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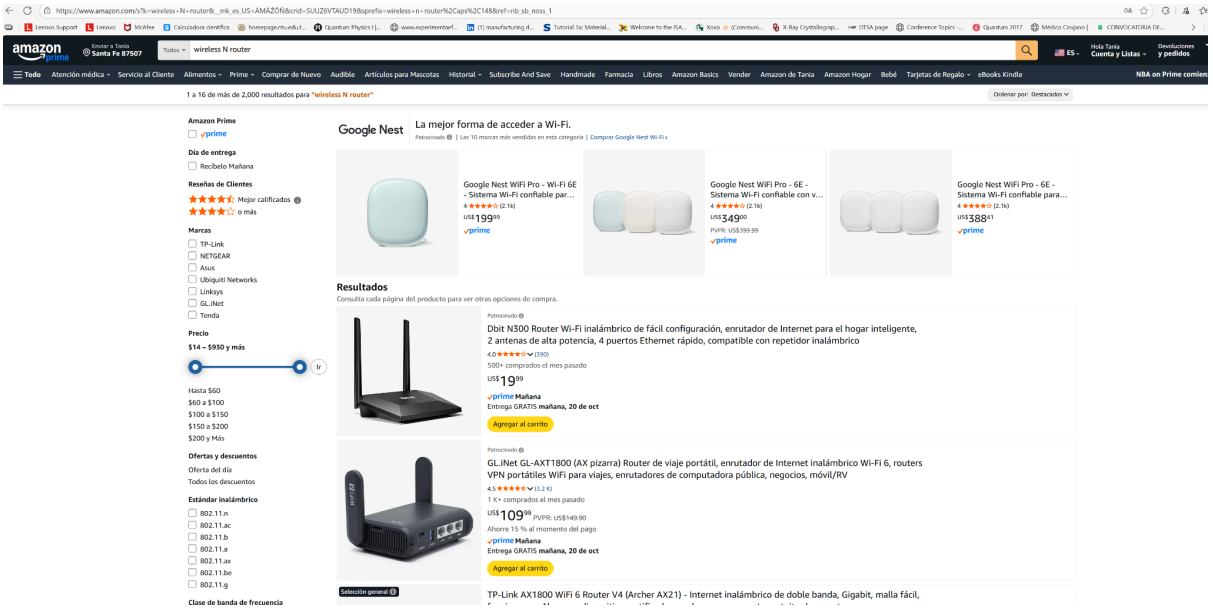
Date: 10/19/25
Course: CIST-2881-D1
Assignment: SOHO Wireless Router/Access Point

1. **Open a web browser and navigate to http://www.amazon.com**
2. **In the search bar, type wireless N router and press Enter.**



3. **Browse the top three choices. What brands are they? What are some of the features they offer?**

1. Dbit N300 Wi-Fi Router

- Brand: Dbit
- Features:
    - Wireless N speed up to 300 Mbps, suitable for video streaming, online gaming, VoIP, web browsing, and multitasking.
    - Dual 3dBi antennas enhance wireless robustness and stability.
    - Easy Setup Assistant for quick and hassle-free installation.
    - Parental control function to manage internet access for children or employees.
    - IP-based bandwidth control allows administrators to allocate bandwidth per device.
    - Supports Access Point (AP) and Wireless Internet Service Provider (WISP) modes.

2. GL.iNet GL-AXT1800 (Slate AX) Portable Travel Router

- Brand: GL.iNet
- Features:
    - Dual-band Wi-Fi 6 with combined speeds up to 1800 Mbps (600 Mbps on 2.4 GHz and 1200 Mbps on 5 GHz).

    - Supports up to 120 devices simultaneously.
    - Pre-installed OpenVPN and WireGuard for secure connections.
    - USB 3.0 port and TF card slot supporting up to 512GB for file sharing.
    - Runs on OpenWrt 21.02, allowing customization and installation of third-party applications.
    - Ideal for travel, offering features like captive portal support and VPN repeater mode.

3. TP-Link Archer AX21 (AX1800) Wi-Fi 6 Router

- Brand: TP-Link

- Features:

    - Dual-band Wi-Fi 6 with speeds up to 1800 Mbps (574 Mbps on 2.4 GHz and 1200 Mbps on 5 GHz).
    - Supports WPA3 security for enhanced protection.
    - OneMesh compatibility for creating a mesh network with TP-Link extenders.
    - Built-in VPN server and basic parental controls.
    - Smart assistant support, including compatibility with Alexa.
    - Ideal for homes with multiple devices, offering stable and fast connections.

Comparison Summary:

- Dbit N300: Budget-friendly option suitable for basic home internet needs with essential features like parental controls and bandwidth management.
- GL.iNet Slate AX: Ideal for travelers and tech enthusiasts seeking advanced features, secure connections, and customization options.
- TP-Link Archer AX21: Offers robust performance for smart homes, with support for multiple devices, mesh networking, and smart assistant integration.

