# **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 1: Installing and Using Windows Server 2019 |
| Due Date | .. / .. / … |
| Teacher name | ­­­­­­­­ |
| Instructions |  |
| Comments | ­­­­­­­­ |

Declaration: Read, tick and sign below

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Student signature ……WangYiZhuo…………………… Date 2024/ 07.. / 11...

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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 1: Installing and Using Windows Server 2019

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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 | DD / MM / 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 if you have two sessions per week. If you group has only one session per week you have four 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. |

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## Task sequence and lab environment

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| **Assessment sequence**  In this unit learners must demonstrate server design, build and testing skills.  Server design skills imply that the learner already has the necessary technical skills to build, configure, manage and test the server infrastructure as well as an understanding of services provided by the system. Because of this dependency, learners are asked to demonstrate their design skills towards the end of the unit, after they have had the opportunity to develop the necessary technical expertise. The assessment sequence for this unit is therefore organised as shown below:   |  |  | | --- | --- | | **Assessment Task** | **Purpose of task** | | 1. Installing and Using Windows Server 2019 | Learners are to develop and demonstrate the technical skills and knowledge to build, configure, manage and test the server infrastructure including services provided by the system.  Attaining these skills and knowledge is a prerequisite for conducting a server design. | | 1. Backups and Network Services | | 1. Implement Security Controls with Active Directory | | 1. Online quiz 1 | Learners are to demonstrate knowledge relating to material previously covered in the unit by answering several of short questions. | | 1. Design a Network Server | Learners are given the task to design a network server for the given case study. They are to demonstrate their ability to apply the technical skills and knowledge, attained while working on assessment task 1, 2 and 3, to design a network server. | | 1. Server build document and sign-off | Learners are to demonstrate documentation, formal communication and reporting skills. | | 1. Online quiz 2 | Learners are to demonstrate knowledge relating to material previously covered in the unit by answering several of short questions. |   **Assessment environment**  Server design, build and testing in the ICT industry is rapidly moving towards use of virtualised production systems in the private and/or public cloud. Individuals who are employed in network or systems engineering roles or similar are expected to work on servers irrespective whether these systems are physical or virtual.  In this unit learners are provided with virtualisation software which allows them to simulate multiple concurrently running computers on their physical lab computer. The ability to operate multiple concurrently running virtualised systems provides the learner with an environment that closely resembles conditions found in a typical ICT industry working environment.  Learners are expected to be familiar with basic virtualisation concepts as applicable to the assessment environment. Detailed instruction on how to setup and use the virtualised lab environment can be found in the document ‘Lab Setup Instructions’ located in the ‘Student resources’ section in Moodle. |

## Tasks and questions

## Task Overview

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| In this assessment learners have to demonstrate their ability to:   * Research and explain basic virtualisation principles and features used in the simulated work environment. * Create Virtual Machines (VM), install the Operating Systems (OS) using ISO image files and configure the systems according to the design specification. * Configure automatic update services on the server to patch the OS and applications. * Test basic server network connectivity and confirm it complies with given benchmarks. * Configure and use Remote Desktop services and manage the server remotely. * Connect storage devices and reconfigure file system and partition schemes. * Describe and interpret basic data security measures on a networked server. * Identify potential server installation hazards and describe appropriate control measures. |

#### Research basic virtualisation principles and features

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| 1 | To demonstrate you understanding of basic virtualisation concepts answer the following questions. | | | | |
| 1. **Research and explain the purpose of the ‘VirtualBox Guest Additions’. You must list the sources you used for your research.**   **Type your answer in the answer area below this line and limit your explanation to between 50 – 100 words (excluding references).** | | | | | |
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| VirtualBox Guest Additions are like a booster pack for your virtual machine. They're a set of tools and drivers that make your VM run smoother and integrate better with your computer. They improve things like video performance, allow you to share folders between host and guest, and make mouse movements seamless. You need to install them inside your VM to get all these benefits.  ***Source(s):*** ***https://www.virtualbox.org/manual/ch04.html#guestadd-intro*** | | | | | |
| 1. **Research and explain the difference between *Hypervisor settings* for a VM and *Computer settings* and provide examples for each. You must list the sources you used to find the answer.**   **Type your answer in the answer area below this line and limit your explanation to between 50 – 150 words.** | | | | | |
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| Hypervisor settings are all about how you tune your virtual machine to run efficiently on the hypervisor (the software managing your VMs). This includes stuff like how many CPUs and how much memory your VM gets, networking setups, and what virtual hardware it uses. Computer settings, though, deal with your actual physical machine — like BIOS settings, how much RAM or which CPU you've got, and your network connections in the real world.  ***Source(s):*** ***https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.vm\_admin.doc/GUID-03DC4A5B-28E8-49D7-AAD2-9B66625C6C97.html*** | | | | | |

