# **Assessment Cover Sheet**

### (Print all details and attach to front of assessment task/assignment before submitting)

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| Course code & name | ­­­­­­­­ ICT50220 - Diploma of Information Technology |
| Unit code & name | ­­­­­­­­ ICTNWK540 - Design, build and test network servers |
| Name of assessment | ­­­­­­­­ Assessment Task 3: Implement Security Controls with Active Directory |
| Due Date | .. / .. / … |
| Teacher name | ­­­­­­­­ |
| Instructions |  |
| Comments | ­­­­­­­­ |

Declaration: Read, tick and sign below

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Student signature …WangYiZhuo……………………… Date 2024/ 07 / 27

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| Please note that your assignment will not be accepted unless you have:   * completed all sections of the assignment * acknowledged all sources of other people’s contributions including references and students’ names for group work assessments * filled in all areas of this student assignment cover sheet. |

## 

Assessment Task 3: Implement Security Controls with Active Directory

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| Course code and title | **ICT50220 Diploma of Information Technology** |
| Unit code and  title | **ICTNWK540 Design, build and test network servers** |
| Due date | … / … / 2022 (Students have 2 weeks to complete this task) |
| Resources  required | Learner to provide:   * The learner may use his own laptop provided it meets the minimum requirements (refer to lab setup instructions in in Moodle)   Provided:   * Learner resources in Moodle * Access to computer and Internet * The computer used when working on tasks must have VirtualBox 6.x virtualisation software installed |
| Learner  instructions | This task involves demonstrating skills in deploying a server. Refer to the Task Details below, for further information.   * This assessment will be conducted using a simulated environment where the conditions are typical of those in a working environment in the ICT industry. * This assessment task is a practical project that must be completed individually * It is to be completed in classroom delivery of this unit * You have two weeks to complete this task. * Reasonable adjustments can be made if special circumstances apply, provided the integrity of the assessment is maintained and the intent is not compromised. E.g., extension of time, oral questions and answers etc. * You must complete the coversheet. * All questions must be answered. * You have to replace all occurrences of '***99***' in this document with the lab ID that was assigned to you at the beginning of the unit. * Naming conventions for the lab environment must be followed. * Unless stated otherwise, all virtual machines must use only the 'Internal Network' adapter. * The Windows Firewall must be enabled for all profiles on the host and on the virtual machines at all times. All inbound connections that do not match a rule must be blocked. * You have to complete the answers electronically and submit the completed assessment document electronically in Moodle by the due date. * If you have any questions about the task or concerns about your ability to complete the task, please discuss this with your Assessor. |

## Tasks and questions

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| This assessment is a continuation of the work completed in assessment 2. The systems W***99***-SERVER**1** and W***99***-CLIENT**1** must be fully operational in order to proceed with this assessment. |

## Task Overview

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| In this assessment you have to:   * Deploy Active Directory services to manage access to resources to and prevent unauthorised access * Configure and manage centralised group and user accounts * Migrate DHCP data to the new server and configure DHCP to support Active Directory * Configure, manage and test network access to file and printer resources * Develop a test plan for the system   Basic understanding of the network services is a prerequisite for the successful completion of this assessment.  Students must ensure that only features and roles explicitly named in this assessment are installed on the server.   |  |  | | --- | --- | | ***Note:*** | *As part of question 1 you will have to consult with your teacher. This may introduce delays before you can proceed beyond question 5.4. Make sure you take this into consideration when planning your work schedule.* | |

#### Redesign and migrate the DHCP server

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| Scenario You work as a system engineer for MP Tech Solutions Ltd (MP Tech) and your organisation plans to migrate DHCP to a new Active Directory (AD) based production environment for one of your clients. You intend to prototype the migration process by using your existing virtualisation environment. You have identified the following requirements:   * The server W***99***-SERVER**1** is to be decommissioned in the near future.The DHCP service running on this server needs to be migrated to a new server called W***99***-SERVER**2**-DC. * The old and the new servers, as well as all client systems, reside on the same network subnet. * The technical team suggested that you use either use Windows Backup for backing up and restoring the DHCP scope configuration files or copy the configuration files together with other data that may need to be migrated from the W***99***-SERVER**1** server, to the new server. * To cater for AD, the migrated DHCP service will need to be modified as follows: * Original DHCP scope options such as reservations and default gateway (router), ***must*** be preserved. * The new scope must cater for at least 60 devices. * Clients must be automatically assigned IP settings that also include the new AD DNS server and contain the new AD domani name name. WINS settings are not to be assigned.   As first step you are to redesign the DHCP service and document the DHCP settings in a design template. As part of the quality assurance process, you are then to develop a checklist for the DHCP server migration. Before proceeding further, you will have to present your DHCP design and checklist to your manager for validation [***your teacher will take on the role of your manager***]. Once you receive approval via email, you are to conduct the DHCP server migration in the prototype environment and demonstrate that your new DHCP server is operational and configured as required. |

