

Occupational specialism assessment (OSA)

Digital Support

Assignment 3 - Distinction

Guide standard exemplification materials

v1.1: Specimen assessment materials September 2021 603/6901/2

Internal reference: DSS-GSEM-17



T Level Technical Qualification in Digital Support Services Occupational specialism assessment

Guide standard exemplification materials

Digital Support

Assignment 3

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Introduction

The material within this document relates to the Digital Support occupational specialism sample assessment. These exemplification materials are designed to give providers and students an indication of what would be expected for the lowest level of attainment required to achieve a pass or distinction grade.

The examiner commentary is provided to detail the judgements examiners will undertake when examining the student work. This is not intended to replace the information within the qualification specification and providers must refer to this for the content.

In assignment 3, the student must first analyse a penetration test of a network in order to identify any maintenance requirements. The second task requires the student to remotely carry out updates to the system.

After each live assessment series, authentic student evidence will be published with examiner commentary across the range of achievement.

Assignment 3:

Scenario

Monitoring and maintaining all infrastructure, whilst documenting the process, is the key to an efficient and functional system. During this process you will analyse the recent penetration test report that has been produced on a network. This will lead to you identifying vulnerabilities, providing solutions, identifying trends and underlying problems, all of which will be documented in a continuous improvement plan.

Alongside this, to save time and improve efficiency, you are required to create and deploy an image remotely which consists of an operating system and software applications.

Task 1: network analysis

Time limit

6 hours

You can use this time how you want but task 1 must be completed within the time limit.

(12 marks)

Student instructions

In this assignment you need to monitor, maintain and demonstrate continuous improvement of a network. For this, you will need to produce an infrastructure status log (worksheet in appendix 3) for the equipment listing (worksheet in appendix 3) and network overview diagram provided (appendix 4). You will log and update the infrastructure status log and produce maintenance notes for each of these devices.

You must also analyse the penetration test report provided (appendix 5) and filter your findings and solutions in the penetration test remediation log (worksheet in appendix 3), into your future planning, to demonstrate understanding of continuous improvements. This will include how current and future vulnerabilities will be mitigated and will also identify trends and document underlying problems to produce solutions faster.

Documentation and screenshots, where applicable, will need to be provided to show the work you have conducted and any future planning.

1) You are required to monitor, maintain and demonstrate continuous improvement of the new network including:

- log infrastructure status
- maintenance notes for the installations
- analysis of penetration testing report
- mitigation of vulnerabilities
- future planning, identifying trends and document underlying problems

You will have access to the following equipment:

- 1 x workstation set-up with office software installed
- internet access for developer notes and help pages

• digital camera

Evidence required for submission to NCFE

The following evidence should be submitted:

- annotated screenshots (if using virtual machines) or photographs (if using physical machines/devices) showing the issues identified in the penetration test report and maintenance notes for the installations within the infrastructure status log (worksheet in appendix 3)
- infrastructure status log (worksheet in appendix 3)
- penetration test remediation log (worksheet in appendix 3)
- documented/planned improvements (word processing document)
- internet browsing history

Student evidence

Following the penetration test report and subsequent risk assessment, it can be summarised that the following vulnerabilities were identified with the current network:

- workstations
 - o vulnerability
 - all workstations within the infrastructure were found to be missing 4 distinct critical updates (risk: high)
 - KB4511552 for x64
 - KB4511552 for ARM64
 - KB4505657 for x64
 - KB4505657 for ARM64

The OS version is Windows 10 1803, which is significantly behind and requires many updates to bring it completely to date, image a:

Image a

About

Windows specifications

 Edition
 Windows 10 Pro

 Version
 1803

 Installed on
 26/04/2021

 OS build
 17134.1

 Change product kervices Agreement that applies to our services

 Read the Microse Software License Terms

Related settings

System info

When checking for Windows Updates it has several updates that were missed, image b:

Image b

Windows Update



Updates available Last checked: Today, 21:31

Your device is missing important security and quality fixes.

Security Intelligence Update for Microsoft Defender Antivirus - KB2267602 (Version 1.335.1735.0) Status: Downloading - 0%

Windows Malicious Software Removal Tool x64 - v5.88 (KB890830) Status: Initializing...

2021-03 Update for Windows 10 Version 1803 for x64-based Systems (KB4023057) Status: Initializing...

2020-06 Update for Windows 10 Version 1803 for x64-based Systems (KB4480730) Status: Initializing...

2020-02 Cumulative Update for Windows 10 Version 1803 for x64-based Systems (KB4537762) **Status:** Initializing...

