

Unit Syllabus

Level 2 Networking, telephony and VoIP for the digital home technology integrator

7575 - 004



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City & Guilds

1 Giltspur Street

London EC1A 9DD

T +44 (0)20 7294 2787

F +44 (0)20 7294 2413

www.cityandguilds.com

centresupport@cityandguilds.com

Contents

Outcome 1	Plan and document a Local Area Network to meet a customer's needs	3
Outcome 2	Install and configure a wired and wireless network in a home environment	5
Outcome 3	Secure data and hardware on a home network	6
Outcome 4	Configure the hardware and software required for VoIP	7
Outcome 5	Troubleshoot networks	8
Unit record sheet		13

Rationale

This unit will enable candidates to plan and install a local area network that provides and integrates data and Voice over Internet Protocol (VoIP) facilities. Candidates will develop an understanding of the technologies available and how they can be integrated in a home environment to meet a customer's needs. They will also develop practical skills required to install components required to enable data and VoIP traffic to be supported on a Local Area Network (LAN).

Level: 2**Unit no: J/502/4500****Credit Value: 4****GLH: 30****Learning Outcomes**

There are five outcomes to this unit. The candidate will be able to:

1. Plan and document a LAN to meet a customer's needs.
2. Install and configure a wired and wireless network in a home environment
3. Secure data and hardware on a home network
4. Install and configure the hardware and software required for VoIP
5. Troubleshooting LAN networks

Unit 004

Networking, telephony and VoIP for the Digital Home Technology Integrator

Outcome 1 Plan and document a Local Area Network to meet a customer's needs

Practical activities

The candidate will be able to:

- 1 Carry out a survey to determine the equipment and software needed to meet the customer's requirements:
 - a. types of features and services requested by the customer
 - b. the location of existing devices that need to be integrated in to the network
 - c. types and location of any existing transmission media and power and data outlets
 - d. proposed locations of any transmission media and devices
 - e. any structural features or planned building work that may affect the choice of transmission media being used

- 2 produce plans and document a solution to meet the customer's requirements using written or electronic methods that detail:
 - a. the location of each device
 - b. the routes of the transmission media
 - c. the type of transmission media used
 - d. the technical specifications of the devices used
 - e. distances between devices/length of each segment of media
 - f. location of data, phone and power outlets
 - g. IP addresses and subnet masks to be used by each device
 - h. Software and device drivers required

- 3 obtain information from a range of sources:
 - a. written manuals eg manufacturers documentation
 - b. on-line resources eg manufactures websites

Underpinning knowledge

The candidate will be able to:

- 1 identify suitable types of transmission media to meet the customer's requirements such as
 - a. Twisted pair and coaxial
 - b. Power line
 - c. Wireless

2. list the characteristics of the transmission media that has been selected
 - a. Data transfer speed
 - b. Maximum permitted length of cable without amplification or regeneration

- c. Common causes of interference on wired and wireless LAN networks and possible remedies
 - d. IEEE 802.11 standards
- 3. identify types of devices that are suitable for a home network such as:
 - a. Wired or wireless router
 - b. Wireless access points
 - c. Hubs
 - d. Switches
 - e. Modems
 - f. VoIP devices
- 4. identify types of software required to meet the customer's needs such as:
 - a. Operating System
 - b. Device drivers
 - c. VoIP software
 - d. Firewall
 - e. Antivirus
- 5. describe the importance of networking protocols and services such as:
 - a. IP V4 addresses
 - b. IP V4 Classes and default subnet masks
 - c. IP V6 addresses
 - d. DNS
 - e. DHCP
 - f. NAT and PAT
- 6. explain the reasons behind producing plans and documentation for a solution such as
 - a. Plan the installation
 - b. Identify legal requirements and physical constraints
 - c. Aids fault finding
 - d. Allows the customer to confirm that they are satisfied with the selected equipment, layout and cost
 - e. Information regarding the configuration of software and protocols is available to the customer if they wish to modify the network.

