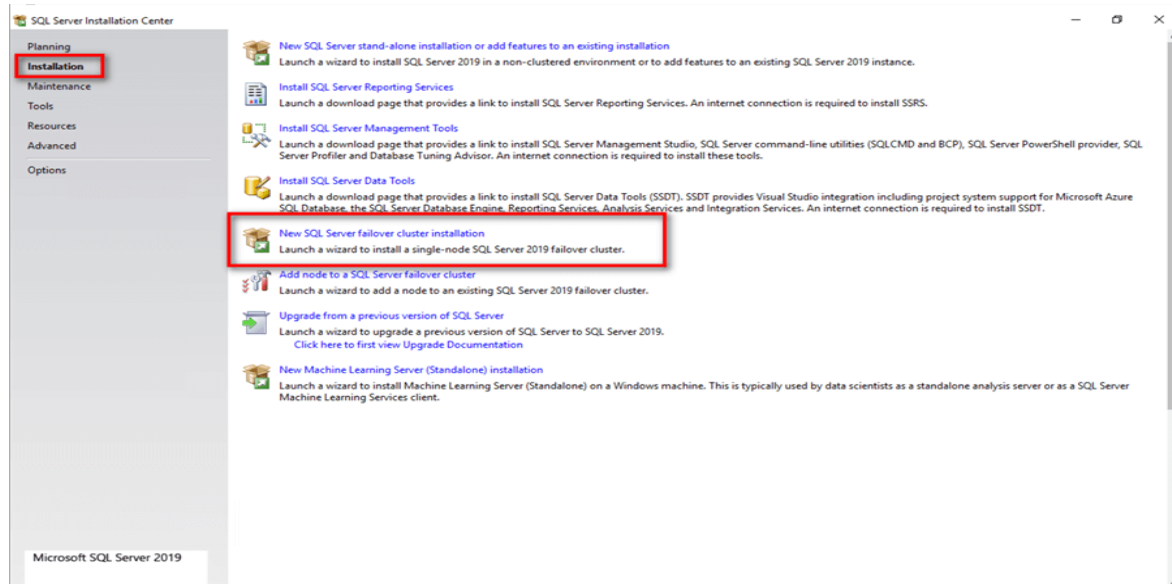


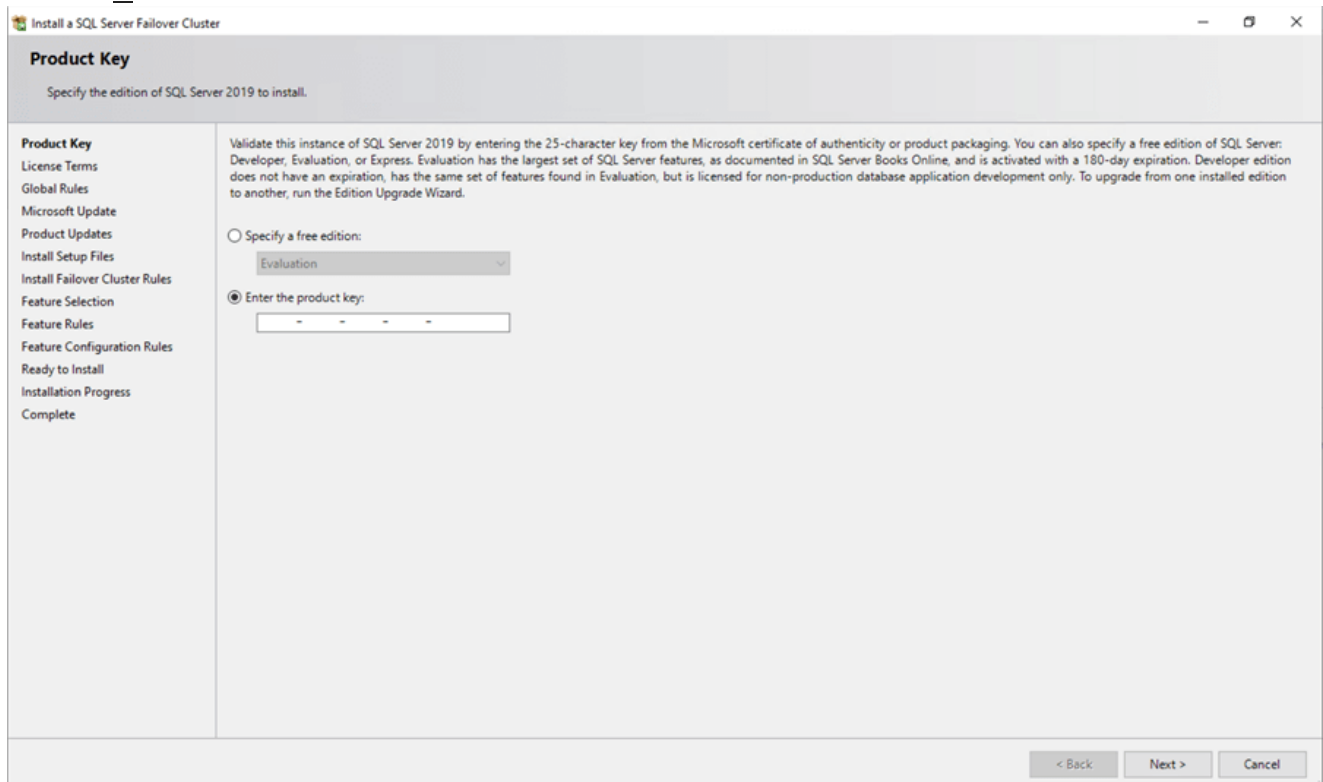
# SQL CLUSTER INSTALLATION

## INSTALL SQL SERVER FAILOVER CLUSTER INSTALLATION

Click the **New SQL Server failover cluster installation** link. This will run the SQL Server 2019 Setup wizard.

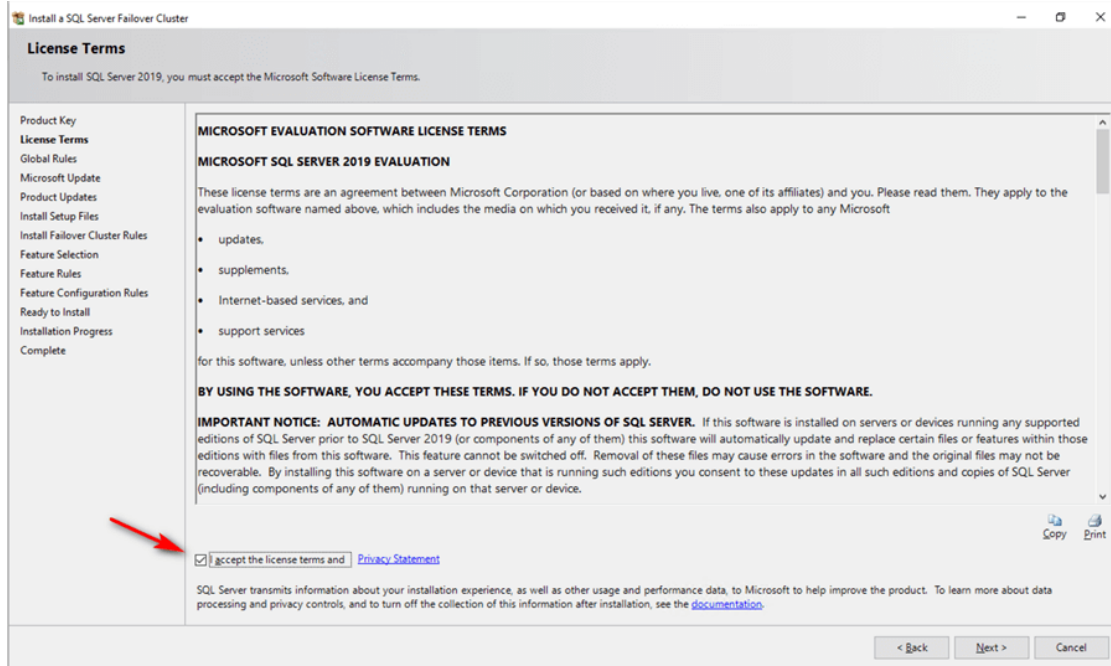


In the **Product Key** dialog box, enter the product key that came with your installation media and click **Next**.

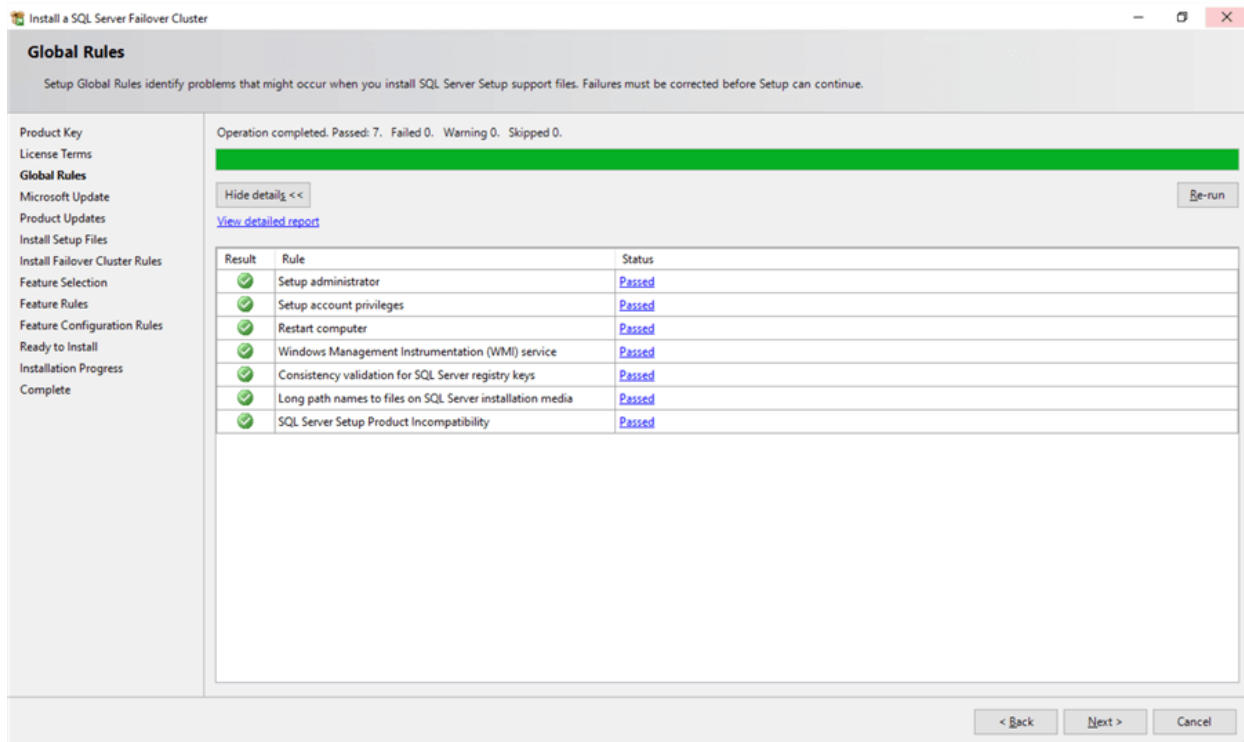


# SQL CLUSTER INSTALLATION

In the **License Terms** dialog box, click the **I accept the license terms** check box and click **Next**.

