COC 2 TERMS AND DEFINITION

REVIEWER FOR 3RD PERIODICAL EXAM

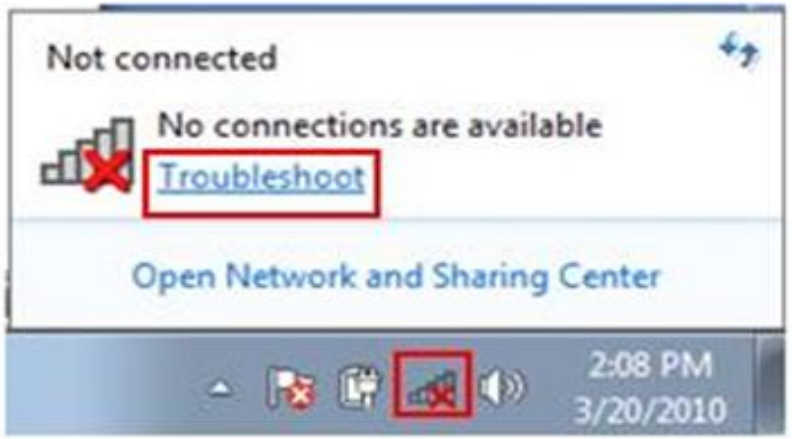
NETWORK ICON EXPLANATION IN WINDOWS 7

- This is simple network icon explanation in Windows 7 article, and this icon is useful to give you visual indication of network connection status of your computer that you use to connect to wireless network, wired Ethernet network, dialup or other network connections.

Where is the location of this icon? This icon is shown in right hand corner of taskbar area.

1) **Not connected – No connections are available** -> Your computer is not connected to any network and no network is detected. This can due to WLAN AutoConfig service is not started, wireless adapter is not activated, wireless or wired Ethernet adapter driver is not installed correctly, faulty network cable or other network problem.

Note: If you click on the network icon, after that you can click on **Troubleshoot** to troubleshoot this problem.



NETWORK ICON EXPLANATION IN WINDOWS 7

2) **Not connected – Connections are available** -> Your computer is not connected to any network but there is network detected, most likely is wireless network. You can click on this icon and connect to those detected networks.

3) **Connect to a network** -> This icon with blue bubble appears when your computer is in the process to connect to a network.

NETWORK ICON EXPLANATION IN WINDOWS 7

4) **Connected - No Internet access** -> This icon with exclamation mark means you are connected to network but no Internet access, you should check the router or modem to see any Internet connection problem.

5) **Connected to network** -> This white network icon means the computer is already connected to a network successfully, it can be wireless or wired network! You should be able to access other computers or Internet.

What does *Default Gateway* mean?

- A *default gateway* serves as an access point or IP router that a networked computer uses to send information to a computer in another network or the internet.
- Default simply means that this gateway is used by default, unless an application specifies another gateway.
- A default gateway allows computers on a network to communicate with computers on another network.

What is Internet Protocol (IP)?

- IP (short for Internet Protocol)

- An Internet Protocol (IP) address is a unique number assigned to every device on a network. Just as a street address determines where a letter should be delivered, an IP address identifies computers on the Internet. Network devices use IP addresses to communicate with each other.

Difference between STATIC and DYNAMIC IPS

- When a device is assigned a static IP address, the address does not change. Most devices use dynamic IP addresses, which are assigned by the network when they connect and change over time.

Internet Protocol Versions

- There are currently two version of Internet Protocol (IP): IPv4 and a new version called IPv6. IPv6 is an evolutionary upgrade to the Internet Protocol. IPv6 will coexist with the older IPv4 for some time.

What is IPv4 (Internet Protocol Version 4)?

- IPv4 (Internet Protocol Version 4) is the fourth revision of the Internet Protocol (IP) used to identify devices on a network through an addressing system.
- IPv4 is the most widely deployed Internet protocol used to connect devices to the Internet.
- IPv6 is the successor to Internet Protocol Version 4 (IPv4).
- IPv6 is often referred to as the "next generation" Internet standard and has been under development now since the mid-1990s. IPv6 was born out of concern that the demand for IP addresses would exceed the available supply.

What is IPv6 (Internet Protocol Version 6)?

