



PRIFYSGOL CYMRU
Y Drindod Dewi Sant
UNIVERSITY OF WALES
Trinity Saint David
SWANSEA - ABERTAWE

Applied Computing

Institute of Inner City Learning (IICL)

Network Operating Systems and Services (NOSS)

(ACCA5023)

Worksheet 1

Building Virtual Networks Using Type Hypervisor

Scenario

Assume, you have been hired as an IT-professional by a Multinational Corporation called NOSS2025. NOSS2025 operates currently at two locations: Swansea (S) and Cardiff (C). You are asked to do research and implement the network as given in the topology in Figure 1.

Objectives

- You are tasked with first creating two, 'disconnected' Virtual networks.
- You will use a Type 2 Hypervisor program such as "Oracle VirtualBox" to create 4 Virtual Machines (VMs);
 - Two VMs machines in Swansea – a server (Windows Server 2022) and a client (Windows 10).
 - Two VMs machines in Cardiff – a server and a client (both Linux – Debian 12.5.0 or newer)
- Once all operating systems are installed, configure the systems into the two separate LANs. Ensure the virtual network settings are correct and assign IP appropriate addresses.
- Following the network design/build, you are required to test connectivity and demonstrate successful 'ping' tests.
- Finally, you are required to document your work for submission as part of your assessment. This should include suitable narrative (not a step-by-step guide).

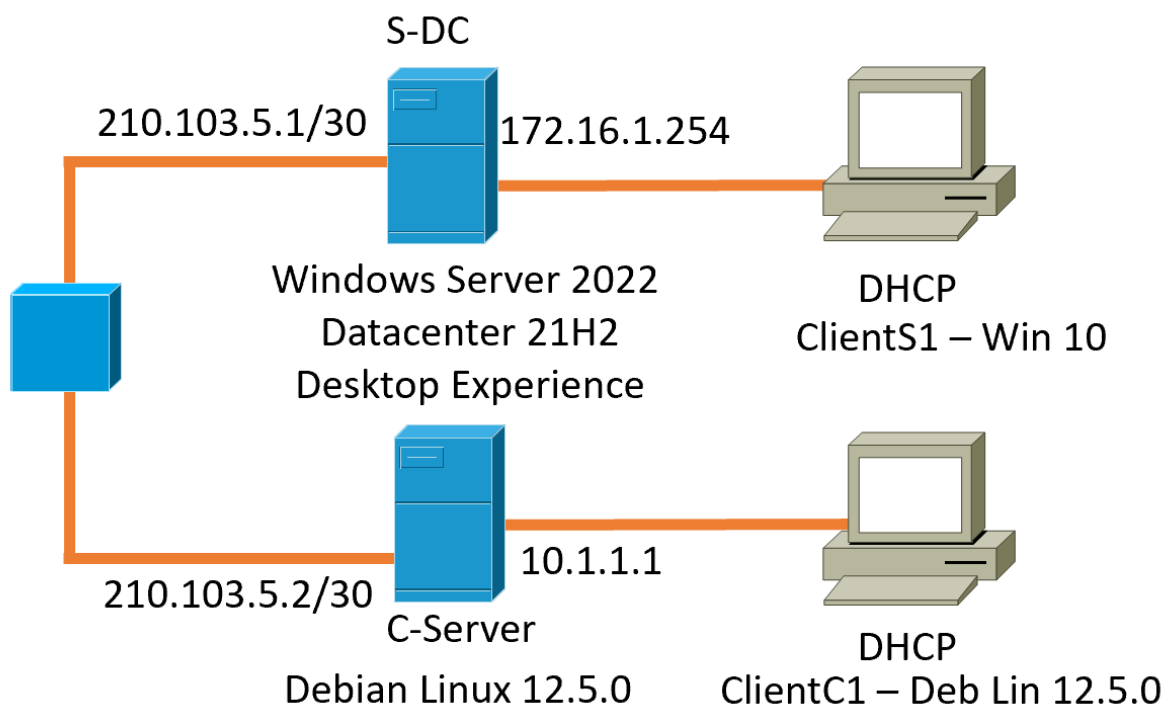


Figure 1 - Network Topology

Brief:

Figure 1 represents the virtual network design that is required. The

Server machines (1 and 2) have 2 network adapters.

1. The first network adapter is a public network adapter which is also known as an Enterprise network connection. This is usually a machine connected to the Internet.
2. The second adapter is an Internal Network adapter which only connects to each of the respective clients (**e.g. Server 1 connects to client 1 and Server 2 connects to client 2**).

The Class C network addresses are provided as an example and depending on your level of understanding of networking and IP addresses, these can be altered to suit your own preference.

NB: YOU ARE REQUIRED TO SCREEN CAPTURE THE COMPLETION OF THESE TASKS IN EVERY WORKSHEET AS YOUR EVIDENCE OF UNDERTAKING THE TASKS REQUIRED.

YOU SHOULD PROVIDE SUITABLE NARRATIVE ALONGSIDE THE SCREEN CAPTURES TO IMPROVE THE QUALITY OF YOUR PRACTICAL TASKS.

**NB: Add your first names to the server and client machines
e.g. John_Server1, John_Client1**

Extract from Assessment Brief:

- 1.1. Choose your Hypervisor:** Based on the above research, justify with concrete evidence and strong statements that influenced your choice of hypervisor to complete this network. Consider the fact that you will be continuing this topology to manage different network services in Coursework 2.

For below Tasks:

Note: The timestamp must prove that the task was done on a regular basis rather than a last minute work to be considered as excellent work.

Note: Without Timestamp in the screenshots submitted, the task 2.2 work will be marked Zero.

1.2. Download and Setup:

1.2.1. Download the chosen Hypervisor and Server, Client Operating Systems for the relevant Sources. *Evidence for downloading from relevant/ appropriate resources will be considered as exceptional work.*

1.2.2. Deploy your network as per the given topology. The setup needs to be taken screenshots with Timestamp

1.3. Configure IP Addressing

1.3.1. Use appropriate IP addresses to configure your network.

1.3.2. The above topology gives network address for the networks. However, it is up to you to use the same network or a different network/ IP Addressing Scheme.

Note: Designing your own IP Addressing scheme for the network will be considered as exceptional work.

1.4. Test and Troubleshoot

You need to achieve the following:

1.4.1. Perform Connectivity tests

Outcome 1: Successful connectivity within same networks.

Outcome 2: Unsuccessful connectivity within different networks.