#### Create the Virtual Machine (VM) according to the given specification

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| You are given the following VM ***Hypervisor Specification***:   |  |  |  |  | | --- | --- | --- | --- | | **Parameter** | **Value / Description** | | | | **VirtualBox VM name** | W***99***-Win2019-Full-**1**-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 allocated VDI 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 | | | | **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 | | |     You will have to complete the following steps:   * Create the VM in VirtualBox using the given specification. * Demonstrate successful creation of the VM. |

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| 2 | As evidence that you have successfully created the VM according to the given specification the present screenshots described below. | | |  |
| 1. **In ‘Oracle VM VirtualBox Manager’ in the VM 'Details' view select W*99*-Win2019-Full-1-DE-Eval. Take a screenshot of the ‘Oracle VM VirtualBox Manager’ window showing the VM listing in the left pane and the VM details in the right pane..**   **Paste the screenshot in the answer area below this line.** | | | | | | |
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| 1. **Present an ‘Oracle VM VirtualBox Manager’ screenshot demonstrating that the disk assigned to W*99*-Win2019-Full-1-DE-Eval is a dynamically expanding disk.**   **Paste the screenshot in the answer area below this line.** | | | | | | |
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#### Install and patch Windows Server 2019

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| You are given 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 | | Use default settings for the 50GB disk | | Login credentials | | Administrator password: *p@ssw0rd* | | **Computer (NetBIOS) name** | W***99***-SERVER**1** | | | | **Workgroup/Domain** | Workgroup: WORKGROUP | | | | **Logical network settings (to be configured after successful evaluation license registration)** | Adapter 1:   * ***After*** successful registration of evaluation license and ***after*** the server is patched change the IPv4 address to: * IPv4 address: 10.21.***99***.**1** / 24   All other IPv4 settings: Not used at this time   * IPv6 address:   Not used (***must*** be unselected)   * All other adapter settings:   Leave unchanged | | | | **Remote Desktop** | Must be enabled for ***all*** clients | | | | **VirtualBox Guest Additions** | ***Must*** be Installed, the version ***must*** match the VirtualBox version | | | | **Create a security group** | **Group name** | W***99***-FTP-Users | | | **Create three users** | |  |  |  |  | | --- | --- | --- | --- | | **Property** | **1st User** | **2nd User** | **3rdUser** | | **User name:** | w***99***-admin**1** | w***99***-user**1** | w***99***-user**2** | | **Password:** | p@ssw0rd | p@ssw0rd | p@ssw0rd | | **Password attribute:** | Never expires | Never expires | Never expires | | **Member of group:** | Users, Administrators | Users | Users,  W***99***-FTP-Users | | | | | **Firewall** | Allow inbound and outbound ICMP ping requests for all profiles | | |     Complete the following steps in line with the computer specification:   * You are to complete the initial Windows Server 2019 installation and proceed with the system configuration in line with the computer specification. * You must provide the evidence for the successful completion of the required configuration steps as listed below.  |  |  | | --- | --- | | ***Note:*** | ***Once you have created the account w99-admin*1*, all work that requires administrative privileges on W99-SERVER*1 *must be conducted using this account (unless stated otherwise).*** | |

