

Assessment - Timothy Edwards

by Tim David Edwards

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Computer systems and components specification

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Contents

Introduction 2

Scenario 1:..... 3

 Breaking down the scenario 3

 The build 3

Scenario 2:..... 6

 Breaking down the scenario 6

 The build 6

Additional storage for Scenario 2 9

Conclusion..... 10

References 11

Introduction

In this report we will cover scenarios given and building functional workstations for users to use as they – the users – requested. Each section of this report will be broken up into three parts, the scenario explanation, the breaking down of the scenario, and the parts found that would satisfy the criteria set by the potential users of the system. For this report, there are two builds.

Scenario 1:

For this scenario, the user is an elderly relative who wishes to have a low-cost PC. The PC is to be a small form factor; however, the keyboard must be full sized. Due to the failing eyesight of the elderly relative, a large monitor will be required. The user will not play games on the system, and only intend to use the PC for simple tasks, such as, word processing functions, checking their emails, surfing the web. The user would also like to watch videos via YouTube and video conferencing apps such as Skype or Microsoft Teams as a method of keeping in touch with their family abroad.

Breaking down the scenario

The build for this PC will need to be cheap. As stated in the above scenario, they wish for a low-cost PC. The fact how they wish to only use word processors, check emails and surfing the web tells us that they do not need a CPU beyond an Intel core i5, maybe even an i3 CPU could do the trick. For the GPU or video card possibly a 1GB will do as the tasks required for the computer to do will not be graphically intensive. For the memory, 8GB will be more than plenty, however, having two 4GB memory seems like the better fit, although even at that, 8GB might even be excessive. Of course, due to the build currently using both channels the motherboard would need to be able to house two channels.

The build

For this we are looking at parts that are recommended, these parts will be as cheap as they have been found.

This builds cost, without any software is £609.92. The estimated wattage is 188W.

Monitor – LG 24MK400H 23.5"

<https://www.amazon.co.uk/gp/product/B07GWQWNGV?ie=UTF8&tag=wwwetalelg-21&linkCode=as2&camp=1634&creative=19450&creativeASIN=B07GWQWNGV>

This was the cheapest 23+ inch monitor found. The reviews vary from good to bad. Ranging from the angle not being good to being the best purchase someone had made [1]. The reason that this would be recommended would be due to the low cost. But there are other reasons that this monitor would be picked, such as the refresh rate being 75Hz, the response time being 1ms. Other reasons would include a standard resolution of 1920x1080 and it is a fairly large monitor at 23.5" to 24" monitor [1][2].

Keyboard/Mouse – Microsoft wired desktop 600 keyboard and mouse set

https://www.amazon.co.uk/gp/product/B001QSZ8BG/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1

From the keyboards available, the set made by Microsoft seems to be the better deal. The keyboard itself is a full-sized UK Layout keyboard as well as having the ability to turn the volume up and down. The mouse that comes with the keyboard is as good as a generic mouse. The reviews seem to say that this is a great budget option [3][4].

CPU – Intel core i3-10100F Comet Lake

<https://www.scan.co.uk/products/intel-core-i3-10100f-cpu-boxed>

This product, while not the cheapest CPU available, in terms of benchmarks had ever so slightly worse stats compared to the 10100 [5]. But the difference in price (of approximately £9 on average) more than makes up for the not quite the same stats. However, the lack of integrated graphics might deter the user, the graphics card will more than make up for the lack thereof. The CPU's reviews claim that its great for budget builds, which this build is [6].

CPU cooler – Cooler Master Hyper 212 EVO CPU Cooling

<https://www.amazon.co.uk/dp/B0068OI7T8?tag=pcp0f-21&linkCode=ogi&th=1>

This product was the cheapest and most well reviewed at the time of writing this report. There is a V2 for £4 more [7], however, this version seems to be well supported. The wattage is 2.28W and has continuous direct contact [7]. The reviews for the cooler are almost entirely positive.

Motherboard – Gigabyte Intel H410M S2H mATX Motherboard

<https://www.amazon.co.uk/dp/B08B48VF9M?tag=pcp0f-21&linkCode=ogi&th=1&psc=1>

This product is perfect for what the user needs, it firstly, allows for 2 channel RAM. Secondly the price is on the lower end, meaning that the motherboard should be affordable at £69.95 [8]. The reviews for the product seem to indicate that it only has one fan slot on it, however minus that one little detail the rest of the product seems to work well for other users [8].

