

T Level Technical Qualification in Digital Support Services

Occupational specialism assessment (OSA)

Digital Infrastructure

Assignment 2

Assignment brief

v1.1: Additional sample material
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T Level Technical Qualification in Digital Support Services

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About this assignment

Introduction

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

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 the task 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

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

Marks available

Across both assignment 2 tasks: 53 marks

Details on the marks available are provided in each task.

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

Read the instructions provided carefully.

Performance outcomes (POs)

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)

SAMPLE

Scenario

DoubleUp Bookkeeping is planning to upgrade from Windows Server 2012 to a newer version to secure the network and to improve the performance of their network. They also wish to highlight key features of the server operating system.

During this assignment you must install, configure and test the systems that will make up the new network – this will include being in a virtual environment.

DoubleUp Bookkeeping have a new website created locally and will be uploading this to their web server to be live on the internet.

As part of the new network infrastructure, you will set up several shared folders, set the company website as the homepage for all staff and backup company folders every 30 minutes.

SAMPLE

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
- 4 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 device with 4 virtual machines.

You are required to develop the test system based on the specification.

The servers must provide the following services:

- document storage
- authentication services
- data back-up and recovery
- web services

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

Server01

- domain controller and run domain name system (DNS) and dynamic host configuration protocol (DHCP) services, no operating system currently installed

Server02

- web server, no operating system currently installed

PC01

- desktop machine, no operating system installed

PC02

- desktop machine, Linux Ubuntu operating system pre-installed

In addition, you will have access to:

- a digital camera
- word processing software

Network information

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

Subnet	Server01 IP address	Server02 IP address	DHCP scope	DNS Address	Default gateway
255.255.0.0	192.168.1.7	192.168.1.4	192.168.1.11 – 192.168.1.20	192.168.1.2	192.168.1.250 (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

Step A: installing and configuring servers

(5 marks)

Processes	Settings	Marks	Evidence required
<p>Install the provided server operating system on Server01</p> <p>Use suitable configurations that match your current time zone and provide evidence of the successful installation of the server operating system on Server01</p>	<p>Installation of Server01 must include the graphical user interface</p> <p>After installation, each server should be given a suitable name (for example, Server01 and the disk drive should be partitioned as Drive A and F)</p>	<p>1</p> <p>1</p>	<p>Provide print screen or photographic evidence of the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Server01 with computer name set <input type="checkbox"/> Server01 with 2 disk partitions
<p>Connect server machines to a switch (this may be virtual)</p>	<p>Show each server is connected to the switch</p>	<p>1</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Image/video showing cable connection from switch to server(s) <p>OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> Print screen of Hyper-V setup showing each server connected to a virtual switch
<p>Provide each server with an appropriate internet protocol (IP) address</p>	<p>Server01 and Server02 should have fixed IP addresses</p>	<p>1</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Server01 and Server02 configured with appropriate IP addresses
<p>Confirm network connectivity between Server01 and Server02</p> <p>Note: Default firewall settings do not allow this</p>	<p>Connectivity demonstrated between Server01 and Server02</p>	<p>1</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Print screen/image of successful Ping/Test-NetConnection command

Step B: domain setup

(6 marks)

Processes	Settings	Marks	Evidence required
Install and configure a directory service on Server01	Install a directory service with an appropriate domain name	1	<input type="checkbox"/> Print screen showing that the directory service has been installed and configured
Install and configure DNS on Server01 Note: This step is completed when the server is promoted to a domain controller	Create a new forest: DUB.local	1	<input type="checkbox"/> Print screen showing DNS has been installed
Install DHCP service on Server01	Ensure the DHCP post install configuration is completed	1	<input type="checkbox"/> Print screen showing the DHCP service installed
Implement a DHCP scope using the IP range provided earlier	As provided in the scenario	1	<input type="checkbox"/> Print screen showing the DHCP scope configured
Join Server02 to the domain		1	<input type="checkbox"/> Print screen showing Server02 domain joined
Confirm a reverse DNS lookup works on Server02 using Nslookup	Nslookup Server01	1	<input type="checkbox"/> Print screen showing Server02 successfully completed a reverse lookup

Step C: user and group setup

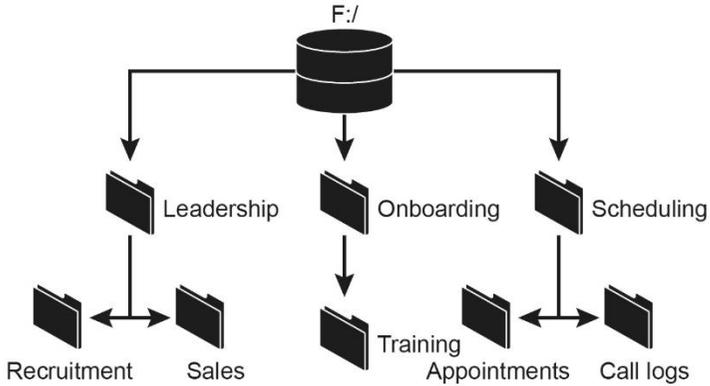
(4 marks)

