CDCS®

epi® Protecting your interests

CERTIFIED DATA CENTRE SPECIALIST

Introduction

With few exceptions, modern enterprises depend heavily on IT to deliver business-critical services—often in real-time and directly to end users. This makes it essential that mission-critical data centres are designed, maintained, and operated with maximum availability, efficiency, and resilience in mind.

Yet in practice, many data centres still fall short of meeting the increasingly demanding requirements for availability, capacity, safety, and energy efficiency. This challenge is further intensified in high-compute environments, where advanced workloads such as AI, HPC, and large-scale data analytics drive up power densities and place significant stress on traditional cooling systems. Ensuring thermal performance in such conditions is now just as vital as electrical reliability.

The Certified Data Centre Specialist (CDCS®) is a comprehensive three-day course designed to equip participants with the knowledge and skills to act as informed, capable counterparts when dealing with data centre design and operations especially in high-demand environments. Participants will be able to evaluate design proposals for accuracy, effectiveness, and efficiency, including solutions related to power and cooling infrastructure.

CDCS® is an essential certification for data centre professionals seeking to enhance their technical credibility and decision-making capabilities. It is also a prerequisite for those aiming to attain the elite Certified Data Centre Expert (CDCE®) status.

Audience

The primary audience for this course includes data centre specialists, facilities managers and IT professionals who work in and around data centres and are responsible for ensuring and enhancing their availability and manageabilityaround the data centre and having the responsibility to achieve and improve high-availability and manageability of the data centre.

Prerequisites

Prerequisites participants must hold a valid CDCP® certificate in order to be able to register for the CDCS® class.

Global Accreditation & Recognition

World-wide accredited by EXIN

Course Benefits ☑

After completion of the course the participant will be able to:

- ☑ Understand the data centre design life cycle, including the distinct stages involved.
- ☑ Discuss the data centre requirements at a great level of detail with vendors, suppliers and contractors to ensure that these requirements are met.
- ☑ Validate design documentation, cost quotations, and technical proposals provided by vendors and contractors to confirm compliance with requirements.
- ☑ Understand redundancy levels for both the data centre design/setup and maintenance.
- ☑ Understand the various building considerations such as bullet proofing, seismic activity mitigation, fire ratings and thermal stability.
- ☑ Understand the correct installation practices for raised flooring systems and to prevent issues such as misalignment, level discrepancies, and leakage.
- ☑ Understand how to read a Single Line Electrical Diagram to effectively identify and mitigate common design flaws.
- ☑ Choose the correct UPS and parallel configuration, while gaining the knowledge required to recognise and avoid typical errors associated with parallel installations.
- ☑ Understand how to calculate battery banks and assess vendor-proposed configurations to verify compliance with design and performance requirements.
- ☑ Understand the appropriate separation distances needed to mitigate electromagnetic field (EMF) risks to human health and avoid interference with sensitive equipment.
- ☑ Understand the fundamental cooling system design, encompassing efficiency metrics, installation prerequisites, airflow rates (CFM), temperature differentials (Delta-T), and other essential performance parameters.
- ☑ Understand how to evaluate and select advanced liquid cooling solutions that are specifically designed to meet the thermal and operational demands of AI and high-performance computing (HPC) environments.
- ☑ Understand contamination factors and limitations.
- ☑ Understand fire suppression systems, including the various available options, methods for calculating gas volume requirements, and procedures for verifying correct system installation.
- ☑ Understand how to assess data centre energy efficiency using industry-standard metrics, and explore methods to enhance overall energy performance.

Course Syllabus

- **Data Centre Design/Life Cycle Overview**
  - Phases of the data centre life cycle

- **Standards and Rating Level Definitions**
  - Rating levels history and definitions
  - Standards and guideline comparison
  - N-redundancy options
  - Distributed redundant options
  - Concurrent maintainability
  - Fault tolerant
  - Substation requirements
  - Example topologies
  - Maintenance options

- **Building Considerations**
  - Building location and floor loading considerations
  - Floor and hanging loads requirements
  - Firing rating for walls and glass
  - Blast protection and bullet proofing
  - Forced entry protection

- **Advanced Raised Floor & Suspended Ceiling**
  - Raised Floor installation requirements
  - Common raised floor problems
  - Seismic protection
  - Requirements for suspended ceiling

- **Advanced Power**
  - Electrical formulae
  - Single Line Diagram (SLD)
  - Overcurrent protection devices
  - Earth Leakage protection
  - Sizing of protective components
  - Surge protection
  - Power cabling and PDU requirements
  - Types of generators
  - Generator components
  - Fuel storage and calculation
  - Generator parallelling
  - Required UPS specifications
  - UPS parallel configuration
  - Harmonic filters
  - Battery bank terminology
  - Calculating battery banks
  - Battery charging
  - Parallelling battery banks
  - Battery testing
  - Battery case selection
  - Flywheel
  - Hydrogen fuel cells

- **Advanced Electro Magnetic Fields**
  - Sources of EMF
  - Single and three phase radiation
  - Measuring EMF
  - Safe distance guidance
  - Calculation of EMF attenuation factors

