Liang Wu

MIS2501 – Enterprise IT Architecture

Flash Research Paper

Professor Mart Doyle

Data Centers and Networking

By upgrading to a Tier III data center we could increase availability because Tier I data center has a 99.67% availability while Tier III has an 99.98%. Over the last year, our organization experienced 10 outages to its ERP system. I propose building a Tier III data center. A Tier III data center has redundant capacity components and multiple independent distribution paths. Tier III data center will generate a net benefit of $13,229,056 through the result of downtime over three years.

Tier III has capacity components for N+1 redundancy which means that it provides higher availability through redundancy components. Redundancy includes equipment such as diverse network paths, UPS, diesel generators, and power feeds. For example, removing a single capacity component from service will not impact any of the extremely sensitive environments such as data center. Thus, Tier III data center increase availability by 0.31% and no more than 1.6 hours of downtime per year.

The total cost of building a data center over three years is $35,000,000. The downtime cost of Tier III data center is $1,555,766 which includes a $105.12 per minute with 525,600 minutes in a year. But, the downtime cost of Tier I data center is $25,670,304 which includes a $1734.48 per minute with 525,600 minutes in a year. The total benefit of reduced downtime costs over three years is $48,229,056. The company will have a net benefit over three years of $13,229,056.

Works Cited

Data Center Site Infrastructure Tier Standard: Topology. Rep. Uptime Institute, 2009.

 Web. 25 Feb. 2017.

Allen, Mike. "Mike Allen." *Datacenters.com: Find Colocation Data Center Facilities*.

 12 Dec. 2014. Web. 25 Feb. 2017.

Staff, Colocation American. "Data Center Tier Rating Breakdown - Tier 1, 2, 3, 4 –

CLA." *Colocation America*. Colocation American Staff, 08 Feb. 2016. Web. 25

Feb. 2017.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Minutes in a year** | **Availability** | **Downtime****(min/year)** | **Downtime** **Cost** |
| **Tier I** | $525,600 | 99.67% | $1,734.48 | $25,670,304 |
| **Tier III** | $525,600 | 99.98% | $105.12 | $1,555,776 |
| **Savings** |  |  |  | $24,114,528 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Year1** | **Year2** | **Year3** | **Total** |
| **Costs** | $35,000,000 | $0 | $0 | $35,000,000 |
| **Benefits** | $0 | $24,114,528 | $24,114,528 | $48,229,056 |
| **3-Yr Net Benefits** |  |  |  | $13,229,056 |