

**DEPARTMENT OF INFORMATION TECHNOLOGY**

ICT50120 Diploma of Information Technology

Assessment

**ICTNWK562 Configure Internet Gateways**

Assessment Task 1

2022

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**Course:** ICT50220 Diploma of Information Technology

**Unit of competency:** ICTNWK562 Configure Internet Gateways



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Assessment Task 1: Short Answer Questions

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| Course code and name | ICT50220 Diploma of Information Technology |
| Unit code and name | ICTNWK562 Configure Internet Gateways |
| Due date | ….. / ….. / ……Week 1 (Students have 1 week to complete this task) |
| Resources required | * Learner resource ICTNWK562 * Access to computer and internet |
| Decision making rules | All questions must be answered satisfactorily to achieve a satisfactory result for this task. |
| Instructions | **Common Instructions**   * This assessment will be conducted using written question method. * It is to be completed in your own time. * You have one week to complete this task. * All questions must be answered. * Sufficient time is provided in class for you to read and review the assessment task and seek clarification on key points prior to undertaking the assessment task. * At this time if you require reasonable adjustments discuss it with the assessor. It is important to ensure the integrity of the assessment is maintained and the intent is not compromised (e.g. extension of time, oral questions and answers etc.). * You must complete the answers electronically and save it as Assessment Task 1 Short Answer Questions Student ID.docx (where Student ID is your student number i.e. s1234567). * Please include Full Name and Student ID in the footer of the answer document. * Submit the saved file in the Assessment Task 1 folder Melbourne Polytechnic Learning Management System. * You must agree (via an ‘I confirm’ radio button) with the assessment submission terms and condition in Melbourne Polytechnic LMS prior to the submission. |

## Questions & Answers

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| 1 | Describe the following key security threats to ISP networks, including data interception, data corruption, data falsification. | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Data Interception [15-30 words] |  |  |
| Data interception refers to the obstruction of data transmission between devices and the remote alteration of messages. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Data Corruption [15-30 words] |  |  |
| Data corruption refers to data errors that may occur when reading, writing, processing, storing or transmitting said data, which may cause unexpected/unwanted changes to the original data. Some malware (such as viruses, worms or Trojans) may intentionally cause data corruption. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | Data Falsification [15-30 words] |  |  |
| Web page tampering is a hacker technique that uses Trojans and other virus programs to tamper with the content of web pages. It has the characteristics of fast transmission speed, easy copying, difficult to eliminate the impact afterwards, and difficult to prevent in real time. | | | |

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| 2 | Research and explain Domain Name Server (DNS). [40-60 words] | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Domain Name Server [40-60 words] |  |  |
| DNS (Domain Name System) acts as the phone book of the Internet - it is a system that assigns user-friendly domain names to unique IP addresses. It converts countless data into human-readable words and phrases, resulting in clear and accurate search results. In fact, every time you visit a website, your browser performs a DNS lookup. Complex pages may require multiple DNS lookups before they start loading, and your computer may perform hundreds of lookups per day. | | | |