Unit 004

Networking, telephony and VoIP for the Digital Home Technology Integrator

Outcome 2 Install and configure a wired and wireless network in a home environment

Practical activities

The candidate will be able to:

- 1 Install wired transmission media and devices
 - a. Termination of cables
 - b. Installing cables
 - c. Site devices appropriately
 - d. Configure devices and update firmware
 - e. Test connectivity

- 2 Install devices used with wireless networks
 - a. Configure devices
 - b. Ensure that the devices are functioning correctly
 - c. Enable Resource sharing and Peer-to-Peer networking
 - d. Test connectivity

Underpinning knowledge

The candidate will be able to:

- 1 list the features of transmission media
 - a. Types available
 - b. Termination of cables
 - c. Cable standards
 - d. Wireless network standards
 - e. Data transmission speeds

2. explain how to install and configure the features and services such as:
 - a. IP Addresses
 - b. Subnet masks
 - c. SSID
 - d. WEP/WPA/WPA2
 - e. Firewalls
 - f. Network devices such as hubs, switches and routers
 - g. Peer-to-Peer networking
 - h. Remote access
 - i. Files sharing
 - j. Broadband technologies such as ADSL and Cable
 - k. DHCP
 - l. DNS
 - m. NAT and PAT

Unit 004

Networking, telephony and VoIP for the Digital Home Technology Integrator

Outcome 3

Secure data and hardware on a home network

Practical activities

The candidate will be able to:

- 1 Install antivirus software
 - a. Install
 - b. Configure
 - c. Update the virus definition files
 - d. Backup data and create restore points
- 2 Install a firewall
 - a. Install hardware and software firewalls
 - b. Configure software firewalls on individual PCs
 - c. Configure a hardware firewall
3. Configure security and privacy settings for a web browser such as
 - a. Cookies
 - b. Restricted sites
 - c. Content adviser
 - d. Managing browser add-ons

Underpinning knowledge

The candidate will be able to:

- 1 explain aspects of home networking security such as
 - a. Types of virus
 - b. Antivirus software
 - c. Firewalls
 - d. Securing web browsers
 - e. Cookies
 - f. Spyware
 - g. Malware
 - h. Physical security of IT equipment
 - i. Types of user accounts
- 2 explain aspects wireless network security such as
 - a. WEP
 - b. WPA/WPA2
 - c. SSID
 - d. MAC Filtering

Unit 004

Networking, telephony and VoIP for the Digital Home Technology Integrator

Outcome 4 Configure the hardware and software required for VoIP

Practical activities

The candidate will be able to:

- 1 Install software and hardware required to allow VoIP communications.
 - a. Install hardware devices eg ADSL splitter/filter, VoIP handset or cable modem
 - b. Install associated software eg device drivers, application software
 - c. Configure the associated software

Underpinning knowledge

The candidate will be able to:

- 1 Identify VoIP/telephony technologies such as
 - a. PTSN
 - b. Broadband (cable, ADSL and GPRS)
 - c. Types of transmission media used with broadband
 - d. VoIP hardware devices
 - e. VoIP software
- 2 install VoIP
 - a. Install VoIP hardware and software
 - b. Configure VoIP hardware and software

Outcome 5 Troubleshoot networks**Practical activities**

The candidate will be able to:

- 1 Troubleshoot transmission media software and devices
 - a Visually inspect cables and connections
 - b Use cable tester
 - Check wireless connectivity and devices
 - Identify and isolate causes of interference
 - c Check network configuration and security settings
 - d Use utilities such as ping, ipconfig, tracert
 - e Check manufacturers websites for software updates
 - Check configuration of VoIP and calls can be made

Underpinning knowledge

The candidate will be able to:

- 1 Troubleshoot wired and wireless LANs
 - b Common types and causes of interference
 - c Check software updates are functioning and roll back if necessary
 - d Check IP addresses and subnet masks
 - e check DHCP settings
 - f check DNS, NAT and PAT settings
 - g Check default gateway settings
 - Identify types of cable testers
 - Use various cable testers
 - Identify wired transmission media termination
 - Check hardware devices are functioning

Unit record sheet

Use this form to track your progress through this unit.

Tick the boxes when you have covered each outcome. When they are all ticked, you are ready to be assessed.

Outcome	✓	Date
1. Plan and document a local area network to meet a customer's needs.	<input type="checkbox"/>	
2. Install and configure a wired or wireless networks in a home environment	<input type="checkbox"/>	
3. Securing data on a home network	<input type="checkbox"/>	
4. Configure the hardware and software required for VoIP	<input type="checkbox"/>	
5. Troubleshooting networks	<input type="checkbox"/>	

Candidate Signature

Date

City & Guilds
Registration Number

Quality nominee
(if sampled)

Date

Assessor Signature

Date

External Verifier
Signature (if sampled)

Date

Centre Name

Centre Number

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)20 7294 2468
F +44 (0)20 7294 2400
www.cityandguilds.com
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