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Flash Research Paper – Virtualization and Cloud Computing  
3/1/2017

**Flash Research Assignment:** Virtualization and Cloud Computing

Currently, we spend \$14 million on 1,000 servers, each of which runs only one operating system.

We can save \$9,200,000 over a three-year period by implementing virtualization on our servers.

Virtualization technology can make multiple operating systems run on one single server. By using virtualization, 10 of our traditional servers will be consolidated onto one single virtual machine. Ultimately, we will eliminate all 1,000 servers, which will save us not only the physical space required to place the servers but also huge amount of money.

Without virtualization, we are using only 10% of the server's capacity. Using virtual machines allows us to utilize almost 100% capacity of the server, and minimize the number and the costs of our servers. Each virtual machine we set up can run independently and would not interrupt each other. It is easier to maintain virtual machines because we will need fewer people to maintain them. Virtual machines are also less susceptible to the physical environment; therefore, system downtime will be vastly reduced because of the consistency and stable performance of the virtual machines. Now, 80% of our servers can run as virtual machines, and ultimately, we can eliminate all 1,000 servers.

By utilizing virtualization, we can eliminate the initial and maintenance costs of 1,000 servers, which is \$14 million over a three-year period. We will need to pay a cost of \$4.8 million, including the initial and maintenance costs of 80 virtual machines and 200 traditional servers. At the end of three years, the server consolidation with virtualization technology will generate a net benefit of \$9.2 million.

	Year 1	Year 2	Year 3	
<b>Cost</b>				
<b>80 virtual machines</b>	1280000			
<b>Maintenance for VMs</b>	240000	240000	240000	
<b>200 traditional servers</b>	1600000			
<b>Maintenance for traditional servers</b>	400000	400000	400000	
<b>Total</b>	<b>3520000</b>	<b>640000</b>	<b>640000</b>	<b>4800000</b>
<b>Benefit</b>				
<b>Eliminating traditional servers</b>	8000000			
<b>Eliminating maintenance</b>	2000000	2000000	2000000	
<b>Total</b>	<b>10000000</b>	<b>2000000</b>	<b>2000000</b>	<b>14000000</b>
			<b>Net Benefit</b>	<b>9200000</b>

**Reference:**

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