***MilleniAds***

***IT Report***

***By***

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***Business Needs***:

**Hardware**:

* Wi-fi Laserjet printer (Scanner, printer, and copier)
* Graphic drawing Tablets
* 2x Laptops (Field Employees)
* 4x Smart phones
* Router and modem
* Paper, business card sheets
* Server
* Check and then upgrade any needed internal components of the computer hardware such as (video card, audio card, motherboards, RAM, & CPU)
* Hard drives with the company’s requested TB storage
* Webcams
* 8x Workstations (Base Employees)

**Software / Network / Information Security**:

* Graphic Design program
* Accountant software program
* OS software program
* Office software program
* Schedule software program
* Payroll Software program
* Internet/Wi-fi program
* Security Software program
* Media Player software
* Audit Management software
* Event Software Program
* Budget Software program
* Tax software program
* Order Organization software program
* Appointment software
* Video chat software
* Cloud Software
* Inventory software

These software and hardware will accomplish the initial goals of MilleniAds to help them establish and nurture throughout the infancy of their business. The hardware such as the workstations and the laptops will allow all the employees access to a device to help stay in contact and grow the business. The storage devices such as the server and RAM will allow any project worked on by the employee to be saved and give the other employees the ability to access it. For software, programs like budget software and payroll will give the company the ability to handle finances whether it be for inventory or employees. Software programs such as office and graphic design will help the company handle its daily workload to develop drawing and reports.

For network, the company will need a network to connect all employees work devices together for teams to handle projects together and to view each other’s work. The network will allow access to the server storing all the data and information involving MilleniAds. The field employees will need this network and different networks to give internet access while on the road. Company’s cellphones for these two individuals will keep them connected with the company regardless of their location. Hotspots and tethering the cellphones with the laptops will help accomplish this task.

Finally, security will be very important in preventing any damages or destruction to MilleniAds’ reputation or work. A security software will program will be able to protect any malware, viruses, or possible hacking into the company. A username and login password for software, hardware, and networks will keep away any non-employee access to company’s files. In the following report, there will be detailed information and recommendations for software, hardware, networks, and cybersecurity recommendations to lift MilleniAds into an upgraded technological lifestyle.

**MilleniAds Hardware:**

Due to the business issues shown in the scenario, the major categories and components needed for the company will be the following:

Motherboards, video cards, audio cards, storage system, CPU, RAM, accessories, and workstations.

1. Workstations/Accessories: The employees traveling and working outside of the company will need laptops and flash drives to accomplish their tasks. These employees need quick and reliable, mobile workstations. Laptops will allow the mobility and the ability to stay connected with the company’s home base. Laptops will accomplish one of the business’s issues by allowing the traveling employees to connect with the company at different locations. The workstations at the company’s home base will need basic accessories such as monitors, cases, mice, speakers, all in one printer, router, modem, and keyboards. These accessories will allow the employees to gain access to the internet. The all in one printer will accomplish one the company’s basic needs by giving the employee the ability to produce physical copies of their product.
2. Motherboards/Video cards/Audio cards: The motherboards for their workstation should have onboard components such as audio cards, video cards, etc. (Test out facts 3.3.2). It will also have to support 32GB RAM system. The employees will not need any type of gaming dedicated video cards and the cards integrated to the motherboard should accomplish the employees’ daily jobs. An upgrade to the internal components of the workstations should prevent one of the company’s issues and this will boost the limits for the employees’ current workstations.
3. CPU: a 64-bit intel system will be needed instead of a 32-bit or an AMD processor. Since the workstations will be running applications, a 64-bit processor will allow the applications to perform better (Test Out facts 3.5.2). A CPU with a multi core and with a cooling system. The CPU must also be able to be integrated with the new motherboard.
4. Storage: The storage systems would be a HDD instead of an SDD for the workstations. My reason for this choice is the storage vs mobility. The SDD does have a faster processor, but the HDD is cheaper and will have more storage space than the SDD (Test Out facts 5.1.2). This will help accomplish one the business issues to be able to store a lot of digital imagery. Flash drives would assist the traveling employees because it would be a large, portable storage device and it can be accessed without an internet connection.
5. RAM: I would integrate a DDR3 into my system due it being cheaper than a DD4, but the DDR3 still having a fast clock speed. The DDR3 can produce the 64-bit system I would want for the workstations. (Test Out 3.7.3). The DDR2 would be use more power and have a slower clock speed than the DDR3. Also, I would not use a DDR because it currently only used in older computers.

I went for cost efficiency above everything else and if the employees can care for the equipment the equipment will be durable and require minimal maintenance. Shown below, I requested the hardware get warranty upon purchase.

