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MIS 2501 - Section 001

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Data Centers & Networking

Our company needs to address the serious outages happening to our ERP system by replacing the current Tier-I data center with a Tier-III data center. A Tier-III type will boost our data center performance by providing redundant components that can reduce the risk of downtime caused by unexpected interruptions. We can achieve a three-year net benefit of $13,229,056 with this implementation.

While our current Tier-I data center faces about 1734.48 downtime minutes, a Tier-III data center is expected to experience no more than 105.12 minutes of unplanned interruption annually. Since each downtime minute costs $14,800, we can save $24,114,528 a year by utilizing Tier-III. This superior accessibility is supported by redundant components which protect the data center from power outages and allow maintenance to be conducted without affecting the system. While a Tier-I data center has just one power distribution path, a Tier-III data center has at least two paths and also backup power generators; therefore, our new data center can continue to operate even when a path fails to function. Additionally, the multiplicity of cooling components can mitigate the risk of overheating, which is one of the main causes of downtime.

The new Tier-III data center will cost our company $35,000,000 and a year to build. 1629.36 minutes in downtime eliminated will decrease our downtime costs and yield us a total benefit of $48,229,056. As a result, our company can maximize our ERP system’s performance with a three-year net benefit of $13,229,056.

**Figure 1:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Minutes per year (mins) | Availability (%) | Downtime (mins) | Downtime cost per minute (dollars) | Downtime cost (dollars) |
| **Tier 1** | 525,600 | 99.67% | 1734.48 | 14,800 | $ 25,670,304 |
| **Tier 3** | 525,600 | 99.98% | 105.12 | 14,800 | $ 1,555,776 |
| **Savings**  **(per year)** |  |  | 1629.36 |  | **$ 24,114,528** |

**Figure 2:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Year 1 | Year 2 | Year 3 | Total |
| **Cost** | $ 35,000,000 | $0 | $0 | **$ 35,000,000** |
| **Benefits** | $0 | $ 24,114,528 | $ 24,114,528 | **$ 48,229,056** |
| **Net benefits** |  |  |  | **$ 13,229,056** |

**References:**

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