T Level Technical Qualification in Digital Support Services

Occupational specialism assessment (OSA)

Network Cabling

Assignment 2

Assignment brief

v1.1: Additional sample material
16 November 2023
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Contents

About this assignment

Introduction

This assignment is set by NCFE and administered by your provider within a 2-week assessment window. Your provider will schedule 6 sessions over 3 consecutive days in which you will complete the tasks.

The assignment will be completed under supervised conditions.

You must complete all tasks in this assignment independently. You are required to sign a declaration of authenticity to confirm that the work is your own. This is to ensure authenticity and to prevent potential malpractice and maladministration. If any evidence was found not to be your own work, it could impact your overall grade.

Internet access is **not** allowed.

Take all photographs using the digital camera provided by your provider. Use of mobile phones is **not** permitted.

Timing

You have 12 hours 30 minutes to complete all tasks within this assignment.

It is recommended that you allocate your time to the tasks as follows:

Task 1 = 9 hours

Task 2 = 3 hours 30 minutes

However, it is up to you how long you spend on each task, therefore be careful to manage your time appropriately.

Marks available

Across all assignment 2 tasks: 44 marks

Details on the marks available are provided in each task.

You should attempt to complete all of the tasks.

Read the instructions provided carefully.

Submit all evidence in .pdf format using the file naming convention:

Surname_Initial_student number_evidence reference

For example, Smith_J_123456789_Task 1

Performance outcomes (POs)

Marks will be awarded against the skills and knowledge performance outcomes (POs) as follows:

Task 1

(32 marks)

PO1: Apply procedures and controls to maintain the digital security of an organisation and its data (12 marks)

PO2: Install and test cabling in line with technical and security requirements (20 marks)

Task 2

(12 marks)

PO1: Apply procedures and controls to maintain the digital security of an organisation and its data (8 marks)

PO2: Install and test cabling in line with technical and security requirements (4 marks)

Scenario

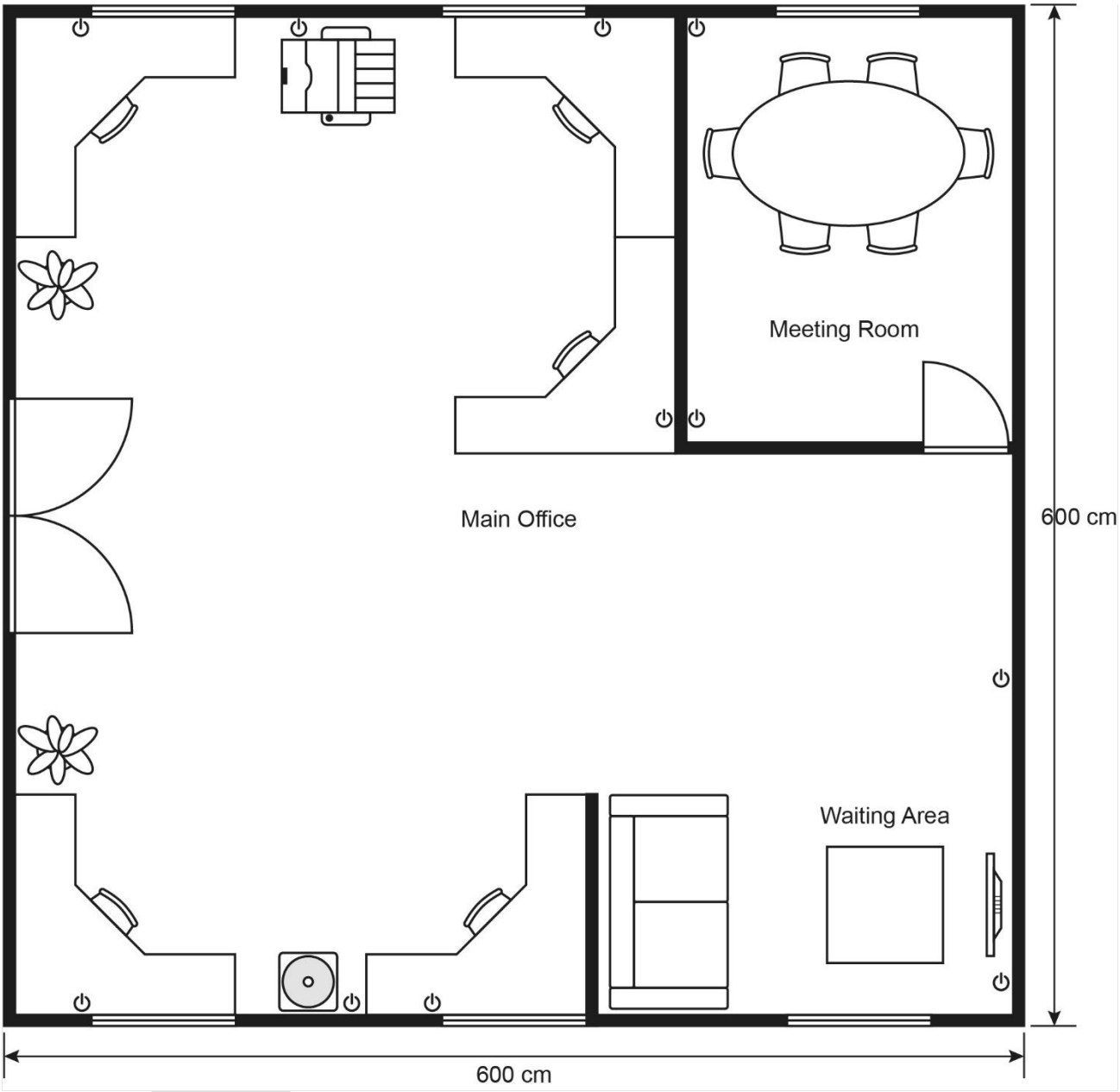
You are required to provide a network data installation for an established Manchester-based business. The firm has 5 members of staff moving to a new branch office space that is a small single-storey building located in Newcastle. This new office will be used to attract new customers in the Newcastle area. The building will have an open office space and a small meeting room. There is ample supply of power sockets in all areas of the building. There needs to be a discussion on where to locate the server/communications cabinet.

