



Cortex Innovation SQL Server 2016 Express Installation Guide

Cortex can be deployed with two engines: the original engine and the Innovation engine. This document is intended specifically for deployments using only the Innovation engine (Cortex v2022).

Cortex Limited
Kings Park House,
22 Kings Park Road,
Southampton,
SO15 2AT
T +44 23 8254 8990
E info@cortex-ia.com

Status: Release
Release Date: 12/08/2022
Author: Cortex Product Development
Document Version: 1.0.0
Software Version: 13.X.X

All rights reserved. Passing on and copying of this document, use and communication of its contents are not permitted without written authorisation from Cortex Limited.

Contents

Contents.....	3
Preface	4
About this Manual.....	4
Audience	4
Related Material	4
Abbreviations used in this Document	4
Revisions to this Document	5
1 Pre-requisites	6
1.1 System requirements	6
1.2 Required service user account (within Database server setup)	6
1.2.1 Creating Active Directory accounts.....	6
1.2.2 Creating Local User accounts.....	7
1.3 Download the media	7
1.4 Additional pre-requisites.....	7
2 Attended Installation	8
2.1 Installation of SQL Server	8
2.2 Installation of SQL Server Management Tools.....	18
2.3 Enable Named Pipes	21

Preface

About this Manual

Cortex can be deployed with two engines: the original engine and the Innovation engine. This document is intended specifically for deployments using only the Innovation engine (Cortex v2022).

This document provides detailed information regarding the installation of SQL Server 2016 Express for Cortex Innovation solutions.

This manual is organised into the following main sections:

- **Pre-requisites** - This section details necessary system configuration and third-party components for this software installation.
- **Attended Installation** - This section provides information on the installation of SQL Server via the user interface.

Audience

The intended audience is anyone required to install a SQL Server 2016 Express instance for use with Cortex Innovation solutions.

Related Material

Other documents related to this installation guide are as follows:

- **Cortex Innovation v2022 Documentation**

For further information, please also consult the following document:

- **Install SQL Server 2016 Express from the Installation Wizard (Setup)**

Abbreviations used in this Document

SQL - Structured Query Language

Revisions to this Document

The following revisions have been made to this document

Date	Author	Revision	Notes
03/08/2022	D. Smith	1.0.0	Final

1 Pre-requisites

1.1 System requirements

Component	Supported versions
Operating System	Windows Server 2016 (x64) Standard
	Windows Server 2016 (x64) Datacentre
SQL Server	2016 Express SP3 (x64) Product Version 13.0.x

1.2 Required service user account (within Database server setup)

A Local User or Active Directory Domain User (an example user account name is Cortex_SqlAdmin) should be used to run the SQL Server services. To create a new Active Directory user account, follow the following Steps in 1.2.1 or to create a new Local User account follow the Steps in 1.2.2.

Note: The user to be used cannot be the built in Administrator account.

The user account to be used should be added to the administrators group as follows:

1. Navigate to **Start -> Administrative Tools -> Computer Management**.
 2. In the left-hand panel, expand the **Local Users and Groups** node then select **Groups**.
 3. In the right-hand panel, double-click on the **Administrators** group.
 4. In the **Administrators Properties** dialog, click on the **Add** button.
- 💡 For step 5 it is possible to use the **Advanced...** button to look up names rather than entering them manually. Various filters can be set to find the correct user more easily. **OK** adds the selected user to the **Enter the object names to select** text box.
5. Type the name of the SQL Admin user into the **Enter the object names to select** text box. Click the **Check Names** button to confirm that the user exists.
 6. Click **OK** on the **Select Users** dialog, and then confirm that the user is correct by clicking **OK** on the **Properties** dialog.

1.2.1 Creating Active Directory accounts

Follow the following steps to create Active Directory accounts if required:

1. Log on to a machine that has Active Directory Users and Computers (Navigable via **Start -> Administrative Tools -> Active Directory Users and Computers**).
2. In the left-hand panel expand the node labelled with the desired domain.
3. Locate the required OU (organisational unit) and right-click on it.
4. Select **New -> User**.
5. Enter details into the **First name**, **Last name** and **User logon name** text boxes and then click **Next >**.

6. Enter details into the **Password** and **Confirm password** fields. Ensure that the password conforms to any company password policy requirements.
7. Untick User must change password at next logon. Tick User cannot change password and tick Password never expires. Click **Next >**.
8. Click **Finish** to create the user.

1.2.2 Creating Local User accounts

Follow the following steps to create Local User accounts if required:

1. Navigate to **Start -> Administrative Tools -> Computer Management**.
2. In the right-hand panel expand the **Local Users and Groups** node.
3. Right-click on **Users** and select **New User**.
4. Enter details in the **User name**, **Full name**, **Password** and **Confirm password** fields. Ensure that the password conforms to any company password policy requirements.
5. Untick User must change password at next logon. Tick **User cannot change password** and tick **Password never expires**. Click **Next >**.
6. Click **Create** to create the new user.

1.3 Download the media

1. Download the SQL Server 2016 with SP3 Express Edition installer from the following link: <https://www.microsoft.com/en-us/download/confirmation.aspx?id=103447>
2. Open the installer, then select **Download Media**
3. Select the Language from the dropdown, then select the **Express Core** option
4. Click on the **Download** button

1.4 Additional pre-requisites

- 📖 The downloaded media must be extracted and installed from the machine that the software will be installed on.
- 📖 The user that executes the install must have local admin rights on the machine and must be a domain user if the machine is on a domain.
- 📖 The SQL Server install media must be available and visible to the local machine.

2 Attended Installation

2.1 Installation of SQL Server

1. Run the SQL Server installer. When the installer loads you will be presented with the SQL Server Installation Center as shown in in Figure 1 - SQL Server Installation Center - Installation Menu.
2. Click New SQL Server stand-alone installation or add features to an existing installation.

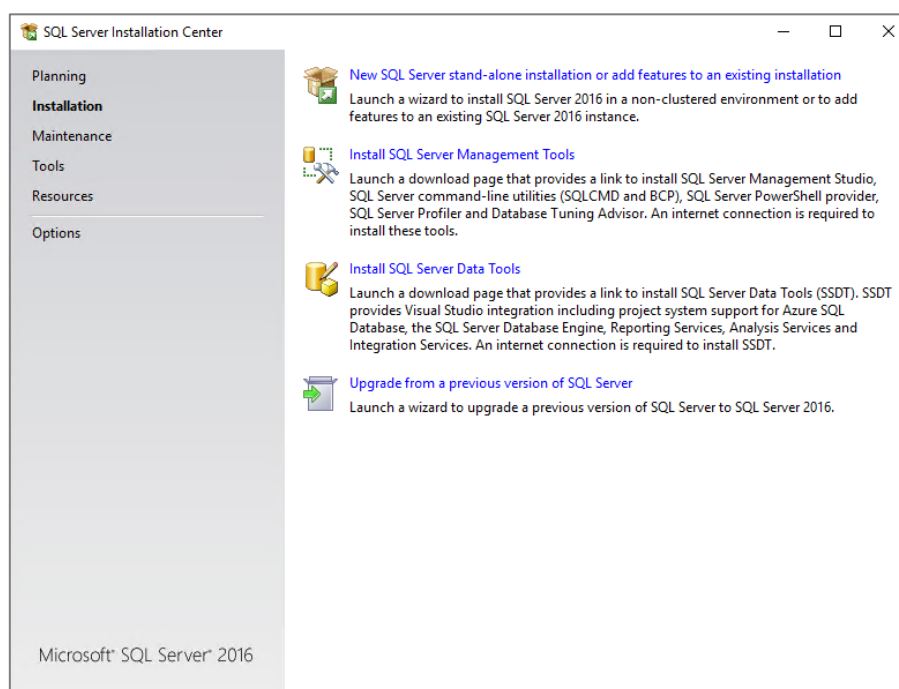


Figure 1 - SQL Server Installation Center - Installation Menu

3. The installer will then show a License Terms screen as shown in Figure 2 - License Terms. Click to agree to the terms and conditions and click Next to continue.