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| 1 | To demonstrate you have successfully prototyped the DHCP server migration, complete the steps listed below and answer the corresponding questions. | | | |
| 1. **The DHCP server design is to be presented in form of the specification planning table shown in the answer area below. You must fill in all mandatory values (cells shaded in *light blue*) in the table. Depending on the requirements and your design choices, some additional settings may also need to be provided.** | | | | | |
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| |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **DHCP Server Design Specification** | | | | | | | **Number of IPv4 scopes:** | 1 | | **Number of IPv6 scopes:** | | 0 | | **IPv4 Scope Name:** | | | | W02cope | | | **Scope IP range (*mandatory*):** | | Start IP address: | | ***10.21.2.101*** | | | End IP address: | | ***10.21.2.150*** | | | **Network mask (*mandatory*):** | | | | ***255.255.255.0*** | | | **Exclusion address range (*if required*):** | | Start IP address: | |  | | | End IP address: | |  | | | **Reservations (*if required*):** | | Reservation name: | | ***W02-CLIENT1*** | | | IP address | | ***10.21.2.111*** | | | MAC address: | | ***08-00-27-04-CD-44*** | | | **Lease duration in days (*mandatory*):** | | | |  | | | **DHCP Options (*mandatory*):** | | Router: | | ***10.21.2.254*** | | | Domain name: | | ***w02.local*** | | | DNS server: | | ***10.21.2.2*** | | | | | | | |
| 1. **As part of the quality assurance process, you are to produce an installation checklist for the new DHCP server. The migration steps in the checklist must address the following DHCP actions:**  * **Install/activate** * **Modify** * **Stop** * **Transfer** * **Test** * **Import** * **Export**  |  |  | | --- | --- | | ***Note:*** | ***The above actions are not listed in the correct chronological order.*** |   **The installation checklist template can be found in the answer area below. In this table you will have to:**   * **List the seven aforementioned actions in the correct chronological order. You can select the action from the drop-down list in each cell of the Action column.** * **For each step you must briefly explain what the action entails (between 2-20 words for each action).** * **You must specify on which system(s) the action is executed.**   **You must fill in all *light-blue* coloured cells in the table.** | | | | | |
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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **DHCP Migration/Installation Checklist** | | | | | | **Step** | **Action** | **Explain briefly what the action entails** | **Execute action on system(s)** | **Com-pleted** | | **1** | Install/Activate | Use PowerShell to export DHCP settings (scopes) to a file | ***W02-SERVER1*** |  | | **2** | Modify | Transfer the DHCP configuration files to the target server.  Option 1: Use Windows Backup to back up and restore data.  Option 2: Copy files manually using shared folders or tools like VirtualBox. | ***W02-SERVER1.***  ***W02-SERVER2-DC*** |  | | **3** | Stop | Stop the "old" DHCP on the source server | W99-SERVER1 |  | | **4** | Transfer | Install and activate the new DHCP server | ***W02-SERVER2-DC*** |  | | **5** | Test | Import DHCP configurations on the target server | W99-SERVER2-DC |  | | **6** | Import | Adjust the imported scopes to match new settings | W99-SERVER2-DC |  | | **7** | Export | Verify the new DHCP server functionality | W99-CLIENT1 |  | | | | | | |
| 1. **You are to consult with your manager (in person or via email) to confirm your DHCP design meets the requirements and that the DHCP migration checklist you prepared is satisfactory [*your teacher will take on the role of your manager*]. Once your design and checklist are validated and approved, you will receive a confirmation email from your manager informing you that you can proceed with the DHCP migration.**  |  |  | | --- | --- | | ***Note:*** | ***While waiting for feedback from your manager, continue to work on questions 2-5. You must obtain the required approval, before you can answer question 6.*** |   **Take a screenshot of the email in which your manager confirmed that you can proceed with the DHCP migration. The screenshot must clearly show the date/time, recipients, subject line and the complete message body of the email reply sent to you by your manager.**  **Paste a screenshot of the approval email you received from your manager in the answer area below.** | | | | | |
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#### Create a new Windows 10 Virtual Machine (VM) test system

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| You are to deploy a second Windows 10 VM that will be used to verify directory-controlled resource allocation to computers and users.  Create a second Windows 10 test VM according to the ***Hypervisor Specification*** below:   |  |  |  | | --- | --- | --- | | **Hypervisor Specification** | | | | **VirtualBox VM name** | W***99***-Win10-Eval-**2** | | | **Operating System type and version** | Windows 10 (64-bit) | | | **Memory** | Host with *only 8GB* Memory | 1.5GB | | Host with *more than 8GB* Memory | 2GB | | **Processor(s)** | 1 | | | **New Virtual disk 1** | 50GB, dynamically expanding Virtual disk (file must be located in own work area as per lab setup instructions)  The base name of the virtual disk file name must match the VirtualBox VM name | | | **Virtual disk CD/DVD** | Windows 10 evaluation ISO attached to the virtual CD/DVD drive (Check lab setup instructions for the location of the ISO file) | | | **Network interface** | Use 'NAT' for initial evaluation registration  Change to ‘Internal Network’ once evaluation registration was successful | | | **Other** | Enable support for Shared Clipboard and Drag’n’Ddrop | |   Deploy the Windows 10 system according to the following ***Computer Specification***:   |  |  |  | | --- | --- | --- | | **Computer Specification** | | | | **Windows 10 installation options** | Time and currency format | English (***Australia***) | | Keep defaults for all other installation options | | | **Post-install choices** | Basic customisation | Keep defaults | | Account | In lower left corner of screen select:  ***Domain joined instead*** | | Privacy settings | All options can be unselected | | **Windows Update** | ***Pause updates for 7 days***   |  |  | | --- | --- | | ***Note:*** | *Not making this change ASAP may result in gigabytes of updates being downloaded to your computer* | | | | **Computer name (NetBIOS) name** | W***99***-CLIENT**2** | | | **Workgroup/Domain** | Workgroup: | | | **Logical network settings** | * IPv4:   ***After successful registration of evaluation license attach network adapter to Internal Network*** and change the IPv4 address to:   * IPv4 address: 10.21.***99***.20**2** / 24 * Default gateway: 10.21.***99***.254 * Preferred DNS server: 10.21.***99***.2 * All other settings: Not used at this time * IPv6:   ***Must*** be unselected (not used in this unit)   * ‘Network discovery’ and ‘File and printer sharing’:   ***Must*** be enabled for all network profiles   * All other adapter settings:   Leave unchanged | | | **Guest Additions** | ***Must*** be installed and the version of the Guest Additions ***must*** match the VirtualBox version. Update the Guest Additions if required. | | | **Firewall** | Allow inbound and outbound IPv4 ICMP ping requests for all profiles | | | **Accounts** | Enable the ***THE*** local ‘Administrator’ account and assign the standard lab password | |   Sign in on W***99***-CLIENT**2** using ***THE*** local Administrator account and demonstrate successful deployment of the system. |

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| 2 | To demonstrate the Windows 10 system is successfully deployed, sign in on W*99*-CLIENT2 using *THE* local *Administrator* account, open a PowerShell prompt with ‘Run as Administrator’, and issue the following commands set (all on one line):  whoami ; Get-Culture ; ipconfig /all ; Get-Date | Select DateTime  Take a screenshot of the PowerShell window (the screenshot must show the VM title bar and all commands successfully completed).  Paste the screenshot in the answer area below this line. | | |
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#### Create a new Windows Server 2019 Virtual Machine (VM)

