# Skills Assessment

## Criteria

### Unit code and name

ICTNWK420 | Install and configure virtual machines

ICTNWK422 | Install and manage servers

### Qualification/Course code and name

Teaching staff/student to select the correct qualification the student is enrolled in from the below dropdown list:

ICT40120 | Certificate IV in Information Technology

## Student details

### Student number

### Student name

## Assessment declaration

*Note: If you are an online student, you will be required to complete this declaration on the TAFE NSW online learning platform when you upload your assessment.*

This assessment is my original work and has not been:

* plagiarised or copied from any source without providing due acknowledgement.
* written for me by any other person except where such collaboration has been authorised by the Teacher/Assessor concerned.

### Student signature and date

Version: *20231025*

Date created: *3 July 2021*

Date modified: *06/05/2024*

For queries, please contact:

Technology and Business Services SkillsPoint

Ultimo

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RTO Provider Number 90003 | CRICOS Provider Code: 00591E

This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

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## Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Assessment overview** | This assessment aims to assess your knowledge and performance in:   * The skills and knowledge required to select and implement virtualisation solutions to meet organisational needs in an information and communications technology (ICT) environment. * It applies to individuals who work in the network area of organisations and are responsible for the virtualisation of desktop and server operating systems. * The skills and knowledge required to install and manage a server. It includes the ability to conduct initial configuration and testing, administration, software distribution and updates, profiling and troubleshooting. * It applies to individuals with Information and Communications Technology (ICT) skills, involved in network management, server administration and similar roles. |
| **Assessment event number** | 3 of 3 |
| **Instructions for this assessment** | This is a skills-based assessment that assesses your ability to demonstrate skills required in the unit.  This assessment is in four parts:   1. Virtualisation 2. Install and basic network configuration 3. Configure and administer servers 4. Implement and test disaster recovery methods.   And is supported by:   * Assessment feedback (not included here) * Supporting documents.   **Note**: This assessment may contain links to external resources. If a link does not work, copy and paste the URL directly into your browser. |
| **Submission instructions** | On completion of this assessment, you are required to submit it to your Teacher/Assessor for marking. Where possible, submission and upload of all required assessment files should be via the TAFE NSW online learning platform.  You must keep a copy of all electronic and hardcopy assessments submitted to TAFE and complete the assessment declaration when submitting the assessment. |
| **What do I need to do to achieve a satisfactory result?** | To achieve a satisfactory result for this assessment you must be available at the arranged time to complete all the assessment criteria as outlined in the assessment instructions.  All parts of the observable task must be performed to a satisfactory level as indicated in the criteria section of the observation checklist.  All oral questions must be answered correctly to be deemed satisfactory in this assessment task; however, Teachers/Assessors may ask you additional questions to confirm your understanding of the task.  If a resit is required to achieve a satisfactory result it will be conducted at an agreed time after a suitable revision period. |
| **What do I need to provide?** | * TAFE NSW student account username and password. If you do not know your username and password, contact your campus or service centre on 131601. * Computer or other devices with word processing software and internet access. * Writing materials, calculator, pens, and measuring equipment, if required. |
| **What the Teacher/Assessor will provide** | Access to this assessment and learning resources, including the student workbook and supporting documents and/or links. This includes the student assessment resources folder.  [**Cl\_VirtualServer\_AE\_Appx.zip**](https://share.tafensw.edu.au/share/items/f1c94a4f-68c3-4080-8c4f-f06c0f82a14e/0/?attachment.uuid=8dd6cefe-fb49-44d2-8fbf-8feeee9ed8a4) including:   * Gelos\_Network\_Specifications * Gelos\_NetworkDirectory\_Specifications * Gelos\_Org\_chart * Gelos\_ProcurementPolicy * Gelos\_Scenario * Gelos\_Server\_Client\_Specifications.   Equipment/resources, including:   * ISO files (available through Microsoft Azure Education): * Windows 10 Professional, Enterprise or Education * Windows Server 2019 * Virtualisation Software:   This assessment should be completed using VirtualBox unless prior arrangement is made with your assessor.   * VirtualBox from <https://www.virtualbox.org/wiki/Downloads> * Windows Hyper-V – free with Windows Pro, Enterprise or Education * If using VMWare from VMWare.com or any other Virtualisation Software, you should consult with your assessor prior to commencing this assessment. (VMWare Workstation Player should be free for education or non-commercial usage). * If using VirtualBox: * VirtualBox Extension Pack (Available from <https://www.virtualbox.org/wiki/Downloads>) * Access to Oracle VirtualBox User Manual * Word processing Application (for example, Microsoft Word or similar) * Screen capture utility: Follow the [Video recording instructions (pdf)](https://share.tafensw.edu.au/share/items/744af7d4-a241-45e2-adb0-0e13f2fe4950/0/?attachment.uuid=01c3c87a-4599-48c2-91f0-68a00b5bbb4c). This one-pager includes useful tips, links to resources, and a demonstration video * Access to the internet.   Software should be the most current version available. |
| **Due date**  **Time allowed** | Refer to the UAG.  6 hours (indicative only). |
| **Assessment feedback, review or appeals** | In accordance with the TAFE NSW policy *Manage Assessment Appeals,* all students have the right to appeal an assessment decision in relation to how the assessment was conducted and the outcome of the assessment. Appeals must be lodged within **14 working days** of the formal notification of the result of the assessment.  If you would like to request a review of your results or if you have any concerns about your results, contact your Teacher/Assessor or Head Teacher. If they are unavailable, contact the Student Administration Officer.  Contact your Head Teacher/Assessor for the assessment appeals procedures at your college/campus. |

