Assessment Task 3: Short Answer Questions

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| Course code and name | ICT50120 Diploma of Information Technology |
| Unit code and name | ICTNWK562 Configure Internet Gateways |
| Due date | ….. / ….. / ……Week 3 (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 4 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 4 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** | **List 2 methods to conduct ISP network security and speed tests. [50 -60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | 2 methods to conduct ISP network security and speed tests  关于网络安全，可以5选2，  1.使用任务管理器（Windows自带的工具）来检测流氓软件  2. 使用Netstat（Windows内置的一种网络测试工具），通过Netstat来查看本地TCP等协议使用情况以及各个端口的使用情况  3.通过Nessus Professional 漏洞扫描软件进行扫描  4.通过OpenVAS漏洞扫描器进行扫描  5.通过Tripwire IP360扫描软件帮忙扫描漏洞  关于测速，可以6选2，网站和APP选着写或者自己找。  1.采用测速网站测速，如测速网：<https://plugin.speedtest.cn/#/>  2. 使用测速网站测速，如中国科学技术大学测速网站http://test.ustc.edu.cn/  3.采用APP软件测速，如“一键测速.APP”  4.采用APP软件测速，如“花瓣测速.APP”  5.采用APP软件测速，如“网络测速大师.APP”  6.采用APP软件测速，如“精准测速.APP” |  |  |
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| **2** | **What are the functions and features of security practices for ISP network protection? [50–60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Functions and features of security practices for ISP network protection |  |  |
| 3选2，尽量自己修改下。  1、中国电信采用主动防御和被动防御相结合，建立安全、可靠的IT网络减少由于入侵、非法访问、病毒入侵、网络故障等引起的损失，为企业发展建立一个良好的环境。2、中国电信使用多重措施，对本地网络信息读写等操作进行保护，避免出现病毒和非法存取、拒绝服务和网络资源被非法占用等威胁，保障网络安装可靠。3、中国电信拥有成熟的技术，安全稳定可靠。 | | | |

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| **3** | **What are the troubleshooting procedures for logical gateway and network router connection? [80–100 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Troubleshooting procedures for logical gateway and network router connection |  |  |
| 答案可以6选3-5个。尽量不与别人重复。尽量自己修改下。  1、排查电源模块故障：查看LED指示灯，硬件设备都有POWER或者PWR，如指示灯亮着，表示电源模块正常。  2、排查硬件故障，可以查看日志排查：路由器在启动时能够检测到硬件存在故障，会在系统的启动日志中会记录下来以便后查。  3、查看是否系统丢失，IOS是路由器的一切配置运行的基础一一操作系统。它保存在FLASH中，有时因操作失误、突然断电等原因，致使FLASH中的IOS丢失，导致路由器无法正常启动。  4、检测是否系统受到网络攻击；如DOS攻击等，导致路由器瘫痪。  5、检测是否系统有缺陷，如IOS版本较低或者配置文档丢失，有缺陷，由于没有及时更新，导致受到攻击后路由器瘫痪  6、工程师配置网络时，出现出人意料的错误，导致网络在运行到一定情况时出现瘫痪。 | | | |

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| **4** | **What are the key security maintenance procedures, including ethical hacking? [50–100 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Key security maintenance procedures |  |  |
| 答案可以答案1中选择1个，2中选择1个，加上3，也可以不要3.尽量换自己的话说，灵活起来。也可以不要2等的。尽量不与别人重复。  1、做好物理安全非常重要，这可能需要工程师做好机房、网络设备等物理方面的安全管理；  1、网络实体安全:如计算机的物理条件、物理环境及设施的安全标准,计算机硬件、附属设备及网络传输线路的安装及配置等  1、定时做安全检测非常重要，这可以让维护我们的网络处于健康状态，此时可以做如系统补丁、安全查杀等。  2、当然，可以配置防火墙，做好安全防范的第一步。  2、当然，也可以设置白名单，加强访问过滤  3、部署安全措施，安装杀毒软件、监控程序、防篡改程序,关闭服务上可能带来威胁的端口 | | | |

