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Project 2

NOTE: Ben McMillan and I collaborated on this project. We decided that we would use the same diagram, personal devices, and layout, but would come up with the advantages/disadvantages and networking devices of each solution on our own. Specifically, I did the diagram part and Ben did the personal device list. The only similarity was the ethernet cable product, but naturally we came up with our own definitions.

- **Desktop Computer - IBuyPower Prebuilt** - $2,839

- IBuyPower prebuilt PC, top of the line gaming computer for all of the home's personal gaming needs. This computer comes with Windows 10, a GeForce RTX 3070, an Intel Core i9-10900X, 32GB RAM, and countless other features. This computer is well equipped to handle the wired connection from the main router.

- **One personal computer, wireless - Dell XPS 17** - $3,257.99

- The Dell XPS 17 is the perfect personal computer to utilize an advanced home network. With a GeForce 2060 Graphics Card, 64GB RAM, 2TB SSD and many more cutting-edge features, this laptop is fully equipped to fulfill any user's professional and gaming needs.
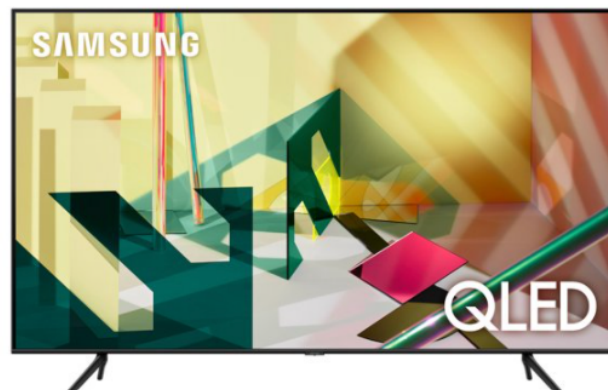
- **One tablet, wireless - iPad Pro** - $1,649

- The iPad Pro is the ultimate multitasking tool for at home and on the go. With an integrated WiFi Chip, the iPad Pro allows you to work anywhere within your interconnected home. This is a great wireless alternative to a laptop and can help anyone at any technological level.

- **Two wireless TV within the home - Samsung QN85** - $9,499

- The ultimate viewing experience is enabled with the Samsung 8k 85" TV. This insane smart TV allows users to utilize their own home network for streaming services and any digital use. There is no alternative to the top of the line other than the 8k Samsung TV itself.

- **Two wireless TV within the home - Samsung QN75** - $1,797.99

- Another Samsung TV within your home will allow you to fully keep connected regardless of where you are in the main house. Offering a 75"QLED display for viewing from almost any angle, this ultimate streaming device can keep you entertained for hours on end.

- **One wireless TV within the shop - HDR UN82** - $1,497.99

- This 82" Samsung Smart TV will be the perfect addition to the shop within the digitally connected property. The large, brightly-lit screen will allow anyone to use the shop, and can help users view any tutorial on whatever they may be working on.

- **Two wireless HUE bulbs - 2-pack E26** - $89.99

- The interconnected HUE bulbs will allow illumination of the room for any type of situation. With Bluetooth connection, you can control the lightbulbs on your phone app and allows visitors to connect as well.

- **Two wireless HUE bulbs - 2-pack BR30 E26** - $89.99

- Another set of connected bulbs, these HUE lightbulbs can allow users for a more immersive experience in conjunction with other bulbs. They also allow for a more personalized room-based lighting if used separately.

- **[Two IoT wireless wall plugs - TP-Link Smart](#)** - $16.99

- This TP-Link Smart IoT smart plug will allow for almost limitless usage all through a smart home. A primary usage for this plug could be for powering the desktop computer through an iPhone app to start applications before you arrive home

- [**Two IoT wireless wall plugs - Peace by Hampton - Wi-Fi Smart Plug 15A**](#) - $9.99

- Another wireless IoT Plug, The peace plug by Hampton allows users to fully conrol any device within their home through a simple phone app. A primary use for this IoT plug could be to allow users to turn on their shop TV before they pull into the garage.