## Specific task instructions

The instructions and the criteria in the tasks and activities below will be used by the Teacher/Assessor to determine whether the tasks and activities have been satisfactorily completed. Use these instructions and criteria to ensure you demonstrate the required skills and knowledge.

If this assessment requires you to record information, your Teacher/Assessor will provide you with an appropriate document/template.

Your Teacher/Assessor will advise a time and location for each event. Alternatively, you may have the option to record your participation and submit it as video evidence.

If you are submitting video evidence, you must:

* Provide a video for each participation meeting all requirements.
* Ensure that you have access to the equipment and resources required to participate in each demonstration.
* Follow the video recording instructions (pdf). This one-pager includes useful tips, links to resources, and a demonstration video.
* Address the questions or items listed in the observation checklist, either during the demonstration or record them in a separate video file.

**Part 1: Virtualisation**

To complete this part of the assessment, you must participate in a practical activity that will demonstrate your ability to complete skills-based tasks to industry standards. These practicals will be observed by your Teacher/Assessor or can be digitally recorded using screenshots or video recording and submitted as evidence.

Your responses will be used as part of the overall evidence requirements of the unit.

You should refer to the list of criteria in the Observation checklist to understand what you need to demonstrate in this section of the assessment. This checklist outlines the assessment criteria used to assess your performance.

Save this assessment document ***Cl\_VirtualServer\_AE\_Sk3of3.docx***

Once completed, submit this assessment and the tasks and activities you are required to complete for marking.

**Note:** If using VMWare from VMWare.com or any other Virtualisation Software, you should consult with your assessor before commencing this assessment.

**Scenario**

You have been assigned the task of installing, configuring and testing virtualisation software to determine that it will be suitable for the organisation’s needs.

**Technical requirements**

As part of the testing, you will need to demonstrate the virtualisation software can support the following technical requirements:

* Installing and configuring the selected virtualisation environment
* Using a range of network types such as:
* Host-only
* NAT/NAT Network
* Bridged
* Supporting sharing folders between host and guest
* Supporting the use of physical USB devices
* Backing up and restoring from the current state
* Backing up and restoring virtual machine drive and settings.

Refer to the following recommended resources when performing the tasks.

* **Organisational standards** (access via LMS)
* *Gelos\_Server\_Client\_Specifications (PDF file)*
* *Gelos\_Network\_Specifications (PDF file).*
* **Vendor documentation on installation procedures (**online**)**
* *Microsoft Windows documents, Technet Articles.*
* **Operating system installation (ISO) files (***access via shared drive in the lab environment or download from vendor website****)***
* *WindowsServer2019\_EVALUATION\_x64FRE\_EN-US*
* *Windows10\_EVALUATION\_x64FRE\_EN-US.*

**Server and Client Configuration Details**

**Virtual Machine Name: MainSvr-XX (XX is your initials)**

Operating System: Windows Server 2019 (Desktop Experience)

Processor Cores: 1-2 Cores depending on your device’s hardware specifications

Memory (RAM): 2GB-4GB depending on your device’s hardware specifications

Hard Disk: 50GB

Computer Name: MainSvr-XX

Description: GELOS Main Domain Controller.

**Virtual Machine Name: WinClient-XX (XX is your initials)**

Operating System: Windows 10

Processor Cores: 1-2 Cores depending on your device’s hardware specifications

Memory (RAM): 2GB-4GB depending on your device’s hardware specifications

Hard Disk: 50GB

Computer Name: WinClient-XX

Description: GELOS Client machine.

**Configuration information for all machines:**

Timezone: UTC+10:00 Canberra, Melbourne, Sydney

Windows Updates: Automatic + Updates for other Microsoft products

Virus and threat protection: On, definitions up-to-date

Firewall & network protection: On.

**Demonstration Task 1**

**Demonstration Task 1:** **Install and configure virtualisation software**

In this task, you are to install and configure the software to provide support for virtualisation. The software can be installed by adding a role or feature to a host operating system (such as Microsoft Hyper-V) or by downloading and installing a virtualisation application (such as Oracle VirtualBox). You can download VirtualBox using the URL provided in the Assessment Instructions.

1. Install the virtualisation software according to industry guidelines.
2. Configure the virtualisation software application features to accommodate required functionality according to organisational needs.
   1. If installing **VirtualBox**, at the screen, **Custom Setup** – Select the way you want features to be installed, only select **Register file associations.**
   2. If installing **another Virtualisation product**, consult with your assessor to determine the screenshot required.
3. Provide a screenshot that shows you have successfully installed your Virtualisation Software.