The needs of the various users are:

- the members of staff will all be part of the sales team, with one sales manager – adequate file shares and permissions must be considered
- the entire sales team would need to have a secure site-to-site connection back to the main office in Manchester
- the sales team will need to access their customer relationship management (CRM) system and require a voice over IP (VoIP) phone each
- the server/communications cabinet location will need to be planned by you, including why it must be in that location
- all of the staff in the sales team will need access to the main printer located in the office –staff have also requested cloud printing capabilities
- network cabling will need to be run throughout the office, ensuring every staff member has 2 ethernet ports
- ethernet ports will need to be provided for guests in the waiting area when they come to visit the office
- wireless coverage is required in the office and staff have asked for a guest network for customers to use when they visit

An outline plan of the building (Image A) has been provided on the next page.

Image A



Sizes are in cm.

Double power sockets are indicated by a ⏻ logo by each desk

Task 1: install the cabling system

Time limit

12 hours 30 minutes to complete task 1 and task 2

(32 marks)

You need to install part of the cabling system for the company in line with the details given in the bulleted list.

Using the components that you have been provided with, you need to create working cables and install hardware to a standard that will ensure a safe working environment for the end users:

- install 4 wall sockets fitted within trunking; this should be correctly cabled to allow successful data transmission
- the cabling system you installed in the previous point should be terminated at the patch panel and be connected to a switch with configured virtual LANs (VLANs)
- there should be both public and private WiFi access with relevant security controls (for example, wireless encryption and mandatory access control (MAC) filtering)
- appropriate application of principles of network security and implementation of a range of security controls when installing the network
- all installed equipment should be labelled and collated into an asset table
- you are required to adhere to relevant health and safety standards whilst completing the installation, use the correct tools and have the correct personal protective equipment (PPE)
- end-user devices capable of wired and wireless connectivity, for example laptops

For task 1 and task 2 you will have access to the following equipment:

- word processing software
- digital camera
- trunking
- appropriate screwdriver
- cable tools – crimper/kroning tool
- CAT5e ethernet cable
- RJ45 wall sockets
- patch panel
- network switch
- wireless access point/router
- labels/labelling machine
- cable tester
- PPE (goggles, gloves)
- appropriate end-user devices for testing

Evidence required for submission to NCFE

Photographic evidence of the following, in .pdf format:

- raw materials
- completed cables meeting standard T-568B
- completed wall outlet sockets, including correct labelling
- wall outlet sockets successfully housed in trunking and fixed securely to work area
- cables terminated at the patch panel meeting standard T-568B
- WiFi access configuration settings showing encryption standards used
- safe working environment and PPE to be utilised
- accurate labelling for all components and cables

Task 2: devise a test plan and test the cabling system

Time limit

12 hours 30 minutes to complete task 1 and task 2

(12 marks)

To provide confidence that the cabling you have installed gives the data transmission capability desired by users, you are required to:

- use the test plan template provided
- take screenshots or photographs of all tests carried out, to be used alongside the test plan

You should:

- use a LAN cable tester to check for the successful connectivity and connection speed in all cables (for example, CAT5e, CAT 6, CAT6A) and infrastructure you have installed, in accordance with TIA/EIA 568B standards
- ensure successful communication between end devices, switches and wireless access points
- troubleshoot any issues encountered, such as latency, jitter, crosstalk, media standard compatibility (for example 1000BASE-T) and any other connection issues; if no issues are found, this should still be documented in your test plan
- appropriately test all implemented network security controls
- document the results – connection results should be cross-referenced to devices and media given in the scenario with information relating to the security controls that have been configured
- suggest any appropriate recommendations you feel would improve network security

Evidence required for submission to NCFE

Completed test results (using provided test plan template) that cover the complete installation and have fully relevant solutions or recommendations to any issues identified, in .pdf format.

Screenshots or photographs of all tests carried out, in .pdf format – these must be cross-referenced to a test in the test plan template.

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education. NCFE is currently authorised by the Institute to develop and deliver the T Level Technical Qualification in Digital Support Services.

Owner: Head of Assessment Design.

Change History Record

Version	Description of change	Approval	Date of issue
v1.0	Additional sample material		01 September 2023
v1.1	Sample added as watermark	November 2023	16 November 2023