04/06/2025 – INTERN

HARDWARE TROUBLESHOOTING

- ❖ A monitor connects to the SU through cables: VGA, HDMI or D cable
- ❖ A cable that connects power is called a power colt
- ❖ Ram has specifications like PC3 PC4 and this is the processing power. The bigger the RAM the better
- ❖ A motherboard has several ports that can be replaced and scaled vertically
- ❖ It has two bridges ie northern and southern bridge. Northern bridge is for memory allocation and the Southern is for peripheral management
- ❖ The processor has a processor fun made of aluminium basically for conduction purposes and a conduction layer.

TROUBLESHOOTING ISSUES

- ❖ One PC has 8GB and i3 but its relatively very fast and holds windows 11, boots faster
- ❖ Others have 2GB and i3and are very slow, and boot slowly
- ❖ One has 4GB, i3 windows 7 and is relatively fast

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SOFTWARE INSTALLATION AND COMPUTER MAINTANANCE

Qualities to consider

- ❖ Architecture
- ❖ O.S
- ❖ Size of the S.W
- ❖ RAM size
- ❖ Hardware compatibility
- ❖ Security
- ❖ SW License

CHECKING FOR PC SPECIFICATION

- ❖ Dxdiag,,, and all other means

STEPS OF OS INSTALLATION

- ▪ Must have a license
- ▪ Create a bootable drive – for installing O.S
- ▪ **USING RUFUS**
  - ➢ Choose the windows image
  - ➢ The PC automatically sets other options

> - GPT for UEFI, then MBR for legacy and the trade off is in how the partitions in the drive will be created. GPT allows for more than 4 partitions unlike MBR which allows for a maximum of 4 partitions
- USSD, Flutter wave,

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- ❖ System restore helps to restore computer back to normal in case a malicious software has been installed
- ❖ Workgroup is the domain for windows that enables interaction among all users
- ❖ Search for workgroup and add new domain, configure new domain with the windows server, having installed the active directory
- ❖ Dual boot windows and ubuntu
- ❖ Installation. Pilot (Just a try, u can maybe try the software in one of the labs), Parallel (Involving getting a duplicate and install exactly what's required in another, can make both run concurrently and then eventually turn one off
- ❖ VM ware can allow for installation of multiple O.S. You can install one O.S then u install the VMware on it, then u install other O.S in the VM
- ❖ The DHCP is used to configure IP automatically to multiple PCs

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MAKING A BOOTABLE FLASH

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- ✓ Open CMD as admin or powershell
- ✓ Run command diskpart. Its where all the disks are, then run list disk, then select disk 1, then if you run list disk again it must have a star on the selected disk
- ✓ Run create partition primary, you can first clean it with clean command
- ✓ Run the format fs =ntfs quick command. Quick is for it towork out faster faster
- ✓ Run assign to assign a letter to your drive
- ✓ Run active to activate the bootable flash
- ✓ Then exit diskpart and cmd.

This is convenient and alternative to Rufus, convenient to copyrighted flash disks.

- ✓ Then we extract files from windows image using WinRar

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INSTALLING OFFICE
- ✓ Copy files to drive C
- ✓ Then open CMD as admin
- ✓ Change the path to the new folder
- ✓ Then run the command setup /configure configuration.xml

✓ **For eduroam,** go to cat.eduroam.com in PC, then download the installer for your specific organization

01/07/25
INTRODUCTION TO WEB DEVELOPMENT

FRONT END DEVELOPMENT

07/07/25
<u>**NETWORKING**</u>
- Connection of two or more devices
- Media (Vacuum(Wireless) or wired, light), Devices (Switches, Routers, Firewalls, End users) and services
- Devices are connected through media
- If u get the media, then u have to debate on the services, and then devices come in
- Understanding the OSI model
  - 1. Physical (Layer 1)
  - 2. Data Link (Layer 2)
  - 3. Network (Layer 3)
  - 4. Transport (Layer 4)
  - 5. Session (Layer 5)
  - 6. Presentation (Layer 6)
  - 7. Application (Layer 7)
- **Physical layer** describes the physical characteristics of the device like the port
- **Data Link** is the medium between the physical and the network layers by encapsulating the characteristics like the unique properties and physical addresses. Involves devices like switches. Uses ARP (Address Resolution Protocol) which is the first protocol established when establishing a network.
- **Network Layer.** It uses IP addresses and uses devices like routers (route is a path from one source to a given destination. Routing is the process of identifying the shortest route at the lowest cost).
- *Hop count refers to the number of routers or network devices a packet passes through from source to destination.*
-
- *Purpose:*
- *1. *Route calculation*: Determine the path packets take.*
- *2. *Network diagnostics*: Identify potential routing issues.*
- *Importance:*

- *Hop count helps network administrators understand network topology and troubleshoot connectivity problems.*
- Transport Layer deals with carrying packets from source to destination
- **Session Layer** deals with keeping one in or kicking them off the network
- **Presentation layer** does the de-encapsulation
- **Application layer** is the application utilizing the network.

NETWORK LAYER – IP ADDRESSES

IPv4 – 4 octets, 32 bits. An octet is made up of 8 bits Written and separated by dots, then means we can obtain 2^{32} addresses. Then to manage the IPs, we use NAT (Network Address Translation) to translate the private IPs to public. We use public on WANs and private on LANs. Its subdivided into classes like class A, class B etc. For class A the first bit is a 0, and for that reason we can have decimals from 1-126 since 127 is reserved for private use. For class B (128-191) the first bit is a 1 and so on for class C (192 – 255).

Subnet Mask

Purpose:

A subnet mask divides an IP address into network and host parts.

Function:

1. *Identifies network*: Determines the network ID.

2. *Identifies host*: Determines the host ID.

Format:

Typically represented in dotted decimal format (e.g., 255.255.255.0).

Importance:

Subnet masks help routers route traffic within networks.

Communication between two different networks can only be done by a router, otherwise the switch can handle.

Network segmentation – Network subnet

IPv6 – 128 bits