



**Preparation Guide**

Edition 201803

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# 1. Overview

EXIN Cloud Computing Foundation (CLOUDF.EN)

## Scope

Cloud Computing is about providing IT related services through the internet. Cloud Computing allows flexible IT solutions to support the business, based on clear service arrangements.

## Summary

The EXIN Cloud Computing Foundation certificate requires an overview of the field and its relationship with other areas of Information Management. Such an overview is based on knowledge of the fundamental concepts of Cloud Computing and understanding of the architecture, design, deployment of Cloud Computing and its incorporation in the organization.

## Context

The exam Cloud Computing Foundation is part of the EXIN qualification program and has been developed in cooperation with international experts in the field.

## Target group

EXIN Cloud Computing Foundation is intended for everyone playing a role or having an interest in the use and management of internet-based services. This includes staff from internal and external service providers, their customers, managers and auditors.

## Requirements for certification

- Successful completion of the EXIN Cloud Computing Foundation exam.

## Examination details

Examination type:	Multiple-choice questions
Number of questions:	40
Pass mark:	65%
Open book/notes:	No
Electronic equipment/aides permitted:	No
Time allotted for examination:	60 minutes

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

## Training

### Contact hours

The recommended number of contact hours for this training course is 16. This includes practical assignments, exam preparation and short breaks. This number of hours does not include homework, logistics for exam preparation and lunch breaks.

### Indication study effort

60 hours, depending on existing knowledge.



## Training organization

You can find a list of our accredited training organizations at [www.exin.com](http://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) and the subtopics (exam specifications).

Exam requirement	Exam specification	Weight
<b>1. The principles of Cloud Computing</b>		<b>30%</b>
	1.1 The concept of Cloud Computing	5%
	1.2 The evolution towards Cloud Computing	10%
	1.3 Cloud Computing architectures	10%
	1.4 Drivers and limitations of Cloud Computing	5%
<b>2. Implementing and managing Cloud Computing</b>		<b>20%</b>
	2.1 Building local Cloud environment	10%
	2.2 Managing Cloud services	10%
<b>3. Using the Cloud</b>		<b>15%</b>
	3.1 Accessing the Cloud	5%
	3.2 Cloud and the business processes	5%
	3.3 Service providers and the Cloud	5%
<b>4. Security and compliance</b>		<b>20%</b>
	4.1 Securing the Cloud	10%
	4.2 Identity and privacy	10%
<b>5. Evaluation of Cloud Computing</b>		<b>15%</b>
	5.1 The business case	10%
	5.2 Evaluating implementations	5%
<b>Total</b>		<b>100%</b>

## Exam specifications

### 1. The principles of Cloud Computing

- 1.1 The candidate understands the concept of Cloud Computing  
The candidate can:
  - 1.1.1 Explain what Cloud Computing is
  - 1.1.2 Compare the main Deployment Models for Cloud Computing (Private, Public, Community and Hybrid cloud)
  - 1.1.3 Describe the main Service Models for Cloud Computing (Paas, IaaS, SaaS)
- 1.2 The candidate knows the evolution toward Cloud Computing  
The candidate can:
  - 1.2.1 Describe the main concepts from which Cloud Computing developed
  - 1.2.2 Explain the role of network and servers in Cloud Computing
  - 1.2.3 Describe the role of the Internet in Cloud Computing
  - 1.2.4 Explain the role of Virtualization in Cloud Computing
  - 1.2.5 Describe the role of managed services in Cloud Computing
- 1.3 The candidate understands the Cloud Computing architectures  
The candidate can:
  - 1.3.1 Explain the difference between a single purpose and multipurpose architecture
  - 1.3.2 Describe the Service Oriented Architecture
- 1.4 The candidate knows drivers and limitations of Cloud Computing  
The candidate can:
  - 1.4.1 Identify the main drivers for Cloud Computing
  - 1.4.2 Identify the main limitations of Cloud Computing

