

# Certified Data Centre Design (CDCD™)

This course, held over three days, is aimed at teaching best practice design principles for the design, construction and operation of computer rooms and data centers. It consists of a number of subsections that address the fundamental requirements of a successful design such as physical infrastructure, electrical power supply, air conditioning and data cabling. Best practice is achieved by bringing together the requirements of British, European, US and International standards. Several case studies are considered to see examples of good and bad practice in real situations. The unit is principally assessed by an ongoing design exercise that leads the delegates through all the steps and decision points needed to arrive at a baseline design of a modern data center.

All the Data Centre Courses have been fully updated to take into account the requirements of the 2009 EU Code of Conduct on Data Centres Energy Efficiency.

## Course Content

### What is a Data Centre?

- The Data Center stack
- TIA 942 spaces and hierarchical model
- Types of Data Center
- Location Considerations

### The Importance of Design Project

#### Management

- Main design considerations
- Developing a project plan

#### Scoping the Requirement

- Identifying key stakeholders
- Market and political drivers
- Global, US and European standards
- Availability and resilience classifications
- Introduction to Uptime Model of Tiering
- TIA 942 recommendations for location, size, heights, floor loading, lighting and decor
- BICSI 002

#### Raised Access Floors

- Global, US and European standards
- Recommended floor heights
- Airflow and sealing
- Ramps and access
- Seismic protection

#### Cabinets

- Requirements of a cabinet
- Security, safety and stabilisation
- Clearance, accessibility and ventilation
- Cable Management
- Common design issues

#### Power

- Some electrical principles, volts, amps, watts, kVA, power factor and three phase
- Regulations and Codes
- The meaning of N, N+1 2(N+1) etc

- Power delivery and losses
- Uninterruptible Power Supply (UPS) options
- Generator considerations
- Power Distribution Units
- Power distribution to and in a rack
- Emergency Power Off (EPO)
- Estimating power requirements

#### Cooling

- Global, US and European Standards
- Basics of air conditioning principles
- CRAHs and CRACs
- Operational parameters
- Underfloor plenum approach
- Hot aisle/cold aisle model
- Psychrometric charts
- Min and max throw distances for underfloor air
- Bypass and recirculation
- Airflow Management
- Chilled water racks, CO2, Passive Air

#### Earthing & Bonding

- Applicable standards
- The terminology of earthing, grounding and bonding
- Equipotential bonding
- ESD
- Functional earths
- The Signal Reference Grid (SRG)
- 'L' and 'M' categories
- Siting of fire/smoke detectors
- NFPA 75 requirements
- Cables for smoke detectors and alarm systems

#### Cable Containment, Management & Protection

- Applicable standards
- Separation of power and data cables
- Administration and labelling
- Types of conduit, trunking, tray etc available
- Earthing and bonding

- Fill rules
- Cable management in and to a rack European fire
- Fire stopping

## Delivering the IT Strategy

- Data center equipment
- Functions and protocols, current and future
- Data center connections
- Cabling requirements
- Cabling standards
- Cabling options
- The impact of 40G and 100G
- The impact of virtualisation

## Copper Cabling Connectivity

- Cabling standards
- Cable Standards, 10GBASE-T and CAT6A, Cat 7A
- Screened v unshielded cables
- High density patching
- Alien Crosstalk
- Design for growth management
- How many connectors in a channel?
- Connection topologies

## Optical Fibre Connectivity

- Optical connectors, past and present
- Optical fibre management
- Types of optical cable
- Pre-terminated cabling
- Advantages and disadvantages of pre-terminating cables
- Optical component loss and link power budgets
- Application link loss
- The MPO and MTP ribbon connector
- Some manufacturers' examples

# 3-Day Course

**Classroom based with instructor led discussions, ongoing case study and a high level of student participation Final online assessment and case study.**

## Qualifications

- BICSI CECs: 2I RCDD, 2I ITS, 2I NTS
- CNet Certificate
- Optional BTEC Advanced Award in Practical Data Centre Design

## Who Should Attend

Any individual involved or responsible for the management of an existing Data Centre or those looking at the best practice for the design of new facilities.

## Related Training

- CDCDP™ - Certified Data Center Design Professional
- CDCT™ - Certified Data Center Technician
- Data Center Power - DCP
- Data Center Cooling - DCC
- Data Center Management - DCM
- Data Center Efficiency - DCE
- CDCM™ - Certified Data Center Management
- CDCMP™ - Certified Data Center Management
- Professional RCDD

## Course Objectives

To understand the best practice of design principles, construction, operation and ongoing management of computer rooms and data centers ensuring they are efficient and compliant.

## Prerequisites

Experience of the data centre environment is essential.

## Requirements

Please bring a laptop with a CD-rom drive.

“ Having attended the CDCDP course I was very happy with the format and the in-depth and up to date information presented. To date I have not found a course that will give such a solid foundation to Data Centre and Infrastructure design. Well recommended. ”