SQL Server: Maintenance Plans

Module 2: Approaches to Database Maintenance

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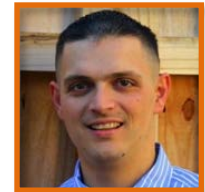
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Introduction

- **Multiple approaches exist for performing routine maintenance tasks in SQL Server, each with its own benefits and drawbacks**

- **When selecting the best approach for the specific needs of your application/database you should consider future supportability and reusability**

- **In this module we'll cover:**
  - Database Maintenance Plans
  - SSIS Packages
  - Custom Transact-SQL scripts
  - PowerShell scripts

Core Maintenance Tasks

- **Any approach to database maintenance should include a minimum set of core tasks to maximize database availability and performance**
  - Backups – minimize the risks of data loss from problems occurring and provide the ability to recover from disasters
  - Consistency checks – proactively check for problems and/or corruption of the database to minimize risks of data loss
  - Index maintenance – rebuilding and/or reorganizing indexes to remove logical fragmentation or improve page density
  - Statistics updates – reduce the risk of sub-optimal execution plans based on old/stale statistics caused by data changes
  - Cleanup tasks – delete old backup files, delete maintenance task log files, and purge history tables in msdb
- **Note that this list does not include performing shrink operations**
  - These should not be performed as regular operations

Database Maintenance Plans

- **Benefits**
  - Simplifies maintenance configurations through limited options for each of the most common tasks in the Maintenance Plan Wizard
  - Fully integrated support in Management Studio simplifies creating and modifying tasks and schedules to meet business requirements

- **Limitations**
  - Not every task provided should be a regular part of maintenance operations
  - Default configurations often perform operations that are unnecessary, for example rebuilding all indexes in all databases even if they aren't actually fragmented, or updating statistics without any analysis
  - Maintenance Plans are not exportable to allow for ease of reuse across multiple servers

SSIS Packages

- **Benefits**
  - Simplifies maintenance configurations through limited options for each of the most common tasks
  - Package configurations can be saved and redeployed to multiple servers, or a single package can perform maintenance on multiple servers using expressions and configuration variables
- **Limitations**
  - Not every task provided should be a regular part of maintenance operations
  - Default configurations often perform operations that are unnecessary, for example rebuilding all indexes in all databases even if they aren't actually fragmented, or updating statistics without analysis
  - Does not create scheduled tasks in SQL Server Agent automatically
  - Packages are not manageable within Management Studio and require BIDs (Business Intelligence Development Studio) for changes

Custom Transact-SQL Scripts

- **Benefits**
  - Provides full customization of maintenance configurations and access to all available options for common tasks
  - Minimizes and/or eliminates unnecessary operations through programmatic analysis of index fragmentation, page density, or data change
  - Free scripts exist online that handle most maintenance requirements
  - Can handle VLDB configurations by tracking work progress within maintenance windows to divide the work across multiple days
  - Easy transportability of scripts for standard configurations across multiple servers
- **Limitations**
  - Requires understanding Transact-SQL and maintenance requirements to implement custom configurations
  - Requires manually creating scheduled tasks in SQL Server Agent

PowerShell Scripts

- **Benefits**
  - Provides the same benefits as Transact-SQL scripts but also includes the ability to centralize all maintenance tasks using Remoting to manage remote servers

- **Limitations**
  - Requires an understanding of PowerShell scripting, SQL Management Objects, and/or Transact-SQL
  - Requires manually creating scheduled tasks in SQL Server Agent or Windows Task Manager

Summary

- **A number of options exist for performing maintenance tasks in SQL Server allowing simple configurations for managing small to medium sized databases under 100-GB in size up to complex configurations for multi-TB databases**

- **This course will look at each of the available options in more detail and the considerations around configuring maintenance**

- **The next module will look at:**
  - Configuring SQL Agent settings