U.S. DATA CENTER

Memo

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| To: | Elizabeth Jones (CIO) |
| From: | Binyam Gebresenbet |
| cc: | Nathan Andrews (CFO) |
| Date: | 3/23/2018 |
| Re: | Improving our memory capacity |

We have been aware for some time that the systems in your organization are having performance problems and there is too much downtime. I and my team have been doing repetitive research on what was causing the problem and we have come to an understanding that, it is time for an upgrade to your webservers. The issues were occurring because the user traffic is usually more than the memory of the server can handle causing the server to crush time to time. To fix this problem, we have two available options and I will try to walk you through them as I proceed. The total memory that we are required to purchase is around 6Tb including a full backup server that will be only used in case the first server becomes vulnerable to a downtime issue. This makes sure that the web server will be working consistently without affecting users time to time.

Now that you are aware of what is causing the problem and, you know how much memory we are required, let me walk you through the available options we can consider to fix the issue. The first option is to purchase a memory device that has a space of at least 6Tb. I was doing research on that and the hardware that caught my attention was a Dell product. The model and version are as follows “WD 32TB My Cloud Pro Series PR4100 Network Attached Storage - NAS - WDBNFA0320KBK-NESN” this device is able to accommodate our network traffic perfectly, but since the size is only 32Tb we will be required to purchase two of its kind because we need to have a backup in case it comes to a downtime. Purchasing two sums up to become 64TB and that will fix the issues we are encountering recently. According to amazon.com, one of the devices costs only, $1,649.00. the two products including SquareTrade 4-Year PC Peripherals Protection Plan, the total cost to purchase the device will be, $3,333.76. This information can be checked at the following link(https://www.amazon.com/gp/cart/view.html/ref=nav\_cart). The drawback of purchasing the device is that you will have to buy another device with bigger memory space when the application gets more traffic than it does now. That being said, the issues we are encountering right now might show up in the future. It may not happen in the near future, but there is always a possibility.

Our second option, which I also recommend is to purchase a memory space on the cloud, there are a variety of cloud service providers these days and the one I specifically recommend is the Amazon cloud service, Amazon charges extremely fair pricing and also the data stored in their cloud is highly secured. This minimizes all the costs we might spend on security, firewall, labor, etc. I have attached the complimentary total cost of ownership (TCO) comparison, that has been done by Amazon web services. The total cost if we choose amazon cloud service will be around $ 52,222 in a 3-year term. According to AWS, we will be saving $328,797 in three years if we decide to choose Amazon Web Services. Additional to the benefits I have discussed earlier, buying Amazon cloud will make sure that we do not ever have to be worried about upgrading our hardware since they provide an enormous amount of space we will probably never reach. On top of that, we are only required to pay for the memory we are using, we do not even have to worry about the backup space because, if traffic builds up and if we need more space than we imagined, Amazon cloud automatically releases space and our application will not go through a downtime.

Since the Inspector General will be doing an audit in 3 months’ time, we should finish all the purchases and cost-related issues before that, otherwise, it will provide a delay in the auditing process and that would create a chaos in the organization; so I urge you approve $ 52,222 request if you decide to go with Amazon and we can set it up in less than a week. I have attached

1- the diagram of how the application uses memory,

2- the spreadsheet of the memory usage in each category

3- total cost of ownership (TCO) comparison between Amazon cloud services and hardware purchases including all costs associated with it.

case management application

**Main Menu**

**2GB**

**New Cases**

**2.4GB**

**Update Cases**

**0.48GB**

**Find Specific Case**

**4GB**

**Search Cases**

**2GB**

Total memory before functional- 16 Gb