Microsoft Azure Data Explorer with Advanced KQL

Course Duration: 16 Hours (2 Days)

Overview

The Microsoft Azure Data Explorer with Advanced KQL course is a comprehensive learning path for professionals who aim to master data analytics within the Azure environment. This course dives deep into Azure Data Explorer (ADX), a high-performance analytics service designed for real-time analysis on large volumes of data streaming from applications, websites, IoT devices, and more. Starting with an overview of Azure Data Explorer and its architecture, learners will understand its key characteristics, use cases, and security aspects. They will then progress to building and managing the infrastructure, including cluster creation, scaling, and cost management. The core of the course focuses on querying data with KQL (Kusto Query Language), exploring its syntax, operators, and advanced features to manipulate and extract insights from data. Learners will also gain skills in visualizing data, leveraging various tools such as Power BI and Grafana for compelling data representation. The course includes modules on monitoring ADX for optimal performance, user analytics, geographic analysis, and diagnostic analysis. Advanced topics cover time series analysis, anomaly detection, forecasting, and extending ADX capabilities using inline Python and R for sophisticated data analysis. This course equips learners with the expertise to harness the full potential of Azure Data Explorer and KQL, making them valuable assets in data-driven organizations.

Audience Profile

The Microsoft Azure Data Explorer with Advanced KQL course is ideal for IT professionals seeking to master data analytics and querying on Azure.

- Data Engineers
- Data Scientists
- Data Analysts
- Cloud Solutions Architects
- Database Administrators
- IT Professionals working with big data and analytics
- DevOps Engineers focusing on monitoring and diagnostics
- Business Intelligence Professionals
- System Administrators looking to scale and secure Azure Data Explorer deployments
- Developers integrating Azure Data Explorer into applications
- Technical Team Leads managing data analytics projects
- Security Analysts involved in monitoring and securing data on Azure
- Data Consultants providing insights on Azure-based data solutions
- Professionals preparing for Microsoft’s data and AI certifications

Course Syllabus

Getting Started with Azure Data Explorer: Overview and Architecture

- What Is Azure Data Explorer and Why Should I Use It?
- ADX Key Characteristics and Use Cases
- ADX Architecture, Components, and Scalability
- ADX Security

Understanding and Creating Azure Data Explorer Infrastructure

- Understanding and Creating Azure Data Explorer Infrastructure
- ADX Cost: Selecting the SKU for Your Use Case
- Creating a Cluster
- Managing Cluster Scaling
- Creating a Database
- Managing Database Permissions
- The Azure Data Explorer Web UI

Querying Data in Azure Data Explorer

- Querying Data in Azure Data Explorer
- Getting to Know the Kusto Query Language (KQL)
- Querying Azure Data Explorer, the Help Cluster, and the Sample Database2m
- Getting Started with Kusto Control Commands
- The Basics of KQL - Most Commonly Used Operators
- More KQL Operators
- Advanced KQL
- Querying External Tables
- Querying Data in Azure Monitor and Using the Flow Kusto Connector
- Exporting Data

Visualizing Data in Azure Data Explorer

- Visualizing Data in Azure Data Explorer
- Visualizing the Results of a Query with the Render Operator
- Data Visualization Using the Azure Data Explorer Dashboard
- Visualizing Data Using Power BI
- Visualizing Data in Grafana
- Visualizing Data in Redash
- Visualizing Data in Kibana with the K2Bridge Open-source Connector

- Visualizing Data in Tableau with the ODBC Connector
- Visualizing Data in Sisense with the JDBC Connector
- Monitoring in Azure Data Explorer

Monitoring in Azure Data Explorer

- Using Metrics to Monitor Cluster Health
- Adding Diagnostic Logs to Monitor Ingestion
- Use Resource Health to Monitor Cluster Health
- Troubleshooting

Exploring User Analytics

- Introduction
- Sliding Window Counts
- Active User Counts
- Activity Counts Metrics
- Activity Metrics
- Activity Engagement

Executing Geographic Analysis

- Nearby Events: Circle
- Nearby Events: Line
- Geofencing
- Clustering
- Geospatial Joins

Performing Diagnostic and Root Cause Analysis

- Introduction to Diagnostic and Root Cause Analysis
- Using Auto cluster
- Using Basket
- Using Diffpatterns
- Performing Verification

Time Series Analysis 1 – Creation and Core Functions

- Make Series
- Series FIR
- Series Fit Line and Fit 2 Lines
- Seasonality Detection

- Series Subtract
- Time Series at Scale

Time Series Analysis 2 – Anomaly Detection and Forecasting

- Decomposition
- Anomaly Detection
- Forecasting
- Scalability

Extensibility Using Inline Python / R

- Introduction to Calling Python and R from KQL
- The Mechanics of Calling Python
- Time Series Analysis Using Python's Numpy
- Using Python's K Means Clustering from KQL
- Calling R from KQL