Place course/unit barcode image here. **Ensure the picture size scale 100%.**

ICTTEN419 Implement and troubleshoot enterprise routers and switches

**Student Name: [Type your name]**

**Student ID: [Your ID number]**

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**Acknowledgements**

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Chris Zhong   
Education Development Services

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Commonwealth of Australia. (2013). *Home Page*, 3.22.1.18. Retrieved November 2, 2022, from training.gov.au: https://training.gov.au

For the full definition of this unit and its assessment requirements, please consult:

https://training.gov.au/Training/Details/ICTTEN419

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**Assessment Information**

|  |  |
| --- | --- |
| **Conducting the Assessment** | The assessment methods and processes are described in this Student Assessment Guide.  Information about each assessment method is discussed and the assessment agreement is completed.  The assessor is to advise students the time and date of the assessments.  All assessments must be conducted in a safe environment. |
| **Applying Reasonable Adjustments** | Reasonable adjustments to assessment methods and processes may be required to accommodate the student needs and enable them to demonstrate their competencies.  Any adjustments made to the assessment must be documented in the assessment agreement in this Student Assessment Guide. |
| **Feedback to Students** | Feedback will be provided to the student after the completion of assessment marking. |
| **Assessments and Competency** | For each assessment task you complete, the assessor will determine it as either ‘Satisfactory’ or ‘Not Satisfactory’.  You will be given the opportunity to resubmit an assessment task if it is determined ‘Not Satisfactory’.  On completion of all assessment tasks, you will be issued a result of either ‘Competent’ or ‘Not Yet Competent’ for the unit. All assessment tasks must be satisfactorily completed for a unit for you to be deemed competent. To be deemed Competent, students must demonstrate all the criteria of the unit.  A student may appeal a “Not Yet Competent” decision by following the *Complaints and Appeals Procedure Students and Community* found on the Institute’s website: <https://www.sunitafe.edu.au/about/procedures/> |
| **Assessment Submission** | Assessments may be submitted either in hard copy or online through [SuniCONNECT](https://suniconnect.sunitafe.edu.au/login/index.php). Ask the assessor for the preferred method.  If submitting as hard copy, sign and submit the Assessment Task/s Submission Statement with each or all assessment/s.  If submitting online, tick the Submission Statement in the Assessment Task drop box and upload all the relevant documents for assessment. |
| **Assessment Due Dates and Extension** | If you are unable to meet an assessment due date you must apply for an extension **in writing**, and provide a justification for the request, specify the duration of the extension required, and must be made at least 1 week (7 days) before the specified assessment due date. The maximum duration of any extension is two (2) weeks.  Where you don’t submit by the assessment due date and do not have an approved extension you may be withdrawn from the unit of competency. |
| **Additional Unit Instructions** | This unit and ICTNWK431 share the case study, students are allowed to reuse evidence that they generated in one unit for another. |
| **Pre-requisites** | Nil |

**What you need to complete:**

The assessment tasks required for completion of the unit/s are:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment Task 1** | | | | | | | | | |
| **Enterprise networking knowledge** | | | | | | | Due Date | | |
| **Assessment Method/s** | | | | | | | | | |
| A  Observation/ Oral Questions | B  Project | C  Practical Task | D  Portfolio | E  Role-play/  Simulation | F  Knowledge Based Test | H  Written Task | | I  Third Party Report | J other (specify)  \_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| **Assessment Task 2** | | | | | | | | | |
| **Preparation for networking** | | | | | | | Due Date | | |
| **Assessment Method/s** | | | | | | | | | |
| A  Observation/ Oral Questions | B  Project | C  Practical Task | D  Portfolio | E  Role-play/  Simulation | F  Knowledge Based Test | H  Written Task | | I  Third Party Report | J other (specify)  \_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| **Assessment Task 3** | | | | | | | | | |
| **Implementation and troubleshooting** | | | | | | | Due Date | | |
| **Assessment Method/s** | | | | | | | | | |
| A  Observation/ Oral Questions | B  Project | C  Practical Task | D  Portfolio | E  Role-play/  Simulation | F  Knowledge Based Test | H  Written Task | | I  Third Party Report | J other (specify)  \_\_\_\_\_\_\_\_\_\_\_\_\_ |
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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Assessment Task 4** | | | | | | | | | |
| **Network** **Documentation** | | | | | | | Due Date | | |
| **Assessment Method/s** | | | | | | | | | |
| A  Observation/ Oral Questions | B  Project | C  Practical Task | D  Portfolio | E  Role-play/  Simulation | F  Knowledge Based Test | H  Written Task | | I  Third Party Report | J other (specify)  \_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  |  |  |  |  | |  |  |

You will be allowed a maximum of 2 attempt/s at each assessment task.

**Assessment Agreement**

An assessment agreement is required to ensure that all students are aware of the process and purpose of an assessment and the requirements to achieve competence in this unit/s.

The individual learner’s needs are considered in the assessment process. Where appropriate, reasonable adjustments are applied by SuniTAFE to take into account the individual learner’s needs.

If you believe you have special needs that require such adjustment to one or more of your assessments, please discuss this with your teacher. If you would prefer not to discuss this with your teacher, you may speak to SuniTAFE's Student Support Services department, who will assist you through this process.

In the box provided, please document any adjustments that have been discussed.

|  |
| --- |
| N/A |

I declare that I have read and understood the assessment methods and assessment process and have discussed any needs with my assessor.

|  |  |  |  |
| --- | --- | --- | --- |
| Student Name | [Type your name] | | |
| Student Signature |  | Agreement Date | 11/10/2023 |

**Assessment Task 1: Enterprise networking knowledge**

|  |  |
| --- | --- |
| **Assessment Instructions** | This assessment is a written task to determine the student’s knowledge around enterprise networking.    In this assessment, students must provide written responses to all questions below. Students may be required to research their answers. Organisational policies and links to manufactory guidelines available on in this document and SuniConnect.  This assessment will be conducted in class and off campus during a student’s own study time.  When students are ready for their work to be assessed, they are to upload that work in a PDF document to the relevant drop box on SuniConnect.  Students must complete all tasks to a satisfactory level to receive a satisfactory result. |
| **Assessor Support:** | Assessors may offer guidance throughout the assessment but **must not** lead the student to the answers or assist with observable tasks. |
| **Duration of Assessment** | 3 hours |
| **Required Knowledge** | To complete the unit requirements safely and effectively, the individual must:  summarise access control lists give examples of characteristics of a typical enterprise including: features and applications work health and safety (WHS) procedures record keeping procedures switching and routing protocols and strategies: hierarchical addressing multilayer switching routing protocols VLAN routing summarise implementation of enterprise wide area networks (WAN) links explain network diagnostic and troubleshooting techniques describe network modelling specify how to configure and activate network access and security measures describe the process of configuring switches and routers to enable local area networks (LAN) and WAN links describe the connection process for enterprise networks using WAN services and applications describe the purpose of maintaining enterprise network documentation summarise the process and importance of troubleshooting network faults and implementing recovery actions describe the use of a hierarchical internet protocol (IP) network address scheme select and use tools and equipment to analyse enterprise networks. |
| **Resources Required for**  **this Assessment:** | |
| **Supplied by SuniTAFE/workplace** | Standard computer classroom. Organisational policies and procedures for networking services. Networking design document template. |
| **Supplied by student** | N/A |

**Questions:**

**1. Summarise three key features of IPv4 standard access control lists and extended access control lists.**

Three key features of IPv4 standard access control lists (ACL) are standard ACL only checks ACL source address. It does not specify Layer 4 protocols and ports and it is with ID 1-99, 1300-1999.