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| **5** | **What are the organisational policies and procedures and legislative requirements relating to work tasks in China? [50–100 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Organisational policies and procedures and legislative requirements relating to work tasks in China |  |  |
| 答案可以6选3-5个。尽量不与别人重复。  1、为了保障网络安全，维护网络空间主权和国家安全、社会公共利益，保护公民、法人和其他组织的合法权益，促进经济社会信息化健康发展，制定本法。  2、国家制定并不断完善网络安全战略，明确保障网络安全的基本要求和主要目标，提出重点领域的网络安全政策、工作任务和措施。  3、国家采取措施，监测、防御、处置来源于中华人民共和国境内外的网络安全风险和威胁，保护关键信息基础设施免受攻击、侵入、干扰和破坏，依法惩治网络违法犯罪活动，维护网络空间安全和秩序。  4、网络运营者开展经营和服务活动，必须遵守法律、行政法规，尊重社会公德，遵守商业道德，诚实信用，履行网络安全保护义务，接受政府和社会的监督，承担社会责任。  5、建设、运营网络或者通过网络提供服务，应当依照法律、行政法规的规定和国家标准的强制性要求，采取技术措施和其他必要措施，保障网络安全、稳定运行，有效应对网络安全事件，防范网络违法犯罪活动，维护网络数据的完整性、保密性和可用性。  6、网络相关行业组织按照章程，加强行业自律，制定网络安全行为规范，指导会员加强网络安全保护，提高网络安全保护水平，促进行业健康发展。 | | | |

## 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 | X | Date |  |
| Please note that your assignment will not be accepted unless you have:   * Completed all sections of the assignment * Acknowledged all sources of other people’s contributions including references and Students’ names for group work assessments * Completed all areas of this Student assignment cover sheet. | | | |

## Marking Guide

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| Trainer/Assessor to complete the following: | | Yes | No |
| The learner has correctly explained LAN, MAN and WAN. | |  |  |
| The learner has known the difference between internet and intranet. | |  |  |
| The learner has known the circumstances that may be necessary to open a specific port on the Internet Gateway. | |  |  |
| The learner has known the three main causes of error in the internet gateway and the first step in locating and resolving most of these problems. | |  |  |
| The learner has correctly answered the minimum Internet Protocol (IP) parameters that any node will need to have configured. | |  |  |
| The learner has described two methods to assign IP addresses to nodes. | |  |  |
| The learner has correctly written two commands to test the network connectivity. | |  |  |
| Comments and feedback | | | |
|  | | | |
| result | | | |
| ☐ Satisfactory  ☐ Not Satisfactory (resubmission required) – Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| Date Assessment Returned |  | | |
| Trainer/assessor Name |  | | |
| Trainer/Assessor signature | X | | |

Assessment Task 4: Project

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| Course code and name | ICT50120 Diploma of Information Technology |
| Unit code and name | ICTNWK562 Configure Internet Gateways |
| Due date | ….. / ….. / …… (See on Moodle) |
| Resources required | * Ruijie Network Device Simulator RGOSV1.0 To Examination * VMware Workstation Pro * SecureCRT * Speed Test Manager * Acunetix * RG Network Equipment Technical Documentations * Access to computer and internet |
| Decision making rules | To achieve an overall satisfactory result for this assessment task:   * All questions must be answered satisfactorily * Learners must achieve a satisfactory result for each item in the Assessment Checklist. |
| Learner Instructions | This is a scenario based lab project assessment composed of practical tasks and written questions. There are 4 parts to this task:   * Part 1: Identify client requirements and network equipment * Part 2: Security Features and Security Plan * Part 3: Install and Configure a Gateway * Part 4: Configure and Test Nodes   For this task you will:   * Complete it individually. * Write answers to all questions * Complete it in class at a time determined by your assessor. * Have time to read and review the assessment task in class. * You must submit your assessment electronically via Moodle and use the following naming convention: “Student ID\_Student Name\_ Assessment Task 4: Lab Project - Configure an internet gateway”   **Example**:  “s123456\_Sathish\_ Assessment Task 4: Configure an internet gateway.pkt”  “s123456\_Sathish\_ Assessment Task 4: Configure an internet gateway.docx”   * You must agree (by clicking on the ‘I confirm radio button) with the assessment submission terms and conditions in Melbourne Polytechnic Moodle prior to the submission |

## Scenario

ABC is a start-up consulting company that has two departments in different floors. Each of the department has 20 employees. In order to conduct business well, an internal web server is needed to provide services to the employees and customers. It is required that all the employees can have access to the internet in the company. The bandwidth of the company's internal LAN is required to reach 1Gbps and the bandwidth of the internet is required to reach 10Mbps.