Table 2: Demonstration 1 Install and configure virtualisation software

| Insert screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- |
| VirtualBox:  Or Hyper-V: |  |  |  |
| Successful Installation of Virtualisation Software: |  |  |  |

**Demonstration Task 2**

**Demonstration Task 2: Create virtual machines to support requirements**

For this demonstration, you are required to create virtual machines that will support the requirements specified in the table.

Supply screenshots as required. Screenshots should be taken after the virtual machines have been created and configured in VirtualBox, and before the operating system has been installed.

**Virtual Machine Name: MainSvr-XX** (XX is your initials)

**Description: GELOS Main Domain Controller**

Table 3: Demonstration 2.1 GELOS Main Domain Controller

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirement | Screenshot | S | U/S | Assessor comments |
| Processor Cores: 1-2  Memory (RAM): 2-4GB (Recommended)  Hard Disk: 50GB  Network Adapter: NAT (or Default Switch for Hyper-V) | Virtual box: |  |  |  |

**Virtual Machine Name: WinClient-XX** (XX is your initials)

**Description: GELOS Client machine**

Table 4: Demonstration 2.2 GELOS Client machine

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirement | Screenshot | S | U/S | Assessor comments |
| Processor Cores: 1-2  Memory (RAM): 2-4GB (Recommended)  Hard Disk: 50GB  Network Adapter: NAT (or Default Switch for Hyper-V) | Virtual box: |  |  |  |

**Demonstration Task 3**

**Demonstration Task 3: Install operating systems onto a prepared virtual machine**

Install and configure the Windows-based network operating systems according to the specifications provided.

Supply screenshots as required. Screenshots should show the **Server Manager – Local Server** dialogue box (ensure all details in this configuration window are visible in the screenshot).

**Virtual Machine Name: MainSvr-XX** (XX is your initials)

Table 5: Demonstration 3.1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirement | Screenshot | S | U/S | Assessor comments |
| Operating System: Windows Server 2019 (Desktop Experience).  Processor Cores: 1-2.  Memory (RAM): 2-4GB (Recommended).  Computer Name: MainSvr-XX (XX is your initials). | Virtual box/ Hyper-V: |  |  |  |

**Virtual Machine Name:** **WinClient-XX** (XX is your initials)

Table 6: Demonstration 3.2

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Requirement | Screenshot | S | U/S | Assessor comments |
| Operating System: Windows 10  Processor Cores: 1-2.  Memory (RAM): 2-4GB (Recommended).  Computer Name: WinClient-XX (XX is your initials). | Virtual box/ Hyper-V: |  |  |  |

**Demonstration Task 4**

**Demonstration Task 4: Configure software to provide the required functions**

1. Configure the virtualisation software application to provide the required functionality according to organisational needs.
   1. If installing **VirtualBox**, using the URL from the Assessment Instructions, download and install the VirtualBox Extension Pack. Provide a screenshot verifying that the extension pack was successfully installed.
   2. If installing **Microsoft Hyper-V**, configure Hyper-V to allow enhanced session mode connections to virtual machines running on the physical host.
   3. If installing **another Virtualisation product**, consult with your assessor to determine the screenshot required.

Table 7: Demonstration 4 Configure software to provide the required functions

| Insert screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- |
| VirtualBox:  Hyper-V: |  |  |  |

**Demonstration Task 5**

**Demonstration Task 5** **Complete OS post-installation configurations**

For this task you are required to complete the following post-installation tasks:

1. Enable the virtual machine to operate within the current network environment by configuring a firewall rule to **Allow Inbound pings** on both virtual machines.
2. Enable the functional operation of thefollowing **additional requirements**:
   1. If installing **VirtualBox**:
      1. Install the VirtualBox Guest Additions. Provide a screenshot verifying that the Guest Additions were successfully installed.
      2. Add a USB filter with all fields set to empty string (matches any connected device). Name the filter Test Filter-<YourInitials>.
   2. If installing **Microsoft Hyper-V:**
      1. Disable the use of automatic checkpoints by unchecking “Use automatic checkpoints”.
      2. Demonstrate the use of machine state settings by configuring the automatic start action and automatic stop action settings for your server as follows:
         * Automatic Start Action – Always start the virtual machine automatically – (delay = 0)
         * Automatic Stop Action – Shutdown the guest operating system
   3. If installing **another Virtualisation product**, consult with your assessor to determine the screenshot required.
3. Create a folder on the Host system named “Shared”.
   1. If installing **VirtualBox**, in VirtualBox Manager, Configure shared folder:
      1. Name: Testing
      2. Automount.
   2. If installing **another Virtualisation product**, share the folder on the network using the folder “Properties”, under the “Sharing” tab.

