DCT Data Center Design

Duration: 5 Days

Course Code: DCT02

Overview:

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

Target Audience:

Developers with at least one year or more experience creating applications

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.

Pre-requisite

- Basic network fundamentals.

Testing and Certification

- Exam: BICSI DCDC-001 Certificates

Content:

BICSI - Data Center Design Consultant Exam Contents and Rating

1. What is a data center?
2. Data centre infrastructure standards.
3. Data center types
4. Architectural, space planning and site selection requirements
5. Determine the criteria for Architectural, space planning & site selection
6. Importance of Architectural, space planning and site selection
7. Data center power & electrical systems
8. Power Review
9. Power Regulations and Basics
10. Power to the Data Centre
11. Power and electrical systems classes
12.Distribution in the Data Centre
13. Power management and Intelligent PDU's
14.Standby Power
15. Earthing and Bonding
16. Data centre mechanical systems and cooling
17. Understand the main components of mechanical systems
18. Cooling Review
19. Data center cabling and I.T
20. Cable Containment, Management and Protection
21. Copper and Optical Fiber Cabling Connectivity
22. Cabling pathways and Raised Access Floors
23.Cabinets and racks
24. Fire protection and safety Management
25.Security and building automation systems requirements
26. Commissioning and handover
27. Understand Data Center operations and maintenance
28. Understand facility design Process and phases
29. Understand technology design phases 30. Understand data centre documentation 31. Manage data centre risk analysis

A. ARCHITECTURAL AND SPACE PLANNING

a. Identify space planning constraints
b. Apply availability requirements
c. Apply IT equipment capacity requirements
d. Apply IT equipment space requirements
e. Determine people's requirements
f. Determine infrastructure requirements
g. Estimate growth rate
h. Develop Space Adjacencies recommendations
I. Provide Functional Space requirements
j. Compile and interpret external requirements

B. SITE SELECTION

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

C. ELECTRICAL SYSTEMS

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

D. SITE SELECTION

a. Develop site utility requirements (e.g. water/storage, gas use.
b. Apply mechanical systems criteria (e.g. chilled water vs dx)
c. Know the main components of the mechanical system.
d. Differentiate among availability levels.
e. Differentiate among mechanical systems.
f. Compile and validate user requirements
g. Understand the advantages/disadvantages of various solutions.
h. Compile and interpret external requirements

E. ANCILLARY SYSTEMS (FIRE PROTECTION, SECURITY, BUILDING AUTOMATION SYSTEM (BAS)

a. Develop site requirements for each ancillary system
b. Apply ancillary systems criteria
c. Know the main components of each ancillary system
d. Differentiate among security systems
e. Differentiate among BAS systems
f. Differentiate among fire protection systems
g. Compile and validate user requirements
h. Understand advantages/disadvantages among various solutions.
i. Interpret facility and data-driven security plans
j. Differentiate among availability of BAS
k. Compile and interpret external requirements

F. INFORMATION TECHNOLOGY

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

G. ELECTRICAL SYSTEMS

a. Describe phases of commissioning process
b. Describe types of commissioning
c. Describe testing as a component of commissioning
d. Describe commissioning documents

H. DATA CENTER OPERATIONS AND MAINTENANCE

a. Describe the Owners operation and maintenance processesâ€™ impact on design (e.g, equipment accessibility, equipment adjacencies)
b. Describe the Owner's monitoring and control processes' impact on design (e.g, environmental, power, service availability)
c. Describe operations and maintenance best practices

I. DATA CENTER OPERATIONS AND MAINTENANCE

a. Translate sustainability requirements into the design recommendations
b. Describe thermal management methodologies
c. Understand advantages/disadvantages among various solutions
d. Describe Third-party sustainability certification levels

J. DESIGN PROCESS

a. Describe project delivery methods
b. Describe facility design phases
c. Describe technology design phases
d. Describe data centre documentation
e. Recognize thirdparty certification organizations

K. RISK ANALYSIS

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