Microsoft .NET Framework 4.8 for Windows 10 Version 1803 for x64 (KB4486153) Status: Downloading - 100%

2019-02 Update for Windows 10 Version 1803 for x64-based Systems (KB4346084) Status: Initializing...

- o action
 - all patches need to be updated on the workstations (timescale max 25 days)
- o vulnerability
 - the NVidia video driver on all workstations was out of date, exposing all workstations to a privilege escalation vulnerability (risk: medium)

This computer did not have the most up to date video drivers available, image c:

Image c

NVIDIA GeForce RTX 3070 P	roperties >	×
General Driver Details E	Events Resources	
NVIDIA GeForce F	RTX 3070	
Driver Provider:	NVIDIA	
Driver Date:	12/04/2021	
Driver Version:	27.21.14.6611	
Digital Signer:	Microsoft Windows Hardware Compatibility Publisher	
Driver Details	fiew details about the installed driver files.	
Update Driver	Jpdate the driver for this device.	
Roll Back Driver	the device fails after updating the driver, roll back to the previously installed driver.	
Disable Device	Disable the device.	
Uninstall Device	Jninstall the device from the system (Advanced).	
	OK Cancel	

- actional
 - all workstations to have drivers updated during next routine maintenance
- servers
 - o vulnerability
 - all 5 of the servers operating within the network had 10 updates missing (risk: high)
 - KB4501835
 - KB4497934
 - KB4505056

- KB4499728
- KB4494441
- KB4495590
- KB4497932
- KB4499405
- KB4495618
- KB4556441

As you can see below there are the updates that were missing, image d:

Image d

Title	•	Classification	Last Updated
2019-05 Cumulative Update for Windows Server 2019 for x64-based Systems (KB4501835)		Updates	5/1/2019
2019-05 Cumulative Update for Windows Server 2019 for x64-based Systems (KB4497934)		Updates	5/20/2019
2019-05 Cumulative Update for Windows Server 2019 for x64-based Systems (KB4505056)		Updates	5/19/2019
2019-05 Servicing Stack Update for Windows Server 2019 for x64-based Systems (KB4499728)		Security Updates	5/13/2019
2019-05 Cumulative Update for Windows Server 2019 for x64-based Systems (KB4494441)		Security Updates	5/13/2019
2019-05 Cumulative Update for .NET Framework 3.5 and 4.7.2 for Windows Server 2019 for x64 (KB4495590)		Security Updates	5/9/2019
2019-05 Security Update for Adobe Flash Player for Windows Server 2019 for x64-based Systems (KB4497932)		Security Updates	5/13/2019
2019-05 Cumulative Update for .NET Framework 3.5, 4.7.2 and 4.8 for Windows Server 2019 for x64 (KB4499405)		Security Updates	5/9/2019
2019-05 Cumulative Update for .NET Framework 3.5 and 4.8 for Windows Server 2019 for x64 (KB4495618)		Security Updates	5/9/2019
2020-05 Cumulative Update for .NET Framework 3.5, 4.7.2 and 4.8 for Windows Server 2019 for x64 (KB4556441)		Security Updates	5/8/2020

o action

- all patches need to be updated on the servers (timescale: max 25 days)
- o vulnerability
 - vulnerabilities were identified in the SQL server operation on SVR09 (risk: critical)
 - a weak username/password combination of root/root were configured on the SQL server allowing root access to the server
 - when running a query against the SQL database, usernames and passwords for all users were able to be retrieved in clear text
 - a rogue username/password was able to be added to the database

As you can see the SQL server only has a simple username and password, image e:

Image e

Always On Availability	y Groups	Startup Pa	arameters	Advanced
Log On	Se	rvice	F	ILESTREAM
.og on as:				
Built-in account:				
			T	
This account:				
Account Name				
Account Name:	root			Browse
Password:	****			
	I			
Confirm password:	****			
	,			
Service status:		Runnina		
Chavt	Chan	Davias	1	Destast
Start	Stop	Pause		Restart
0	¢ l	Cancel	Apply	Help

- o action
 - root account should be disabled on the server, with administrative password set using a strong password
 - encryption should be introduced on the server for any usernames and passwords in the SQL database – the screenshot in the database suggests the server is currently using encryption with the Blowfish algorithm but has been configured poorly
 - it should be noted that if these passwords include external customer details then if this vulnerability were exposed in a genuine attack this alone would be a serious and notifiable breach of GDPR/Data Protection Act 2018 regulations
 - it would be worth introducing a form of 2 factor authentication on the server to help prevent unauthorised access through compromised passwords
- printers
 - o vulnerability
 - the following issues were found on all 5 printers in the infrastructure (risk: medium)
 - no administrative challenge when logging into management console
 - administrator password has not been set
 - printer firmware was running an old version (20150126) which is vulnerable to a JetDirect SNMP device password disclosure vulnerability