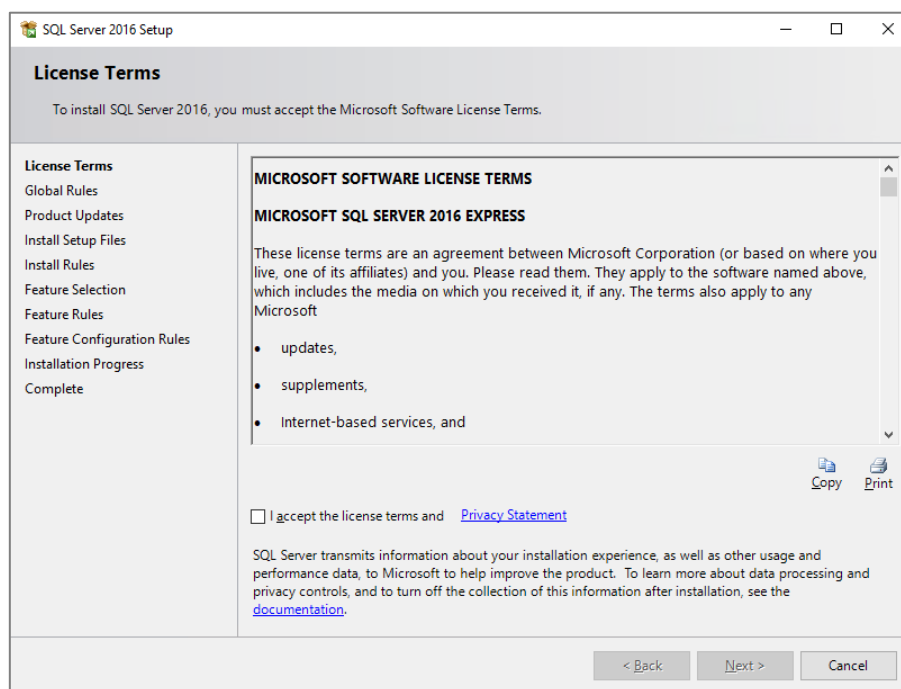


Figure 2 - License Terms

4. The installer will then check for any potential issues when installing the setup support files as shown in Figure 3 - Global Rules. Any issues highlighted should be addressed appropriately. This screen will only show if any problems arise. Once issues are resolved click Re-run and then click Next.

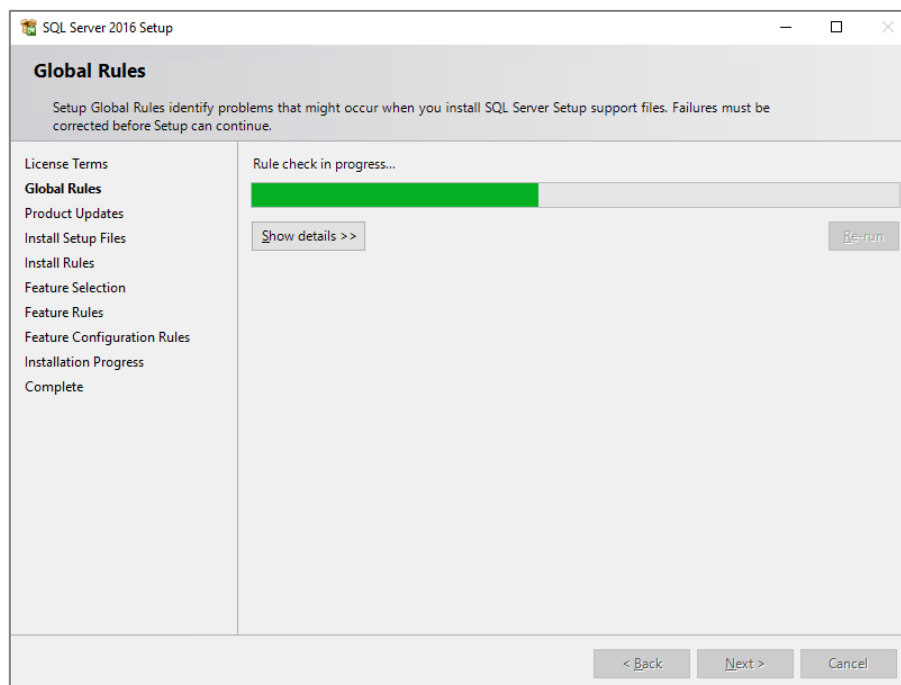


Figure 3 - Global Rules

5. The Installer may then ask whether you want to use Microsoft Update to check for updates as shown in Figure 4 - Microsoft Update. Confirm and click Next to continue.

If this screen is not shown, you can go straight to step 7.

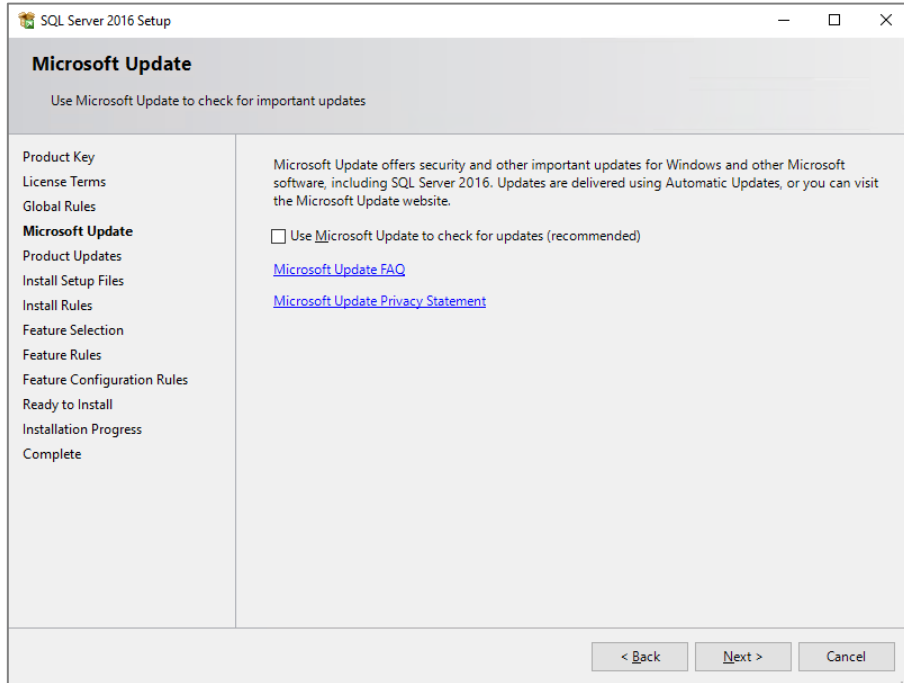


Figure 4 - Microsoft Update

6. At this stage, the Product Updates screen will be displayed if there are updates available as shown in Figure 5 - Product Updates. If any updates are listed, they will be installed when you click Next.

