**network plan**

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**Introduction**

wired network is any physical medium made up of cables. Copper wire, twisted pair, or fiber optic cables. on the other hand, Wireless network is a telecommunication (such as wireless telegraphy or radiotelephony) involving signals transmitted by radio waves rather than over wires.

Why should you upgrade your network to wireless, well upgrading gives you better, more efficient hardware with less chance of failure. It also gives you access to more computing power and storage space, moreover it will allow you to future proof the network by increasing its ability to handle upcoming, not-even-known-yet functionalities, moreover wireless network is more flexible, and it cover a large area also its more secure than the wired network and its cost saving.

(merriam-webster, 2022 ) (geeksforgeeks, 2021)

Project resources

* + - 3 workstations.
    - 1Wireless printer.
    - 1 Tablet.
    - 1Laptops.
    - 1 Access point.
    - 1 Router.
    - 1switch.
    - 2 NIC, 2WNIC.
    - Antiviruses.
    - Windows 8 OS.
    - Cisco packet tracer.

# User requirement

Open questions

Why? What?

Deadline

Budget

How many router

Answers:

Why do you want to change your wired network to wireless?

When is the final deadline?

What is the budget you will offer?

How many workstations need to be changed?

How many routers you would like to add?

# Project Scope

(تلخيص السيناريو ) Points

* Develop wireless network plan.
* Identify the existing problems.
* Prepare floor plan that includes the location for proposed access points for physical and wireless connectivity.
* Prepare IP address scheme.
* Determine all hardware components required to implement wireless network.
* Document networking features that offered by the pre-installed operating systems.
* Identify software license requirements.
* Determine security software problem.

# Project constrains

* Routers need to be purchased.
* Lack of communication.
* Time crunch.
* Not enough electricity plugs.
* Technicians need to be hired.
* Wireless interface card needs to be purchased.
* Window 10 need to be purchased.
* Sockets place should be changed.