- A new Internet addressing system Internet Protocol version 6 (IPv6) is being deployed to fulfill the need for more Internet addresses.
- IPv6 (Internet Protocol Version 6) is also called IPng (Internet Protocol next generation) and it is the newest version of the Internet Protocol (IP).

The Difference Between IPv4 and IPv6 Addresses

- An IP address is binary numbers but can be stored as text for human readers. For example, a 32-bit numeric address (IPv4) is written in decimal as four numbers separated by periods. Each number can be zero to 255. For example, *1.160.10.240* could be an IP address.

- IPv6 addresses are 128-bit IP address written in hexadecimal and separated by colons. An example IPv6 address could be written like this: *3ffe:1900:4545:3:200:f8ff:fe21:67cf.*

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How do I find my default router username and password?

- To locate the default username and password for your router you could look in its manual.
- See the attached sticker to the device itself
- Browse the internet to look the default username and password of a particular router brand.

How do I log into my router?

- 1. Use the search box to find the default router login details for your router
- 2. Open a browser (Chrome, Firefox, Internet Explorer, etc)
- 3. Type in the default router IP into the address bar
- 4. Enter the username and password
- 5. You've now logged into your router!

Service Set Identifier (SSID)

- A **service set identifier (SSID)** is a sequence of characters that uniquely names a wireless local area network (WLAN).
- An SSID is sometimes referred to as a "network name."
- This name allows stations to connect to the desired network when multiple independent networks operate in the same physical area.

Wi-Fi Protected Access Pre-Shared Key (WPA-PSK)

- Wi-Fi Protected Access Pre-Shared Key (WPA-PSK) is a security mechanism used to authenticate and validate users on a wireless LAN (WLAN) or Wi-Fi connection. It is a variation of the WPA security protocol.
- WPA-PSK is also known as WPA2-PSK or WPA Personal.

What is DHCP? (Dynamic Host Configuration Protocol)

- It is a *protocol* used to provide quick, automatic, and central management for the distribution of IP addresses within a network.
- A DHCP server is used to issue unique IP addresses and automatically configure other network information.

What is DHCP? (Dynamic Host Configuration Protocol)

- Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

Term	Definition
DHCP server	A computer running the DHCP Server service that holds information about available IP addresses and related configuration information as defined by the DHCP administrator and responds to requests from DHCP clients.
DHCP client	A computer that gets its IP configuration information by using DHCP.
Scope	A range of IP addresses that are available to be leased to DHCP clients by the DHCP Server service.
Lease	The length of time for which a DHCP client can use a DHCP-assigned IP address configuration.
Reservation	A specific IP address within a scope permanently set aside for leased use by a specific DHCP client. Client reservations are made in the DHCP database using the DHCP snap-in and are based on a unique client device identifier for each reserved entry.
Exclusion/exclusion range	One or more IP addresses within a DHCP scope that are not allocated by the DHCP Server service. Exclusions ensure that the specified IP addresses will not be offered to clients by the DHCP server as part of the general address pool.

DHCP Client Table

- The DHCP Client Table allows you to check the devices that are connected to your network. This router feature lists all wired and wireless computers and devices.

QUICK TIP: ***Devices NOT connected to the network wired or wireless will not be detected by the DHCP Client Table.***

DHCP Client Table

QUICK TIPS:

Setting up a strong WPA/ WPA2 security password is a good way to prevent unauthorized access to your network.

- The DHCP Client Table page provides the following options:
- **SORT** – sorts the clients in order of IP Address, MAC Address, Interface, or Client Name using the To Sort by drop down menu.
- **DELETE** – removes the selected client from the list. This will not disconnect the client from the network.
- NOTE: The Delete button will not block any client from reconnecting to the network. However, you can take note of the client's MAC address and prevent that specific device from connecting to your network. To know how to implement MAC Filtering, click here.
- **REFRESH** – retrieves an updated list of clients.
- **CLOSE** – exits the window.

What Is the Difference between DHCP Reservation and DHCP Exclusion?

- **DHCP RESERVATION** is a feature in the DHCP server that allows the DHCP administrators to reserve one or more IP addresses for particular mission-critical computers only.
- In order to configure DHCP reservation, the administrators are required to know the physical addresses a.k.a. MAC addresses of the target computers for which the particular IP addresses are to be reserved.
- Once the MAC addresses are known, the administrators can then reserve the appropriate IP addresses by mapping them with the MAC addresses.