P LaserJet 400 colo	MFP M475dw NPI	25EAC 192.168.220.230						_	
Home	System	Print	Fax		Scan	Networking	HP Web Servi	ces .	_
Device Status		Douring Config	uration						
Supplies Status		Device Conlig	uration						
Device Configuration	i i i i i i i i i i i i i i i i i i i	Product Information	_	_	_	_	_		
Network Summary									
Reports		Product Name:						HP LaserJet 400 colorMFP M475dw	
Color Hanna Lan		Formatter Number:						SF479RC	
Color Usage Log		Serial Number:						CND8FDTCFL	
Event Log		Service ID:						24132	
		Firmware Datecode:						20150126	
		Disable Fax:						No	
		Telecom Version:						05-031-001	
		Location:						UK	
		ADF Installed:						Yes	
		Max Monochrome Pri	int Quality:					600x8	
		Max Color Print Qual	ity:					ImageREt 3600	
		Controller Number:	-					72	
		Duplexer Version:						0	
		Device Description:						HP LaserJet 400 colorMFP M475dw	
		Language:						English	
		Asset Number:							
		Your Company Name							
		Contact Person:							
		Device Location:							
		Product Security:						of	
		Wired HW Address:						a0 d3 c1 82 5e ac	
		Wireless HW Address						48 5a b6 6a b3 19	
		Network In Use:	-					Wired	
		Host Name:						NPI825EAC	
		IPv4 Address:						192 168 1 210	
		IPv6 Address:						2400-2348-4803-8600-4203-C1EE-EE82-SEAC	
		Total Memory:						192 MRutes	
		Available Memory						46.76 MRvtes	
		Atalaote melliory.						40.10 Mojies	
		Installed Personalities	and Options						
		PCL6						(20040201)	
		AirPrint							
		BC1						(20040201)	

When logging in to the printer you are immediately given full access, image f:

When viewing the firmware, it has been identified that this firmware version is out of date, image g:

Home	System	Print	Fax	Scan	Networking	HP Web Services	
Device Status Supplies Status		Device Confi	guration				
Device Configuration		Product Information	1				
Network Summary Reports Color Usage Log Event Log		Product Name: Formatter Number: Serial Number: Service ID: Firmware Datecode Disable Fax: Telecom Version: Location: ADF Installed: Max Monochrome i Max Color Print Qu Controller Number	: e: Print Quality: sality: :				HP LaserJet 400 colorMFP M475d SF479RC CND8FDTCFL 24132 20150126 No 55-031-001 UK Yes 500x8 imageREt 3600 72

o action

- all 5 printers will need their firmware updating to the latest version (20191105)
- all 5 printers will need a strong administrator password setting on the management console
- all 5 printers will need the settings adjusting to prompt for a password on every login to the management console

Forward planning and continuous improvement

Having looked at all the vulnerabilities, it is clear that there are concerns with patch management and routine maintenance.

Patch management

It is not clear from the report how patch management is being conducted across the network but with missing critical updates, it is likely that patch management is not properly centralised. This can be said for both workstations and servers.

Recommendation for continuous improvement

Windows Server Update Service (WSUS)

I would recommend we introduce a WSUS server to the infrastructure. This will allow us to centrally control the patch management and ensure patches are rolled out to all workstations and servers correctly. WSUS will allow us to download operating systems, Microsoft software and signed drivers as soon as they are released to a central server. We can test patches quickly to confirm they will work with our infrastructure and then deploy to all machines effectively.

We can further set policies via group policy to control the updating of Windows, preventing users from delaying updates and ensuring they are forced to install as soon as they are made available.

WSUS will apply to workstations and servers and will include core signed drivers which should ensure that all the workstation vulnerabilities and the server update vulnerabilities are fixed and will also minimise the risk of vulnerabilities of a similar nature becoming an issue in the future.

Routine workstation maintenance

During routine workstation maintenance, technicians should also be looking at the device manager and driver information to confirm that latest drivers for all devices are installed, also protecting against vulnerabilities such as the NVIDIA video driver.

Routine printer maintenance

Once the initial resolution has been implemented as per the recommendations above, we should also be introducing standard checking of firmware as part of the printer maintenance cycle so that the firmware on printers is kept up to date at all times.

SQL server/PHPMyAdmin

The identified vulnerabilities in the SQL server are serious and need to be resolved urgently (within 3 days as per recommendation).

