Data Center Design Awareness

3 DAYS ⏱ 21

BRAND NEW FOR 2016

Our **new** and **updated** course on Data Center Design Awareness will help you learn the key elements that influence the design of the modern data center. From site selection to cabling infrastructure, this course focuses on the key skills required to understand the design concepts and interdependencies associated with each discipline.

Learning Outcomes

Upon successful completion, students will be able to:

- Explain data center technology advances throughout history, today's challenges and today's industry bodies, standards, regulations, definitions and metrics
- Identify key stakeholders and design considerations in development of data center specifications
- Explain key considerations for data center site selection
- Apply best practice recommendations to building layout requirements, including resilience level and space requirements
- Discuss configuration options for the data center including cabinet types, sizes and layout

- Distinguish between copper and fibre cable and the appropriate containment of each
- Identify servers, storage equipment, communications equipment and technology developments used in the data center today
- Discuss today's challenges, standards and regulations
- Define best practice for cooling systems, including AC options and new technology developments
- Identify major components of electrical systems, including back-up systems, generators and application of efficiency standards
- Discuss configuration options for the data center, including cabinet types
- Recognize the essential elements of

fire detection and fire suppression
- Discuss best security plans for physical and electronic security and surveillance. Identify policy and procedures, regulations and standards
- Define building automation protocols, integrated systems, measuring and monitoring, reporting systems and applicable industry standards
- Identify commissioning scope, project phases, commissioning plan and documentation, maintenance plans, codes and statutory regulations.

DATACENTER SPECIALIST | IT | DESIGN | OPERATIONS | NETWORK

5 reasons to choose our courses:

1 Courses aligned to international standards

2 Expert instructors with over 10 years experience

3 Interactive learning experience

4 Blended learning solutions (classroom and online)

5 Specialist career progression tracks for advanced learning

Who should attend?

Any individual directly or indirectly involved in the management or operation of an existing data center; or in the exploration, design or build phase of a new project, including:

- Data Center Operator
- OEM Supplier
- Sales Engineer
- Project Manager
- Facilities Manager

Professional Development Hrs	21
Exam	1 hour, open book
Pre-requisites	None
Suggested Progression	Energy Efficiency

Price - $1950 | €1500 | £1250

DCD GROUP

Course Content

Data Center Evolution
- Technology advances
- Today's challenges
- Relevant industry bodies
- Current standards and regulations
- Key definitions and metrics

Facility Classification
- Market trends, regulations and design impact
- Balancing IT capacity and efficiency
- Design and project process
- Critical classifications – Uptime Institute, TIA, BICSCI
- Availability and the impact of downtime
- Business needs assessment – TCO and ROI
- Data center options – enterprise, colo, MSP, wholesale

Site Selection
- Site adjacency standards and recommendations
- Availability of water, power, telco, gas and air
- Geographical influences and recommendations
- Future Thinking – PUE, environment, modularit

Architectural Design
- External shell – materials, solar gain, engineering
- Space considerations – computer room layout, support areas and external space
- Structural specifications – floor, ceiling and wall
- Traditional build vs modular options

Raised Floor
- Floor loadings – concentrated, uniform, rolling
- Design and construction considerations
- Air grill tiles – open space vs flow rates
- Ramp design – location, heights and inclines
- Cutting tiles – best practices, sealing gaps
- Managing zinc whiskers and other contaminants

Room Layout
- Equipment considerations
- IT cabinet types
- Hot aisle/cold aisle configuration
- Non-standard equipment considerations

Infrastructure Connectivity
- Copper shielded and unshielded cables, connectors, categories, bandwidth, distances, fire rating
- Fiber single and multimode cable, simplex and array connectors, bandwidth, distance, loss, operational costs
- Cable location and containment best practice, space allocation, overhead vs underfloor
- Connectivity design options –EoR, ToR, no. of connections, resilience – N, N+1, 2N
- Future developments

IT Architecture and Network Design
- Servers – pizza box vs chassis vs blade and the next generation
- Storage – DAS vs NAS vs SAN, RAID, clustering, disk drives, table libraries, solid state and storage management
- Communications – aggregation, edge and core switches, routers, resilience
- Virtualisation, FcoE
- Impact of speed on design – 1G, 10G, 40G, 100G and 400G
- Designing today to meet tomorrow's challenges

Cooling Systems and Environmental Control
- Cooling fundamentals and definitions
- Cooling options – CRAC, CRAH, DX, refrigerants, aid and water system advantages and disadvantages
- ASHRAE limits – recommended A1 to A4
- Design considerations, legacy, hot/cold aisle, containment
- System efficiency – bypass, recirculation, static pressure, thermal capacity, free cooling, air/water economization, rotary and static heat exchangers, CHP, zero refrigeration

Fire Systems
- Fire Regulations and rating systems
- Fire prevention – compartment and barrier design
- Fire detection and warning – smoke, heat, flame detection systems, fire panels
- Fire suppression systems – wet and dry pipe, water mist, inert and synthetic gas, CO2, hypoxic
- System design considerations