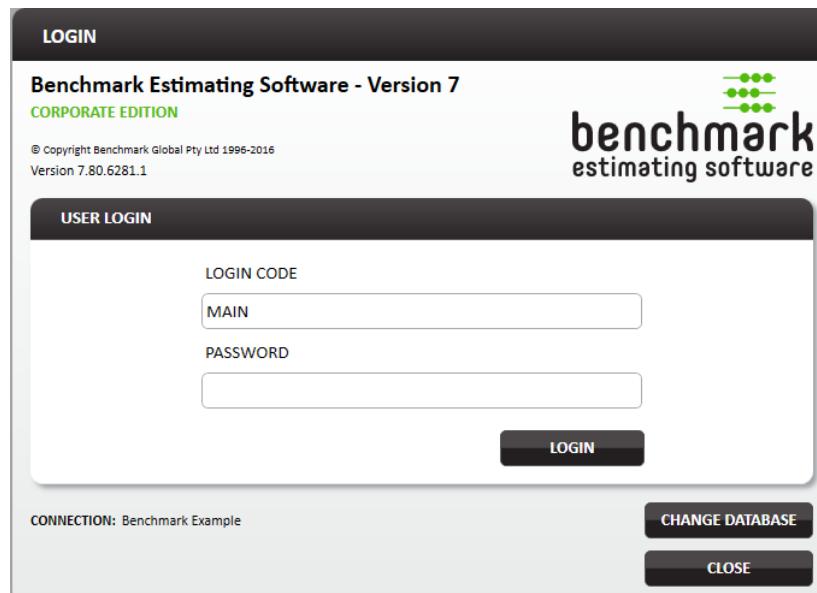


Figure 25: User Login window

- Once in the **Command Centre** select the menu **File → Utilities → Backup Data**.

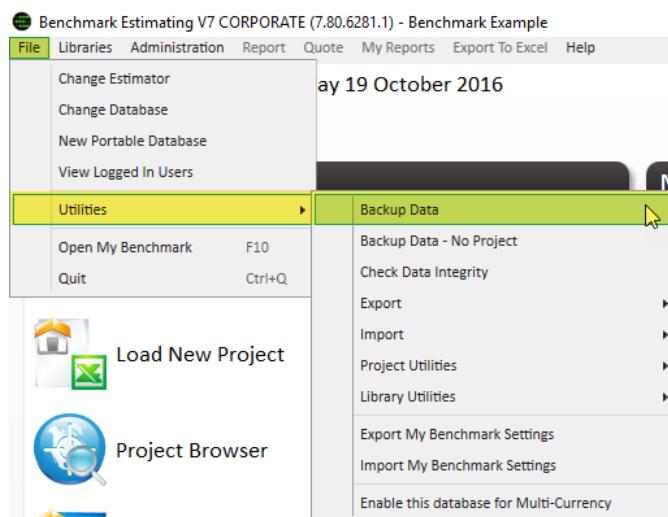


Figure 26: Backup Data menu

- Save the .bgb file somewhere Benchmark Estimating Software can access it.

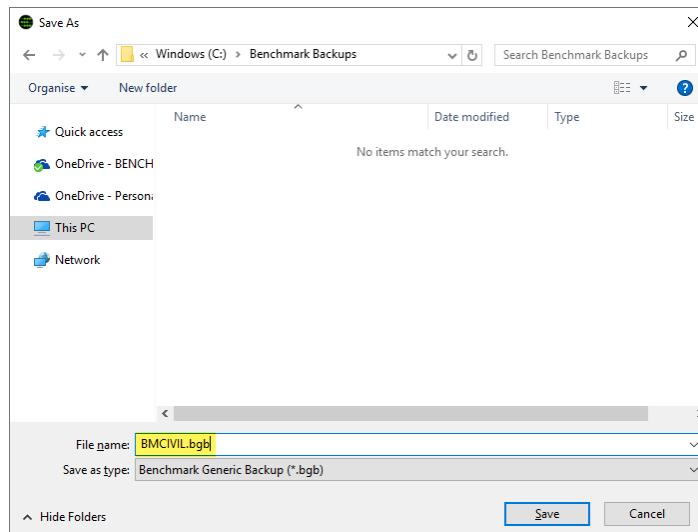


Figure 27: Backup Data Save As window

- Once the backup database process has finished the message "Backup Completed!" should appear. Press **OK**.

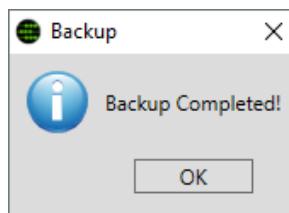


Figure 28: Backup Data Completed message

- Select **File → Change Database** from the menu to go back to the **DATABASE CENTRE** window.

Step 2: Restore the .bgb file to SQL Server

- To re-create the database on a SQL Server, select the Advanced → Restore Database option from the **DATABASE CENTRE**.

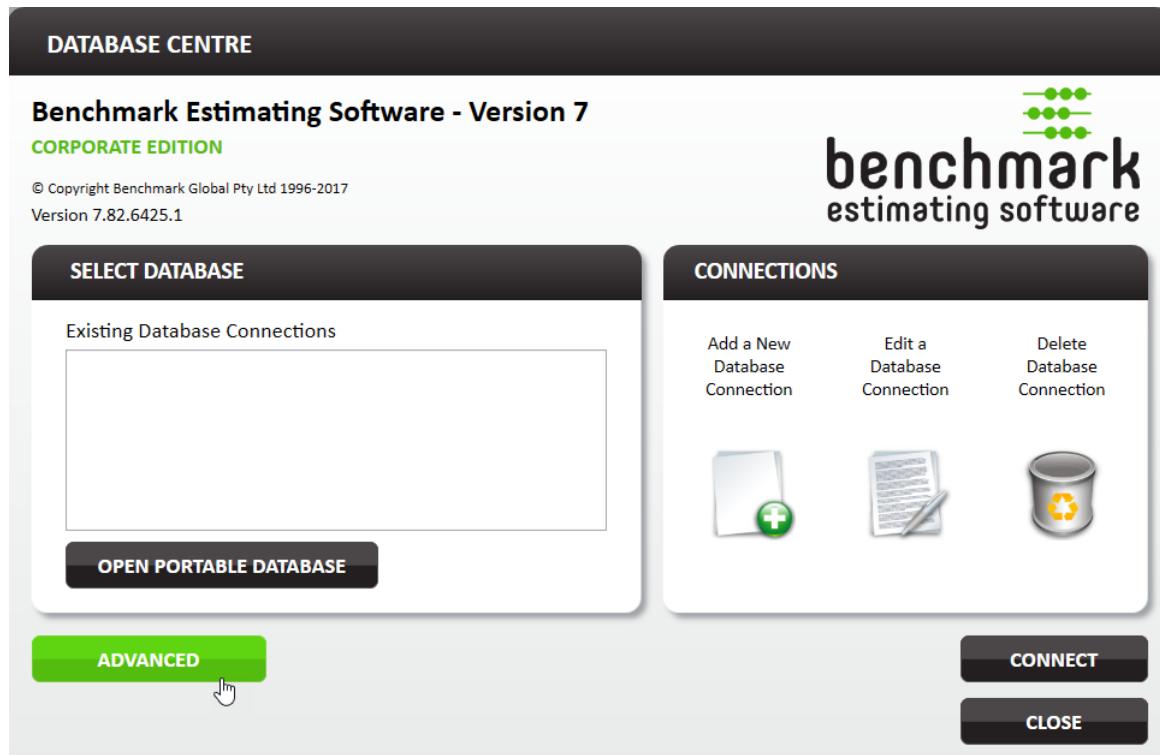


Figure 29: Database Centre - Advanced option

- Fill in all of the fields for the SQL Server database connection as follows:
 - Backup File to Restore* – This is the .bgb file created in Step 6 above.
 - Database Type* – Select SQL Server.
 - Server* – This is the server and instance name the database is to be created on. This is in the form SQLServerName\InstanceName for example "MyServer\BENCHMARK" where Benchmark is the instance name created using our command line parameters for the SQL Server Express installation (*Install Microsoft SQL Server Express* (on page 19)).
 - Click the drop-down box to scan the network for all available SQL Server Instances and fill them into the combo box menu for selection.
 - User Name* – This is the SQL Server Authentication details for the SQL Server Instance. If you used our command line parameters, the user name is **sa**.
 - Password* – This is the password for the user name above. If you installed SQL Server Express using our command line parameters, the password is **bENCHM@RK789**.
 - Use Trusted Connection* – This is if you wish to use Windows Authentication to connect to the MS SQL Server Instance. (This needs to be setup by your Administrator before it will work).

- f. *Create New Database* – Tick this option to create a new database on the SQL Server (recommended). If left un-ticked the Database Name field below will allow you to view the existing databases on the SQL Server to replace an existing one.



Create New Database option

Be aware that not selecting *Create New Database* and selecting a database from the list will *erase all data from that database* and the .bgb file used will be created for that database name.



Database name and Server used

Write down the *Database name* and *Server* used as they will be required when creating the connection to the database which is required after these steps.

- a. *Database Name* – Enter in the name of the database to be created on the *SQL Server*. Otherwise select the database to be replaced by this restore option if *Create New Database* above is not selected.

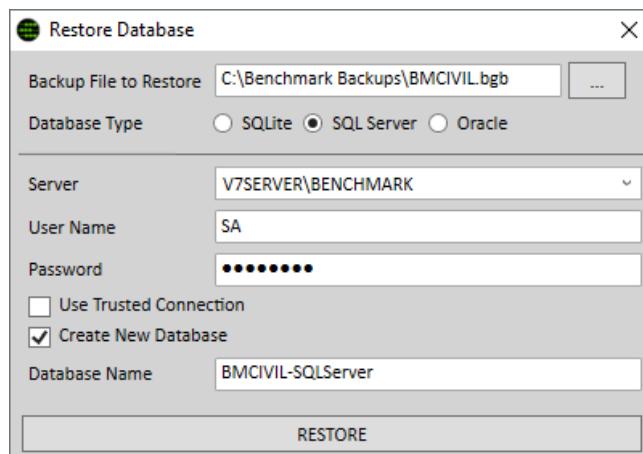


Figure 30: Restore Database window

1. Click RESTORE.
2. The message "Restore operation completed successfully!" should appear. Click OK.
3. Close the **Restore Database** window by clicking the top right **X** button.

Step 3: Add a New Database Connection

1. Select Add a New Database Connection and fill in the details of the database created.
 - a. *Connection Name* – A description to illustrate to the user(s) what database they are opening.
 - a. *Server Type* – Select **SqlServer**.
 - b. *Database Name* – The name of the database on the SQL Server instance. (Step h of step 2 above).
 - c. *Server* – The SQLServerName\SQLInstanceName where the database is found.