Three key features of IPv4 extended access control lists (ACL) are extended ACL Checks both source and destination address. It specifies specific source and destination protocols (IP, ICMP, UDP, TCP), application types (telnet, www), TCP and UDP ports and it is with ID 100-199, 2000-2699.

Satisfactory  Not Satisfactory

**2. Research and review the following characteristics in a typical enterprise. Define once any acronyms used in your answers.**

**2.1 Provide two examples on** **a)** **features and b) applications that enterprises typically have.**

**Features: Enterprises normally have features that** **an Enterprise might have established, formal organization structure. This informs the access control and permission of network applications, and network segmentation for the infrastructure. This also determines the distribution of application components. The structure also often determines reporting lines and authorization.**

**Applications: d Enterprises normally have applications that** **an Enterprise might have explicitly defined business procedures. This can be supported by business applications, e.g. Pay roll, CRM(customer relationship management), ERP(enterprise resource planning), AIS (accounting information system), email system (e.g. MS Exchange) etc. An enterprise might also subject to regulations and public liability such as free of information. A public web site or web app might be necessary.**

Satisfactory  Not Satisfactory

**2.2 Give five** **key features in typical enterprise work health and safety (WHS) procedures.**

**Five key features in typical enterprise work health and safety (WHS) procedures are listed below.**

**1. Training and communications for WHS is essential for OHS procedures to be followed as expected.**

**2. People needs to excise the Duty of Care.**

**3. The organization's OHS prosecutes provide guidelines on compliance with legal obligations, articulating roles and responsibilities of both the employer and employees.**

**4. They also outline safety standards Identify the hazards and notification, emergency and evacuation.**

**5. OHS procedures define how to hand injuries and incidents, and more comprehensive tasks such as how to conduct a safety audit. The process to report and resolve WHS issues.**

Satisfactory  Not Satisfactory

**2.3. Give five** **key features in typical enterprise record keeping procedures.**

Key features in typical enterprise record keeping procedures are listed below.

Record keeping and documentation helps with change, configuration, management and trouble shooting.

Documentation also helps maintain consistency, compliance and keep trail of audit.

Documentation can also provide better understand the complexity of the system such as functional and

non-functional requirements, system settings, compatibilities, current configuration and system status.

Record keeping procedures could contain listed steps below.

1. Define the purpose, why you want to keep the records.

2. Scope: what you should keep with classification to avoid disputes

3. Follow the naming convention, define names and types of records that need to be kept.

4. Timeline: how long you should keep them for.

5. Media and security: Set up access control and authorisation such as how you should keep the record (paper, digital, online) and how to protect the information.

6. Archive and dispose: how you should archive and remove the information. Define the timeframe of records retention for example five years.

7. Version control: how you should name and order the medias if you have multiple version.

8. Maintain and audit confidentiality.

Satisfactory  Not Satisfactory

**3. Outline examples on enterprise switching and routing strategies and protocols.**

* 1. **Strategies of switching and routing for hierarchical addressing:**

Hierarchical IP addressing.

A Network Architecture Model can be a reference model that describes a hierarchical structure that consists of multiple layers of protocols, hardware, and software needed to transmit data between two hosts or devices.

A classful IP address group can be divided into multiple smaller.

The strategies include:

Classless IP address allocate IP addresses with vary length subnet masks (VLSM) that does not fall into any classes.

Addresses can be summarised to the closest classes.

Match IP address groups or sub-networks to virtual local area network memberships.

Satisfactory  Not Satisfactory

* 1. **Two methods of using multilayer switching to implement inter-VLAN routing:**

There are two methods to use multilayer switching to implement inter-VLAN routing.

Inter-VLAN routing requires the use of a layer 3 or multilayer switch.

Open the layer 3 function on a switchports of a multilayer switch.

Inter-VLAN routing requires the use of a layer 3 or multilayer switch.

The “internal” interface is a vlan interface:

Switch(config)#interface Vlan20

Switch(config-if)#ipaddress 192.168.2.1 255.255.255.0

Switch(config-if)#no shutdown

The external interface:

Switch(config)#interface FastEthernet 0/1

Switch(config-if)#no switchport

Switch(config-if)#ipaddress 200.1.1.1 255.255.255.0

Switch(config-if)#no shutdown

Satisfactory  Not Satisfactory

* 1. **Three switching protocols and three routing protocols, including their full names and a key feature. Use full names for router protocols, not just acronyms.**
* Router

Key feature of the routing protocols is they are Layer 3 protocols which is Network Layer. Three switching protocols are list below.

1. IPv4 Internet Protocol version 4

2. IPv6 Internet Protocol version 6

3. ICMP Internet Control Message Protocol

* Switch

Key feature of the switching protocols is they are Layer 2 protocols which is Data Link Layer. Three switching protocols are list below.

1. IEEE 802.3/8/11/14/15/16

- Institute of Electrical and Electronics Engineers standards

- 802.3 Ethernet Standards

- 802.8 Fiber-optic connection

- 802.11 Wireless Networking - Wi-Fi

- 802.14 Standards for cable broadband communications

- 802.15 Bluetooth and Wi-Fi coexistence mechanism

- 802.16 Wireless Networking - WiMAX

2. CDP Cisco Discovery Protocol

3. FDDI Fibre Distributed Data Interface

Satisfactory  Not Satisfactory

* 1. **How are routing protocols used to implement inter-VLAN routing?**

To implement inter-VLAN routing, routing protocols are used.

It requires multiple router interfaces that are each connected to separate VLANs.

In this case, VLAN are treated as individual networks, each VLAN uses a router interface connected to the VLAN members as their gateway.

All VLANs are advertised in routing protocols.

Use routers for inter-vlan routing.

The “internal” interface is access interface on the switch and another side is a routing interface, just like normal routing’s cases:

Switch(config)#interface fa0/1

Switch(config-if)#switchport mode access

Switch(config-if)#switchport access vlan10

On the router’s side:

Router(config)#interface FastEthernet 0/1

Router(config-if)#ip address 192.168.1.1 255.255.255.0

Router(config-if)#no shutdown

And you need to configure routing, dynamic or static:

Router(config-router)# Router rip

Router(config-router)# Network 192.168.1.0

Router(config-router)# Network 200.200.200.0

Satisfactory  Not Satisfactory

1. **What are the technologies that you can choose to implement enterprise wide area networks (WAN) links? List three of them and describe their features.**

List three of enterprise wide area networks to implement links are listed below.

1. Cable modem.

A cable modem is a type of network bridge that provides bi-directional data communication

1. Digital subscriber line (ADSL/VDSL).

Asymmetric digital subscriber line (ADSL) is a type of digital subscriber line (DSL) technology, a data communications technology that enables faster data transmission over copper telephone lines than a conventional voiceband modem can provide.