RAM – Corsair CMK4GX4M1A2400C14 Vengeance LPX 4GB

<https://www.amazon.co.uk/dp/B00UVN2BO4?tag=pcp0f-21&linkCode=ogi&th=1>

For what the user needs, the recommendation was 8GB however since we will be dual channelling, for the better performance, the two 4GB RAM will ultimately be the better choice. The reviews on the product seem to indicate also the Vengeance is well respected and well used set of RAM.

Storage- WD 1TB Hard Disk Drive

https://shop.bt.com/products/wd-blue-1tb-desktop-hard-disk-drive---7200rpm-sata-6gb-s-64mb-cache-3-5-inch---wd10ezex-wd10ezex-8757.html?utm_source=awin&utm_medium=affiliates&utm_content=ZA0000&utm_source=awin&utm_medium=affiliates&utm_content=ZA00&awc=3043_1619140525_4baf69f78e9665b8cd7abee708b3dea

The reviews all vouch for the product, with comments such as the quality should be the same as other WD products [9]. The biggest reason for using a HDD over SSD (Solid State Drive) is the bigger storage size, as well as the reliability of HDD. The amount of storage on the device is enough to cover all tasks the user may wish to do on the workstation.

Video card – MSI NVIDIA GEFORCE GT 710 1GD3H

<https://www.amazon.co.uk/dp/B01AY7927A?tag=pcp0f-21&linkCode=ogi&th=1&psc=1>

The reviews on the graphics card are mostly positive, predominantly explaining that the video card is more on the low end of GPUs but its good [10]. The price being low is a main point to use the video card, however, there are other factors as well, such as the memory clock speed being 1600 MHz [10].

Power Supply – EVGA 450 Watt 80+ Bronze PSU/Power Supply

https://www.scan.co.uk/products/450w-evga-450-br-fully-wired-80plus-bronze-single-rail-375a-120mm-fan-atx-psu?utm_source=pc%20part%20picker&utm_medium=referral

This power supply was chosen as it covers the wattage required to use the workstation.

Case – Corsair 110R

<https://www.amazon.co.uk/dp/B07VMB5YRM?tag=pcp0f-21&linkCode=ogi&th=1&psc=1>

This case is relatively small enough to house the computer. The case also being the price that it is means that it is budget friendly too. The reviews also seem to reflect this.

Scenario 2:

For this scenario, it is a recently graduated student who wishes to be self-employed, starting their own company and such. The company would involve editing 4K video content. For this it will need to take full advantage of the CPU and GPU acceleration, this is something that will be looked into. The budget for this workstation is £2500.

Breaking down the scenario

Because of the editing 4k video content, the budget will first be used to find an appropriate GPU and monitor. After this, we will investigate the CPUs available. After this sound cards will be required to be combed through and found. Going through the priorities, we can probably assume that the computer will not be used for video games, however, due to the high-end graphics required a gaming set-up is most likely preferred as the computer will not only be handling common tasks but also graphic tasks. Due to the editing of videos its safe to assume that sound will also be involved, thus a high-end sound card is more than likely required. With this in mind, suggesting software will more than likely dictate the hardware.

The build

For this build we will run under the assumption the software is going to be Sony Vegas Pro as it has the option to be a one-time payment and compared to the alternatives, such as Adobe Premiere Pro. The minimum specs required to run Vegas Pro (for 4k editing) is as follows: Operating system Windows 10 (64-bit), 7th Generation Intel Core i7, 3.0Ghz and 8 Cores, RAM needed is 32GB and it needs 1.5GB Hard disk storage, however, RAID would be required for 4k editing [11].

The total price is approximately £1106.86, with an estimated wattage of 279W.

Monitor – AOC E2270SWHN 21.5”

https://www.ebuyer.com/726130-aoc-e2270swhn-21-5-full-hd-led-hdmi-monitor-e2270swhn?wgu=267255_206719_16192624005031_819636ac35&wgexpiry=1627038400&utm_source=webgains&utm_medium=referral&utm_content=97907&utm_campaign=PCPartPicker,%20LLC_206719

This monitor is used for this build because even though it is not a 4K monitor, it's within the price range. The monitor is cheap enough that if the user wishes to buy 2 of them, they can. The reviews seem to indicate that the monitor itself is good valued. The connections supported is VGA and HDMI.