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| You are to deploy a second Windows Server 2016 VM that will provide directory services and shared file resources for your prototype environment.  Create a VM according to the following ***Hypervisor Specification***:   |  |  |  |  | | --- | --- | --- | --- | | **Parameter** | **Value / Description** | | | | **VirtualBox VM name** | W***99***-Win2019-Full-**2**-DE-Eval | | | | **OS source** | Windows Server 2019 evaluation ISO *attached to the virtual CD/DVD drive* (Check lab setup instructions for the location of the ISO file) | | | | **Memory** | Host with *only 8GB* Memory | 2GB | | | Host with *more than 8GB* Memory | 4GB | | | **Processor(s)** | 1 | | | | **New Virtual disk 1** | 50GB, dynamically expanding Virtual disk (file must be located in own work area as per lab setup instructions)  The base name of the virtual disk file name must match the VirtualBox VM name | | | | **New Virtual disk 2** | 30GB, dynamically expanding Virtual disk (file must be located in own work area as per lab setup instructions)  The base name of the virtual disk file name should be based on the VirtualBox VM name | | | | **Network interface** | Adapter 1: | |  | | - For initial evaluation license registration use: | | ***NAT*** | | - ***After*** evaluation registration and patching of the server change to: | | ***Internal Network*** | | **Other** | Enable support for Shared Clipboard and Drag’n’Ddrop | | |     Deploy the Windows Server 2019 system according to the following ***Computer Specification***:   | **Parameter** | **Value / Description** | | | | | | --- | --- | --- | --- | --- | --- | | **Operating System (OS) installation options** | **OS Edition** | | Windows Server 2019 Datacenter Evaluation (Desktop Experience) | | | | **Time and currency format** | | English (Australia) | | | | **OS disk location (*Disk 0*)** | | Use default settings for the 50GB disk | | | | **Login credentials** | | Administrator password: *p@ssw0rd* | | | | **Computer (NetBIOS) name** | W***99***-SERVER**2**-DC | | | | | | **Workgroup/Domain** | Workgroup: WORKGROUP | | | | | | **Logical network settings (to be configured after successful evaluation license registration)** | Adapter 1:   * ***Change IPv4 after successful registration of evaluation license to:*** * IPv4 address: 10.21.***99***.**2** / 24 * Default gateway: 10.21.***99***.254 * All other settings: Not used at this time * IPv6 address:   Not used (***must*** be unselected)   * All other adapter settings:   Leave unchanged | | | | | | **Windows Update Settings** | Manual   |  |  | | --- | --- | | ***Note:*** | *Not making this change ASAP may result in gigabytes of updates being downloaded to your computer* | | | | | | | ***Disk 1*** | **Initialize Disk** | MBR | | | | | **Create New Simple Volume** | **Size** | | Use maximum available | | | **Drive Letter** | | D: | | | **Format volume** | | **File system:** | NTFS | | **Allocation unit size** | Default | | **Volume label** | Data | | **Perform a quick format** | | Selected | | | **Remote Desktop** | Enabled for ***all*** clients | | | | | | **VirtualBox Guest Additions** | ***Must*** be Installed, version ***must*** match the VirtualBox version | | | | | | **Firewall** | Allow inbound and outbound ICMP ping requests for all profiles | | | | |   Demonstrate successful deployment of the system. |

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| 3 | To demonstrate the system was configured in line with the given specification, complete the following steps and answer the corresponding questions. | | | | |
| 1. **In the VirtualBox Machine Manager set the focus on W*99*-Win2019-Full-2-DE-Eval so that the VM summary settings are shown in the right pane and take a screenshot of the window.**   **Paste the screenshot in the answer area below this line.** | | | | | |
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| 1. **Issue the PowerShell command showing the *full configuration* for *all* network adapters on W*99*-SERVER2-DC. Provide a screenshot of the PowerShell window showing the result of the command (the screenshot must also show the VM title bar).**   **Paste the screenshot in the answer area below this line.** | | | | | |
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| 1. **To demonstrate that server and client can successfully communicate over the network, on W*99*-SERVER2-DC open a PowerShell prompt with ‘Run as Administrator’ and issue the command set below (all on one line)**   Netsh advfirewall show all state ; Netsh advfirewall show all firewallpolicy ; whoami ; (Get-NetIPAddress | Where-Object {$\_.AddressFamily -eq 'IPv4'}).IPAddress ; ping W***99***-CLIENT**2** | Select-String "from"   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it does not match the given specification, or the ping command is not successful or the response time exceeds 10ms, go back and resolve the issue before continuing further.*** |   **Take a screenshot of the PowerShell window showing the output of the command set (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | | |
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#### Install Active Directory service

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| You are to install Active Directory (AD) on W***99***-SERVER**2**-DC.   |  |  | | --- | --- | | ***Note:*** | ***Do NOT proceed unles the computer name of your server is configured according to the specification.*** |  * Using the Roles and Features wizard, install the ‘Active Directory Domain Services’ (ADDS) role ***AND*** the DNS role on W***99***-SERVER**2**-DC. * Complete the ‘***Post-deployment Configuration***’ and promote the server to a Domain Controller (DC) using the settings specified below:  |  |  |  | | --- | --- | --- | | **Deployment configuration:** | Deployment operation: | Add a new forest | | Root domain name: | w***99***.local | | **Domain Controller Options:** | DSRM password | p@ssw0rd | | Keep all other defaults | | | DNS delegation | Skip the warning | | **Additional Options:** | Keep the default NetBIOS domain name: W***99*** | | | **Paths:** | Keep the default paths | | | **Review Options:** | Check that the configuration settings comply with above specification | | | **Prerequisite check** | The installation will not continue if the ‘Prerequisites check’ finds any ***errors***. If you receive and error, go back and check that you have correctly followed all instructions.  ***Warnings*** relating to NT 4.0 and DNS delegation may be ignored (not relevant for the purpose of this lab). | | | **Installation** | The system will reboot once the installation finished. The restart may take several minutes. | |  * After the reboot sign in as Administrator and create the DNS Reverse Lookup Zone (RLZ) for subnet the DC resides on. * You are to demonstrate that W***99***-SERVER**2**-DC has been successfully promoted to a DC. |

