



EXIN
EPI Data Centre
Management

CDCP®

Certified by


Preparation Guide

Edition 202203



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1. Overview

EXIN EPI Certified Data Centre Professional (CDCP.EN)

Scope

Certified Data Centre Professional (CDCP[®]) is a certification within the EPI Data Centre Training Framework (see Context) that validates a professional's knowledge of and competences in key components of data centres. CDCP is part of a larger structure of certifications for professionals working in data centres.

Summary

Many enterprises rely on IT for the delivery of business-critical services. It is vital that the mission critical data centre is designed, maintained and operated with high availability and efficiency in mind.

The Certified Data Centre Professional knows the requirements for setting up and improving key aspects of the data centre such as power infrastructure, cooling, fire safety/protection, physical network infrastructure, physical security, cabling and safety to ensure a data centre with a high level of availability¹.

The job tasks within data centres are described in the EPI Data Centre Competency Framework. The required competences are derived from the job tasks and are related to the exam specifications (DCCF Competence Matrix and Chapter 2 Exam Requirements). The competencies covered in the CDCP[®] certification are required for individuals who wish to go further to CDCS[®] certification, as can be seen from the Framework in the figure below².

All EPI Data Centre Management certifications have a validity period of 3 years. Technologies change very fast in the industry and in 3 years, certain technologies become obsolete while new technologies may have emerged.

¹ These tasks and focus areas have been chosen by representatives from professional practice in working data centres. They represent the most critical knowledge and competences that enable an employee to design, maintain and operate a data centre.

² Experts from professional practice in working data centres have selected tasks from the DCCF Competence Matrix that represent the essential tasks for Data Centre Professionals.





Context

The certificate Certified Data Centre Professional (CDCP®) is part of the EXIN data centre qualification program and has been developed in cooperation with EPI (www.epi-ap.com). EPI is the owner of the intellectual property of the course content.

The CDCP® scheme is approved by the EPI Data Centre Management Scheme Committee on 15 June 2017.

The scheme committee represents entities from the data centre market, data centre training and data centre qualification.



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Target Group

The examination for Certified Data Centre Professional (CDCP®) is intended for a professional who is:

- working in IT, facilities or Data Centre Operations.
- working in and around the data centre.
- responsible for achieving and improving high availability and manageability of the data centre.

Specific data centre roles related to the CDCP certification³:

9.01 Data Centre Manager	9.20 Structural engineer
9.06 Risk Manager	9.21 Electrical Engineer/ Designer
9.07 Security Manager	9.22 Mechanical Engineer/Designer
9.08 Business Continuity Manager	9.23 Fire/Safety Systems Engineer/Designer
9.09 Environmental Health and Safety Manager	9.24 Security Systems Engineer/Designer
9.10 Sustainability Manager	9.25 Monitoring and Automation Systems Engineer/Designer
9.11 Data Centre Design Manager	9.26 ICT Technology and Network Engineer/ Designer
9.12 Solution Architect	9.27 Commissioning/Testing manager
9.13 Product Manager	9.28 Building Manager
9.14 Service Level Manager	9.29 Facilities Manager
9.15 Account Manager	9.30 Operation Manager
9.16 Project Manager	9.31 Floor manager
9.17 Site Manager	9.32 Data Centre Engineer
9.18 Civil engineer/Construction engineer	9.33 Service Desk Staff
9.19 Architect	9.34 NOC Manager

Requirements for Certification

The exam is most suitable for participants with at least two years of work experience in a data centre/facilities environment. Due to its practice-oriented nature training is mandatory.

Requirements for certification

- Evidence of training of CDCP® by an EXIN accredited training provider, or evidence of a comparable training.
- Successful completion of the CDCP® multiple-choice exam.

Resits

If the candidate fails the exam three times, it is mandatory to do the training again.

Certification is valid for a period of three years, after which the candidate needs to recertify.

Requirements for recertification

- A valid certificate of CDCP®. The expiry date can be found on the certificate.
- Evidence of training of CDCP® by an EXIN accredited training provider.
(Contact your Training Provider for a discount on recertification training)
- Successful completion of the CDCP® exam.

Recertification is required for the highest level certificate the candidate possesses.

³ See EPI Data Centre Competency Framework for the mission, deliverables, main tasks and required competencies in the roles and other possible requirements for the roles. These roles were chosen by representatives from professional practice.



Examination Details

Examination type:	Multiple-choice questions
Number of questions:	40
Pass mark:	68% (27/40 questions)
Open book:	No
Notes:	No
Electronic equipment/aides permitted:	An electronic dictionary is permitted
Exam duration:	60 minutes

The Rules and Regulations for EXIN's examinations apply to this exam.

Bloom level

The EXIN EPI Certified Data Centre Professional certification tests candidates Bloom Level 1 and Level 2 according to Bloom's Revised Taxonomy:

- Bloom Level 1: Remembering – relies on recall of information. Candidates will need to absorb, remember, recognize and recall. This is the building block of learning before candidates can move on to higher levels.
- Bloom Level 2: Understanding – a step beyond remembering. Understanding shows that candidates comprehend what is presented and can evaluate how the learning material may be applied in their own environment.