4. **Do they offer WPA, WPA2, or WEP encryption? Do they offer another type of encryption?**

The top three routers I found are:

1. Dbit N300 Wi-Fi Router

    - Encryption: WPA2
    - Other Features: Has parental controls, easy setup with WPS, and four Ethernet ports. Good for basic home use.

2. GL.iNet GL-AXT1800 (Slate AX)

    - Encryption: WPA2 and WPA3
    - Other Features: Wi-Fi 6, VPN built-in (OpenVPN & WireGuard), Cloudflare for privacy, can connect up to 120 devices. Good for travel and secure public Wi-Fi.

3. TP-Link Archer AX21 (AX1800)

    - Encryption: WPA2 and WPA3

- Other Features: Wi-Fi 6, works with Alexa, VPN server support, beamforming for better coverage. Good for smart homes and lots of devices.

5. **Do they support IPv6? Do the routers have EAP?**

For the three routers I looked at Dbit N300, GL.iNet GL-AXT1800 (Slate AX), and TP-Link Archer AX21, here's what I found about encryption and EAP:

Encryption:

- Dbit N300: Has WPA and WPA2, which are good for basic security. Doesn't mention WPA3.
- GL.iNet GL-AXT1800: Has WPA2, WPA3, and even options for enterprise security. Pretty solid.
- TP-Link Archer AX21: Supports WPA, WPA2, WPA3, and also 802.1x for bigger networks.

EAP Support (Enterprise Authentication):

- Dbit N300: Doesn't really say it supports EAP.
- GL.iNet GL-AXT1800: Yes, it does support EAP, which is good for connecting to work or school networks.
- TP-Link Archer AX21: Also supports EAP for enterprise networks.

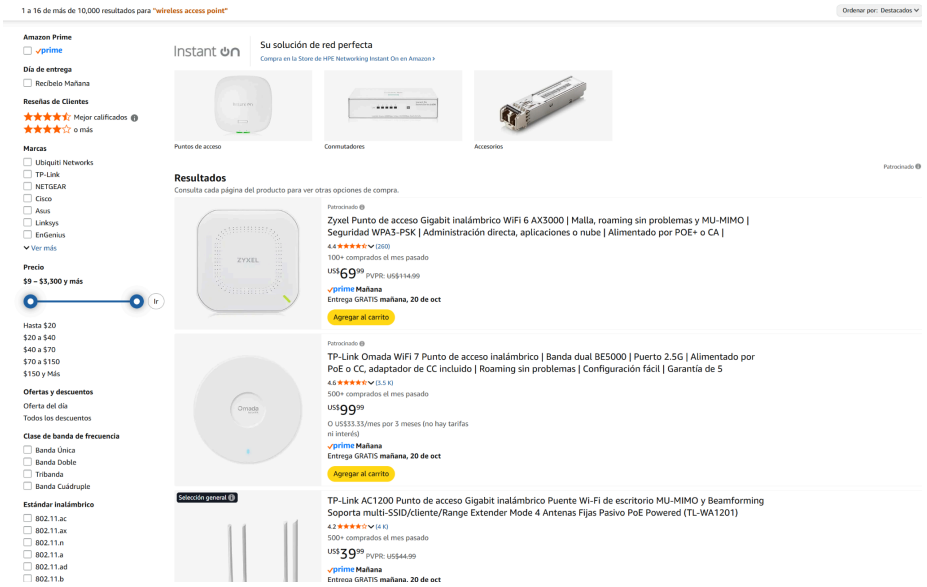
So basically, the GL.iNet and TP-Link routers are better for more secure or professional setups, while the Dbit is okay for home use.

All three routers (Dbit N300, GL.iNet GL-AXT1800, and TP-Link Archer AX21) support IPv6, allowing modern internet connections.

6. **Fill in the following table with information about three different routers. Note three security features for each router. Try to find security features that are not common to all the routers.**

Router Name	Speed	Security Features
Dbit N300 T1 Pro	Up to 300 Mbps	WPA2 encryption, WPS (Wi-Fi Protected Setup), Parental Controls
GL.iNet GL-AXT1800 (Slate AX)	Dual-band Wi-Fi 6 (AX1800)	WPA2-PSK, OpenVPN & WireGuard pre-installed, Cloudflare encryption
TP-Link Archer AX21	Dual-band Wi-Fi 6 (AX1800)	WPA3, WPA2-PSK, WPA/WPA2-Enterprise (802.1x), SPI Firewall

7. **Search the Amazon site for wireless access point.**



8. **How do wireless access points differ from wireless routers?**

Wireless Router:

- Combines multiple functions in one device: it acts as a router, a switch, and a wireless access point.
- Connects your home or office network to the internet.
- Assigns IP addresses to devices (DHCP) and usually includes a firewall.
- Example: TP-Link Archer AX21 – it connects to your modem and provides Wi-Fi to all devices.