#### Your Role

You work as a network engineer for ABC company and you have been given the task to design and build a safe, reliable, scalable and efficient network for the company.

Part 1– Prepare to configure internet gateways

**Step 1:** Confirm work brief and tasks according to organisational policies and procedures.

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| **1** | **What is your work brief and tasks according to the above scenario with reference to ABC Company’s Network Engineering Project Management Policies and Procedures? [40-60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | work brief and tasks [40-60 words] |  |  |
| 大概描述下，自己多写写，也可以删减，尽量不要复制黏贴。  1、本项目采用的网络结构，  2、规划网络拓扑并实现网络互联  3、研究所需的软硬件清单，  4、规划安全措施，  5、选择合适的运营商，  6、进行网络搭建，并进行测试 | | | |

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| **2** | **How will you conduct your work and tasks? Describe the work procedures. [40-60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | work procedures[40-60 words] |  |  |
| 3选1，自己多写写，也可以删减，尽量不要复制黏贴。  1、寻找伙伴，先研究网络结构与拓扑，分配团队工作内容，查找相关资料，购买相关材料和设备，搭建网络，测试网络；  2、与伙伴一起完成本项目工作。先到项目实地考察，再研究网络的设计和实施，如研究采用的网络结构，并规划网络拓扑，配置相关网络设备，完成网络安全等相关工作；  3、与伙伴一起设计、研究本项目工作，先查找相关资料，研究合适的运营商，规划本项目网络拓扑等，搭建网络，布置安全措施，进行测试。 | | | |

You need to identify the client's requirements and fill in the following section according to the above scenario and confirm that with your ABC manager. The key points to be confirmed are as follows:

* Advanced network structure is adopted to meet the needs of information transmission, storage and processing.
* Appropriate security measures are taken for the network.
* Proper network topology is planned and adopted.
* Network interconnection testing requirements should be satisfied.
* Other requirements should be considered and confirmed.

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| **Validation Checklist** | |
| **Project** | **Network Design and Implementation for ABC Company** |
| **Network Topology Type** | 答案：**树状网络** |
| **Security Measures** | 4选3填写  1、采用防火墙确保网络安全，  2、通过IP规划技术使得内部访问安全可靠  3、VLAN划分可以有效控制其他网络的划分  4、IP访问限制是限制外部网络某些网段的访问（也就是黑名单） |
| **Network Topology Planning** | e85f30f27f0f0d632006e6f57764c77 |
| **Any Other Requirements** |  |
| **Start Date** | 工程开始日期：**2023年1月X日** |
| **Due Date** | 工程结束日期：**2023年2月X+随机日** |
| **Project Manager** | 自己名字 |
| **ABC Manger (signature)** | 导师名字 |