Training

Any training leading to the CDCP certification must be given by certified trainers. It is expected that the trainer uses a combination of lectures, question-and-answer sessions and exercises, based on the practical assignments. In addition, the trainer must ensure that the candidate fulfills all competence requirements in the practical assignments and the exam specifications in chapter 2 before giving proof of training to a candidate.

Contact Hours

The recommended number of contact hours for this training course is 14. This includes practical assignments, exam preparation and short breaks. This number of hours does not include lunch breaks, homework and the exam.

Indication Study Effort

14-20 hours, depending on existing knowledge.

Practical assignment(s)

Candidates must complete practical assignments and role-playing exercises during the mandatory training by a certified trainer to show their competences as Data Centre Professionals. Factual knowledge is tested in the exam.

Training Organization

You can find a list of our Accredited Training Organizations at www.exin.com.



2. Exam Requirements

The exam requirements are specified in the exam specifications. The following table lists the topics of the module (exam requirements), the subtopics (exam specifications), the number of questions of each subtopic in the exam and the weight given to the module.

Exam Requirements	Exam Specifications	Number of questions	Weight
1 Facilities of the Data Centre		40	100%
	1.1 The Mission Critical Site	2	5%
	1.2 Data Centre Standards	2	5%
	1.3 Data Centre Location, Building and Construction	1	2.5%
	1.4 Raised Access Flooring and Suspended Ceiling	4	10%
	1.5 Light	1	2.5%
	1.6 Power Infrastructure	6	15%
	1.7 Electro Magnetic Fields (EMF)	2	5%
	1.8 Equipment Racks	2	5%
	1.9 Cooling Infrastructure	6	15%
	1.10 Water Supply	1	2.5%
	1.11 Designing a Scalable Network Infrastructure	2	5%
	1.12 Fire Protection	6	15%
	1.13 Physical Security and Safety	3	7.5%
	1.14 Auxiliary Systems	2	5%
	Total	40	100%

Exam Specifications

1 Facilities of the Data Centre

- 1.1 The Mission Critical Site
The candidate can...
 - 1.1.1 provide information on the various layers in the business.
 - 1.1.2 describe the various types of data centres.
 - 1.1.3 outline the various causes and categories for downtime.
 - 1.1.4 describe a simple method of calculating the cost of downtime.
- 1.2 Data Centre Standards
The candidate can...
 - 1.2.1 list the semi-standards and guidelines.
 - 1.2.2 describe at a high level the requirements of the rating levels.
 - 1.2.3 describe the relation between international and national standards.
- 1.3 Data Centre Location, Building and Construction
The candidate can...
 - 1.3.1 list various site selection criteria.
 - 1.3.2 name two main hazard categories.
 - 1.3.3 describe proximity best practices.
 - 1.3.4 name the criteria for selecting a data centre building and describe the impact of code requirements.
 - 1.3.5 list areas which are part of the data centre and their requirements and best practices.
 - 1.3.6 list classic mistakes in data centre designs.
- 1.4 Raised Access Flooring and Suspended Ceiling
The candidate can...
 - 1.4.1 mention the two main types of raised floors.
 - 1.4.2 describe the main standards and general rules for raised flooring.
 - 1.4.3 mention the reasons for using suspended ceilings.
 - 1.4.4 describe the different loading factors for a raised floor.
 - 1.4.5 describe the purpose of a SRG (Signal Reference Grid) and its requirements.
 - 1.4.6 describe the sizing/dimensioning of the raised floor, computer room and suspended ceiling.
- 1.5 Light
The candidate can...
 - 1.5.1 describe the definition of light.
 - 1.5.2 name the units of measure and recommended unit to use.
 - 1.5.3 list the minimum and recommended light intensity levels.
 - 1.5.4 list the requirements for the light fixtures, its connection and placement.
 - 1.5.5 list the purpose and requirements for emergency lights.
 - 1.5.6 list the various types of emergency lights.