### 2. Implementing and Managing Cloud Computing

- 2.1 The candidate understands the building of Local Cloud environment  
The candidate can:
  - 2.1.1 Describe the main components of a local cloud environment and how they are interconnected
  - 2.1.2 Describe the use of secured access to a Local Area Network
  - 2.1.3 Describe the risks of connecting a local cloud network to the public internet
- 2.2 The candidate understands the principles of managing Cloud services  
The candidate can:
  - 2.2.1 Describe the use of IT Service Management principles (ISO/IEC 20000) in a Cloud environment
  - 2.2.2 Explain the management of service levels in a Cloud environment

### 3. Using the Cloud

- 3.1 The candidate knows how users can access the Cloud  
The candidate can:
  - 3.1.1 Describe how to access Web Applications through a Web Browser
  - 3.1.2 Describe the Cloud Web Access Architecture
  - 3.1.3 Describe the use of a Thin Client
  - 3.1.4 Describe the use of mobile devices in accessing the cloud
- 3.2 The candidate understands how Cloud Computing can be used for business processes  
The candidate can:
  - 3.2.1 Identify the impact of Cloud Computing on the primary processes of an organization
  - 3.2.2 Describe the role of standard applications in collaboration
- 3.3 The candidate understands how Service Providers can use the Cloud  
The candidate can:
  - 3.3.1 Explain how using Cloud Computing changes the relation between vendors and customers
  - 3.3.2 Identify benefits and risks of providing Cloud based services

#### **4. Security and compliance**

4.1 The candidate understands the security risks of Cloud Computing and knows mitigating measures

The candidate can:

4.1.1 Describe the security risks in the cloud

4.1.2 Describe measures mitigating security risks

4.2 The candidate understands managing identity and privacy in the Cloud

The candidate can:

4.2.1 Describe the main aspects of Identity management

4.2.2 Describe privacy and compliance issues and safeguards in Cloud Computing

#### **5. Evaluation of Cloud Computing**

5.1 The candidate understands the business case for Cloud Computing

The candidate can:

5.1.1 Describe the costs and possible savings of Cloud Computing

5.1.2 Describe the main operational and staffing benefits of Cloud Computing

5.2 The candidate understands evaluation of Cloud Computing implementations

The candidate can:

5.2.1 Describe the evaluation of performance factors, management requirements and satisfaction factors

5.2.2 Describe the evaluation of service providers and their services in Cloud Computing



### 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.

#### Core concepts

Application hosting	Multi-user
Authentication, Authorization, Accounting (AAA, Triple A)	Network
Availability	Network Attached Storage (NAS)
Back-up service	Network infrastructure
Capital Expenditure (CAPEX)	Network protocol
Claim based solution	Online games
Client-Server	Open System Interface (OSI)
Cloud access architecture	Open Virtualization Format (OVF)
Cloud Computing	Open-ID
Cloud presence	Operating system
Common Internet File System (CIFS)	Operational benefit
Compliance	Operational Expenditure (OPEX)
Confidentiality	Pay-as-you-go model
Denial-of-service attack (DoS)	Performance factors
Deployability	Permissive federation
Digital identity	Personal Identifiable Information (PII)
Distributed Denial-of-service (DDOS)	Platform as a Service (PaaS)
Distributed Management Task Force (DMTF)	Portability
Drop box	Privacy
Encrypted federation	Privacy notice
Extensible Markup Language (XML)	Private cloud
Extensible Messaging and Presence Protocol (XMPP)	Public cloud
Extranet	Recovery
Failover	Redundancy
Federation	Remote datacenter
Guest operating system	Replication
Hybrid cloud	Risk
Hyper Text Markup Language (HTML)	Satisfaction factors
Hypervisor	Scalability
Identity	Scripting language
Identity management	Security
Infrastructure as a Service (IaaS)	Server
Instant messaging (IM)	Service level
Instant Messaging and Presence Service (IMPS)	Service Level Agreement (SLA)
Integrity	Service Oriented Architecture (SOA)

