MMT2 IT Strategic Solutions Task 1

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INTRODUCTION

A Energy is the energy generation production of products and services. Currently, A Energy has thirty employees within two locations in Fresno, CA and Chicago, ILL. A Energy is entertaining the possible expansion of two additional location sites in the southern and eastern parts of the country for reaching out to new potential clients which market analysis projected the possibility of 20% growth. In this paper a SWOT analysis was done for the current IT infrastructure. Discussions were on the strengths, weaknesses, opportunities, and threats from internal and external sources to the company. Analysis of the SWOT which addresses the weaknesses and threats. Further discussion was made on workable solutions to weaknesses and threats. Then conclusion of the recommended one specific IT solution based upon my research.

A. SWOT

What is the SWOT of the existing IT infrastructure? According to the assigned reading of Chapter 9 titled SWOT analysis are the objectives for analyzing the business internal and external elements of strengths, weaknesses, opportunities, and threats approaches.

First discussion will be on strengths of A Energy current infrastructure. A Energy noted for functionality providing efficient networks and security monitoring system to protect business assets with redundancies maintaining visibility in any event of crisis. It is evident of the characteristics that the sites in Fresno, CA and Chicago, Ill can operate independently. The IT infrastructure maintains an application server that distributes applications to laptops and workstations as an excellent advantage strength of providing the necessary tools for all employees. There is a limitation on software licenses for analysis software that saves IT infrastructure costs. The production server has been an asset in the supply chain logistics of

production of products and services. Furthermore, the IT infrastructure has excellent security and functionality for physical locations security along with security access physically and access safeguards to the computer production process.

Second discussion will be on weaknesses of the IT infrastructure. An identified weakness is that of the single internet server providing capacity and backup to both sites in Fresno and Chicago. The weakness identified on what would happen if the internet provider would be disabled by a hack. The second weakness identified that of the wireless connection use of WPA encryption and MAC addresses filtering for security purposes. The weakness of the WPA system is outdated and data could be compromised by the unsecured filtering system where anyone could have access to A Energy's IT infrastructure. The third weakness identified would that the application server allows for application storage on laptop in the event the worker needs to access application not connected to the internet; storage of data on a laptop can be also compromised due to hacks. Data storage of IT infrastructure should consider an alternate such as the cloud innovative technology. The fourth weakness are the document access servers allowing permission levels for access to documents to be assigned to the user. These permission levels for access should be administered only by IT personnel because access controls for the control computer system should eliminate any possibility of compromising the security of assets. IT infrastructure web servers fifth weakness addresses the insufficient large file support for files greater than 2GB on a 32-bit operating system to serve 150 clients of A Energy with a current load limit of five hundred concurrent client connectivity. Sixth, the duplicity of database and web servers are created at the other site in case of a disaster. The sixth weakness surely implicates that storage duplication should be anywhere than the business sites because in the event of disasters in both locations the database can be compromised due to security. And lastly the

seventh weakness is that the IT infrastructure is lacking the firewall from the internet to the external sources this lacking the innovative technology of the proxy server to intercept external connections to servers and to internal sources of network connections.

The third discussion will be current opportunities to the A Energy IT infrastructure. First identifiable opportunity was addressed by the owner and executive of A Energy. Arnold proposed for 20% growth of server system use, and storage. Second opportunity was the cost savings from the application server on hours of imaging computed and installing software. Third opportunity also was the costs savings on limited licenses expenses reduced through analysis on how new software could be accessed through the uses of operation. The opportunity expanded by application server and limited licenses by costs savings further the increased chances to dedicate the savings passed on to Research and Development of producing more new products and services. The fourth opportunity of the production server can be leveraged for production of products and services through the other systems on IT infrastructure adding cost savings through integration such as monitoring resources and analyzing data. These opportunities are excellent for updating technology within the current IT infrastructure.

Final discussion of SWOT would be the T for SWOT which are threats to the IT current infrastructure. It can be noted that weaknesses of the IT infrastructure can be or could be threats to the organization. In the weakness discussion of the single internet service not sufficient to provide tier one carrier capacity and backup in both location sites. What would happen if the internet service went down, and the service is interrupted? The production of products and services are compromised with the possibility of losses due to down time in production. The second of insignificant wireless connection use of outdated technology of the WPA encryption and MAC addressing can be a threat to encryption and filtering of data. Third, the threat of web

servers not having sufficient GB capacity to manage any attacks for serving more than 150 clients with a current capacity limited to five hundred concurrent client connection could also limit the protection of growth in sales due to insufficient networking systems. And lastly the threat of lacking firewall from internet to external sources insufficient firewall protection could result in external attacks into all current IT infrastructure system server. All the threats discussed could result from loss of continuation of usage by the by the current IT infrastructure.

Concluding factors about the SWOT analysis the author of Chapter 9 "SWOT analysis" states the necessity to the building of the firm's strengths for reducing weaknesses or else adapting strategic strategies avoiding weaknesses: therefore, exploiting opportunities using firm's strength on competitive advantage, and finally the necessity of reducing exposure to threats and the external environment.

