Install and Configure SQL Server Database Software
Interview Questions and Answers

Written by

Zakir Hossain, CS Graduate (OSU)
CEO, Data Group

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What is Operating System?

An operating system (sometimes it is called OS) is a software or program that manages all the other programs in a computer. The other programs are called applications or application programs. All other application programs require an operating system to function. OS provides common services for computer programs. The operating system is an essential component of the system software in a computer system.

OS is the first thing that needs to install into every computer before the computer can be used for anything.

Operating System manages memory, CPU (Central Processing Unit), hardware, processes, and all other software installed into a computer. OS works as an intermediate interface between programs and hardware.
Example of other applications: Accounting software, printing software, Database Software (SQL Server, Oracle, MySQL), Time Management, Schedule Management etc.

Devices use OS: Cellular phones, video game consoles, web servers, application server, Email Servers, Chatting Server, supercomputers, Laptops, PC and so on.

Examples of popular operating systems: Android, BlackBerry, Chrome OS, iOS, UNIX, Linux, and Microsoft Windows.

There are three major types of OS:

1. UNIX: Example of popular UNIX OS are SUN Solaris, IBM-AIX, HP-UX
2. Linux: Example of popular LINUX OS are Red Hat, Ubuntu, Kubantu, FreeBSD, 

Operating System Versions: Windows Operating System comes in two different versions:

1. Desktop version: Desktop version of Windows Operating System is used for single user, not really for multi-tasking system, and for processing light tasks like Microsoft word, Excel, emailing, other personal tasks like Skype and many more similar type of tasks.

Desktop version of Windows Operating System is used for personal computers like Laptop, and PC.

Examples of Desktop version of Windows Operating System are Windows XP, 7, 8, 10, and other future releases.

Server version: Server version of Windows Operating System is used for multi users at the same time, multi-tasking system, and for processing heavy jobs like Database Server, Web and application server.

Difference between Windows Server and SQL Server:

Windows Server is an Operating System and SQL Server is an application that runs on Windows Operating System. It is not possible to install, and use SQL Server application without Operating System like Windows Operating System.

SQL Server is a Data Management Software/application. It is used for storing data, reading data, and modifying data as needed. This is a multi-user data management application. SQL Server database is also called RDBMS (Relational Database Management System).

What kind of problems have you encountered during the installation of SQL Server Database Software? How did you solve those problems?

- **DotNet Framework Problem:** In the past in Windows Server 2003, and 2000, it was required to install DotNet Framework software separately meaning download the DotNet Framework software and install it before starting installing SQL Server database software.

  Since Windows Server 2008 and higher version, DotNet Framework software is installed as part of Windows Server Software installation. So, all it requires to enable the feature of DotNet Framework as Windows Feature from add/remove software.

  As we know if it is not enabled, SQL Server Software installation will fail. That is what I faced as I requested to our System Admin (Windows Server Admin Team) to enable this feature for this purpose.

  I received a confirmation email from the system admin. However, I found it when I tried to install SQL Server 2008 R2. I got an error “**DotNet Framework 3.5 SP1**” is required before installing SQL Server 2008 R2.

  I faced same problem again when I was installing SQL Server 2012 last week as we are upgrading SQL Server 2008 R2 Databases to SQL Server 2012.

- **Some features/components did not install cleanly due to Firewall problem:** All Firewalls including Windows Firewall and any third party firewall like McAfee, Norton, and Kaspersky...
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require to disable. If we do not disable the firewalls, it will give only warning NOT error. However, some components of SQL server will install properly. For an example, SQL Server Configuration Manager, SQL Server Report Configuration Manager, SQL Server Management Studio etc. I have seen this problem as one of my colleague/team member installed SQL Server 2008 R2. Later on, I have seen these components are missing. So, we had to reinstall the software. However, it could be done by adding components as well.