Table 8: Demonstration 5 Complete OS post installation configurations

| Action | Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| **Allow Inbound pings**  Enable **all** “File and Printer Sharing (Echo Request – ICMPv4-In)” Inbound rules |  |  |  |  |
| **Additional requirements**  Provide a screenshot of the Completing Setup screen. | VirtualBox:  Hyper-V: |  |  |  |
| **Shared Folder**  Provide a screenshot showing access to the Shared folder from either virtual machine (Open This PC in File Explorer). | VirtualBox:  Hyper-V/Other: |  |  |  |

**Demonstration Task 6**

**Demonstration Task 6:** **Test that required features are functional**

In this task you will demonstrate that you have configured the virtual machine to meet the requirements of the organisation:

* There is network connectivity between the host system and the virtual machine.
* There is a shared folder that has been mounted and is accessible from the virtual machine.
* The USB filter is operational, and a physical USB is accessible from the virtual machine.

Complete the table according to the provided **Requirement** and **Setting/Values** by inserting the screenshots in the fields provided below.

Table 9: Demonstration 6 Test that required features are functional

| Requirement | Setting/Value to be inputted | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- | --- |
| **Check IP Address** | What is the IP address of the WinClient-XX? |  |  |  |  |
| **Check Host IP Address** | What is the IP address of the host-only (or Default Switch) virtual adapter on the host system? |  |  |  |  |
| **Test network connectivity** | Use the ping command to verify that there is network connectivity between WinClient-XX and the host system. |  |  |  |  |
| **Test shared folder operation** | - Create a file named TestFile-<yourInitials> in the shared folder on the host system.  - On WinClient-XX, open file explorer and verify that the file is accessible.  - Take a screenshot. Be sure to include the full path to the file. |  |  |  |  |
| **Test USB filter operation** | Insert USB drive into physical machine  Access USB from Virtual Machine  Take screenshot to verify that USB accessible from WinClient-XX |  |  |  |  |

**Demonstration Task 7**

**Demonstration Task 7:** **Perform backup and restore procedures using snapshots (or checkpoints)**

For this task, you are to:

* Create a snapshot (or checkpoint) of the current state of the WinClient-XX virtual machine
* Create a new text file
* Create another snapshot (or checkpoint)
* Shutdown the virtual machine (if required)
* Power up the virtual machine using a snapshot (if required)

Complete the table according to the provided **Requirement** and **Setting/Values** by inserting the screenshots in the fields provided below.

Table 10: Demonstration 7: Perform backup and restore procedures using snapshots (or checkpoints)

| Requirement | Setting/Value to be inputted | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- | --- |
| **Create first snapshot (or checkpoint)** | Use **Before\_file** as the name of the snapshot (or checkpoint) | Screenshot not required |  |  | No response or screenshot required |
| **Create a text file** | Create an empty text file in the Documents folder  Name the file **testFile-<yourInitials>**  Provide a screenshot of the txt file in the Documents folder |  |  |  |  |
| **Create a second snapshot (or checkpoint)** | Name the snapshot (or checkpoint) **After\_File** | Screenshot not required |  |  | No response or screenshot required |
| **Shutdown the virtual machine (if required)** | Use the correct shutdown procedure for Windows 10 | Screenshot not required |  |  | No response or screenshot required |
| **Snapshot Manager (or equivalent)** | Provide a screenshot of the snapshot manager showing both snapshots (or equivalent) |  |  |  |  |
| **Restore from Before file** | Take a screenshot (or checkpoint) being restored |  |  |  |  |

**Demonstration Task 8**

**Demonstration Task 8:** **Perform full backup and restore procedure**

In this task you are to use the Export feature of your virtualisation software to create a backup of the **MainSvr-XX** virtual machine.

Complete the table according to the provided **Requirement** and **Setting/Values** by inserting the screenshots in the fields provide below.

Table 11: Demonstration 8: Perform full backup and restore procedure

| Requirement | Setting/Value to be inputted | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- | --- |
| **Prepare for Export of Virtual Machine** | VM to be Exported: MainSvr-XX  File to Export Appliance to: BackupSvr-XX.ova  **For VirtualBox:**  Format: Open Virtualization Format 1.0  Edit Description: Backup <yearMonthDay> | Screenshot not required |  |  | No response or screenshot required |
| **Export Virtual Machine** | Take a screenshot of Exporting progress |  |  |  |  |
| **Restore (or Import) from Backup** | Import the OVA (or similar file type) created  Take screenshot of importing progress. |  |  |  |  |

**Demonstration Task 9**

**Demonstration Task 9:** **Install and test virtual machine networking NAT Network mode (or Default switch)**

For this task, you need to use both virtual server machines. You will:

* change the hostname of the backup virtual machine
* change the network adapter options for both virtual server machines
* configure virtual machine’s interface settings
* test networking between virtual server machines
* resolve issues.

Complete the table according to the provided **Requirement** and **Setting/Values** by inserting the screenshots in the fields provided below.