Keyboard/Mouse – Microsoft wired desktop 600 keyboard and mouse set

https://www.amazon.co.uk/gp/product/B001QSZ8BG/ref=ppx_yo_dt_b_asin_title_o05_s00?ie=UTF8&psc=1

The keyboard is the same as the keyboard used for the elderly relative, much for the same reasons as the elderly relative applies here, difference being that the graduate may wish to upgrade the mouse that the set gives them, and that is fine. However, this is not a gaming set up and the only other options would be for a wireless mouse, which is unreliable, or a gaming mouse, which has more functions to it than a bar of soap, most of which are not needed for Vegas Pro.

CPU – Intel Octa Core i7 10700KF Comet Lake

https://www.scan.co.uk/products/intel-core-i7-10700kf-s-1200-comet-lake-8-cores-16-threads-38ghz-51ghz-turbo-16mb-cache?utm_source=pc%20part%20picker&utm_medium=referral

This CPU handles gaming and other needs easily as indicated by the reviews of the product. The CPU doesn't have any integrated graphics, which will help significantly in the performance of the product. The i7 was recommended for 4k editing on the software specification thus it makes sense to follow that specification.

CPU cooler – Cooler Master Hyper 212 EVO CPU Cooling

<https://www.amazon.co.uk/dp/B00680I7T8?tag=pcp0f-21&linkCode=ogi&th=1>

The cooler is also the same as the elderly relative. The reason for this is due to it functioning rather well with the previous build, it felt fitting to bring it back for this build. While liquid cooling would probably be better for this build, the fact how liquid cooling could backfire would not be ideal.

Motherboard – Gigabyte Intel H410M S2H mATX Motherboard

<https://www.amazon.co.uk/dp/B08B48VF9M?tag=pcp0f-21&linkCode=ogi&th=1&psc=1>

For this build like with the CPU cooler, keyboard and mouse before, is the same as the one with the elderly relative. The Motherboard has the capabilities to handle the specification for the Vegas Pro software, it stands to reason that therefore to save the money and go with exactly what is needed.

RAM – Vengeance LPX 32GB (2x16GB)

<https://www.scan.co.uk/products/32gb-2x16gb-corsair-ddr4-vengeance-lpx-black-pc4-25600-3200-non-ecc-unbuffered-cas-16-20-20-38-xmp-2>

For this build the Vengeance LPX 32GB is used, since the motherboard can dual channel, the RAM is two 16GB, The reason for this because together they equal 32 and that's it. The brand, Vengeance is the same as the elderly relative, this because the brand works in the system.

Storage- WD 4TB Hard Disk Drive

https://shop.bt.com/products/wd-blue-4tb-desktop-hard-disk-drive---5400rpm-sata-6-gb-s-64mb-cache-3-5-inch---wd40ezrz-wd40ezrz-BKXN.html?utm_source=awin&utm_medium=affiliates&utm_content=ZA0000&utm_source=awin&utm_medium=affiliates&utm_content=ZA00&awc=3043_1619270921_84d802351b312de36fcabd79d9b56abd

The software the build is built around requires 1.5GB of storage space to download and run, however, it will need to have more if the user wants to save projects etc., with this in mind, the user would more than likely require about 4TB on the drive initially. Thus the user may upgrade the product in his own time if needed. It is however stated that RAID storage is better as it will allow the user to work in 4K. Meaning that initially the storage may be temporary. It may also be worth noting

that Hard Disk Drives are used for a smoother experience in booting up, this is a reason to choose HDD over Solid-State Drives (SSD).

Video Card – MSI NVIDIA GeForce GT 1030 2 GB

https://www.scan.co.uk/products/msi-geforce-gt-1030-2gh-lp-oc-passive-2gb-gddr5-graphics-card-384-core-1265mhz-gpu-1518mhz-boost?utm_source=pc%20part%20picker&utm_medium=referral

This video card is used as it allows for the user to have a second monitor instead of just the one. While the card is more aimed for gamers it could serve a purpose in the world of video editing and photo editing too, this is due to it being a high-end GPU.