3. Fiber-optic communication (e.g. nbn uses FTTX+LAN).

Fiber-optic communication is a method of transmitting information from one place to another by sending pulses of infrared or visible light through an optical fiber.[

Satisfactory  Not Satisfactory

1. **Identify diagnostic techniques and troubleshooting techniques you can use for each issue in the table below:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Issues** | **Logical segment or O**SI **layers** | **Diagnostic Techniques** | **Troubleshooting technique** |
| Cable issue | Layer 1 | Cable  adapter mismatch,  cable disconnected | Cable testing tools such as Fluke |
| Trunking | Layer 2 | Speed mismatch, duplex mismatch,  vlan membership mismatch, trunking mismatch, port type  mismatch, port security | show interface, show interface trunk, show vlan |
| Ip address mismatch | Layer 3 | Ip addresses, subnet masks, interface parameters | Ping, trace route, show ip interface brief |
| Routing issue | Layer 3 | Routing issues,  protocols, versions,  autonomous  system ID | Ping, trace route, show ip interface brief |
| Access-control mismatch | Layer 3 | IP address mismatch, routing  protocol mismatch, protocol  parameter mismatch, access control  misconfiguration, NAT mismatch | Ping, trace route, show ip interface brief |

Satisfactory  Not Satisfactory

1. **Describe** **network modelling, including Open System Interconnect (OSI)**

Network Model can be a reference model that

describes a hierarchical structure that consists of multiple layers of protocols, hardware, and software needed to transmit data between two hosts or devices.

Network modelling is the way how network components that devices, node, protocols, and connections can be classified, categorized, and logically presented including Open Systems Interconnection (OSI) Model and Transmission Control Protocol/Internet Protocol (TCP/IP) Model.

Satisfactory  Not Satisfactory

1. **Configure and activate network access and security:** 
   1. **Specify steps to configure and activate network access.**

Connect to local network node, e.g. a switch or ISP’s network

Enable TCP/IP stack and configure IP interfaces

Configure network addresses and gateway

Configure authentication (if necessary)

Configure access control

Satisfactory  Not Satisfactory

* 1. **Specify steps to configure and activate security measures.**

Vlans –virtual local area networks: this is a logical subdivision of LAN segments. A Vlan is a group of ports that share the same network ID and they are in the broadcasting domain. L2 traffics are restricted within the same broadcasting domain.

Sub-networking can be based on business functions or organizational structure.

Port security: it defines the expected association between Mac-addresses and L2 ports and the actions to be taken when any association is violated.

Access control list: there are L2 or L3 (IP) access control lists. They filter traffic based on a number of rules such as source addresses, destination addresses, and protocols.

Firewall: firewalls filter traffic from L2 to application layer based on rules called "policies", more common firewalls are packet filter firewall (L3), stateful firewall (L4 and L5), application proxy firewall (L3-7, and some appliance can even check the content).

Satisfactory  Not Satisfactory

1. **Describe how enterprise switches and routers are configured to enable local area networks (LAN) and wide area networks (WAN) links.** 
   1. **Four steps in configuring switches**

To meet the network segmentation requirements, virtual local area networks (VLANs) are configured.

Four steps for configuring switches process LAN and WAN are listed below.

1. Configure virtual local area networks (VLANs) on switches to meet network segmentation requirements.

2. Configure hierarchical addressing over virtual local area networks (VLANs).

3. Configure Inter-Vlan routing and configure trunking for inter-switch connection.

4. Configure port security, and other LAN security mechanisms (if needed) diagnose and rectify network hardware and device configuration faults. Also, document configuration information, fault-finding history and remediation action.

Satisfactory  Not Satisfactory

**8.2 Four steps in configuring routers**

Four steps for configuring routers process LAN and WAN are listed below.

1. Configure IP interfaces, Chose the adaptors if necessary, according to the carrier’s instructions.
2. Configure access control lists to network services and applications and inbound traffics on the gateway.
3. Address other security issues though authentication, encryptions, and zoning, Configure network address translation (NAT).

4. Diagnose and rectify network hardware and device configuration faults. Document

configuration information, fault-finding history and remediation action.

Satisfactory  Not Satisfactory

1. **Outline five sequential steps in the processes through which WAN services and applications are connected.**

Five Outline sequential steps in the processes for connecting WAN services and

Applications are listed below.

1. Determine WAN technology, interfaces, protocols and performance parameters according to connection requirements features. Whether the organization has multiple sites, and how far are these sites to each other.

2. Determine traffic and applications, whether they use video conferencing, streaming, VOIP, and some other services.

3. Determine security and cost expectation, this help choose the most cost effective service without comprising security.

4. Contact service providers and determine availabilities and costs, compare and review their reputation, pricing, and temrs.

5. Determine protocols and parameters and confirm terms and installation plans. Installation and test WAN links and devices

Satisfactory  Not Satisfactory

1. **Why do enterprises need to maintain their network documentation? List three purposes.**

Maintaining network documentation for the enterprises has several advantages.

1. Documentation helps with change, configuration, management and trouble shooting.

2. Documentation also helps maintain consistency, compliance and keep trail of audit.

3. Documentation can also provide better understand the complexity of the system such as functional and non-functional requirements, system settings, compatibilities, current configuration and system status.

Satisfactory  Not Satisfactory

**11. The process and importance of troubleshooting network faults and implementing recovery actions:**

* 1. **Summarise seven main steps of troubleshooting network faults and implementing recovery actions.**

1. Symptoms

2. Segment

3. Locations

4. Hypothesis

5. Test hypothesis

6. Implement solutions

7. Test solution

Satisfactory  Not Satisfactory

* 1. **Why are troubleshooting and recovery actions important? List two reasons.**

Troubleshooting and recovery actions has two aspects one is Function testing which includes unit testing, Integration testing, System testing, Acceptance testing and another is Performance testing which includes Load testing, Compatibility testing, Security testing, Reliability testing. Troubleshooting and recovery actions important due to maintain the system securely and prevent further errors in the system. Those crucial points could make the system sustainable.

Satisfactory  Not Satisfactory

1. **Describe how subnetwork masks and network IDs are used in a hierarchical internet protocol (IP) network address scheme.**

We need subnet masks due to IP address (v4) resources are limited. In a hierarchical internet protocol (IP) network address scheme, each network have its own “network ID”. We need to know if an Ip addresses belongs to my local network or a “foreign” network.

Satisfactory  Not Satisfactory

1. **Recommend two tools and two pieces of equipment that help analyse enterprise networks.**

Two pieces of equipment that help analyze enterprise networks are Cable testing tools such as Fluke and trace route which show ip interface briefly.

Recommended Commonly used two tools for networking are ping and Wireshark.

Satisfactory  Not Satisfactory

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment Task Submission Statement** | | | | | |
| **Student Name** | [Type your name] | | **Student ID** | | [Your ID number] |
| **Assessment Task** | **1 -** Enterprise networking knowledge | | | | |
| First submission | | Subsequent submission | | | |
| **Student Declaration:**  I certify that the attached assessment is my original work. No other person’s work has been used without due acknowledgment in the text of the document.  Except where reference is made in the text, this document contains no material presented elsewhere or extracted in whole or in part from a document presented by me for another qualification at this or another Institution.  I understand the nature of plagiarism to include the reproduction of someone else’s words, ideas or findings and presenting them as my own without proper acknowledgement. Further, I understand that there are many forms of plagiarism which include direct copying or paraphrasing from someone else’s published work (either electronic or hard copy) without acknowledging the source; using facts, information and ideas from a source without acknowledgement; producing assignments (required to be independent) in collaboration with and/or using the work of other people; and assisting another person to commit an act of plagiarism.  I understand that the work submitted may be reproduced and/or communicated by the institution or a third party authorised by the institution for the purpose of detecting plagiarism.  I understand that Sunraysia Institute of TAFE is required to retain evidence of all completed student assessment items for a period of 3 years for auditing purposes, after which time evidence will be securely destroyed. | | | | | |
| **Student Signature:** |  | | | **Date of Submission: 13/10/2023** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessor Report** | | | |
| **Feedback:** | | | |
| **Assessment Outcome** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required? Yes  No | |
| **Resubmission** | Competency development strategies have been discussed with student? | | |
| Agreed due date for resubmission: | | |
| **Assessor Name** |  | | |
| **Assessor Signature** |  | | **Date:** |