**Hardware**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Component  Item  Number | Component | Specification | Cost | vendor | Component icon | URL |
| 1 | Workstation | * Operating System: Windows 11 Home * Processor Type: Intel Core i5-12400T * Processor Generation:12th Generation * Processor Speed:1.80 GHz * Processor Cores:6 * Processor Cache:18 MB * RAM Size:12 GB * Graphics Card: Intel UHD Graphics 730 * Screen Size/Type: 24 * Warranty: 1 year | $1,299.99 | HP |  | [LINK](https://www.bestbuy.ca/en-ca/product/hp-23-8-all-in-one-desktop-pc-snowflake-white-intel-core-i5-12400t-512gb-ssd-12gb-ram-windows-11/16233276) |
| 2 | Wireless Printer | * Printer Functions: Print/Scan/Copy * Print Technology: Laser * Printer Type: All-in-One * Maximum Input Paper Capacity: Up To 250 Sheets. * Print Speed: Black 36 PPM * Scanner Type: Flatbed/Sheetfed * Maximum Scan Size: 8.5 x 14 * Warranty: 1 year | $249.99 | Brother |  | [LINK](https://www.bestbuy.ca/en-ca/product/brother-monochrome-wireless-all-in-one-laser-printer-dcpl2550dw/11662630?source=search&asSlot=2) |
| 3 | Tablet | * Tablet Model: Surface Go 3 * Operating System: Windows 11 Home in S mode * Display Type: PixelSense * Screen Size: 10.51 in * Native Screen Resolution: 1920x1280 * Built-in Storage Type: Flash Memory * RAM Size: 4 GB * Processor Type: Intel Pentium Gold 6500Y Processor. * Processor Speed: 1.1 GHz. * Processor Cores: 2 * Warranty: 1 year | $519.99 | Microsoft Surface |  | [LINK](https://www.bestbuy.ca/en-ca/product/microsoft-surface-go-3-10-5-64gb-windows-11-s-tablet-with-intel-pentium-gold-6500y-platinum/15740363) |
| 4 | Laptop | * Screen Size: 15.6 in * Processor Type: 11th Generation Intel Core i3-1115G4 * Processor Cache: 6 MB L3 Cache. * Solid-State Drive Capacity: 512 GB * RAM Size: 8GB * Graphics Card: Intel UHD Graphics * Operating System: Windows 11 Home * Warranty: 1 year | $499.99 | HP |  | [LINK](https://www.bestbuy.ca/en-ca/product/hp-15-6-laptop-jet-black-intel-core-i3-1115g4-512gb-ssd-8gb-ram-windows-11-home/16363926?icmp=Recos_3across_tp_sllng_prdcts&referrer=PLP_Reco) |
| 5 | Access point | * Type: Ceiling Mount Access Point * Wireless Standard: IEEE 802.11ac/n/g/b/a * Number of Bands: 2 * Maximum Throughput: 1750 Mbps * Wireless Access Point: Yes * Number of Ethernet Ports: 2 * Warranty: 1 year | $79.99 | TP-Link |  | [LINK](https://www.bestbuy.ca/en-ca/product/tp-link-omada-sdn-ac1750-dual-band-wi-fi-5-mu-mimo-ceiling-mount-access-point-eap245/15492774) |
| 6 | Router | * Wi-Fi Coverage per Unit: 2500 sq ft. * Wireless Speed: AX5700. * Number of Bands:2. * Maximum Data Rate – Total: 5700 Mbps. * Ethernet Speed: 10/100/1000. * Number of WAN Ports: 1. * Number of LAN Ports: 4. * Warranty: 2 years | $179.99 | ASUS |  | [LINK](https://www.bestbuy.ca/en-ca/product/asus-wireless-ax5700-dual-band-wi-fi-6-router-rt-ax86s/15781793?icmp=Recos_3across_tp_sllng_prdcts&referrer=PLP_Reco) |
| 7 | Switch | * Type: Ethernet Switch. * Total Number of Ports: 8. * Ethernet Speed: 10/100/1000. * Weight: 410G. * Warranty: 1 year. | $22.99 | NETGEAR |  | [LINK](https://www.bestbuy.ca/en-ca/product/netgear-8-port-business-essentials-gigabit-ethernet-unmanaged-switch-gs308-300pas/15510312) |
| 8 | NIC | * fully compatible with: IEEE 802.3, 802.3u, 802.3ab and 802.3x standards. * Suitable for: PCI-enabled client, server, or workstation. * Compatible with: Linux, Windows 10, 8/8.1, ME, 2000, XP, XP-64bit, Vista, Vista-64bit. * Warranty: 2 years. | $30.99 | StarTech |  | [LINK](https://www.bestbuy.ca/en-ca/product/startech-1-port-pci-32-bit-gigabit-ethernet-network-adapter-card/12387022) |
| 9 | WNIC | * Type: Wireless. * Interface: PCI Express x1. * Wireless: Yes. * Speed: 300 Mbps. * Wireless Standard: IEEE 802.11n/g/b. * Warranty: 1 year. | $35.99 | TP-Link |  | [LINK](https://www.bestbuy.ca/en-ca/product/tp-link-300-mbps-pci-express-wireless-adapter-network-card-tl-wn881nd/12385518) |

