WIZARDSGROUP

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Ranger Workshops: Windows Server Failover Clustering for the SQL Server DBA

Four Days, Instructor-Led

About this Course

High Availability and Disaster Recovery (HA/DR) is an area that every SQL Server professional and IT administrator need to be comfortable with. And with features like Availability Groups and Failover Clustered Instances relying heavily on Windows Server Failover Clustering, a deep understanding of the underlying principles and fundamental technologies spell the difference between successful implementations and horrible disasters. This course is designed, created and delivered by SQL Server MVP, Microsoft Certified Master, author and consultant Edwin Sarmiento. It is designed for both beginners as well as advanced SQL Server professionals and IT administrators who are responsible for architecting, deploying and managing mission-critical and highly available SQL Server databases.

This class will focus on the use of Windows 2012 R2 and SQL Server 2014, but the concepts also apply to Windows 2008 and higher as well as SQL Server 2008 and higher.

What's the value?

- Downloadable materials
- No nonsense learning with practical examples
- Establish building blocks for future development
- Learn from an industry leader
- Free online material

Who should attend?

- Senior IT administrators
- System architects
- SQL Server DBAs
- Anyone that needs to learn more about clustering for SQL Server

Course Outline

Module 1: High Availability and Disaster Recovery Fundamentals

- The need for high availability and disaster recovery
- Non-technology aspects of high availability and disaster recovery
- BIA, RPO, RTO, SLA, etc. Acronyms That Need To Drive HA/DR Projects
- The Lion, The Switch and the Wardrobe

Module 2: Introduction to Clusters

- Overview of Clustering Technologies
- Benefits of Using Clustering Technologies
- Introduction to Windows Server Failover Clustering (WSFC)

Module 3: Windows Server Failover Clustering Fundamentals

- How Windows Server Failover Clustering Works

- Windows Server Failover Clustering Components
    - Nodes
    - Cluster Resources
    - Resource Groups
    - Storage
    - Failover
    - Dependencies – AND versus OR
    - Quorum
    - Heartbeat
    - Cluster Shared Volumes

Module 4: Planning and Installing a Windows Server Failover Cluster

- Requirements for Installation
    - Network and Active Directory Dependencies and Permissions
    - Shared Storage
- Planning the installation
    - Number of Nodes
    - Quorum Model
    - Virtual IP addresses and network names
    - Shared storage allocation
    - Clustered applications
- Adding the Failover Cluster Feature and Failover Cluster Validation
- Installing Windows Server Failover Cluster
    - Pre-staging virtual computer objects
    - Granting permissions in Active Directory
    - Installing Active Directory-detached WSFC (Windows Server 2012 R2)
    - Installing WSFC in Windows Server Core

Module 5: Configuring WSFC

- Modifying Quorum Disk
- Modifying Quorum Types
- Configuring Dynamic Witness (Windows Server 2012 R2)
- Configuring Network Adapters
    - Renaming Adapters
    - Configuring NIC Teaming
- Testing Failover
- Adding and Removing Clustered Disks
- Using Mountpoints
- Configuring Cluster Shared Volumes
- Configuring DNS Registration Behavior for Multi-subnet Clusters

Module 6: Planning and Installing SQL Server Failover Clustered Instance

- Single Instance versus Multi-Instance
- Planning the installation
    - Number of Nodes
    - Virtual IP addresses and network names
    - Shared storage allocation
    - Using SMB File Share
    - tempdb on local disk versus shared storage
- Installing SQL Server Failover Clustered Instance in a Single Subnet
- Installing SQL Server Failover Clustered Instance in Multiple Subnets
- Adding/Removing Nodes to a SQL Server Failover Clustered Instance
- Fixing Installation versus Starting From Scratch
- Installing SQL Server Analysis Services on WSFC

Module 7: Configuring SQL Server Failover Clustered Instance

- Testing Failover of SQL Server Failover Clustered Instance
- Configuring permissions for local tempdb
- Configuring Instant File Initialization
- Cluster Resource Group Configuration
- Configuring SQL Server Failover Clustered Instance DNS settings for Multi-subnet Clusters
- To DTC or not to DTC?
- Configuring Clustered DTC for SQL Server Failover Clustered Instance

Module 8: SQL Server Availability Groups

- Architecture Overview
- Dependencies on WSFC
- Configuring SQL Server Availability Groups
- Configuring Backups on Secondary Replicas
- Configuring Readable Secondaries

Module 9: Managing SQL Server Failover Clustered Instances

- Adding and Removing Clustered Disks
- Adding and Removing Dependencies
- Changing virtual IP Addresses of SQL Server Failover Clustered Instance
- Fixing Broken SQL Server Failover Clustered Instance
- Changing SQL Server service account
- To Backup or not to Backup the WSFC
- Upgrading/Migrating a SQL Server Failover Clustered Instance

Module 10: Monitoring and Troubleshooting

- Understanding the Failover Policies for SQL Server Failover Clustered Instances
- Understanding the sp_server_diagnostics
- The Old LooksAlive and IsAlive Checks
- Configuring the FailureConditionLevel property
- Configuring the HealthCheckTimeOut property
- Reading the Cluster Log
- Force Start a WSFC Without Quorum
- Recover from Failover Cluster Instance Failure

Course Prerequisites

In order to take full advantage this course, attendees need to have:

- A working knowledge of basic relational database concepts
- Experience with administering and managing a SQL Server instance
- Basic knowledge of the Windows Server 2008 and higher server operating system

Course Inclusions:

- Microsoft Official Curriculum (MOC) and/or Wizards Learning Courseware (WLC)
- Microsoft Certified Trainer (MCT)
- Lunch, AM and PM Snacks
- Certificate of Achievement
- Course Notes