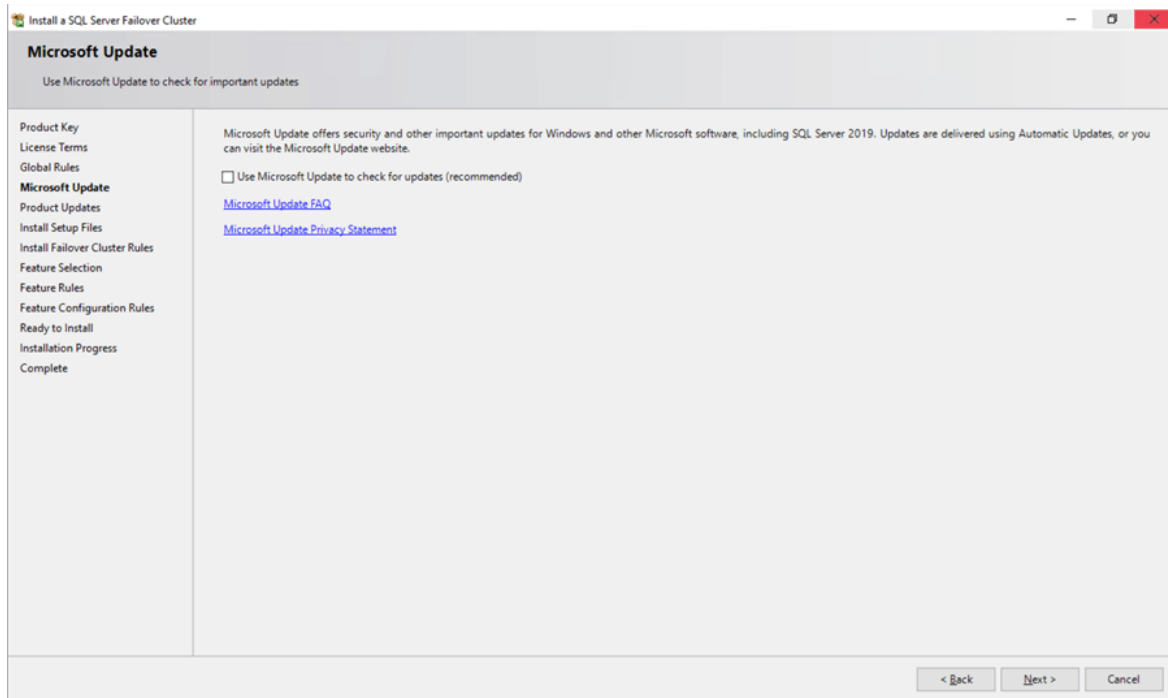


In the **Global Rules** dialog box, validate that the checks return successful results and click **Next**.

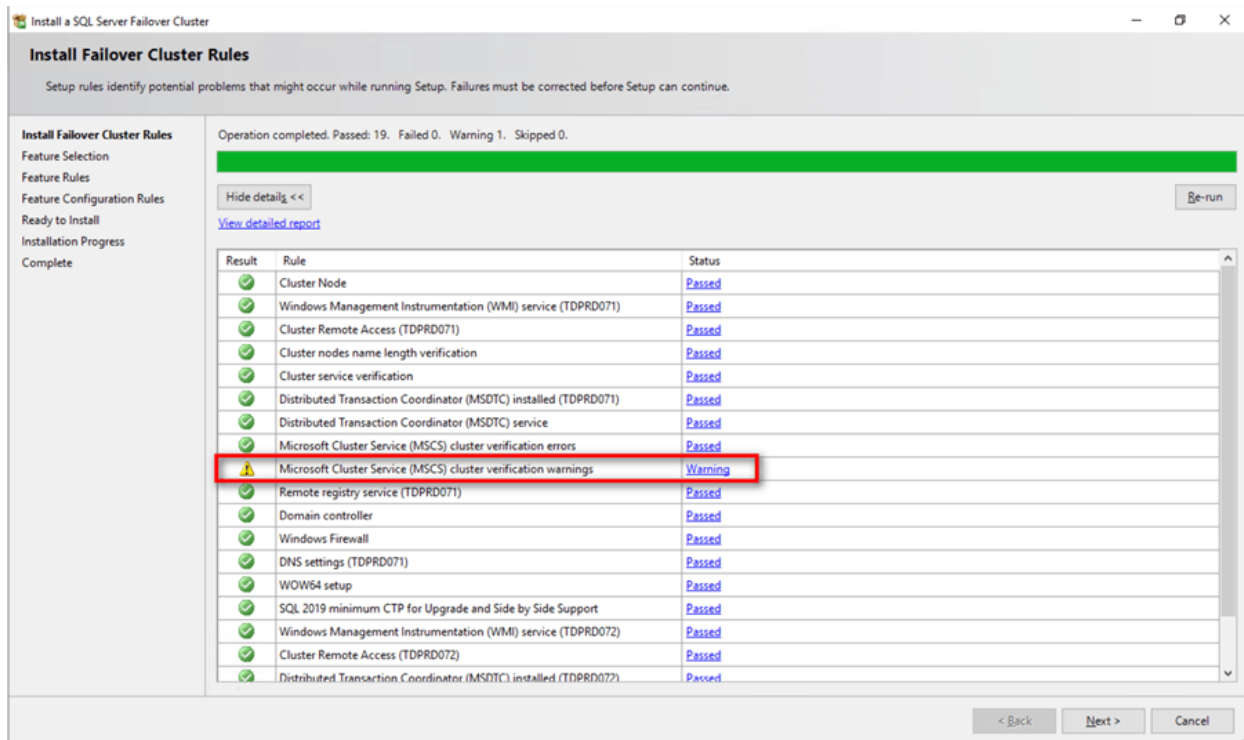


# SQL CLUSTER INSTALLATION

In the **Microsoft Update** dialog box don't select use Microsoft to check just Click **Next**

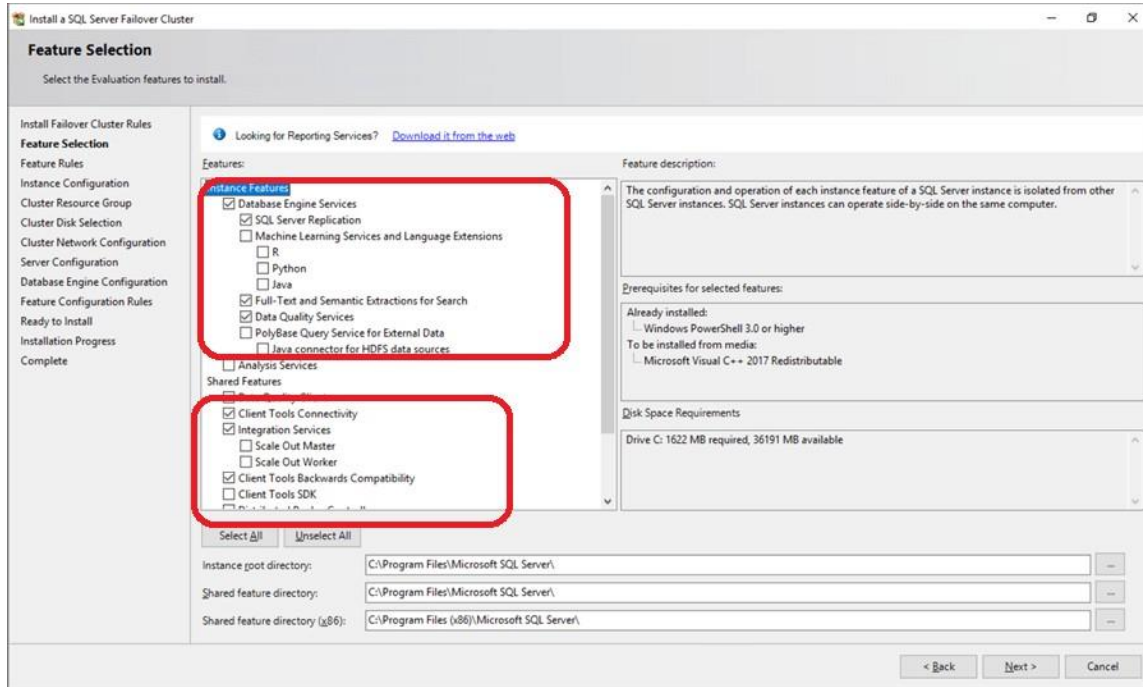


In the **Install Failover Cluster Rules** dialog box, validate that the checks return successful results. If the checks returned a few warnings, Click **Next**.

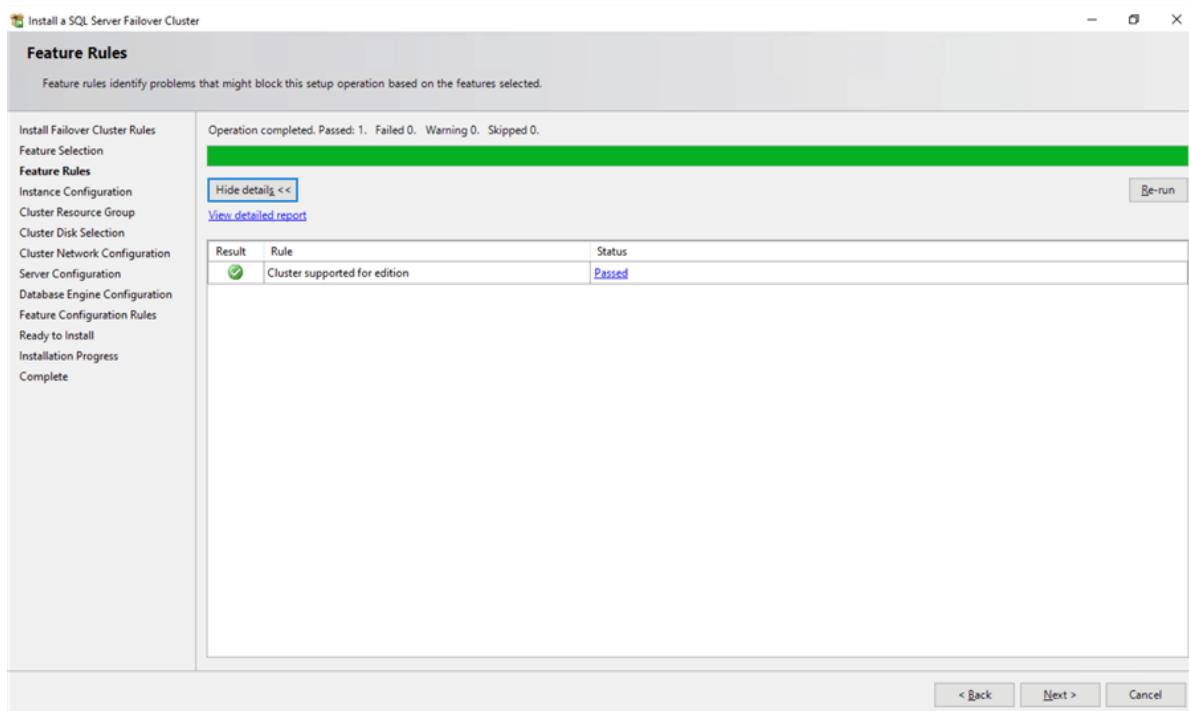


# SQL CLUSTER INSTALLATION

In the **Feature Selection** dialog box, select the following components: **Database Engine Services** and **Client Tools Connectivity, Integration service, Client tools Backward Compatibility**. Click **Next**.