**Assessment Task 2: Preparation for networking**

|  |  |
| --- | --- |
| **Assessment Instructions** | This assessment is a project consisting of a series of tasks to check the student’s skills in the preparation to implement a network.   There are two parts in this project:  **Part I: Confirm WHS and environmental requirements**, This assessment will be conducted in class within self-directed class time, or online during a student’s own study time.   **Part II: Observation: Preparation** Arrangement of when the observation will be conducted in class is to be discussed and confirmed with the trainer/assessor.  Students must read the case profile below, and then complete all parts of the project.  For part II: any one of the below hazards to be present for the observation: ergonomic hazards; slip, trip and fall hazards; heavy devices.  Students are to upload submissions in a PDF document to the relevant drop box on SuniCONNECT.  Students must complete all tasks to a satisfactory level to receive a satisfactory result. |
| **Assessor Support:** | Assessors need to excise duty of care and follow WHS requirements and procedures. When extra support is needed, the assessor may refer the student to internal or external support services. |
| **Duration of Assessment** | 3 hours |
| **Required Knowledge** | To complete the unit requirements safely and effectively, the individual must: identify and describe switches and their operation describe the installation requirements of switches, including: debug commands routing between virtual local area networks (VLANs) spanning tree protocol (STP) switch calling line identification (CLI) commands switch security, including: port deactivation port security secure shell (SSH) advanced switching technologies common network switching issues identify and describe the different types of network and related equipment outline the types of documentation required when installing switches. |
| **Resources Required for this Assessment:** | Standard computer classroom. Server with VMware hypervisor or equivalent. Enterprise routers and switches or simulators. Organisational policies and procedures for networking services. Networking design documents. |
| **Supplied by SuniTAFE/workplace** | As above |

**Note that the case study below must be used for assessment task 2, 3, and 4.**

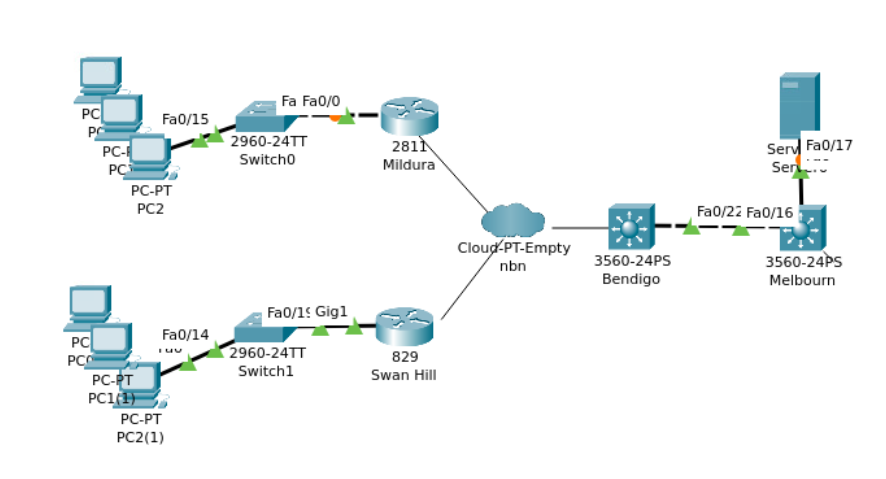
*Case study: Network Implementation and Documentation for XYZ*

***Background***

*XYZ Pty Ltd. has been growing rapidly and now they have up to 80 staff members. XYZ operates in finance service industry, and they need to have secured internal network, especially in its Melbourne Head Office where is data centre is.*

*XYZ has three branches in Bendigo, Mildura and Swan Hill. And they are connected to Melbourne through their Bendigo office. All their four locations have been interconnected via WAN links implemented through nbn FTTX+LAN business plans with SuniNet.*

*The supervisor (your assessor) has provided the following live network as XYZ’s existing system for you to continue on.*

**

*Existing Network at XYZ Source: Chris Zhong 2017*

*A new network upgrading proposal was presented by the CIO of XYZ PTY LTD recently. You have received a job brief.*

***About you (the network technician’s job description****):*

*Your responsibility here are to assist in design, install, troubleshoot, and document enterprise networks. This includes:*

* *determine customer needs,*
* *use information communication technologies (ICT) to meet network requirements,*
* *rectify equipment errors*
* *create and evaluate appropriate workplace network documentation.*

***XYZ’s Network Operating Procedures***

***Legal requirements:***

*XYZ’s IT services are guided by Privacy ACT 1988 and ACSC’s cyber security guidelines* [*https://www.cyber.gov.au/acsc/view-all-content/ism/cyber-security-guidelines*](https://www.cyber.gov.au/acsc/view-all-content/ism/cyber-security-guidelines)*. Other regulations that the technician must be aware of include:*

* *Electronic Transactions Act 1999 (Cwlth)*
* *Copyright Act 1968 (Cwlth) and the Copyright Amendment (Digital Agenda) ACT 2000 (Cwlth)*
* *Telecommunications Act 1997 (Cwlth) and associated Acts*

***General guidelines:***

*Unless specified otherwise in XYZ’s policies and procedures, networking technicians should refer to the following guidelines for instructions for network installation.*

* [*Guidelines for Communications Systems | Cyber.gov.au*](https://www.cyber.gov.au/acsc/view-all-content/advice/guidelines-communications-systems)
* [*Guidelines for ICT Equipment | Cyber.gov.au*](https://www.cyber.gov.au/acsc/view-all-content/advice/guidelines-ict-equipment)
* [*Guidelines for Communications Infrastructure | Cyber.gov.au*](https://www.cyber.gov.au/acsc/view-all-content/advice/guidelines-communications-infrastructure)

***Determine customer networking requirements:***

*This may include describing how network routers, network switches and network resources will be connected, what functions need to be configured.*

***Change of network configuration:***

*Any change to existing network configurations must be based on an approved design document. All changes need to be documented. Only designated network technician can make change.*

***Access to networking facilities:***

*Accessing to XYZ’s networking facilities requires a request to be sent prior to attending the site.*

***IP addressing:***

*XYZ uses classless IP addressing to save IP address resources.*

* *XYZ uses 172.16.10.0/24 to accommodate uses in three subnetworks (VLANs), and there are different business functions and departments.*
* *Subnet mask for internal network is 255.255.255.224.*
* *61.3.50.0/28 are used for WAN connection.*

***Naming convention***

*Resource labelling and tagging:*

*A label (for physical resources) or tag (for digital or logical resources) to be use for all network ports and wall sockets. Labelling should follow the following naming convention:*

*Resourcetype-owner-section(or building)-serisenumber-datetagged, e.g. sw-finance-jg03-02b-01012022.*

*File names:*

*documenttype\_documentname\_version\_date\_time.txt*

***Troubleshooting:***

*Diagnose and rectify network hardware and device configuration faults, present at least one issue in each area of switching and routing and provide solution about the faults.*

***Documentation:***

*Documentation must include network design, configuration information, fault-finding history, and rectification action.*