- d. *ServerPort* – If the SQL Server is using a specific port (due to firewall restrictions for example), enter this port here.
- e. *User Name* – This is the SQL Server Authentication details for the SQL Server Instance. If you installed SQL Server Express using our command line arguments, the user name is **sa**.
- f. *Password* – This is the password for the user name above. If you installed SQL Server Express using our command line arguments, the password is **bENCHM@RK789**.
- g. *Trusted Connection* – Click if you can use Windows authentication. (Note that this will only work if the current logged in Windows account, has been mapped to the master database either during installation or by a SQL Server Administrator, or is mapped to another database).
- h. *Global Setting (Visible to all Windows Users)* – Check this if you are using Remote Desktop Services/Citrix and want this database connection to be available to all users.

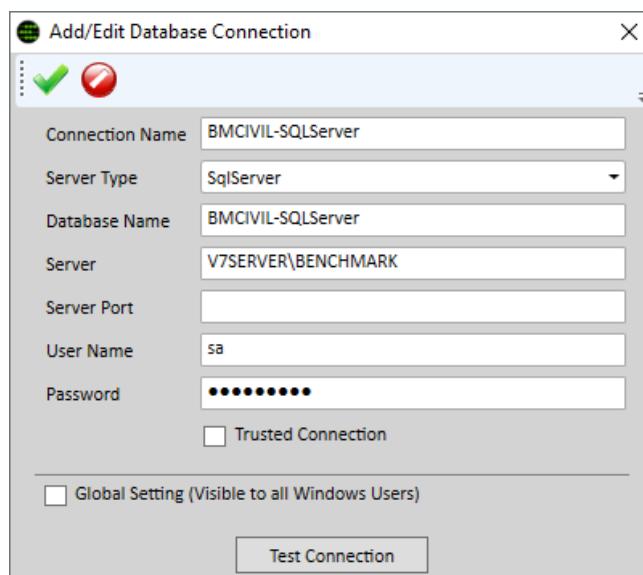


Figure 31: Add/Edit Database Connection window

1. Click the **Test Connection** button to confirm that the details are correct and access to the database is available through the network.
2. Click on the **OK** button to accept the connection and store it into the **Database Centre** list of databases.

Appendix B: Upgrade from Professional to Corporate

This section explains the steps to upgrade a database, for users who upgrade from the Professional edition to the Corporate edition.

Introduction

The Corporate Edition of Benchmark Estimating Software includes the powerful *Regionalisation* feature. *Regionalisation* allows the use of differential pricing in different Regions. What this means, for example, is that a resource in your **Resource Library** can have a different price for each region. Then, when an estimator is pricing a project in REGION A, Benchmark Estimating Software will automatically use the prices for REGION A. This example only discusses resources but many other Libraries in Benchmark Estimating Software can also be configured like this.

Setting up Regions

Geographical location is the most obvious definition of Region. This can be set as North, South, East and West; as City and Rural; as a default such as Rest of Country with named areas specified such as London or Scotland; or in any format.

A Region could also be defined as a business area – perhaps different business areas use different resources, or have differential pricing due to sourcing differences.

Deciding how to structure your Regions is a critical decision to make during the setup process of Benchmark Estimating Software for users of the Corporate version.

Decide on your Regions and then follow the steps in the User Manual to add your regions to the Codes window if required.



Add or Edit Regions

New Regions can be added at any time by a user with access to the **Codes** window. Once a region has been defined, however, and assuming you have resources in your resource Library, that region cannot be deleted. It can, however be edited. It is very important therefore that you take the time to decide on your regions up front.

You can find further information for setting up your database with Regionalisation in the User Manual.

Upgrading to Corporate

Preparations for Conversion

1. It is recommended that this process is performed when you have some ‘downtime’ in your estimating operations. This will help to avoid any unnecessary interruptions in your business.
2. Open Benchmark Estimating Software and review your regions. To see the regions you have set up please select Administration → Codes and click on the region field. It is critical that the list of regions here does not contain any more regions than you require, after you upgrade to Corporate you cannot delete regions, although you can add or edit existing ones.
3. Complete all projects if not complete – do this by selecting any un-complete projects in the browser and selecting Complete Selected.
4. Back up your database, using File → Utilities → Backup data.
5. Zip up and email this backup file to **Benchmark Support** (support@benchmarkestimating.com).
6. We will convert your Professional database to Corporate database structure and send it back to you.

Configure Licences

After you have emailed your database to Benchmark Estimating support continue with the following process.

1. You will then need to re-license each computer to upgrade the Benchmark Estimating Software application to the Corporate Edition. Do this by:
 - a. Opening Benchmark Estimating Software.
 - a. At the **DATABASE CENTRE** window, select Advanced → Reserialise.
 - b. Select Request Licence.
 - c. Complete your details and select Request Licence (which will email through Outlook to Benchmark Estimating support the details of the window), or Copy and then paste (CTRL+V) your details into an email to **Benchmark Support** (support@benchmarkestimating.com).
2. You will be issued a new Corporate Licence for that computer. When you receive this save it to your computer or network, select Advanced → Reserialise, and then select the new Licence file.

(This will need to be done on each computer that has Benchmark Estimating Software installed).

Installing your converted Database

We will email your Corporate database back to you as a .bgb file. Follow the steps provided by **Step 2: Restore the .bgb file to SQL Server** (on page [41](#)) to deploy the database onto your database server. (Oracle is similar to SQL Server).

Appendix C: Firewalls

This section illustrates all the firewall exceptions required to allow a desktop computer to access a SQL Server database through the network. It also provides useful information to help deal with potential firewall issues when accessing a SQL database over a LAN.

Terminology

Trusted Connection

This is also referred to as *Windows authentication* and is used to log onto the Benchmark Estimating Software SQL Server database. To establish a trusted connection a user must be given permissions to that database. This can be done by using Microsoft's SQL Server Management Studio which can be downloaded from Microsoft's website as a free express edition. For more details see **Required MS SQL Server Database permissions** (on page [23](#)).

SQL Server authentication

This can be used instead of a trusted connection. The SQL Server Express installation created using our command line arguments will create a new SQL instance with the user 'sa' which will have full access to all databases in that SQL Server instance.

Desktop Firewall Settings

Each installation of Benchmark Estimating Software will require a network connection to the SQL Server instance. If you use our command line arguments when installing, SQL Server Express will create the 'BENCHMARK' instance. Communication to the database server through the **SQL Browser service** will be through **UDP port 1434**. If SQL was installed without our command line arguments, the SQL Server default instance 'SQLEXPRESS' may have been created and by default and that SQL instance can be accessed over TCP port 1433. If you have a named Instance like 'BENCHMARK' then the port will by default be dynamic so SQL Browser will discover the current TCP port used and return it to Benchmark's SQL connection.

How to allow Benchmark Estimating Software with windows firewall

If the computer where Benchmark Estimating Software is installed uses a different firewall to windows firewall then use that system to create an outbound rule for **UDP port 1434** for the **Benchmark.exe**. If not, add Benchmark Estimating Software to the windows firewall:

1. Open Control Panel → All Control Panel Items → Windows Firewall.

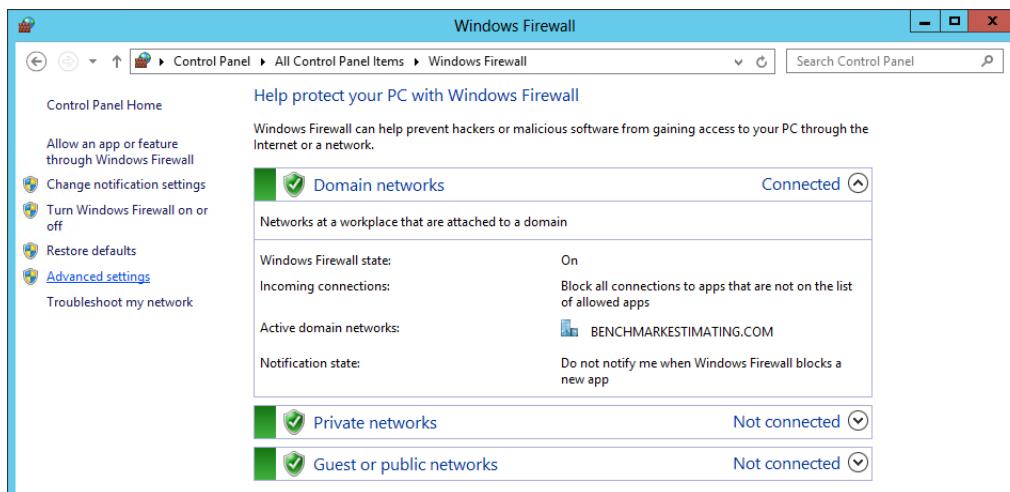


Figure 32: Control Panel - Windows Firewall

1. Press on the Advanced settings option.
2. For Windows Firewall with Advanced Security select Outbound Rules (on the left hand side).