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| 4 | Complete the following steps and answer the corresponding questions.  To demonstrate the Active Directory installed and the server is now a DC, complete the steps listed below and answer the corresponding questions. | | | | |
| 1. **To demonstrate the required DNS zones are setup on W*99*-SERVER2-DC, open a PowerShell prompt with ‘Run as Administrator’ and issue the following command set:**   whoami ; Get-DnsServerZone ; Get-Date | Select DateTime  **Take a screenshot of the PowerShell window showing the result of the commands (the screenshot must also show the VM title bar of the window).**  **Paste the screenshot in the answer area below this line.** | | | | | | |
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| 1. **To demonstrate the W*99*-SERVER2-DC has been successfully promoted to a DC, take a screenshot of the system listed in the Active Directory Users and Computers’ (ADUC)** **‘Domain Controllers' container (the screenshot must show the full DC name in ADUC and also the VM title bar of the window).**   **Paste the screenshot in the answer area below this line.** | | | | | | |
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#### Create Active Directory structure and add required roles and features

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| Your system management and security requirements call for the creation of the AD structures shown in the diagram and specification tables below. You are to create this AD structure in accordance with this specification.   * Using the diagram and table below, create the 1st and 2nd-level Organizational Units (OU) in ADUC.     Richard Neumann © Melbourne Polytechnic, 2021   |  |  | | --- | --- | | **OU Name** | **OU Object Location** | | W02-Company | W02.local Domain | | W02-SysAdmins | W02.local Domain | | W02-Accounting | W02-Company OU | | W02-Groups | W02-Company OU | | W02-Sales | W02-Company OU |  * Create the group accounts as specified in the table below.  |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Group Name** | **Located in OU** | **Group Scope** | **Group Type** | **Is Member of Group** | | W02-GG-Accounting | W02-Groups | Global | Security | None | | W02-GG-Restricted | W02-Groups | Global | Security | None | | W02-GG-Sales | W02-Groups | Global | Security | None | | W02-GG-Secure | W02-Groups | Global | Security | W02-GG-Sales |  * Create the user accounts as specified in the table below.  |  |  |  |  | | --- | --- | --- | --- | | **Display Name** | **Located in OU** | **User Logon Name** | **Is Member of Group** | | W***02*** User**1** | W***02***-Accounting | w***02***-user**1** | Domain Users  W***02***-GG-Accounting | | W***02*** User**2** | W***02***-Sales | w***02***-user**2** | Domain Users  W***02***-GG-Sales | | W***02*** User**3** | W***02***-Company | w***02***-user**3** | Domain Users  W***02***-GG-Restricted  W***02***-GG-Secure | | W***02*** Admin | W***02***-SysAdmins | w***02***-admin | Administrators  Domain Admins  Domain Users  Enterprise Admins  Users | | In the lab, user accounts may all use the same non-expiring password (e.g., p@ssw0rd) | | | |  * Using the ‘Roles and Features’ wizard, ***add*** the functionality specified in the table below to W***99***-SERVER**2**-DC: (make sure that only roles and features explicitly named below are ***added*** on the server):  |  |  |  |  | | --- | --- | --- | --- | | **Service** | **Type of functionality** | **Additional selection** | **Additional instructions** | | **DHCP Server** | Role | When prompted, add features that are required for the role | After the installation complete the post-deployment configuration. Use the default account credentials to ‘Authorize’ the DHCP server in ADDS and commit the configuration. | | **Print and Document Services** | Role | When prompted, add features that are required for the role | Use default settings for installation | | **Windows Server Backup** | Feature | N/A | N/A |   Demonstrate you have created the company structure and added required roles and features according to the given specification. |

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| 5 | To demonstrate the Active Directory structure is in place and the additional roles and features are installed, complete the steps listed below and answer the corresponding questions. | | | | | |
| 1. **To demonstrate that you have created the OU’s and security groups according to the given specification, open a PowerShell prompt on W*99*-SERVER2-DC with 'Run as Administrator' and issue the three command sets shown below.**   Get-ADObject -Filter {ObjectClass -eq 'organizationalunit'} | Where-Object {$\_.name -Like "W02\*"} | Select Name,DistinguishedName | Sort-Object Name  Get-ADGroup -Filter {GroupScope -eq "Global"} | Where-Object {$\_.name -Like "W02\*"} | Select Name,DistinguishedName  Whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Carefully check the output to confirm the results comply with the specification. Correct any discrepancies before continuing any further.*** |   **Take a screenshot of the PowerShell window showing the result of the three command sets (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | | | |
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| 1. **To demonstrate that you have created users and assigned group memberships according to the given specification, open a PowerShell prompt on W*99*-SERVER2-DC with 'Run as Administrator' and issue the six command sets shown below.**   Get-ADGroupMember -Identity W02-GG-Accounting | Select distinguishedName  Get-ADGroupMember -Identity "Domain Admins" | Select distinguishedName  Get-ADGroupMember -Identity W02-GG-Restricted | Select distinguishedName  Get-ADGroupMember -Identity W02-GG-Sales | Select distinguishedName  Get-ADGroupMember -Identity W02-GG-Secure | Select distinguishedName  whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Carefully check the output of the Get-ADGroupMember commands to confirm the results comply with the specification. Correct any discrepancies before continuing any further.*** |   **Take a screenshot of the PowerShell window showing the result of the three command sets (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | | | |
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| 1. **To demonstrate the required roles and features have been added, sign in on W*99*-SERVER2-DC as w*99*-admin.**  |  |  | | --- | --- | | ***Note:*** | ***From this point onward all tasks requiring administrator privileges in the domain w99.local have to be completed while signed in as w99-admin.*** |   **Open a PowerShell prompt with ‘Run as Administrator’ and issue the command set (all on one line):**  **whoami ; Get-WindowsFeature | where-object {$\_.Installed -eq $True} ; Get-Date | Select DateTime**   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it does not match the given specification, go back and resolve the issue before continuing further.*** |   **Take a screenshot of the PowerShell window showing the output of the whole command set (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | | | |
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#### Complete DHCP service migration