What Is the Difference between DHCP Reservation and DHCP Exclusion?

- **DHCP RESERVATION**
- For example, if computer A is playing the role of a print server, and has MAC address of 00:A1:FB:12:45:4C and you want that the computer should always get 192.168.0.7 as its IP address, you can map the MAC address of the computer A with the IP address to configure reservation.

- When an IP address is reserved for a particular computer, the IP address remains in the DHCP address pool, even if it is the only address available for the assignment and any other client computer is requesting for the address. The reserved IP address will only be assigned to the computer whose MAC address is used to map with it. In this example, as soon as the print server boots up and requests for a dynamic IP address from the DHCP server, the DHCP server assigns the 192.168.0.7 IP address to the server as configured.

What Is the Difference between DHCP Reservation and DHCP Exclusion?

- **DHCP EXCLUSION**, on the other hand, is a configuration in the DHCP server using which you, as a DHCP administrator, exclude a single IP address or a range of IP addresses from being assigned automatically to the DHCP client computers.

- DHCP exclusion range is specified while configuring the DHCP server if you have assigned a few static IP addresses to the mission-critical computers in order to avoid latency in the network.

What Is the Difference between DHCP Reservation and DHCP Exclusion?

- **DHCP EXCLUSION**
- For example, if you have assigned the IP addresses from 192.168.0.2 to 192.168.0.5 to the DNS server, DHCP server, Active Directory domain controller, and the WDS server respectively, you must exclude the said IP addresses from the DHCP address pool.

- When an IP address or range of IP addresses is excluded from the DHCP server, the excluded IP addresses are never assigned automatically to the requesting DHCP client computers whatsoever.

MAC, Media Access Control

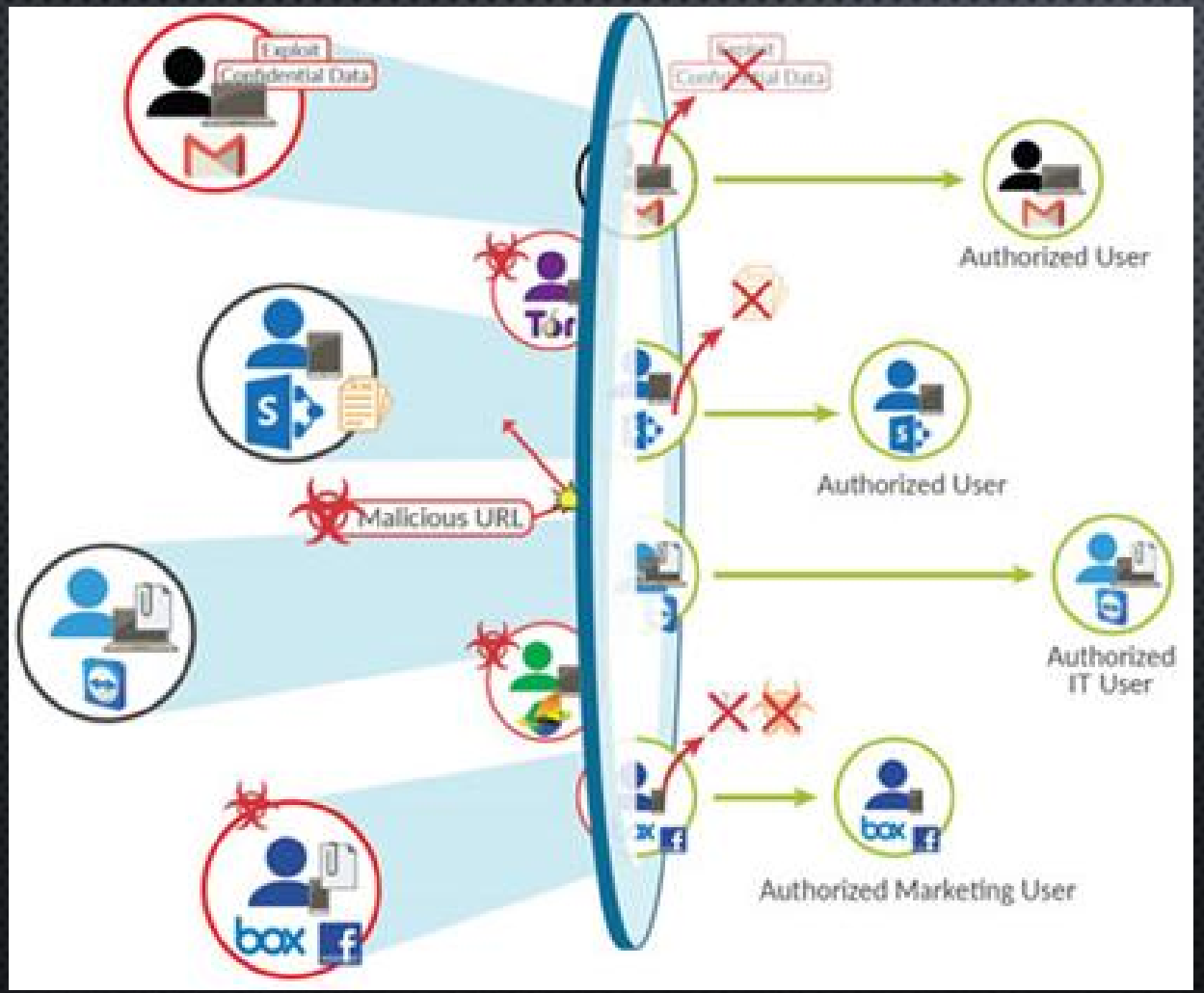
QUICK TIPS: "ipconfig /all"