Table 12: Demonstration 9: Install and test virtual machine networking NAT Network mode (or Default switch)

| Requirement | Setting/Value to be inputted | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- | --- |
| **Start the BackupSvr-XX** |  | Screenshot not required. |  |  | No response or screenshot required. |
| **Sysprep BackupSvr-XX to remove all unique identifiers and reboot** | Select:   * Enter System Out-of-Box Experience (OOBE) * Generalize * Reboot | Screenshot not required | Screenshot for demonstration purposes  Screenshot not required | | |
| **Change the hostname of BackupSvr-XX** | Use BackupSvr-XX | Screenshot not required |  |  | No response or screenshot required |
| **Start MainSvr-XX** |  | Screenshot not required |  |  | No response or screenshot required |
| **Change network adapter mode on both virtual server** **machines** | Change to NAT Network mode (or Default switch)  Provide a screenshot showing the change for both virtual machines | VirtualBox:  Hyper-V: |  |  |  |
| **Renew IP address** | Use command line to renew the IP address for both virtual server machines |  |  |  |  |
| **Connect to www.iana.org** | * Use a browser in both virtual machines to open the web page specified. * Provide a screenshot of the webpage. Include the title bar of the virtual machines in the screenshot. |  |  |  |  |
| **Check IP addresses** | What are the IP addresses for the following?   1. Host system (physical adapter) 2. MainSvr-XX 3. BackupSvr-XX |  |  |  |  |
| **Test connectivity to the virtual machines** | Use ping from the **source IP address of the host physical adapter** to test connectivity between the host machine and virtual machines.  **Sample command:**  **ping <MainSvr-XX\_IP> -S <HOST\_IP**  Was the ping successful?   1. If it was not successful, why not? Provide IP addresses in your answer | Sample command and screenshot of the result: |  |  |  |

**Demonstration Task 10**

**Demonstration Task 10: Install and test virtual machine networking – Bridged mode (External Switch)**

In this task, you will use the Bridged network option (or an External Switch) to form a network between the two virtual machines.

If using Microsoft Hyper-V, use the Virtual Switch Manager to create a new External switch that connects to your host computer physical network adapter:

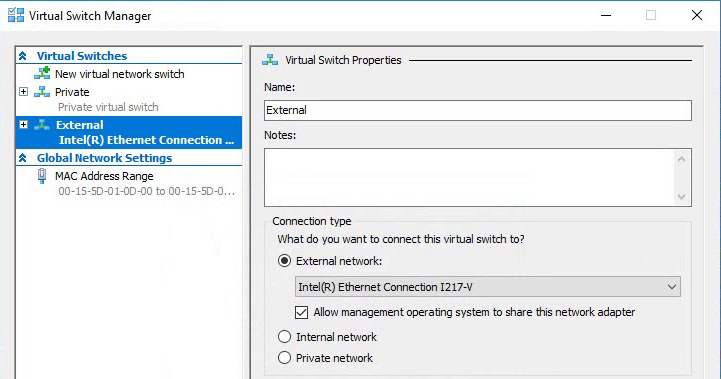


Figure 1: Virtual switch manager screenshot (used with permission from Microsoft)

Complete the table according to the provided **Requirement** and **Setting/Values** by inserting the screenshots in the fields provide below.

Table 13: Demonstration 10 Install and test virtual machine networking – Bridged mode (External Switch)

| Requirement | Setting/Value to be inputted | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- | --- |
| **Change network adapter mode** | * Change network adapter mode to Bridged (External switch) for both virtual machines * Provide a screenshot showing changes. | VirtualBox:  Hyper-V: |  |  |  |
| **Change IP address** | Use the command line to renew IP addresses for both virtual machines | Screenshot not required |  |  |  |
| **Check IP addresses** | What are the IP addresses for the following?   1. Host system (physical adapter) 2. MainSvr-XX 3. BackupSvr-XX 3 Screenshots required |  |  |  |  |
| **Test connectivity** | Use ping to test connectivity between virtual machines   1. MainSvr-XX to the host system 2. Host system to MainSvr-XX 3. BackupSvr-XX to the host system 4. Host system to BackupSvr-XX 5. MainSvr-XX to BackupSvr-XX 6. BackupSvr-XX to MainSvr-XX Indicate if pings were successful or failed.   6 Screenshots required |  |  |  |  |
| **Troubleshoot issues** | If pings failed, troubleshoot and document the problem and solution in the response column. | Outline the problem encountered **in writing** and indicate the steps taken to rectify the problem. (Screenshots optional) |  |  | **Problem:**  **Solution:**  **Problem:**  **Solution:** |
| **Retest connectivity** | • If required, retest to ensure connectivity  • Provide a screenshot of a ping from BackupSvr-XX and Host system and BackupSvr-XX to MainSvr-XX |  |  |  |  |

**Part 2: Install and basic network configuration**

To complete this part of the assessment, you will be required to install and perform basic configurations according to organisational and industry standards.

Read the **scenario** given below before proceeding with the demonstration tasks.

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**Scenario**

The network administrators of Gelos have formulated a plan to set up and configure the network and servers to meet the requirements of the organisation. You are responsible for testing the configuration plan by setting it up in a virtual environment. Refer to the following recommended resources when performing the tasks.