Wireless Access Point (WAP):

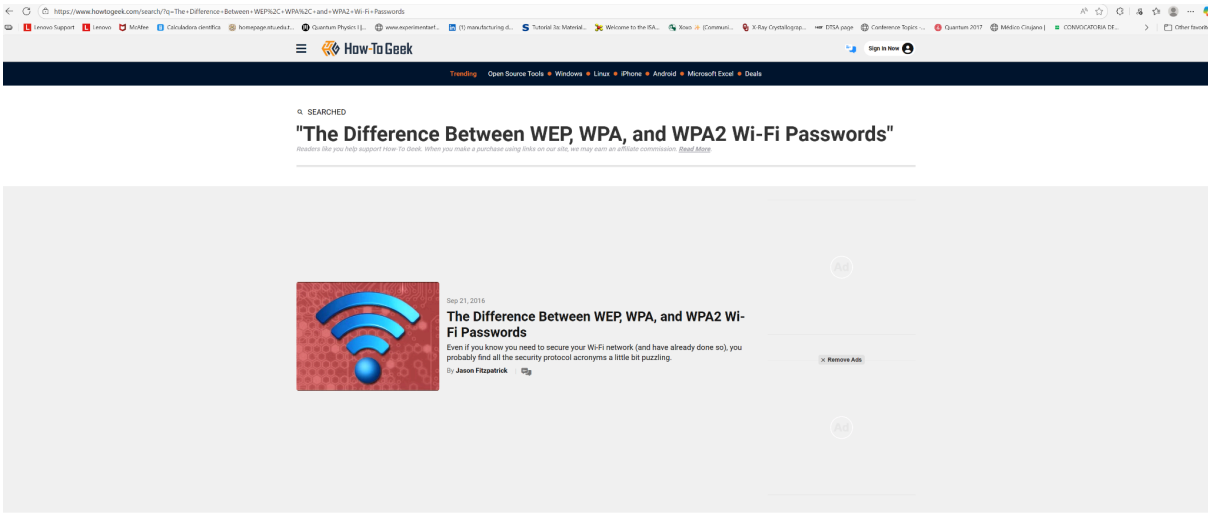
- Only provides Wi-Fi access to a network; it does **not** manage IP addresses or connect directly to the internet by itself.
- Usually connects to a wired network (like via Ethernet) to extend Wi-Fi coverage.
- Used in larger spaces to cover areas where the router's Wi-Fi doesn't reach.
- Example: In an office, you might have a WAP in every corner so everyone gets a strong signal, but the main router still manages the network.

9. **Fill in the following table with information about three wireless access points.**

Feature	Wireless Access Point 1	Wireless Access Point 2	Wireless Access Point 3
Name	Zyxel AX3000	TP-Link Omada WiFi 7 BE5000	TP-Link AC1200 TL-WA1201
Brand	Zyxel	TP-Link	TP-Link
SSID?	Yes	Yes	Yes
MAC filtering?	Yes	Yes	Yes

Signal strength	Good indoor coverage	Strong, up to 250+ users	Good indoor coverage
Band	Dual-band 2.4 & 5 GHz	Dual-band WiFi 7	Dual-band 2.4 & 5 GHz
Antenna	Internal	Internal, mountable	4 external antennas
Fat or thin?	Thin AP	Thin AP	Standalone
Controller-based or standalone?	Controller/cloud	Controller/cloud	Standalone
Extra security features	WPA3-PSK, VLAN tagging, MU-MIMO	PPSK, VLAN, cloud monitoring	Multi-SSID, Beamforming, range extender

10. **Open a new tab in your web browser, navigate to howtogeek.com, and use the Search feature to find the article named The Difference Between WEP, WPA, and WPA2 Wi-Fi Passwords.**



11. **What are some of the characteristics of the three different encryption algorithms? Which one is preferred? Name some weaknesses of the encryption algorithms?**

WEP, WPA, and WPA2 are different types of Wi-Fi encryption that protect your network, but they aren't all equally safe. WEP is the oldest one and was created back in 1999. It uses 64-bit or 128-bit keys, and even though there's a 256-bit version, it's still really easy to hack. People can crack WEP passwords in just a few minutes, so it's not safe to use anymore. WPA came next and improved security by using something called TKIP and stronger 256-bit keys, and some versions also use AES encryption. It's better than WEP, but it still has weaknesses, especially if WPS is turned on because hackers can exploit that. WPA2 is the most secure and is what almost everyone should be using now. It uses AES encryption with a strong protocol called CCMP, which makes it much harder to hack. The main risk with WPA2 is WPS, which could let someone guess your password if it's enabled, but overall it's the safest choice for home or business networks. Basically, WPA2 with AES is the one you want, and older types like WEP should be avoided.