In the **Feature Rules** dialog box, verify that all the rules have passed. If the rules returned a few warnings, make sure you fix them before proceeding with the installation. Click **Next**.



# SQL CLUSTER INSTALLATION

In the **Instance Configuration** dialog box, provide a value for the SQL Server Network Name This is the name that the client applications will use to connect to this server.

Specify the name and instance ID for the instance of SQL Server. Instance ID becomes part of the installation path.

Specify a network name for the new SQL Server failover cluster. This will be the name used to identify your failover cluster on the network.

SQL Server Network Name:

☒ Default instance  
☐ Named instance:

Instance ID:

SQL Server directory:

Detected SQL Server instances and features on this computer:

Instance	Cluster Network Name	Features	Edition	Version	Instance ID
----------	----------------------	----------	---------	---------	-------------

< Back Next > Cancel

In the **Cluster Resource Group** dialog box, check the resources available on your WSFC. Click **Next**.

Create a new cluster resource group for your SQL Server failover cluster.

Specify a name for the SQL Server cluster resource group. The cluster resource group is where SQL Server failover cluster resources will be placed. You can choose to use an existing cluster resource group name or enter a new cluster resource group name to be created.

SQL Server cluster resource group name:

Qualified	Name	Message
⊗	Available Storage	The cluster group 'Available Storage' is reserved by Windows Failover Clustering and cannot be used as a SQL group.
⊗	Cluster Group	The cluster group 'Cluster Group' is reserved by Windows Failover Clustering and cannot be used as a SQL group.

Refresh

< Back Next > Cancel

# SQL CLUSTER INSTALLATION

In the **Cluster Disk Selection** dialog box, select the available disk groups that are on the WSFC for the SQL Server FCI to use. Or select when you kept system database and user databases Click **Next**.

Install a SQL Server Failover Cluster

**Cluster Disk Selection**

Select shared cluster disk resources for your SQL Server failover cluster.

Specify the shared disks to be included in the SQL Server resource cluster group. The first drive will be used as the default drive for all databases, but this can be changed on the Database Engine Configuration pages.

☒ SQL\_DISK\_R  
☒ SQL\_DISK\_S  
☒ SQL\_DISK\_T

Available shared disks:

Qualified	Disk	Message
<input checked="" type="checkbox"/>	SQL_DISK_R	
<input checked="" type="checkbox"/>	SQL_DISK_S	
<input checked="" type="checkbox"/>	SQL_DISK_T	

Refresh

< Back Next > Cancel

In the **Cluster Network Configuration** dialog box, enter the SQL IP address. Select the **IPv4** checkbox under the **IP Type** column as you will be using a static IP address. Click **Next**

**Note** - The SQL Server Network Name with this virtual IP address will be created as an entry in your DNS server.

Install a SQL Server Failover Cluster

**Cluster Network Configuration**

Select network resources for your SQL Server failover cluster.

Specify the network settings for this failover cluster:

IP Ty...	DHCP	Address	Subnet Mask	Subnet(s)	Network
<input checked="" type="checkbox"/> IPv4	<input type="checkbox"/>	172.16.0.17	255.255.0.0	172.16.0.0/16	LAN

Refresh

< Back Next > Cancel



# SQL CLUSTER INSTALLATION

In the **Server Configuration** dialog box, provide the credentials for the SQL Server service accounts in the **Service Accounts** tab. Click **Next**.

Service	Account Name	Password	Startup Type
SQL Server Agent	TESTDOMAIN\sqlservice	*****	Manual
SQL Server Database Engine	TESTDOMAIN\sqlservice	*****	Manual
SQL Full-text Filter Daemon Launcher	NT Service\MSSQLFDLauncher		Manual
SQL Server Browser	NT AUTHORITY\LOCAL SERVICE		Automatic

☒ Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service  
This privilege enables instant file initialization by avoiding zeroing of data pages. This may lead to information disclosure by allowing deleted content to be accessed.  
[Click here for details](#)

In the **Database Engine Configuration** dialog box, under the **Server Configuration** tab,

- Select **Mixed mode** in the **Authentication Mode** section. If required, you can change it later after the installation is complete.
- Add the currently logged on user to be a part of the SQL Server administrators group by clicking the **Add Current User** button in the **Specify SQL Server Administrators** section.

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

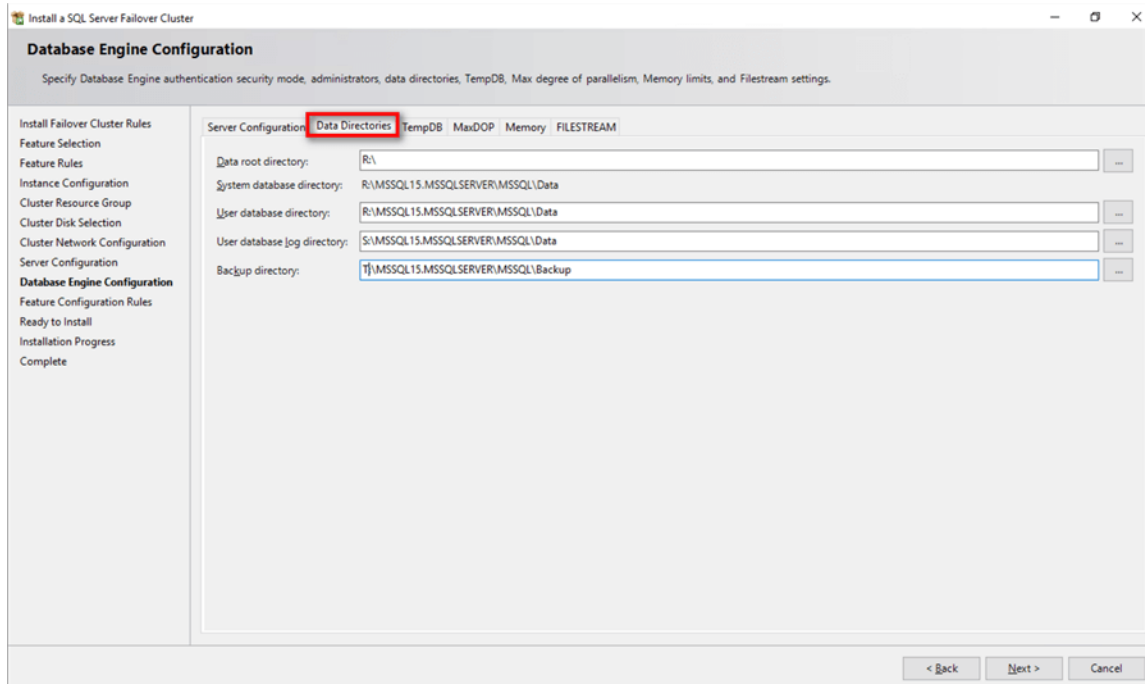
TESTDOMAIN\esarmiento\dba (DBA, Edwin M Sarmiento)

SQL Server administrators have unrestricted access to the Database Engine.

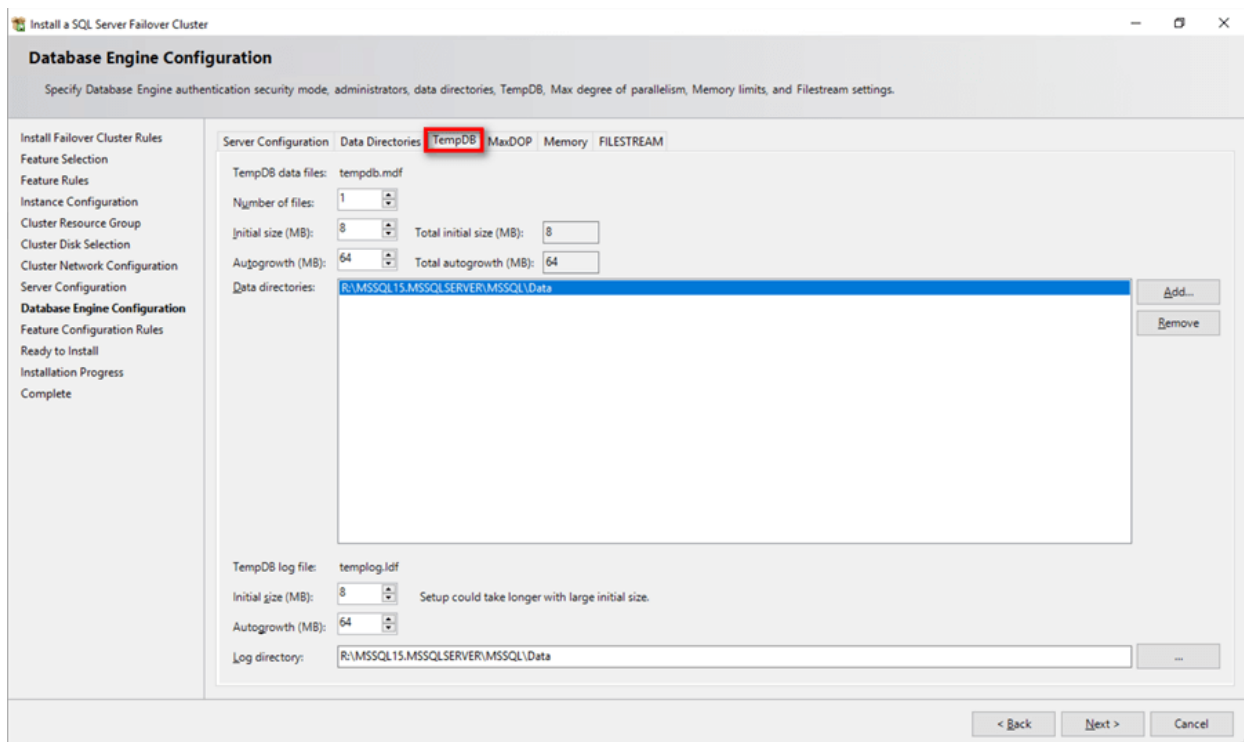
Add Current User Add... Remove

# SQL CLUSTER INSTALLATION

In the **Data Directories** tab, specify the location of the **system databases** data files, the log files, and the backup files.



