

Designing a Microsoft SQL Server 2005 Infrastructure

- **Course Number:** 2786
- **Length:** 2 Day(s)

Certification Exam

This course will help you prepare for the following Microsoft Certified Professional exams:

- **MCITP Exam 70-443:** Designing a Database Server Infrastructure by Using Microsoft SQL Server 2005

Course Overview

This two-day course provides database administrators working in enterprise environments with the knowledge and skills to design a Microsoft SQL Server 2005 database infrastructure. The course focuses on the development of strategies for data archiving, consolidation, distribution, and recovery. The course also stresses the importance of capacity analysis and emphasizes the tradeoffs that need to be made during design.

This is the first course in the database administration curriculum and will serve as the entry point for other courses in the curriculum.

Prerequisites

Before attending this course, students must:

- Understand the tradeoffs among the different redundant storage types. For example, what RAID levels mean, and how they differ from Storage Area Networks (SAN).
- Understand how replication works and how replication is implemented.
- Be familiar with reading user requirements and business-need documents. For example, development project vision/mission statements or business analysis reports.
- Have some knowledge of how queries execute. Must be able to read a query execution plan and understand what is happening.
- Have basic knowledge of the dependencies between system components.
- Be able to design a database to third normal form (3NF) and know the tradeoffs when backing out of the fully normalized design (denormalization) and designing for performance and business requirements in addition to being familiar with design models, such as Star and Snowflake schemas.
- Have monitoring and troubleshooting skills.
- Have knowledge of the operating system and platform. That is, how the operating system integrates with the database, what the platform or operating system can do, and how the interaction between the operating system and the database works. For example, how integrated authentication interacts with Active Directory directory service.
- Have knowledge of application architecture. That is, how applications can be designed in three layers, what applications can do, interaction between applications and the database, interaction between the database and the platform or operating system.

Must already know how to use:

- A data modeling tool.
- Microsoft Office Visio (to create infrastructure diagrams)
- Be familiar with SQL Server 2005 features, tools, and technologies.
- Have a Microsoft Certified Technology Specialist: Microsoft SQL Server 2005 credential or equivalent experience.

In addition, it is recommended, but not required, that students have completed:

- Course 2778: Writing Queries Using Microsoft SQL Server 2005 Transact-SQL.
- Course 2779: Implementing a Microsoft SQL Server 2005 Database.
- Course 2780: Maintaining a Microsoft SQL Server 2005 Database

Audience

This course is intended for current professional database administrators who have three or more years of on-the-job experience administering SQL Server database solutions in an enterprise environment.

Course Outline

- **Module 1 - Analyzing Capacity Needs**
- Lesson 1: Storage Requirements
- Determining Current Storage Capacity
- Determining the Impact of Regulatory Requirements
- Estimating Projected Storage Requirements
- Lesson 2: CPU Requirements
- Analyzing Current CPU Performance
- Choosing a Processor Type
- Forecasting CPU Needs
- Lesson 3: Memory Requirements
- Determining Current Memory Usage
- Forecasting Memory Needs
- Lesson 4: Network Requirements
- Identifying the Database Components of the Topology
- Analyzing Current Database Network Traffic
- Estimating Network Traffic Growth for Database Servers
- Lab 1 Introduction
- Module 1 - Review
- **Module 2 - Data Archiving**
- Lesson 1: Requirements That Affect Data Archiving
- Reasons for Archiving Data
- Determining How Much Data Can Be Archived
- Determining the Accessibility Requirements of Archived Data
- Lesson 2: Structure of Archival Data

- Structuring Archival Data
- Structure of Archival Data
- Lesson 3: Creating a Data Archival Plan
- Creating a Data Archival Plan
- Deciding What Data to Archive
- Selecting a Storage Format for Archival Data
- Developing an Archival Data Movement Strategy
- Lab 2 Introduction
- Module 2 - Review
- **Module 3 - Database Server Consolidation**
- Lesson 1: Overview
- Benefits
- Risks
- Lesson 2: Strategy for SQL Server Instances
- Installing Multiple Instances
- Multiple Instance Design
- Lesson 3: Database Server Consolidation Plan
- Designing a Consolidation Plan
- Creating a Consolidation Plan
- Lab 3 Introduction
- Module 3 - Review
- **Module 4 - Data Distribution**
- Lesson 1: Data Distribution Tools
- Why Distribute Data?
- Considerations
- Tools
- Lesson 2: Data Distribution Plans Using Replication
- Creating a Data Distribution Plan
- Gathering Requirements for Data Distribution
- Guidelines for Creating a Data Distribution Plan
- Lab 4 Introduction
- Module 4 - Review
- **Module 5 - Designing a Database Server Infrastructure**
- Lesson 1: Determining the Current
- Infrastructure
- Assessing the Quality of Database Designs
- Assessing the Quality of Database Server Configurations
- Assessing Database Storage
- Lesson 2: Gathering Requirements for Changing an Infrastructure
- Technical Requirements
- Business Requirements
- Gathering Infrastructure Requirements
- Lesson 3: Designing Modifications to an Infrastructure
- Database Server Infrastructure Design
- Selecting Database Server Hardware and Software
- Establishing Database Design and Implementation Policies

- Establishing Administrative Policies
- Lab 5 Introduction
- Module 5 - Review
- **Module 6 - Data Recovery**
- Lesson 1: Backup and Restore Strategies
- Designing a Backup and Restore Strategy
- Analyzing Business Requirements for Data Recovery
- Categorizing Databases for Backup and Restore
- Protecting Backups
- Lesson 2: Creating Disaster Recovery Plans
- Recommended Components of a Disaster Recovery Plan
- Creating a Disaster Recovery Decision Tree
- Documenting a Decision Tree
- Best Practices
- Lab 6 Introduction
- Module 6 - Review
- **Module 7 - Establishing Database Conventions and Standards**
- Lesson 1: Database Naming Conventions
- Problems with Common Naming Conventions
- Establishing Database Naming Conventions
- Lesson 2: Database Standards
- Types of Standards
- SQL Coding Standards
- Database Access Standards
- Deployment Process Standards
- Lab 7 Introduction
- Module 7 - Review
- Closure