# Software

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Product Item Number | **Product** | **Licensing Details** | **Summary of features** | **Cost** | **Platforms? (i.e. Windows, Mac, Linux etc.)** | **Product Icon** | URL |
| 1 | Windows 8 |  | * Speedy Boot Time. better resource allocations. * Innovative & Dynamic Desktop. * Improved Search Function. * Windows To Go. * Windows Live Syncing * PROCESSOR: 1 GHz. * MEMORY: 1 GB - 32 Bit / 2 GB - 64 Bit. * DISK SPACE: 16 GB - 32 Bit / 32 GB - 64 Bit.   (Poh, 2020) | 19$ | Windows | Buy Windows 8.1 Full OS PC|Best price at Software Base | [LINK](https://www.microsoft.com/en-us/software-download/windows8ISO) |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Antivirus |  | * Block viruses and other malware   Detect viruses, ransomware, and other threats in real-time.   * Scan for Wi-Fi security weaknesses   Find intruders and security weaknesses in your network.   * Get an extra layer of ransomware security   Protect personal photos and files from being encrypted by hackers.   * Safely run suspicious apps   Sandbox any app to test if it’s safe before running it on your computer.   * Lock out hackers with an advanced firewall   Keep hackers from sneaking onto your PC and stealing your data.   * Stop webcam spying   Prevent strangers from watching you via your webcam.   * Permanently shred sensitive files   Securely delete files to ensure that no one recovers them.   * Automatically update apps   Reduce security risks by keeping your other apps up to date. | 64.99$ | Mac  Android  iOS |  | [LINK](https://www.avast.com/lp-ppc-hp-v5?ppc_code=012&ppc=b&gclid=Cj0KCQiAzeSdBhC4ARIsACj36uHT9rhGkUbTaTuqbW-KyXzu7zNQafyxTe6OUawGyC86gB37-gawPiwaAro6EALw_wcB&gclsrc=aw.ds#pc) |
|  | TP-LINK WNIC drivers |  | * Wireless N speed up to 300Mbps makes it ideal for video streaming, online gaming and Internet call. * MIMO technology with stronger signal penetration strength, wider wireless coverage, providing better performance and stability. * Easily setup a highly secured wireless link with WPS™ (Wi-Fi Protected Setup) | Free | Windows 10-8.1-8-7  Linux |  | [LINK](https://www.tp-link.com/us/home-networking/pci-adapter/tl-wn881nd/#overview) |
|  | driver Wireless printer |  | This printer and scanner (WIA and/or TWAIN) drivers, optimized for USB or Parallel interface. Please note that the availability of these interfaces depends on the model number of your machine and the operating system you are using.  To get the most functionality out of your Brother machine, we recommend you install Full Driver & Software Package \*. (\* Not available for Windows Server®.) | Free | Windows Mac Linux |  | [LINK](https://support.brother.com/g/b/downloadlist.aspx?c=us_ot&lang=en&prod=dcpl2550dw_us&os=10013) |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Cisco packet tracer |  | * E-learning. * Visualizing Networks. * Real-time and simulation mode. * Compatible on various platforms. * Support to all languages. * Most networking protocols are supported. * Environment is interactive. * Can be used on unlimited devices.   (pynetlabs, 2022) | Free | **Windows Mac**  **Linux** |  | [LINK](https://www.netacad.com/courses/packet-tracer) |

# IP address scheme

|  |  |  |
| --- | --- | --- |
| Device name | IP address | Subnet mask |
| PC | 192.168 | 255.255.255.0 |
| PC | 192.168 | 255.255.255.0 |
| PC | 192.168 | 255.255.255.0 |
| Printer | 192.168 | 255.255.255.0 |
| Tablet | 192.168 | 255.255.255.0 |
| Laptop | 192.168 | 255.255.255.0 |

|  |  |  |  |
| --- | --- | --- | --- |
| Router name | Interface | IP address | Subnet mask |
| Router |  | 192.168 | 255.255.255.0 |
| Switch |  | 192.168 | 255.255.255.0 |
| Access point |  | 192.168 | 255.255.255.0 |

# Network Floor Plan

Screenshot packet **Floor Plan**

# Conclusion

In this document I have identified the meaning of both wired and wireless network also explained how to upgrade a wired network to a wireless network.

I suggest adding more router to extended Wireless Range, Minimized Downtime, and Increased Ethernet Ports and change the cables from ethernet to fibreoptic because Switching to fiber networks will give the company faster speeds also will make communication of all types much more efficient.

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# Glossary

Radiotelephony: is a radio communication system for conducting a conversation; radiotelephony means telephony by radio.

# Appendix A



Packet object

# Appendix B

Fault log

(Change from wired to wireless)

Screenshot of help desk

Fault and steps