- Media Access Control address is a globally unique identifier assigned to network devices, and therefore it is often referred to as **hardware or physical address.** MAC addresses are 6-byte (48-bits) in length, and are written in MM:MM:MM:SS:SS:SS format.

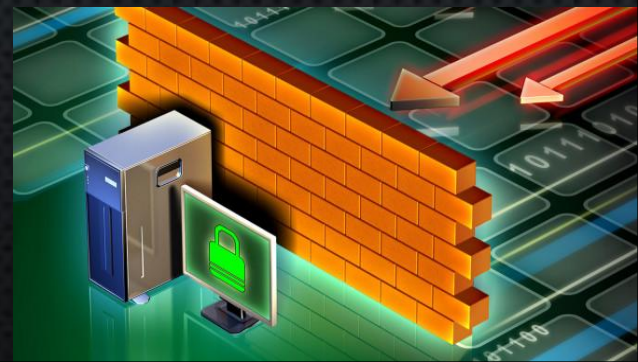
What is the meaning of WPS (Wi-Fi Protected Setup)?

- WPS stands for Wi-Fi Protected Setup. It is a wireless network security standard that tries to make connections between a router and wireless devices faster and easier.
- **WPS works only for wireless networks that use a password** that is encrypted with the WPA Personal or WPA2 Personal security protocols.
- WPS doesn't work on wireless networks that are using the deprecated WEP security, which can be cracked easily by any hacker with a basic set of tools and skills.