**Step 2:** Assess system architecture according to work brief.

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| **3** | **Assess the system architecture that you’ve confirmed with your client from the aspects of network security, speed and functions. [45-90 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Network security [15-30 words]  4选2：本项目采用3层的树状结构设计网络。  1、在三层体系结构中，客户端只能通过Web Server而不能直接访问数据库，这大大提高了系统的安全性。  2、本项目采用了防火墙进行屏蔽，使得系统拥有更高的安全性。  3、在3层结构中，不同的VLAN的数据通信需要经过第三层，使得第三层具有数据检验和隔离的作用。  4、3层树状网络拥有健壮、可扩展性等特点，使得网络更全面更安全。 |  |  |
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|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Network speed [15-30 words]  大体这个方向：三层网络构架层次清晰，可以有效控制网络的规模，高速传输数据，有效减少广播泛滥等问题，提高网络传输速率。 | □ | □ |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | Network functions [15-30 words]  2选1大体这个方向：  1、三层网络构架，使得层次清晰，网络的优化效果明显，具备良好的扩展性，可以根据项目企业扩张而新增网络、扩展设备，可以有效控制、扩展网络的规模，也可以根据业务需要划分VLAN。  2、构建三层网络，可以较好实现各个PC接入，实现网络互联功能，也可以根据实际情况扩展网络规模，增加安全措施。 | □ | □ |
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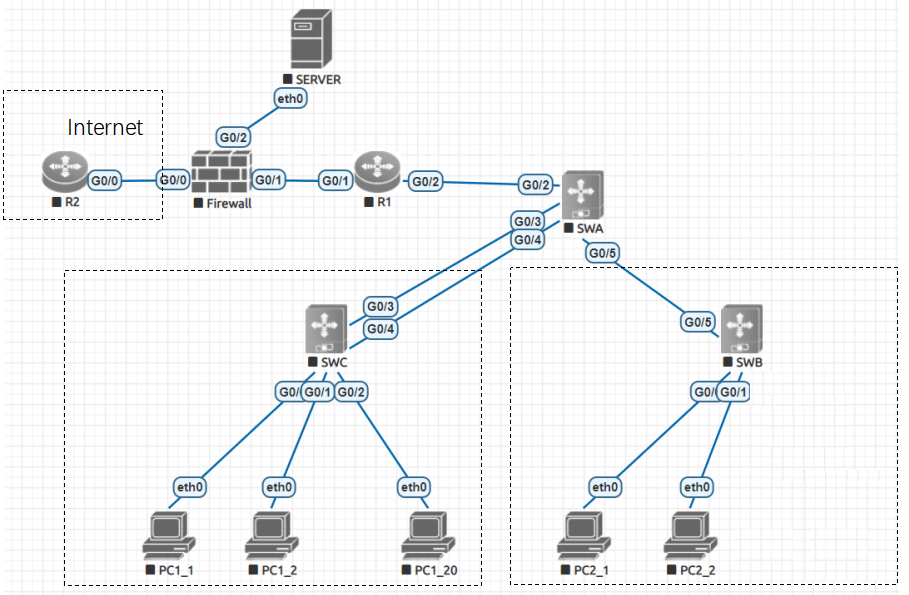
**Step 3:** Select and source required configuration hardware, software and tools.

The hardware and software components that are required for building ABC network are listed as following:

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| **Hardware Components** | | |
| **Equipment** | **Type** | **Quantity** |
| **Router** | **RG-RSR20-X SERIES** | **1** |
| **Switch (Layer 3)** | **RG-S5750-28GT4XS-H** | **1** |
| **Switch (Layer 2)** | **RG-S2910-24GT4XS-E** | **2** |
| **Gateway** | **RG-EG2000F** | **1** |
| **FIREWALL** | **RG-WALL 1600-S3100** | **1** |
| **SERVER** | **UDS-Serv 4000G20** | **1** |

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| **Software Components** | | |
| **Name** | **Version** | **Quantity** |
| **Vmware Workstation Pro** | **Vmware Workstation Pro 16** | **1** |
| **SecureCRT** | **SecureCRT.8.5.4** | **1** |
| **Ruijie Network Device Simulator** | **RGOSV 1.0 To Examination** | **1** |
| **Speed Test Manager** | **V3.1.0** | **1** |
| **Acunetix** | **V12** | **1** |

You need to install the software components and use Ruijie Network Device Simulator to build a simulated network according to the following topology diagram and indicate the type of each device in the topology, then install the hardware components according to the simulated network. For simplicity, only 5 PCs are required to be connected and configured in the simulated network.



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| **4** | **Install the software component and build a simulated network according to the above topology and indicate the type of each device in the topology. Paste the screenshot in the following.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Screenshot of the simulated network with the indication of each device type |  |  |
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**Step 4:** Verify equipment specifications and confirm component serviceability.

