

Prompt #3:

Flash Research Assignment: Virtualization and Cloud Computing

You are the CTA for a small but rapidly growing manufacturing company. You have approximately 1,000 servers in your datacenter. The average server costs \$8,000 to purchase (including system software). You also spend approximately \$2,000 per year per server for hardware maintenance, software maintenance, technical support, power and cooling.

You believe that there are considerable opportunities for savings by utilizing virtualization to consolidate server workloads. You believe that 80% of your servers could run as virtual machines under VMware and that, on average, you could consolidate 10 physical servers onto a single virtual machine server. These would be higher end servers costing approximately \$16,000 each (including system software). In addition, they will cost more to run, approximately \$3,000 (each server) per year for hardware maintenance, software maintenance, technical support, power and cooling.

Prepare a paper for the CIO that describes virtualization and focuses on the benefits of server consolidation. Describe the business case for making investments in this technology. This organization always looks at investments over a 3-year period. Assume that you are at the start of a hardware refresh cycle and you will be replacing all 1,000 servers in the next year.

The maximum length of the body of this paper is 1 page. Additional pages may be used for optional diagrams and required references.

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Switching 80% of our physical machines to virtual machines under VMware will yield a \$9.2M three-year net benefit for our company. VMware software is able to consolidate server workloads so that ten virtual machines can run off of a single virtual machine, meaning fewer servers are needed to run the data center. VMware should be immediately implemented into our data center because of the significant cost reduction virtualization offers.

Currently, most servers are underutilized at less than 20% of capacity; fortunately, virtualization can increase utilization to at least 60% of capacity. Due to this increased utilization, virtual machines require fewer servers in the data center. VMware software facilitates virtualization by allowing the conversion of one physical server into many virtual machines. Each one of these virtual machines will run separately and securely as a unique physical machine with its own virtual CPU, memory and disk. Therefore, consolidation ensures that servers can reach increased processing power utilization while simultaneously reducing the number of servers and energy costs in the data center.

Installing virtual machines will yield our company cost savings in both hardware and maintenance costs, ensuring a significant return on investment. As seen in Figure 1, the three-year as-is costs are \$14M while the three-year to-be costs are \$4.8M under virtual servers. These cost savings result in a three-year net benefit of \$9.2M for our company. Clearly, converting 80% of our servers to virtual machines under VMware will create substantial business value for our company.

Works Referenced

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"Server Virtualization & Consolidation." *VMware*. N.p., 2013. Web. 29 Sept. 2013.

<<http://www.vmware.com/consolidation/overview>>.

Strickland, Jonathan. "How Server Virtualization Works." *How Stuff Works*. N.p., 02 June 2008.

Web. 29 Sept. 2013. <<http://www.howstuffworks.com/server-virtualization.htm>>.

Figure 1

As-Is/To-Be 3-Year Analysis				
As-Is Costs	Year 1	Year 2	Year 3	Total
New servers (1,000)	\$8,000,000.00	\$0	\$0	\$8,000,000.00
Maintenance 1,000 Servers	\$2,000,000.00	\$2,000,000.00	\$2,000,000.00	\$6,000,000.00
Total As-Is Costs	\$10,000,000.00	\$2,000,000.00	\$2,000,000.00	\$14,000,000.00
To-Be Costs	Year 1	Year 2	Year 3	Total
200 Traditional Physical Servers	\$1,600,000.00	\$0	\$0	\$1,600,000.00
80 Vmware Servers (10:1 Consolidation)	\$1,280,000	\$0	\$0	\$1,280,000
Maintenance 200 Traditional Servers	\$400,000	\$400,000	\$400,000	\$1,200,000
Maintenance 80 Vmware Servers	\$240,000	\$240,000	\$240,000	\$720,000
Total To-Be Costs	\$3,520,000.00	\$640,000	\$640,000.00	\$4,800,000.00
	Year 1	Year 2	Year 3	Total
To-Be Benefits	\$6,480,000.00	\$1,360,000.00	\$1,360,000.00	\$9,200,000.00