Flash Research Assignment: Data Centers and Networking

You are the CTA of a small but rapidly growing manufacturing company. Over the past year your organization has experienced 10 unscheduled outages to its ERP system. The vast majority of these outages have been caused as a result of inadequate facilities in your existing, primitive data center. When this system is down your organization cannot process orders, cannot make product, and cannot ship product! Outages cause serious operational problems and impact both the top and bottom line of the income statement.

Prepare a paper for the CIO in which you propose building a "Tier III" data center. Describe the key capabilities of a tier III data center and describe the business case for making this investment. Crude estimates indicate that building this data center will take 1 year and cost approximately $35,000,000. Assume that you are currently running a "Tier I" data center with 99.67% availability. You are proposing building a "Tier III" data center with 99.98% availability. Assume that downtime costs your organization $14,800 per minute. Assume that the organization looks at all investments in technology over a period of three years.

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

Last year our company suffered losses of $25.6 million due to our use of inadequate data center technologies. By upgrading to our data center infrastructure to 'Tier III' we will increase data center availability 0.31% through redundant capacity components and multiple independent distribution paths.

Upgrading our infrastructure from 'Tier I' to 'Tier III' will increase data center availability from 99.67% to 99.98%. The 10 outages we faced this year are directly related to our current 'Tier I' data center that is composed of a single distribution path and does not have redundant capacity components. By investing in 'Tier III' data center infrastructure we are ultimately investing in redundancy capacity components and multiple independent distribution paths. The risk of outage decreases because only one distribution path is required to serve a data center at any given time and 'Tier III' data centers will have multiple sources of power that can be accessed if an event such as a power outage occurs. Additionally the presence of redundant capacity components allows for the removal of any and every capacity component without disrupting or impacting any of the computer equipment or its functionality. In essence downtime is reduced after the implementation of a 'Tier III' data center due to the multiple distribution paths and redundant capacity components compared to 'Tier I' which only has a singular distribution path and non redundant components.

Downtime proves itself costly to our company with a cost of downtime per minute equating to $14.8 hundred. Last year alone we lost $25.6 million as a result of 10 unscheduled outages. However, if 'Tier III' is implemented, down time is reduced ultimately cutting our losses to $1.5 million a year, resulting in a yearly savings of $24.1 million. With the initial implementation cost (three year cost) of $35 million 'Tier III' will bring the company $48.2 million in three-year benefit and $13.2 million in three-year net benefit. Ultimately with a return on investment of 37.8 %, upgrading to "Tier III' data center will reduce downtime and the costs associated, saving the company money and improving overall efficiency.

Table 1

	Minuets in a Year	Availability	Downtime per Year (mins)	Cost of Downtime per Minute	Cost of Downtime
Tier I	525,600	99.67%	1734.48	$14,800	$25,670,304
Tier III	525,600	99.98%	105.12	$14,800	$1,555,776
				Yearly Savings	*$24,114,528*

Table 2

Yearly Cost Vs. Benefit Analysis				
	Year One	Year Two	Year Three	Total
Cost	$35,000,000	$0	$0	$35,000,000
Benefit	$0	$24,114,528	$24,114,528	$48,229,056
			3 Year Net Benefit	*$13,229,056*

References

Craft, Nix. "Explain: Tier 1 / Tier 2 / Tier 3 / Tier 4 Data Center." *Linux Unix Tutorial for Beginners and Advanced Users NixCraft RSS*. N.p., 7 June 2008. Web. 08 Sept. 2014.

"Data Center Site Infrastructure Tier Standard: Topology." *Uptime Institute Data Center Site Infrastructure Tier Standard: Topology* (2012): n. pag. Uptime Institute Professional Services LLC. Web.

Institute, Uptime. "Tier Classifications Define Site Infrastructure Performance." *UPTIME INSTITUTE WHITE PAPER Tier Classifications Define Site Infrastructure Performance* (n.d.): n. pag. Web.