

# SQL Server 2019 Installation and Configuration

## Table of Contents

1. Introduction
2. Pre-Installation Preparation
3. Installation Steps
4. Post-Installation Configuration
5. Performance Tuning
6. Security Best Practices
7. Backup and Recovery
8. Monitoring and Maintenance

## 1. Introduction

This document provides a comprehensive guide for installing and configuring SQL Server 2019 in a large organization with extensive data read and write requirements. The goal is to ensure optimal performance, security, and manageability.

## 2. Pre-Installation Preparation

### Hardware and Storage Planning

- **CPU and Memory:** Ensure sufficient CPU cores and memory. High-performance CPUs and at least 64GB RAM are recommended.
- **Storage:** Use high-speed SSDs. Separate drives for OS, data files, log files, tempdb, and backups.
- **Network:** Configure high-bandwidth network settings.

### Operating System Preparation

- **Update Windows Server:** Apply the latest patches and updates.
- **System Requirements:** Ensure the server meets SQL Server 2019 requirements.

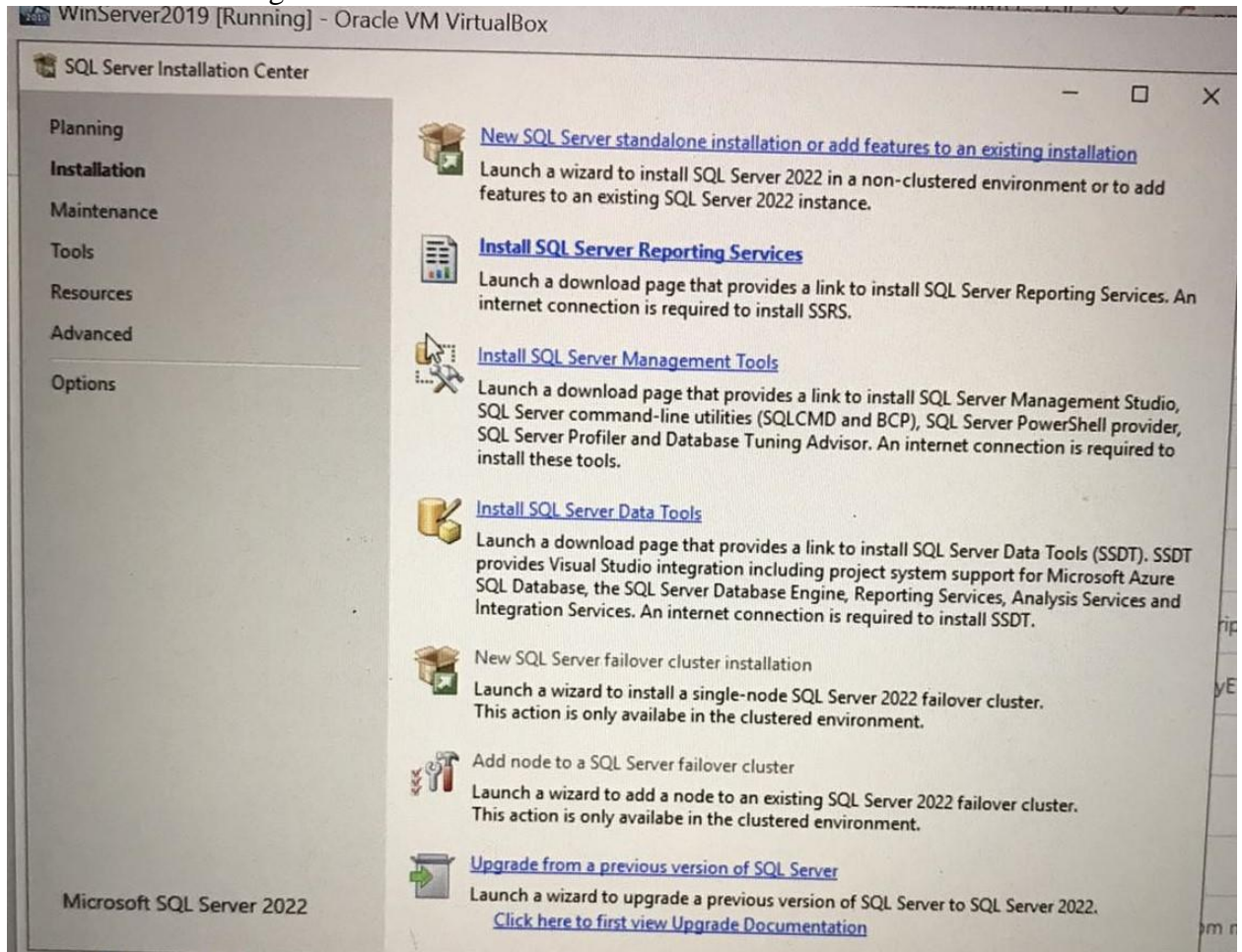
## 3. Installation Steps

### Download SQL Server 2019

- Download the installer from the [Microsoft SQL Server 2019 download page](#).
-

## Run the Installer

1. **Start Setup:** Double-click the installer.
2. **Choose Installation Type:** Select "New SQL Server stand-alone installation or add features to an existing installation".



3. **Product Key:** Enter the product key or choose the edition.

SQL Server 2022 Setup

## Edition

Select the edition of SQL Server 2022 you want to install.

Select an edition of SQL Server to install. You can choose to either use a SQL Server license that you have already purchased by entering the product key or choose pay-as-you-go billing through Microsoft Azure. You can also specify a free edition of SQL Server: Developer, Evaluation, or Express. Evaluation has the largest set of SQL Server features, as documented in SQL Server Books Online, and is activated with a 180-day expiration. Developer edition does not have an expiration, has the same set of features found in Evaluation, but is licensed for non-production database application development only. To upgrade from one installed edition to another, run the Edition Upgrade Wizard.

☒ Specify a free edition:

Evaluation

☐ Use pay-as-you-go billing through Microsoft Azure:

Warning: To enable this option, you must have an active Azure subscription that you will be required to provide along with a resource group, Azure region, and tenant ID later in setup. For more information, see <https://aka.ms/ArcEnabledSqlPAYG>.

Standard

☐ Enter the product key:

- - - -

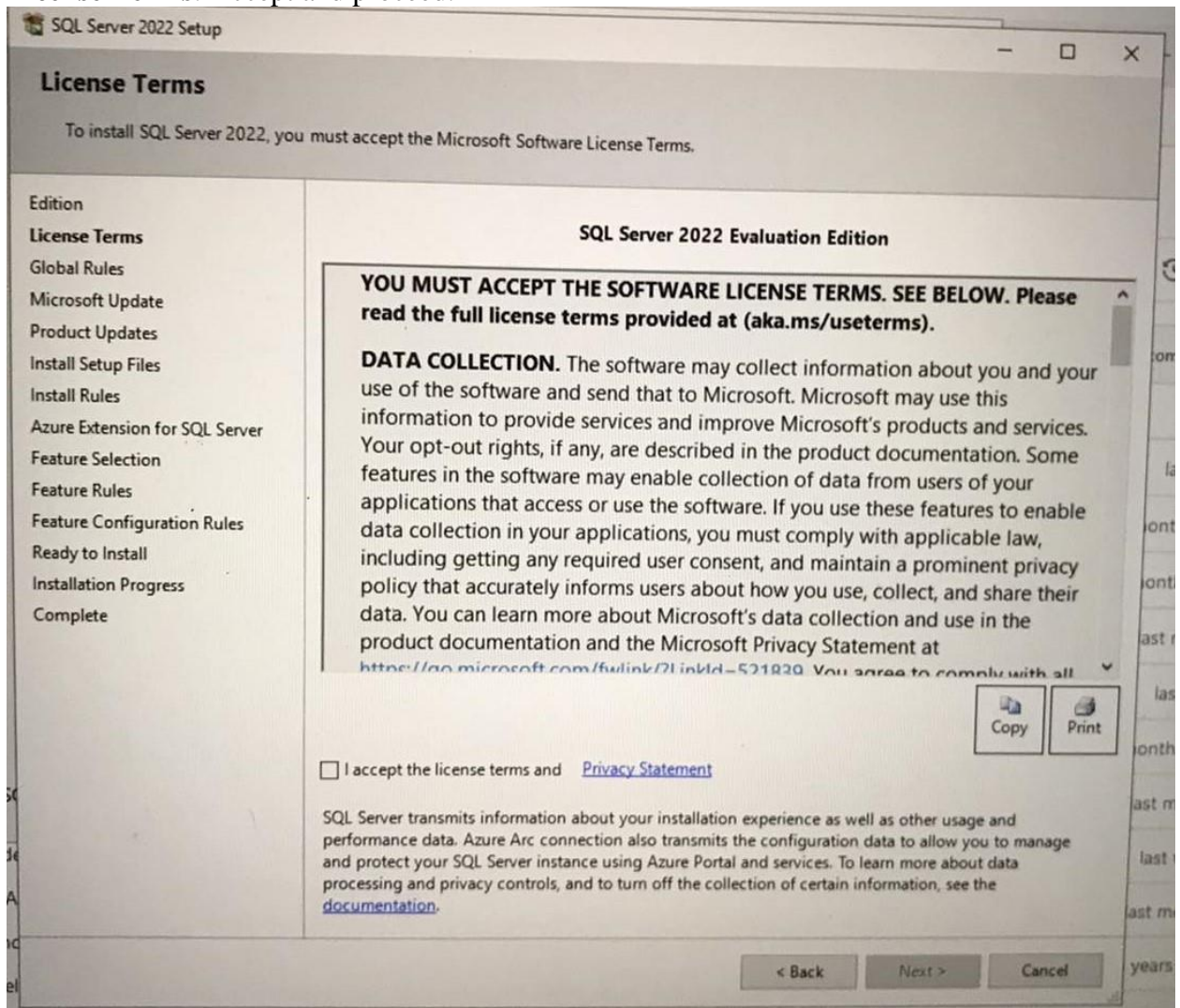
☐ I have a SQL Server license with Software Assurance or SQL Software Subscription