Moving forward we need to ensure that there are no repeats of these issues. I would recommend regular auditing of user accounts to ensure that we can identify that no rogue accounts have been added to the database. The use of 2 factor authentication, preferably using a time-based one-time password (TOTP), would provide a level of authentication that would prevent access with a compromised password as TOTP will use a system such as providing a code sent to a mobile device as well as a password. TOTP will mean the code will expire quickly if not input.

Summary

Implementing these recommendations will resolve the current issues and put in place, through the routine maintenance and monitoring, the ability to identify quickly and resolve proactively any further vulnerabilities that may occur.

History	Clear history -
You'll see your browsing history here once you've	visited sites.

Browser History

Task 2: deploy image remotely

Time limit

4 hours

You can use this time how you want but task 2 must be completed within the time limit.

(15 marks)

Instructions for students

As part of your continuous improvement of the network created, it has been logged that new software applications are needed for computers in an office. To save time and increase efficiency, this will be completed remotely.

For this you must create an image which includes an operating system, office software applications, drivers, rules, active directory permissions and a deployment task sequence. You will deploy this remotely. A test plan and test log (worksheet in appendix 3) will need to be completed for this task. This is required as the image may be deployed on different hardware platforms (for example, graphic cards) as it is necessary to quality assure the device to ensure the deployed image is acting as expected.

Screenshots and notes will need to be made throughout the creation, deployment and testing of the image.

This can be performed either virtually or physically.

2) You are required to demonstrate creation of an image and deployment of that image remotely for **one** virtual or physical machine including:

- create an image
 - operating system
 - o software applications
 - \circ active directory joined
 - o deployment task sequence
- upload image to image distribution system and make available for example, windows deployment service (WDS)
- deploy image
- create a test plan and complete log

You will have access to the following equipment:

- machine running WDS or similar
- internet access for developer notes and help pages
- 1 end-user device or virtual machine
- access to servers, firewalls, network devices, network-based services
- operating system and office licenses for basic image deployment
- digital camera

Evidence required for submission to NCFE

The following evidence should be submitted:

- annotated screenshots (if using virtual machines) or photographs (if using physical machines/devices) and documented notes showing creation and deployment of image
- test plan (worksheet in appendix 3)
- test log (worksheet in appendix 3)
- internet browsing history

Student evidence

Task 2

Creating a reference virtual machine

To create an image for remote deployment, I first need to create a 'reference image. The first steps to achieve this are to install Windows 10 on a computer and set it up exactly as I want all our client PCs to be set up.

Installing Windows 10

These screenshots show me installing Windows 10 Professional onto my reference PC. You can see I have followed a standard installation from installation media including setting a local administrator account (localadmin).

🖆 Windows Setup		- • 💌
	.Windows ⁻	
Language to instal	English (United Kingdom)	·
Time and currency format	English (United Kingdom)	
Keyboard or input method	United Kingdom	-
Enter your language	and other preferences and click "Next" to continue.	
© 2020 Microsoft Corporation. All rights reser	ved.	Next

I boot from an Iso and select the installation language. This is a replacement for a physical disc used in VMs and over networks

🖆 Windows Setup		- • 🛋
	Install now	
Bepair your computer		
2020 Microsoft Corporation. All right	s reserved.	

• I select install



I enter the licence key to validate the licence

٠

Operating system	Architecture	Date modified
Windows 10 Home	x64	11/05/2020
Windows 10 Home N	x64	11/05/2020
Windows 10 Home Single Language	x64	11/05/2020
Windows 10 Education	x64	11/05/2020
Windows 10 Education N	x64	11/05/2020
Windows 10 Pro	x64	11/05/2020
Windows 10 Pro N	x64	11/05/2020
lescription: Vindows 10 Pro N		

I have selected the version of Windows I want to install. I choose Pro as it is for a business



I agree to the licence



• I select the installation process I wish to use. This version will keep old data in a folder called windows.old

Name		Total size	Free coace	Tune
Drive 0 Una	illocated Space	70.0 GB	70.0 GB	type
€ 1 <u>B</u> efresh	Delete	✓ Eormat	+ Ngw	

• I select the drive where Windows is to install. I have only one disk, so this is the one I choose

🅰 Windows Setup	×
Installing Windows	
Status	
Copying Windows files Getting files ready for installation (0%) Installing features Installing updates Getting finished	

• Windows now installs

Basics	
Let's start with region. Is this co	orrect?
Tuvalu	
U.S. Minor Outlying Islands	
U.S. Virgin Islands	
Uganda	
Ukraine	
United Arab Emirates	
United Kingdom	
	Yes
с в	