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| 3 | Outline the features and functions of the following:   1. Network architecture 2. Bridges 3. Logical gateways and desktop operating systems 4. Hubs 5. Network gateways and operating systems 6. Routers 7. Switches 8. Node connection 9. Firewalls 10. Prerequisites and technical requirements | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1. | Network architecture [30-50 words] |  |  |
| Network architecture is a network structure for communication connections. Network architecture is a blueprint that provides an architectural and technical foundation for designing, building and managing a communication network. Network architecture defines every aspect of a data network communication system, including but not limited to the types of interfaces used by users, the network protocols used, and the types of network cabling that may be used. Network architecture typically has a layered structure. Layering is a modern network design principle that divides communication tasks into many smaller parts, each of which performs a specific subtask and combines with other parts in a small number of well-defined ways. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2. | Bridges [30-50 words] |  |  |
| A network bridge connects two separate computer networks, allowing them to communicate with each other and increase the overall network range. They are commonly used to connect LANs, but WiFi networks and WiFi and LAN networks can also be bridged together. Two bridged networks can communicate with each other and they act as one network. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | Logical gateways and desktop operating systems [30-50 words] |  |  |
| Users use personal computers through a desktop operating system. The operating system acts as a link between computer applications and hardware. It simplifies the management of computer hardware and software. Basic functions include task scheduling, peripheral device control, printing, input/output, and memory allocation. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 4 | Hubs[30-50 words] |  |  |
| The main function of the hub is to regenerate, shape and amplify the received signal to expand the transmission distance of the network, and at the same time concentrate all nodes on the node centered on it. It works at the first layer of the OSI (Open System Interconnection Reference Model) reference model, namely the "physical layer". Like the transmission media such as network cards and network cables, the hub is a basic device in the local area network, and adopts the CSMA/CD (i.e., carrier sense multiple access technology with collision detection) media access control mechanism. Each interface of the hub simply sends and receives bits, forwarding 1 when receiving 1 and forwarding 0 when receiving 0, without collision detection. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 5 | Network gateways and operating systems[30-50 words] |  |  |
| Gateway is also called network connector or protocol converter. Gateway realizes network interconnection above the network layer. It is a complex network interconnection device and is only used for interconnection between two networks with different high-level protocols. Gateway can be used for wide area network interconnection as well as local area network interconnection. Gateway is a computer system or device that performs the important task of conversion. It is used between two systems with different communication protocols, data formats or languages, or even completely different architectures. The gateway is a translator. Unlike a bridge that simply transmits information, the gateway repackages the received information to meet the needs of the destination system. Same layer - application layer. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 6 | Routers[30-50 words] |  |  |
| Routers receive and send data on a computer network. Routers are sometimes confused with network hubs, modems, or network switches. However, routers can combine the functions of these components and connect with these devices to improve Internet access or help create business networks. Routers direct and route network data using packets that contain a variety of data such as files, communications, and simple transfers such as network interactions. Packets have several layers or parts, one of which carries identifying information such as the sender, data type, size, and most importantly, the destination IP (Internet Protocol) address. Routers read this layer, prioritize the data, and choose the best route for each transmission. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 7 | Switches[30-50 words] |  |  |
| A network switch is a physical device that operates at the Data Link Layer (Layer 2) of the Open Systems Interconnection (OSI) model. It receives packets sent by devices connected to its physical ports and forwards them to the device the packets are destined for. Switches can also operate at the Network Layer (Layer 3) where routing occurs.  Switches are a common component of networks based on Ethernet, Fibre Channel, Asynchronous Transfer Mode (ATM), and InfiniBand, among others. However, most switches today use Ethernet. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 8 | Node connection[30-50 words] |  |  |
| A node is any physical device that is connected to a network and is capable of sending, receiving, or forwarding information. Examples include personal computers, workstations, servers, switches, routers, hubs, game consoles, etc. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 9 | Firewalls [30-50 words] | □ | □ |
| A firewall is a method of separating an intranet from a public access network (such as the Internet). It is actually an applied security technology and isolation technology based on modern communication network technology and information security technology. It is increasingly used in the interconnection environment between private networks and public networks, especially in access to the Internet. | | | |
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| 10 | Prerequisites and technical requirements [30-50 words] | □ | □ |
| Prerequisites and technical requirements, also known as technical specifications or specifications, refer to implemented solutions that professionals use to solve technical problems and issues involving software. Setting clear technical requirements is an important step in the software and system development process. Understanding technical requirements gives you a fundamental understanding of how they work in the software development industry. | | | |

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| 4 | Describe industry-recognised internet gateways and installation methods. [80-100 words] | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Industry-recognised internet gateways [40-50 words] |  |  |
| 1. DNSFilter   DNSFilter provides users with enterprise-grade protection and content filtering. Protect organizations from costly cyber attacks.   1. Forcepoint Web Security   Forcepoint Web Security allows you to configure one or more filtering locations to fail over to a hybrid service. This ensures that users can access the Internet and are always filtered when other proxies are unavailable. | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Installation methods [40-50 words] |  |  |
| 1. **Installation Method for Software Gateway:**  * Download the standard gateway. * In the gateway installer, keep the default installation path, accept the terms of use, and select "Install." * Enter the email address of your Office 365 organization account and choose "Sign In." * Select "Register a new gateway on this computer" and click "Next." * Enter the name of the gateway and the recovery key, then select "Configure." * Review the information in the final window and select "Close.” The hardware gateway should be installed according to the manufacturer's installation manual. | | | |

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| 5 | Describe functions and features of security plans. [30-50 words] | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Functions and features of security plans [30-50 words] |  |  |
| A system security plan is a formal document that outlines the security requirements for an information system or information security program and describes the security controls established or planned to meet those requirements. | | | |

## Student Declaration

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| Please read, tick and sign below | | | |
| * I declare that the attached assessment I have submitted is my own original work and any contributions from and references to other authors are clearly acknowledged and noted. * This document has been created for the purpose of this assessment only and has not been submitted as another form of assessment at Melbourne Polytechnic or any other tertiary institute. * I have retained a copy of this work for my reference in the event that this application is lost or damaged. * I give permission for Melbourne Polytechnic to keep, make copies of and communicate my work for the purpose of investigating plagiarism and/or review by internal and external assessors. * I understand that plagiarism is the act of using another person’s idea or work and presenting it as my own. This is a serious offence and I will accept that penalties will be imposed on me should I breach Melbourne Polytechnic’s plagiarism policy. | | | |
| Student Signature | WangYiZhuo | Date | 9\_8\_2024 |
| Please note that your assignment will not be accepted unless you have:   * Completed all sections of the assignment * Acknowledged all sources of other people’s contributions including references and Students’ names for group work assessments * Completed all areas of this Student assignment cover sheet. | | | |