☐ I have a SQL Server license only

< Back   Next >   Cancel

if you have product key select the Product Key and enter the key you have.

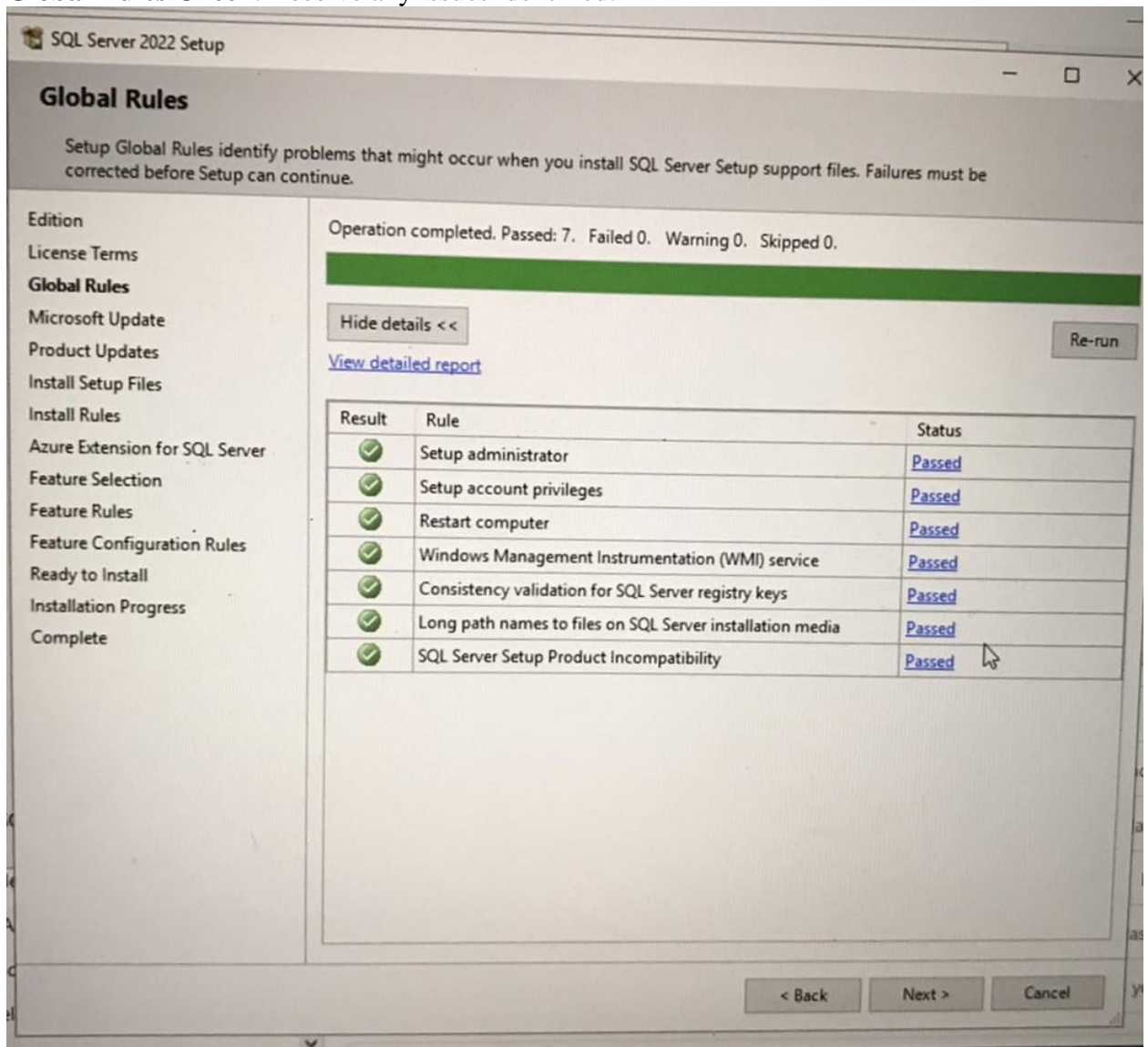
4. **License Terms:** Accept and proceed.



click the I accept and then click next.

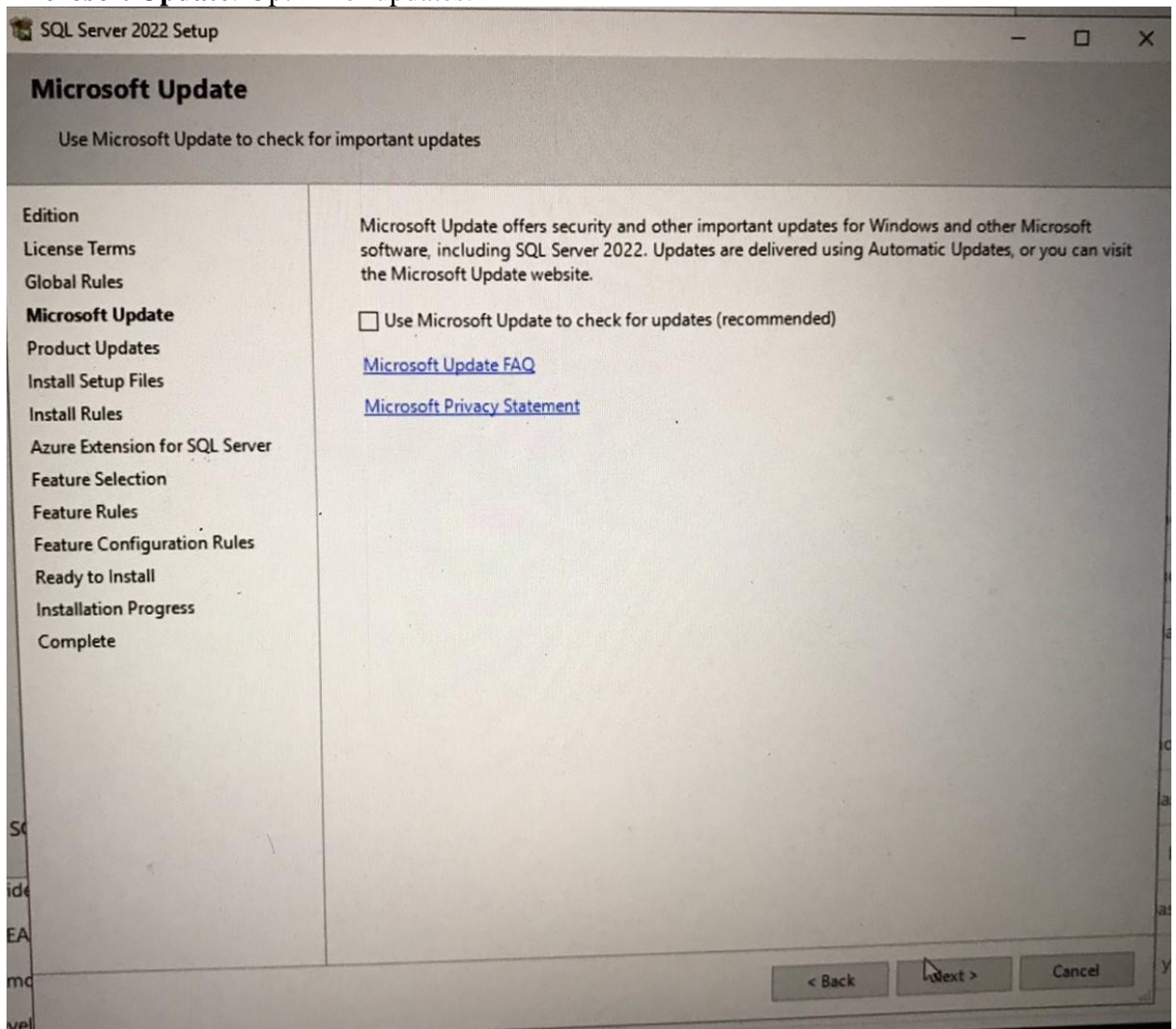


5. **Global Rules Check:** Resolve any issues identified.