• once installed, I select the region

	Basics	
ls ti	his the right keyboard layout If you also use another keyboard layout, you can add that next.	?
	United Kingdom	
	Canadian Multilingual Standard	
	English (India)	
	Irish	
	Scottish Gaelic	
	United States-Dvorak for left hand	
		Yes
ው 🖟		

• I pick the correct keyboard for the country of the company



• I don't need a second keyboard layout as I only have a UK keyboard

	Account	
How	would you like to set up?	
	Set up for personal use We'll help you set it up with a personal Microsoft account. You'll have full control over this device.	
1 1 1	Set up for an organisation You'll gain access to your organisation's resources, such as email, network, apps and services. Your organisation will have full control over this device.	
с в		

• I set the type to organisation as I will be joining to a domain



• now, I sign in

Account	
Who's going to use this PC? What name do you want to use?	
R	
localadmin X	
Or, even better, use an online account	Next
Ф В	

• I give the user a name. This is for the local admin

← Account	
Create a really memorable passwo Make sure that you pick something you'll absolutely remember.	ord
R	
······	
Or, even better, use an online account	Next
G D	

• I create a password for security

÷	Account	2
	Confirm your password Type your password one last time	
	R	
	••••• ©	
Or, even better, use an online accou	unt	Next
Ф В		

• I confirm the password

÷	A	count
Create S Just in case you forg	Security questions for thi net your password, choose 3 security questions and make sure your a	S ACCOUNT
	R	
	What was your childhood nickname?	~
	Fake Childhood Nickname	×
Or, even better, use an online acco	unt	Next
⊕ ₽		

• I add some security questions in case I forget the password. This is the first one. The security questions will allow me to retrieve it account

÷		Account
Create Just in case yo	e security questions for th u forget your password, choose 3 security questions and make sure you	nis account ur answers are unforgettable.
	R	
	What was your first pet's name?	~
	Fake Pet Name	×
Or, even better, use an online	account	Next
с- Ф		

• I add a second security question

÷		Account
Create s Just in case you forg	Security questions for et your password, choose 3 security questions and make sure	this account your answers are unforgettable.
	(2)	
	What is the name of the city where you were born?	~
	Fake City	×
Or, even better, use an online acco	ant	Next
с . 0		

I need to add 3 security questions in total. This is the third one. Three security questions makes it more difficult for answers to be guessed

•

	Services
DC Choose your settings, then select 'Acce Microsoft I	D MORE With YOUR VOICE of to save them. Check the 'Learn more' link for info on these settings, how to change them, how Defender SmartScreen works and the related data transfers and uses.
R)	Use online speech recognition Use your voice for dictation and to talk to Cortana and other apps that use Windows cloud-based speech recognition. Send Microsoft your voice data to help improve our speech services.
<i>ج</i> م	Don't use online speech recognition You won't be able to use dictation or talk to Cortana or other apps that support Windows cloud-based speech recognition. You can still use the Windows Speech Recognition app and other speech services that don't rely on Windows cloud-based services.
	Learn more Accept
с О	

• I don't need voice control as this is a corporate machine. It is not an option that the business uses

		Services
	Find my device	
Choose your settings, then sele Mic	t 'Accept' to save them. Check the 'Learn more' link for info on these settings, how to change rosoft Defender SmartScreen works and the related data transfers and uses.	them, how
	Yes Turn on Find my device and use your device's location data to help you find your device if you lose it. You must sign in to Windows with your Microsoft account to use this feature.	
	No Windows won't be able to help you keep track of your device if you lose it.	
	Learn more	Accept
8		

• I don't need to select location tracking as this is a desktop

÷	Services	
Let Microso Choose your settings, then select 'Accept Microsoft I	oft and apps use your location of to save them. Check the 'Learn more' link for info on these settings, how to change them, how Defender SmartScreen works and the related data transfers and uses.	
0	Yes Get location-based experiences like directions and weather. Let Windows & apps request your location. Microsoft will use location data to improve location services.	
8	No You won't be able to get location-based experiences like directions and weather or enjoy other services that require your location to work.	
	Learn more Accept	
с 0		

• I don't need find my device as this is a reference image. Nor do I want to allow location settings as the image will be deployed for corporate use and could be a security issue

÷					Services
	Choose your settings, then select Micro	Im 'Accep isoft D	prove inking & typir t to save them. Check the 'Learn more' link for info on the efender SmartScreen works and the related data transfer	ng nese settings, how to chan s and uses.	ge them, how
		1	Yes Send inking and typing data to Microsoft to improve th language recognition and suggestion capabilities of app and services running on Windows.	e ps	
		lo	No Don't use my data to help improve the language recognition and suggestion capabilities of apps and ser running on Windows.	vices	
				Learn more	Accept
Ф	0				

