

SQL 2012 and 2014 AlwaysOn Configuration Deep Dive

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Terminology and Architecture

- ▶ AlwaysOn
 - ▶ Marketing name for the high availability features in SQL Server
 - ▶ Includes
 - ▶ Fail over Cluster Instances (FCI)
 - ▶ Availability Groups (AG)
- ▶ Windows Server Failover Clustering (WSFC)
 - ▶ All of AlwaysOn uses WSFC

Windows Clustering

- ▶ What do I need to know as a DBA?
 - ▶ Management
 - ▶ Windows Failover Cluster Manager
 - ▶ PowerShell
 - ▶ Windows Domain
 - ▶ Joined
 - ▶ Authentication
 - ▶ SQL Server needs to run as a Domain Account
 - ▶ Connectivity
 - ▶ DNS Names and SQL Instances
 - ▶ Availability Group Listener
 - ▶ Ports
 - ▶ Quorum

Why do I care about Quorum?

- ▶ Quorum Controls if the Cluster is Online
- ▶ Majority of votes
 - ▶ What can vote?
 - ▶ Shared Disk
 - ▶ Servers - Active, Passive or Witness
 - ▶ File Share - Witness
 - ▶ Manual Voting override is available
- ▶ In Multi-Site configurations you need to decide where the voting members are located

Windows Server Version & Clustering

- ▶ Windows Server 2012 R2
 - ▶ Many useful updates to clustering
- ▶ Dynamic Quorum
 - ▶ Cluster automatically controls Voting
 - ▶ Adjusts the vote weight of each node
 - ▶ Allows for Last Man Standing
- ▶ Network Resiliency
 - ▶ Key to making sure the Cluster is healthy

Non-AlwaysOn branded Features that help High Availability

- ▶ Temp DB not on clustered disk
- ▶ SMB Disk Support
- ▶ Enhanced Health Detection
- ▶ Virtual Network Names used to connect to SQL
- ▶ Multi-Subnet Support
- ▶ Contained Databases (CDB)
- ▶ Automatic Page Repair

SQL Server Version Comparison

SQL 2012 Enterprise

- ▶ Multiple Node FCI
- ▶ Multi-Subnet Clusters
- ▶ AG's - 5 Copies of Data
 - ▶ 4 Secondaries Total
 - ▶ 2 Synchronous
 - ▶ Up to 4 Asynchronous
 - ▶ 2 Automatic Failover Targets
- ▶ Readable Secondaries

SQL 2014 Enterprise

- ▶ Multiple Node FCI
- ▶ Multi-Subnet Clusters
- ▶ AG's - 8 Copies of Data
 - ▶ 7 Secondaries
 - ▶ 2 Synchronous
 - ▶ Up to 7 Asynchronous
 - ▶ 2 Automatic Failover Targets
- ▶ Readable Secondaries
 - ▶ Azure Replica
- ▶ Backup to Azure
- ▶ Site Survivability for Read Intent

FCI or AG?