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| 3 | You are to test your server configuration against the network design specification. As evidence that you have installed Windows Server 2019 according to the given specification you are to provide the screenshots described below. | | |
| 1. **To demonstrate you have installed the specified Windows edition, used the correct regional settings, sign in using the local Administrator account, open a PowerShell prompt with ‘Run as administrator’ and issue the command set (all on one line):**   whoami ; Get-Culture ; Get-WindowsEdition -OnLine ; [System.Environment]::OSVersion.Version ; 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 command set (the screenshot must also show the VM title bar) and paste it in the answer area below.** | | | | |
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| 1. **Using SCONFIG change the ‘Windows Update Settings’ to Automatic. In ‘Windows Settings / Update & Security’ check for updates, apply the listed updates to the server and finally restart the system when prompted. After the successful restart *attach the network adapter to ‘Internal Network’* and sign in as w*99*-admin1.**   **To demonstrate the system has been successfully updated, open ‘Programs and Features / Installed Updates’, maximise the window so that all columns are clearly visible and take a screenshot of the window (the screenshot must also show the VM title bar). Your screenshot must also show the updates installed and include the patch installation dates.**  **Paste the screenshot in the answer area below.** | | | | |
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| 1. **While signed in as w*99*-admin1, using SCONFIG change the Windows Update settings to Manual. To demonstrate that the Windows Update settings, Remote Desktop settings and the computer name are correctly configured, take a screenshot of the SCONFIG window (the screenshot must also show the VM title bar).**  |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it does not match the given specification, go back and resolve the issue before continuing further.*** |   **Paste the screenshot in the answer area below.** | | | | |
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| 1. **To demonstrate the 180-day evaluation license was successfully registered, the IP setting and storage are correctly configured, open a PowerShell prompt with ‘Run as administrator’ and issue the following command set (all on one line):**   whoami ; cscript /nologo c:\windows\system32\slmgr.vbs /xpr ; ipconfig /all ; Get-Volume | ft ; 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 commands (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below.** | | | | |
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| 1. **Provide a screenshot that demonstrates that the VirtualBox Guest Additions have been successfully installed on W*99*-SERVER1 (the screenshot must also show the VM title bar).**   **Paste the screenshot in the answer area below.** | | | | |
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| 1. **To demonstrate additional user and group accounts have been created and configured according the specification, open a PowerShell prompt with ‘Run as administrator’ and issue the following command set (all on one line):**   whoami ; Get-LocalUser ; Get-LocalGroupMember -Group W***99***-FTP-Users | ft ; Get-Date | Select DateTime   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it is not in line with the users specified, go back and resolve the issue before continuing further.*** |   **Take a screenshot of the PowerShell window showing the output of the commands (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below.** | | | | |
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#### Deploy a Windows 10 system and test basic connectivity

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| You are to deploy a pristine Windows 10 VM for testing purposes. You will use it initially to verify network connectivity and at a later time also as a file server.  Create the pristine Windows 10 VM according to the following ***Hypervisor Specification***:   |  |  |  | | --- | --- | --- | | **Hypervisor Specification** | | | | **VirtualBox VM name** | W***99***-Win10-Eval-**1** | | | **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 file 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*** ASAP once evaluation registration was successful (avoids downloading a large number of patches to the computer) | | | **Other** | Enable support for Shared Clipboard and Drag’n’Ddrop | |   You are to install and configure Windows 10 on the VM 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 (computer used for testing only) | | **Windows Update** | ***Pause updates for 7 days***   |  |  | | --- | --- | | ***Note:*** | *Not making this change ASAP may result in large number of updates being downloaded to your computer* | | | | **Computer name (NetBIOS or name)** | W***99***-CLIENT**1** | | | **Workgroup/Domain** | Leave unchanged (assigned as ‘WORKGROUP’) | | | **Logical network settings** | * IPv4:   + IP address:   ***After successful registration of evaluation license attach network adapter to Internal Network*** and change the IPv4 address to:  10.21.***99***.20**1** / 24   * + All other IPv4 settings are 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** | The version of the Guest Additions ***must*** match the VirtualBox version. Update the Guest Additions if required. | | | **Firewall** | Allow inbound and outbound ICMP ping requests for all profiles. | | | **User accounts** | You ***must*** enable ***THE*** local Administrator account and assign the standard lab password. | |   Complete the following steps:   * Deploy and configure the Windows 10 system according to the above Hypervisor and Computer Specification. * Use the Windows 10 system to test and benchmark network connectivity of your server. Your test plan requires that you conduct the following testing:   + Test the network connectivity using ICMP echo requests (ping) ***to*** and ***from*** the server.   + Confirm that the ping response time on the local subnet falls below 10ms. |