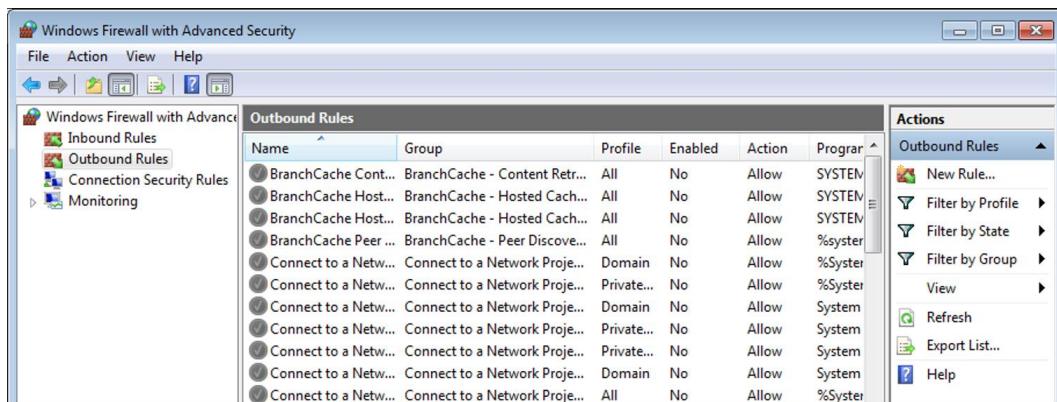


Figure 33: Windows Firewall Desktop Outbound Rules

1. Click on New Rule... (on the right hand side).

2. For Rule Type select Program option and click **Next**.

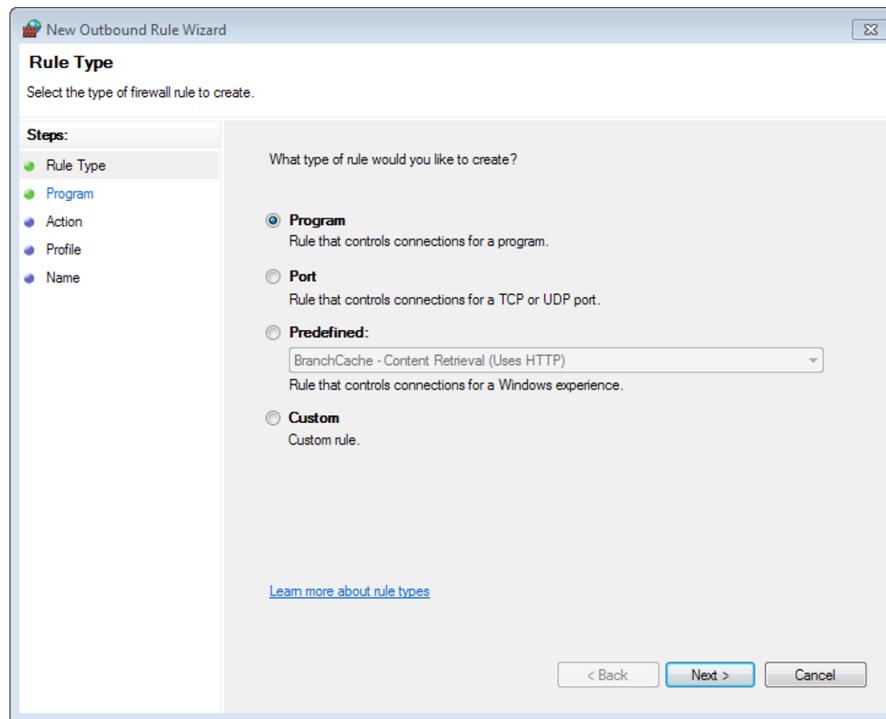


Figure 34: Windows Firewall Desktop Program Rule Type

1. For Program press the **Browse...** button and select the Benchmark.exe from the installation directory which is typically `%ProgramFiles% (x86)\Benchmark V7\`

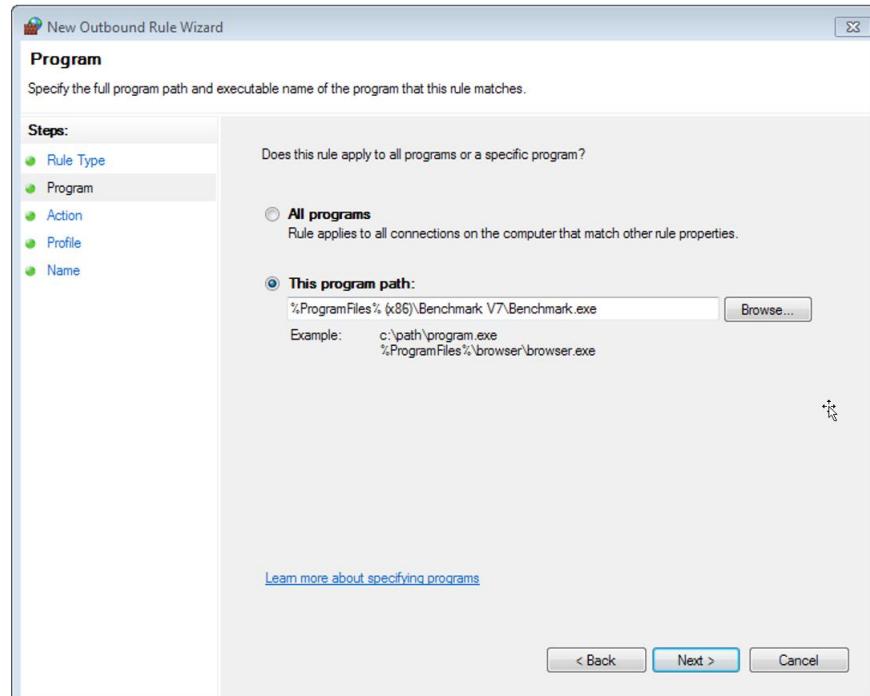


Figure 35: Windows Firewall Desktop Program Path

- For Action click the Allow the connection option and click **Next**.

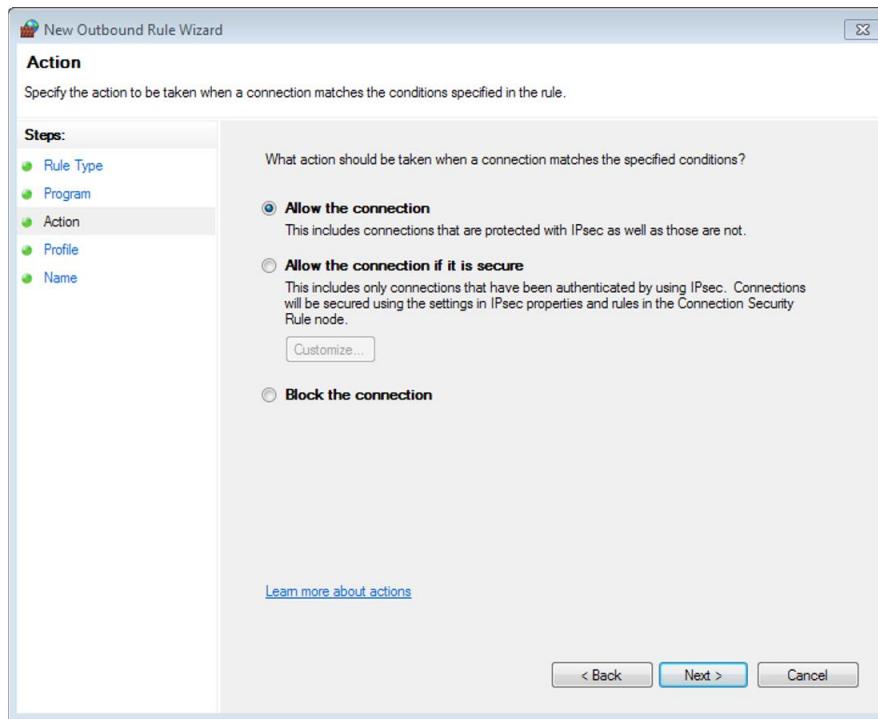


Figure 36: Windows Firewall Desktop Action

- For Profile ensure that the Domain and Private check boxes are ticked and then click **Next**.

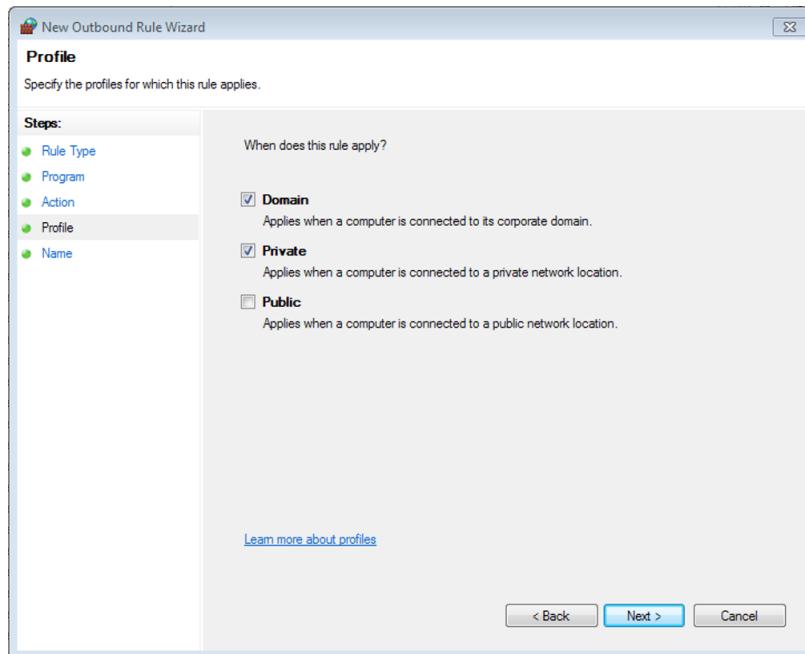


Figure 37: Windows Firewall Desktop Profile

- For Name enter a name similar to **Benchmark SQL Server** and then click **Finish**.

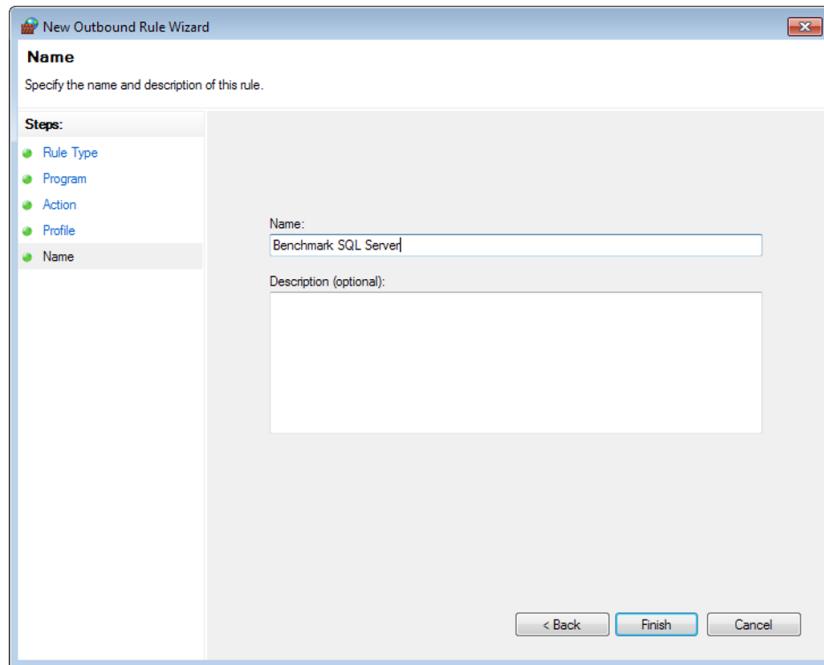


Figure 38: Windows Firewall Desktop Name

- Now double click on the new Benchmark SQL Server outbound rule from the list.

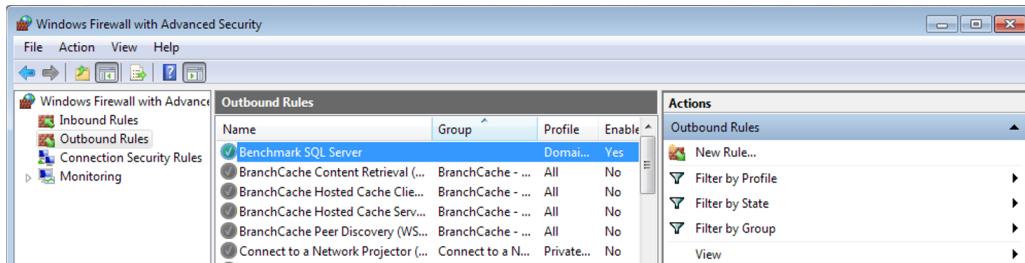


Figure 39: Windows Firewall Desktop SQL Server Rule

- Click on the Protocols and Ports tab.
- From the Protocol type list select **UDP**.
- For Local port select **Specific Ports**.