- **Storage Offline Problem**: During the installation, SAN network storage allocated for the SQL Server went offline (SAN: Storage Area Network). So, installation failed and had to wait until the storage came back online.
- Since Windows Server 2012 it is required to install IIS Feature and SP 2

**How do you prepare your server (machine/computer) to install SQL Server database Software? What are the things you need to do before installing SQL Server on a Server?**

- We are using Dell PowerEdge 3100 machine for our database server (Other models 2900, 2950, 2850)
- Create installation documentation
- Verify Operating System requirement
  - Verify required edition of windows OS (Standard edition or Enterprise edition),
  - Verify required SP
  - Verify required 32 or 64 bit architecture of OS
- Verify required hardware, memory, CPU, and other related software requirements
- Configure hardware for Data file, Log files, TEMPDB, System DBs, Backup location. For your kind information, we use different drives and directories for these
- Stop or disable firewall during the installation of SQL Server Software
- Enable required version DotNet Framework (3.5 SP2 for SQL Server 2008 R2 and 3.5 SP2 and higher for SQL Server 2012 and higher version)
- Create service account with admin permission for SQL Server Services like Database Engine, Agent, Reporting Service, and Integration Service)
- Get license from supervisor

**What kind of CPU do you need for SQL Server Database Server?**
According to Microsoft Recommendation Intel architecture should be used - quad core, or XEON type of CPU machine with i3, i5, i7 or better

**How much memory do you need to install SQL Server database software?**

At least 4 GB of memory is required for SQL Server 2008 R2 and higher version to run business. However, memory requirements depends Database Size, number of users will use the database, type of activities will perform by users, and type application will run on the database.

Again, memory requirements also depend on type of CPU, applications, number of jobs will run, and also what other technologies will run on the server like SharePoint, Reporting Server, Web Apps/Server and so.

**What are the differences between Standard and Enterprise Edition of SQL Server?**

- Cost
- Performance
- Number of processes can run
- Number of cluster instances can configure
- Security Feature like Data encryption, audit
- Compression
- Partitioning
- AlwaysOn feature of SQL Server is not available in Standard edition of SQL Server
- In Memory database will not be possible since standard edition cannot use enough memory

**Differences between Windows Admin Account used as SQL Admin and SA account**

SA (System Admin) account is built-in SQL Server account. This account has super admin permission on SQL Server Database Server.

**Note:** More will be covered in security class

**What is the default TCP/IP port number for SQL Server? Can you change and if can, how do you change?**

Default port number: 1433

Yes, it can be changed by using SQL Server network configuration
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What are the verification and validation methods for installation?

It is a process to verify an application is installed correctly, configured properly, and it is working without any issue as expected.

What are the different network protocols used by SQL Server?

Following are the different database network protocols used by SQL Server Database:

- **TCP/IP**: This allows users to access the DB server from anywhere and from any application
- **Named pipe**: This network protocol is required to configure to use ODBC (Open Database Connectivity) for applications to connect.

ODBC (Open Database Connectivity): It is a protocol to open a connection to Database System. Connection requires by who: apps, human being/users. However, all apps do not use the ODBC protocol to connect database. There are some apps, which only support ODBC protocol to connect to databases. Example, some third party apps (Troubleshooting), TEA (Telework eForm Agreement), WebTA, SAA

- **Shared Memory**: This network protocol of database network allows only local connection

How do you verify SQL Server is being installed correctly or not? What are different the tasks need to perform after installing SQL Server? What are the post installation configuration tasks for SQL Server?

After installing any software specially database software like SQL Server, it requires to ensure a clean installation and verify all other necessary verification as business of any company depends on data and SQL Server is used as data storage. So, it is important keep in memory that data could be sensitive, and very important like credit card bill, utility bill, house payment, immigration information, passport information, driving license, driving violations and many other type of information. So, it is very important to install SQL Server database software cleanly to avoid any unexpected issues in the future.

Some of the important areas to verify after installing SQL Server database software:

- Should see the successful installation confirmation message after installation and verify installation log

VA Office: 5600 General Washington Dr., Suite: B 212, Alexandria, VA 22312
NY Office: 41-66 72 Street, Suite: 1B, Jackson Heights, NY 11377
Phone: 703-310-4949, Ext: 101/105, 703-203-2325, 917-655-2385
Email: help@DataGroupUSA.com, Zhossain@DataGroupUSA.com Web: www.DataGroupUSA.com/portal
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- Services related SQL Server should be able to start and stop

  Related SQL Server services are Database Engine, SQL Server Agent, SQL Server Integration Services (SSIS), SQL Server Reporting Services (SSRS)

- Be able to connect to database server.