- [**WiFi garage door opener - Chamberlain Belt Drive Smart Garage Door Opener**](#) - $198

- A WiFi garage door opener is an ultimate tool for an interconnected household. To be able to allow users to open their garage door to allow Amazon packages inside their home or many other uses.

- [**WiFi front door camera - Nest Cam Outdoor**](#) - $199

- The Nest camera will allow users to fully enable security within their home and premises. By allowing you to use your phone app to access the camera from anywhere, this interconnected camera is a perfect safety feature of a household network.

- **Two modern gaming consoles - Xbox Series X** - $499.99

- The Xbox Series X is a wonderful device to utilize within a home network and in conjunction with a Smart TV. With a hyper fast processor for either wired or wireless networking, this is a great buy for any interconnected home.

- **Two modern gaming consoles - PS5** - $499.99 (Retail)

- The PS5 is a similar device and direct competitor to the Xbox Series X. With a similar processor and networking capabilities, this device will allow one to fully utilize the Playstation Network either with a wired or wireless connection.

Solution 1 Networking Devices - Centralized Network

Advantages	One point of access on the network which contains one password. This allows for ease of access as each connected device only needs to know the one password.	Due to it being one point of access, managing the network is straight forward.	Is more efficient in smaller homes, such as small houses, apartments, and condos.

Disadvantages	Because it's one point of access, the network is vulnerable to hacking as a perpetrator would only be required to take down the centralized router due to their being one password.	Because the router is providing the devices pathways to the Internet, if something were to happen to the router, all of the devices will lose connection.	Depending on how many rooms there are in a home or how it is configured, WiFi tends to have trouble connecting to devices through walls, floors, ceilings, etc.

Cable ISP Provider - [CenturyLink Greenwave C4000 Modem](#) - $0 with ISP Plan		A basic router/modem from CenturyLink, this device will allow users a standard connection to the internet and will build the foundation for a more robust internet connection through partner devices within this networking solution.
Industrial Router – [TP-Link AD7200](#) - $657.99		The TP-Link AD7200 router is an ideal device for a centralized network. With 8 beamforming antennas, this router can allow a huge number of devices to connect to your network through a main hotspot, even allowing two different frequencies of connection.

Ethernet Cable (Desktop/Industrial Router) - Cat 8 Ethernet Cable - $26.99		This ethernet cable will provide users with a more stable connection as it is physical instead of having to travel through the air like WiFi. It will specifically connect the desktop computer to the router/modem.

Solution 2 Networking Devices - Mesh Network

Advantages	Because the network is spread out over one's home, this means users can have better access to the WiFi.	More reliable than a traditional centralized router. If one of the nodes fails, the others will account for it and still provide good Internet for users.	Since the network is spread out rather than centralized, it's easy to expand. For example, one could add a node to the patio on their network and still get as good a connection as the other ones.
Disadvantages	Complicated setup due to having to establish multiple routers instead of one.	Tends to be expensive, especially if there are multiple nodes set up in a home.	The nodes draw more power than usual, and with each additional node in a network, the power consumption will exacerbate.

Starlink Network - $499 with Plan		Starlink is a new technology being implemented by Elon Musk. This internet service allows you to pull internet from a satellite in the sky and bring it into your home, casting it into your local mesh network.
Ethernet Cable (Desktop) - Cat 8 Ethernet Cable - $26.99		This ethernet cable will provide users with a more stable connection as it is physical instead of having to travel through the air like WiFi. It will specifically connect the desktop computer to the router/modem.
Google Nest Mesh Network (6x) - $269 x 3 = $807		The Google Nest Mesh Network allows users to utilize these devices all over their home and gives them reliable access to the Internet. As long as the nodes are spread out effectively, users should have equal access all throughout their home.

Total Costs

- ## Networking Solution 1
    - Total non-networking Devices - $22,144.91
    - Networking Devices - $683.99
    - All Devices - $22,828.90

- ## Networking Solution 2
    - Total non-networking Devices - $22,144.91
    - Networking Devices - $1,332.99
    - All Devices - $23,477.90