T Level Technical Qualification in Digital Support Services

Occupational specialism assessment (OSA)

Digital Infrastructure

Assignment 2

Assignment brief

v1.2: Specimen assessment materials
17 November 2023
603/6901/2

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Contents

About this assignment

Introduction

This assignment is set by NCFE and administered by your provider within a set 1 week window.

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.

Use the electronic workbook provided to record all your evidence against each task.

Save your workbook regularly as you work through the assessment. It is recommended you save after inserting each print screen/photograph.

All print screens and photographs should be numbered and linked to the task as stated in the electronic workbook.

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

Submit the workbook as a single .pdf file at the end of the assessment using the correct file naming convention.

Surname_Initial_student number_Workbook2

For example: Smith_J_123456789_Workbook2.pdf

Timing

You have 6 hours to complete all tasks within this assignment.

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

Task 1 = 20 minutes

Task 2 = 5 hours 40 minutes

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

You are advised to spend the last 15 minutes reviewing your evidence before submission.

Marks available

Across all assignment 2 tasks: 53 marks

Details on the marks available are provided in each task.

You should attempt to complete all of the tasks. Work through the tasks in the order that they are presented.

Read the instructions provided carefully.

Performance outcomes

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

Task 1:

(4 marks)

PO2: Explain, install, configure, test and manage both physical and virtual infrastructure

Task 2:

(49 marks)

PO1: Apply procedures and controls to maintain the digital security of an organisation and its data (10 marks)

PO2: Explain, install, configure, test and manage both physical and virtual infrastructure (39 marks)

Scenario

Willow Technology is planning an upgrade on the backend servers. As part of this upgrade, a small test system needs to be developed that can be used to test the compatibility with the existing backend systems and explore the features of the latest server operating system.

During this assignment you will be required to undertake 2 practical tasks covering cable creation, and the installation and configuration for the new test system that will be used to simulate the new network.

Task 1

It is recommended that you spend 20 minutes on this task.

(4 marks)

Instructions for students

Before you create the test system, a custom length network cable needs to be created to enable the test system to connect to a network port.

You have been provided with a length of Cat5e ethernet cable, 4 x RJ45 ends and suitable cable creation tools.

You need to:

- create a straight through network cable
- provide annotated evidence that the cable has been created correctly
- test that the cable works and provide suitable evidence of the process of validating your cable

You will have access to the following equipment:

- a 1m length of Cat5e ethernet cable
- four RJ45 connectors
- cable creation tools – crimping tool, cable cutter
- network cable tester
- digital camera
- word processing software

Evidence required for submission to NCFE

Annotated photographic evidence of the following stages of cable creation should be provided:

- both RJ45 ends have the strands of cable in the correct order and forming a good connection
- an image of each cable strand being tested on the cable tester to verify connection

Note: this will require 8 or 9 images depending on the cable testing device used.

Task 2

Essential information

It is recommended that you spend 5 hours 40 minutes on this task.

(49 marks)

Equipment

You have been provided with 4 computers. These might be 4 physical machines, or 1 machine with 4 virtual machines. You are required to develop the test system based on the specification outlined by your line manager.

The following information regarding the implementation of the network has been provided:

- Server01 – this will be the domain controller, DNS and DHCP server, no operating system installed
- Server02 – secondary server, file server and another role server, no operating system installed
- PC01 – desktop machine, no operating system installed
- PC02 – desktop machine, operating system pre-installed
- one wireless device, for example, wireless printer, media sender or IP camera recommended
- one optional access point/wireless router/wireless print server

In addition, you will have access to:

- digital camera
- word processing software
- sample files for step C

Network information

The following information outlines the settings you will need to use when configuring the network:

- Subnet – 255.0.0.0
- Server01 IP address -–10.1.1.1 and 10.1.1.2
- Server02 IP address – 10.1.1.3
- DHCP scope – 10.1.1.5-10.1.1.10
- default gateway – 10.1.1.254 (no internet access provided)

Evidence required for submission to NCFE

- you must take print screens and/or photographs of the processes you have carried out
- use the tick box □ in the evidence required column to ensure that all the required print screens and/or photographs have been provided

Task 2

Task sequence

Step A

(3 marks)