***Approved tools:***

* *The software tools to support network documentation tasks include MS Visio, Cisco Packet Tracer, Draw.io.*
* *Hardware testing tools include Fluke cable tester and multi-metre.*
* *Software testing tools include Watir or Selenium*
* *Security testing tool includes Wireshark and NMAP*

***Approved testing methodology:***

*XYZ recommend white-box testing, in which case the tester must refer to existing network design and documentation.*

*The scope of testing includes unit testing (the configuration items), system testing (the segment), and integration testing (the connection and service).*

***Networking and Installation Procedures***

***Selection of devices and application:***

*If is the network technician’s responsibility to select and obtain network services and network application requirements. A minimum of two options must be provided for the supervisor to choose and confirm. The supply information should include cost, supplier’s contact details, and availability. Network application must be chosen from the approved list and must be downloaded or obtained from the suppliers’ official website.*

***Installation guidelines:***

* *Review exiting network design*
* *Check the site for WHS issues*
* *Obtain approval for site access*
* *Test devices before use. Using simulation platform as prototype if applicable.*
* *Configure routers and switches using hierarchical addressing over virtual local area networks (VLANs) to meet network link requirements.*
* *Connect users from different VLANs and regional offices.*
* *Test must include unit test and end to end system test.*

***Access control and traffic management:***

*Enable and control access to network services and applications across the network,*

* + *Marketing (VLAN 20) is the only department able to use the ftp server*
  + *Accounting (VLAN 10) is not able to go to the internet.*
  + *All VLANs cannot use telnet.*
  + *Other service unspecified can be enabled*

***WHS Policy (ICT Installation section)***

1. *XYZ requires all ICT technicians to be aware of and adhere to the WHS policies listed in the next seven sections of this document, necessary training should be conducted for their employees.*
2. *XYZ also requires the ICT technicians to arrange at least one contact person liaising with them on all matters about the project/services. The ICT technician needs to provide this person(s)’ names to XYZ for clearance purpose; and site access should be requested two days before arrival. All ICT technician’s service technicians should wear proper name badges all the time during their stay in XYZ’s site.*
3. *XYZ requires all ICT technicians to disclose any potential hazards to XYZ. This may include some of the following (but not limited to): ergonomic hazards; manual handling hazards; Slip, trip and fall hazards; electrical hazards (e.g., appliances, power sockets, etc.); fire hazards; other environmental issues; noise, overheating/temperature, radiation, etc.*
4. *ICT technicians need to make sure they are aware of other safety guidelines and relevant industry standards.*

*If their services involve and hazards, the person who identified the hazards should implement two of the following countermeasures in consultation with their supervisor:*

* *Isolate people from the WHS risk*
* *Eliminate the risk*
* *Substitute the hazard/activity*
* *Use administrative controls e.g., use safety signs*
* *And/or Use personal protective equipment (PPE)*
* *The technician should use the WHS checklist to identify the hazards and report it to the supervisor for feedback and confirmation using the checklist below.*

1. *The WHS officer is to provide confirmation and advices on the above.*
2. *All ICT technicians need to advise XYZ any requirements, including environmental requirements, e.g., power and water supply, temperature, and humidity control, working spaces.*
3. *Technicians are required to liaise and communicate with the supervisor and make sure they are ware of other people working in the save site.*
4. *Upon completion, all ICT technicians need to restore worksite to safe condition, this may include (when applicable): backup the work, disable unused interfaces, turn off testing computers, unplug unused cables, and secure the devices with password.*
5. *Other relevant Guideline and standards:*

* *Occupational Health and Safety Act 2004: This Act is the cornerstone of legislative and administrative measures to consistently improve occupational health and safety.*
* *Occupational Health and Safety Regulations 2007: These regulations are made under the Occupational Health and Safety Act 2004.*

1. *The following checklist template must be used for WHS hazards:*

|  |  |  |  |
| --- | --- | --- | --- |
| *Date: Venue:* | | | |
| *Tasks:* | | | |
| ***Hazards*** | ***Observed*** | ***Description*** | ***Risk control measures*** |
| *Ergonomic hazards;* | *Yes*  *No* |  |  |
| *Manual handling hazards;* | *Yes*  *No* |  |  |
| *heavy devices* | *Yes*  *No* |  |  |
| *Slip, trip and fall hazards;* | *Yes*  *No* |  |  |
| *Electrical hazards (e.g., appliances, power sockets, etc.); Power shock or Static electricity* | *Yes*  *No* |  |  |
| *Fire hazards* | *Yes*  *No* |  |  |
| *Over heating* | *Yes*  *No* |  |  |
| *Noise* | *Yes*  *No* |  |  |
| *Other hazards* | *Yes*  *No* |  |  |
| *Technician: Supervisor:* | | | |

***Documentation Procedure***

*XYZ’s documentation always requires version control and data stamps.*

*A network document must include the following sections:*

* *client requirements,*
* *network design, followed by network diagrams,*
* *recommended devices and supplier information,*
* *implementation plan.*

*The document must explicitly indicate client’s requirements, including function requirements and technical requirements. This might be referred to as the criteria*

*The document must specify technical requirements, and this must include key parameters such as network segmentation and network addressing.*

*Design needs must include address supported hardware, software, protocols, topology, and connections.*

*XYZ’s has an approved templates for networking as* ***below:***

|  |  |  |
| --- | --- | --- |
| ***1. Client’s requirements*** | | |
| *Function requirements* |  | |
| *Technical requirements* | *Supported devices* |  |
| *Vlan, tags, and membership* | *Vlan names:*  *Member interfaces:* |
| *Access control* |  |
| *Network segments*  *(IP addressing and names)* | *Vlan1:*  *Vlan2:*  *Vlan3:*  *Vlan4:* |
| ***2 Network design*** | | |
| *Wired and wireless devices* |  | |
| *Routing protocols* |  | |
| *Internet Access* |  | |
| *Cables and connections* |  | |
| *Topology* |  | |
| *Security features* |  | |
| ***3. Network diagram.*** | | |
| ***Logical and/or physical diagram*** | *Provide a physical network diagram; it should include topology and connections* | |
| ***4.Device and Supply*** | | |
| |  |  |  |  | | --- | --- | --- | --- | | *Devices or resources (including internet services and monthly plans)* | *Specifications (two of the following: physical (e.g., dimensions, etc), function (e.g. mac filter, etc) and performance (1Gbps Ethernet connections)* | *Vendor contact information* | *Cost* | |  |  |  |  | |  |  |  |  | |  |  |  |  | | | |
| ***5.Implementation timeline*** | | |
| |  |  |  |  | | --- | --- | --- | --- | | *Tasks* | *Timeline (start and end dates)* | *Priority (high, low)* | *Contingency arrangements (e.g., outages, disruptions, shipment delay etc.)* | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | |  |  |  |  | | | |

***The Scenario:***

*You have received the following* ***Job brief (IT Service request)*** *detailing your tasks in the network upgrade project:*

