POLY UNIVERSITY

UC THEORY FUNDAMENTALS EXAM BLUEPRINT

UCTFND-EX

OBJECTIVES

This exam is designed to help verify that technical support staff, system installers and solution designers who are designing, deploying and supporting Unified Communications solutions have a fundamental knowledge of core technologies used as part of a customer Unified Communication solution.

The UCTFND-EX exam is a required component of all Specialist Level certifications in the Poly Expert Program.

EXAM OVERVIEW

The Poly UC&C Theory Fundamentals Exam (UCTFND-EX) verifies that the successful candidate understands the core Unified Communication and Collaboration theoretical concepts which will enable them to follow a Specialist level certification within the **Poly Expert Program**.

TARGET AUDIENCE

This exam is appropriate for all technical audiences involved with the deployment, support and operation of Unified Communication and Collaboration solutions.

ASSOCIATED CERTIFICATIONS

The UC&C Theory Fundamentals Exam (UCTFND-EX) is a component of the Poly Expert Program and is a required element of the following certification paths:

- **Poly Voice Specialist** (**VOICE-SPC**)
- **Poly Video Specialist** (**VIDEO-SPC**)
- **Poly Infrastructure Specialist** (**INFRA-SPC**)

RECOMMENDED STUDY

In order to successfully complete the UCTFND-EX exam, Poly University recommends the following learning:

- UC Theory Fundamentals (UCTFND) Course

FORMAT FOR THE EXAM

This exam is presented as an online multiple-choice assessment.

The assessment contains a total of **40** questions, and you will have **60** minutes to complete the examination.

A score of **70%** or higher is required to pass the exam.

Exam Duration:	**60 minutes**
Questions Presented:	**40 questions**
Pass Grade:	**70% / 28 questions** *You must correctly answer 28 questions or more to achieve a pass mark for this exam*

GENERAL TOPIC AREAS

The UCTFND-EX assessment is based on the content of the UC Theory Fundamentals (UCTFND) elearning course which covers the following topic areas:

COMMUNICATION BASICS

- Introduction to UC&C
- Analogue signals vs Digital signals
- Blending Data Types – Unified Communication
- Communication and Human Interaction
- Intro to UC&C
- Network types - WiFi, DECT, Bluetooth, Ethernet, IP
- Real-time vs Non-Real time Communication
- Analogue to Digital Conversion

FUNDAMENTALS OF HEARING AND ACOUSTICS

- Analogue Audio Signals
- Essential acoustic concepts
- How does hearing work
- What is sound

FUNDAMENTALS OF VISION AND VIDEO

- Clear Vision: Understanding Sight
- Color Video Signals
- How a video camera works
- Image Refresh Rate
- Image resolution
- Let’s be clear: the function of the lens
- Shedding light on the function of the iris
- The function and structure of the eye

FUNDAMENTAL COMMUNICATION CONCEPTS

- Circuits vs Packets
- Defining the rules of communication
- Moving Digital Data
- Protocols and Standards
- The Internet Protocol Suite
- Unified Communication

LAYERED APPROACH TO COMMUNICATION PROTOCOLS

- The Application Layer
- The Data-Link Layer
- The IP Suite Model vs the OSI Model
- The Network Layer
- The Physical Layer
- The Presentation Layer
- The Session Layer
- The Transport Layer
- What is the OSI Model and how it works

INTRODUCTION TO THE INTERNET PROTOCOL STACK

- A (Very) Brief History of IP and the Internet
- Application Layer Protocols for IP
- Default Gateway
- IPv4 Addresses
- IPv6 Addresses
- Layer 3 Internetworking
- Private IP addresses
- Subnet Masks
- TCP and UDP
- The Internet Protocol (IP)
- Transmission Control Protocol (TCP)
- User Datagram Protocol (UDP)

DNS AND DHCP

- Additional IP Protocols
- Address Resolution
- DHCP Scope Options
- Domain Name System
- Dynamic Host Configuration Protocol
- IP Address Management

REAL-TIME DATA OVER IP (SIP AND H.323)

- Carrying Real-time Data over IP
- H.323
- Real-time Transport Protocol (RTP)
- Session Initiation Protocol
- What is Signalling (Intro to SIP and H.323)

CALL SERVERS FOR VOICE AND VIDEO

- H.323 Gatekeepers
- Other Call Server Platforms
- SIP Servers
- Why do we need Call Servers

BASICS OF BANDWIDTH, COMPRESSION AND QOS

- Audio and Video Bandwidth
- Compression
- Quality of Service
- Requirements of Real-time Traffic

WIRELESS TECHNOLOGIES OVERVIEW

- Airplay, Miracast and DLNA
- DECT vs Bluetooth
- So What Exactly is Wifi?
- The Pros and Cons of Wireless
- WiFi Frequency Ranges and Variants
- Wireless Radio Frequencies
- Wireless Technology

DEVICE PROVISIONING

- Device Identification
- How does Provisioning Work?
- Profile choice
- Provisioning Server Address
- User Identification/credentials
- What is Provisioning?
- Zero Touch Onboarding

CLOUD TECHNOLOGY

- Cloud Hosting Providers
- Examples of Cloud Services
- Private Cloud, Public Cloud and Hybrid
- Pros and Cons of Cloud Services
- What and Where is “The Cloud”

DETAILED STUDY OBJECTIVES

The questions for the UCTFND-EX assessment are designed to test your understanding of the key theoretical concepts underpinning a Unified Communication solution.

The following is a detailed list of objectives that have been used to derive the exam questions.

Note: Exam questions and learning objectives are subject to change without notice.

