Instructions:

1. **Make a group of 3 members. Submit on Moodle 2 files one cisco packet tracer file and other word file with all snapshots.**
2. **Submit:**
	1. **A soft copy of your Cisco packet tracer file with your names.**
	2. **Word document with step 2, step 3 designing details of classles subneting (VLSM) and snapshots of step 5.**

Building a Switches and Router Network using CISCO Packet Tracer 7.2.2

**Given Topology:**

 ****

**Addressing Table**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device**  | **Interface**  | **IP Address**  | **Subnet Mask**  | **Default Gateway**  |
| Router 2 | G0/0  |  |  | N/A  |
|   | G0/1  |  |   | N/A  |
| S1 & S2 | VLAN 1  | N/A  | N/A  | N/A  |
| PC A  | NIC  |  |   |  |
| PC B | NIC  |  |  |  |
| PC 1 | NIC | DHCP enabled | - | - |
| PC 2 | NIC | DHCP Enabled | - | - |
| DHCP server  | NIC |  |  |  |

**Required Resources**

**2 Routers (Cisco 2911) – Router 2 with 2 interfaces Gigabit Ethernet 0/0, Gigabit Ethernet 0/1 connected to Subnet A and B as per the given network above.**











1. **Switches (Cisco 2960)**
2. **PCs as end devices and 1 server**

**Download CISCO packet tracer free version from link below:** [**Download cisco packet tracer 7.2.2**](https://www.itechtics.com/packet-tracer-download/)

**Designing the Network with Classful Subneting**

1. **Network given is provided with network address of 192.168.10.128 /25 (Network ID).**
2. **Design 3 subnets for the above network using classless subnetting (VLSM).**
	1. **Subnet A with 13 computers**
	2. **Subnet B with 25 computers**
3. **Subnet A is connected to Router 2 G0/0 interface. Subnet B is connected to G0/1 of Router 2.**
4. **Answer the following: (Note: the first and last Subnet IDs are not valid in traditional classful subnetting) (Show all steps in the word document)**
5. **Calculate new subnet mask or prefix for each subnet?**
6. **Find the valid address ranges in each subnet?**
7. **After designing, fill the table with valid IP addresses and subnet masks.**

**Required Configuration**

**Step 1: Cable the network as shown in the topology.**

1. Layout the devices shown in the topology diagram, and cable, as necessary using cisco packet tracer. Note: you may use auto configuration option for cables.
2. Power on all the devices in the topology.

**Step 2: Configure the switch.**

1. No configuration is required on the switch.

**Step 3: Configure the Routers.**

1. **Configure the Router 2 two interfaces GigabitEthernet 0/0 and GigabitEthernet 0/1 with IP addresses and subnet masks according to the table.**
2. **Activate all interfaces up.**

**Step 4: Configuration on PCs**

1. **Configure the IP address, subnet mask, and default gateway settings on PC A and PC B.**
2. **Configure the IP address, subnet mask, and default gateway settings on PC 1 and**
3. **PC 2. All these computers are DHCP clients.**
4. **Configure one server as DHCP server.**

**Step 5: Verifying the network**

1. Ping PC A to PC 2. Put the result as snapshot.
2. Ping PC 1 to PC B. Put the result as snapshot.
3. Show the DHCP setting on server and PC 1. Put the snapshots in word document.

Rubric for Project

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Criteria** | **Covering all requirements. Correctly Done-above satisfaction** | **One or two points are missed-satisfactory** | **60% of the configuration steps are missing-Needs Improvement** | **100% to 80% steps are not done correctly-Poor** | **Marks** |
|  |
| **IP addressing calculation, subnetting and applying to network devices *based on given requirements in the table.*** | 4-3.5 | 3-2.5 | 2-1.5 | 1-0 |  /4 |
| **Overall network implemented using cisco packet tracer** | 3-2.5 | 2-1.5 | 1-0.5 | 0.5-0 |  /3 |
| **DHCP server configuration settings** | 2 | 1.5 | 1 | 0.5-0 |  /2 |
| **PING computers of network A and network B** | 1 | 0.75 | 0.5 | 0.25-0 |  /1 |