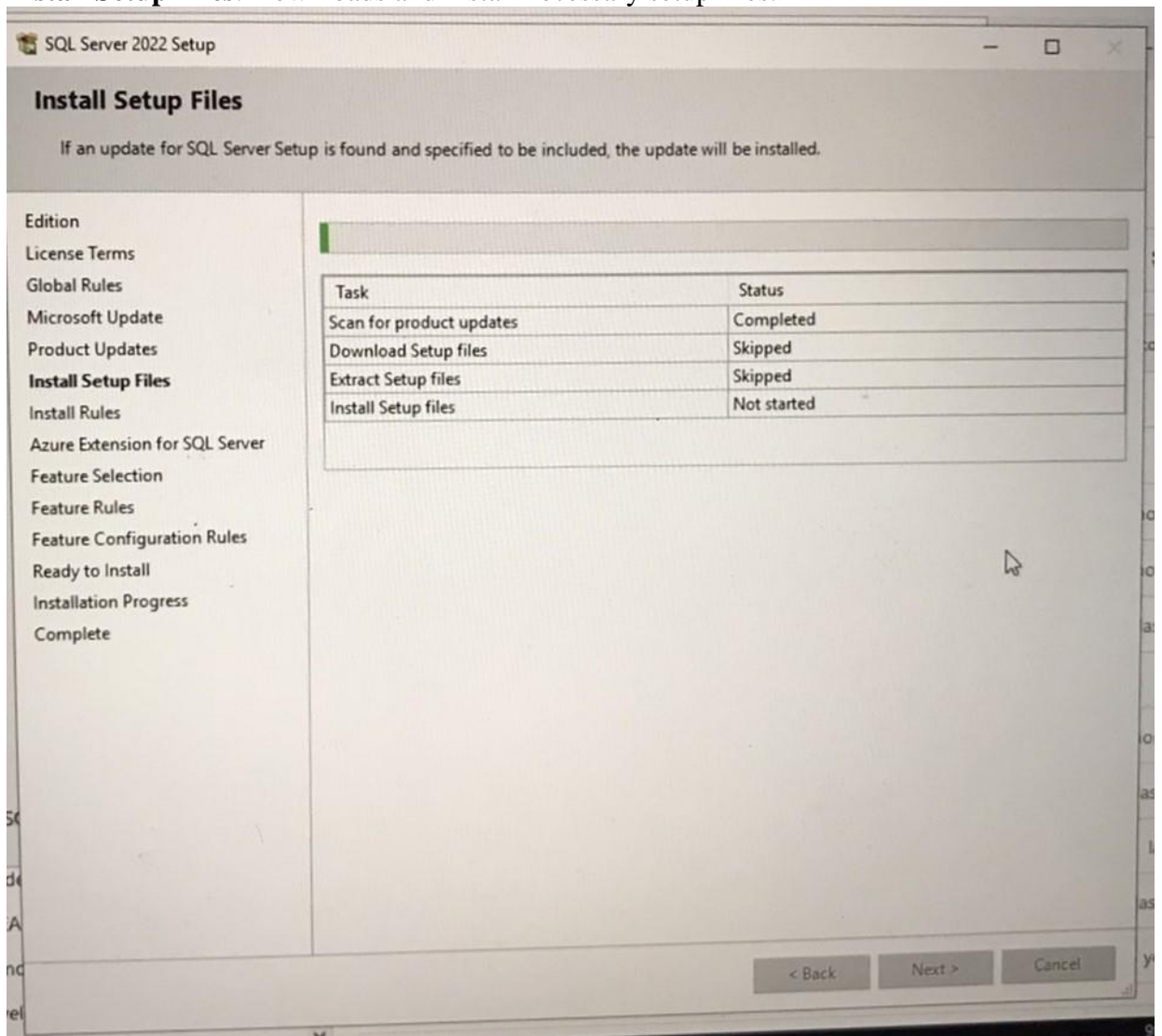
just click next.

6. **Microsoft Update:** Opt-in for updates.

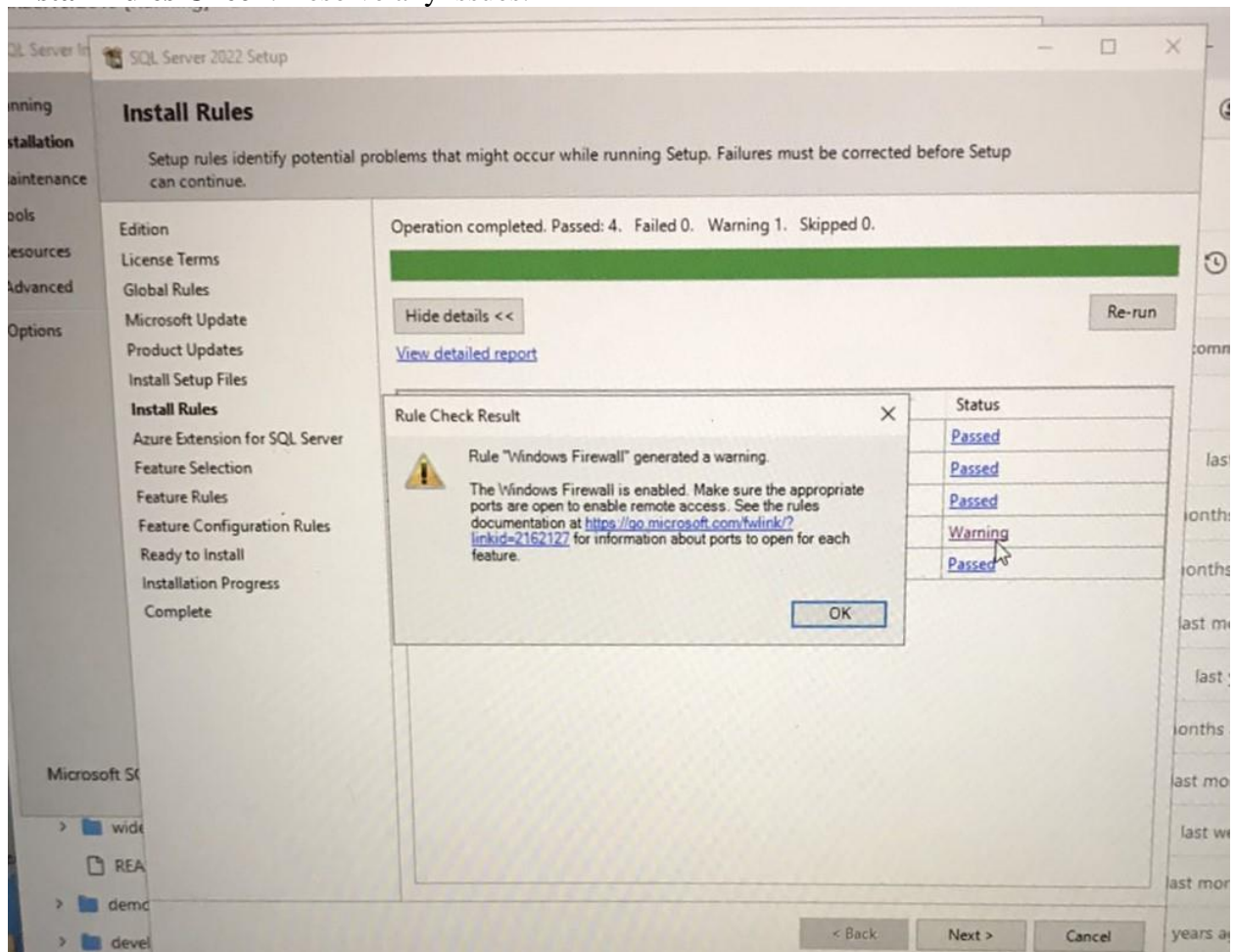


if you want to install the updates you can click the check the box otherwise just click Next.