Power Supply – MSI MPG A650GF 650W

<https://www.cclonline.com/product/332256/306-7ZP0A18-CE0/Power-Supplies/MSI-MPG-A650GF-650W-80-PLUS-Gold-Certified-Fully-Modular-ATX-Power-Supply-Unit/PSU1899/?siteID=8BacdVP0GFs-kandzQ9l3FdR04C2Tln6A>

The Power Supply chosen is because approximately the Wattage of the system is 279W, and the power supply that has been chosen can handle up 650W. Meaning that the system will run perfectly fine.

Case – Corsair SPEC-DELTA Carbide Series

<https://www.amazon.co.uk/dp/B07KGSJRC3?tag=pcp0f-21&linkCode=ogi&th=1&psc=1>

We use this case as it will have the ability to hold all the components that we need it to hold. The case is not very expensive and the reviews for the case all seem positive.

Additional storage for Scenario 2

For this section of the report it has been asked that we look into some Network Attached Storage for the graduate student. The user would like to have 16TB to start with but would like to add 8TB drives later, going as high as 56TB in total. To that end the Synology DS220+ DiskStation 2-Bay 16TB Network Attached NAS Storage w/ 2 8TB Seagate IronWolf Hard Drive (2GB RAM)

https://www.broadbandbuyer.com/products/41591-synology-ds220-16tb-iw/?gclid=CjwKCAjwg4-EBhBwEiwAzYAlsljImpC1HKmGXev8hsEeLwCuSVYK5ByJRGq3yqMVslx0VjzXMfnwxoCfPQQAvD_BwE.

The device features 2 USB 3.0 ports which may be used for external Hard-Drives, this allowing the user to add more to the system as they require. For that a 8TB drive, the recommend would be the Western Digital My Book 8TB Hard Drive, Which can be found here:

<https://www.ebuyer.com/758910-western-digital-my-book-8tb-desktop-hard-drive-wdbbgb0080hbk-eesn>.

The drive may be plugged into the NAS and the transfer of files and such will be performed in the same method in which the user has the NAS setup. In this instance plugging the NAS into the Switch/Router that the Workstation is attached to will be the better method as the files may then be shared on the network. The NAS unit can be connected to the network through Ethernet connection, This allows for the devices connected to where the ethernet is connected to, to access the files that would be stored on the NAS unit.

The NAS unit may only go up to RAID1, which is unfortunate as it would be better to go up to RAID5. However, for the purposes of what the user intends to use it for RAID1 would be better anyway.

Conclusion

At the beginning of this report, we discussed that by the end the report we would have written up about 2 builds that are made for very different reasons. One build was for an elderly relative, who wanted to keep up with family all around the world and do basic tasks, such as checking their emails. The other is for a recently graduated student who wishes to open a business for 4k video content and as an extension the graduate wanted some additional storage in the form of a NAS unit.

Both builds as seen in the report have been completed, with reasoning and explanations as to why each part was chosen. The first one spoke of reviews and how the reviewers felt about the product, as a means to give the elderly relative ease of mind about each component, a necessity as evidence to a lack of budget. The second one went more for quality and previous experience from the previous build, the graduate in this instance is sure about his purchase, as seen with a set budget indicating that they are more confident and know roughly what to expect, allowing for less reliance on reviews.

References

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Assessment - Timothy Edwards

GRADEMARK REPORT

FINAL GRADE

GENERAL COMMENTS

Instructor

59/100

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

GRADING FORM: GJ_2019

TIM DAVID EDWARDS

293

ENGAGEMENT WITH LITERATURE



Some ok evidence of background reading and relevant research performed. Could have been even more extensive though and covered ALL areas – note that listing product websites (while fine to do) doesn't really add to the 'engagement with literature' part of the marks.

55

KNOWLEDGE AND UNDERSTANDING



Some good knowledge and understanding demonstrated, with most areas giving reasonable information - but you could have added even more reference sources to back your statements up.

60

COGNITIVE AND INTELLECTUAL



Most outcomes fairly sensible (apart from the NAS section!)

60

PRACTICAL APPLICATION



appropriate systems specified apart from the NAS section which doesn't do what the brief asked! (need an 8 bay enclosure and use RAID5 with 3*8TB to start)

60

TRANSFERABLE SKILLS



Would have benefited from a more formalised layout, such as breaking down the assignment into more detailed numbered sections that follow the 1. 1.1 1.2 2. Style Would have benefited in having more images of some of the components included in the main body of the text to give context and interest. Try not to use the "I" first person style.