* **Organisational standards** (access via LMS)
  + *Gelos\_Server\_Client\_Specifications (PDF file)*
  + *Gelos\_Network\_Specifications (PDF file)*
* **Vendor documentation on installation procedures** (online)
  + *Microsoft Windows documents, Technet Articles*
* **Operating system installation (ISO) files** (*access via shared drive in the lab environment or download from vendor website)*
  + *WindowsServer2019\_EVALUATION\_x64FRE\_EN-US*
  + *Windows10\_EVALUATION\_x64FRE\_EN-US*

**Demonstration Task 1**

**Demonstration Task 1: Securely connecting the server to the internet**

Install and configure Windows updates and relevant applications on **Windows-based** serversaccording to the specifications provided. You must capture evidence *(in the form of screenshots)* for the following configuration details from each of your virtual Windows server machines. **Include your screenshots in the section provided below for both servers (Main server and Backup server).**

Complete the table according to the provided **Requirement** by inserting the screenshots in the fields provided.

Table 14: Demonstration 1 Securely connecting server to the internet

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| **Connect servers to the Internet (You need to configure the correct network setting to connect with the WAN point of presence in your lab environment).** | MainSvr-XX: |  |  |  |
| **Windows Update settings - (show that automatic updates are received for the system as well as for other Microsoft products/applications).** | MainSvr-XX:  BackupSvr-XX: |  |  |  |
| **Patch the operating system and applications.** | MainSvr-XX:  BackupSvrR-XX: |  |  |  |
| **Windows Defender/Security settings (show configurations as per the specification document).** | MainSvr-XX:  BackupSvr-XX: |  |  |  |

**Demonstration Task 2**

**Demonstration Task 2: Install and configure server application software**

Table 15: Demonstration 2: Install and configure server application software

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| **Download and install the latest SQL Server Express edition in the main server virtual machine (Windows Server 2019). Provide evidence of successfully installing this application software.** | **Name of installed application:**  **Version/Edition installed:** |  |  |  |
| **Test installed software.**  **Open SQL Server Installation Center and launch the System Configuration Checker tool to check successful installation and configuration of SQL Server.**  Record the details and results of the above test in **Table 1**.  Include screenshots of the rule/status summary and the detailed report of the test result  Write your **interpretation of the results** and **evaluation of the program** performance in the appropriate sections given in **Table 1**. | **See ‘Table 1’ Below** |  |  |  |
| Use the Windows Troubleshooting tool to check for program compatibility of SQL Server 2017 Error and Usage Reporting program.   * Perform a test run of the program using recommended compatibility settings. * Record the details and results of the above test in **Table 2** * Generate a Troubleshooting Report of the above test and include a screenshot of this under the Detailed report section of **Table 2.** * View detailed information about the above test using the Event Viewer tool. Include a screenshot of the numerical results shown for this event under the Results section of **Table 2.** * Write your interpretation of the results and evaluation of the program performance in the appropriate sections given in **Table 2**. | **See ‘Table 2’ below** |  |  |  |

**Task 2 Table 1**

Table 16: Task 2 Table 1

| TABLE 1  Software test criteria | TABLE 1  Details |
| --- | --- |
| Name of Software component: |  |
| Tool/s used: |  |
| Results: | Include any numerical details of the results generated.  Passed:  Failed:  Warning:  Skipped: |
| Test results interpretation | [This should include an interpretation of the test result by making the required calculations] |
| Rules and status report | (Insert screenshot) |
| Detailed report | (Insert screenshot) |
| Evaluation of results | [This should include an evaluation of the software component’s performance from the test results]. |

**Task 2 Table 2**

Table 17: Task 2 Table 2

| TABLE 2  Software test criteria | TABLE 2  Details |
| --- | --- |
| Name of Software component: |  |
| Tool/s used: |  |
| Results: | (Insert screenshot) |
| Test results interpretation | [This should include an interpretation of the test result by making the required calculations] |
| Detailed report | (Insert screenshot) |
| Evaluation of results | [This should include an evaluation of the software component’s performance from the test results]. |

**Part 3: Configure and administer servers**

To complete this part of the assessment, you will be required to configure and administer servers according to organisational and industry standards.

Read the **scenario** given below before proceeding with the demonstration tasks.

**Scenario:**

You have previously installed and configured server and client machines with the appropriate operating systems, applications and network configuration. You still need to perform some advanced network service configurations including setting up domains, user accounts, groups, print services and security access in the main server machine (MainSvr-XX) and test the functionality.

Refer to the following recommended resources when performing the tasks.

* **Organisational standards** (access via LMS)
* *Gelos\_Server\_Client\_Specifications (PDF file)*
* *Gelos\_Network\_Specifications (PDF file).*
* **Vendor documentation on installation procedures** (online)
* *Microsoft Windows documents, Technet Articles.*

**Demonstration Task 1**

**Demonstration Task 1:** **Install and config network directory service**

1. Install and configure network directory services in MainSvr-XX according to the specifications provided.
2. Use the correct tool provided by the network directory services in Windows, to configure the following within the **GelosXX.local domain**.