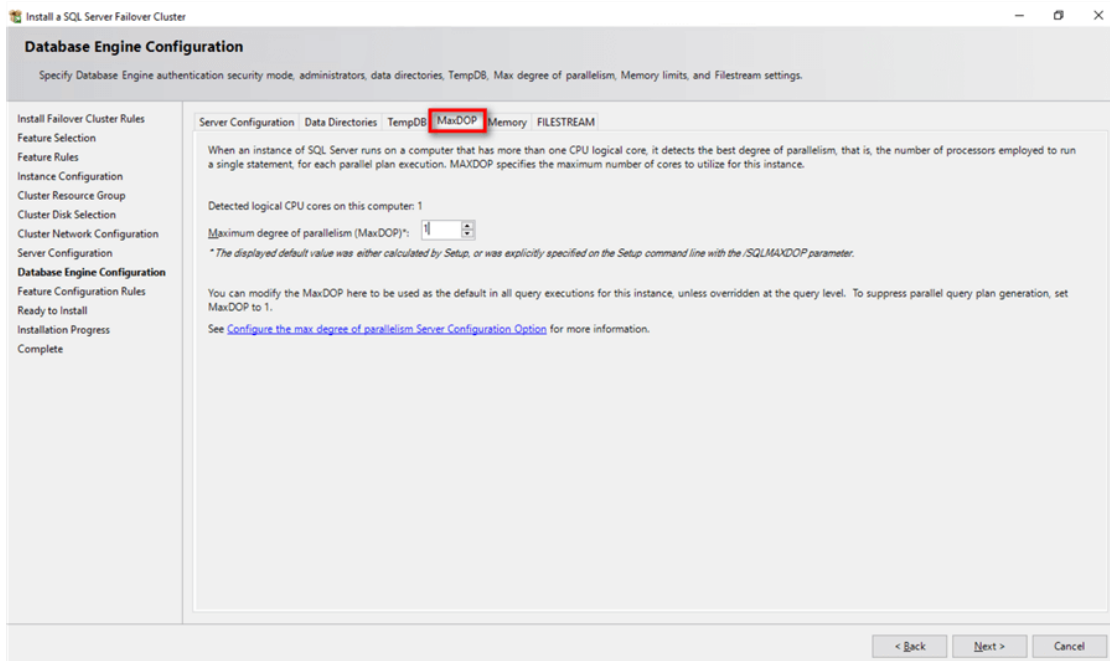
In the **TempDB** tab, you can set the number of **TempDB** data files, initial size and auto growth settings of both data and log files as well as their corresponding locations.



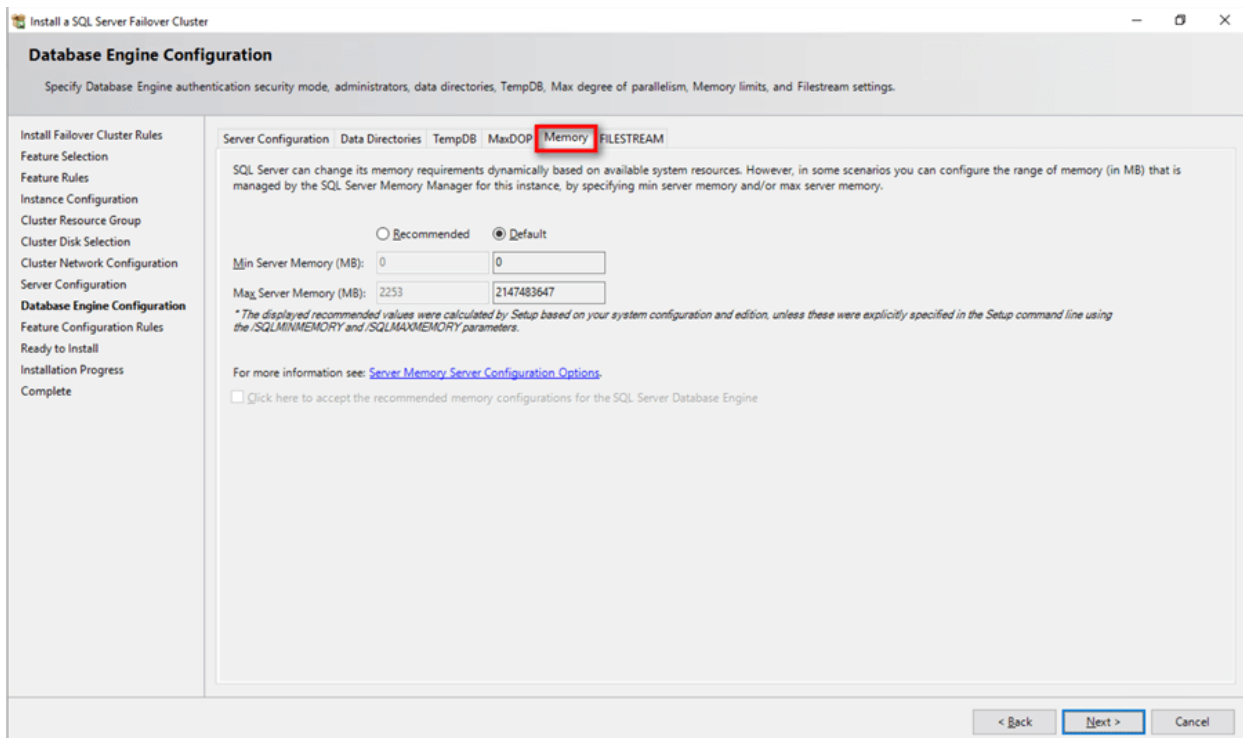


# SQL CLUSTER INSTALLATION

New in SQL Server 2019 is the **MaxDOP** tab which introduces automatic recommendations for setting the MAXDOP server configuration option during the installation process. The recommended MAXDOP setting is based on the number of logical CPU cores detected on the server.

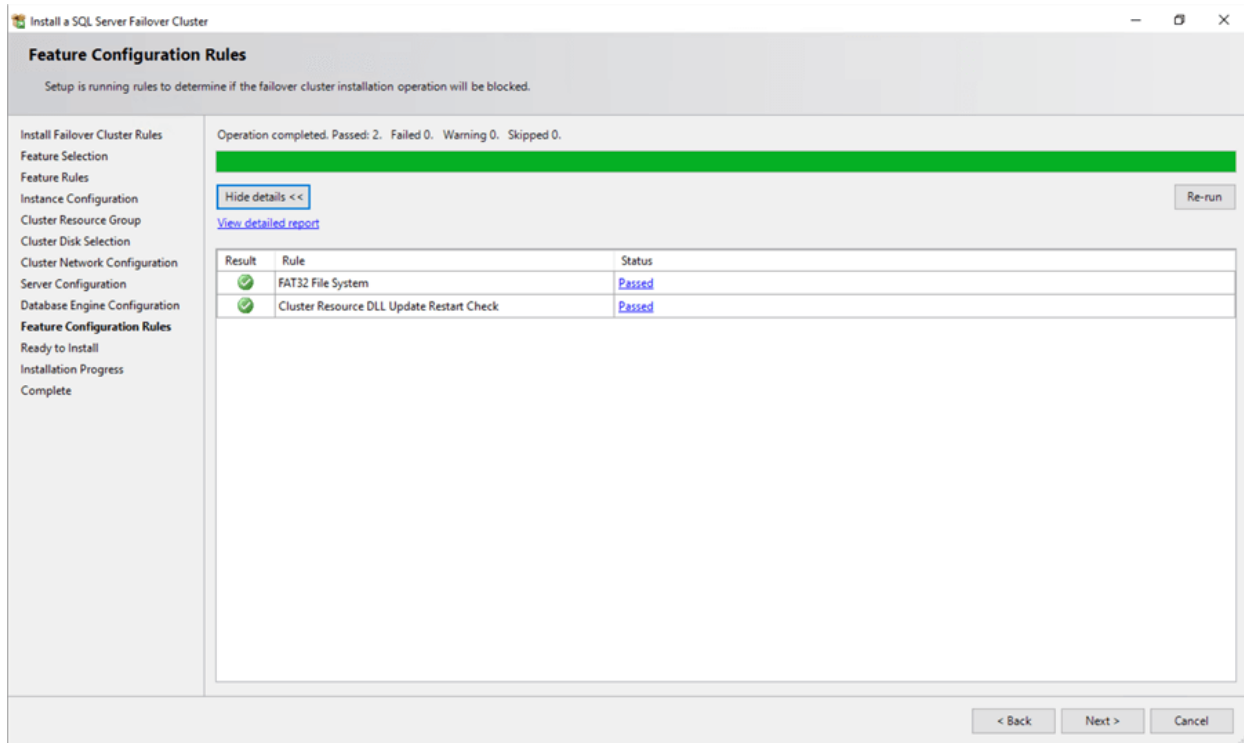


Also new in SQL Server 2019 is the **Memory** tab which introduces the ability to set the minimum and maximum server memory during installation, just like how you would with **sp\_configure** after installation. Click **Next**

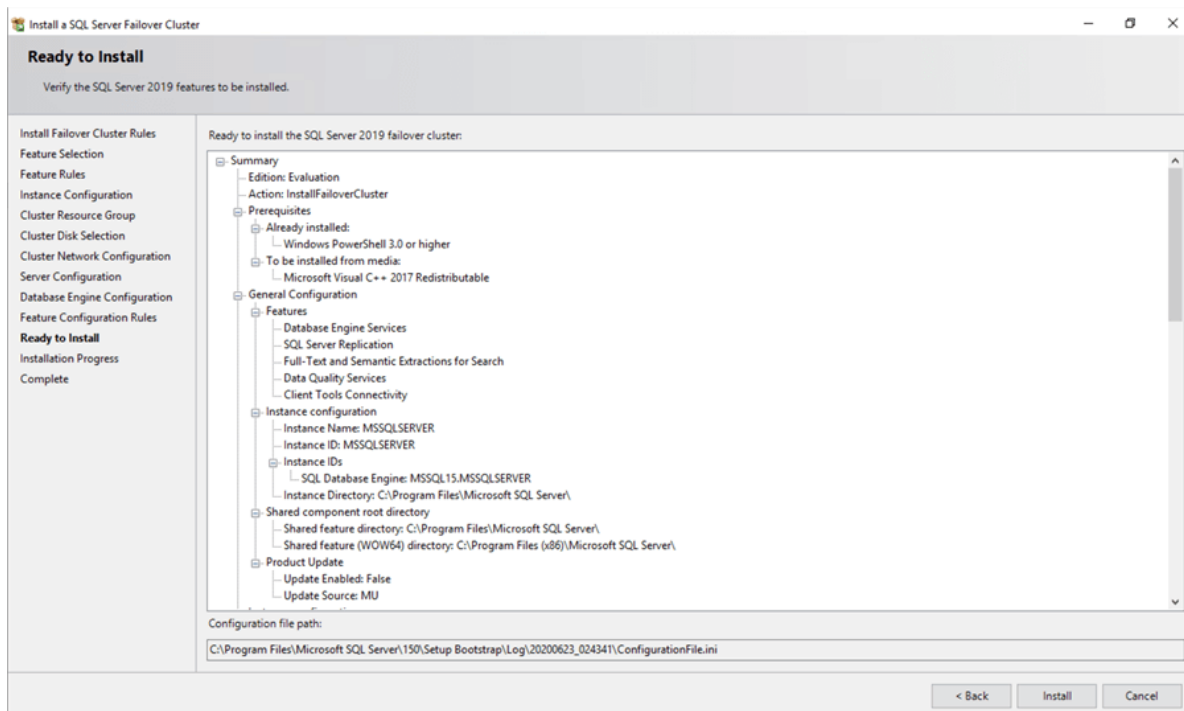


# SQL CLUSTER INSTALLATION

In the **Feature Configuration Rules** dialog box, verify that all checks are successful. Click **Next**.