• I don't need "inking" as I will not need handwriting on the image

Se	nd diagnostic data to M	licrosoft
Choose your settings, th	n select 'Accept' to save them. Check the 'Learn more' link for info on Microsoft Defender SmartScreen works and the related data transf	these settings, how to change them, how fers and uses.
	Full Send all Basic diagnostic data, along with info about t websites you browse and how you use apps and featu plus additional info about device health, device activit and enhanced error reporting. Diagnostic data is used help keep Windows secure and up to date, troublesh problems and make product improvements. Regardle whether you select Basic or Full, your device will be equally secure and will operate normally.	the ures, ty d to oot iss of
	Basic Send only info about your device, its settings and capabilities, and whether it is performing properly. Diagnostic data is used to help keep Windows secure up to date, troubleshoot problems and make product improvements. Renardless of whether you select Basi	and

• I choose to only send basic data to Microsoft as it is a corporate image, and it could be a security risk

÷	Services	
Get tailored Choose your settings, then select 'Accept Microsoft (experiences with diagnostic data pt' to save them. Check the 'Learn more' link for info on these settings, how to change them, how Defender SmartScreen works and the related data transfers and uses.	
Ŷ	Yes Let Microsoft use your diagnostic data, excluding information about websites you browse, to offer you personalised tips, ads and recommendations to enhance your Microsoft experiences.	
Q	No The tips, ads and recommendations you see will be more generic and may be less relevant to you.	
	Learn more Accept	
с Ф		

• I will not send diagnostic data to Microsoft as again it is a corporate image

÷					Services
	Le Choose your settings, then select Micro	et a 'Accep isoft D	apps use advertis t' to save them. Check the 'Learn more' link for in efender SmartScreen works and the related data	- sing ID nfo on these settings, how to o transfers and uses.	change them, how
		Ċ	Yes Apps can use advertising ID to provide more pe advertising in accordance with the privacy polic provider.	ersonalised sy of the app	
		0	No The number of ads you see won't change, but t less relevant to you.	hey may be	
				Learn more	Accept
G	0				

• I do not want advertising to be tailored as again it could be a security risk and this is a corporate machine

\					Services
Do n	nore acros	ss devices	with activ	ity hist	ory
If you want timeline your activity history, M	and other Windows features which includes info about w ficrosoft products and service	s to help you continue what ebsites you browse and how es use this data to personali	you were doing, even when you were apps and services. e experiences while respect	you switch device Select Learn mor ing your privacy.	s, send Microsoft e to find out how
Learn more			N	5	Yes
с в					

I agree to history as this will help users to work more efficiently



• I allow Cortana as Windows will not function properly if it is not installed. It can be disabled later via a group policy



I can now log in as local admin

•

"e		
■ P Type here to search	0 # 8 # 8 @	^ 50 N and 0

• here is my reference PC logged in for the first time

Installing software

• I am also installing productivity suite OpenOffice. These screenshots show me installing the OpenOffice software, including opening the application to see that it is working ok

,e		
All and a second se		
	Property of the second se	
	OpenOffice The Interference of the Addition of	
	The Tragment and a track shared spectral property which a second for the spectral constraints. For instally spectral provided in the spectral constraints. For filling lower and the second spectral s	
	APACHE	
P Ige here to asset Q R P III III		< 10 44 memoria □
I start the install for Open Office	e	
e		
l Feell Maanaa May		
	Operatives (15) and O	
	take of instal (and Na 4). If a fit Allocate Mark, "A rated in a Miner Main, dot Brown and self-andre Male. Out (and it is and the radiation.	
	New Works U.L.M. New works U.L.M.	
	-100 UNI	

• I select an installation location

3				
,e				
		Dynol Waa k Li - mataktina Waad Castanar Malematina Reine atter and rikenten Providenten Providenten Providenten Providenten Providenten Providenten	x Oppicer	
		balah te saturare Ne. € teore de san the sergine (dravet) Oran for na balantei) teoret/fact (d		
P Age here to search	0 = 0 = 0	4		

I enter the organisation details

٠

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aj .		
e 		
	Image: Specific act 1.1 - An advances in Figure 1 Image: Specific act 1.2 - An advances in advances in Figure 1 <t< td=""><td></td></t<>	
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I select the installation type

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I click next when prompted

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I click next to move on to the next screen •

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Open Office is now installed

Checking drivers

These screenshots show that all drivers on the reference computer are installed correctly. There are no conflicts, missing drivers or outdated drivers.