4. Enter **1434** in the field under Specific Ports. The Protocols and Ports window should now look like the following.

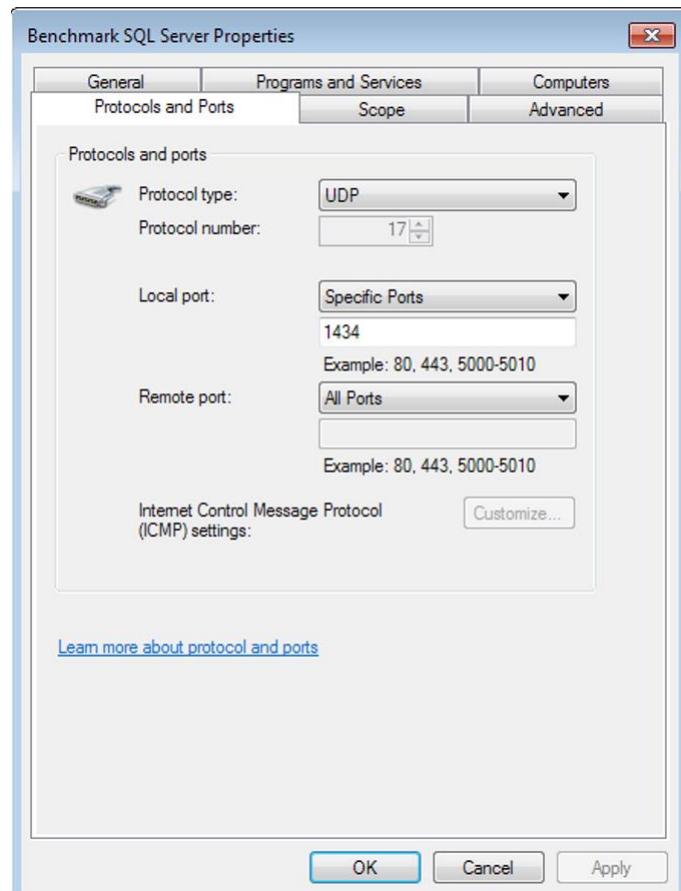


Figure 40: Windows Firewall Desktop Protocols and Ports

1. Then click **Apply** and then **OK** to close out of the window.

Database Server Firewall Settings

TCP/IP enabled

If you are using an existing SQL Server created without our command line arguments ([Install Microsoft SQL Server Express](#) (on page [19](#))), you must have TCP/IP enabled for it to work across the network. SQL Server Express has network access disabled by default.

On the SQL Server open the Sql Server Configuration Manager, select the Protocols for [Your Sql server instance] and enable the TCP/IP setting.

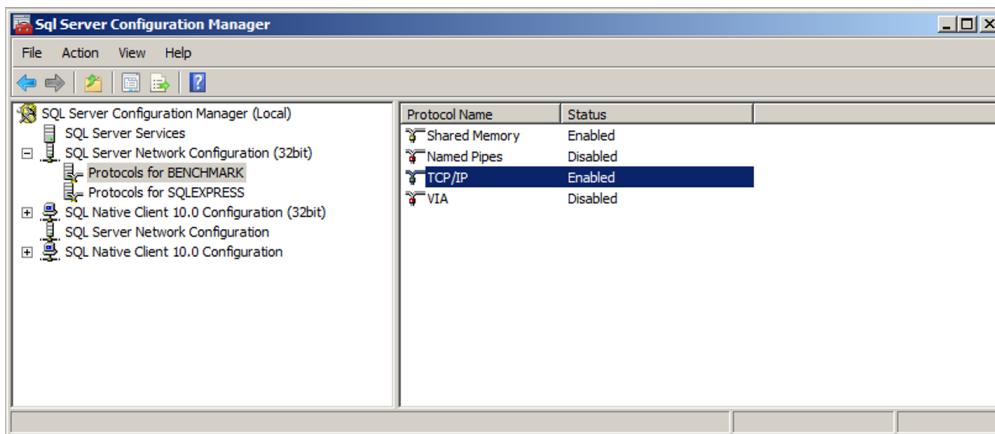


Figure 41: SQL Server Configuration Manager

SQL Server Browser

You will not need the SQL Server browser enabled if you are using the default MSSQLServer instance. If however you used our command line arguments (**SQL Server Express** (on page [20](#))), the SQL Server Browser service must be allowed over UDP Port 1434 within SQL Servers firewall as an exception. This will allow discovery of the dynamic TCP port used for named SQL instances. Every time the SQL Server is restarted the TCP port used will be random. For operating systems before Windows Vista and Windows Server 2008 the range is 1025-5000. For operating above and including Vista and Server 2008 the range is 49152-65535.

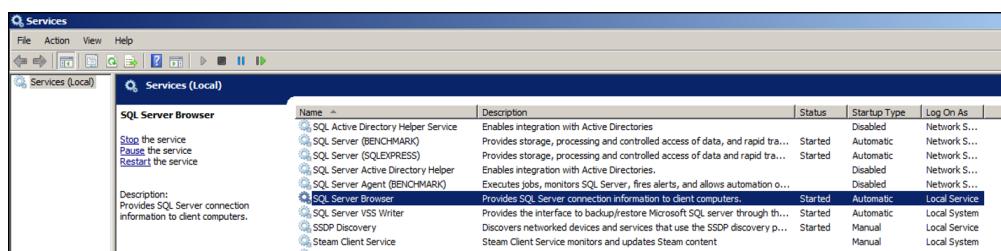


Figure 42: SQL Server Browser Service

How to allow SQL Browser with Window's firewall

On the database server you will need to do the following steps:

1. Open Control Panel → All Control Panel Items → Windows Firewall.

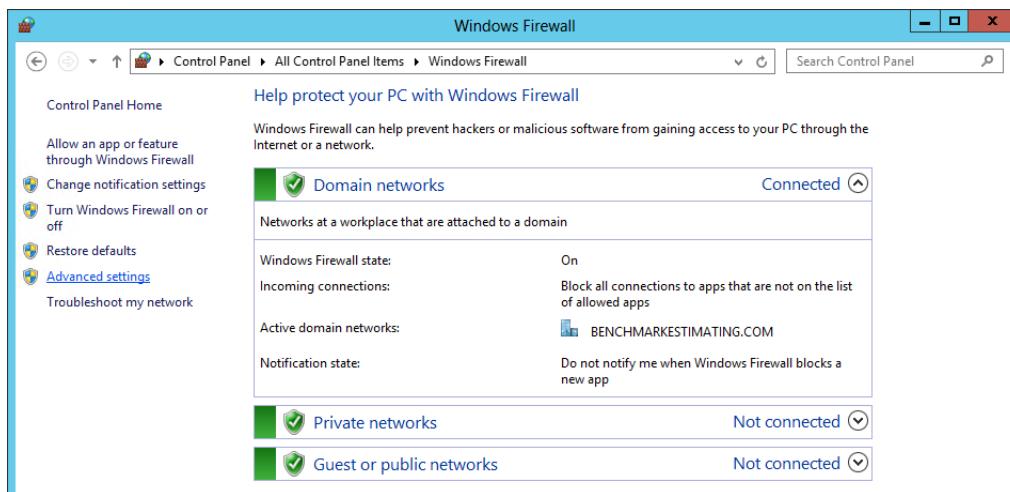


Figure 43: Control Panel - Windows Firewall

1. Click on the Advanced settings option on the left.
2. For Windows Firewall with Advanced Security select Inbound Rules (on the left hand side).

