80428: SQL Optimization for Microsoft Dynamics AX 2012

About this Course

This two-day instructor-led course provides students with the knowledge and skills to configure and maintain the performance of Microsoft Dynamics AX 2012.

Audience Profile

This course is intended for experienced Dynamics AX programmers with a minimum of 2 years development experience.

At Course Completion

After completing this course, students will be able to:

- Create a plan for Microsoft Dynamics AX 2012 infrastructure.
- Configure parameters to improve the performance of Microsoft Dynamics AX 2012.
- Create Maintenance plans in SQL Server to maintain the performance of Microsoft Dynamics AX 2012.
- Design data structures in Microsoft Dynamics AX 2012 to improve their performance.
- Evaluate table design structure in Microsoft Dynamics AX 2012 to improve performance.
- Tune indexes.
- Tune queries.
- Review X++ best practices that affect performance.
- Define a performance tuning approach.
- Understand the tools available to monitor and solve performance problems.

Prerequisite

Before attending this course, students must have attended the following courses:

- Development IV in Microsoft Dynamics AX 2012
- Installation and Configuration for Microsoft Dynamics AX 2012
Course Outline

Module 1: Infrastructure and Capacity Planning for Microsoft Dynamics AX 2012
This module provides the high level information that is required for an administrator to perform sizing for an instance of Microsoft Dynamics AX 2012. To perform this sizing, an administrator must combine his or her understanding of the Microsoft Dynamics AX 2012 architecture, and the performance characteristics with relevant information on how Microsoft Dynamics AX 2012 will be used.
In this module, you learn the fundamentals of the Microsoft Dynamics AX 2012 system architecture. Sizing guidelines and benchmarks are included to use as references. Additionally, the guidelines and benchmarks are provided with a sample set of questions to ask a company that relate to performance.

Lessons
- Microsoft Dynamics AX 2012 Architecture Review
- Sizing Questions
- Hardware Sizing Resources
- Moving from Theory to Practice

Module 2: Configuration Best Practices
This module discusses many of the settings that affect the performance of Microsoft SQL Server 2012, the Microsoft Dynamics AX 2012 client, and the Microsoft Dynamics AX 2012 Application Object Server (AOS). This module also describes how to create maintenance plans so that the database continues to run more efficiently.

Lessons
- SQL Server Configuration
- Microsoft Dynamics AX 2012 Settings
- Design Effective SQL Server Maintenance Plans

Lab: Verify Settings
- Verify Breakpoints are Turned Off in Production.

Lab: Database Maintenance
- Set up a nightly maintenance plan to perform a full backup of the production Microsoft Dynamics AX 2012 Database.

Module 3: Database Design Considerations
This module describes design techniques that can improve database performance in Microsoft Dynamics AX 2012.

Lessons
- Create and Maintain Database Objects
- Data Types
- Table Caching
- Table Inheritance
- Temporary Tables
- Indexing
- Concurrency Control
- Data Compression

Lab: Table Caching
Module 4: X++ SQL Code Best Practices

This module discusses the two primary ways to make a single query run faster—index tuning and query tuning. Index tuning improves a query’s performance by adding indexes, and query tuning improves a query’s performance by rewriting the query.

Lessons

- Index Tuning
- Query Tuning

Lab: Index Tuning Lab: Query Tuning

After completing this module, students will be able to:

- Review how to add indexes to improve performance.
- Review how to modify a query in Microsoft Dynamics AX to improve performance.

Module 5: Microsoft Dynamics AX 2012 X++ Coding for Performance Best Practices

In this module, you will learn the common performance design patterns and the correct code placement when you develop customizations for Microsoft Dynamics AX 2012. You will learn how to develop batch jobs and consider tasks with parallelism, and you will also explore the techniques to use to limit client-side running code on forms.

Lessons

- Development Practices to Do and Not Do
- Code Placement
- Batching and Batch Strategies
- Form Considerations
- Response Time Expectations

Module 6: Post-Implementation: Monitoring and Performance

This module describes how to monitor and tune the performance of Microsoft Dynamics AX 2012.

Lessons

- Performance Tuning Approach
- Locking, Blocking, and Deadlocks
- SQL Server Reporting Services and Enterprise Portal Performance Tuning
- Performance Analyzer for Microsoft Dynamics AX (DynamicsPerf)
- Microsoft Dynamics AX Trace Parser
- Microsoft Dynamics AX Diagnostic Framework (Beta)
- Windows Performance Monitor (PerfMon)
- Other Tools
- Tools to be Cautious About
- CIL

Lab: Trace Parser