





# SQL SERVER PERFORMANCE MONITORING AND TUNING

- We need to monitor SQL Server Instances and Databases to see if they are handling workload efficiently.
  - Performance monitoring and tuning is very subjective and depends on so many factors
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# Reasons for Monitoring:

- Find problems or error, suspicious behavior.
- To manage security.
- To manage disk utilization.
- To address users and developers requests and problems
- To troubleshoot problems and errors proactively as well as reactively.
- To monitor Server Performance
- To Trace user activities

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- Performance of a database depends on many factors:
  - **Operating system**
  - **Application performance**
  - **Memory(PL)**
  - **IO Bottleneck**
  - **CPU**
  - **Hard Disk**
  - **Blocking bottleneck**



It also depends on database issues:


- **Bad Database Design**
  - **Too Many Joins**
  - **Too Many Indexes**
  - **Unused Indexes**
  - **Table Scan**
  - **Fragmented Index**
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# Tools to monitor performance

- **SQL Server and Windows Native Tools**  
**Third Party Tools:(interview)**
  - RedGate SQL Monitor
  - Idera SQL Diagnostic Manager

# SQL and Windows Native Tools:


- **SQL Server Profiler:** Allows to trace server events
- **Windows Server Performance Monitor:** Provides counters to track SQL Server and Windows resources
- **SQL Server Logs:** Troubleshoot SQL Server problems(Management Studio>Expand Management>Logs>Double click log file to view)
- **SQL Server Agent Logs:** Troubleshoot SQL Server Agent Related problems


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- **SQL Error Log** - Management Studio>Expand SQL Server Agent>Error Logs> Double click log file to view
  - **Windows Event Logs:** Troubleshoot system-wide problems. It includes SQL Server, SQL

# Stored Procedures:

- **sp\_helpserver**: Provides information about SQL Server instance configuration for Replication and Remote Access
- **sp\_helpdb**: Provides information about Database
- **sp\_helpindex**: Provides information about indexes on table and view



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- **sp\_spaceused**: Provides information about disk space used by a table, view, index etc in current database
  - **sp\_monitor**: Provides information about usage statistics like CPU usage, CPU idle time
  - **sp\_who**: List current users and processes
  - **sp\_who2**: List current users and processes
  - **Sp\_who2 active**: List current active users.

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- **DBCC**: Check database integrity, trace activity, statistics
  - DBCC checkdb(AdventureWorks2014)
  - **DMV** (Dynamic Management View):  
**Sys.dm\_tran\_locks: Provides information about object lock**
  - **Activity Monitor**: Provides information on current users, processes, locks