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| You are to complete the DHCP service migration in your prototype environment.   |  |  | | --- | --- | | ***Note:*** | ***In order to proceed with this question, you must have:***   1. ***The saved DHCP scope configuration file (created on W99-SERVER1) from assessment 1, question 2.3.*** 2. ***Obtained the approval email for the DHCP design from your manager and completed question 1.3.*** |   To complete the DHCP migration you are to:   * Import the save DHCP scope configuration file from W***99***-SERVER**1** on W***99***-SERVER**2**-DC * Modifying the DHCP scope settings on W***99***-SERVER**2**-DC according to the design approved by your manager (refer to questions 1.2 and 1.3 for relevant configuration details).   On W***99***-SERVER**2**-DC create folder C:\DHCP and copy the exported DHCP scope configuration file (that originated on W***99***-SERVER**1**) to this folder. To import the DHCP scope, open a PowerShell prompt with ‘Run as Administrator’ and issue the following command:  Import-DhcpServer -ComputerName “W***99***-SERVER**2**-DC” -File “C:\DHCP\W***99***-SERVER**1**-DHCP-Export.xml” -BackupPath “C:\DHCP\”  After the successful import, modifying the DHCP scope according to your approved design.  Using W***99***-CLIENT**1** you are to validate that the DHCP service on W***99***-SERVER**2**-DC assigns IPv4 settings as required. |

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| 6 | To validate correct operation and configuration of the new DHCP server, sign in on W*99*-CLIENT1 as *THE* local Administrator and open a PowerShell prompt with ‘Run as Administrator’ and issue the following two command set:  whoami ; Get-Date | Select DateTime ; ipconfig /renew  ipconfig /all     |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it does not match your DHCP scope settings, go back and resolve the issue before continuing further.*** |   Take a screenshot of the PowerShell window showing the output of the command sets (the screenshot must also show the VM title bar).  Paste the screenshot in the answer area below this line. | | |
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#### Implement security controls to prevent unauthorised access to a system

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| You are to setup security controls to prevent unauthorised access to AD joined systems.  As first step you will join the two Windows 10 client VM’s to AD. You will then configure controls to restrict user access to specific computers only and verify that these security controls work as intended. |

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| 7 | To demonstrate you have successfully implemented security controls to prevent unauthorised access to a system, complete the steps listed below and answer the corresponding questions. | | |
| 1. **You are to join W*99*-CLIENT1 and W*99*-CLIENT2 to AD as outlined below.**  * **As first step make sure that both clients obtain their IPv4 addresses automatically and that they can successfully ping the Fully Qualified Domain Name (FQDN) of the DC. If the ping does not work, resolve the issues before proceeding any further.** * **Join W*99*-CLIENT1 and W*99*-CLIENT2 to the Active Directory domain w*99*.local. When prompted, provide w*99*-admin credentials for joining the domain.** * **On W*99*-CLIENT1 *and* on W*99*-CLIENT2 sign in as w*99*-admin. If you are unable to sign in, resolve any issues before proceeding any further.** * **Add the group ‘Domain Users’ to the local Administrators group on W*99*-CLIENT1 *and* on W*99*-CLIENT2.**   **To demonstrate you have successfully joined both systems to the domain, take a screenshot of the ADUC window showing the list of computers in the ‘Computers’ container (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | |
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| 1. **Explain the difference between the account W*99*\Administrator and W*99*‑CLIENT1\Administrator.**   **Type your response below this line and limit your explanation to between 10 – 30 words (excluding references).** | | | |
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| ***W99\Administrator***  ***This is the administrator account for the entire domain (W99).***  ***This account can manage all computers and users in the entire domain.***  ***W99 CLIENT1\Administrator***  ***This is the local administrator account for the CLIENT1 computer.***  ***This account can only manage resources and settings on the CLIENT1 computer.*** | | | |
| 1. **Using ADUC, restrict the user account w*99*-user1 to sign in only on computer W*99*-CLIENT1.**   **To demonstrate the log on restrictions have been successfully applied, attempt to sign in as w*99*-user1 on W*99*-CLIENT2.**   |  |  | | --- | --- | | ***Note:*** | ***If you are able to sign in, you have made an error and you must correct the issue before you continuing any further.*** |   **Take a screenshot of the error message you receive (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | |
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#### Manage network access to server storage resources

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| Your server is to provide file services for the sales team and the accounting department. In line with the security design, strict access controls must be implemented to prevent unauthorised access to system resources. Required folders and access permissions are provided in form of specification tables. You are to prototype the file services using your virtualised environment.  Using the specification below you are to create the shown folder structure on W***99***-SERVER**2**-DC and assign NT File System ***(NTFS) permissions***.   |  |  |  |  | | --- | --- | --- | --- | | **Folder Name** | **Folder Location** | **Permissions Inheritance** | **Group/User Permissions** | | W***02***-Company | D:\ | Disabled with ‘Convert inherited permissions into …’ | * Remove ‘CREATOR OWNER’ group from permissions * Remove ‘Users’ group from permissions * Make sure w***02***-admin has ‘Allow’ column ‘Full control’ permission selected (for ‘This folder, subfolders and files’) * Leave all other converted permissions unchanged | | W***02***-Accounting | W***02***-Company | Enabled | * Keep inherited permissions unchanged * Add W***02***-GG-Accounting with ‘Allow’ column ‘Modify’ permissions selected | | W***02***-Sales | W***02***-Company | Enabled | * Keep inherited permissions unchanged * Add W***02***-GG-Sales group with ‘Allow’ column ‘Modify’ permissions selected * Add ‘Domain Users’ group with ‘Allow’ column ‘Read & Execute’, ‘List folder Contents’ and ‘Read’ permission | | W***02***-Secure | W***02***-Sales | Disabled with ‘Convert inherited permissions into …’ | * Remove ‘Domain Users’ group from permissions, keep all other permissions * Leave all other converted permissions unchanged * Add ‘W***02***-GG-Restricted’ group with ‘Deny’ column ‘Full control’ permissions selected |   Once the folder structure is in place, configure ***share permissions*** on W***99***-SERVER**2**-DC as specified below:   |  |  |  | | --- | --- | --- | | **Folder in D:\W*02*‑Company** | **Share Name** | **Share Permissions (Advanced Sharing…)** | | W***02***-Accounting | W***02***-Accounting | * Add W***02***-GG-Accounting group with ‘Allow’ column ‘Full control’ permissions * Remove ‘Everyone’ group | | W***02***-Sales | W***02***-Sales | * Add ‘Domain Users’ group with ‘Allow’ column ‘Full control’ permissions * Remove ‘Everyone’ group |   You are to demonstrate correct setup of the folder structure, verify the security configuration and explain system behaviour when attempting to access storage resources over the network. |

