

# Data Center Infrastructure Professional (DCIP)

**Duration:** 5 Days (40 Hours)

**Level:** Foundation / Beginner

**Target Audience:** Individuals with little to no prior knowledge of Data Centers

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## Course Objectives

By the end of this training, participants will be able to:

- Understand the purpose and evolution of Data Centers
  - Explain the role of Data Centers in modern IT infrastructure
  - Identify design considerations for building a Data Center
  - Compare different Data Center Tier classifications
  - Differentiate between passive and active components
  - Understand essential power, cooling, safety, and monitoring systems
  - Recognize basic operational best practices
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## Day 1 – Fundamentals of Data Centers

### Session 1: Welcome and Program Introduction

- 1.1 Introduction to the Training Program
  - 1.2 Participant Introductions
  - 1.3 Training Objectives and Agenda
  - 1.4 Learning Approach and Assessment Overview
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### Session 2: Introduction to Data Centers

- 2.1 Definition and Purpose of a Data Center
  - 2.2 History and Evolution of Data Centers
  - 2.3 Traditional vs Modern Data Centers
  - 2.4 Edge, Cloud, and Hybrid Data Centers
  - 2.5 Key Functions of a Data Center
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### Session 3: Role of Data Centers in Organizations

- 3.1 Importance in Modern Businesses
  - 3.2 Business Continuity & Disaster Recovery
  - 3.3 Benefits of Dedicated Infrastructure
  - 3.4 Industry Use Cases & Case Studies
  - 3.5 Group Discussion: Data Center in Real Life
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## **Day 2 – Data Center Types & Infrastructure Basics**

### **Session 4: Types of Data Centers**

- 4.1 Enterprise Data Centers
  - 4.2 Colocation Data Centers
  - 4.3 Hyperscale Data Centers
  - 4.4 Managed Service Provider (MSP) Data Centers
  - 4.5 Edge Data Centers
  - 4.6 On-Premises vs Cloud Models
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### **Session 5: Core Infrastructure Overview**

- 5.1 Physical Infrastructure Overview
  - 5.2 IT Infrastructure Overview
  - 5.3 Supporting Infrastructure Overview
  - 5.4 High-Level Architecture of a Data Center
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### **Session 6: Introduction to Data Center Standards**

- 6.1 Overview of Global Standards
  - 6.2 Uptime Institute Overview
  - 6.3 Basic Industry Compliance Requirements
  - 6.4 Safety Standards
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## **Day 3 – Data Center Design & Tier Classification**

### **Session 7: Design Considerations in the Planning Phase**

- 7.1 Site Selection Criteria
  - 7.2 Risk Assessment (Natural & Environmental)
  - 7.3 Accessibility and Connectivity
  - 7.4 Scalability Planning
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## **Session 8: Power and Cooling Design**

- 8.1 Power Infrastructure Basics
  - 8.2 Redundancy Concepts (N, N+1, 2N)
  - 8.3 Cooling Requirements
  - 8.4 Airflow Management (Hot/Cold Aisle Concept)
  - 8.5 Energy Efficiency Considerations
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## **Session 9: Space Planning & Security**

- 9.1 Rack Layout and Space Planning
  - 9.2 Raised Floor Concepts
  - 9.3 Physical Security Systems
  - 9.4 Access Control & Surveillance
  - 9.5 Regulatory and Compliance Requirements
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## **Session 10: Data Center Tier Classification**

- 10.1 Introduction to Data Center Tiers
  - 10.2 Tier I – Basic Capacity
  - 10.3 Tier II – Redundant Capacity Components
  - 10.4 Tier III – Concurrently Maintainable
  - 10.5 Tier IV – Fault Tolerant
  - 10.6 Tier Comparison & Business Impact
  - 10.7 Cost vs Availability Trade-offs
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# **Day 4 – Data Center Components (Passive & Active)**

## **Session 11: Passive Components**

- 11.1 Definition and Importance
- 11.2 Structured Cabling Systems

- 11.3 Copper vs Fiber Cabling
  - 11.4 Racks, Cabinets, and Enclosures
  - 11.5 Cable Pathways & Containment
  - 11.6 Best Practices in Cable Management
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## **Session 12: Active Components**

- 12.1 Definition and Importance
  - 12.2 Servers (Rack, Blade, Tower Overview)
  - 12.3 Storage Systems (DAS, NAS, SAN Basics)
  - 12.4 Network Equipment (Switches, Routers, Firewalls)
  - 12.5 Load Balancers and Basic Security Devices
  - 12.6 Basic Hardware Maintenance Practices
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## **Session 13: IT Infrastructure Basics**

- 13.1 Virtualization Overview
  - 13.2 Basic Cloud Integration Concepts
  - 13.3 Backup and Recovery Overview
  - 13.4 Basic Networking Concepts in Data Centers
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# **Day 5 – Supporting Systems, Operations & Best Practices**

## **Session 14: Power Infrastructure Systems**

- 14.1 Utility Power Supply
  - 14.2 Generators
  - 14.3 Uninterruptible Power Supply (UPS)
  - 14.4 Power Distribution Units (PDU)
  - 14.5 Grounding and Electrical Safety
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## **Session 15: Cooling & Environmental Systems**

- 15.1 CRAC / CRAH Units
- 15.2 Precision Cooling
- 15.3 Liquid Cooling Basics
- 15.4 Temperature & Humidity Monitoring

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## **Session 16: Safety & Fire Protection Systems**

- 16.1 Fire Detection Systems
- 16.2 Gas-Based Fire Suppression Systems
- 16.3 Emergency Procedures
- 16.4 Workplace Safety in Data Centers

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## **Session 17: Monitoring & Management**

- 17.1 Data Center Infrastructure Management (DCIM)
- 17.2 Environmental Monitoring
- 17.3 Alerting and Reporting
- 17.4 Preventive Maintenance Practices

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## **Session 18: Operations & Best Practices**

- 18.1 Documentation & Asset Management
- 18.2 Change Management Basics
- 18.3 Capacity Planning
- 18.4 Sustainability & Green Data Centers
- 18.5 Future Trends in Data Center Technology

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## **Session 19: Final Wrap-Up**

- 19.1 Recap of Key Concepts
- 19.2 Knowledge Check / Quiz
- 19.3 Q&A Session
- 19.4 Feedback & Evaluation
- 19.5 Next Steps & Advanced Learning Paths