**Hardware Recommendation:**

Stationary Employees’ Hardware:

* Xerox All in one printer model 6515/DN ($319) (Office.Xerox.com, 2019)
* Wacom – Wireless graphic tablet w/ 2-year warranty ($189.99) (Bestbuy.com, 2019)
* Router and modem combo – Netgear Dualband w/ 2-year warranty ($120) (Bestbuy.com, 2019)
* Server – Dell T30 server ($460.00) (Amazon.com, 2019)
* Video card – Integrated Video Card ($0)
* Audio card – Onboard Dolby Digital 5.1 Surround Sound ($0)
* Motherboards – 8x Motherboards with integrated graphics and audio card. Able to allow CPU intel Core i7, HDMI and USB connectors. 4x memory slots. ($125) (newegg.com, 2019)
* RAM – 64-Bit 16GB DDR3 ($60 each) (newegg.com, 2019)
* CPU – 8x Intel Core i7-2600K w/ cooling device and 3-year warranty ($150 each) (newegg.com, 2019)
* Storage – 8x 2 TB 7200 rpm HDD ($54.99 each) (newegg.com, 2019)
* Logitech C925-e Webcam w/ 4-year protection plan ($89.71) (Amazon.com)
* Smart phones ($0) (Employees personal phones used)

The company will have updated internal components to increase the limited capabilities of the employees’ workstations that are currently in place. The upgraded internal components will improve the graphic quality, storage system, and communication/ file transfer for the employees. The issues for the mobility, storage of accounts and digital imagery, and complaints of employees will be handled from the upgrades. The motherboard will have integrated and on onboard cards because it will not need dedicated video cards or added audio cards. The company’s needs can be handled with the onboard cards. The HDD storage devices will be necessary for maximum storage, low cost, and the lack of mobility needed. The company will not have to maneuver storage devices and for this reason the SDD would not be necessary. The CPU and RAM will increase graphic quality and also assist in memory for the system. The all in one printer will accomplish the business issue to be able to print physical copies of the company’s product.

Mobile Employees’ Hardware:

* 2x HP Laptops Model #14-CF0012DX w/ 3-year warranty ($309.98 each) (Best Buy, 2019)
* 2x Flash Drives San Disk 128 GB ($11.99 Each) (Best Buy, 2019)
* Smart phones ($0) (Employees personal phones used)

The mobile employees will need an up to date basic laptop with the capability to show power points and product to other companies. The laptops will also need to be able to handle communications and files transfers back and forth between the laptop and the company’s home base server.

Estimated total value without accessories and cords: $4,942.99

Assisting in the budget of issue of $25k with the request to spend as minimal as possible.

***MilleniAds Software:***

While choosing a software program for the company, my most important concern above all else would be cost efficiency. I would make a list of subcategories in each type of category of software programs. I would compare the programs to each other by the following categories: cost efficiency, reliability, quality, frequent updates, and user-friendly. The difference in how I obtain the software will be either open source or proprietary (Test out 12.9.3). I would first look into open source software due to the cost efficiency; however, if the quality and reviews of the software program do not meet the standards of the company then I would investigate proprietary software programs.

Software Needs:

1. Graphic Design program: A graphic design software program would only be needed for the employees involved in creating and editing photographs and artwork. Graphic design programs help these employees create, edit, and store drawing and/or images for the designed sale’s product. For my software choices, I would either consider Adobe (proprietary) or multiple open source software programs to assist MilleniAds graphic designers.
2. OS software program: A reliable Operation software program is always needed for each workstation to control and manage the workstations’ hardware and software systems. The two I would consider would be Windows 10 or MacOS
3. Office software program: The two programs I would suggest to the company is Office 365 (proprietary) and Libre Office (open source). Office 365 has two categories Home and Business. Office 365 has a monthly fee for each workstation, but it comes with many applications needed for a business. Office 365 Business comes with the following apps: Word, Excel, PowerPoint, Access, SharePoint, Teams, One Drive, Exchange, & Outlook. Libre Office can be downloaded to each workstation for free, but it only comes with a limited number of apps. The limited number of apps can hinder a company and the company will have to look for additional software programs to handle the daily work. Libre office comes with the following apps: Write, Calc, Impress, Draw, Base, & Math.
4. Schedule / Payroll Software program: A schedule program will allow employees a set work schedule or to document any type of overtime for the company to approve. Payroll programs are also needed in this new age because most salaries are paid by a direct deposit into an employee personal bank account. Payroll software also help the accountant keep track of salaries and calculate monthly salaries. Payroll programs will help the employee keep track of paychecks, w-2 forms, sick time, vacation time, and benefits.
5. Internet / Email program: In this new age, access to the internet is not only wanted, but needed for daily use and work. Emails are very important because it allows the employees to receive important documentation and stay in contact with each other. The internet programs I would consider would be Google Chrome, Fire fox, and Safari. The email accounts I would consider would be an outlook web or Google mail.
6. Security Software program: Security programs are needed to prevent and protect the workstations from any malware, viruses, or hacking. Without security programs, the company’s work and information will be unprotected and many hours of work can be destroyed, infected, or stolen by unwanted intruders. A company can be forced to lose or spend an unknown amount of money if their files are infected, which could cause other companies to stray away from being in business with MilleniAds.
7. Media Player / Media Editor software**:** Media software is needed to play any video footage or to create video footage. Media creation will help employees with Power Points or websites to show potential customers the benefits of purchasing product from MilleniAds. The two software programs I would consider would be Windows Media and VLC media.
8. Budget / Audit Management / Tax software program: These programs will be needed for anyone handling the financial aspects of MilleniAds. Budgeting software programs help document and keep track of the business income and expenses to protect the company from overspending. Audit Management software programs reduce the time for an employee to conduct an audit for MilleniAds. An audit can be used to keep track of documents, reports, and data. A tax software program will allow MilleniAds to file the documentation needed for yearly state and federal taxes when registering the company as a S-corp or C-corp.
9. Inventory Order / Inventory Management software / Customer Management: These programs allow MilleniAds to keep a documented track records of any product and components for the company. An inventory management software will keep the employee up to date with many of the physical aspects of the company such as: storage space, number of components (ink cartridges), etc. An order software program will help the employees be on the same page with the items needed for the company’s daily work. For example: Sales staff can have a damaged phone or be low on a certain supply. They can input the items needed in the Inventory order software program and update the employee handling the office management (Office administrator). The office administrator can then approve or deny the order for the needed items. The inventory order software will document the additional items purchased and this will also assist the employee handling the finances of the company.
10. Appointment / Event Software Program: Appointment and event programs are helpfully to a company because it keeps a calendar record for any important event coming to the business such as: a video conference meeting with Microsoft at 10:00 AM or a local company wanting to have a face-to-face meeting with the CEO at the office. MilleniAds having these situations documented gives up to date knowledge and reminders for the employees.
11. Video chat software: I would suggest a video chat software program for employee business meetings and business-to-business conferences. Since MilleniAds has mobile employees, a quality and reliable video chat is needed for the employees to be in contact with each other whether its to share ideas or bring up concerns involving the company at the business meetings. Also, a video chat will assist MilleniAds with having contact with future customers and save the company money from any additional travel expenses for other employees besides the mobile ones.
12. Cloud storage and sharing software program: These programs will be needed for the employees to store documents and work for the company. These programs will give the employees access to their own work or their co-workers which will benefit the team and individual work duties. Cloud based system help because it allows the employee to access their work on different workstations instead of only relying and guarding 1 computer or laptop.

Software Suggestions:

* Office 365 (Reference: #3): The reason I chose Office Suite over Libre Office is because of the apps. Yes, MilleniAds will have the pay a fee for each workstation, but the apps take care of multiple software needs for the company. First, Office 365 can create PowerPoints, documents and spreadsheets. These apps are basic needs for anyone using a computer for work or personal needs. With only these apps, Office 365 makes it almost even with Libre Office but slightly behind due to the fee (List # 3). However, the additional apps are what make Office 365 blow Libre Office out of the competition.

With the use of Office 365 outlook and exchange (List # 5 & 10), Outlook allows an employee to have a company email account in order to handle work contacts on a safe and private account. I chose outlook over Gmail because of privacy and security. I have personally seen, through my prior work experience, Gmail accounts being hacked into by unknown hackers. I have also seen guarded outlook accounts prevent multiple number of hackers attempting to enter the business’ email system. With the use of exchange, the company can have control of its private system for its employees’ outlook accounts. Exchange also updates employees’ outlook with events and appointment calendars.

Next, Access app gives the employees the ability to create and manipulate multiple databases. Databases could be used to store information about customers’ contact info, employees’ info, inventory needs, and it could assist with audits (List # 8 & 9).

These are just a few of the software needs handled by just Office 365. The additional needs that Office 365 can handle are #11 (Teams) and #12 (OneDrive & SharePoint). With the cost value of $12.50/per user per month. The application usage outweighs the fee for the use of this program. I show the value to be approximately $125 per month in total (Products.office.com. ,2019).