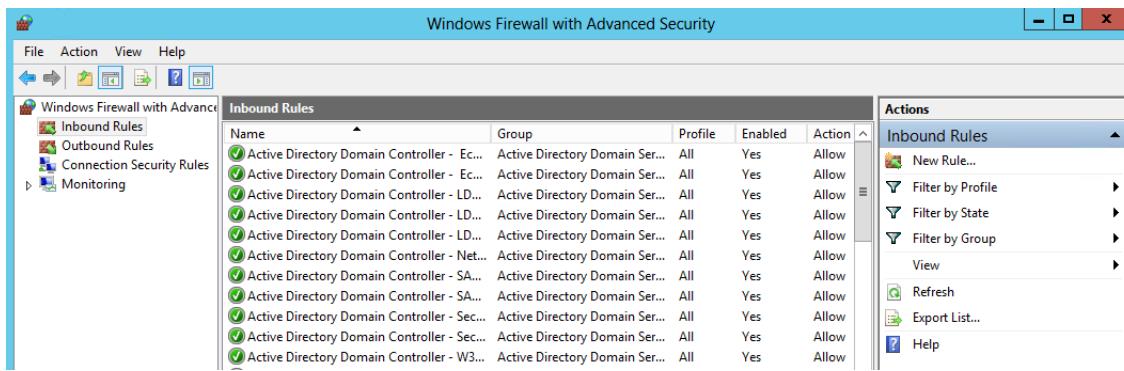


Figure 44: Windows Firewall Server Inbound Rules

1. Click on New Rule on the right hand navigation pane.

2. For Rule Type select Custom option and click **Next**.

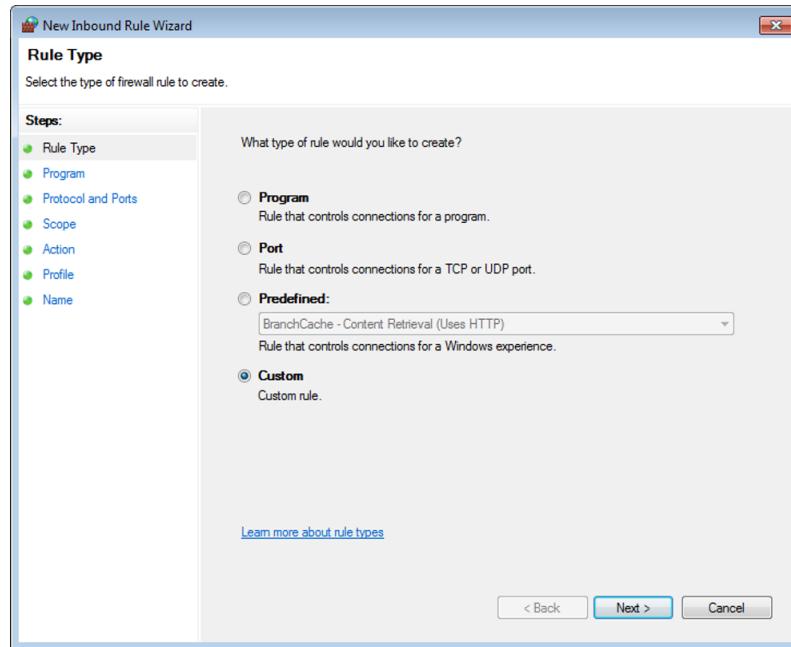


Figure 45: Windows Firewall Custom Server Rule Type

1. For Program press the services **Customize...** button.

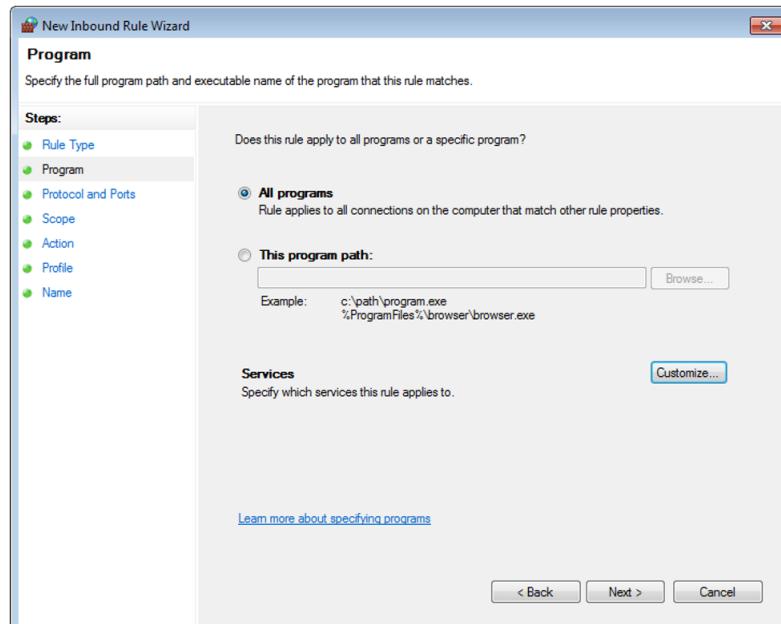


Figure 46: Windows Firewall Server Customize Service

1. For Customize Service Settings select the Apply to this service radio option and select the line SQL Server Browser then press **OK**.

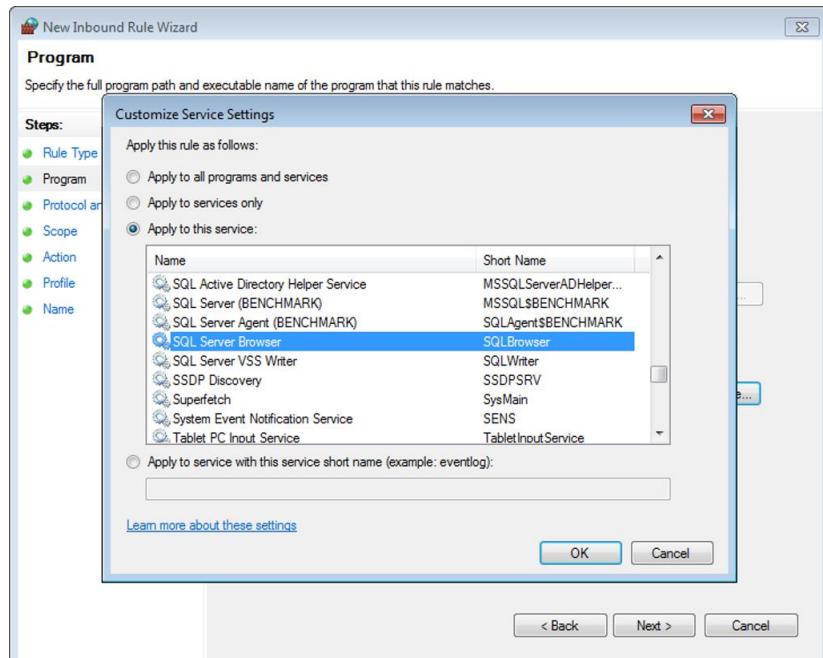


Figure 47: Windows Firewall Server Customize Service Settings

1. Now that the service has been selected click **Next**.
2. Select UDP as the Protocol type.
3. For Local port select Specific Ports.
4. Enter port **1434** into the field under Specific Ports so that it looks like;