Processes	Settings	Marks	Evidence required																					
Create the following groups in your directory service	IT Accountants Partners Reception Juniors	1	<input type="checkbox"/> Print screen showing the 5 groups created in the directory service																					
Create users in the directory service and set a Group Policy Object for all passwords, to be a minimum of 8 characters	<table border="1"> <thead> <tr> <th>User</th> <th>Username</th> <th>Password</th> </tr> </thead> <tbody> <tr> <td>Charlie Mears</td> <td>CharlieM</td> <td>Password1</td> </tr> <tr> <td>Jessica Smith</td> <td>JessicaS</td> <td>Password1</td> </tr> <tr> <td>Marco Shelvey</td> <td>MarcoS</td> <td>Password1</td> </tr> <tr> <td>Nathan Remy</td> <td>NathanR</td> <td>Password1</td> </tr> <tr> <td>Isaac Ashton</td> <td>IsaacA</td> <td>Password1</td> </tr> <tr> <td>Noah Wilson</td> <td>NoahW</td> <td>Password1</td> </tr> </tbody> </table> <p>Ensure all users' passwords do not expire and the password does not need to be changed at login</p>	User	Username	Password	Charlie Mears	CharlieM	Password1	Jessica Smith	JessicaS	Password1	Marco Shelvey	MarcoS	Password1	Nathan Remy	NathanR	Password1	Isaac Ashton	IsaacA	Password1	Noah Wilson	NoahW	Password1	1	<input type="checkbox"/> Print screen showing a user has been set up with the correct settings
User	Username	Password																						
Charlie Mears	CharlieM	Password1																						
Jessica Smith	JessicaS	Password1																						
Marco Shelvey	MarcoS	Password1																						
Nathan Remy	NathanR	Password1																						
Isaac Ashton	IsaacA	Password1																						
Noah Wilson	NoahW	Password1																						

Processes	Settings	Marks	Evidence required														
Assign users to groups	<table border="0"> <thead> <tr> <th data-bbox="611 336 891 368">User</th> <th data-bbox="913 336 1234 368">Group</th> </tr> </thead> <tbody> <tr> <td data-bbox="611 408 891 440">Charlie Mears</td> <td data-bbox="913 408 1234 472">Partners, IT, Domain Admins</td> </tr> <tr> <td data-bbox="611 512 891 544">Jessica Smith</td> <td data-bbox="913 512 1234 544">Accountants</td> </tr> <tr> <td data-bbox="611 584 891 616">Marco Shelvey</td> <td data-bbox="913 584 1234 616">Partners</td> </tr> <tr> <td data-bbox="611 655 891 687">Nathan Remy</td> <td data-bbox="913 655 1234 687">Reception</td> </tr> <tr> <td data-bbox="611 727 891 759">Isaac Ashton</td> <td data-bbox="913 727 1234 759">Juniors</td> </tr> <tr> <td data-bbox="611 799 891 831">Noah Wilson</td> <td data-bbox="913 799 1234 831">Juniors</td> </tr> </tbody> </table>	User	Group	Charlie Mears	Partners, IT, Domain Admins	Jessica Smith	Accountants	Marco Shelvey	Partners	Nathan Remy	Reception	Isaac Ashton	Juniors	Noah Wilson	Juniors	1	<input type="checkbox"/> Print screen showing the Juniors group and the users within
User	Group																
Charlie Mears	Partners, IT, Domain Admins																
Jessica Smith	Accountants																
Marco Shelvey	Partners																
Nathan Remy	Reception																
Isaac Ashton	Juniors																
Noah Wilson	Juniors																
Add groups to the Hotel group	Add the following groups to the Accountants group: <ul style="list-style-type: none"> • Seniors • ProfitLoss • BankReconciliation 	1	<input type="checkbox"/> Print screen showing the 3 groups have been added to the Accountants group														

Step D: shared folder setup

(6 marks)

