SQL 2016 Always On High Availability

Varighet: 3 Days **Kurskode: M55246** **Version: A**

Beskrivelse:

This three-day instructor-led course is designed for database administrators and Windows engineers to familiarize them with the concepts in SQL AlwaysOn and High Availability. The course utilizes SQL 2016, but explains the differences from SQL 2012- SQL 2014.

Målgruppe:

Experienced DBAs, Windows Server pros, team leads.
We designed this course based on our experience of having taught hundreds of classes to literally thousands of students. We tried very hard to make the labs, of which there are over 30, very oriented to a single concept such as Adding a Replica or Transferring Logons. We did this because it is common in technical courses to write long labs with multiple exercises which in our opinion is not effective as they turn into “click streams”. We assume the student is new to the technology and that the instructor is knowledgeable in it.

Agenda:

- **After completing this course, students will be able to:**
- Understaand AlwasyOn High Availability
- Employ Server 2016 Failover Clustering
- Deploy SQL Failover Clusters
- Work with Availability Groups
- Perform maintenance
- Monitor and Troubleshoot Availability Groups

Forkunnskaper:

Before attending this course, students must have:

- Experience as SQL DBA
- Experience as Windows IT PRO

Innhold:

Module 1: IntroductionThis module explains the course and objectives.Lessons

- Course introduction

After completing this module, students will be able to:

- Course introductionModule 2: ALWAYSON AND HIGH AVAILABILITY CONCEPTS AND TERMINOLOGY This module will introduce the participants to the concepts and terminology used in the course.Lessons
- Concepts and Terminology
- Table of Availability
- High Availability
- Causes of Downtime
- Planned downtime
- Unplanned downtime
- Disaster Recovery
- Recovery Time Objective (RTO)
- Recovery Point Objective (RPO)
- Recovery Level Objective (RLO)
- Storage Area Networks (SAN)
- Edition Changes from SQL 2012
- SQL Server 2014 Changes
- SQL Server 2016 Changes
- Legacy Solutions prior to Always On
- Failover Cluster Instances
- Log Shipping
- A Typical Log Shipping Configuration
- Monitor Server
- Replication
- Database Mirroring
- Database Mirroring Terminology
- Principle
- Mirror
- Witness (red box in image above)
- Database Snapshots
- Limitations of legacy solutions:
- What do we mean by Always On?
- Table of Always On Comparison

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Understand Quorums

Understand Windows Failover

Understand Cluster Service

Understand Preferred Owners

- Understand Node MajorityModule 4: SQL 2016 FAILOVER CLUSTER INSTANCESIn this module we move from the generic failover clustering to the specifics involving SQL.Lessons
- Failover Cluster Instance
- As A FCI Appears To A ClientLab : Create A Configuration File By Running The Advanced Cluster Preparation WizardLab : Complete The SQL Cluster Installation On SQL1Lab : Install The Cluster On SQL2 And SQL3Lab : Test the

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Understand the Dashboard

Perform Logon and Job replication

- Module 7: Active Secondary Availability Group Actions Within Availability groups you may have Active secondary SQL which is covered and demonstrated in this module.Lessons
- Reporting with Secondary Replicas
- Configuring a Readable secondary
- Read-Only Routing
- Load Balancing
- Lab: Configure a Read-Only Secondary
- Database Backups with Secondary
- Steps of Backup Using secondary
- Backup Preference OptionsLab : Database Backup Using Secondary ReplicaLab : Configure a Read-Only secondary

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Perform backups with Secondary Replicas

- Configure a Read-Only ReplicaModule 8: MaintenanceIn this module you explore

- SQL Server 2016 Changes
- Legacy Solutions prior to Always On
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Terminology

SQL 2014 Changes

SQL2016 Changes

- Understand the role of the SANS

- Understanding Failover Clustering in Server 2016
- Statefull High Availability Solution
- Supported in both Standard and Datacenter
- Servers should run similar hardware
- Should run same edition
- Hyper-V best with datacenter
- Certified for Windows server logo
- Shared Storage
- Quorums
- Node Majority
- Node and Disk Majority configuration:
- Node and File Share Majority
- No Majority
- Configuration
- Cluster Networks Best Practices
- Connection to nodes to shared storage
- Private network for internal cluster
- Public network for client connections
- Cluster Aware Updating
- Virtual Machine Failover Clustering
- Preferred Owners
- Failover Failback
- Resources
- Dependences
- HeartbeatLab : Set up iSCSI ServerLab : Install the iSCSI VMSLab : Add Servers to Server Manager for Ease of ManagementLab : Add the Windows Cluster Feature to SQL1, SQL2 And SQL3Lab : Create the iSCSI Initators to add t

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Cluster Testing

Understand Configuration Files

- Install ClustersModule 5: SQL 2016 ALWAYS ON AVAILABILITY GROUPS Within the failover clusters of SQL are the concept of Availability groups and their enhancements with the release of SQL 2016 which is the focus of this m
- Availability Groups and Replicas
- Primary Replica
- Secondary Replicas
- Availability Group Listener
- Availability Mode
- Synchronous Commit Mode
- Asynchronous Commit Mode
- Failover Modes
- Automatic Failover Without Data Loss
- Automatic Failover Requirements:
- Manual
- Manual Failover Requirements
- Common TopologiesLab : Create a SQL Instance For The Availability GroupLab : Enable the SQL Server AlwaysOn Availability Group FeatureLab : Set Up For Availability GroupsLab : The Availability Group WizardLab : SSMS and

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maintenance procedures for AlwaysOn High Availability Groups.Lessons

- DBCC Checks
- Database Adding and RemovingLab : Add a DatabaseLab : Remove a DatabaseLab : Add a ReplicaLab : Remove a Replica

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Add and Remove Databases

- Add and Remove ReplicasModule 9: MONITORING AND TROUBLESHOOTING AVAILABILITY GROUPSIn this the final module you will learn how to monitor the clusters and Availability groups and various common troubleshooting procedures
- The Dashboard in Depth
- Events
- Policy Based Managemnt for Availability GroupsLab : Dashboard WizardsLab : Create an Extended Event SessionLab : Using T-SQLLab : Policy based management for Availability GroupsLab : Observe a Policy In ActionLab : Creat
- Migrating Settings by using Windows Easy Transfer
- Configuring a Reference Image of

introduce the participants to the concepts and terminology used in the course.Lessons

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ISCSI Setup

Work with Roles

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Enable AlwaysOn

- Understand and work with availability GroupsModule 6: The Dasboard Managing AlwaysOn High Availability groups wit SQL 2016 is accomplished with the Dashboard. This module will demonstrate the skills necessary for the acc
- The Dashboard
- How to view logs
- Using replication with Logins
- Using partially contained databasesLab : The DashboardLab : Replicating Logins and JobsLab : Contained or Partially Contained Databases

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Windows 7

- Configuring a Reference Image

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Change Owners

Work with Policies

- Work with Extended Events

Ytterligere informasjon:

For mer informasjon eller kursbooking, vennligst ring oss 22 95 66 00

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