You need to verify the availability and reliability of the above equipment and provide the following screenshots:

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| **The availability and reliability of the equipment** | | |
| **Euipment** | **Screenshots of equipment startup** | **Screenshots of equipment self-checking** |
| **Switch (Layer 3)** |  |  |
| **Switch (Layer 2)** |  |  |
| **Gateway（R1）** |  |  |
| **Firewall** |  |  |
| **Server** |  |  |

Part 2– Determine security requirements

**Step 1:** Analyse existing ISP security features.

China Telecom, as one of the biggest ISP in China, provide the internet services for ABC company. You need to analyse the security features of China Telecom and assess its ability to prevent data interception, data corruption and data falsification.

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| 1 | **Analyse security features of China Telecom and assess its ability to prevent data interception, data corruption and data falsification. [60–100 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Security features of China Telecom [30–50 words]  *4选1，灵活写。*  1、中国电信拥有全方位的安全保障体系，网络安全稳定可靠可信。  2、中国电信多重措施，对本地网络信息读写等操作进行保护，避免出现病毒和非法存取、拒绝服务和网络资源被非法占用等威胁，保障网络安装可靠。  3、中国电信拥有成熟的技术可保障稳定的上网需求。  4、中国电信宽带网络覆盖全国，是全国最先进的宽带互联网公司，用户上网稳定安全可靠。 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Assess China Telecom’s ability to prevent data interception, data corruption and data falsification [30–50 words]  *2选1*   1. 中国电信构建了 “云、网、端、边、用”一体化、全方位的安全保障体系，筑牢安全可信的“安全堤坝”，因此具有较强的防止数据截取、数据损坏和数据伪造的能力   2、中国电信充分利用运营商的网络安全优势，采用云堤DDOS网络攻击演示流量图显示，经过流量处理，原先对网络安全造成威胁的大量网络攻击流量被防御在外，引起有较强的数据安全防范能力。 |  |  |
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**Step 2:** Conduct required ISP speed test and identify system vulnerabilities.

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| **2** | **Using Speed Test Manager and Acunetix to conduct the speed test and system vulnerability scanning for China Telecom. Provide the screenshots of the results.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Speed test screenshot |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | System vulnerability scanning screenshot |  |  |
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**Step 3:** Analyse internet gateway options.

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| **3** | **Analyse the internet gateway options and explain the features of Static Network Address Translation (SNAT), Dynamic Network Address Translation (DNAT) and Port Address Translation (PAT).** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Static NAT [30–50 words]  *可精简*  静态转换是指将内部网络的私有IP地址转换为公有IP地址，IP地址对是一对一的，是一成不变的，某个私有IP地址只转换为某个公有IP地址。借助于静态转换，可以实现外部网络对内部网络中某些特定设备（如服务器）的访问。 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Dynamic NAT [30–50 words]  *可精简*  动态转换是指将内部网络的私有IP地址转换为公用IP地址时，IP地址是不确定的，是随机的，所有被授权访问上Internet的私有IP地址可随机转换为任何指定的合法IP地址。也就是说，只要指定哪些内部地址可以进行转换，以及用哪些合法地址作为外部地址时，就可以进行动态转换。 | □ | □ |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | PAT [30–50 words]  *可精简*  端口多路复用（Port address Translation,PAT）是指改变外出数据包的源端口并进行端口转换，即端口地址转换（PAT，Port Address Translation）.采用端口多路复用方式。内部网络的所有主机均可共享一个合法外部IP地址实现对Internet的访问，从而可以最大限度地节约IP地址资源。同时，又可隐藏网络内部的所有主机，有效避免来自internet的攻击。 | □ | □ |
|  | | | |