Processes	Settings	Marks	Evidence required
Install the provided server operating system on Server01 and Server02 Use suitable configurations that match your current time zone and provide evidence of the successful installation of the server operating system on both Server01 and Server02	All hard disks should be partitioned to a single 100% partition, and the machines named Server01 and Server02 Server01 and Server02 should have fixed IP addresses	**1**	Provide print screen or photographic evidence of the following: ☐ Server01 disk partitions ☐ Server01 IP address (1) Set ☐ Server01 IP address (2) Set ☐ Server01 name set ☐ Server01 regional settings, date and time
		1	☐ Server02 disk partitions ☐ Server02 IP address set ☐ Server02 name set ☐ Server02 regional settings, date and time
Install the provided desktop operating system on PC01	All hard disks should be partitioned to a single 100% partition Use suitable region-specific settings, otherwise the defaults should be taken	**1**	Provide print screen or photographic evidence of the following: ☐ PC01 disk partitions ☐ PC01 name set ☐ PC01 regional settings, date and time

Step B

(8 marks)

Processes	Settings	Marks	Evidence required
Install and configure DNS		8	☐ print screen showing DNS has been installed
Install and configure a directory service	Install a directory service with the domain name set as (First nameSurname).local, for example: JohnSmith.local		☐ print screen showing the directory service has been installed and configured
Install DHCP service on Server01			☐ print screen showing the DHCP service installed
Implement a DHCP scope using the IP range provided earlier			☐ print screen showing the DHCP scope configured
Evidence PC01 is using DHCP to join the network			☐ print screen showing PC01 has been assigned a DHCP address
Domain join Server02 and PC01 to Server01 forming the start of the network			☐ print screen showing Server02 domain joined ☐ print screen showing PC01 domain joined
Install and confirm a reverse DNS lookup works on Server02 using NSLOOKUP			☐ print screen showing Server02 successfully completed a reverse lookup

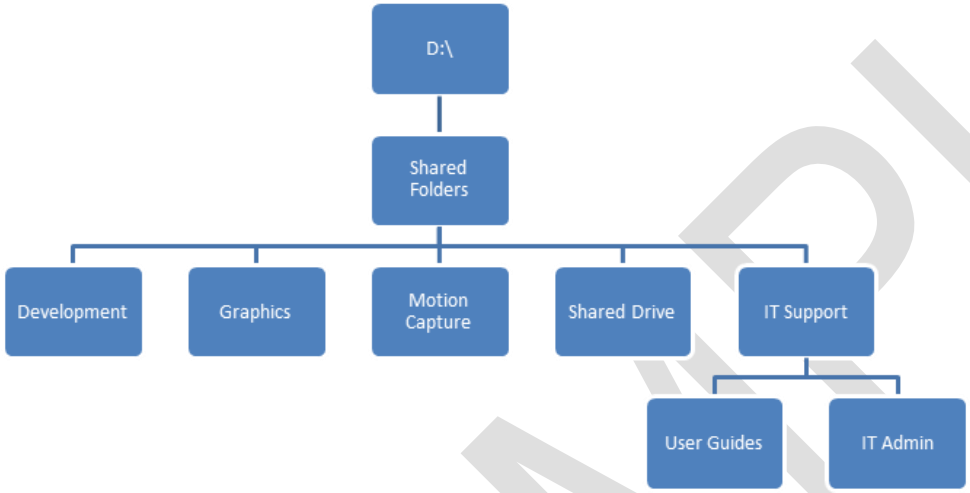
Step C

(8 marks)

Processes	Settings	Marks	Evidence required

Create the following groups in your directory service	All staff, developer, graphics, motion capture, IT admin	**1**	☐ print screen showing the 5 groups created in your directory service

<table>
<tr>
<td>Populate the directory service with the following user accounts making sure they are added to the correct group and each user has the right privilege:
<table>
<tr><th>User account</th><th>Privileges</th><th>Job description</th><th>Group(s)</th></tr>
<tr><td>Your first and surname</td><td>Administrator</td><td>IT admin</td><td>IT admin</td></tr>
<tr><td>Paul James</td><td>Standard user</td><td>Developer</td><td>Development</td></tr>
<tr><td>Tamara Jacobs</td><td>Standard user</td><td>Graphics artist</td><td>Graphics</td></tr>
<tr><td>Yousif Sobbah</td><td>Standard user</td><td>Motion capture specialist</td><td>Motion capture</td></tr>
</table>
</td>
<td>1</td>
<td>☐ print screen evidence that each user has the correct name, privilege, job description and has been added to the correct group</td>
</tr>
<tr>
<td>Using the group called all staff, add the following groups to this group:
• development
• graphics
• motion capture
• IT admin</td>
<td>1</td>
<td>☐ print screen showing all 5 groups added to the all staff group</td>
</tr>
</table>