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• I check that all drivers are installed correctly

Windows updates

• I have ensured all available updates are downloaded and installed prior to creating a reference image from the reference computer. The screenshots show Windows is completely up to date



• I check Windows is up to date. Then I update as necessary. This helps keep the pc secure and it is better to update before we take the image



here updates are being installed

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Windows is now up to date

Create reference image

Running the Sysprep tool with the out of box experience (OOBE)/generalise settings means that I have set the Windows installation back to as if it were a new computer out of the box. Generalise tells Windows to remove any traces of user profiles so the computer is completely as new. I now have a completely clean computer set up the way I want that I can duplicate across all the computers in our infrastructure. Once completed the machine shuts itself down.

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I use Powershell to run Sysprep

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• I select OOBE and shutdown as my options as this will give the user an "as new" out of box experience when it first boots

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- Sysprep is running
- when finished the machine will shut down

Capturing an image using WDS

Create a capture boot Image

• I have opened WDS, navigated to the boot images folder and right clicked on the Windows 10 setup image. I have selected the create capture image option which has launched the create capture image wizard



on my admin machine, I run WDS to allow the capture of the image

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I select capture an image

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• the capture image is being created

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• once done, I click finish

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• this summary shows success

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Here is the image on the WDS server ready for the capture of the image from the reference machine.

• I have now created a boot image that can be used to boot the reference PC remotely. The capture image includes a wizard that can be used to copy and capture the installation on the reference PC

Capturing the reference image

These screenshots show me booting through PXE on the reference PC and selecting the capture image. I then follow the capture wizard with the following settings:

- capture C:\ on the target computer
- image name/description: Windows 10 custom image
- select an appropriate save location and, also select to upload to a Windows deployment server
- specify the server name and use the domain admin credentials to connect to the server
- the reference image is then captured and copied to the server

This answer file can now be copied to as many computers as we want.

UDS Boot Manager version 0800 Client IP: 172.16.1.150 Server IP: 172.16.1.99 Server Name: DC01.Example.com

Press ENTER for network boot service.

I boot using PXE

Windows Boot Manager (Server IP: 172.16.1.99)	
Choose an operating system to start: (Use the arrow keys to highlight your choice, then press ENTER.)	
Capture Image	>
Microsoft Windows Setup (x64)	
To specify an advanced option for this choice, press F8.	
Seconds until the highlighted choice will be started automatically: 3	19
ENTER=Choose	ESC=Exit

I select the image from the server

Windows Deployment Services Image Capture Wizard
Directory to Capture
Enter the following information for this image. Note that you will only see volumes that contain operating systems that have been prepared with Sysprep.
Volume to capture:
C:\
Image name:
Captured-OperatingSystem
Image description:
Updated and software installed
< Back Next > Cancel

• I select the location

Enter a local location where yo image is not corrupted if there	u want to save the ins is a network malfuncti	tal image. This on.	ensures the
Name and location:			
C:\JTemp-Install.wim			Browse
Upload image to a Windows	Deployment Services	server (optional	0
Server name:			
DC01		Connect	
Image Group name:			
Windows-10		*	
To create this image, click Nex	t.		

I complete options



• I add further details

Windows Deployment Services Image	Capture Wizard
Task Progress Capturing image	
Percent complete: 34%	
	<back cancel<="" finish="" th=""></back>

here we see the progress

Windows Deployment Services Image Capture Wizard						
Task Progress						
The operation is complete.						
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The install image use meated oursessfully						
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	<back< td=""><td>Finish</td><td>Cancel</td></back<>	Finish	Cancel			

progress is 100%



- the capture is complete
- when deploying to a target computer we want the target PC to automatically join to the domain, to achieve this, we need to configure an answer file; the answer file will be set to respond to all configuration options in the OOBE and then join the PC to the domain
- these screenshots show the use of the autoattend.xml file created to join the domain and configure other settings for the deployed system

1	General Version Fit	ters User Permissions	
	Captured 4	OperatingSystem	
	Image type:	Install Image	
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	Architecture:	x64	
L	Description:	Updated and software installed	
1	Select Unattend File		×
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	Unattend File Path:		_
	U: Wemote Install Jauto	Bro Bro	wse
	If an unattend file for the new file.	he selected image already exists, it will be overw	ritten by

• I add an answer file

Deploying the Image

• the deployment has run correctly and is installed on the target computer

Windows Boot Manager (Server IP: 172.16.1.99)	
Choose an operating system to start:	
(Use the arrow keys to highlight your choice, then press ENTER.)	
Capture Image	
Microsoft Windows Setup (x64)	>
To specify an advanced option for this choice, press F8.	
ENTER=Choose	ESC=Exit

now I boot the target machine using PXE

🕰 Windows Setup		1
Windows Deploymen Keyboard © 2020 Microsoft Corport	t Services	
1 Collecting information 2 Installing Windows		