***XYZ IT Service Request***

*Ref No.20220602137A Date/time lodged: 02/06/2022*

*Priority: Urgent, High, Low Responsible person: Steve Gates, Manager of Business Operation.*

|  |  |
| --- | --- |
| ***User requirements:***  *XYZ will upgrade its existing routing and switching network. You have been appointed to facilitate the design, documentation of its new networks.*  *XYZ wants to create network segments for each department. The two branches in Mildura and Swan Hill will directly connect to Melbourne head office. Traffic control requirements are in their “Networking and Installation Procedures”. An internal web server is placed in the head office to provide web and file services.*  *You job is to design, implement, and document the network and fix any issues that might occur.*  ***Job outline:***  *End-to-end delivery of networking services, including prepare, document, install, configure, and troubleshoot network routers switches and other resources.*  *Support network segmentation, inter-branch and inter department connections, configure IP addressing, support user access to service and applications, enable traffic access and filtering.* | |
| ***Workplace coordination:***  *The supervisor of IT team is the required personnel that you will liaise with.*  *You are required to work with other IT technicians (other students in the class) and the supervisor will provide suggestions on how you should work with them.*  *A WHS staff member will provide support when you are dealing with workplace hazards.* | |
| ***Regulations, policies and procedures, guidelines, user manuals:***  *You must adhere to Regulations, policies and procedures, guidelines, user manuals outlined in XYZ’s policies and procedures. You must use tools and obtain resources from approved sources.* | |
| *Ticket level: 2 (On-site supports)* | *Ticket Creator: Bill Jobs* |
| *Client contact: Bill Jobs* |  |
| *Testing standards:*   * *Vendor specified* * *User acceptance.* | |

**Student instruction:**

Read the case study document above to answer the following written questions in Part I and prepare for practical tasks with the assessor observation in Part II.

Some documents are provided as links to external resources. If any link is broken, you must inform the assessor immediately. You must prepare your own installation notes and steps independently based on the procedures and manuals supplied.

Trainees may refer to their organisation’s policies.

**Scenario**

You are one of XYZ’s networking technicians and have been asked by your workplace supervisor (your trainer/assessor) to contribute in a networking project. Your tasks are outlined in the job brief.

In this assessment task, you are to prepare for the implementation of network routers and switches in accordance with workplace requirements and standards.

**Part I: Confirm WHS and environmental requirements for the XYZ’s network installation jobs:**

1. Summarise a list of five jobs that you need to perform to install routers and switches for XYZ.

Satisfactory  Not Satisfactory

1. Summarise and list seven XYZ’s WHS requirements related to your installation tasks.

Satisfactory  Not Satisfactory

1. Summarise and list three environmental requirements for your installation tasks

Satisfactory  Not Satisfactory

**Part II Preparation (Observation)**

This practical task involves simulation of a workplace, referred to as XYZ. You will play the role as networking technician, and the assessor will act as the workplace supervisor. You must read the case study and review the observation checklist for a list of observable tasks that you will be assessed against.

The observation can be done in person or video evidence can be provided by negotiation with the assessor. Where video evidence is provided, you must be in view. You must advise your assessor in writing which method you have chosen 7 days prior to assessment date.

The assessor will use an observation checklist to observe your skills.

**Resources**

* Case study document
* Role play participants (three): the technician (the student) and supervisor (the assessor), and WHS staff (another SuniTAFE staff member).
* If the observation is conduced online or virtually, refer to the video evidence requirements supplied by your assessor on demand.
* Observation checklist

**The student must:**

* brief the supervisor about the finding from your review Part I.
  + outline to the supervisor the WHS requirements and resources needed for the installation.
  + outline the scope e.g., as a list of jobs and the nature of the job (e.g., installation, configuration, and troubleshooting) for your supervisor to confirm based on the review of the case study document.
* inspect the worksite. There will be a WHS hazard for you to identify and record with the WHS checklist below. You will need to report the hazards to the WHS staff and implement two risk control measures according to the company’s policies and procedures.
* identify and obtain operating instructions, manuals, hardware, and software testing methodologies.
* liaise with the supervisor to ascertain that the tasks are effectively coordinated with others. You must demonstrate:
  + Collaborative techniques
  + Clear communications
  + Listening and questioning skills
  + Planning and taking action according to the plan.
* Submit the observation checklist and WHS checklist.

|  |  |  |  |
| --- | --- | --- | --- |
| **Observation Checklist** | | | |
| **Assessment Task2 - ICTTEN419 - Implement and troubleshoot enterprise routers and switches.** | | | |
| **Student Name** | [Type your name] | **Student ID** | [Your ID number] |
| **Student Instructions** | You will be observed by an Assessor completing the following task/s. During the task/s you may be asked oral questions by the Assessor to confirm your understanding.    Observations will be recorded in the student’s observation worksheet as **S** if the skills have been performed to a satisfactory level or **NS** if the skills have not been performed satisfactorily.  **Student’s responses must be in line with the case study provided. The assessor is to apply their professional judgement.**  The assessor must set up one hazard in any of the following categories for the student to identify from: ergonomic hazards; slip, trip and fall hazards; heavy devices. The assessor is to invite a SuniTAFE staff member to play the role of XYZ’s WHS staff. The assessor must brief the SuniTAFE staff member of their limited role in this scenario.  An example is stacking three switches so it become a heavy item, the student must NOT physically lift it but to identify it as a manual handling issue. The student must use the WHS check list provided below. Sample responses have been provided in the checklist.  At the conclusion of the observation the student must submit the completed observation checklist to SuniConnect with their name and student ID as well as the WHS checklist. The assessor must provide student with feedback on the Observation checklist.  The assessment outcomes can only be completed by the Assessor.  You must achieve a satisfactory result for the whole of the observation for the assessment to be deemed complete. | | |
| **Description** | Student meets with the supervisor of XYZ’s ICT team, briefs the supervisor, inspects the worksite with a WHS checklist, identifies and obtains operating instructions, liaises with the supervisor to ascertain that the tasks are effectively coordinated with others. | | |

|  |  |  |
| --- | --- | --- |
| **Tasks and/or Oral Questions** | **1** | **Comments** |
| * 1. Work with the appropriate personnel to prepare for the given networking job. | ​​☐​ S  ​​☐​ NS |  |
| * 1. Inspect the worksite, and identify safety hazards and implement risk control measures and consult with appropriate personnel. | ​​☐​ S  ​​☐​ NS |  |
| * 1. Define the nature and scope of routers, switches, and other network resources from job briefs with the supervisor | ​​☐​ S  ​​☐​ NS |  |
| * 1. Choose and obtain network services and request the requirements of applications | ​​☐​ S  ​​☐​ NS |  |
| * 1. Identify and obtain operating instructions, manuals, hardware, and software testing methodologies | ​​☐​ S  ​​☐​ NS |  |
| * 1. Liaise with the supervisor to check with how you should work effectively with other people involved on the worksite. | ​​☐​ S  ​​☐​ NS |  |
| * 1. Use listening and questioning skills to confirm understanding for requirements when liaising with the supervisor on technical matters. | ​​☐​ S  ​​☐​ NS |  |

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| **Assessor Report** | | | |
|  | | | |
| **Assessment Outcome:** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required?Yes  No | |
| **Resubmission:** | Competency development strategies discussed with student? | | |
| Agreed due date for resubmission: / / | | |
| **Assessor Name:** |  | | |
| **Assessor Signature:** |  | | **Date:**  / / |

**WHS Check List:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date: Venue:** | | | |
| **Tasks:** | | | |
| **Hazards** | **Observed** | **Description** | **Risk control measures** |
| Ergonomic hazards; | Yes  No |  |  |
| Manual handling hazards; | Yes  No |  |  |
| heavy devices | Yes  No |  |  |
| Slip, trip and fall hazards; | Yes  No |  |  |
| Electrical hazards (e.g., appliances, power sockets, etc.); Power shock or Static electricity | Yes  No |  |  |
| Fire hazards | Yes  No |  |  |
| Over heating | Yes  No |  |  |
| Noise | Yes  No |  |  |
| Other hazards | Yes  No |  |  |
| Technician: Supervisor: | | | |