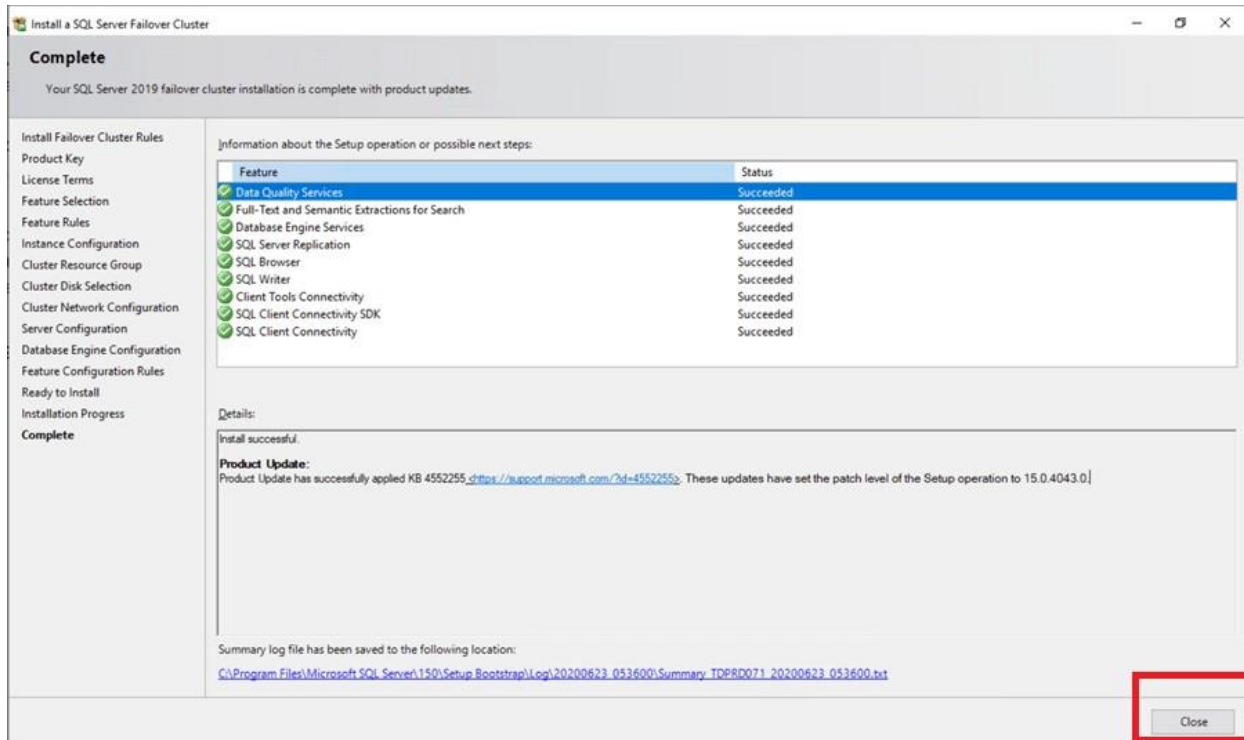


In the **Ready to Install** dialog box, verify that all configuration settings are correct. Click **Install** to proceed with the installation.



# SQL CLUSTER INSTALLATION

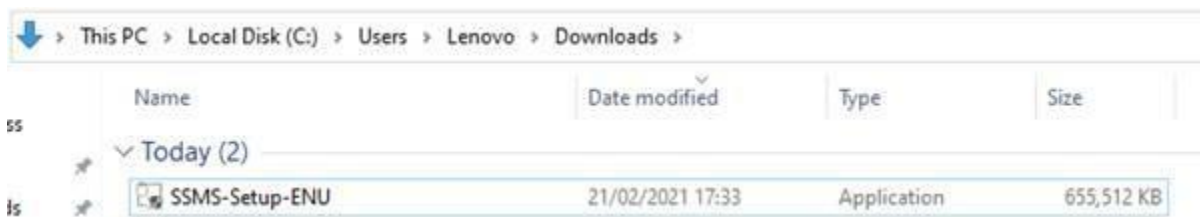
In the **Complete** dialog box, click **Close**.



After installation complete take reboot the server

After completing the reboot now install **SQL Server Management Studio** on server.

Double-click the .exe file **SSMS-Setup-ENU.exe** to starting installing.

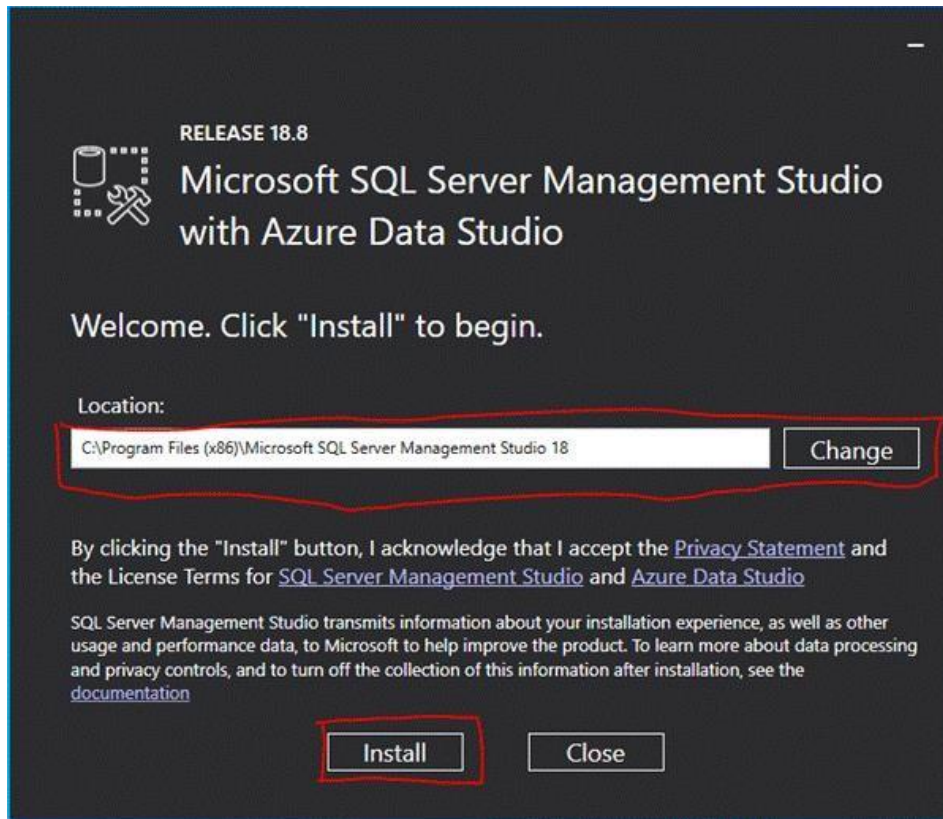


After double-clicking, the system will ask the permission: "Do you want to allow the following to make a change to this computer? Click yes to continue installing the SQL Server Management Studio 2019, or..."

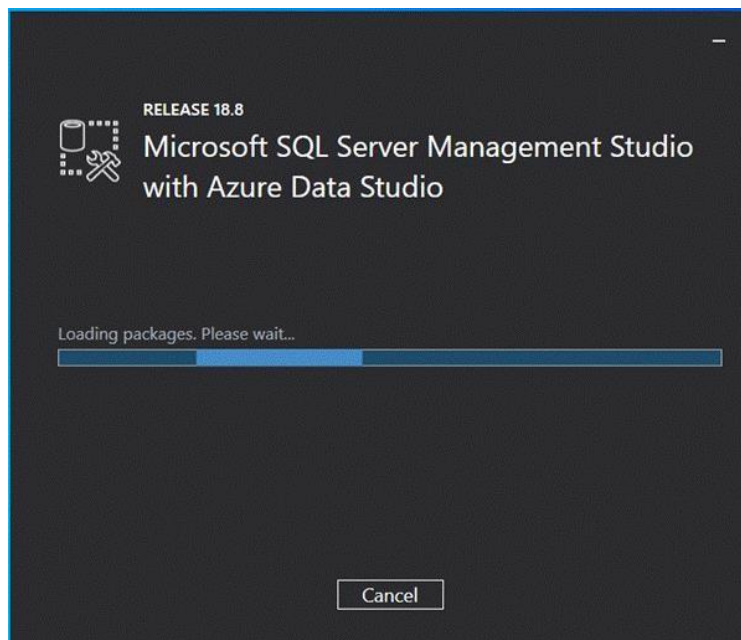
Click **"Yes"** on any security prompt.

# SQL CLUSTER INSTALLATION

The installation window will be open after giving permission to install. Click the **Install** button.



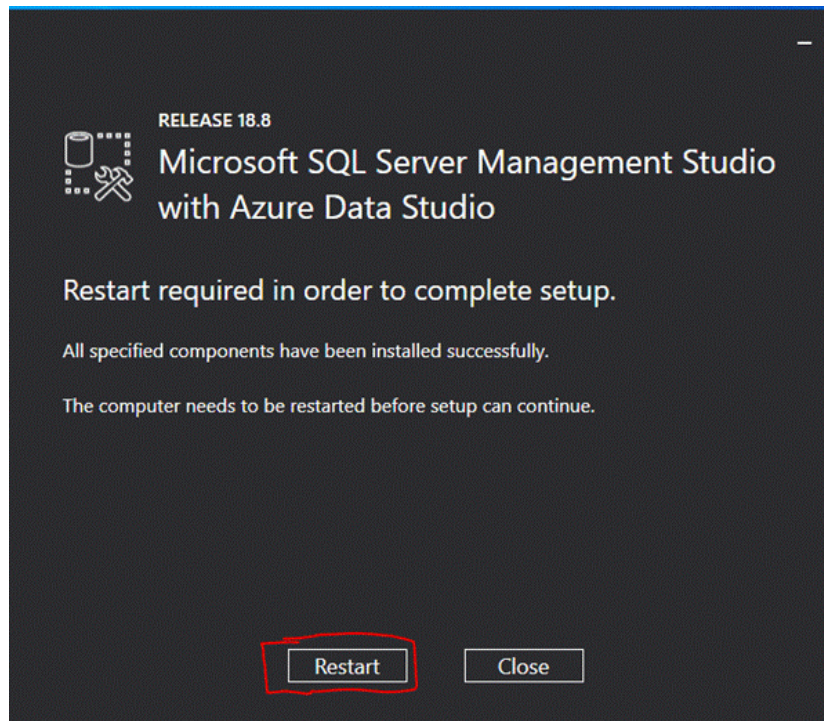
After loading packages progress bar will be shown. One is Package Progress and Overall Progress. Wait for few minutes while the installer sets up the software.



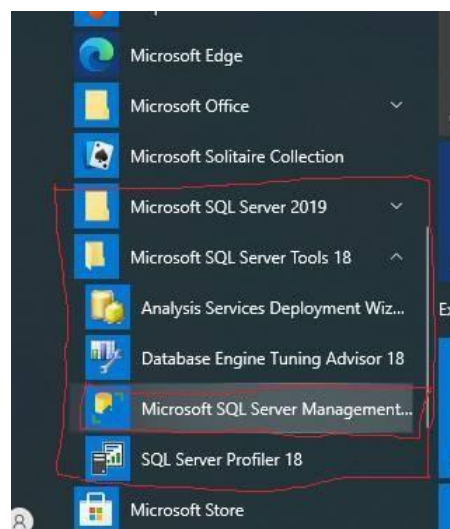


# SQL CLUSTER INSTALLATION

Installation completed. After completing the installation **restart** your computer for a complete setup.

