CE155 Assignment

**Part 1**

Address range 192.168.213.0 - 192.168.214.255

/26 mask length.

Subnet A 20 PCs, Subnet B 8 PCs, Subnet C 17 PCs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Subnet | Network Address | Mask in dotted decimal form  (e.g. 255.255.255.0) | Number of hosts including PCs and router interfaces | Number of unused addresses |
| A | 192.168.213.0 | 255.255.255.192 | 21 | 41 |
| B | 192.168.213.64 | 255.255.255.192 | 9 | 53 |
| C | 192.168.213.128 | 255.255.255.192 | 18 | 44 |
| D | 192.168.213.192 | 255.255.255.192 | 3 | 59 |
| E | 192.168.214.0 | 255.255.255.192 | 2 | 60 |

**TABLE 1 SUBNET DETAILS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Interface | IP Address | Subnet mask in decimal form (e.g. 255.255.255.0 for a /26 mask length | Default getaway |
| R1 | FA0/0 | 192.168.213.62 | 255.255.255.192 | N/A |
| FA0/1 | 192.168.213.126 | 255.255.255.192 | N/A |
| S0/0 | 192.168.214.255 | 255.255.255.192 | N/A |
| R2 | FA0/0 | 192.168.213.254 | 255.255.255.192 | N/A |
| FA0/1 | 192.168.213.190 | 255.255.255.192 | N/A |
| S0/0 | 192.168.214.254 | 255.255.255.192 | N/A |
| 1st PC subnet A | NIC | 192.168.213.1 | 255.255.255.192 | 192.168.213.62 |
| Last PC subnet A | NIC | 192.168.213.20 | 255.255.255.192 | 192.168.213.62 |
| 1st PC subnet B | NIC | 192.168.213.65 | 255.255.255.192 | 192.168.213.126 |
| Last PC subnet B | NIC | 192.168.213.73 | 255.255.255.192 | 192.168.213.126 |
| 1st PC subnet C | NIC | 192.168.213.129 | 255.255.255.192 | 192.168.213.190 |
| Last PC subnet C | NIC | 192.168.213.146 | 255.255.255.192 | 192.168.213.190 |
| DNS server | NIC | 192.168.213.193 | 255.255.255.192 | 192.168.213.254 |
| Eagle Server | NIC | 192.168.213.194 | 255.255.255.192 | 192.168.213.254 |

**TABLE 2 ADDRESSING TABLE**

**Part 2**

For my given range and mask there are only 3 possible subnets to add to given topology, because one can hold up to 60 PCs. I would say that it’s not super-efficient because it stresses the subnets and if some problems occurs you have 60 PCs down and you need to look at which one has the problem, it would be much easier if you would have less PCs per subnet but more subnets overall . For subnets A, B, C, D there are many open spaces left, there are more than 40 spaces for each subnet. Subnet E is especially inefficient because it only holds 2 IP routers. If Subnets would use different mask it would be more efficient, I would say like /27 mask length would be perfect for this amount of PCs. I believe it would be much more efficient to connect subnet A with Subnet C in one IP router, rather than A with B, and B should be connected with subnet D. And in addition to that there are always a possibility to add PCs to subnets A, B and C.

**Part 3**

**TELNET**

TELNET is a telecommunications network protocol. The purpose of the TELNET Protocol is to provide a fairly general, bi-directional, eight-bit byte oriented communications facility. Its primary goal is to allow a standard method of interfacing terminal devices and terminal-oriented processes to each other. It is envisioned that the protocol may also be used for terminal-terminal communication ("linking") and process-process communication (distributed computation). A TELNET connection is a Transmission Control Protocol (TCP) connection used to transmit data with interspersed TELNET control information. The TELNET Protocol is built upon three main ideas: first, the concept of a “Network Virtual Terminal”; second, the principle of negotiated options; and third, a symmetric view of terminal and processes [1].

All Telnet clients and servers implement a network virtual terminal (NVT). The NVT is responsible for translating operating system-specific instructions (keyboard codes or display codes) into a consistent set of codes that all Telnet clients and servers can transmit and receive. The NVT is what makes Telnet clients and servers capable of communicating with each other regardless of which operating system they are using [2].

**IMAP**

Internet Message Access Protocol or IMAP is a protocol for e-mail retrieval and storage developed 1986. Internet message access protocol specifically allows multiple clients simultaneously connect to the same mailbox. Different clients can access same mailbox at the same time and can detect state changes made by other clients. IMAP is an Application Layer internet protocol that allows an e-mail client to access a remote mail server. It is a preferred method to connect to email server, simply displays the contents of your mailbox as they appear on server. By default spam folders are configured to be IMAP-only, meaning you need IMAP to view and delete messages [3].

**Part 4**

**References**

[1] Telnet Protocol Specification. J. Postel, J.K. Reynolds, RFC 854, May 1983

Available from: <https://tools.ietf.org/html/rfc854>

[2] Microsoft TechNet Telnel Technical Reference.

Available from: <https://technet.microsoft.com/en-us/library/cc778139%28v=ws.10%29.aspx>

[3] Internet Message Access Protocol. M. Crispin RFC 3501, March 2003.

Available from: <https://tools.ietf.org/html/rfc3501>