

T Level Technical Qualification in Digital Support Services

Occupational specialism assessment (OSA)

Network Cabling

Assignment 3

Assignment brief

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About this assignment

Introduction

This assignment is set by NCFE and administered by your provider over 3 days. The times and dates will be specified by NCFE.

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 5 hours 30 minutes to complete all tasks within this assignment.

Task 1 = 1 hour 30 minutes (this task will be completed in one session)

Task 2 = 2 hours (this will be provided after completion of task 1 and be completed in one session)

Task 3 = 2 hours (this will be provided after completion of task 2 and be completed in one session)

Individual tasks must be completed within the timescales stated for each task, but it is up to you how long you spend on each part of the task, therefore be careful to manage your time appropriately.

Marks available

Across all assignment 3 tasks: 61 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

(25 marks)

PO1: Apply procedures and controls to maintain the digital security of an organisation and its data (4 marks)

PO2: Install and test cabling in line with technical and security requirements (21 marks)

Task 2

(20 marks)

PO2: Install and test cabling in line with technical and security requirements (16 marks)

PO3: Discover, evaluate and apply reliable sources of knowledge (4 marks)

Task 3

(16 marks)

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

PO3: Discover, evaluate and apply reliable sources of knowledge (4 marks)

Scenario

You have just been hired as a junior network cabler to work at a large company. The roles and responsibilities of your new role include undertaking a range of implementation, monitoring and testing tasks, as well as ensuring that all work is documented appropriately to meet organisation quality standards and best working practice. Below are 3 tasks you have been given to complete.

SAMPLE

Task 1: Troubleshooting faulty cables

Time limit

1 hour 30 minutes

You can use the time how you want but all parts of the task must be completed within the time limit.

(25 marks)

As your first task you have been asked to fix several cables that one of the apprentices has incorrectly constructed, so they can be reused. The cables have various problems that need troubleshooting before they can be used in a cabling installation. Issues you may encounter include latency, jitter, cross talk and poor connections in the cables.

You are required to:

- test the cables to find and fix the faults in accordance with TIA/EIA 568B standards
- document the faults in the test plan template provided and record suitable solutions
- fix the fault on each cable and document the test results in the test plan template
- take photographs of the corrected cables which clearly show the connections of the internal wiring to the RJ45 and the coloured outer cable

You will have access to the following equipment:

- a hand-held cable/network tester
- a network impairment simulator/network delay simulator
- a digital camera
- a supply of RJ45 connectors

Evidence required for submission to NCFE

Completed test plan template in .pdf format.

For each cable you need to provide in .pdf format:

- a clear photograph showing a close up of the RJ45 connector and the corrected wires within it, with the coloured cable clearly visible
- a photograph of the read-out from the cable tester showing the full results of testing, with the coloured cable clearly visible

Task 2: Troubleshooting the proposed cabling installation

Time limit

2 hours

You can use the time how you want but all parts of the task must be completed within the time limit.

(20 marks)

Your predecessor was in the process of designing 2 separate, interconnected networks for a law firm that is a client of your organisation. Unfortunately, because they have left the company, they were unable to finish the project. You have been asked by your manager to complete this project by troubleshooting and resolving any issues within the design of the interconnected networks. You are to perform thorough troubleshooting of all cabling on the interconnected network design to identify and fix any faults identified prior to the customer conducting their own testing (UAT). You will describe how you will approach the troubleshooting, including why you will approach it that way, and record the results in a test plan.

You will be using the Cisco Packet Tracer file to carry out troubleshooting to ensure that data can be transmitted across all devices on the interconnected networks.

You must:

- write a brief description of how you will analyse, interpret and solve any issues which arise from the troubleshooting process – 4 marks are available for this element of the task
- document your troubleshooting in a logical order, demonstrating that no aspect of troubleshooting and analysis has been omitted
- use the test plan template provided to record the results of the troubleshooting

You will have access to the following equipment:

- word processing software
- Cisco Packet Tracer

Evidence required for submission to NCFE

- screenshots of all issues identified and resolved within the Cisco Packet Tracer file, in .pdf format (this must be a before and after screenshot)
- completed test plan template in .pdf format
- written description of analysis and interpretation of issues, as well as solution of issues

Task 3: Carry out a risk assessment of the client's network

Time limit

2 hours

(16 marks)

The law firm in task 2 has now implemented your interconnected network design. You have been asked to perform a risk assessment on both the Newcastle and London sites. Your manager has given you the following details from an information gathering session that they attended.

Both sites are in industrial areas and have no record of flooding. They are in areas with a high level of reported crime. The 2 sites are linked through a site-to-site VPN configured on the routers and communication is vital between the 2 sites due to shared services. Both sites have high speed internet connections, so latency is rarely an issue. The London site also has a back-up mobile data (4G) connection.

Both sites have a single server. The London server is the law firm's domain controller and runs their DNS and DHCP. The Newcastle server is their file server and print server, however printing is rare and considered non-essential. Both servers have 4 network cards, however due to time constraints during the network setup only one was utilised.

Both sites have inert gas fire suppression systems for the server rooms to help prevent a fire from destroying the servers and switches. There are no other fire suppression systems installed in the rest of the building and fire safety relies on building evacuation. To prevent and detect intruders, the buildings are locked at night by the last member of staff to leave the building. All staff have a master key which can be used on any door in the building. There is currently no CCTV or burglar alarm system.

All infrastructure cabling is accessible due to easily opened trunking and floating ceilings. When your manager inspected this, they noted that Cat5e U/UTP cable is used for all machines and all infrastructure cabling. They also noted that a large batch of the cabling was running parallel and near to the power cables. When inspecting the cabling, your manager noticed evidence of rodents possibly being above the floating ceiling.

The law firm has a large budget to pay for any changes that you recommend as a result of your risk assessment.

Your risk assessment should include:

- identification of possible threat to the interconnected networks
- vulnerability related to threat identified
- asset at risk
- impact if threat is exploited
- likelihood that threat is exploited
- overall risk to business
- recommended action
- type of control implemented as mitigation

You should consider:

- the information provided by your manager above
- both internal and external cabling
- security of the interconnected network on both sites

- all hardware network components
- documentation to support mitigation

You will have access to the following equipment:

- word processing software

Evidence required for submission to NCFE

Completed risk assessment document.

SAMPLE

Document information

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Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Post approval, updated for publication.		December 2020
v1.1	Branding and formatting final updates. NCFE rebrand.		September 2021
v1.2	Sample added as a watermark.	November 2023	21 November 2023