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| 4 | You are to use the Windows 10 system to test and benchmark your server network setup.  To demonstrate that your server is operational on the network, complies with the network specification and satisfies the benchmark criteria, provide the following evidence. | | |
| 1. **To demonstrate that the Windows 10 systems is configured according to the specification, sign in using *THE* local Administrator account, open a PowerShell prompt (with ‘Run as Administrator) and type the following command set on a single line:**   **whoami ; Get-Culture ; ipconfig /all ; Get-Volume | ft ; 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 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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| 1. **To demonstrate that the server is accessible over the network and satisfies the benchmark criteria, open a PowerShell prompt on W*99*-CLIENT1** **and type the following command set on a single line:**   **Netsh advfirewall show all state ; Netsh advfirewall show all firewallpolicy ; whoami ; (Get-NetIPAddress | Where-Object {$\_.AddressFamily -eq 'IPv4'}).IPAddress ; ping 10.21.*99***.1 **| Select-String "from"**   |  |  | | --- | --- | | ***Note:*** | ***Review the output carefully. If it does not match the given specification, or the ping command is not successful or the response time exceeds 10ms, go back and resolve the issue before continuing further.*** |   **Take a screenshot of the PowerShell window showing the output of the command set (the screenshot must also show the VM title bar).**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **To demonstrate your Windows Server 2019 computer can communicate with other devices on the network and satisfies the benchmark criteria, sign in on W*99*-SERVER1 using the w*99*-admin account. Open a PowerShell prompt and type the following command set on a single line:**   **Netsh advfirewall show all state ; Netsh advfirewall show all firewallpolicy ; whoami ; (Get-NetIPAddress | Where-Object {$\_.AddressFamily -eq 'IPv4'}).IPAddress ; ping** W***99***-CLIENT**1 | 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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#### Using Remote Desktop to control computers over the network

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| You are to demonstrate that Remote Desktop (RD) on the Windows 2019 server is operational and verify that the RD connection access controls work as designed. You will do this by using the Remote Desktop Connection application on W***99***-CLIENT**1** and connecting to W***99***-SERVER**1** (using its IPv4 address) with different user accounts. |

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| 5 | Complete the following steps and answer the corresponding questions. | | |
| 1. **You are to demonstrate that w*99*-user1 is unable to sign in remotely on W*99*-SERVER1.**   **On W*99*-CLIENT1, open a RD connection to W*99*-SERVER1 (use the servers IPv4 address). If prompted with a** ***certificate* error** **select ‘Yes’ to continue connecting. On the ‘Enter your credentials’ screen sign in as w*99*-user1.**   |  |  | | --- | --- | | ***Note:*** | *If you do* ***NOT*** *receive an error message stating that* ***‘the user is not authorized for remote login’****, you have made an error. You must resolve this issue before continuing further.* |   **Analyse the error message and then take a screenshot of the message. The screenshot must also show VM title bar, the IPv4 address you are connecting to and the user you are connecting as.**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **You are to allow w*99*-user1 to connect via RD to W*99*-SERVER1.**   **While signed in on W*99*-SERVER1 as w*99*-admin, add w*99*-user1 to the 'Remote Desktop Users' security group.**  **On W*99*-CLIENT1, open a RD connection to W*99*-SERVER1 (use the servers IPv4 address) and sign in as w*99*-user1.**  **To demonstrate that w*99*-user1 has successfully established a RD connection, in the session window open a PowerShell prompt and issue the command:**  whoami ; Get-ChildItem Env:CLIENTNAME   |  |  | | --- | --- | | ***Note:*** | *If you receive a PowerShell error stating* ***“Cannot find path 'CLIENTNAME' because it does not exist”****, you have most likely not signed in using Remote Desktop and you must fix this issue.* |   **Take a screenshot of the Remote Desktop session window showing the output of the above command. The screenshot must also show VM title bar.**  **Paste the screenshot in the answer area below this line.** | | | | |
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| 1. **While signed in on W*99*-SERVER1 as user w*99*-user1 via the RD connection, open ‘Computer Management’ on the server and edit the ‘Remote Desktop Users’ security group.**   **Remove the w*99*-user1 account from the ‘Remote Desktop Users’ group and click on ‘Apply’.**  **Explain why you receive an ‘Access is denied’ message’ when trying to remove w*99*-user1 account from the ‘Remote Desktop Users’ group.**  **Type your response in the answer area below this line (limit your explanation to between 10 – 20 words.** | | | | |
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| You receive an Access Denied message because you are currently using a Remote Desktop connection and you do not have the necessary administrative permissions to remove yourself from the Remote Desktop Users group. | | | | |