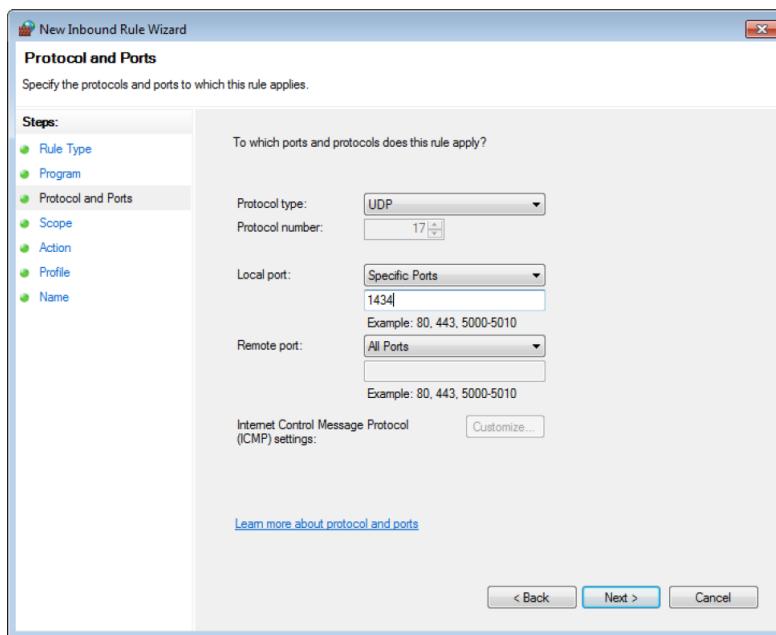


Figure 48: Windows Firewall Server Protocol and Ports

1. Click **Next**.

2. For Scope click **Next**.

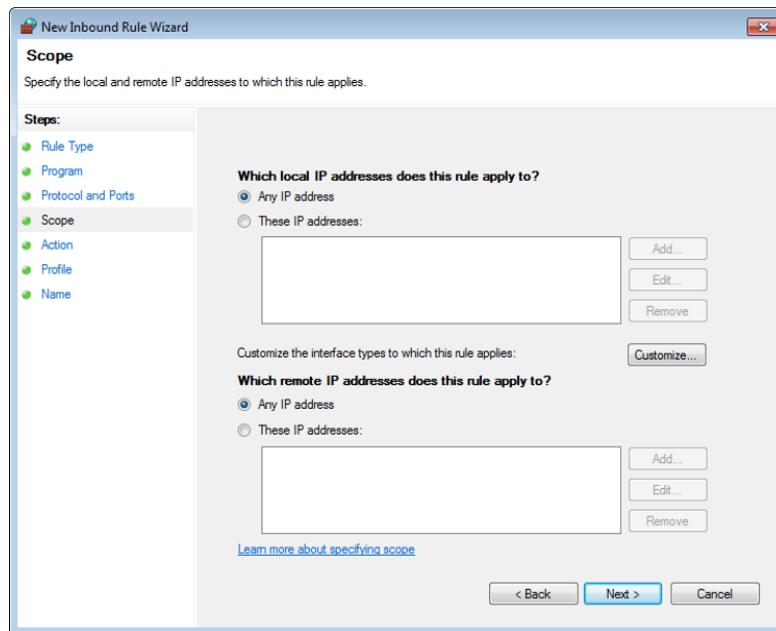


Figure 49: Windows Firewall Server Scope

1. For Action ensure the radio option Allow the connection is selected and click **Next**.

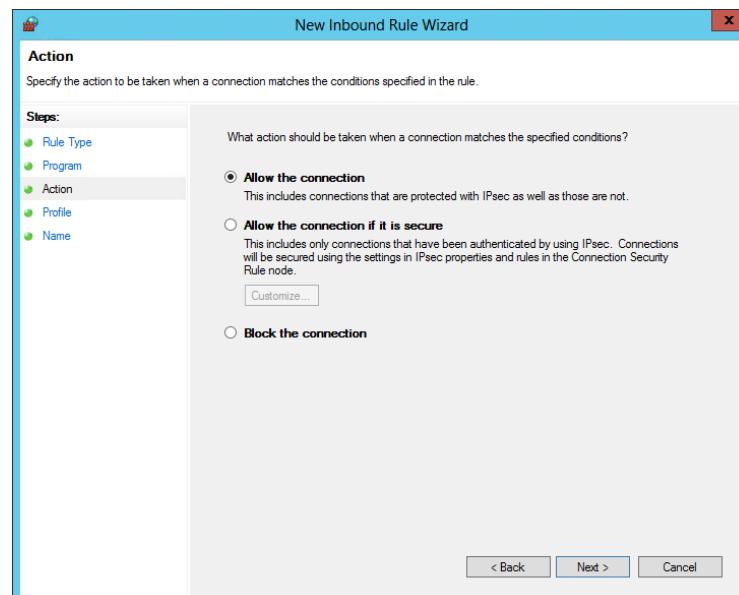


Figure 50: Windows Firewall Server Action

1. For Profile ensure Domain and Private are ticked and click **Next**.

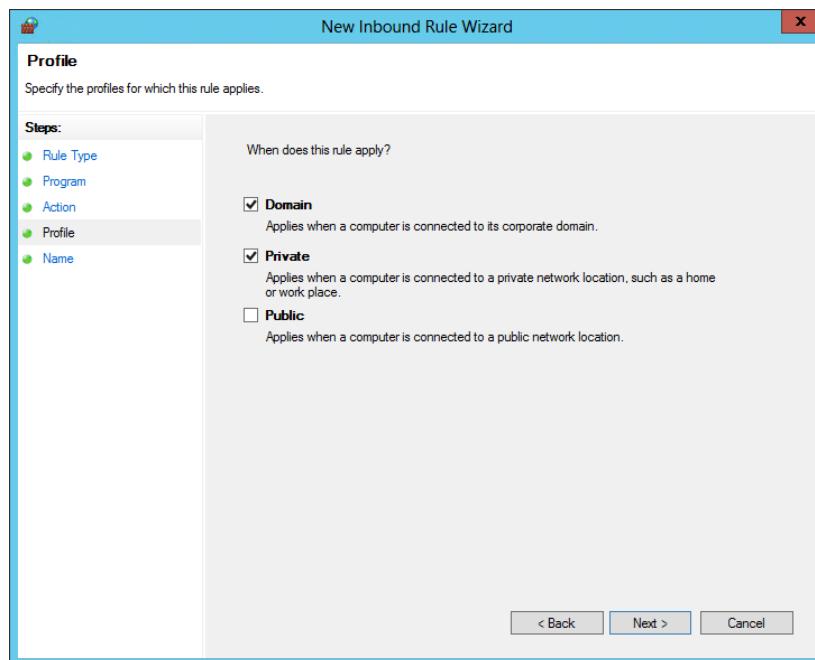


Figure 51: Windows Firewall Server Profile - Inbound

1. For the Name enter in a descriptive name such as **SQL Browser UDP 1434** and click **Finish**.

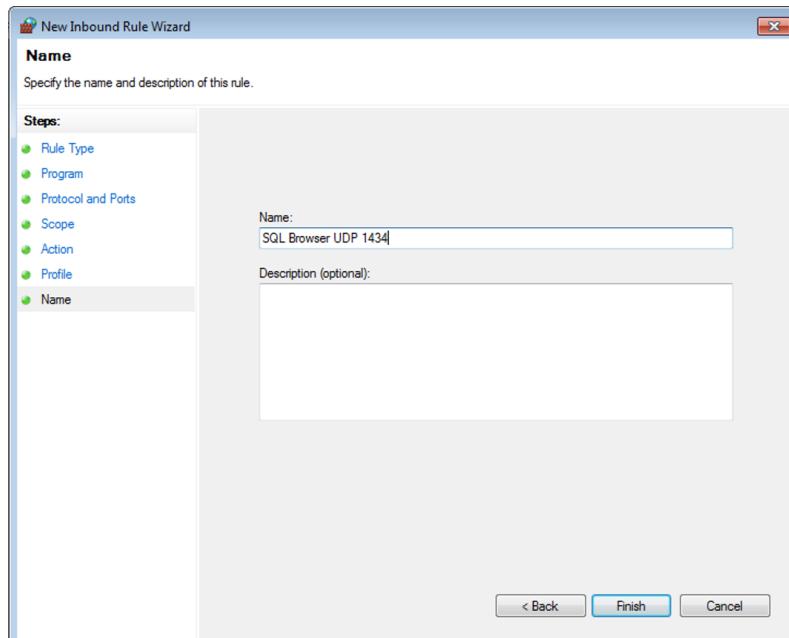


Figure 52: Windows Firewall Server Name

1. There will now be a row in the list of inbound rules for **SQL Browser UDP 1434**.

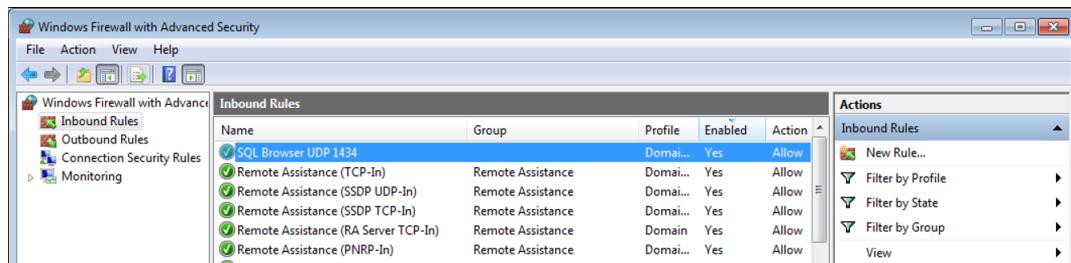


Figure 53: Windows Firewall Server SQL Browser Exception Complete

Firewall exception for sqlservr.exe

When Benchmark Estimating Software attempts to establish a connection to the database on the database server, it uses the SQL Browser to find and request the connection. The SQL Browser then attempts to create a TCP connection from the SQL Server to Benchmark Estimating Software between ports 1,024 to 5,000 pre Windows Vista & Server 2008 or 49152-65535 for Vista & Server 2008 and above.

The firewall will need to allow this connection to be established. On the server create a program specific exception dependent on which SQL Server instance you are using for the sqlservr.exe. The exception requires TCP Ports for the range corresponding to the operating system SQL Server is installed on.

How to allow SQLSERVR with windows firewall

1. Open Control Panel → All Control Panel Items → Windows Firewall.

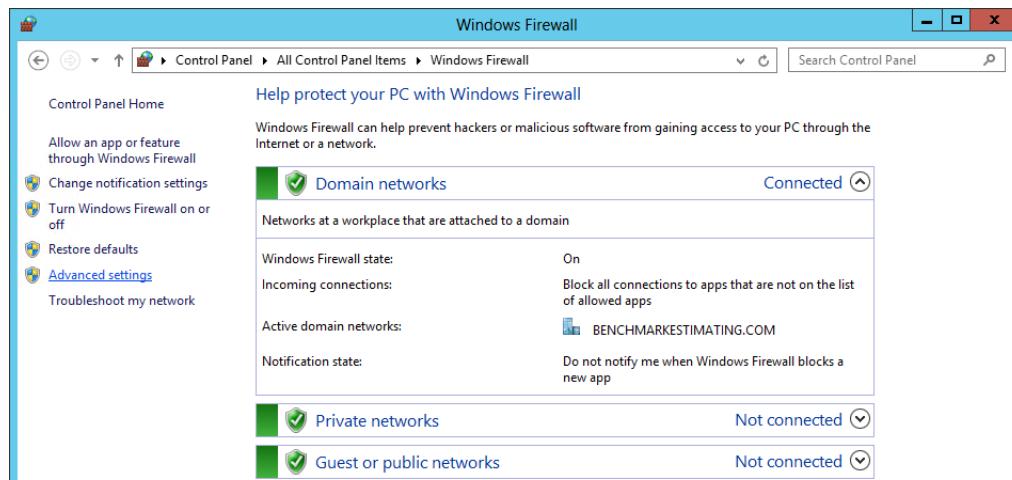


Figure 54: Control Panel - Windows Firewall

1. Press on the Advanced settings option.

2. For Windows Firewall with Advanced Security select Inbound Rules (on the left hand side).

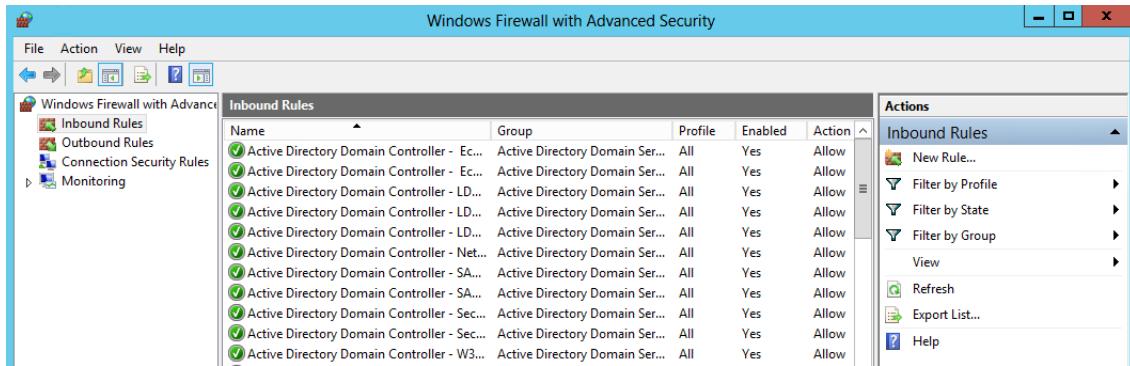


Figure 55: Windows Firewall Server Inbound Rules

1. Click on New Rule... (on the right hand side).
2. For Rule Type select Program option and click **Next**.

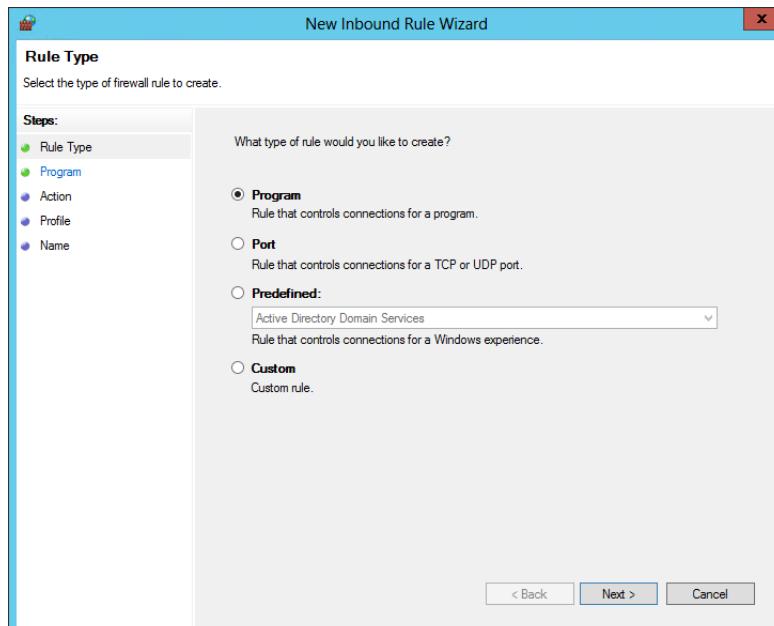


Figure 56: Windows Firewall Server Program Rule Type

- For Program press the **Browse...** button and select the sqlservr.exe from the installation directory which is typically %ProgramFiles%\Microsoft SQL Server\MSSQL10_50.BENCHMARK\MSSQL\Binn\sqlservr.exe

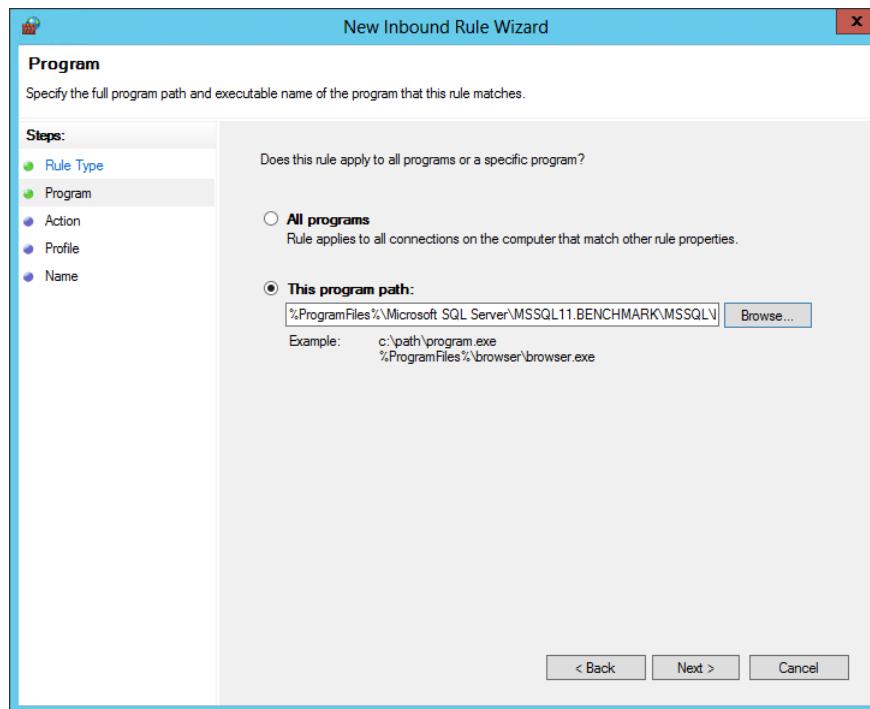


Figure 57: Windows Firewall Server Program Path - Inbound

- For Action click the Allow the connection option and click **Next**.