Internet Protocol Security (IPSec)	Single sign-on (SSO)
Interoperability	Software as a service (SaaS)
Intranet	Staffing benefit
IT infrastructure	Stakeholder
IT service	Subcontracted supplier
JavaScript	Supplier contract
Latency	Supplier management
Local Area Network (LAN)	Support
Location independent	Thin client
Loosely coupled	Throughput
Mainframe	Tiered architecture
Man-in-the-middle attack	Time to Value
Messaging protocol	Time-to-market
Microcomputer	Total Cost of Ownership (TCO)
Middleware	Traceability
Migration	Transmission Control Protocol / Internet Protocol (TCP/IP)
Minicomputer	Utility
Mobile device	Verified federation
Mobility	Virtual Machine (VM)
Multimedia Message Service (MMS)	Virtual Private Network (VPN)
Multiprocessing	Virtualization
Multi-programming	Virtualized environment
Multiprotocol Label Switching (MPLS)	Web browser
Multipurpose architecture	Web frontend
Multi-sides	Workload

### Additional terms

Application	Memory
Audit	National Security Agency (NSA)
Back-up	Open Cloud Consortium (OCC)
Bandwidth	Pretty Good Privacy (PGP)
Bits per second (bps)	Processing
Blog	Protocol Analyzer
Business logic	Short Message Service (SMS)
Bytes per second (Bps)	Slide share
Cell phone	Smartphone
Client	Social media
Common carrier	Software
Cost	Storage
Customer	Storage Management Initiative-Specification (SMI-S)
Customer Relation Management tool	System Management Architecture for System Hardware (SMASH)
Data center	Track
Database	User

Datacenter architecture	Video telecommunication
E-commerce	Virtualization Management Initiative (VMAN)
Economic benefit	Virus (infection)
E-mail	Voice-over-IP (VoIP)
Frame relay network	Web Service Management (WS-MAN)
Green IT	Web-based Enterprise Management (WBEM)
Hardware	Webmail
Institute for Electrical and Electronics Engineers (IEEE)	Website
International Standards Organization (ISO)	Wiki
JavaScript Object Notation (JSON)	Wikispace

## 4. Literature

### Exam literature

The knowledge required for the exam is covered in the following literature:

- A** J.W. van den Bent (ed.) and M. van der Steeg  
**EXIN CLOUD Computing Foundation – Workbook**  
EXIN, 2015  
ISBN: 978-90-820388-8-0 (e-book)  
ISBN: 978-94-018025-2-9 (hard copy)

### Additional literature

- B** ISO/IEC 17788:2014(en)  
Information technology – Cloud computing – Overview and vocabulary

### Comment

Additional literature is for reference and depth of knowledge only.

## Literature matrix

Exam requirement	Exam specification	Literature
<b>1. The principles of Cloud Computing</b>		
	1.1 The concept of Cloud Computing	A: Chapter 1
	1.2 The evolution towards Cloud Computing	A: Chapter 1
	1.3 Cloud Computing architectures	A: Chapter 1
	1.4 Drivers and limitations of Cloud Computing	A: Chapter 1
<b>2. Implementing and managing Cloud Computing</b>		
	2.1 Building local Cloud environment	A: Chapter 2
	2.2 Managing Cloud services	A: Chapter 2
<b>3. Using the Cloud</b>		
	3.1 Accessing the Cloud	A: Chapter 3
	3.2 Cloud and the business processes	A: Chapter 3
	3.3 Service providers and the Cloud	A: Chapter 3
<b>4. Security and compliance</b>		
	4.1 Securing the Cloud	A: Chapter 4
	4.2 Identity and privacy	A: Chapter 4
<b>5. Evaluation of Cloud Computing</b>		
	5.1 The business case	A: Chapter 5
	5.2 Evaluating implementations	A: Chapter 5

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