* The OS program: Windows 10 is not only reliable, but it makes other programs adapt to it. For example: Apple Safari now can be accessed used by Windows 10 because there is approximately 80% of the computer usage population use Windows 10. Windows 10 is user-friendly, reliable, and has frequent updates. Yes, Windows 10 does have a price value of approximately $200 for each workstation; however, certain hardware purchases come with Windows 10 to assist the sale of the certain hardware. For example, Best Buy shows HP laptops and desktops come with Windows 10.
* Media Player: VLC Media is the software program I would recommend. VLC is user-friendly, free open source program, and it allows you to edit videos for free. Windows Media player is a free software, but Windows Media editor software program is not and can cost approximately $75 per workstation. The other reason VLC is my choice is because it can support a lot of different file types unlike Windows Media.
* Graphic Design (Reference #4): Open source software program. The Adobe apps must be individually purchased with each having a monthly fee. With the multiple fees, the price could be over $500 even for 2-3 users at MilleniAds. I would use an open source program such as GIMP and Blender. These two programs are completely free, and they are user-friendly. GIMP allows the creation and manipulation of images. GIMP also can support many different imaging files which helps with my choice (GIMP, 2019).
* Internet: I would go with Google Chrome since it user-friendly, free, and it is reliable with internet browsing.
* Security (Reference #1 & 2): For security, I chose Norton small business software. I chose this software program because it reviews and cost value. My two top choices were Norton and Bitdefender 2019 due to their 5-star reviews and protection plans. The cost value for 1-year subscription with 20 devices for Norton was $48 (Techsoup.org., 2019) while Bitdefender was $169.99 (Bitdefender, 2019).
* Schedule / Payroll (Reference #5): The program I would suggest is a program called Deputy. I found it to be an alternative for programs such as Schedule Express and EMACs. These two programs are very reliable and user-friendly. The only problems are regulations with these software programs. Schedule Express is only allowed to be used by public safety officers and EMACS is a payroll program only allowing employees with the county of San Bernardino. Deputy is user-friendly and it has 24/7 contact assistance with this company’s employees. Deputy will allow input of hours and it has direct deposit for your employees. It tracks breaks, sick days, vacation days, and any other manipulation of the schedule. Deputy can allow employees to input their hours and it also has auto-scheduling. It also gives an option to upgrade the system just in case MilleniAds grows past 10 employees. With a cost value of $4 per user/per month. An approximately cost would be around $40 per month in total (Deputy, 2019).

***MilleniAds Network:***

The type of network I would recommend for MilleniAds would be a Client-server Network over a Peer-to-Peer Network (PTP). Due to the different types of employees, I chose the Client-Server in order to protect saved and shared files between the workstation. With PTP, there is no central storage location and it can save onto an employee workstation. Depending on the employee, it can be risky to store edited photos onto a financial accountant’s workstation because accountant might not know what these types of files contain and accidentally delete the graphic designers work. A Client-server is more expensive than a PTP, but it allows multiple networks to be handled at a central location.

The Client-Server will need multiple types of servers such as: File and Print Server, Directory Server, Remote Access Server, VolP server, and a few internet appliances. These types of servers will accomplish handling the problems for each one of MilleniAds’ needs. The Remote Access Server will assist the two mobile employees by allowing them access to stationary company files while the employees are on the road or at their homes. The main base of the MilleniAds will need servers like File and Print Server and Directory Server. The File and Print Server will give the employees the ability to share files with each other and print physical copies for the company.

A Directory Server is needed to store employees’ information, but also give user access with the employees’ saved credentials on the computer. A Directory Server will be used to establish the security protocol for the network created for MilleniAds. With a Directory Server and Client-Server Network, I can create workstation’s setting for all the computers without having to configure each workstation.

In order to obtain and keep up security for the network, an active directory and admin password would be used to protect the files in the network. The admin and active directory will protect the workstations from the user’s actions of downloading any type of malware or viruses from the internet. I would also have the company form a group and create an account for each employee. The remote access server will be needed for the mobile employees to use their account for the group.

The User Account and groups information taught in Test out 12.5.1 allows the employees to have their log in custom to their needs and it also allows the protection to the company by denying access to an individual without the correct credentials to enter the group.

Due to the mobile hardware, I would use a Wi-Fi network connection with a modem and router to connect the workstations to a LAN network. Depending on the size of the building, unbound network devices will prevent the company the need to bunch the computer workstations closely together and it will also give the company mobility with the less usage of wires. The scenario states the employees tend to use mobile devices to handle professional responsibilities; however, the employees in the field need to be able to connect their work laptops to the internet. Company’s cellphones for these employees can use a hotspot and tethering to connect the company’s laptops to the internet.