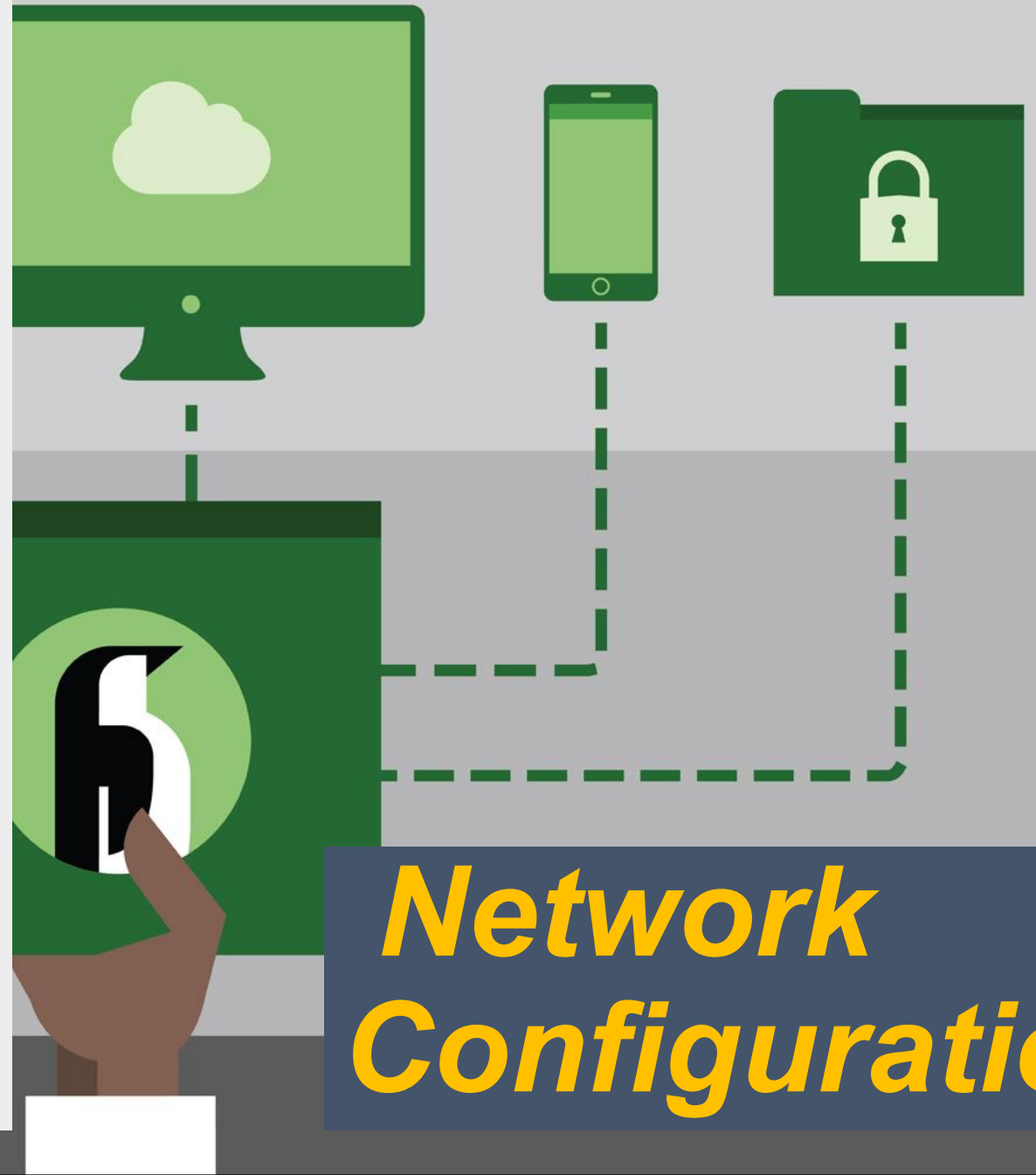
FIREWALL



- A firewall is a network security device that grants or rejects network access to traffic flows between an untrusted zone (e.g., the Internet) and a trusted zone (e.g., a private or corporate network).



- **Network configuration** is the process of setting a network's controls, flow and operation to support the network communication of an organization and/or network owner.
- This broad term incorporates multiple configuration and setup processes on network hardware, software and other supporting devices and components.
- Network configuration is also known as **network setup**.



Network Configuration

- ***Network configuration*** allows a system administrator to set up a network to meet communication objectives. The process involves the following tasks:

•**Router configuration**: Specifies the correct IP addresses and route settings, etc.

•**Host configuration**: Sets up a network connection on a host computer/laptop by logging the default network settings, such as IP addressing, proxy, network name and ID/password, to enable network connection and communication.

•**Software configuration**: Any network-based software, like an intrusion detection system (IDS), is allowed access and provided with the appropriate credentials to monitor network traffic..

- Moreover, network configuration includes Internet/network sharing, software/application installation and firewall installation/configuration.

Network Configuration

- **Network discovery** is a network setting that affects whether your computer can **see (find)** other computers and devices on the network and whether other computers on the network can see your computer. By default, Windows Firewall blocks network discovery, but you can enable it.

