Azure SQL Data Warehouse Performance Tuning and Optimization

Course Duration: 16 Hours **Course Code: AZ-DW-OPT-301**

1. Course Overview

This course focuses on optimizing performance in Azure SQL Data Warehouse (Azure Synapse Analytics). It covers query optimization, workload management, indexing strategies, and performance monitoring. Learners will gain practical skills to enhance data warehouse efficiency, reduce query execution time, and manage large-scale data workloads effectively.

2. What You'll Learn

- Understand Azure SQL Data Warehouse architecture
- Optimize query performance and execution plans
- Implement indexing and partitioning strategies
- Manage workloads and resource classes
- Monitor performance using built-in tools
- Troubleshoot performance bottlenecks
- Apply best practices for data distribution

3. Target Audience

- Data Engineers
- Database Administrators (DBAs)

- Data Analysts working with large datasets
- Cloud Professionals working on Azure
- IT Professionals involved in data warehousing

4. Pre-Requisites

- Basic knowledge of SQL and databases
- Understanding of data warehousing concepts
- Familiarity with Microsoft Azure fundamentals
- Experience with relational database systems (preferred)

5. Course Content

Module 1: Introduction to Azure SQL Data Warehouse

- Overview of Azure Synapse Analytics
- Architecture and components

Module 2: Data Distribution & Partitioning

- Distribution methods (Hash, Round-robin, Replicated)
- Partitioning strategies

Module 3: Query Performance Optimization

- Query execution plans
- Statistics and indexing
- Query tuning techniques

Module 4: Workload Management

- Resource classes and concurrency
- Workload isolation and prioritization

Module 5: Monitoring & Troubleshooting

- Performance monitoring tools
- Identifying bottlenecks
- Troubleshooting slow queries

Module 6: Best Practices & Optimization Techniques

- Data loading performance
- Maintenance strategies
- Cost-performance optimization

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