7. **Install Setup Files:** Downloads and install necessary setup files.



8. **Install Rules Check:** Resolve any issues.

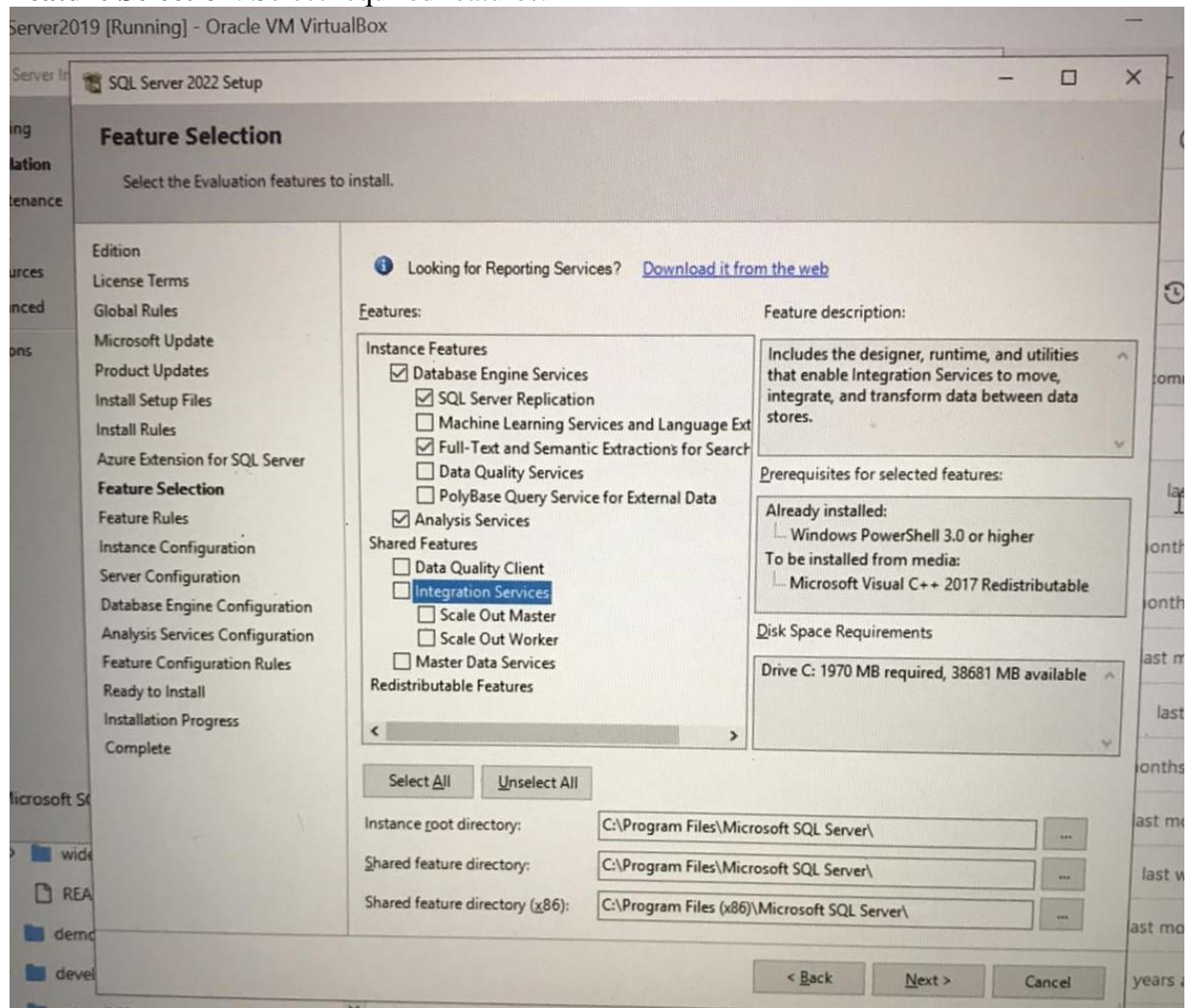


if there is any issues it will notify. Open the Appropriate ports so that it can be connected remotely.

## Feature and Instance Configuration



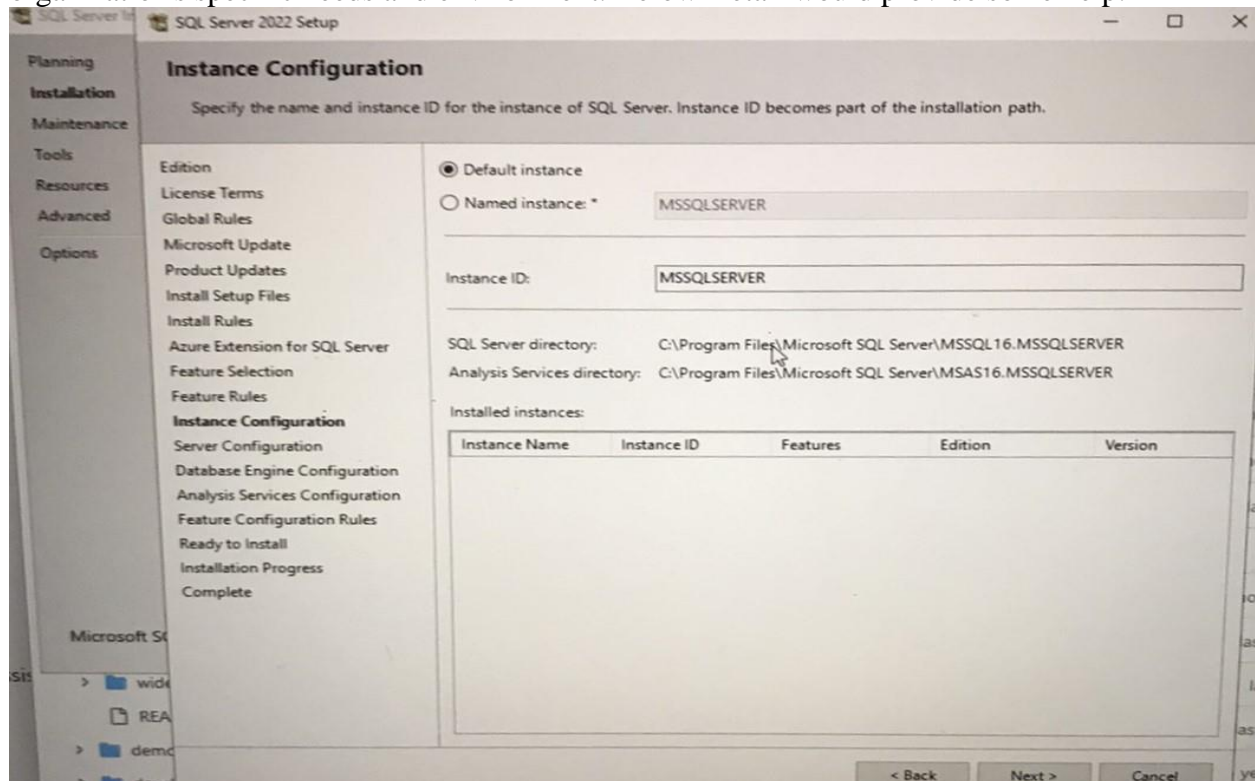
1. **Feature Selection:** Select required features.



We will select only few features required for the database configuration Like database Engine Service, Full-Text and Semantic Extractions for Search, Analysis Services. Only Required Feature that are necessary of the sql server to function properly.

