

# Data Center Technology Professional (DCTP)®

## Course outline

### **Module 1: Introduction to Data Center Technology**

Module 1: Introduction to Data Center Technology is an introductory course designed to provide Data Center Technology Professionals (DCTP)® with a comprehensive overview of the fundamentals of data center technology. This module covers topics such as data center architecture, power and cooling, cabling, and network infrastructure. It also provides an introduction to the various technologies used in data centers, including servers, storage, and virtualization. Additionally, this module provides an overview of the various standards and best practices used in data center operations.

#### ***Lessons***

- Overview of Data Center Technology
- Data Center Infrastructure Components
- Data Center Networking Basics
- Data Center Security and Compliance
- Data Center Virtualization
- Data Center Automation and Orchestration
- Data Center Storage Solutions
- Data Center Power and Cooling
- Data Center Monitoring and Management
- . Data Center Design and Best Practices

#### **After completing this module, students will be able to:**

- Understand the fundamentals of data center technology, including the components, architecture, and operations.
- Identify the different types of data center technologies and their associated benefits and challenges.
- Develop an understanding of the various data center technologies and their associated best practices.
- Develop the skills to design, implement, and manage data center technologies.

### **Module 2: Data Center Infrastructure**

Module 2 of the Data Center Technology Professional (DCTP)® course provides an overview of the data center infrastructure, including the physical components, network architecture, and power and cooling systems. It covers topics such as server racks, cabling, power distribution, cooling systems, and environmental monitoring. It also provides an introduction to the various technologies used in data

centers, such as virtualization, storage, and networking.

## ***Lessons***

- Overview of Data Center Infrastructure
- Data Center Design and Architecture
- Power and Cooling Considerations
- Networking and Connectivity
- Security and Compliance
- Data Center Automation and Management
- Data Center Maintenance and Troubleshooting
- Data Center Optimization and Best Practices
- Data Center Virtualization and Cloud Computing
- . Data Center Disaster Recovery and Business Continuity Planning

## **After completing this module, students will be able to:**

- Understand the components of a data center infrastructure, including power, cooling, and cabling systems.
- Identify the best practices for designing and deploying a data center infrastructure.
- Analyze the impact of data center infrastructure on the performance of applications and services.
- Develop strategies for monitoring and managing data center infrastructure to ensure optimal performance.

## **Module 3: Data Center Networking**

Module 3 of the Data Center Technology Professional (DCTP)® course provides an in-depth look at data center networking. It covers topics such as network topologies, network protocols, network security, and network management. It also provides hands-on experience with configuring and troubleshooting data center networks. This module is designed to give students the skills and knowledge needed to design, implement, and maintain data center networks.

## ***Lessons***

- Overview of Data Center Networking
- Network Topologies and Architectures
- Network Protocols and Standards
- Network Security and Access Control
- Network Performance Monitoring and Troubleshooting
- Network Virtualization and Automation
- Network Design and Implementation
- Network Management and Maintenance
- Network Optimization and Capacity Planning
- . Network Troubleshooting and Problem Resolution

## **After completing this module, students will be able to:**

- Understand the fundamentals of data center networking, including the components, protocols, and architectures used in data center networks.
- Design and implement data center networks using industry-standard technologies.
- Troubleshoot and resolve data center network issues.
- Monitor and optimize data center network performance.

## Module 4: Data Center Security

Module 4 of the Data Center Technology Professional (DCTP)® course focuses on data center security. It covers topics such as physical security, network security, and data security. It also provides an overview of the different security measures that can be implemented in a data center environment. The module also provides an introduction to the different security standards and best practices that should be followed in order to ensure the safety and security of data centers.

### Lessons

- Understanding Data Center Security Principles
- Implementing Physical Security Measures
- Implementing Network Security Measures
- Implementing Access Control Measures
- Implementing Data Encryption and Authentication
- Implementing Intrusion Detection and Prevention Systems
- Understanding Data Center Compliance Requirements
- Implementing Disaster Recovery and Business Continuity Plans
- Understanding Cloud Security and Virtualization Security
- . Understanding Security Auditing and Monitoring

### After completing this module, students will be able to:

- Understand the principles of data center security and the importance of implementing security measures.
- Identify and implement appropriate security measures to protect data center assets.
- Implement security policies and procedures to ensure the safety of data center resources.
- Monitor and audit data center security systems to ensure compliance with security standards.

## Module 5: Data Center Storage

Module 5 of the Data Center Technology Professional (DCTP)® course provides an overview of data center storage technologies, including storage area networks (SANs), network-attached storage (NAS), and direct-attached storage (DAS). It covers the fundamentals of storage architecture, storage protocols, and storage management. It also covers the different types of storage media, such as hard disks, solid-state drives, and tape drives. Finally, it provides an introduction to storage virtualization and cloud storage.

### Lessons

- Overview of Data Center Storage Technologies

- Data Center Storage Architecture
- Data Center Storage Networking
- Data Center Storage Security
- Data Center Storage Virtualization
- Data Center Storage Capacity Planning
- Data Center Storage Performance Optimization
- Data Center Storage Backup and Recovery
- Data Center Storage Disaster Recovery
- . Data Center Storage Compliance and Regulatory Requirements

### **After completing this module, students will be able to:**

- Understand the different types of storage technologies and their use cases in data centers.
- Design and implement a storage solution that meets the requirements of a data center.
- Troubleshoot and maintain storage systems in a data center.
- Utilize best practices for data center storage security and compliance.