Satisfactory  Not Satisfactory

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment Task Submission Statement** | | | | | |
| **Student Name** | [Type your name] | | **Student ID** | | [Your ID number] |
| **Assessment Task** | **2 -** Preparation for networking | | | | |
| First submission | | Subsequent submission | | | |
| **Student Declaration:**  I certify that the attached assessment is my original work. No other person’s work has been used without due acknowledgment in the text of the document.  Except where reference is made in the text, this document contains no material presented elsewhere or extracted in whole or in part from a document presented by me for another qualification at this or another Institution.  I understand the nature of plagiarism to include the reproduction of someone else’s words, ideas or findings and presenting them as my own without proper acknowledgement. Further, I understand that there are many forms of plagiarism which include direct copying or paraphrasing from someone else’s published work (either electronic or hard copy) without acknowledging the source; using facts, information and ideas from a source without acknowledgement; producing assignments (required to be independent) in collaboration with and/or using the work of other people; and assisting another person to commit an act of plagiarism.  I understand that the work submitted may be reproduced and/or communicated by the institution or a third party authorised by the institution for the purpose of detecting plagiarism.  I understand that Sunraysia Institute of TAFE is required to retain evidence of all completed student assessment items for a period of 3 years for auditing purposes, after which time evidence will be securely destroyed. | | | | | |
| **Student Signature:** |  | | | **Date of Submission:** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessor Report** | | | |
| **Feedback:** | | | |
| **Assessment Outcome** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required? Yes  No | |
| **Resubmission** | Competency development strategies have been discussed with student? | | |
| Agreed due date for resubmission: | | |
| **Assessor Name** |  | | |
| **Assessor Signature** |  | | **Date:** |

**Assessment Task 3: Implementation and troubleshooting**

|  |  |
| --- | --- |
| **Assessment Instructions** | Students are required to complete the following practical tasks on installation and troubleshooting for enterprise routers and switches in accordance with workplace requirements and standards. This assessment has two parts:  **Part I- Configure routing, switching, and access controls**  **Part II – Diagnose and rectify networking issues**  This task can be conducted on and off campus.  Students are to upload submissions in a PDF document to the relevant drop box on SuniCONNECT.  Students must complete all tasks to a satisfactory level to receive a satisfactory result. |
| **Duration of Assessment** | 4 hours |
| **Required Knowledge** | To complete the unit requirements safely and effectively, the individual must: identify and describe switches and their operation describe the installation requirements of switches, including: debug commands routing between virtual local area networks (VLANs) spanning tree protocol (STP) switch calling line identification (CLI) commands switch security, including: port deactivation port security secure shell (SSH) advanced switching technologies common network switching issues identify and describe the different types of network and related equipment outline the types of documentation required when installing switches. |
| **Resources Required for this Assessment:** | Standard computer classroom. Server with VMware hypervisor or equivalent. Enterprise routers and switches or simulators. Organisational policies and procedures for networking services. Networking design template. |
| **Supplied by SuniTAFE/workplace** | As above |

The student must refer to the XYZ case study. Some documents are provided as links to external resources. If the any links is broken, the student should inform the assessor immediately. The student is required to prepare their own installation notes and steps independently based on the procedures and manuals.

**Scenario:**

You have been approached by your workplace supervisor and asked to contribute to a networking project as outlined in the job brief.

You are required to implement the installation and troubleshooting for enterprise routers and switches in accordance with workplace requirements and standards.

Student please note: before conducting part II, you must use a switch and a router that are pre-configured by the assessor with faults for you to identify and fix.

Trainees may conduct this assessment in their actual workplace then the student and supervisor need to refer to their organisations policies.

|  |  |  |  |
| --- | --- | --- | --- |
| **Observation Checklist** | | | |
| **ICTTEN419 - Implement and troubleshoot enterprise routers and switches. Assessment task 3.** | | | |
| **Student Name** | [Type your name] | **Student ID** | [Your ID number] |
| **Student Instructions** | Observations will be recorded in the student’s observation worksheet as **S** if the skills have been performed to a satisfactory level or **NS** if the skills have not been performed satisfactorily.  **Student’s responses must be in line with the case study provided. The assessor is to apply their professional judgement.**  For part II, the assessor will provide one of the switches and routers for the student to use and create two configuration errors:   * on at least one switch add an issue that causes trunking mismatch * on at least one router add an issue that might cause routing advertisement issues   The assessor must observe the student and complete the observation checklist located within the students’ assessment guide (SAG).  At the conclusion of the observation the student must submit the completed observation checklist to SuniConnect with their name and student ID. The assessor must provide student with feedback on the checklist.  The assessment outcomes can only be completed by the assessor. | | |
| **Description** | The network technician implements installation and troubleshooting for enterprise routers and switches in accordance with workplace requirements and standards.  The technician must work with the “supervisor” and perform all tasks listed in the first column of the checklist. | | |

|  |  |  |
| --- | --- | --- |
| **Tasks and/or Oral Questions** | **1** | **Comments** |
| **Part I- Configure routing, switching, and access controls** | | |
| 1. Configure network devices according to the network design produced and adhering to industry standards as required by the organisation. | ​​☐​ S  ​​☐​ NS |  |
| 1. Use hierarchical addressing over virtual local area networks (VLANs), based on job description and XYZ’s procedure. Provide screenshots with descriptions | ​​☐​ S  ​​☐​ NS |  |
| 1. Activate and verify wide area network (WAN) links provide network connectivity | ​​☐​ S  ​​☐​ NS |  |
| 1. Configure network services and enable network applications to complete network connectivity process for users | ​​☐​ S  ​​☐​ NS |  |
| 1. Set up traffic access control lists according to enterprise procedures | ​​☐​ S  ​​☐​ NS |  |
| **Part II – Diagnose and rectify networking issues (inform the assessor before moving forward)** | | |
| 1. Test the performance of the router and switch and identify any performance issues of the devices or their components with testing and analysis tools. | ​​☐​ S  ​​☐​ NS |  |
| 1. Check the cause and fix LAN issues. | ​​☐​ S  ​​☐​ NS |  |
| 1. Check the cause and fix internet connectivity issues. | ​​☐​ S  ​​☐​ NS |  |
| 1. Restore work-site to safe condition as per established safety procedures | ​​☐​ S  ​​☐​ NS |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessor Report** | | | |
|  | | | |
| **Assessment Outcome:** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required?Yes  No | |
| **Resubmission:** | Competency development strategies discussed with student? | | |
| Agreed due date for resubmission: / / | | |
| **Assessor Name:** |  | | |
| **Assessor Signature:** |  | | **Date:**  / / |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment Task Submission Statement** | | | | | |
| **Student Name** | [Type your name] | | **Student ID** | | [Your ID number] |
| **Assessment Task** | **3 -** Implementation and troubleshooting | | | | |
| First submission | | Subsequent submission | | | |
| **Student Declaration:**  I certify that the attached assessment is my original work. No other person’s work has been used without due acknowledgment in the text of the document.  Except where reference is made in the text, this document contains no material presented elsewhere or extracted in whole or in part from a document presented by me for another qualification at this or another Institution.  I understand the nature of plagiarism to include the reproduction of someone else’s words, ideas or findings and presenting them as my own without proper acknowledgement. Further, I understand that there are many forms of plagiarism which include direct copying or paraphrasing from someone else’s published work (either electronic or hard copy) without acknowledging the source; using facts, information and ideas from a source without acknowledgement; producing assignments (required to be independent) in collaboration with and/or using the work of other people; and assisting another person to commit an act of plagiarism.  I understand that the work submitted may be reproduced and/or communicated by the institution or a third party authorised by the institution for the purpose of detecting plagiarism.  I understand that Sunraysia Institute of TAFE is required to retain evidence of all completed student assessment items for a period of 3 years for auditing purposes, after which time evidence will be securely destroyed. | | | | | |
| **Student Signature:** |  | | | **Date of Submission:** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessor Report** | | | |
| **Feedback:** | | | |
| **Assessment Outcome** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required? Yes  No | |
| **Resubmission** | Competency development strategies have been discussed with student? | | |
| Agreed due date for resubmission: | | |
| **Assessor Name** |  | | |
| **Assessor Signature** |  | | **Date:** |

