

Data Centers: Hyperscale, SDDC & Hyperconverged Infra

Learn to design, deploy and manage hyperscale, software-defined and hyperconverged data centers, from architecture to compliance.

4 Hours

DURATION

10

MODULES

64

TOPICS

COURSE OVERVIEW

This course covers data center fundamentals, including their evolution and types such as enterprise, colocation and hyperscale facilities, followed by core architecture components like compute, storage, power, cooling and network topologies. It then examines hyperscale data centers, cloud computing models, and modern technologies including virtualization, software-defined data centers, containers, microservices and hyperconverged infrastructure. Later modules address operations, security, energy efficiency, industry standards such as ISO/IEC 27001 and ITIL, and the design, planning, implementation and testing of data centers, concluding with real-world case studies and future trends.

WHO THIS COURSE IS FOR

Data Center Engineers

Cloud Architects

Infrastructure Planners

IT Operations Managers

Network Administrators

System Administrators

LEARNING OBJECTIVES

- Describe the evolution and types of data centers
- Identify core data center architecture components and topologies
- Explain the design principles of hyperscale data centers
- Compare public, private and hybrid cloud deployment models
- Apply modern technologies such as SDDC, containers and HCI
- Assess data center security, energy efficiency and management tools
- Interpret industry standards such as ISO/IEC 27001 and ITIL
- Plan data center design, capacity, deployment and testing

10 Modules, 64 Topics

01

Introduction to Data Centers

TOPICS

Overview of Data Centers · Evolution of Data Centers

TYPES OF DATA CENTERS

Enterprise Data Centers · Managed Services Data Centers · Colocation Data Centers · Hyperscale Data Centers

02

Data Center Architecture

DATA CENTER COMPONENTS

- Compute
- Storage
- Data Center Infrastructure
- Power and Cooling Systems
- Physical Security
- Network Infrastructure
- Data Center Topologies
- Traditional Three-Tier Architecture
- Spine-Leaf Architecture

03

Hyperscale Data Centers

TOPICS

Definition and Characteristics · Key Providers (e.g., AWS, Google, Microsoft) · Design Principles · Benefits and Challenges · Case Studies

04

Cloud Computing and Data Centers

TOPICS

Overview of Cloud Computing

PUBLIC CLOUD /PRIVATE CLOUD /HYBRID CLOUD

Key Providers · Services and Offerings · Use Cases · Definition and Deployment Models · Key Technologies (e.g., VMware, OpenStack) · Integration of Public and Private Clouds · Use Cases and Benefits

05

Modern Data Center Technologies

VIRTUALIZATION

- Server Virtualization
- Network Virtualization
- Storage Virtualization

SOFTWARE-DEFINED DATA CENTERS (SDDC)

- Definition and Components
- Key Technologies (e.g., VMware NSX, Software-Defined Storage)

CONTAINERS AND MICROSERVICES

- Containerization (e.g., Docker, Kubernetes)
- Microservices Architecture

HYPERCONVERGED INFRASTRUCTURE (HCI)

- Definition and Benefits
- Leading Solutions (e.g., Nutanix, VMware vSAN)

06

Data Center Operations and Management

DATA CENTER MANAGEMENT TOOLS

DCIM (Data Center Infrastructure Management) · Monitoring and Automation Tools

SECURITY IN DATA CENTERS

Physical Security Measures · Cybersecurity Best Practices

ENERGY EFFICIENCY AND SUSTAINABILITY

Green Data Centers · Energy Management Techniques

07

Industry Standards and Compliance

DATA CENTER STANDARDS

Uptime Institute's Tier Standards · ANSI/TIA-942

CLOUD SECURITY STANDARDS

ISO/IEC 27001 · SOC 2 · GDPR

OPERATIONAL STANDARDS

ITIL · COBIT

08

Design and Planning of Data Centers

TOPICS

- Site Selection and Infrastructure Design
- Capacity Planning and Scalability
- Risk Assessment and Disaster Recovery Planning
- Cost Estimation and Budgeting

09

Implementation and Deployment

CONSTRUCTION AND DEPLOYMENT PHASES

Site Preparation · Equipment Installation · Network Setup · Integration with Existing Systems

TESTING AND VALIDATION

Performance Testing · Security Testing

10

Case Studies and Real-World Examples

TOPICS

Hyperscale Data Center Implementations · Colocation Data Center Examples · Cloud Data Center Integrations ·
Innovations and Future Trends in Data Centers

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Delivery by certified instructors and subject matter experts
- Hands-on exercises throughout the course
- Course completion certificate from Koenig

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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