

# DCT Data Center Design

## Program Duration:

5 Days

## Program Objectives

- Select the appropriate availability class based on the site requirements.
- Locate a suitable site to construct a data centre.
- Identify best practices used when building a new or updating an existing data centre. Apply sustainability concepts to a data centre design.
- Identify the systems housed in a data centre. Examine the phases in a commissioning process.



## Target Audience

Developers with at least one year or more experience creating applications

## Pre-requisites

Basic network fundamentals.

## Program Overview

The DCT Data Centre Design DCTDCD content has evolved over the years based on knowledge and competency to reflect the Industry recognized Building Industry Consulting Service International ( BICSI ) standards and exams. The course is geared for IT professionals who are involved in Design, Implementation and Upgrades of Data Centers and computer rooms.

## Data Centre Design Topics

### a). Architectural and Space Planning

- Identify space planning constraints
- Apply availability requirements
- Apply IT equipment capacity requirements
- Apply IT equipment space requirements
- Determine people's requirements
- Determine infrastructure requirements
- Estimate growth rate
- Develop Space Adjacencies recommendations
- Provide Functional Space requirements
- Compile and interpret external requirements

### b). Site Selection

- Develop criteria for natural environment
- Develop criteria for utility environment
- Evaluate regulation requirements (local, regional, national)
- Develop criteria for location environment (e.g. transportation, job market)
- Develop financial criteria (e.g. cost, tax incentives f. Evaluate criteria for site selection
- Compile and interpret external requirements

### c). Electrical Systems

- Develop site utility requirements (e.g. medium voltage, underground, overhead)
- Develop criteria for utility environment c. Know the main components of the electrical system
- Differentiate among availability levels.
- Differentiate among Power Distribution Systems
- Compile and validate user requirements
- Understand advantages/disadvantages among various solutions
- Compile and interpret external requirements

### d). Ancillary systems (Fire Protection, Security, Building Automation System (BAS)

- Develop site requirements for each ancillary system
- Apply ancillary systems criteria
- Know the main components of each ancillary system
- Differentiate among security systems
- Differentiate among BAS systems
- Differentiate among fire protection systems
- Compile and validate user requirements
- Understand advantages/disadvantages among various solutions.
- Interpret facility and data-driven security plans
- Differentiate among availability of BAS
- Compile and interpret external requirements

## Data Centre Design Topics

### e). Information Technology

- Apply IT systems criteria (e.g., server, SAN, switches)
- Describe networking fundamentals (e.g., OSI, architecture)
- Compile and interpret network connectivity media requirements (e.g copper or optical fiber cabling.
- Describe fundamental network components (e.g., servers, switches, routers, storage)
- Describe basic data centre network communications (e.g, Ethernet, TCP/IP, Fibre Channel, WAN circuits)
- Compile and interpret external requirements
- Recognize temporary and emerging technologies and how they relate to design of a data centre
- Develop site utility requirements (e.g., underground, overhead)
- Apply telecommunications systems criteria (e.g., network infrastructure, LAN, WAN, pathways)
- Differentiate among availability levels
- Understand advantages/disadvantages among various positions

### f). Electrical Systems

- Describe phases of commissioning process
- Describe types of commissioning
- Describe testing as a component of commissioning
- Describe commissioning documents

### g). Data Centre Operations and Maintenance

- Describe the Owners operation and maintenance processes' impact on design (e.g, equipment accessibility, equipment adjacencies)
- Describe the Owner's monitoring and control processes' impact on design (e.g, environmental, power, service availability)
- Describe operations and maintenance best practices
- Translate sustainability requirements into the design recommendations
- Describe thermal management methodologies
- Understand advantages/disadvantages among various solutions
- Describe Third-party sustainability certification levels

### h). Design Process

- Describe project delivery methods
- Describe facility design phases
- Describe technology design phases
- Describe data centre documentation
- Recognize thirdparty certification organizations

### i). Risk Analysis

- Identify assets (e.g people, property, operations, information)
- Manage Threat assessment (identification, frequency, impact)
- Coordinate security audit (building inspections, security surveys, security analysis)
- Verify against objectives (ascertain security status, current state, protection levels)
- Identify countermeasures (ascertain security status, current state, protection levels)
- Coordinate cost-benefit/feasibility/ present value studies.
- Translate client's business continuity plan (BCP) requirements into availability design recommendations
- Translate the client's disaster recovery plan (DRP) requirements into recovery design recommendations