## 2. Instance Configuration: Choose default or named instance.

Choosing between a default instance and a named instance for SQL Server depends on your organization's specific needs and environment. Below Detail would provide some help:



### Default Instance

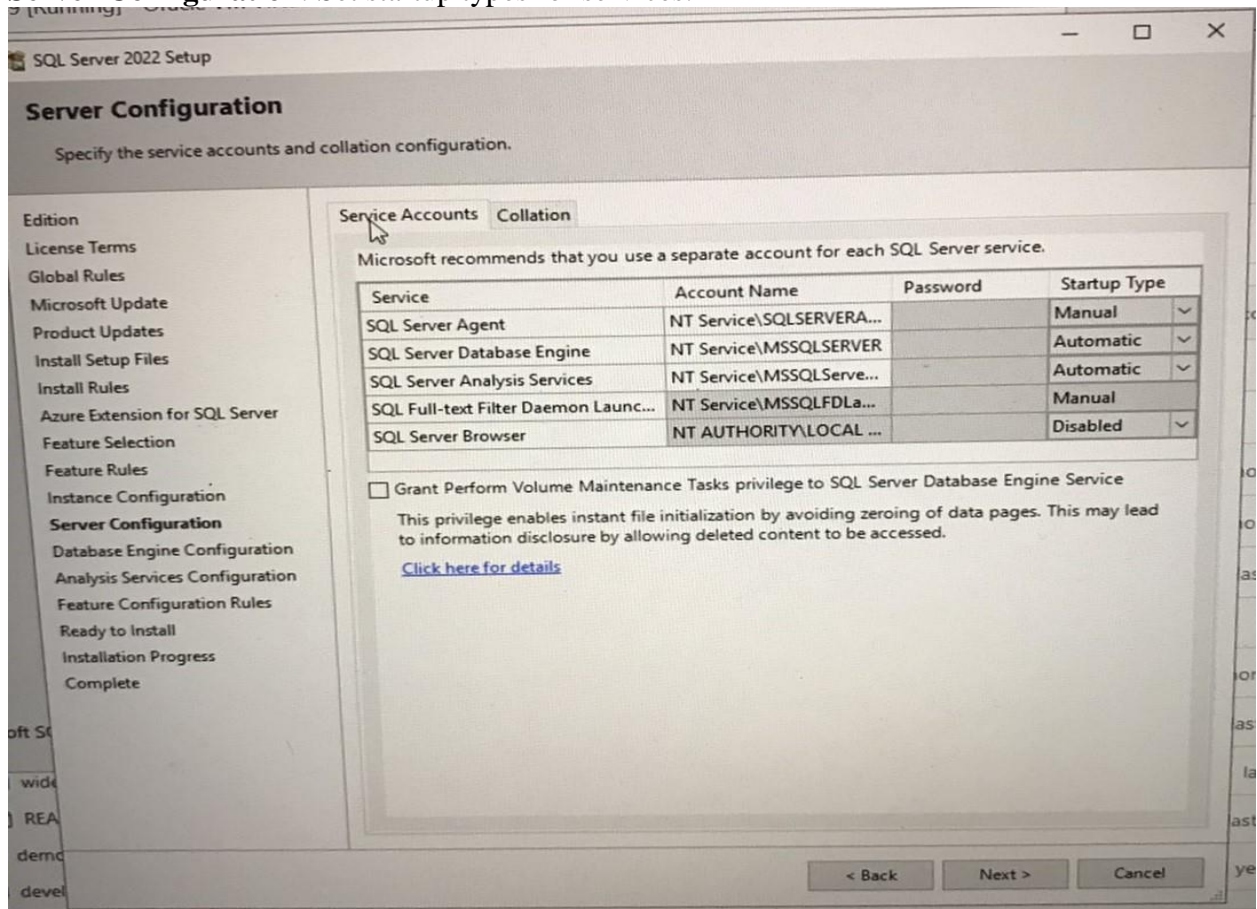
- **Easier to Connect:** Users can connect without specifying an instance name.
- **Use Cases:** Suitable for environments with a single SQL Server instance.
- **Port:** Default instance uses the default port 1433.

### Named Instance

- **Multiple Instances:** Allows multiple SQL Server instances on the same machine.
- **Isolation:** Each instance operates independently, which can improve security and manageability.
- **Port:** Uses dynamic ports, a fixed port can be configured.

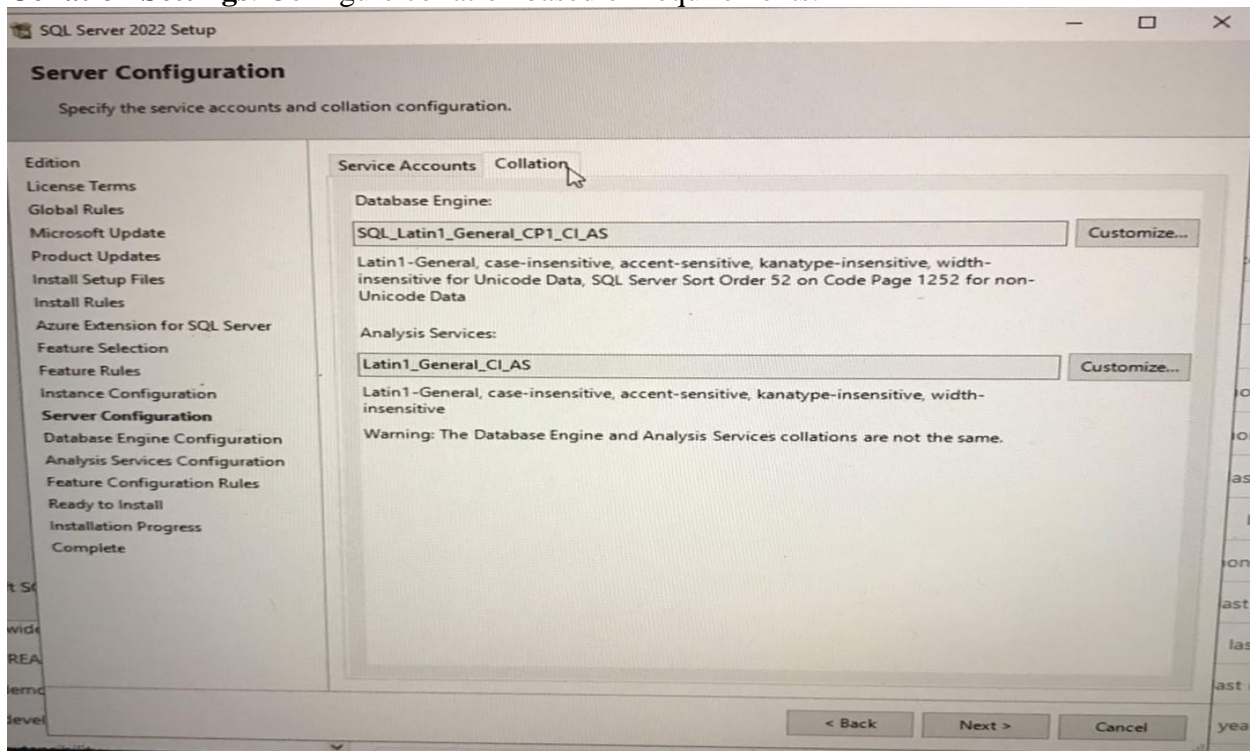
If you want to install other version of sql server on the same machine, you can have another Instance name here. After choosing your choice, Default in this case click next.

3. **Server Configuration:** Set startup types for services.



These are the default option for the server either you can configured here or you can change it after installation of sql server in the service.msc .

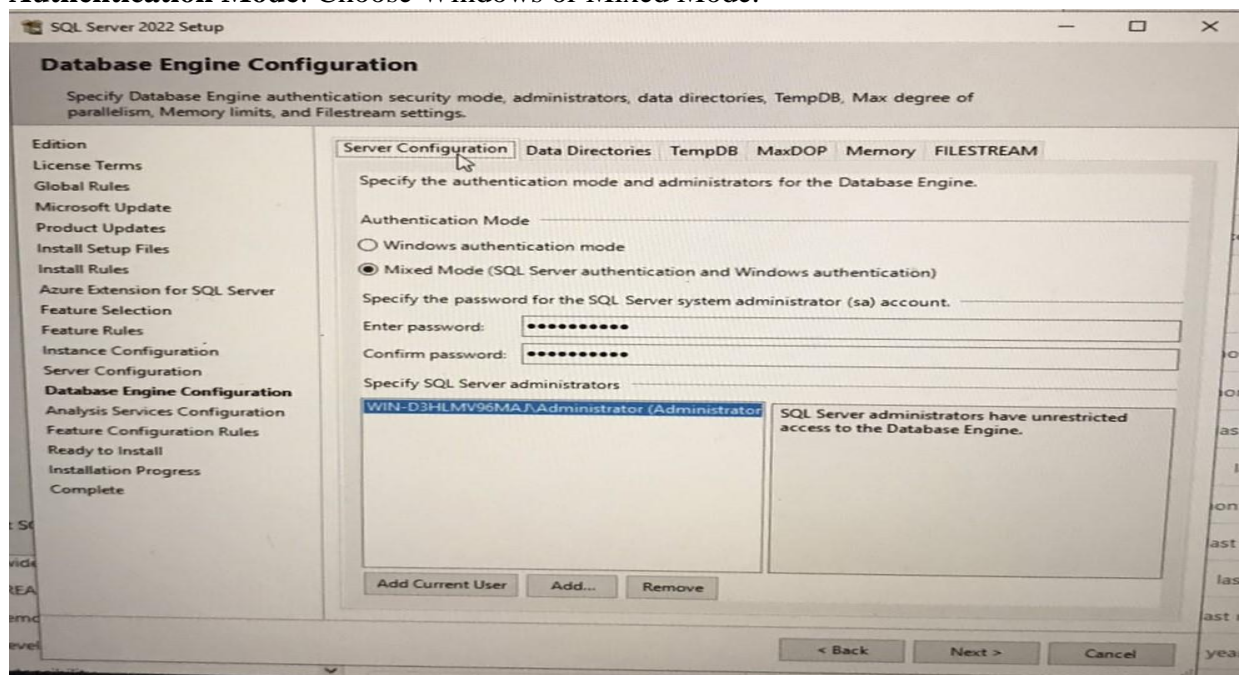
4. **Collation Settings:** Configure collation based on requirements.