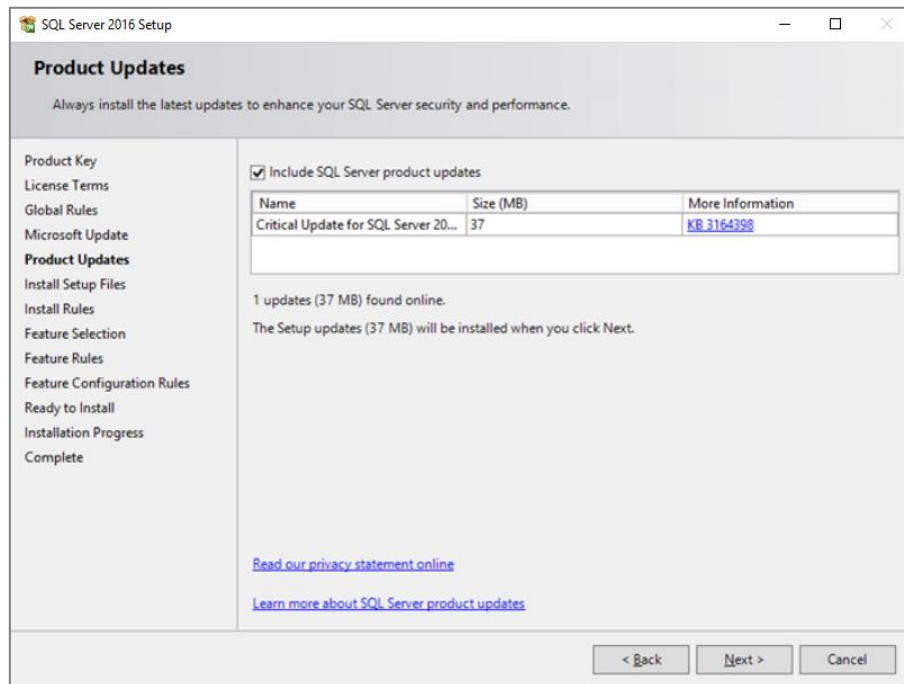


Figure 5 - Product Updates

7. The next step is installing setup files as shown in Figure 6 - Install Setup Files. Once complete, click Next.

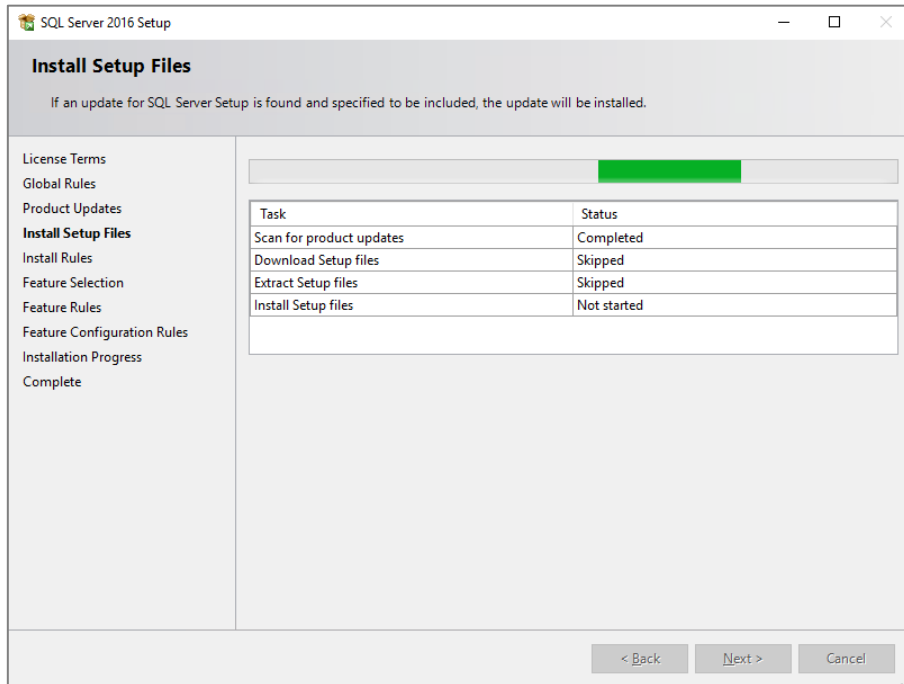


Figure 6 - Install Setup Files

8. Some install rules will then be verified as shown in Figure 7 - Install Rules. Click Next.

- ◆ This screen is usually only displayed if there are any warnings or failures

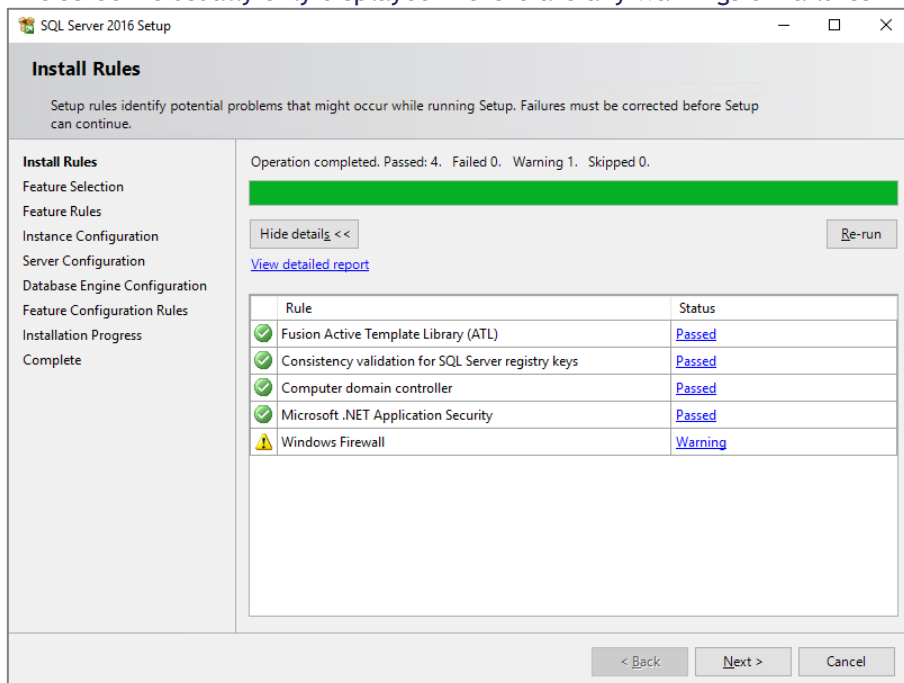


Figure 7 - Install Rules

9. If you currently have SQL Server components installed, the Installation Type screen will be displayed as shown in Figure 8 - Installation Type. For a new installation of SQL Server 2016 Express select the **Perform a new installation of SQL Server 2016** option. Click Next.

If you don't have any SQL Server components installed, you won't see this screen and can go straight to step 10.

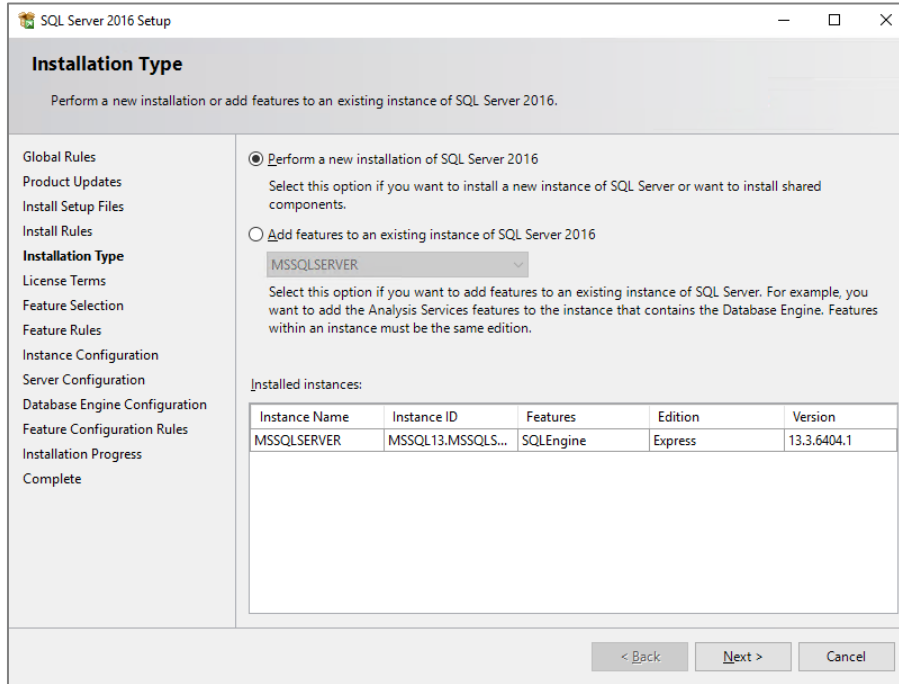



Figure 8 - Installation Type

10. On the Feature Selection screen, as shown in Figure 9 - Feature Selection you will need to select/deselect options based on the components required for Cortex Innovation. Table 1 - Feature Selection Matrix shows which options should be selected for a Cortex Innovation installation. Any components not specified in Table 1 should not be installed.

 Depending upon the solution specification you may need to deploy some components on a separate server (which implies additional license costs). If you are unsure of what to install or where, speak to a member of the database team.

Component	Cortex Innovation
Database Engine Services	Yes

Table 1 - Feature Selection Matrix

Once the options required have been selected, click Next.

