

SQL Server Preinstallation, Installation and Post installation checklist

Pre-Installation Checklist

Step	Description	Key Actions
System Requirements Check	Ensure hardware and OS meet SQL Server requirements.	<ul style="list-style-type: none">- Verify CPU, memory, disk space.- Ensure OS compatibility (e.g., Windows Server versions).- Check for required service packs/updates.
SQL Server Edition Selection	Choose the appropriate SQL Server edition (Standard, Enterprise, etc.).	<ul style="list-style-type: none">- Determine based on workload, licensing, and features required.
Licensing Model	Decide between Core-based or Server+CAL licensing models.	<ul style="list-style-type: none">- Understand the implications for performance and cost.
Service Accounts Setup	Set up dedicated service accounts for SQL Server services (Database Engine, Agent, etc.).	<ul style="list-style-type: none">- Follow least-privilege model.- Ensure service accounts have the required permissions.
Instance Planning	Decide if it will be a default or named instance.	<ul style="list-style-type: none">- Consider naming conventions for consistency.- Determine port numbers for named instances.
SQL Server Collation	Choose appropriate collation settings based on application requirements.	<ul style="list-style-type: none">- Determine based on language and locale requirements.- Default: SQL_Latin1_General_CP1_CI_AS.
Disk Layout Planning	Plan disk layout for data, log, TempDB, and backups.	<ul style="list-style-type: none">- Use separate disks for data files (.mdf), log files (.ldf), TempDB, and backups to improve performance and recoverability.

Firewall and Ports	Open the necessary firewall ports (default: 1433 for Database Engine).	<ul style="list-style-type: none"> - Ensure the necessary ports are open. - Configure static ports for named instances if required.
Backup Plan	Ensure backup strategy is defined before installation.	<ul style="list-style-type: none"> - Plan for backup and restore procedures (full, differential, transaction log backups).
Storage Subsystem Validation	Validate the performance of the storage subsystem (RAID, SAN, SSD, etc.).	<ul style="list-style-type: none"> - Run performance tests (e.g., Diskspd) to verify I/O throughput and latency.
Antivirus Exclusions	Set exclusions for SQL Server directories and files in antivirus.	<ul style="list-style-type: none"> - Exclude SQL Server processes, data files, log files, and backups from real-time scanning to avoid performance degradation.
Security Baseline Review	Ensure SQL Server complies with the security policies.	<ul style="list-style-type: none"> - Check for encryption requirements (e.g., TDE, Always Encrypted). - Determine authentication mode (Windows/SQL authentication).

Installation Checklist

Step	Description	Key Actions
Install SQL Server	Run SQL Server installation using setup wizard or command-line options.	<ul style="list-style-type: none"> - Use <code>setup.exe</code> for the GUI or <code>ConfigurationFile.ini</code> for unattended installations. - Select installation type (Database Engine, Reporting Services, etc.).
Instance Configuration	Configure the SQL Server instance (default or named).	<ul style="list-style-type: none"> - Choose default or custom installation directories. - Set the appropriate instance name for named instances.

Server Configuration	Set up SQL Server services and configure service startup types.	<ul style="list-style-type: none"> - Set SQL Server and SQL Agent services to automatic startup. - Set appropriate service accounts.
Authentication Mode	Choose authentication mode: Windows Authentication or Mixed Mode (Windows + SQL Authentication).	<ul style="list-style-type: none"> - Set an sa password if using Mixed Mode. - Recommended: Use Windows Authentication for enhanced security.
Data Directories Setup	Specify directories for database files, log files, and TempDB.	<ul style="list-style-type: none"> - Set separate locations for data and log files for performance optimization. - Use fast storage for TempDB.
SQL Server Collation	Choose SQL Server collation as per application requirements.	<ul style="list-style-type: none"> - Set collation based on language requirements and consistency with existing environments.
Memory Configuration	Configure SQL Server memory settings.	<ul style="list-style-type: none"> - Set maximum memory limit for SQL Server to avoid consuming all system memory. - Configure minimum memory for SQL Server processes.
Configure TempDB	Set up TempDB with appropriate number of data files and size settings.	<ul style="list-style-type: none"> - Recommended: One data file per CPU core (up to 8 cores), uniform file sizes. - Set appropriate initial file size and auto-growth settings.
MaxDOP Configuration	Set Maximum Degree of Parallelism (MaxDOP).	<ul style="list-style-type: none"> - Recommended: Set MaxDOP based on the workload and number of processors. - Best practice: For OLTP workloads, MaxDOP = 1 or number of physical cores.
Set Backups Location	Configure backups to be saved in a dedicated directory.	<ul style="list-style-type: none"> - Plan for automated backups using SQL Server Agent jobs or third-party tools.

