

Microsoft Data Platform Bootcamp Courses

**Bootcamp Title – MCSA: Data Platform (1 Cert)**
Number of Days – 6
Number of Exams – 2
Number of Certifications – 1
Cost - $5,595

Certifications:

MCSA: SQL Server 2014

Exams:

**70-464:** Deploying Microsoft SQL Server Databases

**70-465:**Designing Database Solutions for Microsoft SQL Server

Course Description:

The MCSE Data Platform certification boot camp is a 6 day comprehensive deep dive into the SQL Server covering topics such as implementing, developing and designing. This instructor led face to face training camp will teach you the skills needed to support a Data Platform environment.

Class Objectives (*Following information customized from Microsoft Learning Test Objectives)*

**Course Outline**

**Module 1: Introduction to Database Development**

This module introduces database development and the key tasks that a database developer would typically perform.

**Lessons**

* Introduction to the SQL Server Platform
* SQL Server Database Development Tasks

**Lab : Introduction to Database Development**

After completing this module, you will be able to:

* Describe the architecture and editions of SQL Server 2012.
* Work with SQL Server tools.
* Configure SQL Server Services.

**Module 2: Designing and Implementing Tables**

This module explains how to design, create, and alter tables. Also it focusses on working with schemas.

**Lessons**

* Designing Tables
* Data Types
* Working with Schemas
* Creating and Altering Tables
* Partitioning Data
* Compressing Data

**Lab : Designing and Implementing Tables**

After completing this module, you will be able to:

* Design Tables.
* Work with Schemas.
* Create and Alter Tables.

**Module 3: Ensuring Data Integrity through Constraints**

This module explains how to enforce data integrity, and implement domain integrity to maintain high quality data. Also it focusses on implementing Entity and Referential Integrity.

**Lessons**

* Enforcing Data Integrity
* Implementing Domain Integrity
* Implementing Entity and Referential Integrity

**Lab : Ensuring Data Integrity through Constraints**

After completing this module, you will be able to:

* Explain the available options for enforcing data integrity and the levels at which they should be applied.
* Implement domain integrity.
* Implement entity and referential integrity.

**Module 4: Introduction to Indexing**

This module describes the concept of an index and discusses selectivity, density and statistics. It covers appropriate data type choices and choices around composite index structures.

**Lessons**

* Core Indexing Concepts
* Data Types and Indexes
* Single Column and Composite Indexes

**Lab : Implementing Indexes**

After completing this module, you will be able to:

* Describe core indexing concepts.
* Choose appropriate data types for indexes.
* Design and implement clustered and nonclustered indexes.

**Module 5: Designing Optimized Index Strategies**

This module explains covering indexes and the INCLUDE clause as well as the use of padding, hints and statistics. The module also covers the use of the Database Engine Tuning Advisor and index-related dynamic management views to assess indexing strategies.

**Lessons**

* Covering Indexes
* Managing Indexes
* Working with Execution Plans
* Using the DTE

**Lab : Designing Optimized Index Strategies**

After completing this module, you will be able to:

* Describe the elements of an execution plan.
* Design effective indexing strategies.
* Monitor your system to assess the performance of your indexing strategy.

**Module 6: Columnstore Indexes**

This module explains columnstore indexes and how to use them to maximize the performance and scalability of database applications.

**Lessons**

* Introduction to Columnstore indexes
* Creating Columnstore Indexes
* Working with Columnstore Indexes

**Lab : Using Columnstore Indexes**

After completing this module, you will be able to:

* Create columnstore indexes.
* Describe the considerations for updating tables with non-clustered columnstore indexes.

**Module 7: Designing and Implementing Views**

This module introduces Views, and explains how to create and manage Views. Also it focuses on the performance consideration for Views.

**Lessons**

* Introduction to Views
* Creating and Managing Views
* Performance Considerations for Views

**Lab : Designing and Implementing Views**

After completing this module, you will be able to:

* Explain the role of views in database development.
* Implement views.
* Describe the performance related impacts of views.

**Module 8: Designing and Implementing Stored Procedures**

This module describes the potential advantages of the use of stored procedures along with guidelines on creating them.

**Lessons**

* Introduction to Stored Procedures
* Working With Stored Procedures
* Implementing Parameterized Stored Procedures
* Controlling Execution Context

**Lab : Designing and Implementing Stored Procedures**

After completing this module, you will be able to:

* Describe the role of stored procedures and the potential benefits of using them.
* Work with stored procedures.
* Implement parameterized stored procedures.
* Control the execution context of a stored procedure.

**Module 9: Designing and Implementing User-Defined Functions**

This module explains how to design and implement user-defined functions that enforce business rules or data consistency, and modify and maintain existing functions written by other developers.