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| 8 | To demonstrate you have successfully created the required folder structure and verified that the access permissions comply with the design, complete the steps listed below and answer the corresponding questions. | | | |
| 1. **To demonstrate you have setup folders and NTFS permissions as required, open a PowerShell prompt on W*99*-SERVER2-DC with ‘Run as Administrator’, and issue the following commands sequences (executing the commands separately is not acceptable)**   (Get-ACL D:\W***02***-Company\W***02***-Accounting).access | Select IdentityReference,FileSystemRights,AccessControlType,IsInherited | Sort IdentityReference  (Get-ACL D:\W***02***-Company\W***02***-Sales).access | Select IdentityReference,FileSystemRights,AccessControlType,IsInherited | Sort IdentityReference  (Get-ACL D:\W***02***-Company\W***02***-Sales\W***02***-Secure).access | Select IdentityReference,FileSystemRights,AccessControlType,IsInherited | Sort IdentityReference  whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. Do not proceed with the next step unless you are sure that the output of the commands is in line with the specified NTFS permissions.*** |   **Take a screenshot of the PowerShell window (the screenshot must show the VM title bar and all commands successfully completed).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **To demonstrate you have setup shares and permissions as required, open a PowerShell prompt on W*99*-SERVER2-DC with ‘Run as Administrator’, and issue the following command set.**   Get-SmbShare | Where-Object {$\_.name -Like "W***99***\*"} | Get-SmbShareAccess | Sort Name ; whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. Do not proceed with the next step unless you are sure that the output of the commands is in line with the specified share permissions.*** |   **Take a screenshot of the PowerShell window (the screenshot must show the VM title bar and all commands successfully completed).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **You are to test and verify network access for user w*99*-user1 to the folders you have previously created and explain the access behaviour and error messages you receive.**  * **Sign in as w*99*-user1 on W*99*-CLIENT1 (all steps must be completed signed in as w*99*-user1)** * **Map drive X: to the share \\W*99*-SERVER2-DC\W*99*-Sales** * **Map drive W: to the share \\W*99-*SERVER2-DC\W*99*-Accounting** * **Open Notepad, type a few characters and save the file as w*99*-user1-file.txt on drive W:\**  |  |  | | --- | --- | | ***Note:*** | ***You will have to provide evidence that you successfully saved this file later on.*** |  * **Attempt to save file w*99*-user1-file.txt on drive X:**  |  |  | | --- | --- | | ***Note:*** | ***If you do not see a network error message, your configuration is not right. Before proceeding any further, delete the file from drive X:, check your configuration and make sure you have correctly followed all instructions. You must see an error message, before continuing any further.*** |   **Carefully analyse and diagnose the error message as you will have to explain it when answering the knowledge question further down.**  **Take a screenshot of the error message you receive when you try to save the file w*99*-user1-file.txt to X: (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **You are to test and verify network access for user w*99*-user2 to the folders you have previously created and explain the access behaviour and error messages you receive.**  * **Sign in as w*99*-user2 on W*99*-CLIENT2 (all steps must be completed while signed in as w*99*-user2)** * **Map drive X: to the share \\W*02*-SERVER2-DC\W*02*-Sales** * **Attempt to map drive W: to the share \\W*02-*SERVER2-DC\W*02*-Accounting**  |  |  | | --- | --- | | ***Note:*** | ***If you do not see a network error message, your configuration is not right. Before proceeding any further, check your configuration and make sure you have correctly followed all instructions. You must see an error message, before continuing any further.*** |   **Carefully analyse and diagnose the error message as you will have to explain it when answering the knowledge question further down.**  **Take a screenshot of the error message you receive when you try map drive W: to \\W*99*-SERVER2-DC\W*99*-Accounting (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **You are to test and verify network access for user w*99*-user2 and w*99*-uesr3 to the folders you have previously created and explain the access behaviour and error messages you receive.**  * **While signed in as w*99*-user2 on W*99*-CLIENT2, open Notepad, type a few characters and save the file as w*99*-user2-file.txt in the folder X:\W*99*-Secure (X: is still mapped to \\W*99*-SERVER2-DC\W*99*-Sales as in question 8.4)**  |  |  | | --- | --- | | ***Note:*** | ***You will have to provide evidence that you successfully saved this file later on.*** |  * **Disconnect drive X: and sign out** * **Sign in as w*99*-user3 on W*99*-CLIENT2 (the remaining steps must be completed signed in as w*99*-user3)** * **Map drive V: to the share \\W*99*-SERVER2-DC\W*99*-Sales** * **Open Notepad, type a few characters and save the file as w*02*-user3-file.txt in the folder V:\**  |  |  | | --- | --- | | ***Note:*** | ***You will have to provide evidence that you successfully saved this file later on.*** |  * **Attempt to save file w*99*-user3-file.txt in the folder V:\W*99*-Secure**  |  |  | | --- | --- | | ***Note:*** | ***If you do not see a network error message, your configuration is not right. Before proceeding any further, delete the file from V:\Secure, check your configuration and make sure you have correctly followed all instructions. You must see an error message, before continuing any further.*** |   **Carefully analyse and diagnose the error message as you will have to explain it when answering the knowledge question further down.**  **Take a screenshot of the error message you receive when you try to save the file w*99*-user3-file.txt to V:\W*99*-Secure (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **To validate the creation of the three test files, sign in on W*99*-SERVER2-DC as w*99*-admin. Open a PowerShell prompt with 'Run as Administrator' and issue the command**   Get-ChildItem -Recurse "D:\W***02***-Company" -Include \*.txt ; whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If you do not see the three files you created previously listed, you have made an error. Do not continue any further until you have resolved the issue.*** |   **Take a screenshot of the PowerShell window showing the three files you previously created (the screenshot must show the VM title bar and all commands successfully completed).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **Answer the following four knowledge questions about file permissions and access controls. *Your explanations must discuss NTFS and share permissions and your argumentation must be based on the users group membership. Use the following example as a guideline for your your answer:***   ***Group G1 has full share access and Group G2 has modify NTFS access to the folder. Because user U1 is a member of G1 and G2, U1 can write to the folder.***  **Type your response in the answer area below this line in the right column next to each question, and limit your explanation to between 20 – 50 words for each question (excluding optional references).** | | | | |
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| |  |  | | --- | --- | | **Question** | **Your explanation must discuss NTFS and share permissions for the user** | | 1. **Analyse the error message you received in question 8.3. Explain why w*99*-user1 does not have permission to save the file in \\W*99*-SERVER2-DC\W*99*-Sales.** | w99-user1 lacks save permissions because their group membership may have restrictive NTFS or share permissions on the folder. If w99-user1's group has read-only NTFS or share permissions, they cannot save files despite other permissions. | | 1. **Analyse the error message you received in question 8.4. Explain why w*99*-user2 does not have permission to access \\W*99*-SERVER2-DC\W*99*-Accounting.** | w99-user2 likely does not have permission to access the folder due to restrictive NTFS permissions for their group. Even if share permissions allow access, NTFS permissions can prevent access if they are more restrictive. | | 1. **Review the steps in question 8.5 and explain why w*99*-user3 was able to save the file in \\W*99*-SERVER2-DC\W*99*-Sales.** | w99-user3 was able to save the file because their group membership includes sufficient NTFS and share permissions. For example, if their groups have modify or full control on both NTFS and share permissions, saving files is permitted. | | 1. **Analyse the error message you received in question 8.5. Explain why w*99*-user3 does not have permission to access \\W*99*-SERVER2-DC\W*99*-Sales\W*99*-Secure.** | w99-user3 cannot access the subfolder due to restrictive NTFS permissions specifically on the W99-Secure folder. Even if they have sufficient permissions on the parent folder, NTFS permissions on subfolders can deny access. | | | | | |

