

SQL Server 2012: AlwaysOn High Availability and Disaster Recovery Solutions



Workshop *PLUS*

- **Target Audience:**

This workshop is targeted at SQL Server 2012 architects, database administrators, IT professionals and SQL Server support staff. This is not a beginner's workshop or training targeted at SQL Server developers. To ensure the high-quality knowledge-transfer expected by attendees of this four day workshop, class size is limited to a maximum of 16 students who meet the following criteria:

- At least 1-2 years of experience working with SQL Server as a database administrator
- Basic understanding and hands-on experience with Windows Server 2008 R2 Failover Cluster

Overview

The SQL Server 2012: AlwaysOn High Availability and Disaster Recovery Solutions is a four-day Workshop that provides in-depth technical and architecture details of SQL Server 2012 AlwaysOn Technologies. Students will perform various hands-on labs and build practical end-to-end High Availability (HA) and Disaster Recovery (DR) solutions for mission critical applications using SQL Server 2012 AlwaysOn technologies.

This workshop focuses on SQL Server 2012 AlwaysOn technologies and it contains Level 300 content. Please review the Target Audience information, and contact your Microsoft Services representative to ensure that this workshop is appropriate to the student's experience and technical expertise.

Technical Highlights

After attending this workshop, students will be able to:

- Understand HA and DR concepts.
- Gain the practical experience and confidence required to manage SQL Server 2012 AlwaysOn HA and DR solutions.
- Administer, maintain and troubleshoot SQL Server 2012 AlwaysOn HA and DR solutions.

Syllabus

Hardware

Requirements:

To participate in the course, students need to have access to a workstation that meets or exceeds the minimum hardware and software requirements listed below. If you are attending an open enrollment workshop, a workstation will be provided for you.

- Windows Server 2008 R2 with HyperV
- Internet connectivity, Internet Explorer 9.0 or newer
- Quad Core Intel/AMD 64-bit or emulated 64-bit processor with Virtualization Technology capabilities
- 16 gigabytes (GB) of RAM
- 250-GB hard disk drive, 7200 RPM
- Super VGA (SVGA) monitor (17 inch) or better

This workshop runs for four full days. Students should anticipate consistent start and end times for each day. Early departure on any day is not recommended.

Lesson 1: SQL Server High Availability and Disaster Recovery Technologies.

This lesson introduces several SQL Server 2012 HA and DR solutions that will improve the availability of servers or databases. In this lesson, students gain an understanding of SQL Server 2012 AlwaysOn Failover Cluster Instances (FCI), AlwaysOn Availability Groups (AG), Database Mirroring, Log Shipping and Replication. This lesson also compares the solutions and provides an overview of how they can be used together.

Lesson 2: Windows Server Failover Clustering.

This lesson provides a foundation for Windows Server 2008 R2 Failover Clustering to enable SQL Server administrators to build AlwaysOn FCIs and AGs on Windows Server 2008 R2 Failover Cluster. In this lesson, students get hands-on experience to build a two-node Windows Server 2008 R2 Failover Cluster.

Lesson 3: AlwaysOn Failover Cluster Instances.

This lesson explains the key enhancements in SQL Server 2012 AlwaysOn FCI. This lesson covers planning for AlwaysOn Failover Cluster Instance deployments and installation methods. Students get hands-on experience building a two-node SQL Server 2012 AlwaysOn FCI.

Lesson 4: AlwaysOn Failover Cluster Instance Administration and Maintenance.

In this lesson, students learn and perform common AlwaysOn FCI administration and maintenance tasks.

Lesson 5: AlwaysOn Failover Cluster Instance Troubleshooting.

This lesson covers troubleshooting techniques for installation and post installation of SQL Server AlwaysOn FCI, as well as common problems.

Lesson 6: AlwaysOn Availability Groups.

This lesson provides an overview of AlwaysOn AGs and discusses AG setup, architecture and client failover. In this lesson, students get hands-on experience to create and configure AlwaysOn AGs to provide high availability and disaster recovery for application databases.

Lesson 7: AlwaysOn Active Secondary Replicas.

AlwaysOn active secondary replicas enable database administrators to efficiently utilize all hardware in a high-availability SQL Server solution. This lesson discusses what AlwaysOn active secondary replicas are, how to create backups against them and maximize the hardware utilization by offloading read-only workloads to the secondary replicas. In this lesson, students get hands-on experience confirming active secondary replicas and read-only routing.

Syllabus Continued

Lesson 8: AlwaysOn Availability Groups Administration and Troubleshooting.

In this lesson, students learn and perform common AlwaysOn AG administration and troubleshooting.

Lesson 9: AlwaysOn Failover Cluster Instances and Availability Groups.

This lesson examines the advantages of SQL Server FCIs combined with AGs over SQL Server FCIs and database mirroring. It also discusses setup and configuration, client connectivity, and the disaster recovery process of the recommended architecture.

Lesson 10: AlwaysOn Failover Cluster Instance and Microsoft Distributed Transaction Coordinator.

This lesson introduces Microsoft Distributed Transaction Coordinator (MSDTC) and explains when it is needed for a clustered instance of SQL Server 2012. This lesson also outlines how to plan for and configure MSDTC in a Windows Server 2008 R2 failover cluster when one or more AlwaysOn FCIs are installed.

Lesson 11: Upgrading a SQL Server Failover Cluster Instance.

This lesson explains how to perform a rolling upgrade from a previous version of SQL Server. In this lesson, students will learn how they can perform a rolling upgrade with minimum downtime.

Lesson 12: AlwaysOn Best Practices.

This lesson discusses the best practices around implementing and maintaining SQL Server 2012 AlwaysOn FCIs and AGs.

Lesson 13: Windows 2012/R2 and SQL Server 2012 SP1 Cluster Enhancements.

This lesson covers some of the important enhancements to the Failover Clustering feature in Windows Server 2012 and Windows Server 2012 R2 releases that helps to further improve the AlwaysOn technology. This lesson also explains the Cross Cluster Migration feature introduced in SQL Server 2012 SP1 that facilitates Availability Group migration between clusters with minimal downtime.