Table 18: Demonstration 1: Install and config network directory service

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| Create a new user account for yourself with administrative settings. Refer to the ‘User Account Specifications’ provided and set the password for your account as the example given in the guidelines. | **User Account configuration**   1. **Administrator account configuration**   User logon name: *student.name* |  |  |  |
| Create a new organisational unit and complete the following according to the Organisational Unit Specifications provided.   * Create a new group. * Create a user account. * Add the user to the new group. | 1. **Organisational unit configuration**   Include screenshots below of how to set up the following:   * Create a new group * Create a user account * Add the user to the new group |  |  |  |

**Demonstration Task 2**

**Demonstration Task 2:** **Configure shared print and file services**

Table 19: Demonstration 2 Configure shared print and file services

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| Configure shared print services according to the Print service specifications provided.  Document evidence of your configurations with **screenshots under section 2 x Print services configuration.** | 1. **Printer 1 and 2 configurations** 2. **Printer permission assignment** 3. **Shared Printer properties** 4. **Printer pooling** |  |  |  |

**Demonstration Task 3**

**Demonstration Task 3:** **Configure network directory service**

Table 20: Demonstration 3 Configure network directory service

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| Configure MainSvr-XX for hard drive redundancy according to the specifications provided.  a. Connect the required number of hard drives to the server. | 1. **Additional hard drives connected to the server** |  |  |  |
| b. Configure disk partitioning scheme and file systems. | 1. **RAID-5 configuration** |  |  |  |
| c. Allocate the recommended amount from the new volume for virtual memory. | 1. **Virtual Memory allocation** |  |  |  |

**Demonstration Task 4**

**Demonstration Task 4:** **Create directory structure and disk quotas**

Table 21: Demonstration 4: Create directory structure and disk quotas

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| Create a directory structure and disk quotas on the new volume (which was configured for redundancy in the previous task) according to the specifications provided. Follow the sequence of tasks given below.  a**. Configure disk quotas.**   * Enable disk quota management. * Configure quota limitations. * Configure quota logging. * Add a disk quota entry for the test user. | 1. **Disk quota configuration** |  |  |  |
| b**. Create a directory structure.**   * Create the main directories in the correct volume. * Share the folders with the correct group and permissions. * Install the DFS Namespaces role. * Create a directory structure using DFS Management, where the namespaces are associated with the correct folder targets. | 1. **Directory structure configuration** |  |  |  |

**Demonstration Task 5**

**Demonstration Task 5:** **System policies and scripts for configuring user environment**

Read carefully the information given following the heading; **System policies and scripts for configuring user environment**, in the specifications document provided to you. Create and set up the following policies and scripts in MainSvr-XX to configure other hardware and software on the user environment (WinClient-XX).

Table 22: Demonstration 5 System policies and scripts for configuring use environment

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| 1. Policy for folder redirection. | 1. **Folder redirection settings** |  |  |  |
| 1. Policy for preventing unauthorised access to the system. | 1. **Unauthorised Access settings** |  |  |  |
| c. Policy for network drive mapping.  d. Policy for network printer mapping.  e. Script for installing Google Chrome on staff computers automatically through the network. | 1. **Network drive mapping**      1. **Network printer mapping**      1. **Network software installation** |  |  |  |

**Demonstration Task 6**

**Demonstration Task 6:** **User environment testing against requirement benchmarks**

Your client had provided a test plan benchmark, against which you must test the system’s functionality. To perform the test, you need to log in to the Windows 10 Client (WinClient-XX) virtual machine as a **test** user. While performing the tests, you must document your test results in the section provided below.

**Note: If you identify any problems/errors while testing the system’s functionality, do not correct them at this stage.**

The test plan provided to you includes the following criteria:

Table 23: Demonstration 6 User environment testing against requirement benchmarks

| Requirement | Test outcome/results | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| **Benchmark details** | Test performed by:  Date and time of test:  Test environment description: |  |  |  |
| a. User can log in to the client computer using domain user account credentials. | YES  NO  Comments: |  |  |  |
| b. The user can access the shared network drive. | YES  NO  Comments: |  |  |  |
| c. The user can create sample data in the shared drive. | YES  NO  Comments: |  |  |  |
| d. The user can access shared printing services. | YES  NO  Comments: |  |  |  |
| e. Google Chrome software is installed on the client computer via a network script. | YES  NO  Comments: |  |  |  |
| f. Sample data created on user’s **Documents** folder is visible in the Documents\_Backup folder in **GelosXX-R5Vol1.** | YES  NO  Comments: |  |  |  |
| **Document operational changes made to server and service status according to organisational policies and procedures**. | **Summary of test outcomes and comments:**  Populate the table below with the status and functionality of your servers.  **\*\*\*See following table\*\*\*** |  |  |  |

**Table: Summary of test outcomes and comments**

Table 24: Summary of test outcomes and comments

| Network elements and servers | Status | Comments on functionality |
| --- | --- | --- |
| MainSvr-XX |  |  |
| BackupSvr-XX |  |  |
| WinClient-XX |  |  |
| LAN Switch and Router |  |  |
| The communications link between MainSvr-XX and WinClient-XX |  |  |
| The communications link between MainSvr-XX and BackupSvr-XX |  |  |
| The communications link between BackupSvr-XX and WinClient-XX |  |  |

**Demonstration Task 7**

**Demonstration Task 7:** **Server Performance Monitoring**

Your client requires you to measure and review the performance of the server by monitoring and running some benchmark tests and comparing the results with expected levels of performance.