**Lessons**

* Overview of Functions
* Designing and Implementing Scalar Functions
* Designing and Implementing Table-Valued Functions
* Implementation Considerations for Functions
* Alternatives to Functions

**Lab : Designing and Implementing User-Defined Functions**

After completing this module, you will be able to:

* Design and implement scalar functions.
* Design and implement table-valued functions.
* Describe implementation considerations for functions.
* Describe alternatives to functions.

**Module 10: Responding to Data Manipulation via Triggers**

This module, explains what DML triggers are and how they enforce data integrity. Also it focusses on the different types of triggers available, and how to define triggers in a database.

**Lessons**

* Designing DML Triggers
* Implementing DML Triggers
* Advanced Trigger Concepts

**Lab : Responding to Data Manipulation via Triggers**

After completing this module, you will be able to:

* Design DML triggers.
* Implement DML triggers.
* Explain advanced DML trigger concepts.

**Module 11: Using In-Memory Tables**

This module covers the creation of in-memory tables and native stored procedures and discusses the advantages and disadvantages of using in-memory tables.

**Lessons**

* In-Memory Tables
* Native Stored Procedures

**Lab : In-Memory OLTP**

After completing this module, you will be able to:

* Design and implement memory-optimized tables.
* Create native stored procedures.

**Module 12: Implementing Managed Code in SQL Server 2014**This module explains how to use CLR integrated code to create user-defined database objects that are managed by the .NET Framework.

**Lessons**

* Introduction to SQL CLR Integration
* Importing and Configuring Assemblies
* Implementing SQL CLR Integration

**Lab : Implementing Managed Code in SQL Server 2014**

After completing this module, you will be able to:

* Explain the importance of SQL Server CLR Integration.
* Import and configure assemblies.
* Implement objects that have been created within .NET assemblies.

**Module 13: Storing and Querying XML Data in SQL Server**

This module introduces XML and shows how XML data can be stored within SQL Server and then queried, including queries written in a language called XQuery.

**Lessons**

* Introduction to XML and XML Schemas
* Storing XML Data and Schemas in SQL Server
* Implementing the XML Data Type
* Using the T-SQL FOR XML Statement
* Getting Started with XQuery

**Lab : Storing and Querying XML Data in SQL Server 2014**

After completing this module, you will be able to:

* Describe XML and XML schemas.
* Store XML data and associated XML schemas in SQL Server.
* Implement the XML data type within SQL Server.
* Use the T-SQL FOR XML Statement.
* Work with basic XQuery queries.
* Shred XML to a relational form.

**Module 14: Working with SQL Server 2014 Spatial Data**

This module introduces Spatial Data, and explains how to work with SQL Server Spatial Data Types.

**Lessons**

* Introduction to Spatial Data
* Working with SQL Server Spatial Data Types
* Using Spatial Data in Applications

**Lab : Working with SQL Server Spatial Data**

After completing this module, you will be able to:

* Describe the importance of spatial data and the industry standards related to it.
* Explain how to store spatial data in SQL Server.
* Perform calculations on and query SQL Server spatial data.

|  |
| --- |
| **Module 1: Introduction to Enterprise Data Architecture**As organizations grow to enterprise scale, their IT infrastructure requirements become more complex and the network environment often includes an increasing number of servers, client computers, network segments, and other components. Because data is fundamental to most IT operations, careful thought must be given to the provisioning and management of databases across the enterprise.**Lessons*** Considerations for Enterprise Data
* Assessing an Existing Infrastructure

**Lab : Assessing an Existing Enterprise Data Infrastructure**After completing this module, you will be able to:* Describe the considerations for enterprise data infrastructure.
* Use the MAP Toolkit to assess an existing enterprise data environment.

**Module 2: Multi-Server Configuration Management**When an enterprise infrastructure includes multiple database servers, it can be useful to standardize and enforce configuration settings in order to ensure compliance and manageability. This module discusses Policy-Based Management in SQL Server, and describes how it can be used together with enterprise configuration management tools such as Microsoft System Center to aid enterprise database server management.**Lessons*** Policy-Based Management
* Microsoft System Center

**Lab : Planning and Implementing Policy-Based Management**After completing this module, you will be able to:* Implement Policy-Based Management
* Describe how System Center can be used to manage database infrastructure

**Module 3: Monitoring SQL Server 2014 Health**This module describes Data Collector and the SQL Server Utility Control Point (UCP), two features of SQL Server 2014 that enable you to perform in-depth health monitoring across the enterprise.**Lessons*** Introduction to Health Monitoring
* Data Collector
* SQL Server Utility

**Lab : Monitoring SQL Server Health**After completing this module, you will be able to:* Describe the options for multi-server health monitoring in SQL Server 2014.
* Describe and configure Data Collector.
* Describe and configure SQL Server Utility.

