
SQM

Maintaining
Microsoft SQL for
Broadcast Engineers

Training Course Outline

2015



SQM : Maintaining Microsoft SQL for Broadcast Engineers

Duration: 2 Days

Technical Level: High

Overview

Classically databases have been used to store large passive data sets. However current trends in software design mean that databases are commonly being employed to hold configuration and functional data. Inevitably this has trickled into the realm of mission critical software products used in the broadcast industry. Many such products rely entirely on Structured Query Language (SQL) databases to function.

Often the favoured version of SQL is Microsoft's. The company produces a suite of SQL products which are used extensively with broadcast software. It has therefore become vital that broadcast engineers understand the basics of SQL and can maintain the Microsoft SQL engine.

The course

This course has been designed for broadcast engineers who may find they have to support broadcast products based around the Microsoft SQL suite. The primary focus will be on supporting existing Microsoft SQL systems as opposed to programming or designing SQL relational databases from scratch. However the course will demonstrate this.

It is understood that delegates will want to discuss their own products in detail and the course structure allows for this.

There will be multiple practical labs with networked hosts running SQL. The delegates will be able to see first-hand the functionality of the product.

Prerequisites

Basic understanding of broadcast television concepts, basic grounding in IT and networking.

Who should attend?

This course is designed for broadcast engineers and others who wish to understand the fundamentals of SQL and learn about maintaining and managing Microsoft SQL databases.

Learning outcomes

Delegates will:

1. Understand the history and thinking behind SQL and learn about the structural nature of SQL databases.
2. Understand the relationship between broadcast products and SQL databases.
3. Learn how to create an SQL database and execute fundamental SQL commands for data retrieval and manipulation.
4. Understand fully all the tasks required to maintain, manage and support a working Microsoft SQL system.
5. Understand how the SQL engine works and what aspects affect reliability and efficiency.
6. Learn how to backup and restore data correctly.

All learning outcomes will be achieved using the information provided, case studies, practical demonstrations and labs.

Content

SQL Fundamentals

- Databases Defined
- Computer Based Databases
- Basic Table Relationships
- Multiple Table Relationships
- Relational Database Concepts
- SQL and the Broadcast Industry

Microsoft SQL Suite

- Microsoft SQL Server Vintages
- Editions of SQL Server
- Express Edition
- Standard and Enterprise Editions

Backend Components

- Backend Components
- SQL Services
- Server Instances and Database Instances

Installing Microsoft SQL

- Installation Preparation
- Installing SQL Server 2014

Introducing SQL Utilities

- SQL Server Configuration Manager
- SQL Server Management Studio

Basic Querying

- Database Schema
- Transact-SQL
- Query Delineation and Execution
- Joining Tables

Database Indexing

- Index Concepts
- Index Structure
- Clustered and Non-Clustered Indexes
- Statistical Intelligence
- To Index, or not to Index
- Broadcast Product Index Example

Database Structure

- Database File Locations
- Database File Structure
- Transaction Logs
- SQL Transaction Logs
- Transaction Log Management
- Recovery Model
- Transaction Log Best Practice
- Changing the Recovery Model

Manual Backup and Restore

- Backing up the Database
- Choosing a Backup Strategy
- Broadcast Backup Strategies
- Restoring Databases
- System Databases
- Recovery Models for System Databases

High-availability

- High-availability Introduction
- Log Shipping
- Mirroring
- Monitoring and Diagnosing Mirroring
- AlwaysOn Availability Groups
- AlwaysOn Failover Cluster Instances

Maintenance

- Maintenance Strategy
- Jobs and Maintenance Plans
- Checking Database Integrity
- Shrinking the Database
- Shrinking the Log
- Reorganise and Rebuilding Indexes
- Statistics
- Clean Up History
- SQL Server Agent
- Creating Jobs
- Creating Alerts

Broadcast Product and MS SQL Example

- SQL DB strategies employed in real world products

Other Diagnostic Tools

- Diagnostic Log Files
- Log File Viewer
- Activity Monitor