#### Connecting storage devices to the server

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| You are to create the following four virtual disks and connect them to W***99***-Win2019-Full-**1**-DE-Eval:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Name of file** | W02-SRV**1**-D**1**.vdi | W02-SRV**1**-D**2**.vdi | W02-SRV**1**-D**3**.vdi | W02-SRV**1**-D**4**.vdi | | **Size** | 7 GB | 7 GB | 7 GB | 30 GB | | **Disk file type:** | VDI | VDI | VDI | VDI | | **Storage type:** | Dynamically allocated | Dynamically allocated | Dynamically allocated | Dynamically allocated |     Demonstrate that the disks were successfully added. |

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| 6 | To demonstrate the four disks were correctly created, provide a screenshot of the VirtualBox ‘Tools’ view showing the 'Media' list and the ‘Hard disks’ tab.  Paste the screenshot in the answer area below this line. | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY |
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#### Storage options, file systems and disk partition schemes

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| You are to setup several data volumes using the virtual disks you have created in the previous exercise.  Using the ***Storage Increment*** you have been assigned at the beginning of the unit (refer to list in Moodle) complete the cells with ***light blue background*** in the table below.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Volume** | RAID-0 | RAID-1 | RAID-5 | Spanned volume | Simple volume | | **Virtual disks used** | Disks: 1+2+3 | Disks: 1+2 | Disks: 1+2+3 | Disks: 1+2+3 | Disk: 4 | | **Volume *base size*** | 1,400 MB | 1,200 MB | 1,300 MB | N/A | N/A | | **Calculate the *storage addition* as indicated** | ***3*** *x Your* **storage volume increment:** | ***1*** *x Your* **storage volume increment:** | ***2*** *x Your* **storage volume increment:** | N/A | N/A | |  | ***60*** | ***20*** | ***40*** | | ***Total* volume size (sum of *base size* and the *storage addition*)** | ***1460*** | ***1220*** | ***1340*** | Remaining space on Disk 1+2+3 | All space on Disk 4 | | **Drive letter** | W: | X: | Y: | Z: | D: | | **Label** | RAID-0 | RAID-1 | RAID-5 | Span | Backups | | **File system** | NTFS | NTFS | NTFS | NTFS | NTFS | | **Format type** | ***Quick format*** | ***Quick format*** | ***Quick format*** | ***Quick format*** | ***Quick format*** |   Once you have determined your volume sizes, proceed with the configuration of the storage volumes on W***99***-SERVER**1**. The first time you access your virtual disks, you will need to initialise them using the MBR partition style. You may then proceed with the creating the disk volumes according to the specification in the table.   |  |  | | --- | --- | | ***Note:*** | ***Check the volumes you have created carefully to confirm they comply with the given specification (number of disks used, volume layout, volume capacity). If necessary, correct any discrepancies before continuing further.*** |   You are to demonstrate that you have created the storage options, file systems and disk partition schemes according to the given requirements and then answer some knowledge questions. |

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| 7 | To demonstrate the storage options, file systems and disk partition schemes were successfully created and comply with the requirements, you are to provide a screenshot of the ‘Disk Management’ console. On W*99*-SERVER1 open the ‘Disk Management’ console and expand the window so that all disk details in the upper and lower middle pane are shown.   |  |  | | --- | --- | | ***Note:*** | ***Carefully check the volumes you have created to confirm they comply with the given requirements. If necessary, correct any discrepancies before continuing further. Note that the ‘Capacity’ of the RAID volumes shown in your screenshot must correspond to the total volume sizes you have previously calculated.*** |   Take a screenshot of the ‘Disk Management’ console showing the necessary details (your screenshot must also show the VM title bar). Paste your screenshot in the answer area below. | | |
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| 8 | | Answer the following knowledge questions about the storage volumes on your server. | | |
| 1. **What is the capacity of your volumes in Gigabytes (GB) and in Gibibytes (GiB)?**  |  |  | | --- | --- | | ***Note:*** | ***If the volume size is not in line with the given requirements, you must correct the volume size before continuing further.*** |   **Type your response in the table in answer area below. You *must* provide values in all light-blue shaded cells.** | | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY | |
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| |  |  |  | | --- | --- | --- | | **Capacity of volume** | | | | **Volume Label** | **Gigabytes (GB)** | **Gibibytes (GiB)** | | **RAID-0** | ***4.29*** | ***3.99*** | | **RAID-1** | ***2.38*** | ***2.21*** | | **RAID-5** | ***3.93*** | ***3.66*** | | **Span** | ***10.4*** | ***9.68*** | | | | | |
| 1. **If ‘Disk 1’ in the screenshot of Q7 gets corrupted, will data on volume RAID-0 remain accessible?**   **Provide a short explanation to justify your answer. Type your response in the answer area below and limit your explanation to between 5 - 20 words (excluding references).** | | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY | |
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| ***No, data on volume RAID-0 will be lost. RAID-0 has no redundancy.*** | | | | |
| 1. **Comparing RAID-0, RAID-1, RAID-5, simple volumes and spanned volumes, which of these five volumes can be shrunk and/or extended when using the *Windows 'Disk Management'* console?**   **Type your response in the answer area below and limit your explanation to between 2 - 20 words (excluding references).** | | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY | |
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| ***simple volumes and spanned volumes*** | | | | |
| 1. **What type of volume can extend only across a single basic disk?**   **Type your response in the answer area below and limit your explanation to between 2 - 20 words (excluding references).** | | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY | |
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| ***Dynamic disks can be extended across multiple disks. Simple volumes can reside on basic and dynamic disks. Simple volumes on basic disks cannot be extended to other disks.*** | | | | |
| 1. **When using the *Windows 'Disk Management'* console to configure storage, which Windows file systems are available when *creating* RAID-5 or spanned volumes?**   **Type your response in the answer area below and limit your explanation to between 2 - 20 words (excluding references).** | | | | |
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| ***You can use NTFS file system when creating RAID5 or spanned volumes*** | | | | |