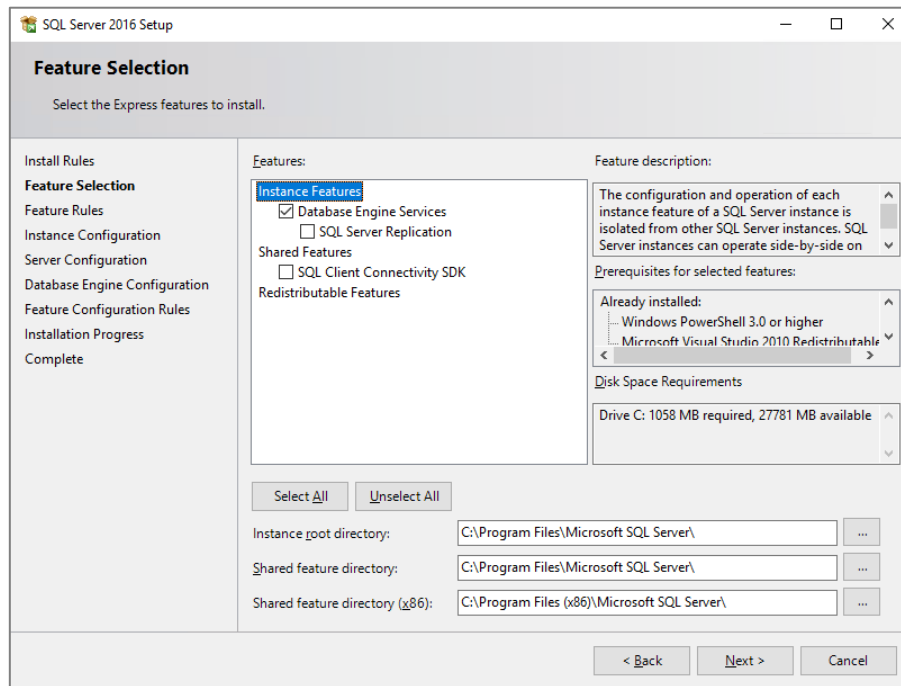


Figure 9 - Feature Selection

11. Some feature rules will then be verified as shown in Figure 10 - Feature Rules. Click Next.

◆ This screen is usually only displayed if there are any warnings or failures

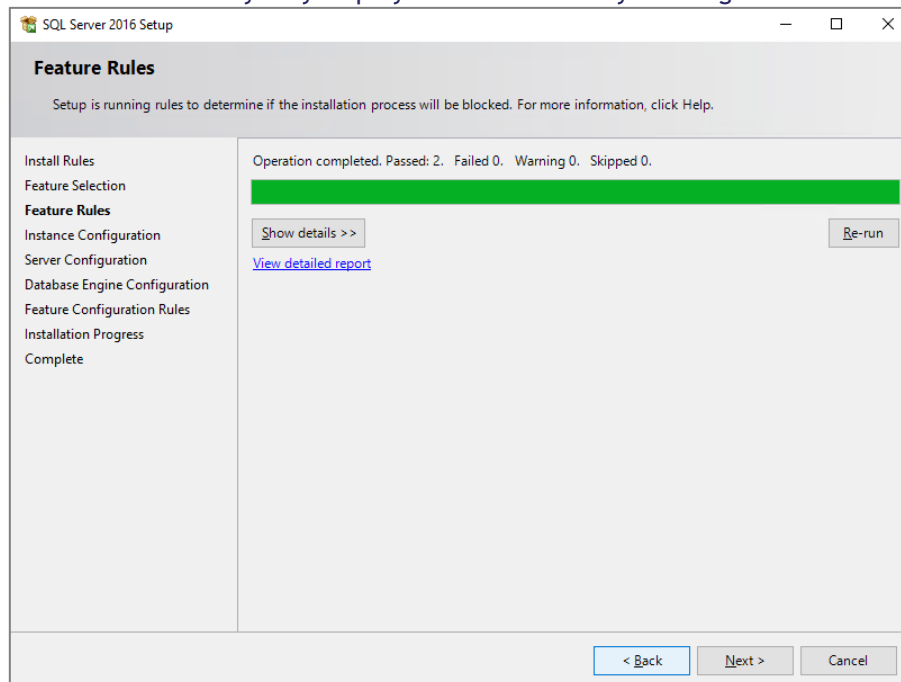


Figure 10 - Feature Rules

12. The Instance Configuration screen, as shown in Figure 11 - Instance Configuration allows you to install either the default instance or a named instance. You can install either, albeit that you can only have one default instance on any given machine. Typically, you should install the default instance unless told otherwise. You don't need to change any other default values, and once options have been selected, click Next.

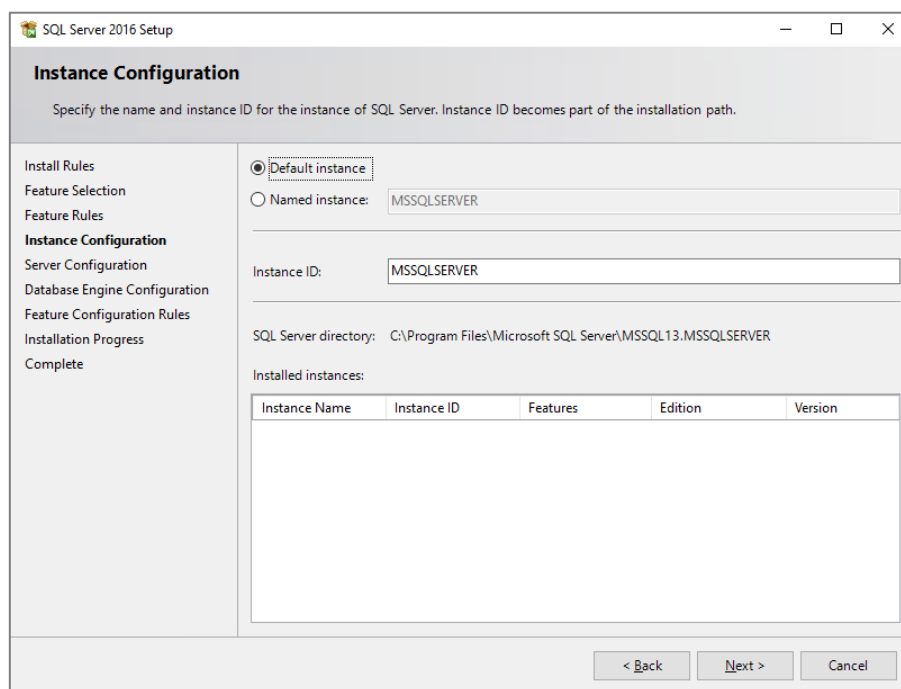


Figure 11 - Instance Configuration

13. The Server Configuration screen as shown in Figure 12 - Server Configuration - Service Accounts allows you to specify which account the SQL Server Services will run as. This would normally be a dedicated user account e.g. Domain\Cortex_SQL_Admin. Once you've configured service accounts and their associated passwords navigate to the Collation tab.

 If you have selected to install a named instance in step 12, the SQL Server Browser service should be set to automatic start up too though the service account cannot be changed.

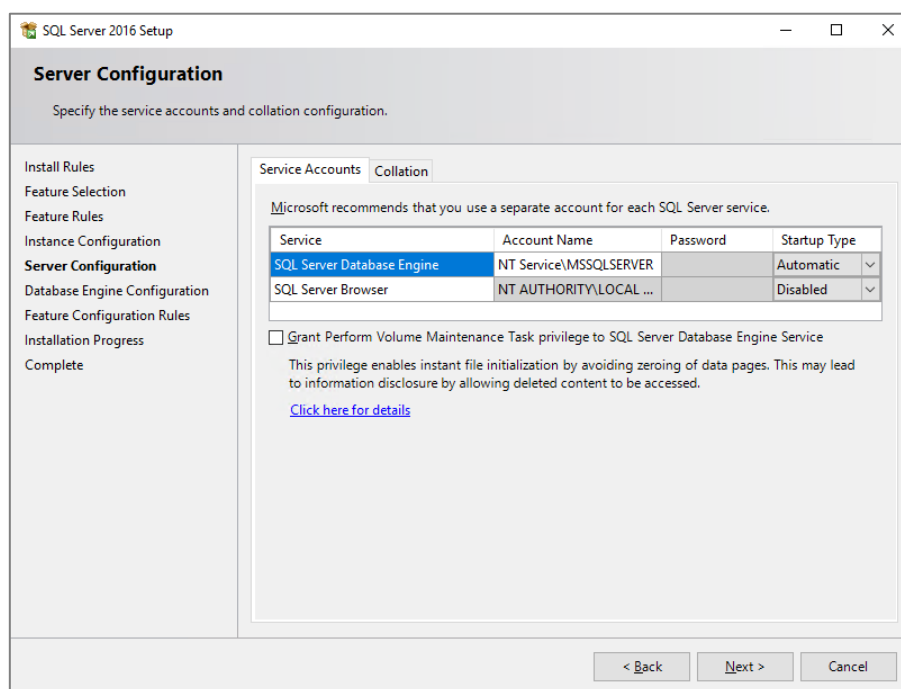


Figure 12 - Server Configuration - Service Accounts

14. On the Collation tab as shown in Figure 13 - Server Configuration - Collation you need to ensure that the collation for any items in the list is set to **Latin1_General_CI_AS**. If this is not the case click the Customize... button, and go to step 15. If the collation is set to **Latin1_General_CI_AS** click Next and go to step 16.