Choose: SQL\_Latin1\_General\_CP1\_CI\_AS for Database Engine-> Due to common English speaking environment and Board compatibility and widely used default.  
and Latin\_1\_General\_CI\_AS for Analysis Services-> Versatile, good for diverse linguistic requirements

5. **Database Engine Configuration:**

- **Authentication Mode:** Choose Windows or Mixed Mode.

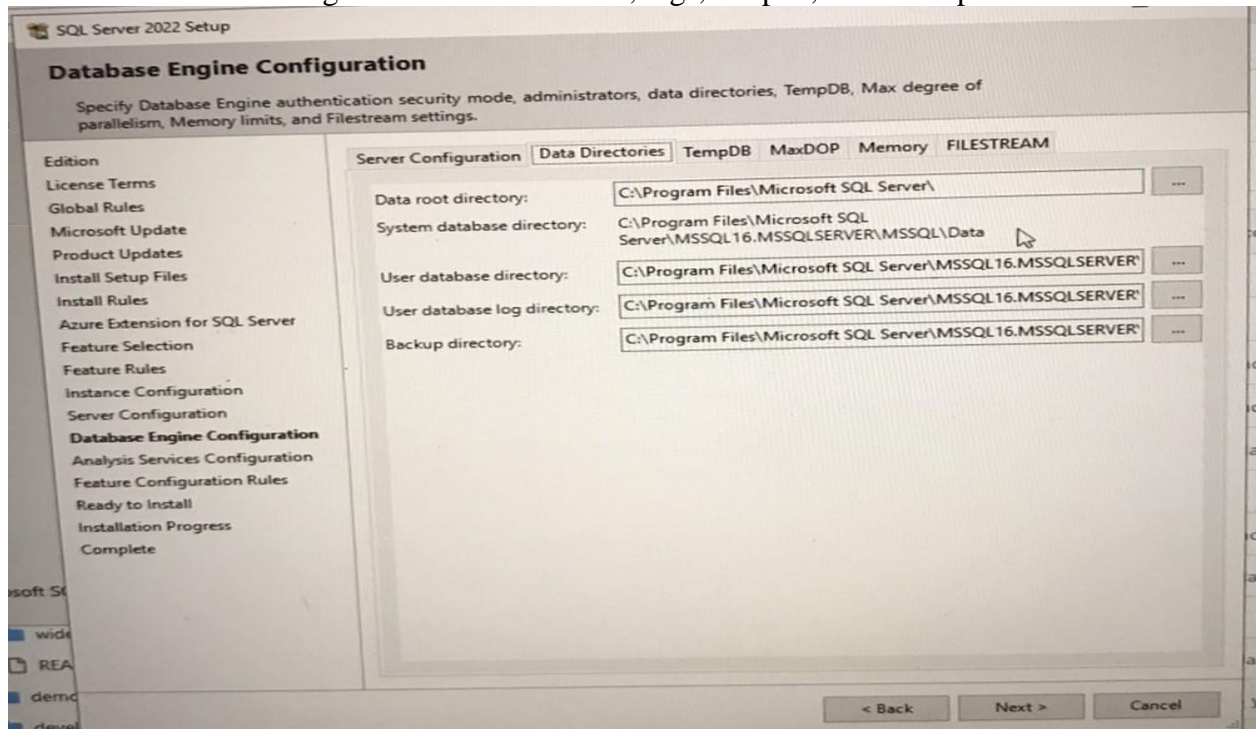




We here choose the Mix mode so that both Windows and sql server authentication could authenticate us.

\* **SQL Server Administrators:** Add administrators or any authorize user

6. **Data Directories:** Configure directories for data, logs, tempdb, and backups.



Personal and Recommended all the Data file in other Drive(D: ) and LogFiles in other drive: (E: )

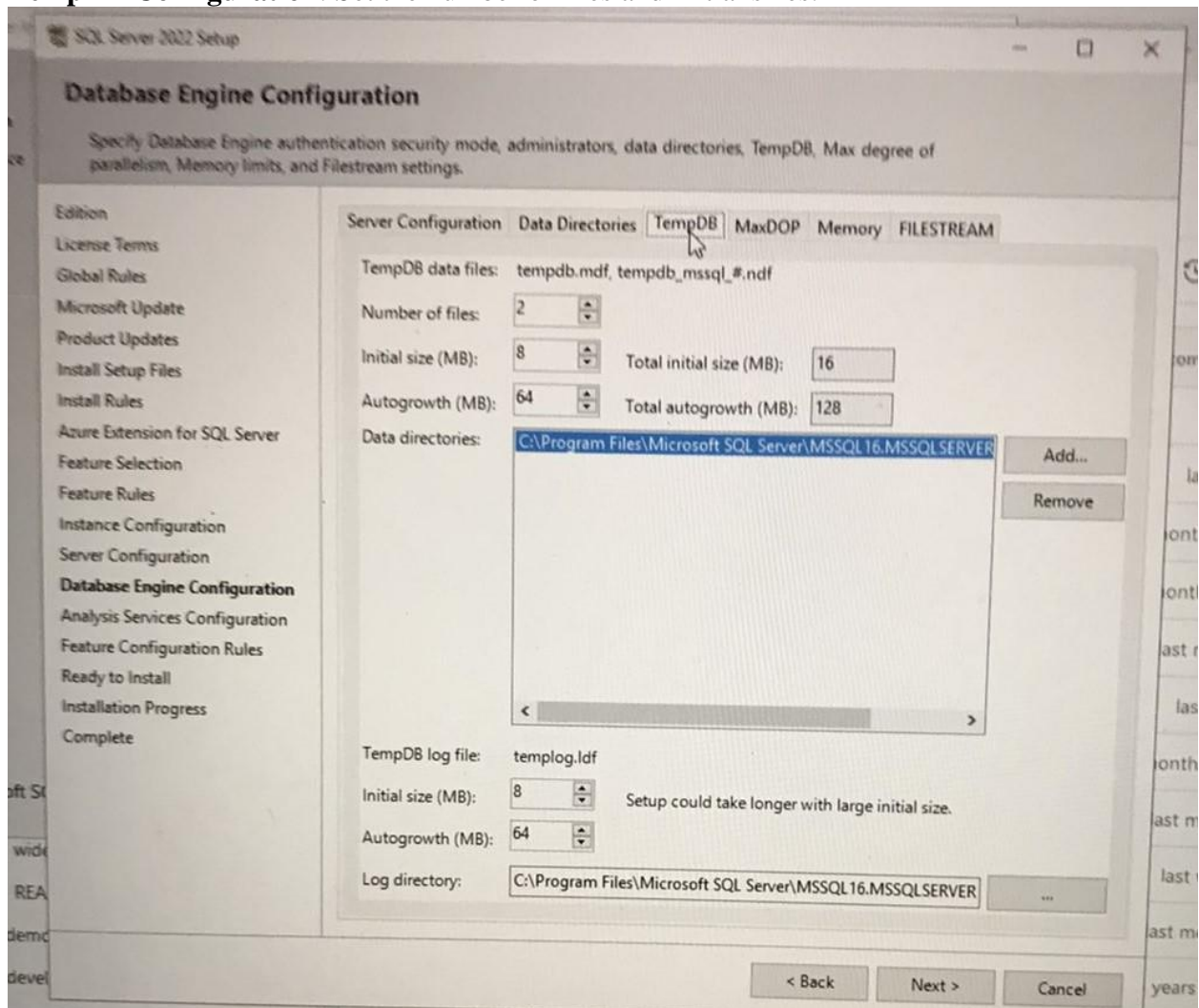
Reason:-

\* for performance

\* For Manageability

\* for Fault Tolerance(reduces the risk of both application and data files in case of drive failuers)