- **Advanced Cooling**
  - Cooling definitions
  - Psychrometric chart
  - ASHRAE recommendations
  - Heat dissipation
  - Equipment airflow
  - Floor plan set-up
  - Types of perforated tiles
  - Rack door construction
  - Delta-T and impact
  - Optimizing airflow
  - Thermal unit conversions
  - Calculating air volume displacement (CFM/CMH)
  - Cooling capacity calculations
  - Computational Fluid Dynamics (CFD)
  - Air-conditioner efficiency
  - SHR impact on OPEX
  - Efficiency indicators
  - Air-conditioner selection
  - Humidity control
  - Redundancy requirements
  - Installation requirements
  - Service corridor considerations
  - Set points and calibration
  - Advanced cooling technologies – air cooling
  - Advanced cooling technologies – liquid cooling

- **Advanced Fire Protection**
  - Fire triangle
  - Fire detection systems
  - Installation and testing of smoke sensors
  - Water-based suppression systems
  - Gas-based suppression systems
  - Calculate gas content
  - Release and hold times
  - Fire detection panel requirements
  - Verification of installation
  - Ongoing maintenance
  - Alternative systems

- **Designing and Installing Scalable Network Cabling Systems**
  - TIA-942 cabling structure topology
  - Copper and fibre cabling
  - ToR and EoR design
  - Installation best practices
  - Grounding and bonding
  - Cables labelling and administration

- **Environmental Specifications / Contamination Control**
  - Acoustic noise effects, regulations, specifications and limits
  - Data centre contamination categories
  - Contamination measurements, standards and limits
  - Preventive measures

- **Data Centre Efficiency**
  - Business drivers for environmental sustainability
  - Green standards and guidelines
  - Power Usage Effectiveness (PUE)
  - PUE categories
  - Additional performance metrics
  - Open Compute Project (OCP)
  - Savings on cooling infrastructure
  - Savings on light infrastructure

- **Mock Exam**

- **EXAM: Certified Data Centre Specialist**

Roadmap

Delivery Structure and Methods

The CDCS® course is lectured by an EPI Certified Instructor using a combination of lectures and question-and-answer sessions to discuss participants' specific needs and challenges experienced in their own data centre environments. Participants are able to tap into the extensive experience of the trainer enabling them to validate and improve their own environments thus adding tremendous business value.

CDCS® course is available in the following delivery methods:

- ILT – Instructor Led Training
- VILT – Virtual ILT
- TOD – Training On Demand

The classes are available on public schedule as well as private group training.

Examination

The exam is a 90-minute closed book exam, with 60 multiple-choice questions. The candidate requires a minimum of 45 correct answers to pass the exam.

Certification

Candidates who successfully pass the exam will receive the official 'Certified Data Centre Specialist' certificate. The certification is valid for three years after which the student needs to re-certify. More information is available on the EPI corporate website at www.epi-ap.com.

Global Accreditation & Recognition

The CDCS® course and certification is accredited by EXIN, which is a global, independent and not-for-profit accreditation and examination institute. EXIN's mission is to improve the quality of the IT and data centre sectors, the proficiency of IT and data centre professionals and the IT users, by means of accreditation of course material as well as independent examination and certification. Every day, EXIN examinations are taken in more than 125 countries on six continents, and in more than 15 languages.

Recommended Next Course

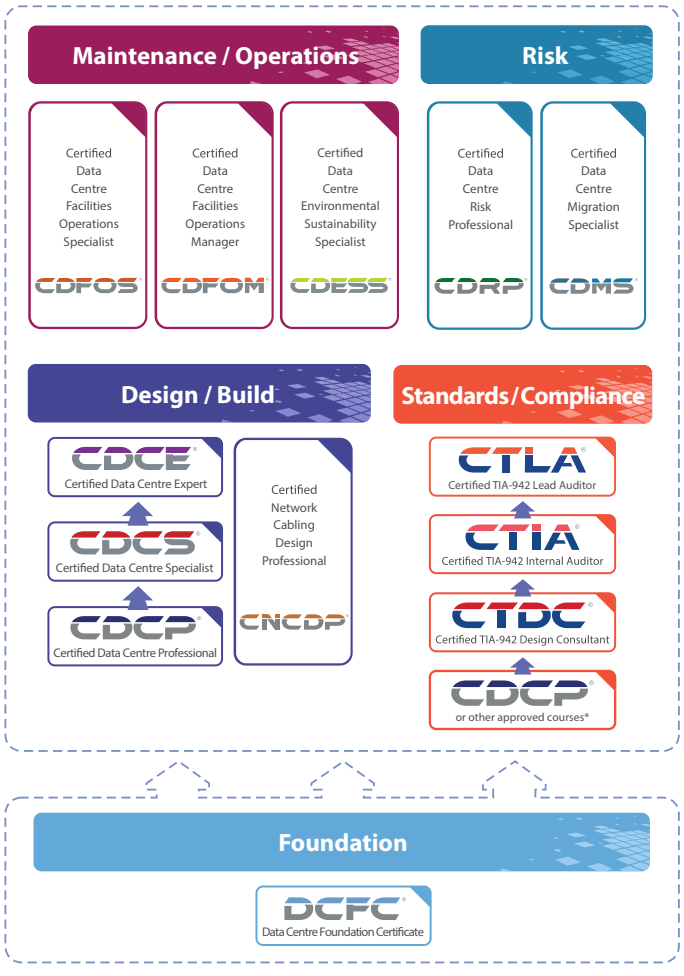
Candidates with a desire to become a data centre expert are recommended to take the CDCE® course. CDCE® prepares participants to manage a project which covers scope, plan, design, implement, and retire or move a mission critical data centre up to the highest redundancy level.

