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Lab - Research a Hardware Upgrade

Introduction

Use the Internet, a newspaper, or a local store to gather information about hardware components. Your customer's computer currently has one module of 2 GB of RAM, a 500 GB hard disk drive, and a PCIe video adapter card with 256 MB of RAM. Your customer wants to be able to play advanced video games.

Instructions

Step 1: Research memory options.

Shop around, and in the table below list the brand, model number, features, and cost for two different 8 GB modules of DDR3.

Brand and Model Number	Features	Cost
Patriot/PSD38G16002	*Speed: DR3-1600* *Cas Latency: 11* *Heat Spreader: No* *First Word Latency: 13.75 ns*	*1,217 PHP*
G.Skill/F3-1600C9S-8GXM	*Speed: DR3-1600* *Cas Latency: 9* *Heat Spreader: Yes* *First Word Latency: 11.25 ns*	*1,566 PHP*

Question:

Based on your research, which RAM would you select? Be prepared to discuss your decisions regarding the RAM you select.

I would select the G.Skill RAM because of the lower CL level, which is 9 (lower the latency the faster the acecess to the memory), and the lower first word latency (this specification would be useful if the user is using the pc for gaming and rendering). Not only that, but PCs tend to get hot over time (this depends on the use case), and a heatsink is a must for cooling, especially under heavy workloads.

Shop around, and in the table below list the brand, model number, features, and cost for a 3 TB 7200 rpm SATA 3 hard disk drive and a 500GB or 1TB solid state drive (SSD).

Brand and Model Number	Features	Cost
Seagate/ ST3000DM008(HDD) *ADATA /Legend 710 (SSD)*	*HDD:* *7200RPM, 3TB Cache 64MB,* *SSD:* *Speed R: 2400MB/s, W: 1800MB/s* *Flash Type: 3D NAND (QLC)* *MTBF: 1500000 hours* *DRAM or HMB: HMB*	*3,740PHP HDD* *(Refurbished Pricing)* *3,936 PHP (SDD)*
Toshiba/ P300 (HDD) *Fanxiang/ S500pro (SSD)*	*HDD:* *7200RPM, 3TB Cache 64MB,* *SSD:* *Speed R: 3200MB/s, W: 2000MB/s* *Flash Type: 3D NAND (TLC)* *MTBF: 2000000 hours* *DRAM or HMB: HMB*	*3,295.00 PHP HDD* *(Refurbished Pricing)* *3,369 PHP (SSD)*

Question:

Based on your research, which hard disk drive would you select? Be prepared to discuss your decisions regarding the hard disk drive you select.

The HDD's may be similar in specifications but it's also good to to take note of the reputation of these products. According to a study by Andy Klein of Backblaze (2015) shows that these drives has the highest failure rate, it may be a different model but it is important to consider what has happened in the past because hard drives may hold a lot of important information. The P300 has a good reputation with many people on reddit saying it is one of the best drives (at least for Desktop storage) even though this is opinion based it is best to pick the one with a good reputation because HDD's are meant to hold a lot of files for long term use. So I'd pick the Toshiba P300.

For the SSD's I would pick the Fanxiang S500pro because it has better Read and Write speeds with a better flash type which is TLC better than QLC. The MTBF is 2000000 hours 500000 more hours than the Adata Legend 710.

Step 2: Research video adapter card options.

Shop around, and in the table below list the brand, model number, features, and cost for two different PCIe video adapter cards with at least 1 GB of RAM.

Brand and Model Number	Features	Cost
NVIDIA/ GTX 1660 Super	*VRAM: 6 GB* *Power Draw: 125 W* *PCIe Interface: 3.0* *Bit Bus: 192 bit* *Base Clock: 1530 MHz* *Boost Clock: 1785 MHz* *Memory Clock: 1750 MHz 14 Gbps effective*	*7,000+ PHP* *(Used Market Pricing)*
AMD/ 5600 XT	*VRAM: 6 GB* *Power Draw: 150 W* *PCIe Interface: 4.0* *Bit Bus: 192 bit* *Base Clock: 1130 MHz* *Boost Clock: 1560 MHz* *Memory Clock: 1500 MHz 12 Gbps effective*	*7,000+ PHP* *(Used Market Pricing)*

Question:

Based on your research, which video adapter card would you select? Be prepared to discuss your decisions regarding the video adapter card you select.

I would pick the 5600 XT for the overall performance, according to Technical City and UserBenchmark the 5600XT performs 6-8% faster and there is no point using the 1660 Super for AI or Raytracing purposes because its in the GTX line up of NVIDIA. Additionally, the 5600 XT supports PCIe 4.0, which offers higher bandwidth than the 1660 Super's PCIe 3.0 giving it a slight performance benefits in bandwidth-heavy tasks.

ADDITIONAL:
We are in the used market territory and for me to make a decision is really based on what I can get the card for but if the cards are at the same price I would 100% pick the 5600XT