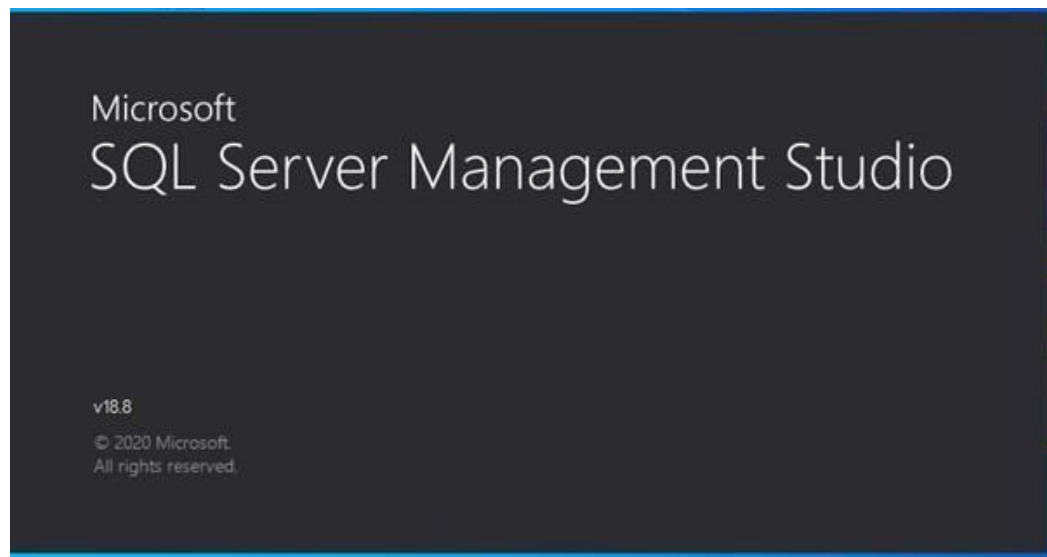


Once the server restarts, go to all programs in your system; we can see two folders: one is Microsoft SQL Server 2019 and another one is Microsoft SQL Server Tools 2018.

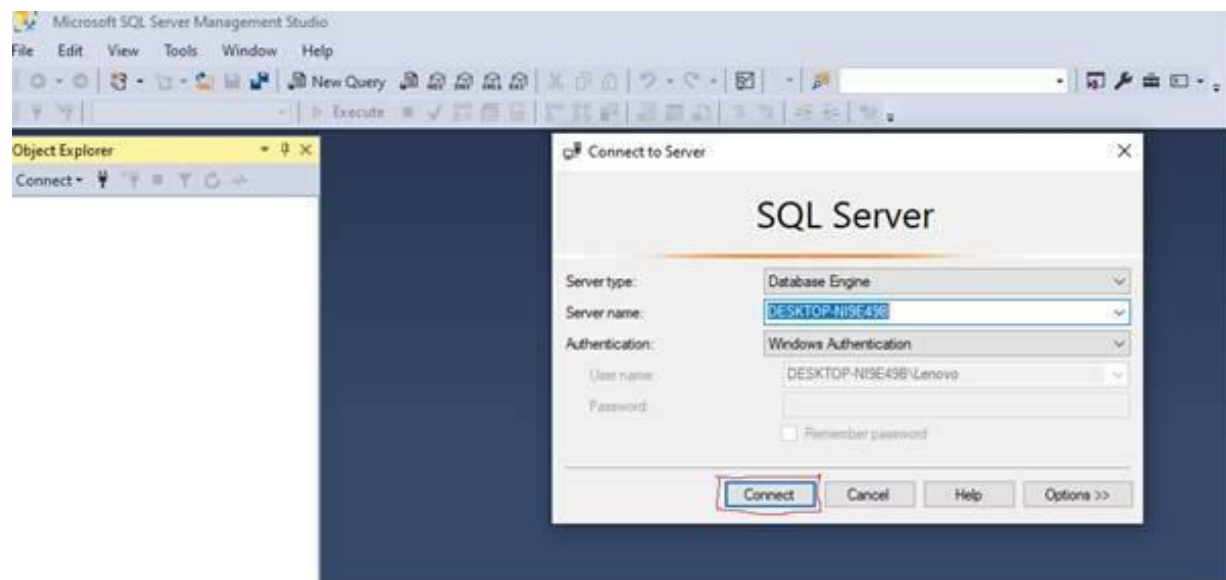


# SQL CLUSTER INSTALLATION

Double-click on SQL Server Management Studio 18 and it will open looks like the below screenshot. The first time opening it will take a few minutes.



After opening SQL Server Management Studio 2018, we can see that it looks like the below screenshot.





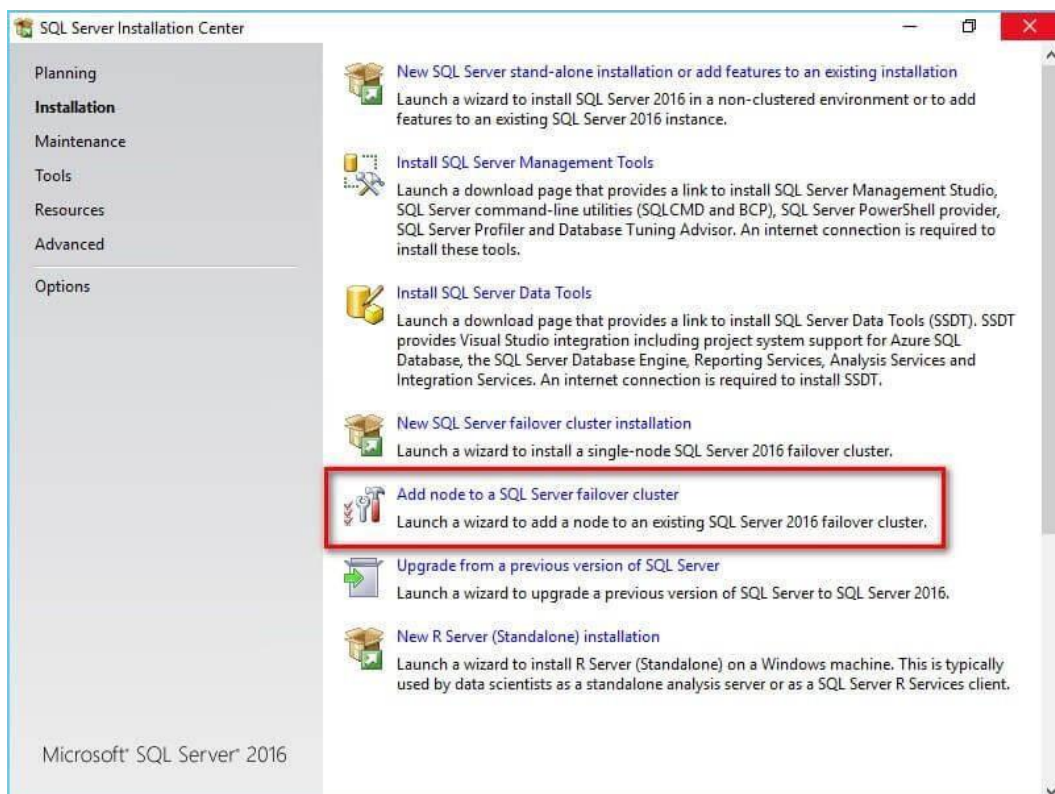
# SQL CLUSTER INSTALLATION

## Now Go to 2<sup>nd</sup> Node to install SQL Server 2019 Failover Cluster Instance Installation - Install Secondary (Failover) Cluster Node

Now that you have a working SQL Server 2019 FCI, you make it highly available by adding nodes. To add a node to an existing SQL Server 2019.

Run **setup.exe** from the SQL Server 2019 installation media to launch **SQL Server Installation Center**. Click on the **Installation** link on the left-hand side.

Click the **Add node to a SQL Server failover cluster** link. This will run the SQL Server 2019 Setup wizard.



# SQL CLUSTER INSTALLATION

In the **Product Key** dialog box, enter the product key that came with your installation media and click **Next**.

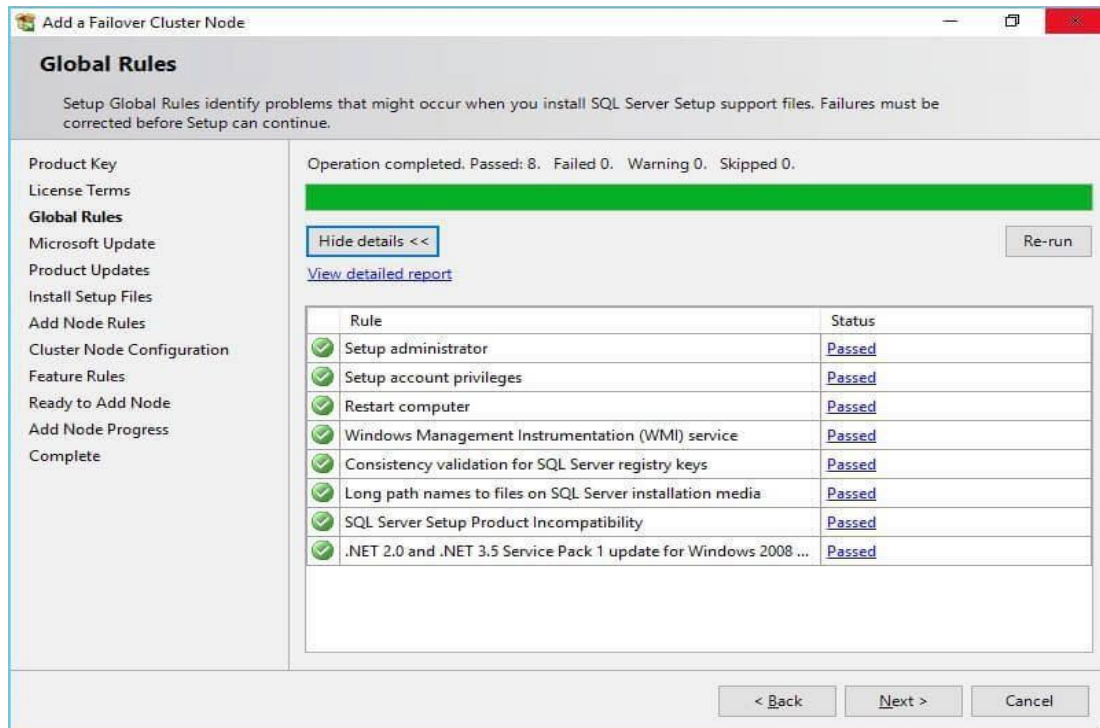
The screenshot shows the 'Add a Failover Cluster Node' dialog box with the 'Product Key' tab selected. The left sidebar lists the installation steps: Product Key, License Terms, Global Rules, Microsoft Update, Product Updates, Install Setup Files, Add Node Rules, Cluster Node Configuration, Feature Rules, Ready to Add Node, Add Node Progress, and Complete. The main area contains instructions to validate the instance of SQL Server 2016 by entering a 25-character key. It offers two options: 'Specify a free edition' (with a dropdown menu showing 'Evaluation') and 'Enter the product key' (which is selected and has an empty text box below it). At the bottom right are buttons for '< Back', 'Next >', and 'Cancel'.

In the **License Terms** dialog box, click the **I accept the license terms** check box and click **Next**.