Processes	Settings	Marks	Evidence required
Create the following folder structure on second partition of Server02 		**N/A**	Marks are **not** awarded for creating the folder structure and you do **not** need to submit evidence for this task

<table>
<tr><th>Processes</th><th>Settings</th><th>Marks</th><th>Evidence required</th></tr>
<tr><td>Apply the following privileges to each of the folders using the groups created earlier</td><td>
<table>
<tr><th>Folder</th><th>Group</th><th>Permission</th></tr>
<tr><td>Development</td><td>IT admin</td><td>Read and write</td></tr>
<tr><td>Graphics</td><td>Development</td><td>Read and write</td></tr>
<tr><td>Motion Capture</td><td>Motion capture</td><td>Read and write</td></tr>
<tr><td>Shared Drive</td><td>All staff</td><td>Read</td></tr>
<tr><td>User Guides</td><td>All staff</td><td>Read</td></tr>
<tr><td></td><td>IT admin</td><td>Read and write</td></tr>
<tr><td>IT admin</td><td>IT admin</td><td>Read and write</td></tr>
</table>
</td><td>1</td><td>☐ print screens showing each folder with correct privileges</td></tr>
<tr><td colspan="2">Using the files provided, populate the folder structure</td><td></td><td></td></tr>
<tr><td colspan="2">Using the test plan template provided in the workbook, prove that the privileges work correctly using both a valid and invalid user
Note: The shared drive only requires a valid user to be tested</td><td>4</td><td>☐ completed test plan
☐ print screens showing folder privileges have been tested</td></tr>
</table>

Step D

(3 marks)

Processes	Settings	Marks	Evidence required
Using an external hard disk drive or an additional virtual disk to Server02, implement a scheduled backup of the shared folders to run every hour to the second physical hard or external storage device		3	☐ print screen showing scheduled backup set
Confirm the backup has been taken successfully by restoring the contents of the backup **Note**: You might need to return to this step later to collect the required evidence			☐ print screens showing a successful backup ☐ print screens showing a successful restoration

Step E

(4 marks)

(4 marks) **Processes**	**Settings**	**Marks**	**Evidence required**
Using Server02, install **and** configure a **single** application service from the following list:	• desktop deployment • media server • database server • IT helpdesk • web server • print server	4	☐ print screens showing the service being installed and configured
Prove the service has been tested and works			☐ print screens showing the service is running ☐ print screens showing the service being tested

Step F

(2 marks)

Processes	Settings	Marks	Evidence required
Create a remote connection from PC02 to Server01 **Note**: You are **not** permitted to domain join the computer		**2**	☐ print screens showing the remote connection process

Step G

(4 marks)

Processes	Settings	Marks	Evidence required
Implement a SNMP on all machines on the network		**4**	☐ print screens from PC01 and Server02 showing that SNMP has been enabled
Verify that SNMP data is being collected by the traps and can be viewed			☐ a series of print screens showing the SNMP data is being collected centrally

Step H

(10 marks)

Processes	Settings	Marks	Evidence required
Using policies, implement 5 rules that will make the domain joined PC01 more secure		**10**	☐ provide a short description of each policy and what it will achieve ☐ provide a print screen showing each of the policies created on Server01
Carry out testing to prove the policies have been applied correctly			☐ provide evidence of each policy applied on PC01

Step I

(7 marks)

Processes	Settings	Marks	Evidence required
Using the wireless device provided, integrate the device into your network		**7**	Provide print screen or photographic evidence of the following: ☐ set an IP address for the device ☐ connect to a wireless AP or other such device ☐ install the required drivers or management software ☐ configure the device with suitable settings ☐ evidence that SNMP data is being captured
Test that the device works and is accessible from any 2 machines			☐ a series of print screens and photographs showing connection and configuration of the wireless device

Review and submit

You have now reached the end of the assignment. It is recommended that you review your evidence to ensure all the required print screens have been provided.

Save this document and convert into a .pdf for submission using the naming convention.

Surname_Initial_student number_Workbook2

For example: Smith_J_123456789_Workbook2.pdf

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

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	17 November 2023