

## Assessment 1: Individual Assignment

Weightage	50%
Submission Deadline	Refer to Timetable
Word Limit	1200 – 1400 words

### Virtual private network (VPN):

Virtual private networks are point-to-point connections across a private or public network such as the Internet. A VPN client uses special TCP/IP-based protocols, called tunneling protocols, to make a virtual call to a virtual port on a VPN server. In a typical VPN deployment, a client initiates a virtual point-to-point connection to a remote access server over the Internet. The remote access server answers the call, authenticates the caller, and transfers data between the VPN client and the organization's private network.

There are two types of VPN connections:

- Remote access VPN
- Site-to-site VPN

Remote access VPN connections enable users working at home or on the road to access a server on a private network using the infrastructure provided by a public network, such as the Internet. From the user's perspective, the VPN is a point-to-point connection between the computer (the VPN client) and an organization's server. The exact infrastructure of the shared or public network is irrelevant because it appears logically as if the data is sent over a dedicated private link.

Site-to-site VPN connections (also known as router-to-router VPN connections) enable organizations to have routed connections between separate offices or with other organizations over a public network while helping to maintain secure communications. A routed VPN connection across the Internet logically operates as a dedicated WAN link. When networks are connected over the Internet, as shown in the following figure, a router forwards packets to another router across a VPN connection. To the routers, the VPN connection operates as a data-link layer link.

A site-to-site VPN connection connects two portions of a private network. The VPN server provides a routed connection to the network to which the VPN server is attached. The calling router (the VPN client) authenticates itself to the answering router (the VPN server), and, for mutual authentication, the answering router authenticates itself to the calling router. In a site-to-site VPN connection, the packets sent from either router across the VPN connection typically do not originate at the routers.

### Question 1

(a) With the use of a diagram explain what VPN is and how it can be used to provide secure communications over the Internet. (17 Marks)

(b) Explain the differences between VPN and VNC (8 Marks)

(Students are required to write a word length of about 600 words to 700 words)

### Question 2

A salesman has been given a company laptop computer. They are currently attending a conference in another country but need to access their company's network and servers. Explain how, if they have access to the Internet, they could use a VPN to gain secure access to their company's network. You may assume that the company network is also connected to the Internet via a Firewall. (25 Marks)

(Students are required to write a word length of about 600 words to 700 words)

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### Check List for Essay

1. Essay will be approximately 1200 – 1400 words in length. Essay must be typewritten, using standard-sized paper, 12 point Times New Roman font or 11 point Arial font, 1.5 spacing, with 1 inch border on all sides, with numbered pages (footers).
2. Essay must have a cover page (Assignment Cover Sheet – Lecturer's Comments Form).
3. Essay must have a minimum of 5 references.
4. Essay must have a finalised bibliography / references on a separate page (with all sources used from steps 1-5) in proper APA format / sources listed in alpha order by author's last name.
5. Essay Step 5 (final copy) will not be accepted without the process steps 1 - 4.
6. In the case where Essay Step 5 will be submitted online (one file with title page, name and class, module and essay, bibliography, rubric)