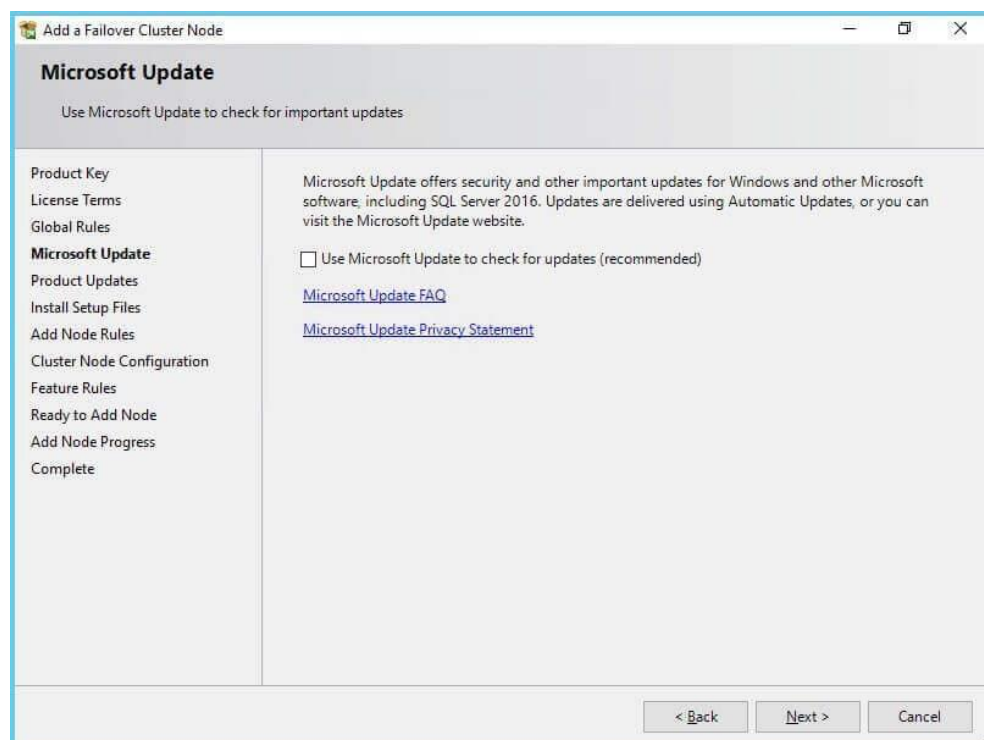
The screenshot shows the 'Add a Failover Cluster Node' dialog box with the 'License Terms' tab selected. The left sidebar is the same as in the previous step, but 'License Terms' is now highlighted. The main area displays the 'MICROSOFT SOFTWARE LICENSE TERMS' for 'MICROSOFT SQL SERVER 2016 ENTERPRISE'. It includes a paragraph of terms and a bulleted list: updates, supplements, Internet-based services, and support services. At the bottom, there is a checkbox labeled 'I accept the license terms.' which is checked. Below this checkbox is a note about data transmission and a link to the 'Privacy Statement'. At the bottom right are buttons for '< Back', 'Next >', and 'Cancel'.

# SQL CLUSTER INSTALLATION

In the **Global Rules** dialog box, validate that the checks return successful results and click **Next**.

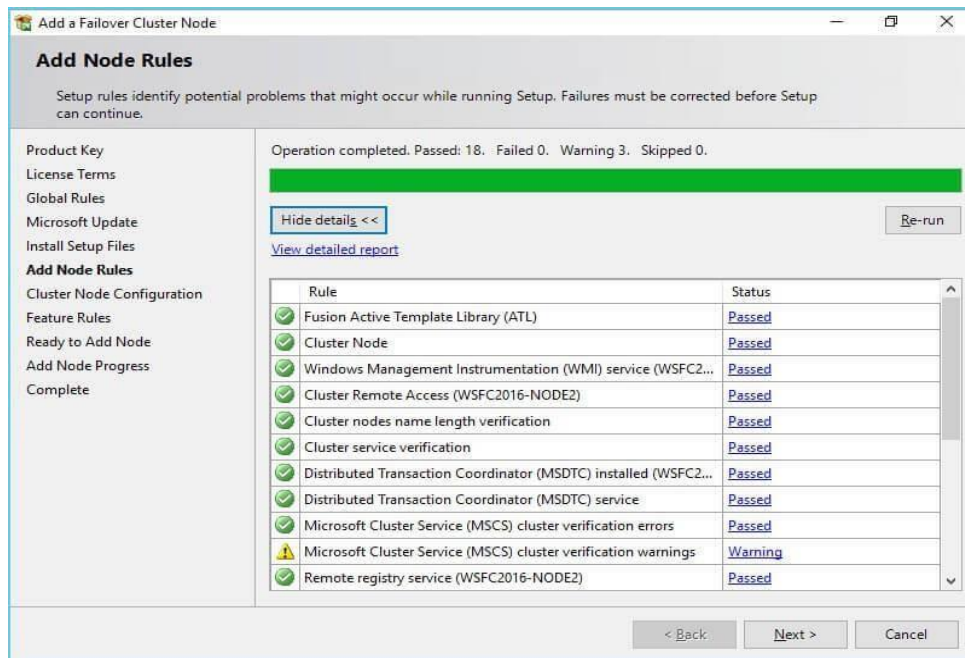


In the **Microsoft Update** dialog box, click **Next**.

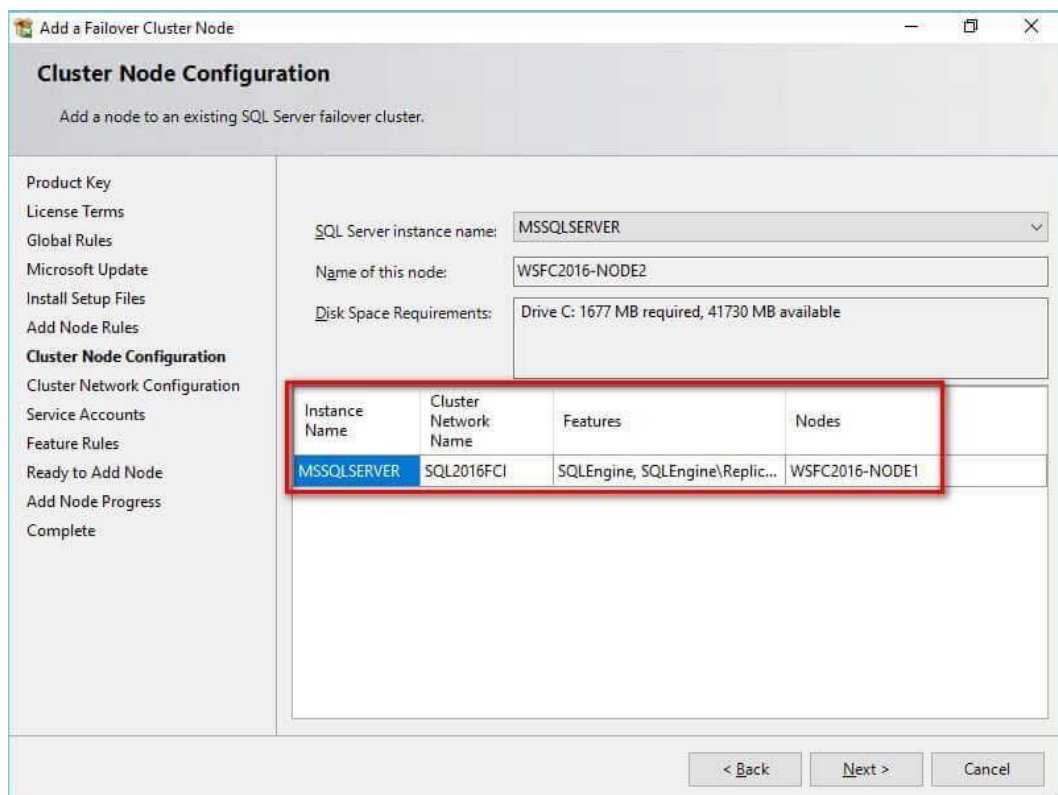


# SQL CLUSTER INSTALLATION

In the **Add Node Rules** dialog box, validate that the checks return successful results. If the checks returned a few warnings, make sure you fix them before proceeding with the installation. Click **Next**.



In the **Cluster Node Configuration** dialog box, validate that the information for the existing SQL Server 2019 FCI is correct. Click **Next**.





# SQL CLUSTER INSTALLATION

In the **Cluster Network Configuration** dialog box, validate that the IP address information is the same as the one you provided

The screenshot shows the 'Add a Failover Cluster Node' dialog box, specifically the 'Cluster Network Configuration' step. The left sidebar lists various configuration steps, with 'Cluster Network Configuration' highlighted. The main area contains a table for specifying network settings for the failover cluster. A red box highlights the table, which includes columns for IP Type, DHCP, Address, Subnet Mask, Subnet(s), and Network. The table shows two entries: one for IPv4 with DHCP enabled, and another for IPv4 with DHCP disabled. The IP address 172.16.0.35, Subnet Mask 255.255.0.0, and Subnet(s) 172.16.0.0/16 are listed. The Network is set to LAN. A 'Refresh' button is located at the bottom right of the table area. Navigation buttons '< Back', 'Next >', and 'Cancel' are at the bottom of the dialog.

IP Ty...	DHCP	Address	Subnet Mask	Subnet(s)	Network
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	172.16.0.35	255.255.0.0	172.16.0.0/16	LAN
<input checked="" type="checkbox"/>	<input type="checkbox"/>				

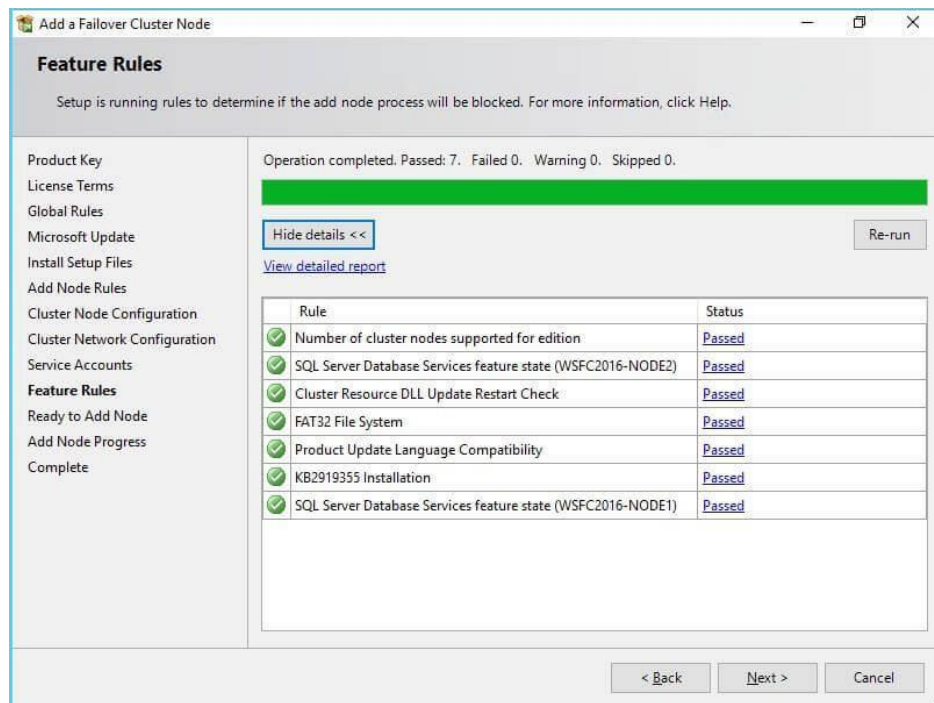
In the **Service Accounts** dialog box, verify that the information is the same as what was used to configure the first node. Provide the appropriate credentials for the corresponding SQL Server service accounts.

