# SQL Server 2012: Nonclustered Columnstore Indexes

## Module 6: Deployment Planning

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# Module Introduction

- While implementation of the nonclustered columnstore indexes is rather easy on the surface, there are several areas to consider in order to make sure your deployment is successful

- This module will detail the various things you should consider prior to deploying nonclustered indexes, including a review of some of the improvements coming in vNext of SQL Server

# Interoperability Limitations

- **The following features are not compatible with columnstore indexes:**
  - Change Data Capture, Change Tracking
  - Replication
  - FILESTREAM/FileTable
  - Columnstore indexes are not suggested as part of the Query Optimizer's "missing index" functionality or by the DTA tool

# Index Creation Memory Requirements (1)

- **Rule of thumb for creation duration is 1.5x an equivalent non-columnstore index**
- **More schedulers involved, the better, but that also translates to increased memory grant requirements**
- **Even if you're not "using" Resource Governor, you may need to alter the default workload group to bump up the default grant percent**
  - Or reduce the MAXDOP for the index creation

# Index Creation Memory Requirements (2)

- **Contributing factors to memory requirements:**
  - Degree of parallelism
  - Number of columns
  - Number of string-based columns

# Deployment Considerations (1)

- Enterprise Edition of SQL Server 2012
- Identify candidate tables
- Identify candidate columns
- Determine data modification strategy
- Identify indexes that are no longer needed
- Ensure sufficient storage for existing regular indexes and new nonclustered columnstore indexes

# Deployment Considerations (2)

- Test index creation to ensure sufficient memory
- Do workloads use the columnstore index when expected?
- Do workloads use the columnstore index when they shouldn't?
- Do workloads use batch or row execution mode?
- Do you need to refactor any queries to support batch execution mode?

# vNext *Clustered* Columnstore Indexes

- **Announced at the 2012 PASS Summit**
  - Will be included in PDW version 2 and vNext of the "Box" product
- **Supports INSERT, UPDATE, DELETE, MERGE, BULK INSERT**
- **Removes the need for a separate heap or clustered index**
- **Removes the various batch-execution mode inhibitors**
- **Expands data type options (all but CLR and "max" data types)**

# Course Summary

- **We covered:**
  - Nonclustered columnstore index fundamentals
  - How to leverage batch-execution mode
  - How to benefit from segment elimination
  - How to manage data modifications
  - How to properly plan for deployment

- **Thanks for watching!**