• I pre-add the domain account details so I do not need to manually add the machine after installation. This is an advantage of using an image

🔏 Windows Setup		
Windows Deployment	Services	
Keyboard or	Locale: English (United Kingdom)	* *
© 2020 Microsoft Corporatio	in, All rights reserved.	Next
lecting information 2 Installing Windows		

• I set languages (this could be done with an answer file if a large deployment was to be done)

	Windows Setup	ant to install		
	Operating system Captured-OperatingSystem	Language en=GB	Architecture x64	Date modified 07/01/2021
	Description: Updated and software installed			
	Select a language to install: English v			4
Collecting information	2 Installing Windows			

I choose the image

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		Name		Total size	Free space	Туре	1
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	€9 B4	fresh vad driver	X Delete	Eormat	∦ Ngw	Net	
1 Collecting information	2 Installin	g Windows					

• this is the disk to image

	💑 Windows Setup	
	Installing Windows	
	Your computer will restart several times. This might take a while.	
	✓ Copying Windows files Getting files ready for installation (0%) Installing features Installing drivers Getting finished	
1 Collecting information	2 Installing Windows	
I wait while Wi	ndows installs	
	8	

TempAdmin

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Other use

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I change to the other user

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	How do I sign in to another domain?	
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here is the deployed Windows showing OpenOffice



language is also already set to UK so it does not have to be reset



• when I check active directory, I can see that the computer is joined

Browser History

•



Examiner commentary

The student has achieved the grade for the following reasons:

- the student has demonstrated excellent understanding of the penetration test report and has accurately completed the penetration test risk assessment template
- the student has made good recommendations to resolve all the vulnerabilities identified
- the student has given a well thought out report that recommends detailed actions for future improvements with detailed explanations why
- they have been able to fully complete the deployment exercise, with all aspects including automatically joining the domain satisfied
- they have provided a detailed commentary of their work, demonstrating complex understanding of the deployment process
- the student uses complex language and terminology that shows they have a high level of understanding of the subject area
- the student is showing an effective demonstration of the skills and techniques required to achieve this task they are doing this consistently

Grade descriptors

The performance outcomes form the basis of the overall grading descriptors for pass and distinction grades.

These grading descriptors have been developed to reflect the appropriate level of demand for students of other level 3 qualifications, the threshold competence requirements of the role and have been validated with employers within the sector to describe achievement appropriate to the role.

Distinction The evidence is logical and provides an excellent response to the demands of the brief. Makes use of relevant knowledge and is well-informed by the practices of the sector. Demonstrates an understanding of the different perspectives/approaches associated within the sector. Makes excellent use of facts/theories/approaches/concepts. Demonstrates comprehensive use of breadth and depth of knowledge and understanding. Consistently selects appropriate skills/techniques/methods. Identifies information from a range of suitable sources and makes use of appropriate information/appraises relevancy of information. Combines information to make accurate and appropriate decisions. Makes sound judgements/takes appropriate action/seeks clarification and guidance. Successfully tackles both routine and non-routine problems that reflect real life situations in the sector. Effectively demonstrates skills and knowledge of the relevant concepts and techniques reflected in the sector and is applied across a variety of contexts. Tackles unstructured problems that have not been seen before, using their knowledge to analyse and find suitable solutions to the problems. Analyses data/information in context and applies appropriate analysis in confirming or refuting conclusions and carrying out further work to evaluate conclusions. Justifies strategies for solving problems, giving clear explanations for their reasoning. Pass The evidence is logical and a good response to the demands of the brief. Makes use of relevant knowledge and is generally informed by the practices of the sector. Demonstrates an understanding of some perspectives or approaches associated within the sector. Makes good use of facts/theories/approaches/concepts. Demonstrates an understanding of some perspectives or approaches clarification and guidance. Akakes use of apropriate information hor make accurate decisions. Makes use of appropriate information promptions. Combines information to make accurate decisions. Makes generally so	Grade	Demonstration of attainment
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- * 'Threshold competence' refers to a level of competence that:
- signifies that a student is well placed to develop full occupational competence, with further support and development, once in employment
- is as close to full occupational competence as can be reasonably expected of a student studying the TQ in a classroom-based setting (for example, in the classroom, workshops, simulated working and (where appropriate) supervised working environments)
- signifies that a student has achieved the level for a distinction in relation to the relevant occupational specialism component

U grades

• if a student is not successful in reaching the minimum threshold for the core and/or occupational specialism component, they will be issued with a U grade

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Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Published final version.		May 2021
v1.1	NCFE rebrand		September 2021