#### Identify potential hazards when installing a physical server

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| ***Scenario***  You have arrived at a customer site where you plan to deploy a physical server. The IT Manager of your customer is showing you the computer room where the new system is to be doplyed. The manager informed you that a Job Safety Analysis (JSA) was conducted three years ago. The computer room contains multiple server racks, various types of computers and network equipment as well as two tables which are used as work areas. The computer room also contains a nuber of boxes with unkown content and does not look particularly tidy.  You must check the work environment and identify Workplace Health and Safety (WHS) hazards that need to be addressed before installing the server. You will need to raise any WHS issues you identify with your customers IT Manager and report back to your supervisor.   |  |  | | --- | --- | | ***Note:*** | *Keep in mind that WHS is concerned with the* ***health and safety of people*** *and not with the ‘health’ of computers.* | |

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| 9 | You have arrived at a customer site where you plan to deploy a physical server and the local IT Manager is showing you the computer room where the system is to be deployed. Answer the two questions below. | | | |
| 1. **Describe what** **potential WHS hazards you could be faced with in your customers computer room.**   **In the table below list *four* hazards. For each hazard you must identify what is causing the hazard, name the associated *risk* and describe the *controls* you suggest to put in place to mitigate the risk.**  **Type your response in the table shown in the answer area below and limit your explanation to between 50 – 100 words in total.** | | | | | |
| ANSWER | | SATISFACTORY | | UNSATISFACTORY | |
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| |  |  |  |  | | --- | --- | --- | --- | | **Hazard** | | **Risk** | **Control** | | **9.1.1.** | Overloaded power outlets | Fire hazard and power outages | Ensure proper electrical wiring and use surge protectors; avoid overloading outlets. | | **9.1.2.** | Poor cable management | Tripping hazard and equipment damage | Implement structured cabling and use cable organizers to keep cables tidy and secure. | | **9.1.3.** | Inadequate ventilation | Overheating and equipment failure | Install proper ventilation systems and ensure sufficient airflow to prevent overheating. | | **9.1.4.** | Insufficient lighting | Accidental injury and errors | Install adequate lighting to ensure clear visibility and reduce the risk of accidents. | | | | | | |
| 1. **Describe how the 1st hazard that you identified in the previous question could cause network and user disruptions and to whom this issue needs to be communicated to.**   **Type your response in the answer area below and limit your description to between 20 – 50 words in total.** | | | | | |
| ANSWER | | SATISFACTORY | UNSATISFACTORY | | |
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| |  |  |  | | --- | --- | --- | | **1.** | **How could the issue identified disrupt network operation and users?** | Electrical hazards could lead to power outages or damage to equipment, causing network downtime and user disruption. | | **2.** | **Who needs to be informed about the issue?** | The local IT Manager and the facilities management team need to be informed about the electrical hazards and associated risks. | | | | | | |

## 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 | Date |  |
| 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. | | | |