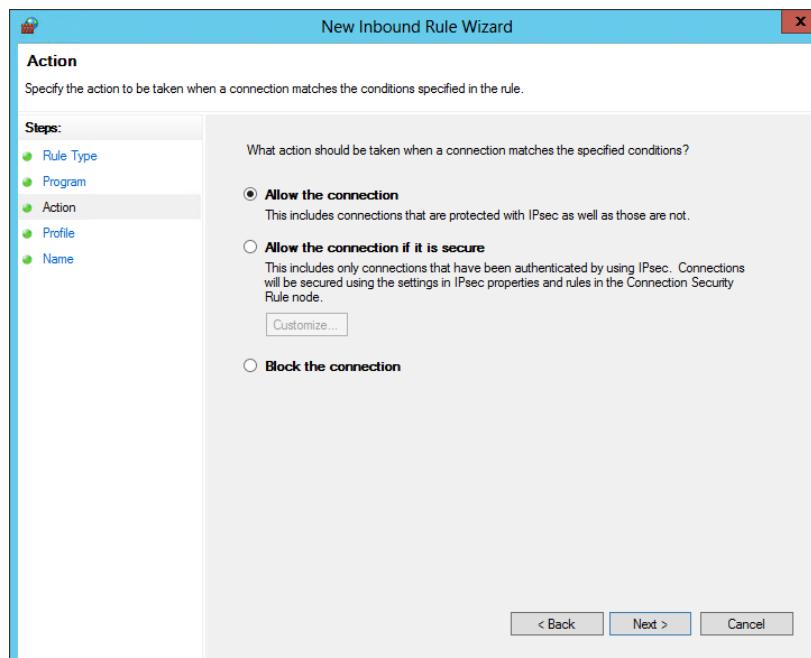


Figure 58: Windows Firewall Server Action - Inbound

- For Profile ensure that the Domain and Private check boxes are ticked and then click **Next.**

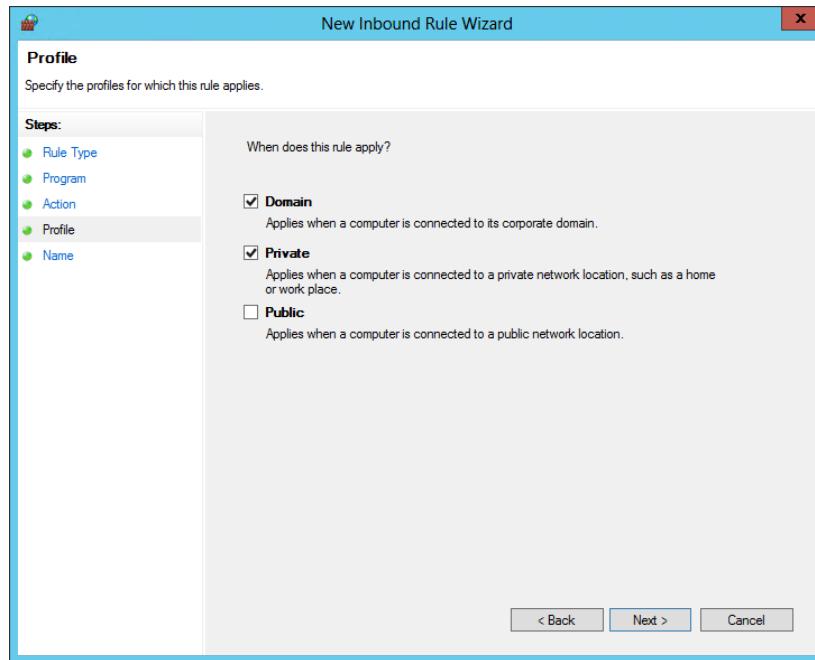


Figure 59: Windows Firewall Server Profile - Inbound

- For Name enter a name similar to **SQLSERVR ports** and then click **Finish.**

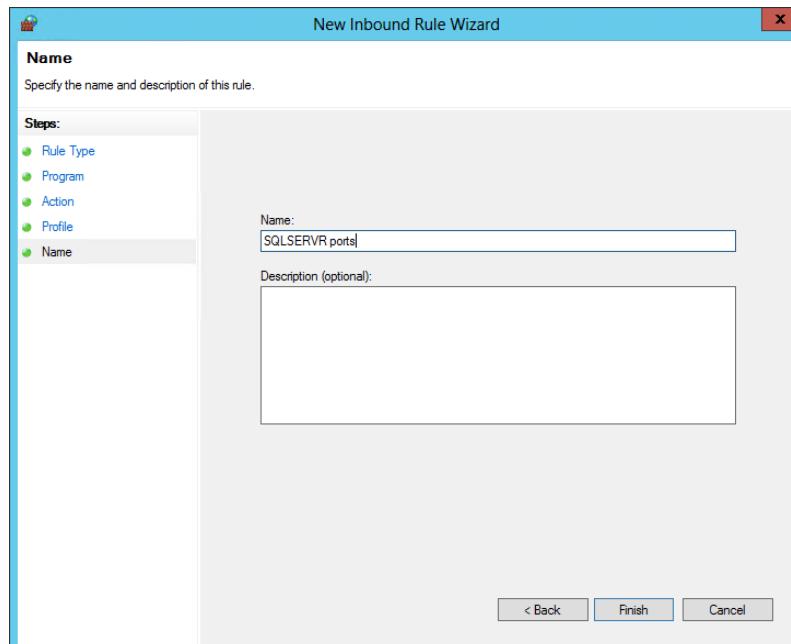


Figure 60: Windows Firewall Server Name

- Now double click on the new **SQLSERVR ports** outbound rule from the list.

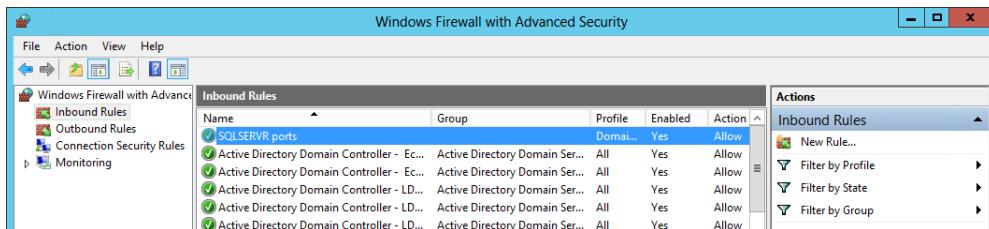


Figure 61: Windows Firewall Server SQL Server Rule - Inbound

- Click on the **Protocols and Ports** tab.
- From the **Protocol type** list select **TCP**.
- For **Local port** select **Specific Ports**.
- Enter **1025-5000** (pre Vista and Server 2008) or **49152-65535** (Vista, Server 2008 and above) depending on operating system in the field under **Specific Ports**. The **Protocols and Ports** window should now look like the following.

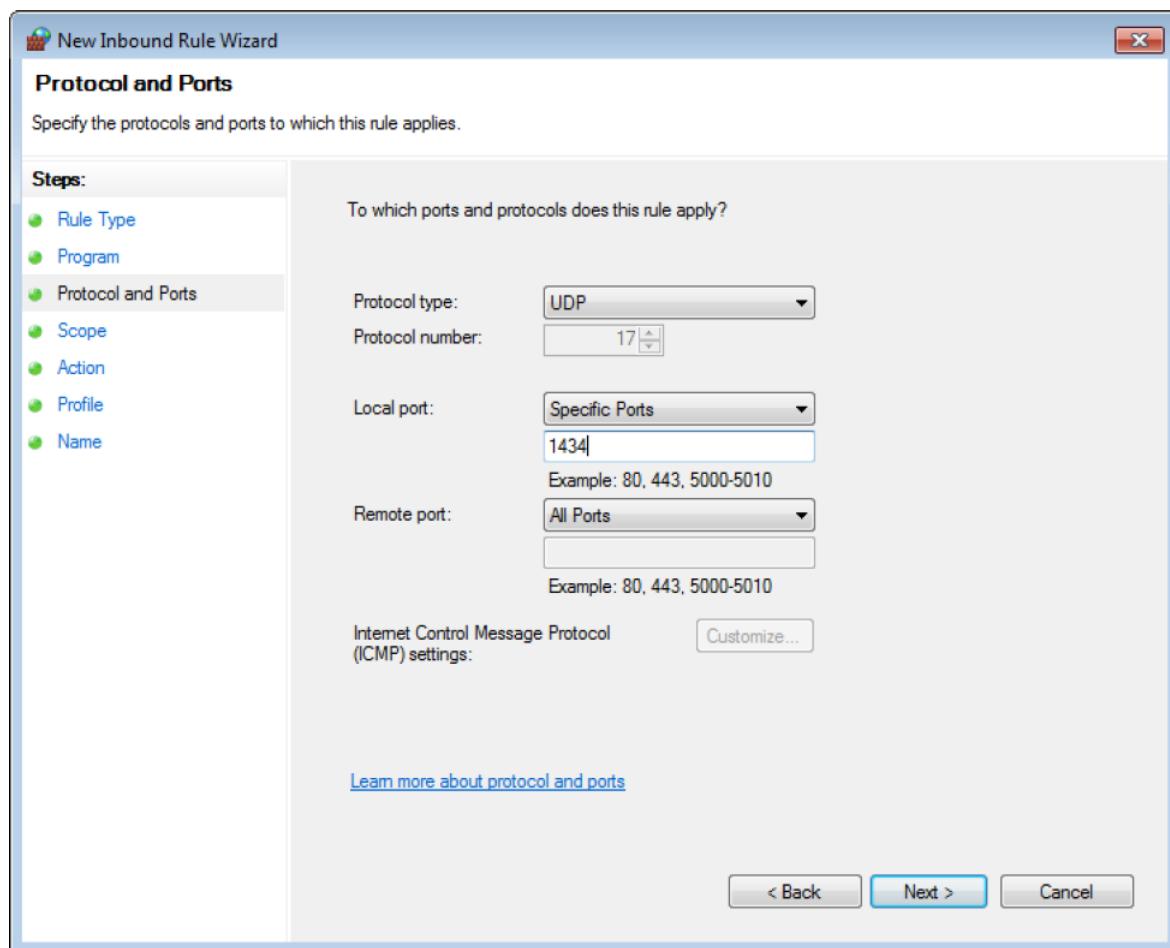


Figure 62: Windows Firewall Server Protocols and Ports

- Then click **Apply** and then **OK** to close out of the window.
- The database server should now be configured to receive and send through the firewall for the SQL Server and SQL Browser service.

Troubleshooting Error messages

Error Locating Server/Instance specified

"A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and that SQL Server is configured to allow remote connections. (provider: SQL Network Interfaces, error: 26 - Error Locating Server/Instance Specified)"

This error appears when the firewall on either the server or desktop PC is not configured correctly. Ensure the SQL Server's firewall allows inbound UDP 1434 for SQL Browser and inbound TCP ports for sqlservr.exe.