Configure FileStream (Optional)	Enable and configure FileStream if required.	- Enable FileStream if the application requires storing binary large objects (BLOBs) in the file system.
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Post-Installation Checklist

Step	Description	Key Actions
Apply Latest Service Pack/CU	Update SQL Server with the latest service packs or cumulative updates.	- Ensure SQL Server is up to date with the latest patches to fix bugs and vulnerabilities.
SQL Server Instance Settings	Configure instance-level settings (e.g., default backup location, maintenance plans).	<ul style="list-style-type: none"> - Set default locations for backups, databases, and logs. - Configure instance-level settings (e.g., recovery models, auto-growth settings).
Setup Database Maintenance Plans	Configure maintenance plans for backups, index optimization, and statistics updates.	<ul style="list-style-type: none"> - Set up regular full, differential, and transaction log backups. - Schedule jobs for rebuilding/reorganizing indexes and updating statistics.
Configure Alerts and Monitoring	Set up monitoring and alerting systems (SQL Server Agent Alerts, third-party tools).	<ul style="list-style-type: none"> - Configure SQL Server Agent alerts for critical events (e.g., job failures, low disk space). - Set up performance monitoring (e.g., Performance Monitor, Extended Events, DMVs).
Enable SQL Server Auditing	Set up SQL Server Audit to track user activities and database changes.	<ul style="list-style-type: none"> - Enable SQL auditing for security and compliance purposes. - Review logs periodically.

Database Encryption (Optional)	Implement Transparent Data Encryption (TDE) if required for security.	<ul style="list-style-type: none"> - Enable TDE to encrypt databases at rest. - Ensure certificates and keys are properly managed.
Baseline Performance Testing	Conduct performance tests to establish a baseline for the system.	<ul style="list-style-type: none"> - Run queries to test performance and compare with expected results. - Store baseline metrics for future reference (e.g., CPU, memory, I/O utilization).
Create Database Users/Roles	Set up appropriate user roles and permissions.	<ul style="list-style-type: none"> - Use least privilege principles to assign roles and permissions. - Avoid giving users sysadmin role unless necessary.
Review Security Settings	Validate security settings to ensure compliance with security policies.	<ul style="list-style-type: none"> - Disable features like xp_cmdshell if not required. - Set up firewall rules and ensure only necessary ports are open.
Configure SQL Server Agent Jobs	Set up recurring SQL Agent jobs for tasks like backups and maintenance.	<ul style="list-style-type: none"> - Automate recurring tasks such as database backups, index optimization, and integrity checks.
Verify Backups	Test database backups to ensure they work correctly.	<ul style="list-style-type: none"> - Perform backup and restore operations to ensure that recovery procedures work as expected.
HA/DR Setup (Optional)	Configure High Availability (HA) and Disaster Recovery (DR) features if required (e.g., AlwaysOn, Log Shipping).	<ul style="list-style-type: none"> - Configure AlwaysOn Availability Groups or Failover Cluster Instances (FCI). - Set up log shipping or replication for disaster recovery.

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Summary:

This table provides a step-by-step checklist for ensuring a successful SQL Server installation, including the critical stages of pre-installation, installation, and post-installation. Each section ensures that the SQL Server environment is optimally configured for performance, security, and reliability.

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