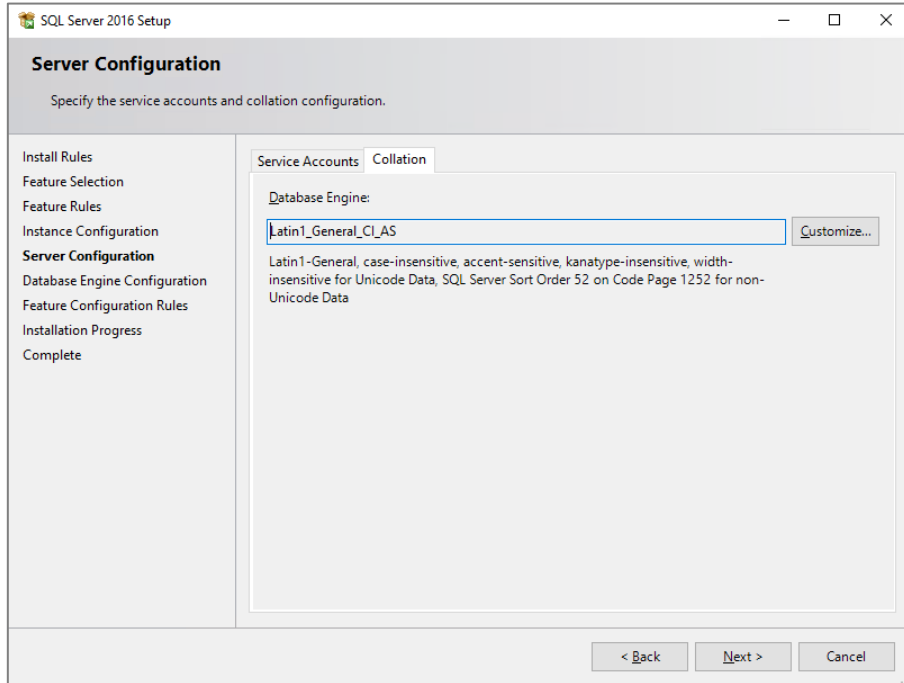


Figure 13 - Server Configuration - Collation

15. On the customization screen ensure that the values are specified as shown in Figure 14 - Server Configuration - Collation Customization and click OK.

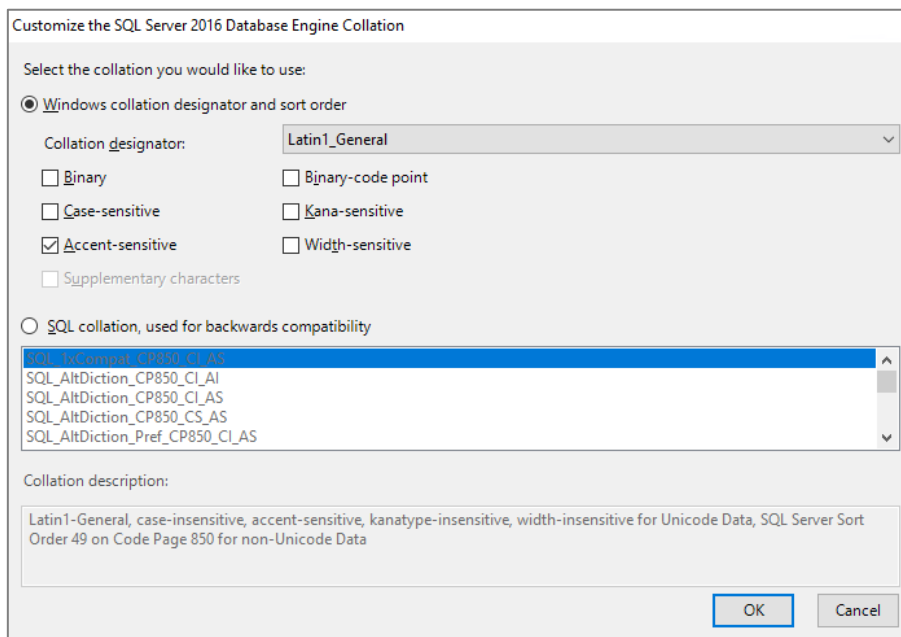


Figure 14 - Server Configuration - Collation Customization

Back on the collation tab, ensure that the collation for any items in the list is now set to **Latin1_General_CI_AS** and click Next.

16. On the Database Engine Configuration screen as shown in Figure 15 - Database Engine Configuration you can specify whether to install in Windows authentication mode or Mixed mode. Mixed mode allows you to access the system using SQL Server authentication which may or may not be a requirement.

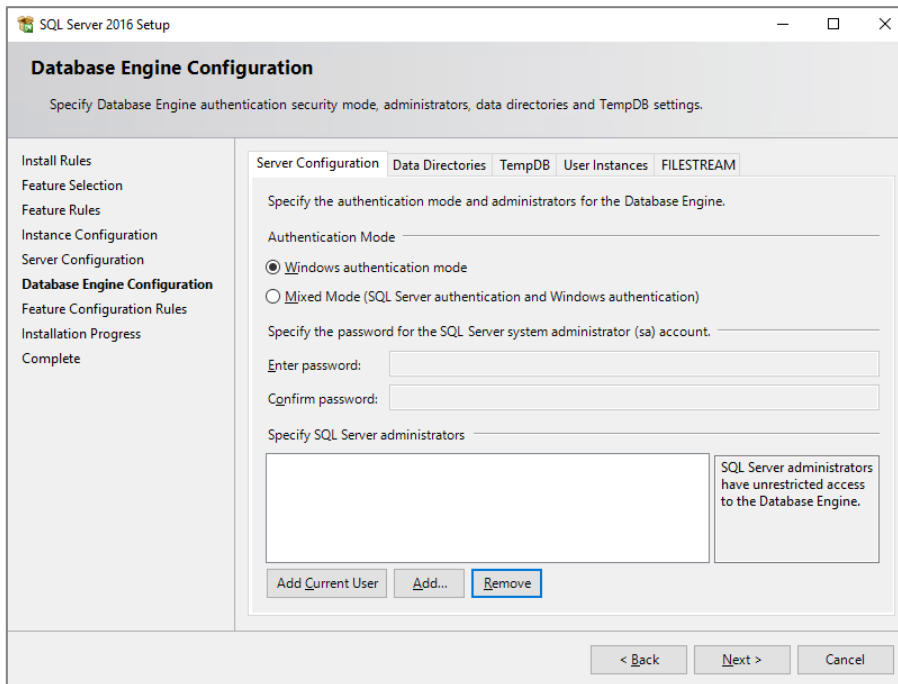
If you are installing in mixed mode, you will need to supply a password for the sa account.

You also need to specify SQL Server administrators for the system. You have to specify at least one, and you have the option to select the current user and any other available Windows users and groups.

- ✎ The MSSQLSERVER service user(s) should be configured as a system administrator.

Once authentication mode and administrators have been specified click Next.

- ✦ There is no need to change any configuration in the Data Directories, TempDB or FILESTREAM tabs.



SQL Server 2016 Setup

Database Engine Configuration

Specify Database Engine authentication security mode, administrators, data directories and TempDB settings.

Install Rules
Feature Selection
Feature Rules
Instance Configuration
Server Configuration
Database Engine Configuration
Feature Configuration Rules
Installation Progress
Complete

Server Configuration | Data Directories | TempDB | User Instances | FILESTREAM

Specify the authentication mode and administrators for the Database Engine.

Authentication Mode

☒ Windows authentication mode

☐ Mixed Mode (SQL Server authentication and Windows authentication)

Specify the password for the SQL Server system administrator (sa) account.

Enter password:

Confirm password:

Specify SQL Server administrators

SQL Server administrators have unrestricted access to the Database Engine.