**Step 4:** Select required internet gateway option and create security plan according to analysis findings.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | **Which internet gateway options will you select according to your analysis findings.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Select required internet gateway options [2–10 words]  Static NAT、Dynamic NAT |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | **Create a security plan according to analysis findings and have a description. [40–50 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Security Plan [40–50 words]  *以下都写，但稍微改下写*  1、在访问服务器的路径上使用Static NAT，实现外部网络对内部网络中某些特定设备(如服务器)的访问。  2、在其他网络中使用Dynamic NAT，实现对外访问，提高IP地址的利用率 |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **6** | **Report the potential security problems and attacks to the clients. [40–60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Potential Security Problems [20-30 words] |  |  |
| 1、注意网线、设备安全，防范通过物理设备进行攻击。  2、网络仍有潜在的漏洞，同时未来更先进的攻击方式；  3、如果出现信息泄露、数据丢失等突发事情，仍可能导致网络不安全。  4、内部人员在操作时出现弱密码、钓鱼邮件等操作问题，导致网络安全问题，  *以上4选1，与下面选择的要一致* | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Potential Attacks [20-30 words] |  |  |
| 1、采用屏蔽性能较好的网线，将网络设备和机房安装在屏蔽的环境下。  2、网络管理员定时安全监测，如漏洞扫描、渗透测试等。  3、对管理人员、操作人员进行安全方面的培训，针对突发事情提前预案  4、加强内部安全管理，提高内部人员安全意识，检查网络存在的漏洞，预防可能出现的问题。  *以上4选1，与上面选择的要一致* | | | |

Part 3 – Install Internet Gateways

Please refer to the attached RG Network Equipment Technical Documentations and complete the gateway installation and configuration.

**Step 1:** Identify required internet gateway installation method according to security plan and work brief.

The IP address table is as follows. You need to change the following X into your own ID number.

|  |  |  |
| --- | --- | --- |
| **Device** | **Interface / VLAN** | **IP Address** |
| **PC1\_1** | **G 0/0 VLAN 10** | **192.168.**X**.1/24** |
| **PC1\_2** | **G 0/1 VLAN 10** | **192.168.**X**.2/24** |
| **PC1\_20** | **G 0/2 VLAN 10** | **192.168.**X**.3/24** |
| **PC2\_1** | **G 0/1 VLAN 20** | **192.168.**X+1**.1/24** |
| **PC2\_2** | **G 0/2 VLAN 20** | **192.168.**X+1**.2/24** |
| **SERVER** | **Eth 0** | **172.16.1.1/24** |
| **SWA** | **VLAN10** | **192.168.**X**.254/24** |
| **VLAN 20** | **192.168.**X+1**.254/24** |
| **G 0/2** | **200.200.200.201/30** |
| **Gateway(R1)** | **G 0/1** | **200.200.200.2/30** |
| **G 0/2** | **200.200.201.1/30** |
| **Firewall** | **G 0/0** | **218.122.12.1/24** |
| **G 0/1** | **200.200.200.1/30** |
| **G 0/2** | **172.16.1.2/24** |
| **Internet(R2)** | **G 0/0** | **218.122.12.2/24** |
| **218.122.12.3/24**  **(Alternate test address)** |

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **Describe the internet gateway installation method according to security plan and work brief.[30-40]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Internet gateway installation method [30-40]  2选1，修改着写   1. 将网关配备的电源线接好，插到网关的电源口。将网线拆开，接到网关的网络口。将电源线通电；网线的另一端接到路由器的LAN网络口。网关中间的绿灯亮起，即连接成功。 2. 插上电源线，然后就是从路由器上对应的wan口接触一条网线连接到计算机。根据说明书上的路由器的地址进行登录，密码和用户名都是默认的，登录后根据连接想到一步步设置。 |  |  |
|  | | | |

**Step 2:** Configure internet gateways according to technical guidelines.

|  |  |  |  |
| --- | --- | --- | --- |
| **2** | **Configure the firewall to make the server access the Internet through SNAT, and provide a screenshot.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Screenshot of SNAT on the firewall |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **3** | **Configure the router to make the PCs access the Internet through PAT, and provide a screenshot.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Screenshot of PAT on the router |  |  |
|  | | | |

