

Exam Objectives - Administering Microsoft SQL Server 2012 Databases

Skills measured

This exam measures your ability to accomplish the technical tasks listed below. The percentages indicate the relative weight of each major topic area on the exam. The higher the percentage, the more questions you are likely to see on that content area on the exam. **Please note that the questions may test on, but will not be limited to, the topics described in the bulleted text.**

Install and configure (19%)

- Plan installation
 - Evaluate installation requirements; design the installation of SQL Server and its components (drives, service accounts, etc.); plan scale-up vs. scale-out basics; plan for capacity, including if/when to shrink, grow, autogrow, and monitor growth; manage the technologies that influence SQL architecture (for example, service broker, full text, scale out, etc.); design the storage for new databases (drives, filegroups, partitioning); design database infrastructure; configure a SQL Server standby database for reporting purposes; Windows-level security and service level security; Core mode installation; benchmark a server before using it in a production environment (SQLIO, Tests on SQL Instance); choose the right hardware
 - Install SQL Server and related services
 - Test connectivity; enable and disable features; install SQL Server database engine and SSIS (not SSRS and SSAS); configure an OS disk
 - Implement a migration strategy
 - Restore vs detach/attach; migrate security; migrate from a previous version; migrate to new hardware; migrate systems and data from other sources
 - Configure additional SQL Server components
 - Set up and configure all SQL Server components (Engine, AS, RS and SharePoint integration) in a complex and highly secure environment; configure full-text indexing; SSIS security; filestream; filetable
 - Manage SQL Server Agent
 - Create, maintain, and monitor jobs; administer jobs and alerts; automate (setup, maintenance, monitoring) across multiple databases and multiple instances; send to "Manage SQL Server Agent jobs"
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Maintain instances and databases (17%)

- Manage and configure databases
 - Design multiple file groups; database configuration and standardization: autoclose, autoshrink, recovery models; manage file space, including adding new filegroups and moving objects from one filegroup to another; implement and configure contained databases; data compression; configure TDE; partitioning; manage log file growth; DBCC
- Configure SQL Server instances
 - Configure and standardize a database: autoclose, autoshrink, recovery models; install default and named instances; configure SQL to use only certain CPUs (affinity masks, etc.); configure server level settings; configure many databases/instance, many instances/server, virtualization; configure clustered instances including MSDTC; memory allocation; database mail; configure SQL Server engine: memory, fillfactor, sp_configure, default options
- Implement a SQL Server clustered instance

- Install a cluster; manage multiple instances on a cluster; set up subnet clustering; recover from a failed cluster node
 - Manage SQL Server instances
 - Install an instance; manage interaction of instances; SQL patch management; install additional instances; manage resource utilization by using Resource Governor; cycle error logs
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Optimize and troubleshoot (14%)

- Identify and resolve concurrency problems
 - Examine deadlocking issues using the SQL server logs using trace flags; design reporting database infrastructure (replicated databases); monitor via DMV or other MS product; diagnose blocking, live locking and deadlocking; diagnose waits; performance detection with built in DMVs; know what affects performance; locate and if necessary kill processes that are blocking or claiming all resources
 - Collect and analyze troubleshooting data
 - Monitor using Profiler; collect performance data by using System Monitor; collect trace data by using SQL Server Profiler; identify transactional replication problems; identify and troubleshoot data access problems; gather performance metrics; identify potential problems before they cause service interruptions; identify performance problems; use XEvents and DMVs; create alerts on critical server condition; monitor data and server access by creating audit and other controls; identify IO vs. memory vs. CPU bottlenecks; use the Data Collector tool
 - Audit SQL Server instances
 - Implement a security strategy for auditing and controlling the instance; configure an audit; configure server audits; track who modified an object; monitor elevated privileges as well as unsolicited attempts to connect; policy-based management
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Manage data (19%)

- Configure and maintain a back-up strategy
 - Manage different backup models, including point-in-time recovery; protect customer data even if backup media is lost; perform backup/restore based on proper strategies including backup redundancy; recover from a corrupted drive; manage a multi-TB database; implement and test a database implementation and a backup strategy (multiple files for user database and tempdb, spreading database files, backup/restore); back up a SQL Server environment; back up system databases
 - Restore databases
 - Restore a database secured with TDE; recover data from a damaged DB (several errors in DBCC checkdb); restore to a point in time; file group restore; page level restore
 - Implement and maintain indexes
 - Inspect physical characteristics of indexes and perform index maintenance; identify fragmented indexes; identify unused indexes; implement indexes; defrag/rebuild indexes; set up a maintenance strategy for indexes and statistics; optimize indexes (full, filter index); statistics (full, filter) force or fix queue; when to rebuild vs. reorg and index; full text indexes; column store indexes
 - Import and export data
 - Transfer data; bulk copy; bulk insert
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Implement security (18%)

- Manage logins and server roles
 - Configure server security; secure the SQL Server using Windows Account / SQL Server accounts, server roles; create log in accounts; manage access to the server, SQL Server instance, and databases; create and maintain user-defined server roles; manage certificate logins
 - Manage database permissions
 - Configure database security; database level, permissions; protect objects from being modified
 - Manage users and database roles
 - Create access to server / database with least privilege; manage security roles for users and administrators; create database user accounts; contained logins
 - Troubleshoot security
 - Manage certificates and keys; endpoints
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Implement high availability (12%)

- Implement AlwaysOn
 - Implement a mirroring solution using AlwaysOn; failover
- Implement database mirroring
 - Set up mirroring; monitor the performance of database mirroring
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 - Troubleshoot replication problems; identify appropriate replication strategy