**Assessment Task 4: Network Documentation**

|  |  |
| --- | --- |
| **Assessment Instructions:** | Students are required to complete the listed tasks on documenting an enterprise networking project, in specific detail, as outlined in instructions.  This task can be conducted on and off campus.  Students are to upload submissions in a PDF document to the relevant drop box on SuniCONNECT.  Students must complete all tasks to a satisfactory level to receive a satisfactory result. |
| **Duration of the Assessment:** | 3 hours |
| **Required Knowledge** | To complete the unit requirements safely and effectively, the individual must:  identify and describe switches and their operation  describe the installation requirements of switches, including:  debug commands  routing between virtual local area networks (VLANs)  spanning tree protocol (STP)  switch calling line identification (CLI) commands  switch security, including:  port deactivation  port security  secure shell (SSH)  advanced switching technologies  common network switching issues  identify and describe the different types of network and related equipment  outline the types of documentation required when installing switches. |
| **Resources Required for this Assessment:** | Standard computer classroom. Server with VMware hypervisor or equivalent. Enterprise routers and switches or simulators. Organisational policies and procedures for networking services. Networking design document. |
| **Resources Supplied by the Institute for this Assessment:** | As above |

**Templates have been provided for Tasks 1 and 2.**

1. Document the configuration of the task according to enterprise procedures. You must complete the table below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Tasks** | **Configuration location (tick where you have configured)** | **Configuration Item** | **Setting and or Parameters (screenshots or commands)** | **Testing (description or commands)** |
| **Device initial configuration** | Routers,  switches  servers |  | Admin password: |  |
| **Hierarchical IP address schema** | Routers,  switches  servers |  | DHCP scope: |  |
| **VLANs and VLAN membership** | Routers,  switches  servers |  | Interface: |  |
| **Access control lists** | Router  switches |  | Source and destination addresses and port: |  |
| **Network services.** | Servers  Router access lists |  | Web server address: |  |

Satisfactory  Not Satisfactory

1. **Document troubleshooting records for the three issues that you solved in AT3 Part II, list the following information: Potential causes, Diagnostic tools, Rectification Solutions, and results.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Issues** | **Possible fault** | **Diagnostic tools or utilities** | **Remediation action** | **Results** |
| **Performance** |  |  |  |  |
| **LAN** |  |  |  |  |
| **Internet** |  |  |  |  |

Satisfactory  Not Satisfactory

1. **Summarise the installation and troubleshooting that you completed in AT3. This must be done in a business email to your supervisor (the assessor) to notify them that you have completed the job. You must use appropriate job title and industry-related terminology. Provide a screenshot of your email.**

Satisfactory  Not Satisfactory

1. **Store information that you produced in task 1,2, and 3 as three separate files to OneDrive with the naming convention defined by XYZ. Provide your screenshots**:

Satisfactory  Not Satisfactory

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Assessment Task Submission Statement** | | | | | |
| **Student Name** | [Type your name] | | **Student ID** | | [Your ID number] |
| **Assessment Task** | **4 –** Implementation and troubleshooting | | | | |
| First submission | | Subsequent submission | | | |
| **Student Declaration:**  I certify that the attached assessment is my original work. No other person’s work has been used without due acknowledgment in the text of the document.  Except where reference is made in the text, this document contains no material presented elsewhere or extracted in whole or in part from a document presented by me for another qualification at this or another Institution.  I understand the nature of plagiarism to include the reproduction of someone else’s words, ideas or findings and presenting them as my own without proper acknowledgement. Further, I understand that there are many forms of plagiarism which include direct copying or paraphrasing from someone else’s published work (either electronic or hard copy) without acknowledging the source; using facts, information and ideas from a source without acknowledgement; producing assignments (required to be independent) in collaboration with and/or using the work of other people; and assisting another person to commit an act of plagiarism.  I understand that the work submitted may be reproduced and/or communicated by the institution or a third party authorised by the institution for the purpose of detecting plagiarism.  I understand that Sunraysia Institute of TAFE is required to retain evidence of all completed student assessment items for a period of 3 years for auditing purposes, after which time evidence will be securely destroyed. | | | | | |
| **Student Signature:** |  | | | **Date of Submission:** | |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assessor Report** | | | |
| **Feedback:** | | | |
| **Assessment Outcome** | **SATISFACTORY** | | |
| **NOT SATISFACTORY** | Is resubmission required? Yes  No | |
| **Resubmission** | Competency development strategies have been discussed with student? | | |
| Agreed due date for resubmission: | | |
| **Assessor Name** |  | | |
| **Assessor Signature** |  | | **Date:** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assessment Summary Report** | | | | |
| The Assessment Summary Report is to be completed and signed by the assessor after the completion of all assessments. If competency is not achieved by the student in the first instance, strategies to address competency requirements should be identified and a time for reassessment arranged. | | | | |
| **Student Name** | [Type your name] | | | |
| **Student ID** | [Your ID number] | | | |
| **Unit Code & Title** | ICTTEN419 Implement and troubleshoot enterprise routers and switches | | | |
| **Course Code & Title** | Certificate IV in Information Technology | | | |
| **Assessment Tasks** | Assessment Task 1 | Satisfactory | | Not Satisfactory |
| Assessment Task 2 | Satisfactory | | Not Satisfactory |
| Assessment Task 3 | Satisfactory | | Not Satisfactory |
| Assessment Task 4  Satisfactory  Not Satisfactory | | | |  | Not Satisfactory |
| **Assessor Feedback** |  | | | |
| **Assessment Result for this Unit of Competency** | **Student is deemed COMPETENT** | | | |
| **Student is deemed NOT YET COMPETENT** | | | |
| **Assessor Name** |  | | | |
| **Assessor Signature** |  | | **Date:** | |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ADMIN. USE ONLY** | | | | | |
| ***Foundation Skills courses only* – Student’s post assessment ACSF summary** | | | | | |
| ***Core Skills Level:*** | ***Learning:*** | ***Reading:*** | ***Writing:*** | ***Oral Communication:*** | ***Numeracy:*** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **AUDIT** | **EASD** | **SMS ENTRY** | **STUDENT EVIDENCE** | **VERIFIED** |
| < 30 Days  1 within first month of training  > 30 Days  1 type of EOP in first month of training  1 type of EOP in last month of training | Assessment Summary Report  Attendance  Student Work  Assessment Documentation  Other | Final Result  Effective date (assessed date) | Evidence & ASR scanned | Signed:  Date: |
| Signed:  Date: |
| **Notes:** | | | | |

**Call:** 1300 478 648 **Visit:** sunitafe.edu.au



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