The screenshot shows the 'Add a Failover Cluster Node' dialog box, specifically the 'Service Accounts' step. The left sidebar lists various configuration steps, with 'Service Accounts' highlighted. The main area contains a table for specifying service accounts and collation configuration. A red box highlights the table, which includes columns for Service, Account Name, Password, and Startup Type. The table lists four services: SQL Full-text Filter Daemon Launcher, SQL Server Database Engine, SQL Server Browser, and SQL Server Agent. The Account Name for the first three is 'NT Service\MSSQLFDLaun...', 'TESTDOMAIN\sqlservice', and 'NT AUTHORITY\LOCAL S...' respectively. The Password for the first three is '\*\*\*\*\*'. The Startup Type for the first three is 'Manual', and for the last is 'Automatic'. A checkbox 'Grant Perform Volume Maintenance Task privilege to SQL Server Database Engine Service' is checked. A note below the table states: 'This privilege enables instant file initialization by avoiding zeroing of data pages. This may lead to information disclosure by allowing deleted content to be accessed. Click here for details'. Navigation buttons '< Back', 'Next >', and 'Cancel' are at the bottom of the dialog.

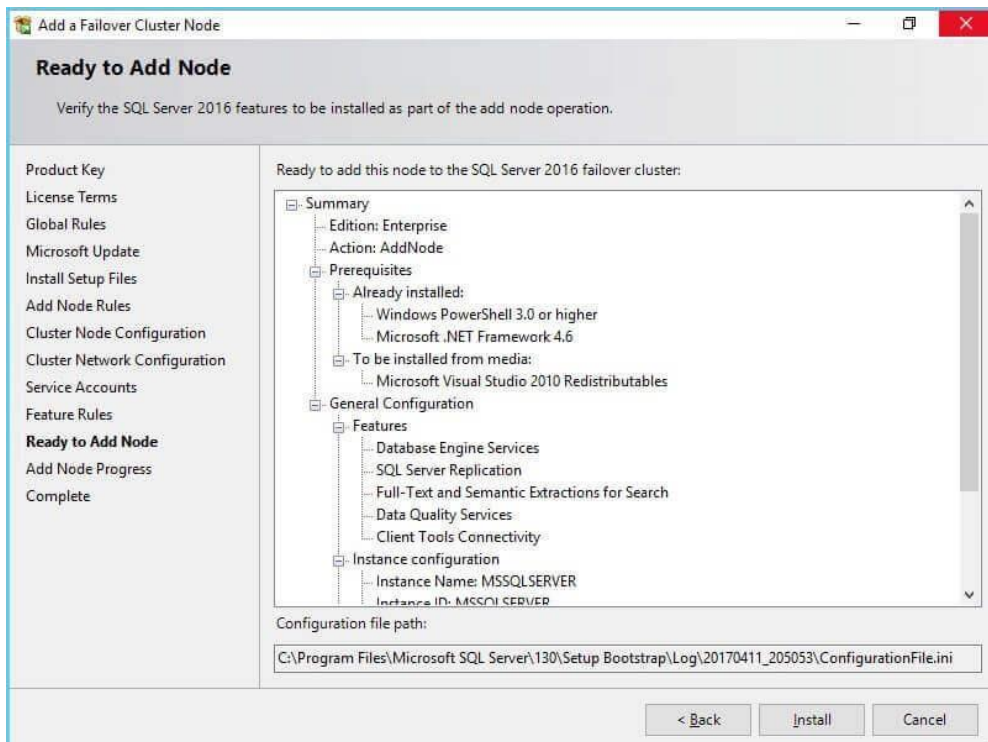
Service	Account Name	Password	Startup Type
SQL Full-text Filter Daemon Launcher	NT Service\MSSQLFDLaun...		Manual
SQL Server Database Engine	TESTDOMAIN\sqlservice	*****	Manual
SQL Server Browser	NT AUTHORITY\LOCAL S...		Automatic
SQL Server Agent	TESTDOMAIN\sqlservice	*****	Manual

# SQL CLUSTER INSTALLATION

In the **Feature Rules** dialog box, verify that all checks are successful. Click **Next**.



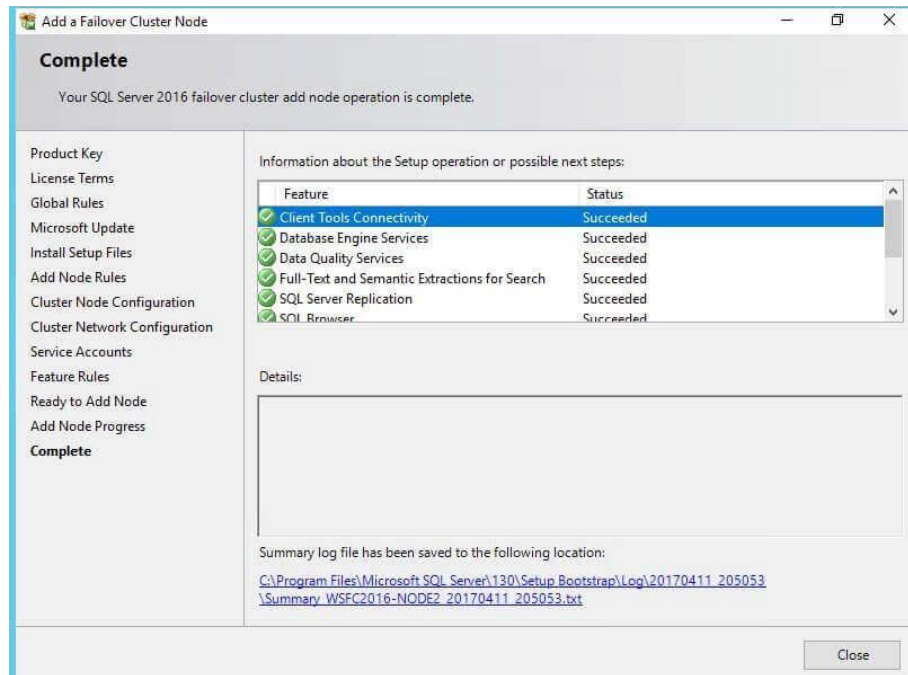
In the **Ready to Add Node** dialog box, verify that all configuration settings are correct. Click **Install** to proceed with the installation.





# SQL CLUSTER INSTALLATION

In the **Complete** dialog box, click **Close**.



**After installation complete take reboot the server**

After completing the reboot now install SQL Server Management Studio on 2<sup>nd</sup> Node.

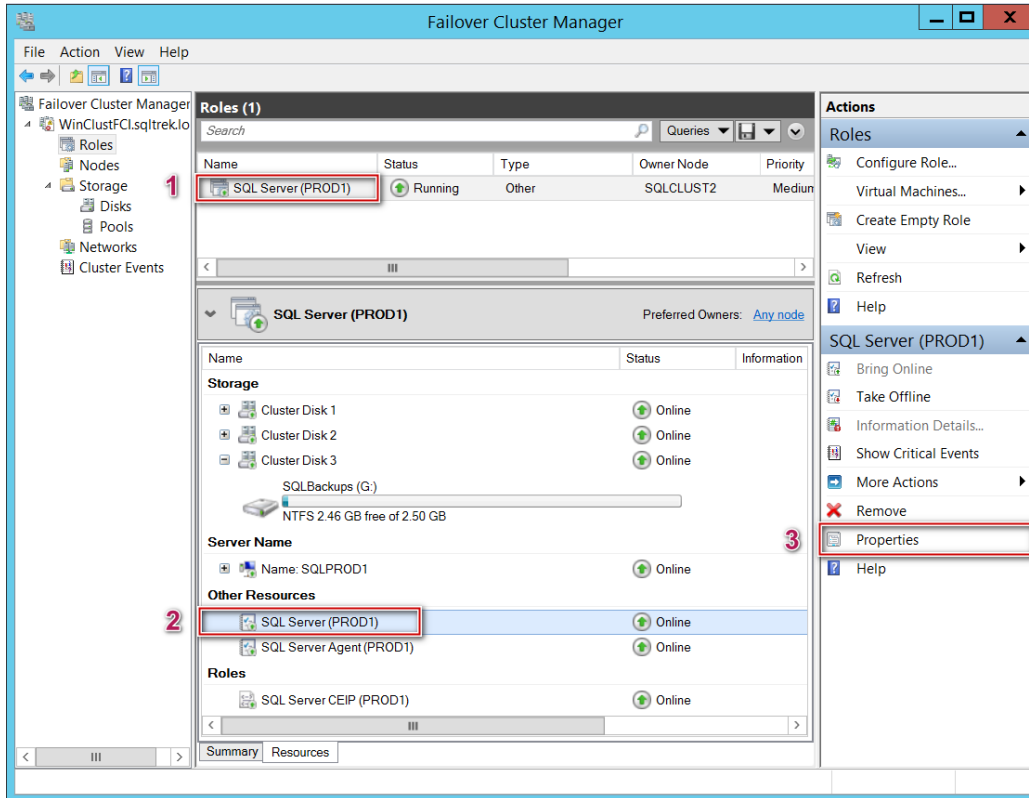
## Prerequisite of SQL Cluster Installation

- **SQL CLUSTER IP ADDRESS**
- **SQL NETWORK NAME** (i.e., SQL server instance name)
- Both SQL Cluster IP Address & SQL Network Name **Entry** in Active Directory **DNS** Server
- Create one **OBJECT** in Active Directory **OU** (Organization Unit) with the name of **SQL Network Name** and provide Full Rights on that **OBJECT**.
- **SQL server (MSSQLSERVER)** Role not created on **Cluadmin.msc**
- **SQL Cluster Disk** is not assigned to any **ROLE** in **cluadmin.msc**.
- Note Down the cluster **DISK number** where you kept system database and user databases.
- Dot Net **3.5 & 4**. Framework
- Require **2 GB** space on **C Drive** for SQL Cluster installation Binaries on both **NODE**.

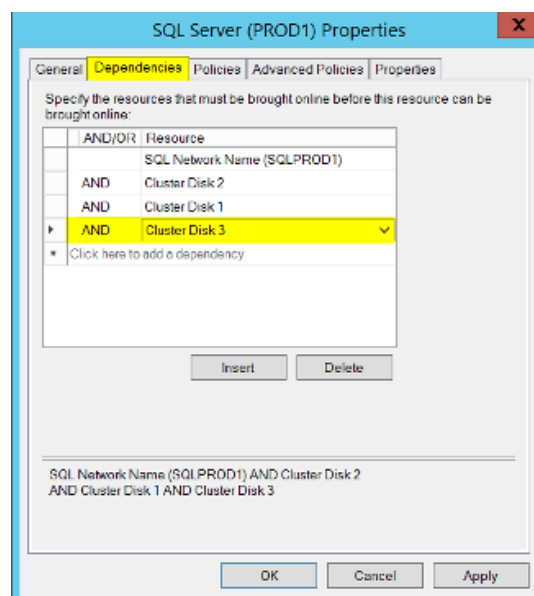
# SQL CLUSTER INSTALLATION

## How to add new disk on SQL Server Dependencies

Open **Cluadmin.msc** and go to SQL server **ROLE**, navigate to SQL Server **Resource** and go to **Properties**



In Properties choose "**Dependencies**" tab



# SQL CLUSTER INSTALLATION

Click on **Insert** and select **Cluster Disk 4** from the drop-down box in the **Resources** column.