#### Using Group Policies for printer assignment

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| Your design requires that printers are made available to users based on the department a computer belongs to. Group Policies (GP) will be used to satisfy this requirement.  You are to pilot the printer assignment in your virtualised test environment. You will first create the GP Objects (GPO) and then setup and configure the printers be deployed via GP.   * Using ‘Group Policy Management’ (GPM) on W***99***-SERVER**2**-DC create GPOs according to the specification below:  |  |  |  | | --- | --- | --- | | **Parameter / Instructions** | **First GPO** | **Second GPO** | | GPO Location | Group Policy Objects | Group Policy Objects | | GPO Name | W02-Accounting-GPO | W***02***-Sales-GPO | | Link GPO to OU (in GPM select the OU and link it to the corresponding GPO) | W02-Accounting | W02-Sales |  * Using ‘Print Management’, in the 'Print Servers' section add two the printers according to the specification below:  |  |  |  | | --- | --- | --- | | **Installation Wizard Value** | **First Printer:** | **Second Printer:** | | Add a new printer using an existing port: | LPT**1**: | LPT**2**: | | Install a new driver | Selected | Selected | | Manufacturer | Generic | Microsoft | | Printer | MS Publisher Color Printer | Microsoft PCL6 Class Driver | | Share this printer | Selected | Selected | | Printer Name: | W***99***-MS-PCP | W***99***- MS-PCL6 | | Share Name: | W***99***-MS-PCP | W***99***- MS-PCL6 | | In printer properties 'Sharing' tab select: | 'List in the directory' | 'List in the directory' |  * Using ‘Print Management’, configure the deployment option as specified below:  |  |  |  | | --- | --- | --- | | **Parameter / Instructions** | **W*99*-MS-PCP** | **W*99*-MS-PCL6** | | Action: | Deploy with Group Policy… | Deploy with Group Policy… | | GPO name: | W02-Accounting-GPO | W02-Sales-GPO | | Deploy this printer connection to the following: | The ***computer*** that this GPO applies to (per machine) | The ***computer*** that this GPO applies to (per machine) | | ***Note: You must click on 'Add' and then click on ‘Apply’ to apply the above settings for each printer*** | | |  * Using ADUC, move W***99***-CLIENT**1** form the 'Computers' container to the W***99***-Accounting OU and W***99***-CLIENT**2** form the 'Computers' container to the W***99***-Sales OU. * Restart W***99***-CLIENT**1** and W***99***-CLIENT**2**.   You are to demonstrate that the printers are deployed according to the design. |