Processes	Settings	Marks	Evidence required
<p>On Server01, create the following folder structure:</p>  <pre> graph TD F["F:/"] --> Leadership F --> Onboarding F --> Scheduling Leadership --> Recruitment Leadership --> Sales Onboarding --> Training Scheduling --> Appointments Scheduling --> CallLogs["Call logs"] </pre>	<p>On the F:/ drive, create the 8 folders as shown in the diagram. Make sure the folders are created using the same hierarchical structure:</p>	1	<input type="checkbox"/> Print screen showing the F:/ drive has been used for folder structure
	<ul style="list-style-type: none"> • Leadership folder containing folders for Recruitment and Sales • Onboarding folder containing a folder for Training 	1	<input type="checkbox"/> Print screen showing folder(s) have been created
	<ul style="list-style-type: none"> • Scheduling folder to include folders for Appointments and Call Logs 	1	<input type="checkbox"/> Print screen(s) confirming the hierarchical folder structure has been created as requested

Processes	Settings	Marks	Evidence required
Apply appropriate permissions to the Scheduling folder to ensure access is only available to those authorised	<p>Partners and Reception should have 'change' access to this folder</p> <p>IT should have 'full control' access to this folder</p> <p>Accountants and Juniors should not be able to access this folder</p>	1	<input type="checkbox"/> Print screen(s) showing relevant permissions provided on shared folder
Apply appropriate permissions to the Leadership folder to ensure access is only available to those authorised	Only Partners should have access to the Leadership folder, all other users should have no access	1	<input type="checkbox"/> Print screen(s) showing relevant permissions provided on shared folder
Apply appropriate permissions to the Onboarding folder to ensure access is only available to those authorised	<p>Juniors and Accountants should have 'change' access to this folder</p> <p>Partners should have 'full control' access to this folder</p>	1	<input type="checkbox"/> Print screen(s) showing relevant permissions provided on shared folder

Step E: client computer setup and test

(10 marks)

Processes	Settings	Marks	Evidence required
Install the provided operating system on PC01 Use suitable configurations that match your current time zone and region, and provide evidence of the successful installation of the operating system on PC01	After installation, the computer should be given a suitable name (for example, PC01) and the disk drive should be partitioned as drive A and F	1	<input type="checkbox"/> Print screen/photographic evidence showing PC01 with computer name set
		1	<input type="checkbox"/> Print screen/photographic evidence showing PC01 with 2 disk partitions
(DHCP address) Configure and confirm network settings on PC01 to ensure the computer is on the domain	Connect PC01 to the switch that Server01 and Server02 are connected to Join PC01 to the DoubleUpBookkeeping domain Confirm the network address has been provided by DHCP and is within the expected range	1	<input type="checkbox"/> Print screen or photograph showing PC01 is connected to virtual switch/switch
		1	<input type="checkbox"/> Print screen showing PC01 is connected to the domain
		1	<input type="checkbox"/> Print screen showing network configuration to confirm IP address is in the expected range
Log in to PC01 as user Charlie Mears and confirm that user can access all shared folders on the network	Connect to the server \\server01 through file explorer and ensure shared	1	<input type="checkbox"/> Print screen(s) showing selected user has access to shared folders

Processes	Settings	Marks	Evidence required
	folders are shown and can be accessed Create a document in the Leadership folder to confirm user can access and use the shared folder	1	<input type="checkbox"/> Print screen(s) showing selected user can access specified folder
Log in to PC01 as Noah Wilson and confirm access to Onboarding folder	Connect to the server \\server01 through file explorer and ensure shared folders are shown and can be accessed Create a folder in the Onboarding folder called 'Practice Accounts' and a document within called 'Bills Joinery'	1	<input type="checkbox"/> Print screen(s) showing selected user can access specific folder
Log in to PC01 as Isaac Ashton and confirm appropriate access to shared folders Note: This final step requires an understanding of the importance of inheritable permissions	Connect to the server \\server01 through file explorer and ensure shared folders are shown and can be accessed. Confirm if Isaac can access the Leadership folder	1	<input type="checkbox"/> Print screen(s) showing selected user's access permissions for specified folder

Processes	Settings	Marks	Evidence required
	Confirm Isaac can access the Onboarding folder and can delete the folder 'Practice Accounts'	1	<input type="checkbox"/> Print screen(s) showing selected user can access and delete the specified folder

SAMPLE

Step F: configuring server back-up

(7 marks)

Processes	Settings	Marks	Evidence required
Add a second hard disk drive to Server02 Note: This may be a physical or virtual hard disk depending on the resources being used	Safely install the disk in the computer/virtual machine	1	<input type="checkbox"/> Print screen(s) or photograph showing disk being added
	Initialise, format and partition the disk using Disk Management	1	<input type="checkbox"/> Print screen(s) showing new disk being setup in Disk Management
Install Windows Server Backup feature on Server01	Install using the Roles and Features Installation Wizard	1	<input type="checkbox"/> Print screen(s) showing completed feature is installed
Configure Windows Server Backup to run on agreed schedule	Create a new backup schedule Custom Backup Add the following item: System State (F:) Every 30 minutes between 10am and 4pm Backup to a shared network folder: \\Server02\Backup\	1	<input type="checkbox"/> Print screen(s) showing completed configuration