Final Recommendations (Network):

* A Client-Server Network with internal components for File and Print, Directory, and Remote Access. The Client-Server will be more expensive than a PTP style. Average small business server base value: $700.00 (Athow, 2019). Value will increase due to upgrade needs.
* Router will be needed for the Wi-Fi access to the network. Approximately average value of $300.00 (The Balance Small Business, 2019). Approximate average value for 7 of the top Routers in 2019.
* Modem will keep the businesses connected to the internet. Approximate value $170 for a decent modem (Cable Modems, Bestbuy, 2019).
* Creation for user account and user group for MilleniAds to establish additional security and protection for the company’s files.
* Administrative password to protect the company from its own employees obtaining power to download files into the workstation which could infect the network with viruses, malware, and/or unauthorized accessors.
* Company’s Cellphones would be a better choice over BYOD (Bring Your Own Device). A hotspot will be needed to connect the mobile devices to the internet and tethering the cellphones to the company’s laptops will make sure the field employees will have access to the company. With most personal cellphones, hotspots cost additional fees depending on the limit of the employee’s cellphone plan. The company giving cellphones to this employee will make sure the employees stay with the company. The cellphones, cellphone plans, and any additional fees can be used by the company as a tax write off for company’s expenses. Cellphone plans usually can happen when a person or company purchases 4+ cellphones with the deal. At this moment, two cellphones can go to the employees in the field and the other two can go to employees with supervisor roles (CEO & Office Administrator. Verizon cellphone service offers a deal for 4+ cellphones at $60 per line plus additional taxes (Verizon, 2018). This Verizon deal will handle all the necessary requirements for the employees in the field and their supervisors. The total approximate value for this deal will be around $240. Depending on the location of travel and use of internet, the higher Verizon plan will be needed for the employees in the field. Employees not in the field or a supervisor role would continue to BYOD since it has been established that they currently use their own cellphones for personal and professional daily obligations.
* If MilleniAds goes with Verizon, MilleniAds can obtain an internet deal plan for the employee’s workstations at the main office. The basic Verizon Fios plan will be enough due to MilleniAds having a small number of employees at the main office. The basic plan will be approximately $109.99 per month + taxes. (Verizon, 2018)
* Also, most internet services provide a dual router and modem for free when you create an account and become a customer. With this knowledge, an approximate value of $470 can be negated from the total value.

Total approximate initial value for network service will be between $1,049.99 - $1,519.99 with a monthly charge of $349.99 for the Verizon service.

***MilleniAds Computer Maintenance and Security:***

When it comes to the access to company’s files, I do not believe there needs to be a guest access account. A guest account to me is someone that is not really associated with the company and I do not see a necessity for them to see these files. As I previously stated, employees should have an access log in username and password to allow them access to company files. The access account to the system can relate to the outlook web account.

I would suggest two different types of share folders for company’s files. A share folder for completed projects and a share folder for employees. A policy can be issued for any completed projects to be placed in the completed projects share folder. The share folder can then be placed in read permission for anyone without an administrator log in. With an administrator log in, the share folder and its files can be edited. The second share folder could be used for employees to create their own personal folder inside of the share folder. It would allow all employees to review and edit these files, but the files would only be able to be accessed by employees since the system needs an employee access log in. For notification, I believe the setting should be set to default if any apps attempt to change any files. The notification will help administrators be aware if its an employee or an outside source attempting to change the files for MilleniAds. For wireless connection, I would suggest a main Wi-fi and a guest Wi-fi depending on the CEO having meeting with outside companies at the office.

Now for backups and storage, I would recommend the CEO use the purchased Server on an offsite location such as their residence or any trusted location. The server being placed in the same office as the workstation with the already stored files will be like the saying, “Keeping all your eggs in one basic”. If an outside disaster occurs in the office, all the files will be destroyed if the server is kept in the office.

***MilleniAds Future Considerations:***

The total estimated cost to handle this company at the main office is approximately $6,025.98 down payment with a total monthly fee of approximately $514.99. The Norton Anti-Virus services will have to be newly subscribed every year. The yearly total cost for the technology will be approximately $12, 205.86 which is less than half of the total tech budget of $25k.

Now, it would be cheaper for MilleniAds to higher more employees for the main office instead of opening a second branch because the purchase of an additional WI-FI system would not be needed for the additional employees. If MilleniAds opened a second branch at a separate location with the same number of employees, the tech cost for both locations would be just below the max budget of $25k. The reason for this value being lower is because the company can add the other employees to certain accounts such as Verizon cellphone service and Norton Anti-Virus Service. I predict the company would need $25k/yr. per every 2 branch locations.

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