To perform the tests, you need to log in to MainSvr-XX using the domain administrator account and use ‘Performance Monitor on’ to test Processor, Memory, Logical Disk, and Network Interface performance.

Once you have performed the tests, you are required to seek and respond to feedback on server performance from the client. The client has provided feedback on the required performance thresholds and requests that you respond with appropriate recommendations.

Reference: <https://docs.microsoft.com/en-us/biztalk/technical-guides/checklist-measuring-performance-on-hyper-v>.

The counters tested will be:

* \Processor(\*)\% Processor Time
* \Memory\Available MB and \Memory\Pages/sec
* \Logical Disk(\*)\Avg. Disk sec/Read and \Logical Disk(\*)\Avg. Disk sec/Write
* \Network Interface(\*)\Bytes Total/sec

While performing the tests, you must document your test results and recommendations in the section provided below:

Table 25: Demonstration 7: Server Performance Monitoring

| Evidence of Benchmarking | S | U/S | Assessor Comment |
| --- | --- | --- | --- |
| Evidence of counters added to Performance Monitor for MainSvr-XX: |  |  |  |

Table 26: Demonstration 7 Server performance monitoring

| Test | Results / Recommendation | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| **Processor counter:**  \Processor(\*)\% Processor Time  **Recommended threshold:**  \Processor(\*)\% Processor Time < 60% consumed | **Actual Results:**  \Processor(\*)\% Processor Time =  **Recommendation:** |  |  |  |
| **Memory counters:**  \Memory\Available Mbytes  Memory\Pages/sec  **Recommended threshold:**  \Memory\Available Mbytes > 50% of free memory available or more  \Memory\Pages/sec < 500 | **Actual Results:**  \Memory\Available Mbytes =  \Memory\Pages/sec =  **Recommendation:** |  |  |  |
| **Logical Disk counters:**  \Logical Disk(\*)\Avg. Disk sec/Read  \Logical Disk(\*)\Avg. Disk sec/Write  **Recommended threshold:**  \Logical Disk(\*)\Avg. Disk sec/Read = 1ms to 15ms  \Logical Disk(\*)\Avg. Disk sec/Write = 1ms to 15ms | **Actual Results:**  \Logical Disk(\*)\Avg. Disk sec/Read =  \Logical Disk(\*)\Avg. Disk sec/Write =  **Recommendation:** |  |  |  |
| **Network Interface counter:**  \Network Interface(\*)\Bytes Total/sec  **Recommended threshold:**  \Network Interface(\*)\Bytes Total/sec < 40% of the interface consumed | **Actual Results:**  \Network Interface(\*)\Bytes Total/sec =  **Recommendation:** |  |  |  |

**Part 4:** **Implement and test disaster recovery methods**

To complete this part of the assessment, you will be required to perform backups and test the implementation of the disaster recovery methods outlined by your organisation.

Read the **scenario** given below before proceeding with the demonstration tasks.

Save this assessment document ***Cl\_VirtualServer\_AE\_Sk3of3.docx***

**Scenario:**

You have previously installed and configured the main server with domains, user accounts, groups, print services, and security access and have tested the main server machine (MainSvr-XX) for correct functionality. Now, you are required to configure a backup domain controller as part of implementing disaster recovery and restoring security and reliability for the networked system.

Refer to the following recommended resources when performing the tasks.

* **Organisational standards**
* *Gelos\_NetworkDirectory\_Specifications.pdf*
* **Vendor documentation on installation procedures** (online)
* *Microsoft Windows documents, Technet Articles*

**Demonstration Task 1**

**Demonstration Task 1: Implement and test disaster recovery methods**

Table 27: Demonstration 1 Implement and test disaster recovery methods

| Requirement | Insert Screenshot | S | U/S | Assessor Comment |
| --- | --- | --- | --- | --- |
| 1. Perform a full backup and configure future backups in MainSvr-XX. | 1. **Server backup procedure** |  |  |  |
| 2. Configure BackupSvr-XX as a backup domain controller according to the organisational guidelines and specifications provided. | No screenshot required |  |  |  |
| 3. **Restore main server data to the backup server**; include relevant screenshots as evidence of restoring main server data to a backup server | 1. **Restore main server data to a backup server** |  |  |  |

## Assessment feedback

*NOTE: This section must have the Teacher/Assessor and student signature to complete the feedback. If you are submitting through the TAFE NSW online learning platform, your Teacher/Assessor will give you feedback via the platform.*

### Assessment outcome

Satisfactory

Unsatisfactory

**Assessor feedback**

Has the assessment declaration for this assessment event been signed and dated by the student?

Are you assured that the evidence presented for assessment is the student’s own work?

Was reasonable adjustment in place for this assessment event?

*If yes, ensure it is detailed on the assessment document.*

*Comments*:

### Assessor name, signature and date

### Student acknowledgement of assessment outcome

*Would you like to make any comments about this assessment?*

### Student name, signature and date