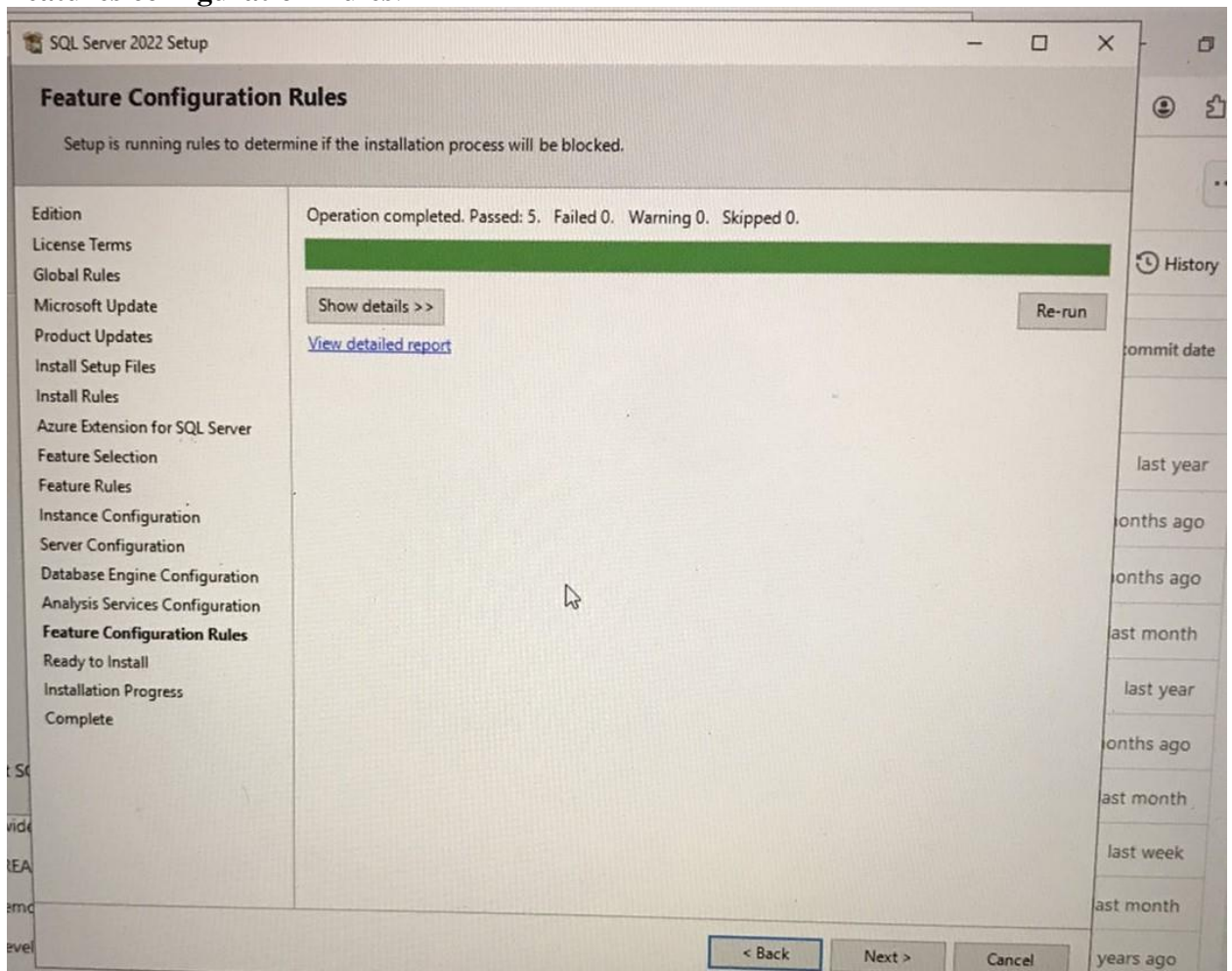
7. **TempDB Configuration:** Set the number of files and initial sizes.



Configuring the TempDB in SQL Server is crucial for performance and efficient resource management, particularly in environments with heavy data processing. TempDB can have multiple secondary data files that can distribute the I/O load, enhancing throughput.

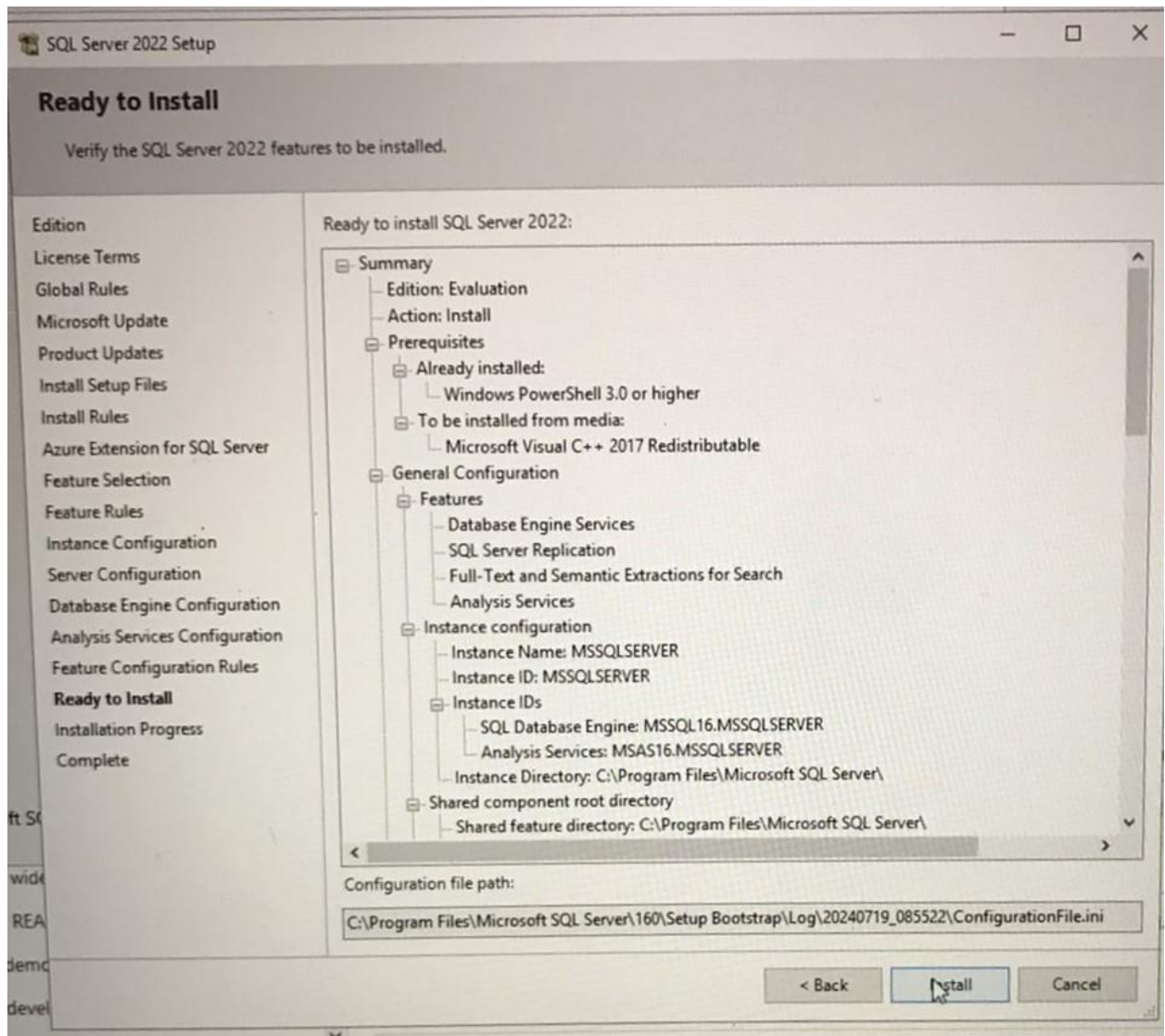
8. **FileStream Configuration:** Enable if required.  
SQL Server that allows storing and managing unstructured data (such as documents, images, and videos)
9. **Memory Configuration:** Set maximum server memory.  
Configure the Memory Properly: if not then once SQL Server reached that level due to client workload, it cannot free up memory to OS.  
If Total RAM is : 12GB add 8GB For SQL server. After configuration of memory Click NEXT.