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| 9 | To demonstrate you have created the GPO’s and printers and that the printers are deployed according to the design, complete the steps listed below and answer the corresponding questions. | | |
| 1. **To demonstrate that the GPO’s have been successfully created and are linked to their corresponding OU's, sign in as w*99*-admin on W*99*-SERVER2-DC. Open a PowerShell prompt with 'Run as Administrator' and issue the command set below (all on one line).**   Get-GPInheritance -Target "ou=W***02***-Accounting,ou=W***02***-Company,dc=w***02***,dc=local" ; Get-GPInheritance -Target "ou=W***02***-Sales,ou=W***02***-Company,dc=w***02***,dc=local" ; whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. Make sure that each OU shows only the corresponding GPO and the Default Domain Policy as being linked. Correct any issues or incorrect policy links before proceeding any further.*** |   **Take a screenshot of the PowerShell window (the screenshot must show the VM title bar and all commands successfully completed).**  **Paste the screenshot in the answer area below this line.** | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY |
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| 1. **To demonstrate that the printers have been successfully created, take a screenshot of the Print Management console. The screenshot must show the Printers container selected in the left pane, and the two new printers shown as 'Ready' in the right pane. The VM title bar must also be visible in the screenshot.**   **Paste the screenshot in the answer area below this line.** | | | |
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| 1. **To demonstrate the printer W*99*-MS-PCP was successfully deployed, sign in on W*99*-CLIENT1 as w*99*-user1. Open a PowerShell prompt with 'Run as Administrator' and issue the command sets shown below.**   gpupdate /force  Get-Printer ; hostname ; whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***If printer W99-MS-PCP is not shown in the command output, you have made an error in your configuration or the policy has not been applied. Resolve the issue before proceeding any further.*** |   **Take a screenshot of the PowerShell window (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | |
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| 1. **To demonstrate the printer W*99*-MS-PCL6 was successfully deployed, sign in on W*99*-CLIENT2 as w*99*-user2. Open a PowerShell prompt with 'Run as Administrator' and issue the command sets shown below.**   gpupdate /force  Get-Printer ; hostname ; whoami ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***If printer W99-PCL6 is not shown in the command output, you have made an error in your configuration or the policy has not been applied. Resolve the issue before proceeding any further.*** |   **Take a screenshot of the PowerShell window (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | |
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#### Develop a test plan

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| You are to prepare a test plan for the server to ensure that the system meets client requirements, performance standards and quality expectations. You have identified the following test categories your plan needs to cover:   1. Virtual Infrastructure (hypervisor) 2. Computer settings 3. Network Services 4. Active Directory 5. Disk performance and data recovery   Your test plan must include two tests for each of the above five categories. For each test you must describe:   * What will be tested - the test item * How you will conduct the test – provide an outline of the test actions * Specify success criteria and what evidence of successful testing will you provide   You are to base your descriptions on the example shown below.  ***Example***   |  | | --- | | **Example of Server Test** |  | **Test category** | | | **Test item** | **Outline how you will conduct the test [use 5 – 50 words]** | **Specify success criteria and what evidence of successful testing will you provide [use 5 – 50 words]** | | | --- | --- | --- | --- | --- | --- | --- | | 1. ***Virtual Infrastructure (hypervisor)*** | | | 1. *Shared Clipboard must be enabled for the VM* | *In VirtualBox check the VM settings in ‘Settings / General / Advanced / Shared Clipboard’* | *Provide screenshot showing that the shared clipboard value is set to ‘Bidirectional’ and verify copy and paste between host and guest system.* | | |  | | |  |  |  | | | ***Note:*** | ***You cannot use the above example as an answer in your response.*** | | | |   When choosing the test items, draw on the experience you have gathered while working on your assessments.  You are to complete the test plan table presented below. |

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| 10 | To demonstrate your ability to prepare a test plan for the server, complete the table below. For each of the five test categories describe two tests [rows a) and b)] you propose to conduct. You must provide descriptions in each of the three columns. You must name the test item; describe how you will conduct the test and specify the criteria and evidence required for successfully completing each test.  Type your answers in the table shown in the answer area below this line. | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY |
|  |  |
| |  | | --- | | **Server Test Plan** |  | **Test category** | **Test item** | **Outline how you will conduct the test [use 5 – 50 words]** | **Specify success criteria and what evidence of successful testing will you provide test [use 5 – 50 words]** | | --- | --- | --- | --- | | 1. ***Virtual Infrastructure (hypervisor)*** | 1. ***The virtual machine has enabled the shared clipboard*** | ***In virtualbox, check the virtual machine settings in Settings/General/Advanced/Shared Clipboard*** |  | | 1. ***Memory is set to 4096MB*** | ***In VirtualBox, check the virtual machine settings in "settings /System /Base Memory*** |  | | 1. ***Computer settings*** | 1. ***Computer name*** | ***Open Powershell on W02-SERVER2-DC***  ***and enter***  ***:hostname*** |  | | 1. ***Correctly configure the IP*** | ***Open Powershell on W02-SERVER2-DC and enter: ipconfig /all*** |  | | 1. ***Network Services*** | 1. ***DHCP works as designed*** | ***Windows 10 client virtual machine automatically obtains IPv4 address, issue command ipconfig /a1l*** |  | | 1. ***Web service is operational on W02-SERVER1*** | ***In the Windows 10***  ***client VM, open a browser and go to the test website 1 using the correct URL***  ***and port 44499/connection*** |  | | 1. ***Active Directory*** | 1. ***Active Directory Authentication*** | ***The Windows 10 client logs in as W02-user1 and issues the command***  ***whoami*** |  | | 1. ***Deploy to Windows 10 clients via GPO*** | ***Open Powershell as an administrator on the Windows 10 client and issue the command: Get-Printer*** |  | | 1. ***Disk performance and data recovery*** | 1. ***Disk queue length indicating load*** | ***Using Resource Monitor, monitor the disk queue length under load and without load*** |  | | 1. ***Backup*** | ***Configure and run a backup, delete the data, and then restore the data from the backup*** |  | | | | |

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## Learner Declaration (hard copy submission only)

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| Please read, tick and sign below | | | |
| * I declare that the attached assessment I have submitted is my own original work and any contributions from and references to other authors are clearly acknowledged and noted. * This document has been created for the purpose of this assessment only and has not been submitted as another form of assessment at Melbourne Polytechnic or any other tertiary institute. * I have retained a copy of this work for my reference in the event that this application is lost or damaged. * I give permission for Melbourne Polytechnic to keep, make copies of and communicate my work for the purpose of investigating plagiarism and/or review by internal and external assessors. * I understand that plagiarism is the act of using another person’s idea or work and presenting it as my own. This is a serious offence and I will accept that penalties will be imposed on me should I breach Melbourne Polytechnic’s plagiarism policy. | | | |
| Student Signature | WangYiZhuo+S1554654 | Date | 2024-7-27 |
| Please note that your assignment will not be accepted unless you have:   * Completed all sections of the assignment * Acknowledged all sources of other people’s contributions including references and Students’ names for group work assessments * Completed all areas of this Student assignment cover sheet. | | | |