Add Current User | Add... | Remove

< Back | Next > | Cancel

Figure 15 - Database Engine Configuration

17. The Installation Progress screen as shown in Figure 16 - Installation Progress will then be displayed.

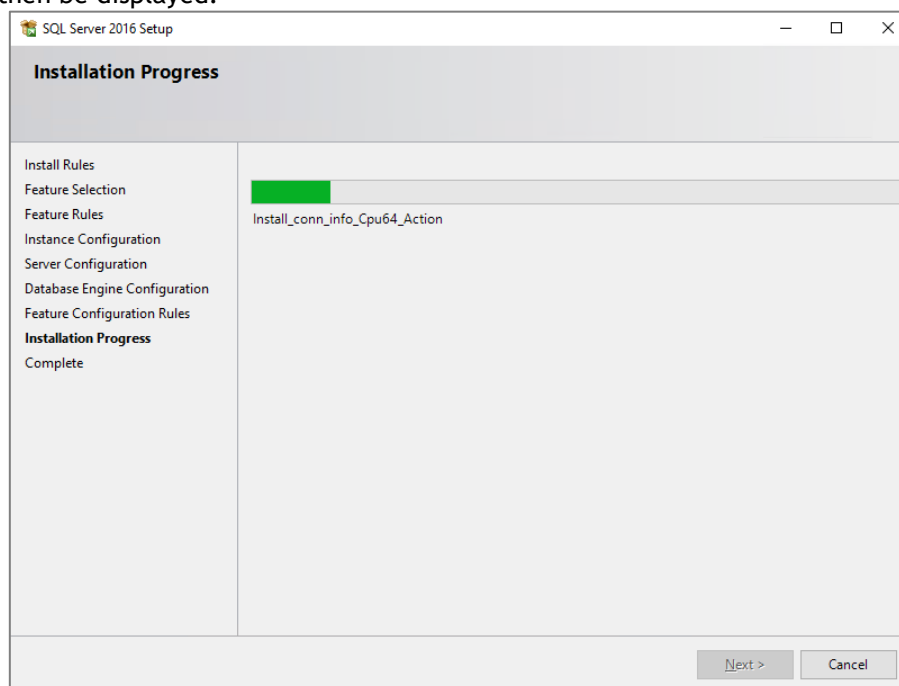


Figure 16 - Installation Progress

18. You may be advised that a computer restart is required in order to complete the setup process. Click OK.
19. The Installation Complete screen as shown in Figure 17 - Installation Complete confirms that the installation is complete. Click Close, and your SQL Server installation is complete.

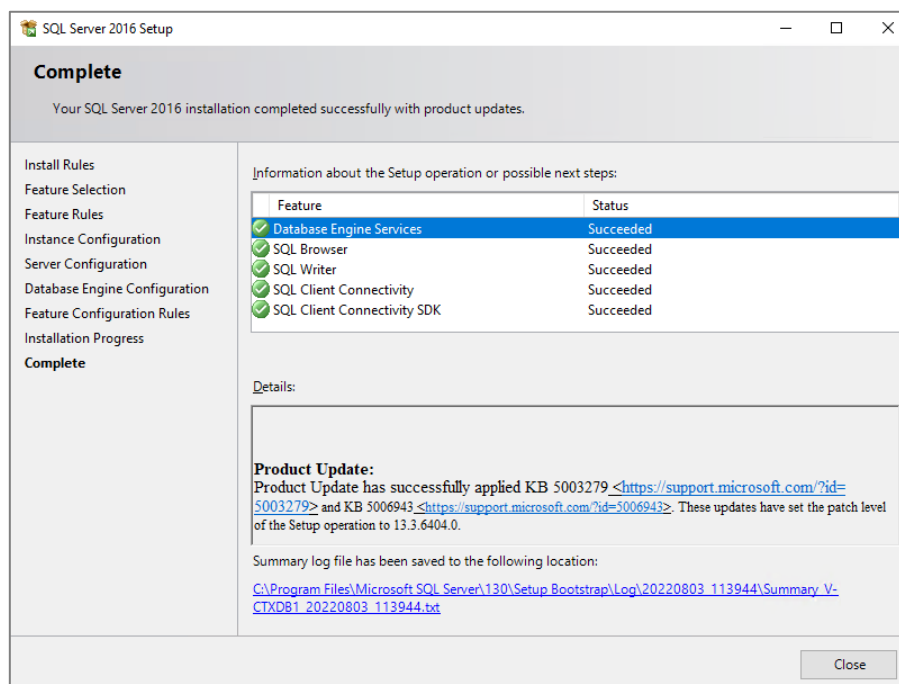


Figure 17 - Installation Complete

20. If you were prompted to restart your computer at step 18 you should restart it now.

2.2 Installation of SQL Server Management Tools

1. In the SQL Server Installation Center, ensure that you are on the Installation section on the list of options on the left of the screen.
2. Click Install SQL Server Management Tools as shown in Figure 18 - SQL Server Installation Center - Installation Menu.

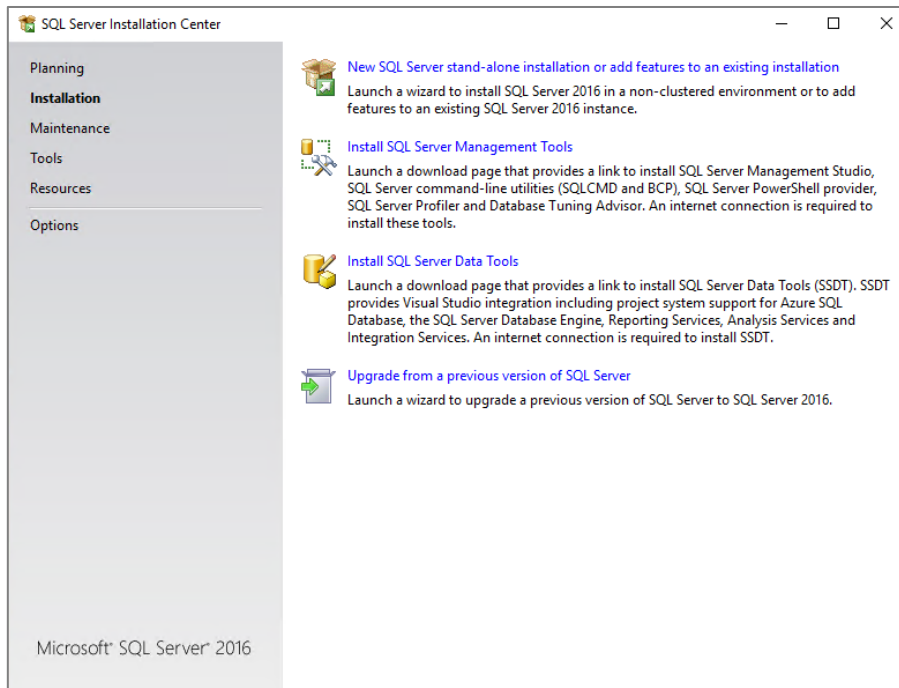


Figure 18 - SQL Server Installation Center - Installation Menu

3. You will be redirected to Microsoft's download website to download the file needed to install the SQL Server Management Tools as shown in Figure 19 - Microsoft Download Page.

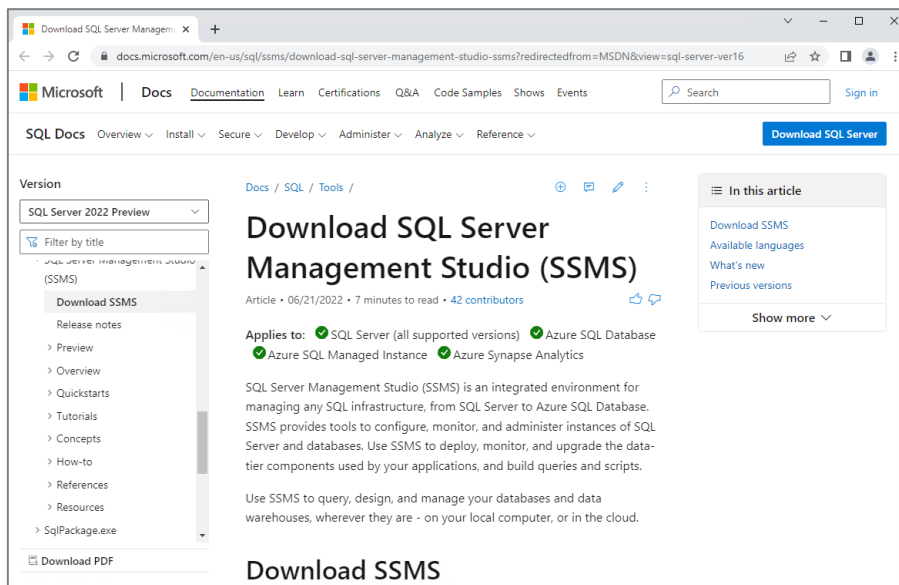


Figure 19 - Microsoft Download Page

4. Download the latest version (release for production use) of the Management Tools by clicking on the link and select Save As when prompted and save it to a known location. Wait for the download to complete.

