

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 immediately.

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

Virtualization & Cloud Computing

Our company could experience a net benefit of \$9.2 million over three years by utilizing virtualization to consolidate the servers in our data center. Virtualization consolidates server workloads and allows “multiple operating systems to run on a physical server as highly efficient virtual machines” (VMWare). By opting to use virtual machines, we can transform 800 physical servers into only 80, allowing us to operate more efficiently and significantly decrease costs.

Currently we have 1,000 physical servers, each with separate hardware running their own operating systems and applications. Virtualization enables you to use a single physical server to “distribute the necessary hardware capabilities among many users or environments” (Red Hat). Using virtualization, we can consolidate 10 of our physical servers into only 1 virtual machine server and have a combination of 200 physical servers and 80 VM servers in our data center. This set up would minimize the costs of maintenance, support, power and cooling, while increasing productivity.

The three year cost of this project would be \$4.8 million, which combines initial server purchasing prices, maintenance, and tech support. Because of the consolidation, we realize a benefit of \$14 million from avoiding the cost to implement and maintain a data center of 1000 physical servers. As a result, our company would experience a three year net benefit of \$9.2 million.

Works Cited

“The Advantages of Using Virtualization Technology in the Enterprise.” *Intel® Software*, Intel, 7 June 2017, software.intel.com/en-us/articles/the-advantages-of-using-virtualization-technology-in-the-enterprise.

“Virtualization Technology & Virtual Machine Software: What Is Virtualization?” *VMWare*, 2018, www.vmware.com/solutions/virtualization.html.

“Virtualization: What Is Virtualization?” *Red Hat*, Red Hat, Inc., 2018, www.redhat.com/en/topics/virtualization/what-is-virtualization.

# of Physical Servers	1000
Cost per server (w/ software)	\$8,000
Maintenance per server (per year)	\$2,000

% of Servers to run as VM	80%
# of Servers to run as VM	800
# of Physical Servers	200
Cost per physical server	\$8,000
Maintenance per physical server (per year)	\$2,000
# of VM servers	80
Cost per VM server	\$16,000
Maintenance per server (per year)	\$3,000

Costs	Current (As Is)	Virtualization (To Be)
Year 1 (servers + maintenance)	\$10,000,000	\$3,520,000
Year 2 (maintenance)	\$2,000,000	\$640,000
Year 3 (maintenance)	\$2,000,000	\$640,000
Total Costs	\$14,000,000	\$4,800,000

Three Year Benefit	\$14,000,000
Three Year Total Cost	\$4,800,000
Three Year Savings (Net Benefit)	\$9,200,000