

# MS SQL DBA Course Details

## Microsoft SQL Server Database Administration

### Topic 1: Starting with SQL Server

- Responsibilities of Database Administrator
- Types of DBAs
- History of SQL Server -versions
- What is new in SQL Server 2005, 2008R2, 2012, 2014, 2016 and 2017 for Administrators?
- Tools and components of SQL Server
- SQL Server Services
  - Instance–aware Services
  - Instance–unaware Services
  - Start & Stopping Services
- Instances
  - Advantages of Instances
  - Types
- Default Instance
- Named Instances
- Requirements
  - Hardware
  - Software
- Installing SQL Server
  - Pre – installation steps
  - Installations
  - Viewing installation process with LOG files.
  - Adding or removing components.
- Troubleshooting SQL Server installation common issues.

### Topic 2: Configuring SQL Server

- Main Configuration Features
- Configuring various Services.
- Backup folders.
- Configuring data file and log file paths.
- Configuring ErrorLogs
- Patching SQL Server
- Remote connections
- Tempdb Configurations
- Memory configuration
- Configuring max worker threads
- Configuring DAC
- Configuring service accounts
- Case Study
- Patching issues
- Connectivity issues
- How to rollback service packs

### Topic 3: Working with Databases

- Working with databases.
- System Defined databases
- Moving system databases
- Handling TempDB database.
- Database Architecture.
- Data Files
- Log Files
- Filegroups
- Extents
- Pages –types
- Page architecture
- Tracking free space
- Transaction Log file architecture and common issues
- Data file architecture.

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- Creating Databases.
- Adding files, Filegroups.
- Database States
- **Case Study**
  - Recovering suspect database
  - Moving system databases
  - Troubleshooting TempDB issues
  - Log file full – how to solve the problem.

## Topic 4: Implementing Security

- Security in SQL Server
- Security Enhancements
- Types of Authentications.
  - Windows Authentication
    - Creating logins from windows users and groups
    - Orphan logins.
  - SQL Server Authentication
    - Creating SQL logins and testing logins
- Setting authentication Mode Security Auditing.
- Understanding server roles. Working with users.
- Encryption and decryption.
- Working with certificates and schemas.
- Security catalog views and stored procedures.
- **Case Study**
  - Connecting to instance without login credentials
  - Resolving orphan users

## Topic 5: Backup and Restoration

- Understanding Transaction Log file.
- Understanding checkpoints & Lazy writer. Truncating log file.
- Recovery Models
  - Full
  - Bulk Logged
  - Simple
- Setting recovery model.

- Database Backups
  - Full
  - Differential
  - Transaction Log
  - File or Filegroups
  - Copy-only, Mirrored, Split, Tail Log backups
- Performing Restoration
- Backup system databases.
- Compressions
  - Data Partitions
  - Table Compression via T-SQL
  - Compressing Backups
- Viewing complete details of backup process.
- **Case Study**
  - Common backup and restore issues.

## Topic 6: Automating Administrative Tasks

- Working with Database Mail.
  - Mail architecture.
  - Configuring Profiles and Accounts
  - Sending Mail
- Configuring linked servers.
- Implementing Automation
  - Configuring SQL Server Agent.
  - Creating Operators, Alerts, Jobs
  - Managing jobs and resolving errors.
  - Monitoring jobs.
    - auto alert when jobs are enabled, disabled or failed.
  - Database Snapshots.
- **Case Study**
  - Configuring TempDB growth alerts
  - Configuring T.Log growth alerts

## Topic 7: High Availability

- Introduction to High Availability.
- Working with Log Shipping.
  - Features

## Topic 8: Replication

- Replication and advantages
- New features 2008 R2/ 2012/2014/2016
- Replication Entities
- Replication Architecture.

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- Working with indexes
  - Table Scan
  - Index
  - Types of Index
    - Clustered
    - NonClustered
  - Index Management
    - Index Fragmentation
    - Index Reorganizing
    - Index Rebuilding
- Statistics
  - Statistics basics
  - How the statistics are created
  - How to check statistics
  - What is stale statistics?
  - How to update
  - Incremental Statistics in SQL Server 2014
  - Patching to clear statistics bugs
- Transactions and Locks
  - Isolation Levels
  - Blocking and deadlocks in SQL Server
- Tools
  - Profiler, DTA, Activity Monitor
- Case Study
  - Troubleshooting slowly running queries, Using DTA

## Topic 10: Clustering SQL Server

- Introduction to cluster environment & features.
- Overview of Windows Clustering.
- How SQL Server supports clustering.
- Requirements
- Installing and configuring SQL Server clustering.
- Testing Failover
- Applying service packs and hot fixes.
- Active Passive and Active - Active Cluster
- Adding virtual disks
- **Troubleshooting cluster issues**

## Topic 11: Implementing Always On

- Introduction to SQL Server Always On (HA/DR) features
- Limitations of existing features
- Always on benefits
- Always on architecture
- Pre Requisites to configure AO
- Configuring Always On
- Always On Availability Groups
- Availability Group Failover
- Configuring Listener
- Monitoring AO
- Adding databases and replicas
- New enhancements in 2014/2016
- Resource Governor IO enhancements

Below Activities can handle, Once you trained with us:-

- ✓ CPU Issues
- ✓ Memory Issues
- ✓ IO Issues
- ✓ Regular Wait tasks
- ✓ Log file full Issue
- ✓ Database Suspect issue
- ✓ Backup failures
- ✓ Troubleshooting Replication Issues
- ✓ Troubleshooting Logshipping
- ✓ Troubleshooting Mirroring
- ✓ Troubleshooting Clustering Always On Troubleshooting Issues
- ✓ Troubleshooting Slow running Queries
- ✓ Regular issues and FAQs