5. Open the location that the installer was saved to in step 4 and start the installation by double clicking on the SSMS-Setup-ENU.exe file.
6. When the Microsoft SQL Server Management Studio welcome screen is displayed as shown in Figure 20 - SQL Server Management Studio Welcome Screen click Install.

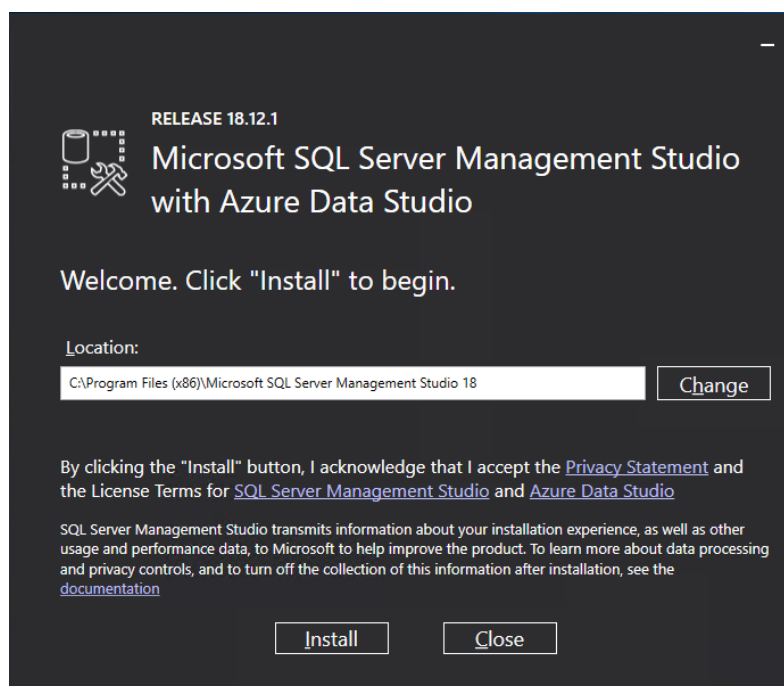


Figure 20 - SQL Server Management Studio Welcome Screen

You may be prompted with a Restart Required screen. Close any open applications and click Restart. If a restart is not required, go to step 6.

7. You will then see a progress screen as shown in Figure 21 - Loading Packages Progress while the installation packages are loaded

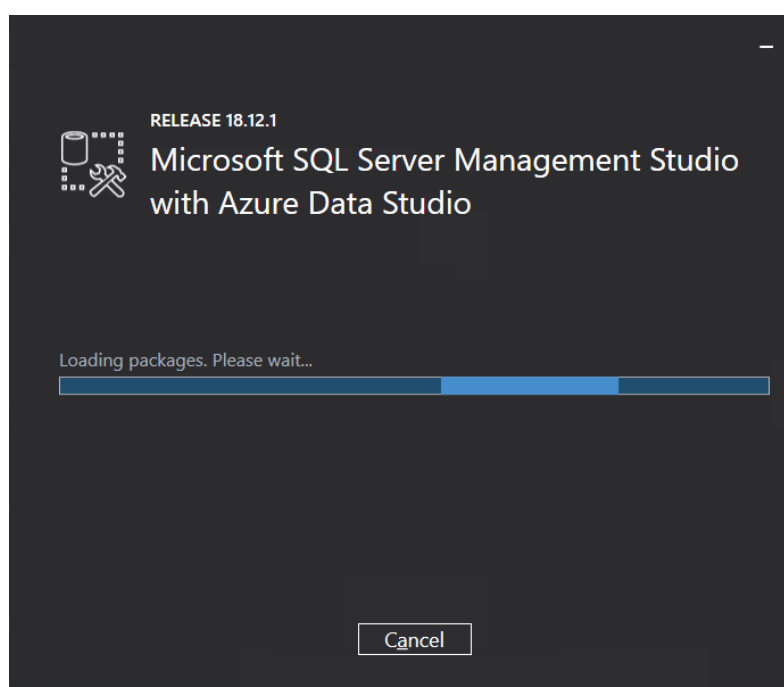


Figure 21 - Loading Packages Progress

8. A progress screen will then display the progress of the installation as shown in Figure 22 - Installation Progress.

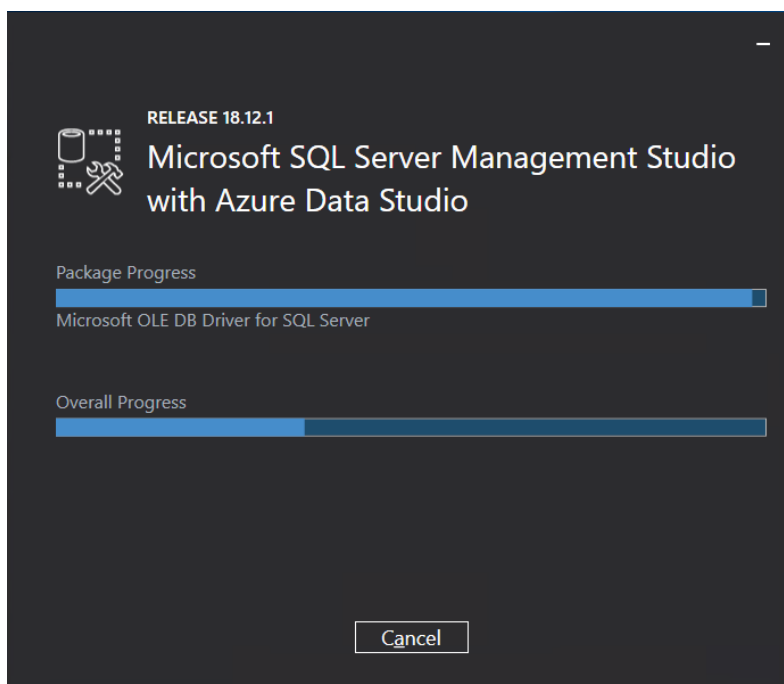


Figure 22 - Installation Progress

9. Once installation has completed a confirmation screen will be displayed and may request a machine restart as shown in Figure 23 - Installation Complete. Click Restart if prompted, else click Close.

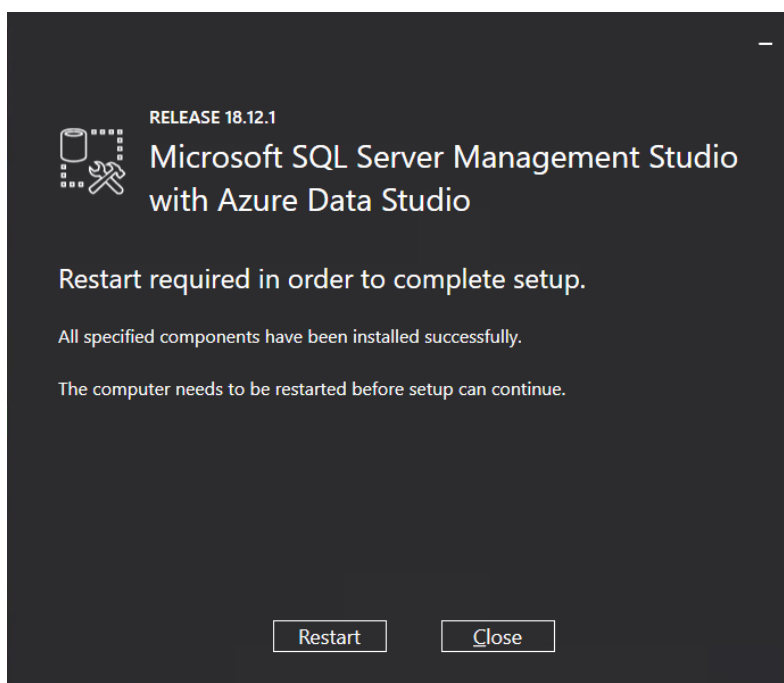


Figure 23 - Installation Complete

2.3 Enable Named Pipes

Once SQL Server has been installed we need to configure the instance so that it can be connected to via name rather than just IP Address.