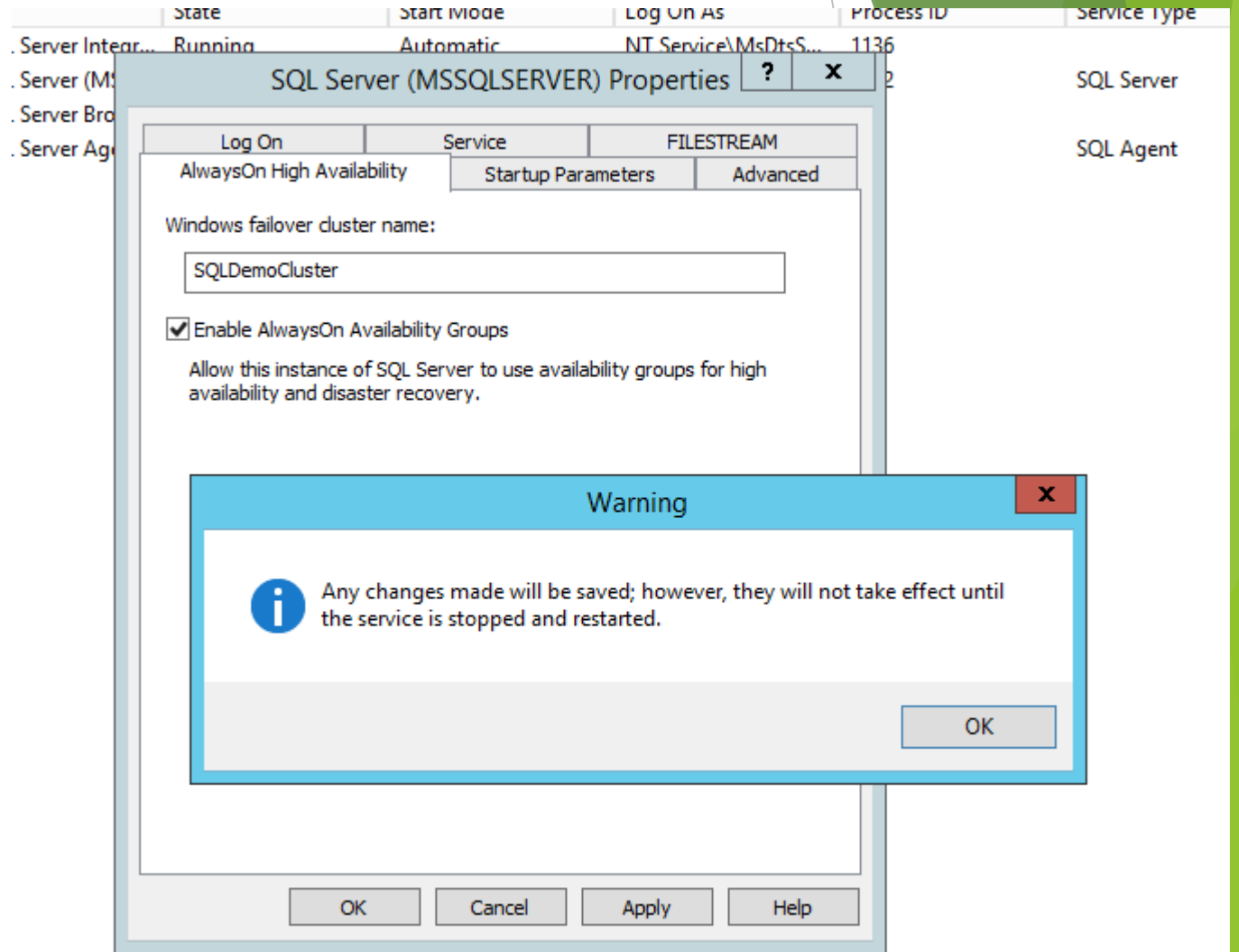
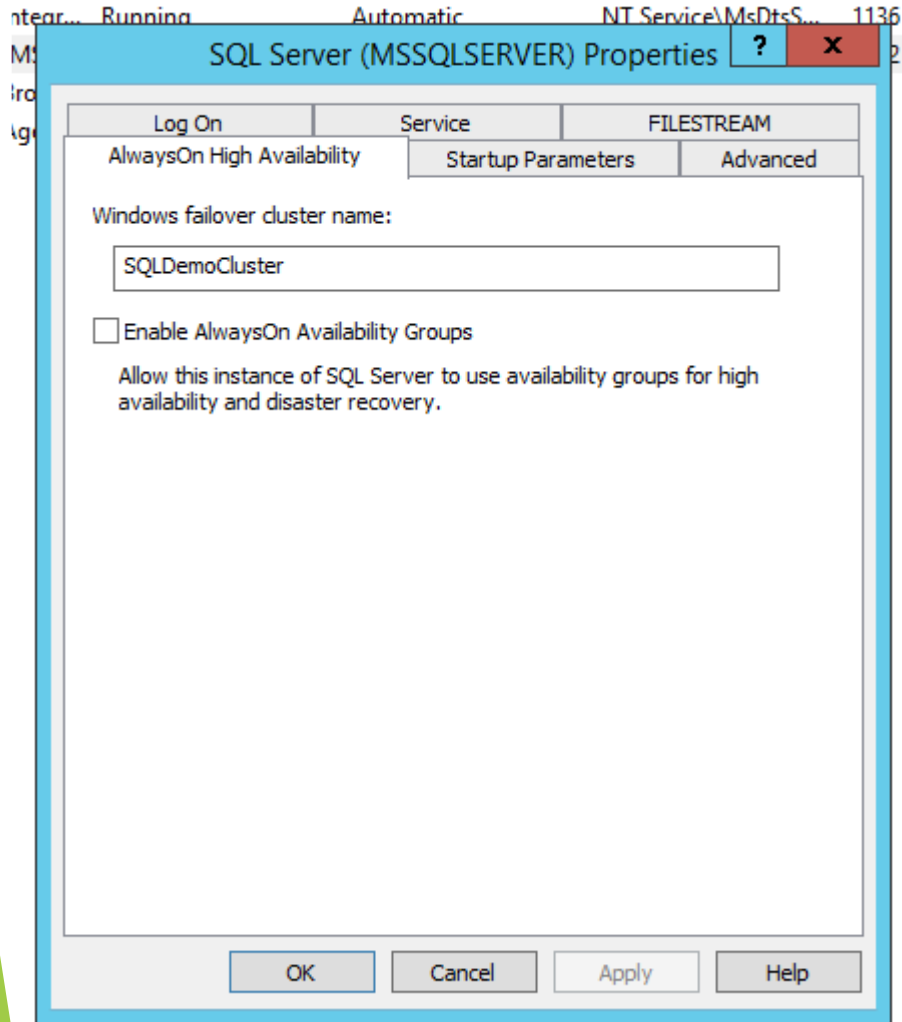
- ▶ If you need MSDTC, AGs don't support MSDTC
- ▶ AGs require separate Disk for each Instance
- ▶ AGs can fail from node to node faster than FCI
- ▶ Synchronous AGs require transactions to commit on both servers
- ▶ AG Secondaries can do workload
 - ▶ Backup & Read-only

Answer - It depends on your needs
You might want to combine them!

AG Gotcha's

- ▶ SQL Server Service Accounts
 - ▶ Accounts must have correct permissions
- ▶ Database File Paths
 - ▶ Simplest if it is the same on all servers
- ▶ Connectivity
 - ▶ Correct client for some new features to perform optimal
 - ▶ Syntax slightly different with different clients
- ▶ Feature Enablement
 - ▶ Done after the server is in a cluster
 - ▶ Needs SQL Engine service restarted to enable

Enabling AGs



DEMO's

Useful Reference Links

- ▶ SQL AlwaysOn Team Blog

- ▶ <http://blogs.msdn.com/b/sqlalwayson/>

- ▶ SQL Server Customer Advisory Team

- ▶ <http://blogs.msdn.com/b/sqlcat/>

- ▶ SQL Server 2014 Technet Reference

- ▶ <http://technet.microsoft.com/en-US/sqlserver/dn135309>

- ▶ SQL High Availability on MSDN

- ▶ <http://social.msdn.microsoft.com/Forums/en-US/home?forum=sqlhadr>

Thanks!

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