1. INTRODUCTION TO UC

1.1. Identify the elements of person-to-person communication
1.2. Define the term Unified Communications
1.3. Identify advantages of Unified Communications
1.4. Identify the requirements for interactive communication

2. FUNDAMENTALS OF HEARING AND ACOUSTICS

2.1. Define the nature of Sound
2.2. Define the term "Amplitude" as it relates to sound
2.3. Define the term "Frequency" as it relates to sound
2.4. Explain the role of Decibels as a unit of measure
2.5. Identify the range and imitations of human hearing
2.6. Identify the function of components of the human ear
2.7. Define the term "Phase" as it relates to sound
2.8. Explain the significance of phase on sound wave interaction
2.9. Define the terms "Analog" and "Digital"
2.10. Identify the range of frequencies supported by a traditional analogue telephone call
2.11. Identify the standard bandwidth used in digital telephony

3. FUNDAMENTALS OF VISION AND VIDEO

3.1. Identify the function of components of the human eye
3.2. Identify differences in function and operation of lenses in the human eye and in a digital camera
3.3. Define resolutions used in common video formats
3.4. Identify components of a color video signal

4. FUNDAMENTAL COMMUNICATION CONCEPTS

4.1. Compare advantages and disadvantages of analog and digital signals
4.2. Define steps in the process of analog to digital conversion
4.3. Define the requirements for "Real-time Communication"
4.4. Identify examples of "Non-real time Communication"
4.5. Identify examples of "Real-time Communication"
4.6. Identify issues with blending real-time communications with non-real-time communications
4.7. Define the terms "Latency" and "Jitter"
4.8. Identify issues with blending real-time communications with non-real-time communications
4.9. Define the term "Proprietary" as it relates to communication systems
4.10. Identify the nature and function of different communication systems

5. LAYERED APPROACH TO COMMUNICATION PROTOCOLS

5.1. Identify the layers of the OSI model
5.2. Define the functions of each layer of the OSI model
5.3. Identify the layers of the OSI model
5.4. Define the functions of each layer of the OSI model
5.5. Identify the layers of the OSI model
5.6. Define the functions of each layer of the OSI model
5.7. Identify the layers of the OSI model
5.8. Define the functions of each layer of the OSI model
5.9. Identify the layers of the OSI model
5.10. Define the functions of each layer of the OSI model
5.11. Identify the layers of the OSI model
5.12. Define the functions of each layer of the OSI model
5.13. Identify the layers of the OSI model
5.14. Define the functions of each layer of the OSI model
5.15. Identify the layers of the OSI model
5.16. Define the functions of each layer of the IP Protocol stack
5.17. Identify the layers of the IP Protocol stack

6. INTRODUCTION TO THE INTERNET PROTOCOL STACK

6.1. Identify applications suitable for transmission using TCP
6.2. Identify components of the TCP protocol header
6.3. Identify components of the UDP protocol header
6.4. Identify the advantages and disadvantages of the UDP protocol
6.5. Identify examples of IP Application Layer Protocols
6.6. Define the functions of the IP Protocol
6.7. Identify components of the IP Protocol header
6.8. Define the function and format of an IPv4 address
6.9. Define the function and format of a subnet mask
6.10. Define the function of a Default Gateway
6.11. Define the advantages of the IPv6 address format
6.12. Define the function and format of an IPv6 address
6.13. Define the function of IPv4 Private Address ranges
6.14. Define the functions and formats of TCP and UDP

7. DNS AND DHCP

7.1. Define the advantages of Address Resolution systems
7.2. Identify examples of Address Resolution systems
7.3. Define the role of the Doman Name System
7.4. Identify DNS address structure components
7.5. Define the functions of the DHCP protocol
7.6. Identify tools for IP address management
7.7. Identify common DHCP scope options
7.8. Identify examples of IP Application Layer Protocols

8. REAL-TIME DATA OVER IP (SIP AND H.323)

8.1. Define the function and features of RTP
8.2. Define requirements for real-time data transport
8.3. Identify appropriate mechanisms for transporting Real-time data over IP
8.4. Identify examples of real-time data
8.5. Define the role of call signaling in conference call communication
8.6. Define the roles of SIP and H.323 as call signaling protocols
8.7. Identify components of a conference call communication
8.8. Define the functions and features of the Session Initiation Protocol
8.9. Identify standard message components of a SIP call establishment
8.10. Define the function and features of H.323 Call Signaling messages (H.225.0)
8.11. Define the function and features of H.323 Registration, Admission, Status (RAS) messages

9. CALL SERVERS FOR VOICE AND VIDEO

9.1. Define the functions of a Call Server
9.2. Identify the services offered by a SIP server
9.3. Identify benefits of using H.323 Call Signaling Routing
9.4. Identify the services offered by an H.323 Gatekeeper

10. 11 WIRELESS TECHNOLOGIES OVERVIEW

10.1. Identify types of wireless technology
10.2. Identify advantages and disadvantages of using wireless technology
10.3. Identify radio frequencies used for commercial wireless technologies
10.4. Compare functions and features of DECT and Bluetooth communication systems
10.5. Identify common technologies used for wireless display mirroring

11. 12 DEVICE PROVISIONING

11.1. Define the term "Device Provisioning"
11.2. Identify methods for device identification used in Device Provisioning
11.3. Identify required components of a Device Provisioning solution

12. 13 CLOUD TECHNOLOGY

12.1. Identify advantages and disadvantages of Cloud technology
12.2. Define the terms "Private Cloud", "Public Cloud" and "Hybrid Cloud"