  So open management studio and connect to database server

- Be able to create, and delete database and other objects like tables, views etc, and also be able to insert, update, and delete records/information in a table.

  So open management studio, connect to database server and perform these activities before open to use by customers

How long does it take to install SQL Server?

It takes about 20 to 45 minutes depending on system resources

What are the different authentication modes in SQL Server? Advantages and disadvantages of modes and which is one better?

- SQL Server support two authentication modes:
  - Windows authentication mode: This authentication mode only supports Windows AD (Active Directory) account authentication to connect to SQL Server.

    So, in use Windows authentication mode all users must have Windows account

  - Mixed authentication mode: This authentication mode supports both Windows AD (Active Directory) account authentication to connect to SQL Server and SQL Server account authentication to connect to SQL Server.

    So, in use Mixed authentication mode, users can have either Windows account or SQL server
account or can have both

❖ **Advantage:**

- **Windows authentication mode:** Allows SQL Server to run using Single Sign-On (SSO). SSO does not require providing logins and password to access/use any applications. Same logins and password used to login to desktop/laptop; will use the same authentication to authorize for all other applications, if that application supports SSO. SQL Server supports SSO. It gets the login credentials from AD (Active Directory), highly secured.

  Sometime, I think this mode is more secured compare to other since the account and account rights are managed from single server (AD Server). Using AD, it makes life easier to centrally manage all accounts like can disable account and control accounts rights centrally, if there is any security concern.

- **Mixed authentication mode:** SSO still possible for SQL Server in Mixed authentication mode. At the same time, if there are any users who do not have AD account, must require using SQL Server account. This is only possible in mixed authentication mode.

  I would consider this mode is more convenient and at the same time it provides enough security as well since it requires credentials for each and every single apps

❖ **Disadvantage:**

- **Windows authentication mode:**
  - If someone does not have AD account, the user will not be able to use the SQL Server.
  - If someone forgot to lock their desktop, anyone can access all applications including databases. Security is compromised, which potentially could be very dangerous.
  - Every single user require to have AD account first before an account in DB system can be created

- **Mixed authentication mode:**
  - Accounts and rights may be managed in each app separately. It would require more administrative work, more risk of making makes, cost more
  - If an employee leaves a company, it may require an administrator to remember all the apps in which the employee has access. It is because it requires disabling the user/employee account from all the applications. Some cases it might be impossible
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or hard to manage it as it would require to keep track users account in all apps to disable, control access rights, activate and inactivate account individually in each app

- It may also be hard in using company standard password policy (like naming and password complexity) since different apps may have different password policy as it would require different password combinations. It could be very risky.

Which authentication mode is more secured compared to Windows Authentication Mode and SQL Server Authentication Mode?

Note: Will be covered more in security class

Why should you disable the firewall?

Some features/components did not install cleanly due to Firewall problem: All Firewalls including Windows Firewall and any third party firewall like McAfee, Norton, and Kaspersky require to disable. If we do not disable the firewalls, it will give only warning NOT error. However, some components of SQL server will install properly. For an example, SQL Server Configuration Manager, SQL Server Report Configuration Manager, SQL Server Management Studio etc. I have seen this problem as one of my colleague/team member installed SQL Server 2008 R2. Later on, I have seen these components are missing. So, we had to reinstall the software. However, it could be done by adding components as well.

What kind of permission do you need to install SQL server?

System Admin permission on the server

Does it require applying SP for OS before installing SQL Server 2008 R2 or 2012?

It may require you to apply SP on Windows Operating System to install SQL Server Database Software. It depends on which version of Windows Server is used for which version of SQL Server.

For an example, to install SQL Server 2012 on Windows Server 2008, it requires to apply OS SP2 (Service Pack 2) to Windows Server 2008.

What is collation?
What is a binary file?
What is service account?
Do you need a domain account?
What is the difference between instance feature and shared feature?
What are the differences between evaluation and licensed edition?
How much does the licensing cost?
What kind of licensing does your company have?
When you buy a license for SQL Server, what are the things you need to consider?
How do you determine which SP of OS you need for your SQL Server?
What are the system requirements to install SQL Server Database Software?
How do you configure memory and CPU for SQL Server?