**Step 3:** Test internet gateway, and rectify and report any network issues.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | **When you were doing the testing, you found that the PC1\_1 could not ping the PC2\_1 successfully. Please analyze the possible causes (at least 2 points) and make necessary changes for the network. Provide the screenshot of the correct result. [40-60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Analyze the Possible Causes [40-60 words] |  |  |
| 看录像 | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Screenshot of the Correct Result |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | **During the testing, you found that PC1\_1 cannot access Server although the gateway address was configured correctly. Please analyze the possible causes (at least 2 points) and make necessary changes for the network. Provide the screenshot of the correct result. [40-60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Analyze the Possible Causes [40-60 words] |  |  |
| 看录像 | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Screenshot of the Correct Result |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **6** | **During the testing, you found PC1\_1 cannot ping Firewall’s G0/1 successfully. Please analyze the possible causes (at least 2 points) and make necessary changes for the network. Provide the screenshot of the correct result. [40-60 words]** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Analyze the Possible Causes [40-60 words] |  |  |
| 看录像 | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2 | Screenshot of the Correct Result |  |  |
|  | | | |

Part 4 – Connect nodes to internet gateways

Please refer to the attached RG Network Equipment Technical Documentations and complete the following configuration and testing.

**Step 1:** Establish prerequisites and confirm gateway connection to network router.

|  |  |  |  |
| --- | --- | --- | --- |
| **1** | **Describe the prerequisites that you established.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | Prerequisites [30-50 words] |  |  |
|  | | | |

|  |  |  |  |
| --- | --- | --- | --- |
| **2** | **Confirm gateway connection to network router and provide the screenshot.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1 | screenshot |  |  |
|  | | | |

**Step 2:** Assign nodes to logical gateway as required by network architecture.

Provide the screenshots of IP configurations of the gateway, switch (layer 3), Firewall, Server, PC1\_1, PC1\_2, PC1\_20, PC2\_1,PC2\_2.

|  |  |  |  |
| --- | --- | --- | --- |
| **3** | **Provide the screenshots of IP configurations of the following devices.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1. | Gateway |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2. | Switch (Layer 3) |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | Firewall |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 4 | Server |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 5 | PC1\_1 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 6 | PC1\_2 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 7 | PC1\_20 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 8 | PC2\_1 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 9 | PC2\_2 | □ | □ |
|  | | | |

**Step 3:** Determine connection type and configure firewalls.

Provide screenshots that show the configuration of the firewalls.

|  |  |  |  |
| --- | --- | --- | --- |
| **4** | **Provide the screenshots of the completed configuration of the firewall.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
|  | Screenshot of firewall |  |  |
|  | | | |

**Step 4:** Test and confirm internet gateway node connection.

Provide the screenshots of the following device connectivity test.

|  |  |  |  |
| --- | --- | --- | --- |
| **5** | **Test the connectivity of the following devices using ping command and provide the screenshots.** | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 1. | From PC1\_1 to Internet |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 2. | From PC1\_2 to Internet |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 3 | From PC1\_20 to Internet |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 4 | From PC2\_1 to Internet |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 5 | From PC2\_2 to Internet |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 6 | From PC1\_1 to PC1\_2 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 7 | From PC1\_20 to PC2\_2 |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 8 | From PC1\_1 to Server |  |  |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 9 | From PC2\_2 to Server | □ | □ |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 10 | From R2 (218.122.12.2) to Server | □ | □ |
|  | | | |
|  | Answer | Satisfactory | Unsatisfactory |
| 11 | From R2 (218.122.12.3) to Server | □ | □ |
|  | | | |

Student Declaration

|  |  |  |  |
| --- | --- | --- | --- |
| 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. | | | |
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## Marking Guide

|  |  |  |  |
| --- | --- | --- | --- |
| Trainer/Assessor to complete the following: | | Yes | No |
| The learner has analysed the client requirements and determined network specifications. | |  |  |
| The learner has determined security measures and briefed users. | |  |  |
| The learner has correctly connected network hardware devices to an internet gateway. | |  |  |
| The learner has configured and tested the gateway products. | |  |  |
| The learner has correctly configured and tested node according to vendor specifications and client requirements. | |  |  |
| Comments and feedback | | | |
|  | | | |
| result | | | |
| ☐ Satisfactory  ☐ Not Satisfactory (resubmission required) – Due date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | |
| Date Assessment Returned |  | | |
| Trainer/assessor Name |  | | |
| Trainer/Assessor signature | X | | |