**Module 4: Consolidating Database Workloads with SQL Server 2014**This module provides an overview of the benefits of consolidating database workloads by using SQL Server 2014, and describes the different options for implementing a consolidation strategy. It also describes how you can manage a consolidated infrastructure in various scenarios.**Lessons*** Considerations for Database Server Consolidation
* Managing Resources in a Consolidated Database Infrastructure

**Lab : SQL Server Consolidation**After completing this module, you will be able to:* Describe the considerations for consolidating databases and database servers.
* Explain the options for managing resources in various consolidation scenarios.

**Module 5: Introduction to Cloud Data Solutions**Cloud computing has risen to prominence very rapidly within the world of IT, and many organizations have implemented or are planning to implement cloud-based solutions that encompass all or part of their infrastructure. This module describes some of the fundamental concepts of cloud computing and outlines how to include SQL Server 2014 in a private cloud infrastructure.**Lessons*** Overview of Cloud Computing
* SQL Server in a Private Cloud

**Lab : Preparing a SQL Server Installation in a Virtual Machine Template**After completing this module, you will be able to:* Explain the fundamental concepts behind cloud computing, and describe the technologies that underpin Microsoft cloud solutions.
* Describe how to provide SQL Server based data services in a private cloud infrastructure.

**Module 6: Introduction to High Availability in SQL Server 2014**Maintaining highly available database services is vital in a 24 hour operating environment. SQL Server 2014 includes many features that can help organizations to deliver the levels of service they require to drive their businesses. This module explains the different ways that you can implement high availability by using SQL Server 2014. It also describes how to use log shipping to promote resilience for individual user databases.**Lessons*** High Availability Concepts and Options in SQL Server 2014
* Log Shipping

**Lab : Using Log Shipping**After completing this module, you will be able to:* Describe the core concepts and options for implementing high availability in SQL Server 2014.
* Describe how to implement high availability for individual databases by using log shipping.

**Module 7: Clustering with Windows Server and SQL Server 2014**SQL Server 2014 is closely integrated with the Windows Server Failover Clustering feature in Windows Server 2012 and Windows Server 2012 R2, enabling you to create enterprise-class clustering solutions that can deliver comprehensive high availability and disaster recovery solutions. This module explains how Windows Server Failover Clustering and SQL Server AlwaysOn Failover Cluster Instances work, and describes how to implement clustering to protect service availability.**Lessons*** Introduction to Windows Server Failover Clustering
* SQL Server AlwaysOn Failover Cluster Instances

**Lab : Implementing an AlwaysOn Failover Cluster Instance**After completing this module, you will be able to:* Describe the key benefits and features of Windows Server Failover Clustering.
* Describe how to use SQL Server AlwaysOn Failover Cluster Instances to maintain high availability for SQL Server instances.

**Module 8: AlwaysOn Availability Groups**SQL Server 2014 includes AlwaysOn Availability Groups to provide high availability for groups of databases. This module describes AlwaysOn Availability Groups in SQL Server 2014, explains the key concepts of AlwaysOn Availability Groups, and describes how you can use them to maintain highly available databases.**Lessons*** Introduction to AlwaysOn Availability Groups
* Working with AlwaysOn Availability Groups
* Considerations for Using AlwaysOn Availability Groups

**Lab : Implementing and Testing an AlwaysOn Availability Group**After completing this module, you will be able to:* Describe the fundamental concepts and terminology for AlwaysOn Availability Groups.
* Explain how work with AlwaysOn Availability Groups.

**Module 9: Planning High Availability and Disaster Recovery**This module describes the planning considerations for high availability and disaster recovery, and provides common implementation scenarios for on-premises, hybrid, and Microsoft Azure environments.**Lessons*** High Availability and Disaster Recovery with SQL Server 2014
* SQL Server High Availability and Disaster Recovery Solutions

**Lab : Planning High Availability and Disaster Recovery**After completing this module, you will be able to:* Explain the considerations for implementing high availability and disaster recovery by using SQL Server 2014, and describe some common scenarios.
* Explain the considerations for implementing high availability and disaster recovery by using SQL Server 2014 and Microsoft Azure services, and describe some common scenarios.

**Module 10: Replicating Data**SQL Server replication enables you to copy and distribute data and database objects to other computers and locations in your enterprise, which can improve availability and scalability. This module provides an overview of SQL Server replication and explains the agents used to implement replication. It also describes some common replication scenarios, how to design an appropriate replication system for your requirements, and how to monitor and troubleshoot replication.**Lessons*** SQL Server Replication
* Planning Replication

**Lab : Planning and Implementing Replication**After completing this module, you will be able to:* Describe SQL Server replication.
* Identify an appropriate replication solution for a particular scenario.
 |
|  |