Processes	Settings	Marks	Evidence required
Confirm backup has been successfully completed Note: You may need to wait for the next scheduled time (for example, after 30 minutes)		1	<input type="checkbox"/> Print screen(s) showing completed configuration
Confirm restore process works correctly	Delete all files and sub-folders in the Onboarding folder Restore the backup	1	<input type="checkbox"/> Print screen(s) showing empty folder
	Confirm that the files and sub-folders have been replaced	1	<input type="checkbox"/> Print screen(s) showing files and sub-folders are now restored

Step G: setting up and testing web services

(4 marks)

Processes	Settings	Marks	Evidence required
On Server02 install the Internet Information Services (IIS) service	Steps to be completed: <ul style="list-style-type: none"> install web server (IIS) role on Server02 add the recommended features complete install 	1	<input type="checkbox"/> Print screen(s) showing service has been installed
Configure the role/feature	Steps to be completed: <ul style="list-style-type: none"> open inetpub folder replace index.htm in folder with a .html folder called "home_page.html" and add a basic HTML container 	1	<input type="checkbox"/> Print screen(s) showing Internet Information Services (IIS) has been configured
Add the DNS record for the web server (including Server02 IP address) www.dub.com	Add relevant DNS records for the DoubleUpBookkeeping website	1	<input type="checkbox"/> Print screen(s) showing DNS record being added for web server
Test the website works on PC01	Load web browser and navigate to the web link that has been set up	1	<input type="checkbox"/> Print screen(s) showing website tested on PC01

Step H: remote connection

(4 marks)

Scenario for this step:

You are working from home and receive a call that a member of staff (Isaac Ashton) has been relieved of his duties and his account needs to be secured.

Processes	Settings	Marks	Evidence required
<p>Create a remote connection from PC01 to Server02</p> <p>Note: You are not permitted to domain join the computer</p>	<p>Ensure PC01 is on the same switch as Server02</p> <p>Open Remote Desktop Connection and connect to Server02.DoubleUpBookkeeping.local or 192.168.1.4</p> <p>Username: administrator, 1Pa\$\$w0rd</p> <p>Note: This step will likely fail as Server02 needs to allow remote connectivity</p>	1	<input type="checkbox"/> Print screen(s) showing remote connection to Server02 is not successful
<p>Configure Server02 to allow remote desktop connections and successfully connect to Server02 from PC01</p>	<p>Allow remote connectivity on Server02 from 'Configure this local server' menu</p> <p>Open remote desktop connection and attempt to connect to Server02</p>	1	<input type="checkbox"/> Print screen(s) showing successful remote connection to Server02

Processes	Settings	Marks	Evidence required
Open Active Directory Users and Computers (ADUC) and secure the account	Identify the account and reset the password and disable the account Open Active Directory Users and Computers (ADUC) Secure the Isaac Ashton account by resetting password and disabling	1	<input type="checkbox"/> Print screen(s) showing specified account password has been reset and account disabled
Confirm user cannot log in from PC02	Confirm Isaac Ashton cannot log in to the network	1	<input type="checkbox"/> Print screen(s) showing specified user cannot log on to PC02

Step I: configuring group policies

(3 marks)

Processes	Settings	Marks	Evidence required
Using Group Policy Management set the browser home page for all users to be www.dub.com	Create a Group Policy Object (GPO) for the DoubleUp Bookkeeping domain and link it GPO name: Homepage Edit policy and configure setting > User Config > Policies > Admin Templates > Windows Components > Microsoft Edge > Disable changing home page setting	1	<input type="checkbox"/> Print screen(s) showing browser policy has been configured
Using Group Policy Management, ensure that Partners users have the Leadership folder as a mapped drive on login	GPO name: Drivemap Edit policy and configure setting > user config > preferences > windows settings > drive maps Add new drive map \\server02\Leadership\ Label as: Leadership Map as Z:\ Select to item target and target Finance	1	<input type="checkbox"/> Print screen(s) showing drive mapping policy has been configured

Processes	Settings	Marks	Evidence required
Log in to PC01 as Charlie Mears and confirm the home page and mapped drives are as set	Test browser home page in Microsoft Edge Confirm drive mapping is present Note: You may need to run a GPUupdate/force command if the settings have not updated	1	<input type="checkbox"/> Print screen(s) showing PC01 has received policies as configured

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

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	Additional sample material		01 September 2023
v1.1	Sample added as a watermark	November 2023	17 November 2023