1. Open the **SQL Server 2016 Configuration Manager**

- a. Click the **Start** button
- b. Search for **SQLServerManager13.msc**
- c. Click the search result

The dialog should be similar to the one shown in Figure 24 - SQL Server 2016 Configuration Manager.

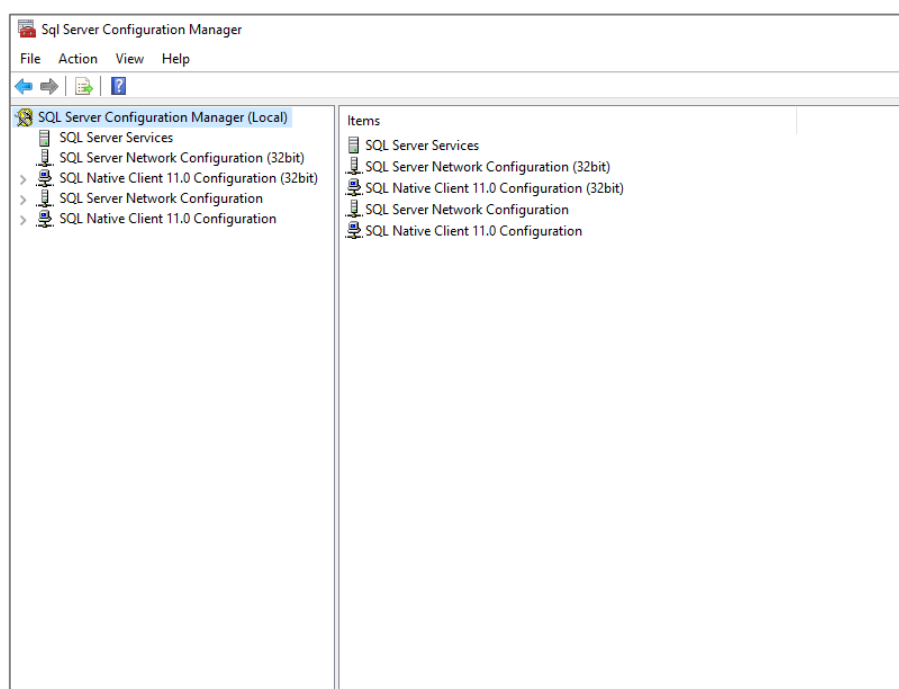


Figure 24 - SQL Server 2016 Configuration Manager

2. In the Left hand side of the Window, expand the “SQL Server Network Configuration” tree and select “Protocols for <instance name>” where instance name is the instance that you have installed in 2.1 step 12 as shown in Figure 25 - SQL Server Network Configuration.

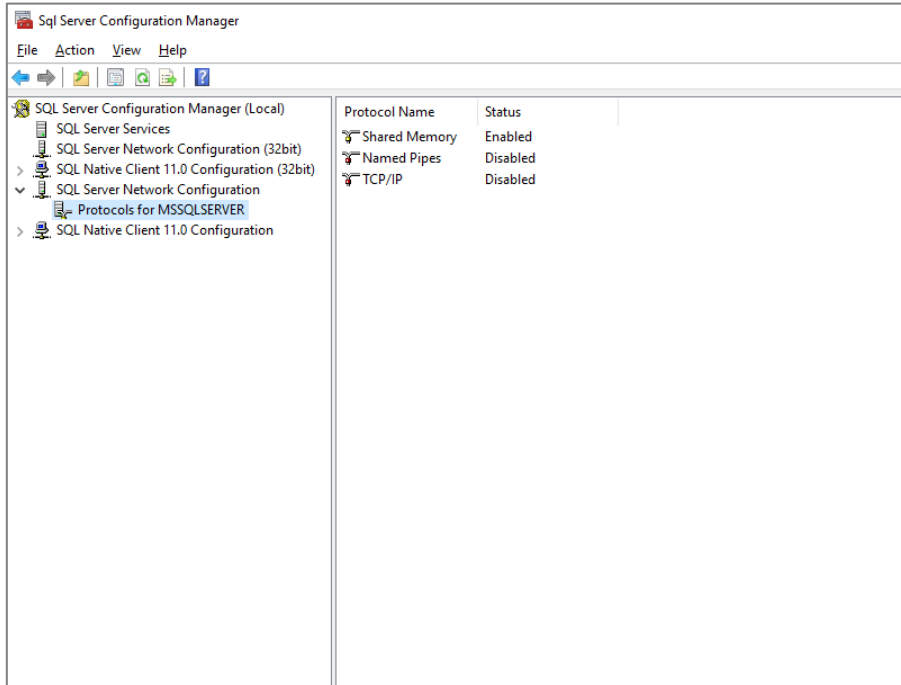


Figure 25 - SQL Server Network Configuration

3. In the Right hand side of the Window, locate the protocol “Named Pipes” and check whether it is enabled, if it is not right click on the protocol name and select enable.
4. You will be displayed a message as shown in Figure 26 - Confirmation Message that confirms that the SQL Server Service needs to be restarted for the changes to take effect.

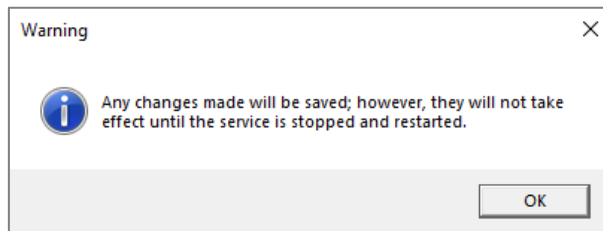


Figure 26 - Confirmation Message

5. Click OK
6. Now check the protocol “TCP/IP” and ensure that this is enabled, if not right click on the protocol name and select enable.
7. You will be displayed a message as shown in Figure 26 - Confirmation Message that confirms that the SQL Server Service needs to be restarted for the changes to take effect.
8. Click OK
9. Repeat steps 3 to 8 for the following options in the left hand side of the screen:
 - a. SQL Native Client 11.0 Configuration
 - b. SQL Native Client 11.0 Configuration (32bit)
10. In the left hand side of the window select “SQL Server Services”.

11. In the right hand side of the window as shown in Figure 27 - SQL Server Services, locate the “SQL Server (<instance name>)” Service where instance name is the instance that you have installed in 2.1 step 12.

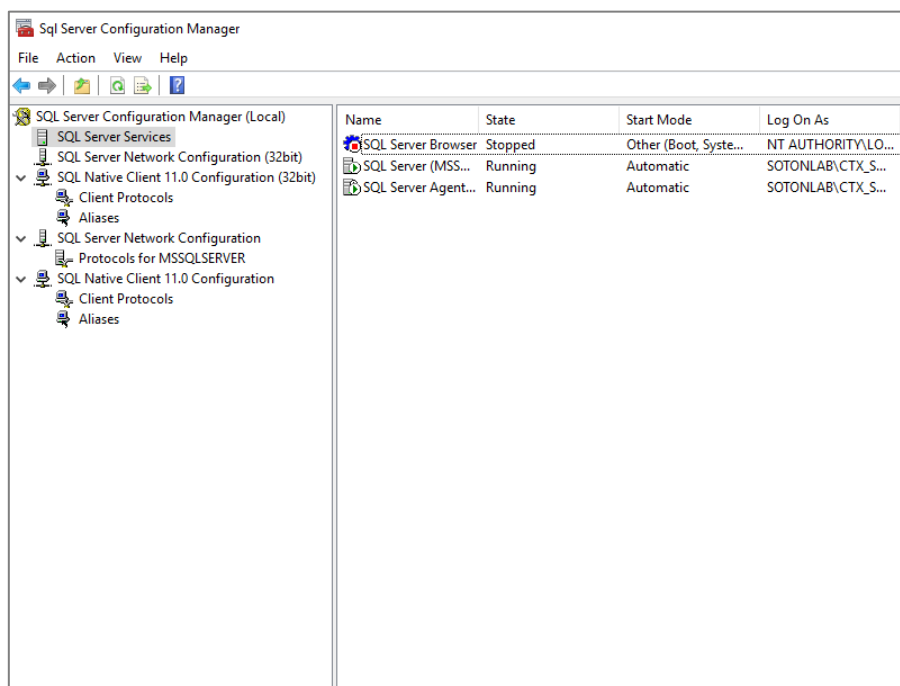


Figure 27 - SQL Server Services

12. Right click on the Name and select restart.
13. Once the necessary services have restarted and the restart dialogs have disappeared close the SQL Server Configuration Manager.