- 1.6 Power Infrastructure
The candidate can...
- 1.6.1 name the various components in a power distribution chain.
 - 1.6.2 describe various redundancy levels and techniques.
 - 1.6.3 indicate how to achieve proper power distribution within the data centre.
 - 1.6.4 explain the difference between bonding and grounding.
 - 1.6.5 describe how to apply bonding and grounding in mission critical sites.
 - 1.6.6 outline PDU standards and form factors.
 - 1.6.7 name the IP Protection grades.
 - 1.6.8 name the main electrical power and power quality units of measure, tolerances and their impact, causes and sources of power quality disturbances.
 - 1.6.9 outline the differences between the UPS technologies.
 - 1.6.10 describe various battery and battery monitoring technologies, their application/usage and pro's/con's.
 - 1.6.11 describe the thermo-graphics and their purpose.
- 1.7 Electro Magnetic Fields (EMFs)
The candidate can...
- 1.7.1 explain what an EMF is.
 - 1.7.2 mention the two main different types of EMFs and units of measurements.
 - 1.7.3 list the potential sources for an EMF.
 - 1.7.4 name the norms and best practices for EMF and their recommended values.
 - 1.7.5 explain how to reduce an EMF.
- 1.8 Equipment Racks
The candidate can...
- 1.8.1 outline the difference between 2-post and 4-post racks.
 - 1.8.2 name the different 4-post rack types with their limitations.
 - 1.8.3 recognize the various widths and depths of racks and their usage and impact.
 - 1.8.4 name the various security measures available for racks.
 - 1.8.5 clarify the various power rail/power strip, color, casters, security and other considerations and their application.
- 1.9 Cooling Infrastructure
The candidate can...
- 1.9.1 describe the trends in heat loads and the problems they pose to mission critical sites and their equipment.
 - 1.9.2 describe the various air-conditioning types with their pros and cons.
 - 1.9.3 explain how to cool a data centre and its equipment and the requirements for air volume displacement.
 - 1.9.4 name the various units in which cooling capacity is measured and the applicable standards and recommended values.
 - 1.9.5 explain how to convert cooling units.
 - 1.9.6 describe various techniques for high density cooling.
 - 1.9.7 mention common cooling problems.
 - 1.9.8 explain how to avoid cooling problems.
- 1.10 Water Supply
The candidate can...
- 1.10.1 explain the function of water for data centre operations.
 - 1.10.2 list the options for creating a backup water supply system and its pros and cons.

- 1.11 Designing a Scalable Network Infrastructure
The candidate can...
 - 1.11.1 explain the function of the network and planning for implementation.
 - 1.11.2 mention the various copper and fiber network technologies with their pros and cons.
 - 1.11.3 describe a method for connectivity planning.
 - 1.11.4 explain how to achieve network diversity and redundancy.
 - 1.11.5 list the various network connections.
 - 1.11.6 explain how to achieve building-to-building connectivity.
 - 1.11.7 name the installation best practices.
 - 1.11.8 mention test and verification methods.
 - 1.11.9 list the network monitoring requirements.
- 1.12 Fire Protection
The candidate can...
 - 1.12.1 name the most common causes of fire.
 - 1.12.2 describe requirements for fire suppression systems.
 - 1.12.3 list standards for fire suppression and describe their content.
 - 1.12.4 mention the fire detection systems and their operating principles.
 - 1.12.5 describe the gas and non-gas based fire suppression systems available, their operating principles, and their pros and cons.
 - 1.12.6 name the various classes of fire and correctly identify which handheld fire extinguishers to use.
 - 1.12.7 describe requirements for signage and safety and regulatory requirements.
- 1.13 Physical Security and Safety
The candidate can...
 - 1.13.1 name options for physical security.
 - 1.13.2 describe requirements for Closed Circuit Television (CCTV) cameras.
 - 1.13.3 list the various entry control options.
 - 1.13.4 name options for physical safety.
- 1.14 Auxiliary Systems
The candidate can...
 - 1.14.1 outline the challenges and requirements for monitoring data centres.
 - 1.14.2 describe the different monitoring systems.
 - 1.14.3 describe notification options.
 - 1.14.4 describe which factors to monitor.

3. List of Basic Concepts

This chapter contains the terms and abbreviations with which candidates should be familiar.

Please note that knowledge of these terms alone does not suffice for the exam; the candidate must understand the concepts and be able to provide examples.

For further information on the concepts of CDCP® we refer to the CDCP® Course Syllabus of EPI, the course provider on www.epi-ap.com

(H)EMP Standards	documentation
air conditioner techniques	downtime
apparent power	electrical fields definitions
applicable standards	Electro Magnetic Fields (EMF's)
application areas	emergency light, Emergency Power Systems (EPS)
Automatic Transfer Switch (ATS)	EMF shielding solutions
backup water supply techniques	energy efficiency
battery types	Environmental Monitoring System (EMS)
best practices	facilities setup
bonding	fire suppression
Building Management System (BMS)	fire suppression systems;
building-to-building connectivity	fire suppression techniques
bus bar trunking	form factors
cable characteristics	generators
cabling hierarchy	grounding
comfort cooling	grounding of racks
common mode noise	high density cooling techniques
connectivity requirements	how to size and calculate load in the data center
conversion rates	IP protection grades
cooling infrastructure	isolation transformers
cooling requirements	latent heat definitions
cooling trends	light fixtures types and placement
cooling units	light standards
data center monitoring	magnetic fields definitions
data center monitoring requirements	network monitoring system requirements
data centre	network redundancy
data centre building	notification considerations
data centre construction	notification options
Data Centre Infrastructure Management (DCIM)	physical safety controls
data centre location	physical security controls
detection systems	power cabling
disability act and regulations	power distribution option
document policies	power infrastructure
document procedures	power infrastructure layout, from generation to rack level



power quality guidelines
precision cooling
raised floor
real power
recommended installation practices
redundancy levels and techniques
safety
scalable network infrastructure

sensible heat definitions
testing structured cabling
thermo-graphics
three phase usage
uniform, concentrated and rolling load definitions
verifying structured cabling infrastructure
water leak detection systems
water supply





4. Literature

Exam Literature

During the CDCP® course candidates receive a Student Course Manual. For further information we refer to www.epi-ap.com.







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