Course Schedule

Our courses are available in over 60 countries across all continents. For a comprehensive course schedule, visit the EPI corporate website at www.epi-ap.com or contact your local authorised reseller/partner.

EPI Data Centre Training Framework©

The EPI Data Centre Training Framework© provides a structured course curriculum for individuals working in and around data centre facilities and data centre operational management. It addresses the various disciplines required to design and manage a high-availability, efficient data centre. EPI's data centre course curriculum is not only the first in the world, it is also by far the largest in the industry. Many companies have specified these courses as prerequisites for their staff working in and around the data centre and use them as part of their career planning initiatives. Recognized globally, these certifications add value to both companies and individuals.



The Company

EPI is a data centre specialist company of European origin operating world-wide in over 60 countries through direct operations and a large partner network. EPI offers an extensive range of data centre services on auditing, certification and training. EPI's focus is on mission-critical, high-availability environments. Established in 1987, EPI has developed an international reputation for delivering high quality technical expertise, with flexible and innovative services, techniques and methodologies.

All our services are aimed at helping our customers to:

- Increase **Availability** of their mission-critical infrastructure
- Improve **Efficiency**, **Effectiveness** and **Manageability**
- **Minimise risk** of business interruption

Our Clients share a common need to protect their valuable data, run their mission-critical infrastructure efficiently and to be protected on a 24 x 7 basis. By protecting the interests of our customers, EPI is committed to an intensive program of comprehensive services development backed by engineering and support excellence.

Quality Systems and Procedures have always been at the heart of every stage of our service delivery to ensure consistent and high quality services. We are known for our thoroughness, flexibility and responsiveness. We focus on providing servicess that fit each organisation and each project with a drive to deliver quality on time, every time.

Let us put our expertise to work for you!

Data Centre Services

Audit & Certification

• Data Centre Standards
- ANSI/TIA-942
- DCOS®
- EN 50600
- ISO/IEC 22237

• Other International Standards
- ISO 9001
- ISO 14001
- ISO 14644
- ISO/IEC 20000-1
- ISO 22301
- ISO/IEC 27001
- ISO/IEC 27701
- ISO 37001
- ISO 45001
- ISO 46001
- ISO 50001
- PCI DSS

• Other Standards
- SS 507
- SS 564
- SS 584
- DTPM
- CBPR
- PRP
- SCRA
- RMiT

Professional Training & Certifications

- Data Centre
  DCFC®, CDCP®, CDCS®, CDCE®, CNCDP®
  CDFOS®, CDFOM®, CDESS®, CDRP®, CDMS®,
  CTDC®, CTIA®, CTLA®

- IT
  CITO®, CITM®, CITD®

Non-Certification Training

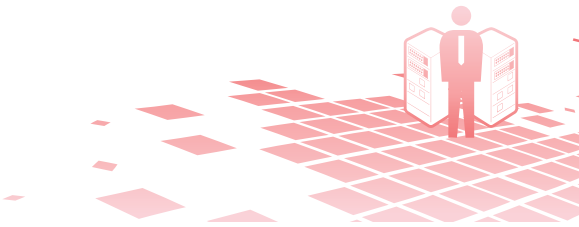
- Digital Transformation

Frameworks

- IT&DCF© - IT & Data Centre Framework
- DCCF® - Data Centre Competence Framework
- DCTF© - Data Centre Training Framework
- ITTF - IT Training Framework

Standard

- DCOS® - Data Centre Operations Standard
- MDCS - Modular Data Centre Standard
- SCMDCS - Self-Contained Modular Data Centre Standard
- CRUR® - Computer Room Utilisation Ratio



Global Headquarters:

Enterprise Products Integration Pte Ltd

Level 21 Centennial Tower, 3 Temasek Avenue, Singapore 039190.

Tel: +(65) 6829-7027 E-mail: sales@epi-ap.com

Local offices in : China, India, Italy, Japan, LATAM, Malaysia, Middle East, Pakistan, Singapore, The Netherlands, USA

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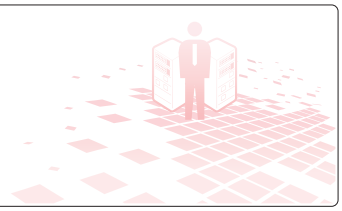
Authorised Reseller/Partner:



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