- For desktop configuration, see **How to allow Benchmark Estimating Software with windows firewall** (on page [47](#))
- For database server configuration, see **Database Server Firewall Settings** (on page [52](#))

No process is on the other end of the pipe

"A connection was successfully established with the server, but then an error occurred during the login process. (provider: Named Pipes Provider, error: 0 –No process is on the other end of the pipe.)"

"A transport-level error has occurred when sending the request to the server. (provider: Named Pipes Provider, error: 0 - No process is on the other end of the pipe.)"

The *Trusted Connection* check box is ticked when the SQL Server 2005 Instance does not have Named Pipes enabled in the SQL Server Configuration Manager.

A connection attempt failed because the connected party did not properly respond after a period of time

"A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and that SQL Server is configured to allow remote connections. (provider: TCP Provider, error: 0 - A connection attempt failed because the connected party did not properly respond after a period of time, or established connection failed because connected host has failed to respond.)"

The Trusted Connection check box is ticked but the SQL Server 2005 Instance does not have Named Pipes enabled in the SQL Server Configuration Manager.

Server doesn't support requested protocol

"A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and that SQL Server is configured to allow remote connections. (provider: SQL Network Interfaces, error 28 – server doesn't support requested protocol)"

- The SQL Server Instance does not have TCP/IP turned on.
- Use the SQL Server Configuration Manager to enable it.

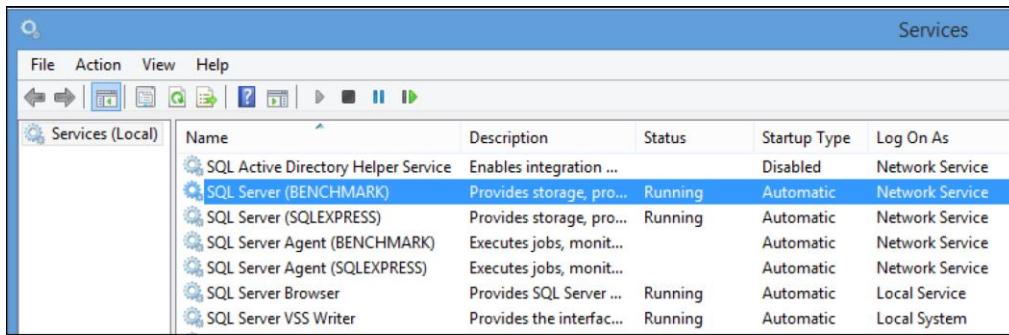
No connection could be made because the target machine actively refused it

"A network-related or instance-specific error occurred while establishing a connection to SQL Server. The server was not found or was not accessible. Verify that the instance name is correct and that SQL Server is configured to allow remote connections. (provider: TCP Provider, error: 0 - No connection could be made because the target machine actively refused it.) (Microsoft SQL Server, Error: 10061)"

The firewall on the current computer or the server computer is blocking access to the SQL Server instance. Allow the following:

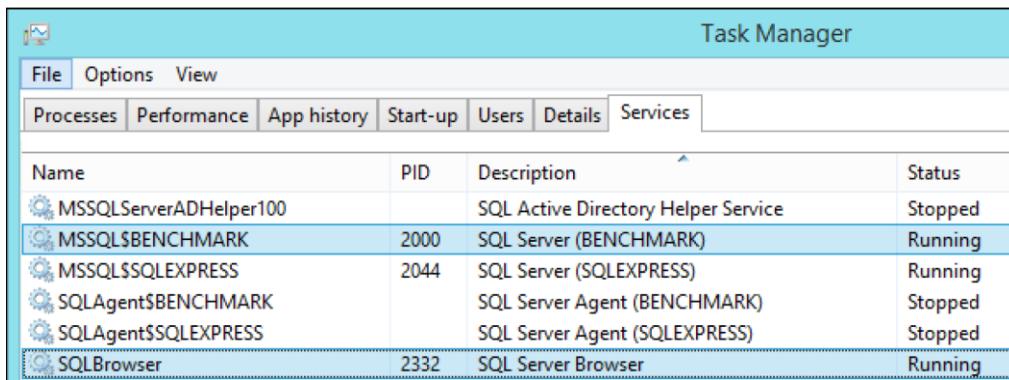
- The Benchmark Estimating Software application requires access to the network via:
 - Inbound UDP port 1434 for SQL Browser service or,
 - Inbound TCP port 1433 for the default SQL instance SQLEXPRESS if you are using it or,
 - A specific TCP port setup for the SQL Server if you have manually set it.
- Configure the servers firewall
 - Allow Inbound UDP port 1434 for SQL Browser service.
 - Allow sqlservr.exe Inbound TCP ports from 1025-5000 when the instance is using dynamic ports for operating systems before Windows Vista or Windows Server 2008.
 - Allow sqlservr.exe Inbound TCP ports from 49152-65535 when the instance is using dynamic ports for operating systems Vista, Server 2008 and above.
 - Only one SQL Instance can use dynamic ports so you could set the port manually via the SQL Server Configuration Manager → Protocols for Benchmark → TCP/IP → IP Addresses → IPALL → TCP Port = **55000** for example. Then the firewall exception for the sqlserver.exe should only be set for that TCP port 55000.

You will also receive this error if the SQL Server instance is not started. You can check this by going to the services tab in [Windows Task Manager](#) or by going to Administrative Tools in the [Control Panel](#).



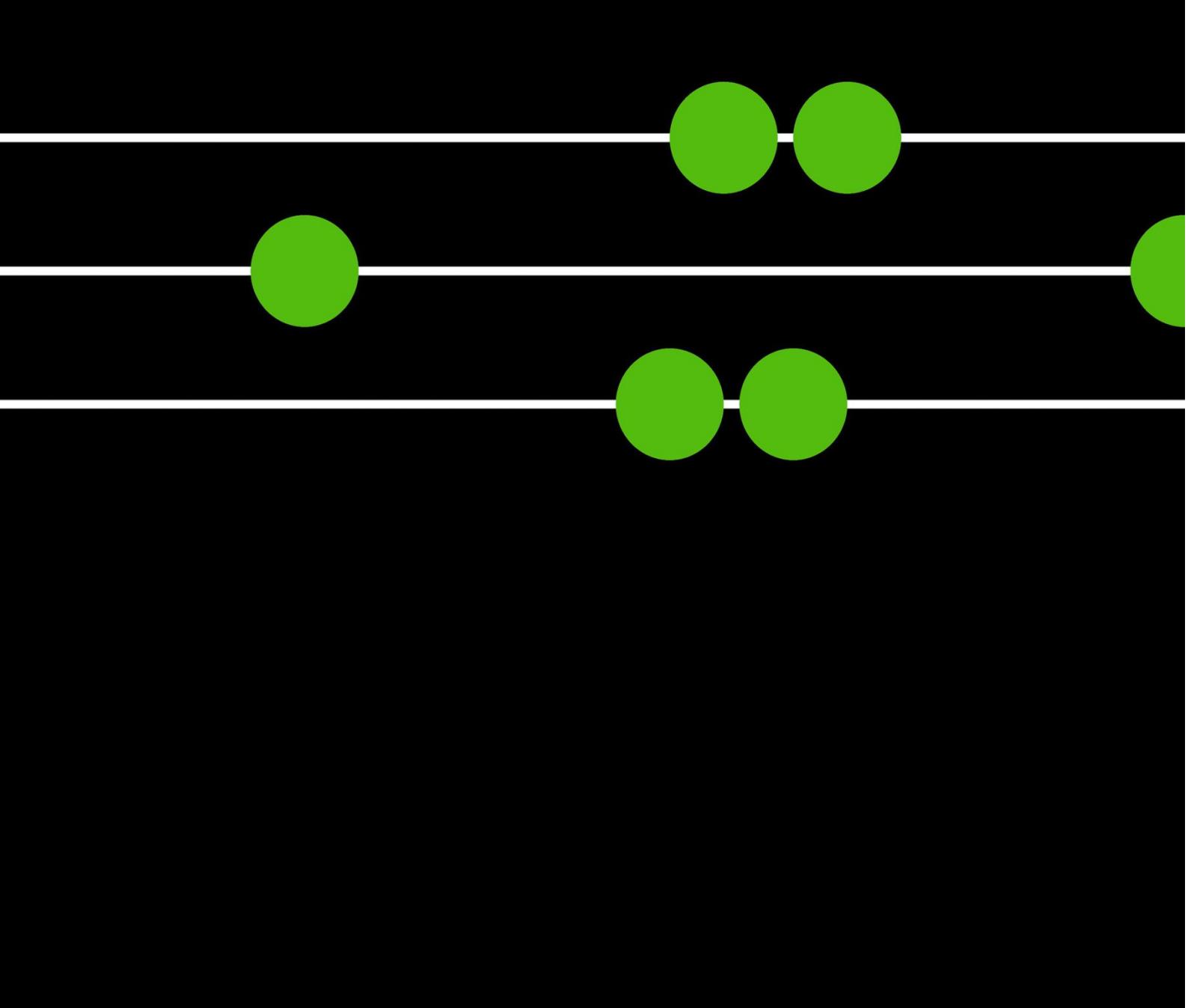
Services					
	Name	Description	Status	Startup Type	Log On As
	SQL Active Directory Helper Service	Enables integration ...	Disabled	Network Service	
	SQL Server (BENCHMARK)	Provides storage, pro...	Running	Automatic	Network Service
	SQL Server (SQLEXPRESS)	Provides storage, pro...	Running	Automatic	Network Service
	SQL Server Agent (BENCHMARK)	Executes jobs, monit...		Automatic	Network Service
	SQL Server Agent (SQLEXPRESS)	Executes jobs, monit...		Automatic	Network Service
	SQL Server Browser	Provides SQL Server ...	Running	Automatic	Local Service
	SQL Server VSS Writer	Provides the interfac...	Running	Automatic	Local System

Figure 63: SQL Services via Services



Task Manager				
File	Options	View	Processes	Performance
Start-up	Users	Details	Services	
Name	PID	Description	Status	
MSSQLServerADHelper100		SQL Active Directory Helper Service	Stopped	
MSSQL\$BENCHMARK	2000	SQL Server (BENCHMARK)	Running	
MSSQL\$SQLEXPRESS	2044	SQL Server (SQLEXPRESS)	Running	
SQLAgent\$BENCHMARK		SQL Server Agent (BENCHMARK)	Stopped	
SQLAgent\$SQLEXPRESS		SQL Server Agent (SQLEXPRESS)	Stopped	
SQLBrowser	2332	SQL Server Browser	Running	

Figure 64: SQL Server Services via Task Manager



Australia - Sydney

Level 1, 83-89 Renwick Street
Redfern NSW 2016, Australia
+61 (0)2 8396 6555

Australia - Nowra

2/49 Berry Street
Nowra NSW 2541, Australia
+61 (0)2 4422 3444

Europe - United Kingdom

Level 17, 111 Piccadilly
Manchester M1 2HY, UK
+44 (0)161 228 3351