## 10. Features configuration Rules:



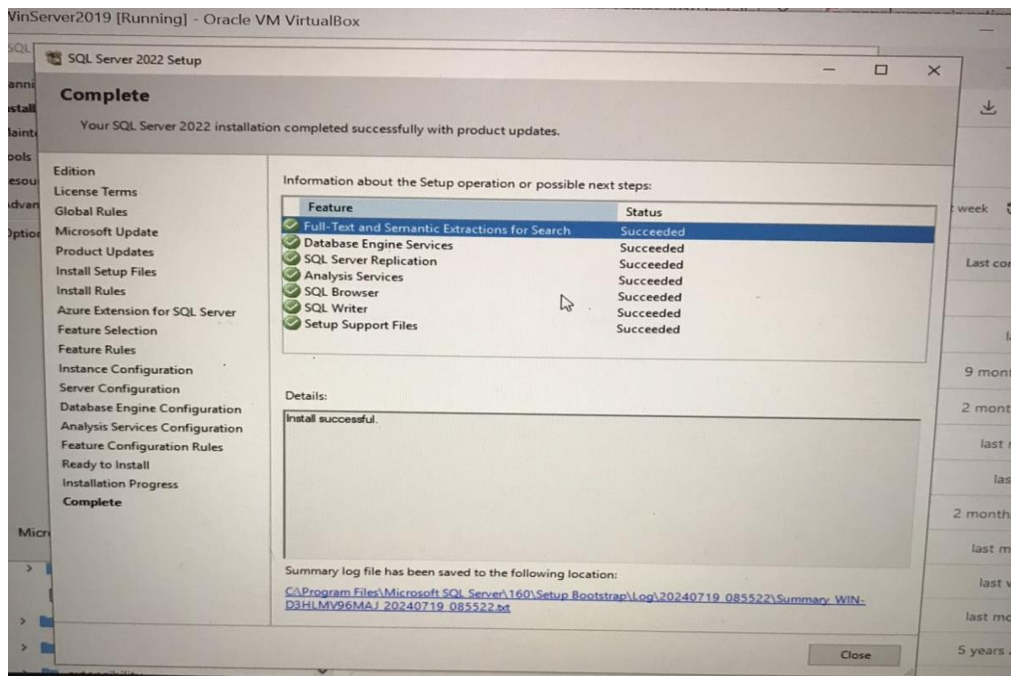
Just Click next.

## 11. Ready To Instal: Looked every feature and other details are maintained. Just Click INSTALL.



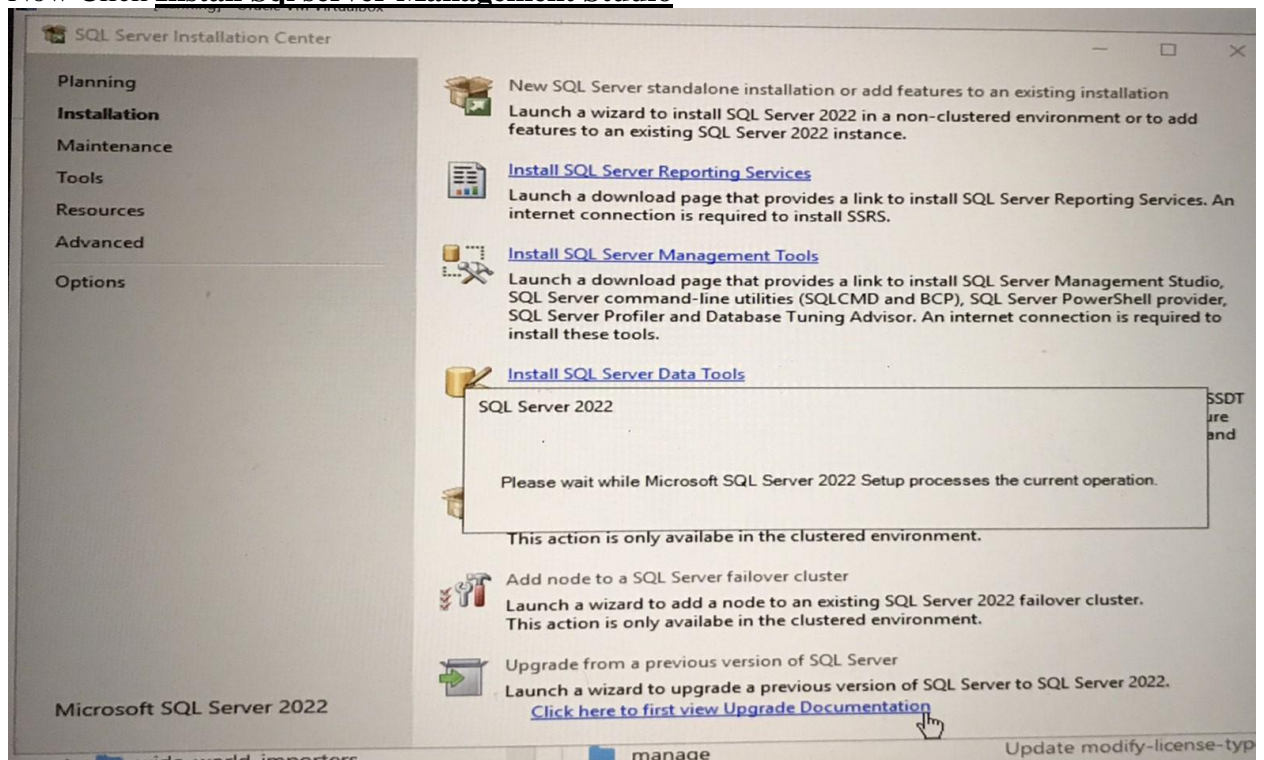
At Last:  
Wait for the Installation to be completed:





After the Installation is completed.

Now Click **Install Sql server Management Studio**



it will redirect to the Microsoft site

<https://learn.microsoft.com/en-us/sql/ssms/download-sql-server-management-studio-ssms?view=sql-server-ver19>

1. Download SSMS->
2. Install it.
3. Open it. With username and Password while installing the Database Engine:  
Choose the **Server Type**:-Database Engine  
**ServerName**:-Local or the instance Name(PCNAME\InstanceName)  
**UserName**:sa,  
**Password**:\*\*\*\*\*  
Sql server management Studio Starts.

After we can have certain configuration to perform  
-- Create a new database

```
CREATE DATABASE DemoDB;  
  
GO
```

-- Set database options

```
ALTER DATABASE DemoDB  
SET RECOVERY FULL;  
  
GO
```

-- Create a new SQL login

```
CREATE LOGIN MyLogin WITH PASSWORD = '*****';  
  
GO
```

-- Create a new user for the login

```
USE DemoDB;  
  
GO  
  
CREATE USER MyUser FOR LOGIN MyLogin;  
  
GO
```

-- Grant necessary permissions to the user

```
ALTER ROLE db_owner ADD MEMBER MyUser;  
  
GO
```

-- if we want to Configure max server memory

```
EXEC sp_configure 'show advanced options', 1;  
RECONFIGURE;  
  
EXEC sp_configure 'max server memory', 12096; -- Set max memory to 12GB around
```

RECONFIGURE;

GO

---

### -- Configure TempDB

ALTER DATABASE tempdb MODIFY FILE (NAME = tempdev, SIZE = 1024MB, FILEGROWTH = 512MB);

ALTER DATABASE tempdb MODIFY FILE (NAME = templog, SIZE = 512MB, FILEGROWTH = 256MB);

-- Add additional data files

ALTER DATABASE tempdb ADD FILE (NAME = tempdev2, FILENAME = 'D:\TempDB\tempdev2.ndf', SIZE = 1024MB, FILEGROWTH = 512MB);

ALTER DATABASE tempdb ADD FILE (NAME = tempdev3, FILENAME = 'D:\TempDB\tempdev3.ndf', SIZE = 1024MB, FILEGROWTH = 512MB);

ALTER DATABASE tempdb ADD FILE (NAME = tempdev4, FILENAME = 'D:\TempDB\tempdev4.ndf', SIZE = 1024MB, FILEGROWTH = 512MB);

---

## Post-Installation Configuration

- **Apply Updates**

Apply the latest SQL Server patches and cumulative updates.

- \* Performance Tuning

- Initial Settings: Set max degree of parallelism, cost threshold for parallelism, and configure index maintenance plans.
- Query Optimization: Regularly analyze and optimize slow-running queries.

- **Security Configuration**

Server-Level Security: Configure firewalls and network security.

Database-Level Security: Implement roles, permissions, and encryption.

Compliance: Ensure data security compliance with organizational policies.

- **Backup and Recovery**

Implement a comprehensive backup strategy:

- Full Backups: Weekly.

- Differential Backups: Daily.
- Transaction Log Backups: Every few hours.

Store backups on separate drives or external storage.

- Monitoring and Maintenance

Use SQL Server Management Studio (SSMS) and third-party tools for monitoring.

Regularly perform maintenance tasks:

Index Rebuilds/Reorganizations

Statistics Updates

Database Integrity Checks

## **Conclusion**

By following Mention Detail, we can ensure efficient SQL Server installation that meets the high demands of a large organization. Regular maintenance and tuning will help maintain optimal performance and security.