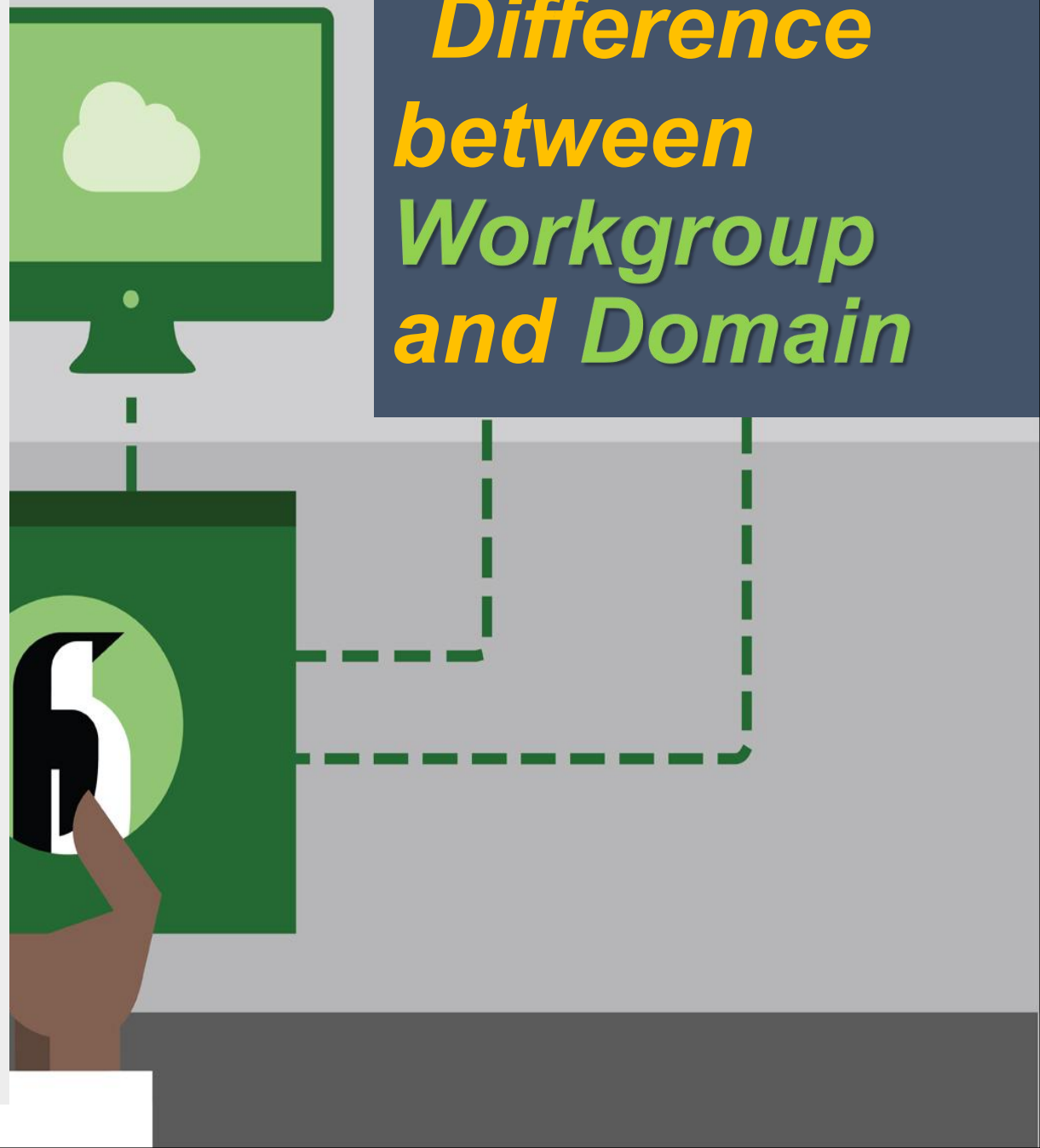
NETWORK DISCOVERY

- If **PASSWORD PROTECTED SHARING** is on, **only people** who have your user account and password can access your shared files, folders and printers.
- To give others **direct access**, you need to turn off password protected sharing.

PASSWORD PROTECTED SHARING

Difference between Workgroup and Domain

- A **WORKGROUP** is a type of peer-to-peer network. It is essentially the name for a Windows based peer-to-peer computer network.
- Computers in this kind of network can allow each other access to their files, printers, or Internet connection.



Difference between Workgroup and Domain

- A **DOMAIN**, on the other hand, is a client/server network in which the security and resource management is centralized.
- This means that a singular administration has control over the domain and allows which users have access to which files.