

Modern Data Infrastructure: NoSQL, Search & Data Pipelines - 32 Hours

Course Overview:

This course introduces modern data infrastructure components commonly used in data engineering, analytics platforms, and operational systems. Participants will learn how to work with NoSQL databases using MongoDB, build and query search and analytics pipelines using the ELK stack (Elasticsearch, Logstash, Kibana), and design data ingestion and orchestration workflows with Apache NiFi.

The course focuses on practical architecture, deployment, indexing, querying, and operational considerations. Participants will gain hands-on experience with real-world use cases such as event and log analytics, document storage, search and aggregation, and building scalable data flows between systems.

What Participants Gain?

- Designing and operating NoSQL data stores using MongoDB
- Building and querying search and analytics pipelines with Elasticsearch
- Applying indexing, mappings, and aggregations for scalable search use cases
- Designing end-to-end log and event pipelines with ELK (Elasticsearch, Logstash, Kibana)
- Building and operating data ingestion workflows with Apache NiFi
- Architecting scalable data pipelines across modern data platforms

Target Audience

- Data Engineers
- Backend Developers
- BI Developers working with semi-structured data
- DevOps engineers involved in data pipelines
- Technical professionals working with modern data platforms

Prerequisites

- Basic understanding of databases and data structures
- Familiarity with REST APIs and JSON
- Basic command-line experience
- No prior experience with MongoDB, ELK, or Apache NiFi is required

Course Syllabus:

MongoDB

- Introduction to MongoDB architecture, components, deployment models, and indexing
- MongoDB CRUD operations and administrative commands

Search Engines – ELK Stack

- Introduction to search engines, Elasticsearch, and common use cases
- Basic setup and configuration
- Indexes (Lucene) and mapping configurations
- Querying: APIs, simple and complex queries, aggregations
- Introduction to Logstash
- Introduction to Kibana

Apache NiFi

- Introduction to Apache NiFi
- Core components and processors
- Parameter contexts
- Architecture and deployment models
- NiFi Registry and version control
- Limitations and best practices