## **Module 6: Data Center Virtualization**

Module 6 of the Data Center Technology Professional (DCTP)® course covers Data Center Virtualization. This module provides an overview of virtualization technologies, including server virtualization, storage virtualization, and network virtualization. It also covers the benefits of virtualization, such as improved scalability, cost savings, and increased efficiency. Additionally, this module covers the challenges associated with virtualization, such as security, performance, and management. Finally, this module provides an introduction to the tools and techniques used to manage virtualized environments.

### **Lessons**

- Overview of Data Center Virtualization
- Benefits of Data Center Virtualization
- Challenges of Data Center Virtualization
- Types of Data Center Virtualization
- Implementing Data Center Virtualization
- Security Considerations for Data Center Virtualization
- Troubleshooting Data Center Virtualization
- Best Practices for Data Center Virtualization
- Automation and Orchestration of Data Center Virtualization
- . Monitoring and Optimizing Data Center Virtualization

### **After completing this module, students will be able to:**

- Understand the fundamentals of virtualization and its application in the data center.
- Identify the components of a virtualized data center and the benefits of virtualization.
- Implement and manage virtualized data center solutions using industry-leading technologies.
- Troubleshoot and optimize virtualized data center solutions to ensure optimal performance.

## Module 7: Data Center Automation

Module 7 of the Data Center Technology Professional (DCTP)® course focuses on data center automation. It covers topics such as automation tools, automation strategies, and automation best practices. It also provides an overview of the different automation technologies available and how they can be used to improve data center efficiency and reduce costs. The module also provides hands-on experience with automation tools and techniques.

### **Lessons**

- Introduction to Data Center Automation
- Automation Tools and Technologies
- Automation Strategies and Best Practices
- Automating Data Center Infrastructure
- Automating Data Center Operations
- Automating Data Center Security
- Automating Data Center Monitoring
- Automating Data Center Provisioning
- Automating Data Center Maintenance
- . Automating Data Center Compliance
- . Automating Data Center Disaster Recovery
- . Automating Data Center Capacity Planning
- . Automating Data Center Performance Optimization
- . Automating Data Center Cost Optimization
- . Automating Data Center Change Management

### **After completing this module, students will be able to:**

- Understand the fundamentals of data center automation and its importance in the data center environment.
- Identify the components of a data center automation system and how they interact.
- Develop an automation strategy for a data center environment.
- Implement automation solutions to improve the efficiency and reliability of data center operations.

## Module 8: Data Center Management

Module 8 of the Data Center Technology Professional (DCTP)® course provides an overview of data center management, including best practices for managing data center operations, security, and compliance. It covers topics such as data center infrastructure, power and cooling, asset management, and disaster recovery. The module also provides an introduction to the various tools and technologies used to manage data centers.

### **Lessons**

- Understanding Data Center Infrastructure
- Data Center Design and Planning
- Data Center Security and Compliance
- Data Center Power and Cooling

- Data Center Networking and Connectivity
- Data Center Monitoring and Management
- Data Center Automation and Orchestration
- Data Center Capacity Planning
- Data Center Disaster Recovery and Business Continuity
- . Data Center Virtualization and Cloud Computing

### **After completing this module, students will be able to:**

- Understand the fundamentals of data center management, including the roles and responsibilities of data center personnel.
- Develop and implement data center policies and procedures to ensure the security and reliability of data center operations.
- Utilize best practices for data center design, including power, cooling, and cabling.
- Monitor and maintain data center systems and equipment to ensure optimal performance.

## **Module 9: Data Center Disaster Recovery**

Module 9 of the Data Center Technology Professional (DCTP)® course covers the fundamentals of data center disaster recovery. It provides an overview of the different types of disasters that can occur, the steps to take to prepare for a disaster, and the strategies for recovering from a disaster. It also covers the importance of having a comprehensive disaster recovery plan in place and the best practices for implementing it.

### ***Lessons***

- Understanding Data Center Disaster Recovery Strategies
- Developing a Data Center Disaster Recovery Plan
- Implementing Data Center Disaster Recovery Procedures
- Testing and Evaluating Data Center Disaster Recovery Plans
- Managing Data Center Disaster Recovery Resources
- Data Center Disaster Recovery Best Practices
- Data Center Disaster Recovery Regulations and Compliance
- Data Center Disaster Recovery Risk Management
- Data Center Disaster Recovery Cost Analysis
- . Data Center Disaster Recovery Automation and Monitoring

### **After completing this module, students will be able to:**

- Understand the importance of data center disaster recovery planning and the steps involved in creating a comprehensive plan.
- Identify the components of a data center disaster recovery plan and the roles and responsibilities of personnel involved in the process.
- Develop a data center disaster recovery plan that meets the requirements of the organization.
- Implement and test the data center disaster recovery plan to ensure its effectiveness.

# Module 10: Data Center Optimization

Module 10 of the Data Center Technology Professional (DCTP)® course focuses on data center optimization. It covers topics such as energy efficiency, cooling systems, and power management. It also provides guidance on how to optimize data center operations and maximize efficiency. The module provides an overview of the latest technologies and best practices for data center optimization.

## ***Lessons***

- Understanding Data Center Infrastructure
- Data Center Design and Architecture
- Data Center Power and Cooling Solutions
- Data Center Security and Compliance
- Data Center Networking and Connectivity
- Data Center Automation and Orchestration
- Data Center Monitoring and Management
- Data Center Capacity Planning and Optimization
- Data Center Virtualization and Consolidation
- . Data Center Disaster Recovery and Business Continuity Planning

## **After completing this module, students will be able to:**

- Understand the principles of data center optimization and how to apply them to improve efficiency and reduce costs.
- Analyze data center infrastructure and identify areas for improvement.
- Develop strategies to optimize data center operations and reduce energy consumption.
- Implement best practices for data center optimization, including virtualization, consolidation, and automation.