B. Analysis of SWOT

The analysis of the results obtained in the SWOT analysis will identify at least two ways to leverage the strengths of the current IT infrastructure for improvement in existing products and services and what are they? In the production of components of A Energy usage of advanced materials and processing capabilities to supply the components to create superior value product for the client is a definite leverage of the IT current infrastructure. Another leverage to strengths is the investment in technology with Research and Development providing additional leverage of strengths through addressing emerging technologies for advancement to metal products like metal adhesives that are sustainable viable a corporate social responsibility of sustainability to the community and environment. Further leverage of 17.5% sales growth was the expansion of service component parts to energy efficiency and energy generation with current supplies component parts to 150 firms with help from Research and Development to design new and

innovative parts: therefore, increasing the competitiveness of clients. And lastly, the leverage of strengths increased efficiency resulting power being produced with the lessen input resulting in the energy lowering of costs which increases profitability with effect for increase for greater disposable income for clients and sustainability to economic and environmental factors.

This section will identify at least two opportunities within the current IT infrastructure to bring new products and services to existing and potential customers. In the reading of Chapter 9, "SWOT Analysis", it was noted that innovative technology when available in which the Research and Development department can take advantage of for development of products is on opportunistic way of using innovative technology. On the other hand, if the organization does not take advantage of innovative technology due to lack of resources to produce new product cannot exploit the market on the competitive edge. One strategic opportunity by A Energy was to use of blending machinery and advanced materials properties added performance approach to technology integration with association of Research and Development competitive advantage. Another opportunistic opportunity was A Energy's revolutionary advances in material science along with powder processing which provided new capabilities enhancing effectiveness of metal-based components from powders. Another opportunity to brining in new products and services were that their products require energy effectiveness to maintain competitive edge in the market with motors, turbines, and transformers.

Discussion will be made on weakness and threats in current IT infrastructure which would impact potential in the market. It has been addressed that the weakness of just having one single internet service provider on one tier carrier providing capacity and backup on both of sites. The threat and weakness of one internet service provider may indicate the strong possibility that the one single service could be down for several reasons would threaten the capacity and security of

services. There is a need for another internet service backup in the case the primary service is down. Another weakness and threat of the outdated wireless connection use WPA encryption and MAC address filtering for security not enough to firewall intrusion detection for content filtering authentication data encryption. What is needed to address the wireless connection wireless encryption updated WEP (wired equivalent privacy) in which innovative technology wi-fi is protected access throughWPA2 or WPA3 in which A Energy is not complying to industry standards. The last weakness and threat to discussion is that of web servers for support for files greater than 2 GB on 32-bit operating system insufficient to manage some attacks currently to 150 clients with current load limitations to five hundred client connections. My research indicates that 100 email accounts each using 250 MB disk space requiring 100*250MB = 25GB. Therefore, current storage for files of 2 GB not sufficient threat of loss of production data due to insufficient storage.

Discussion will be made on the one weakness or threat with the enormous potential for impact on the current IT infrastructure would be the weakness of using wireless connection use of the outdated technology of WPA encryption. The reason being WPA inherited vulnerable aspects from the older WEP standard. WPA has built in lesser secure encryption requiring a shorter password thus weaker authentication and authorization process. I would not recommend enterprise solution for WPA because it is not built to be secure enough to support business usage. The greater threat would be a hacker getting into the production server compromising the production cycle for recording data information can be altered or omitted causing gross misrepresentation of products and services. Hacking would alter production information displayed of each machine and the evaluation of actual versus expected performance in production and quality would be altered.

C. Solutions

What are the potential solutions that could address the weakness or threat at the impact of using wireless connection for the use of WPA encryption? In the article “Cybersecurity & Infrastructure Security Agency” describes risks on a wireless network like Piggybacking when failing to secure wireless connection anyone within range can access your connection. In wireless sniffing in public access points are not secured along with traffic not encrypted. Unauthorized computer access could allow malicious user to access any directories and files. There are ways to minimize risk of wireless network, for example changing default passwords on a regular basis, restricting access when only authorized users access network, encrypting data on network with using WPA3 currently the strongest encryption method, install a firewall adding a layer of protection to the data, maintain antivirus software, use file sharing with caution , and connect wireless using a Virtual Private Network (VPN) which allows employees to connect securely to network away from the office.

My personal research strategies for identifying and evaluating current technologies according to the article “5 Steps to Evaluate New Emerging Technology” which I consider on a personal basis are the following: 1) asking question based upon your needs, 2) answering the questions like what are the current software needs of the organization, 3) Research of different resources which can help myself and the organization through vendor websites. Industry or technology blogs, and 4) write my hypothesis thus making predictions like forecasting using tools like financial statements’ ROI (return in investment), 5) I would evaluate my hypothesis like assessing a potential software for usage whether the innovative technology would meet the needs of the company. Therefore, after going through the process steps explained above a conclusion is

made. It is important to know how my current business approaches the emerging innovative technology.

What are the two examples of current technology addressing the weakness or threat of current usage of the WPA encryption system? The first example would be to use WPA3 currently the strongest encryption for wireless devices today. WPA3 offers much greater security than WPA which is inherently vulnerable according to industry standards. The WPA3 requires using PMF Protected Management Frames augmenting privacy protections along with security mechanism in place to service data according to the article "WEP vs. WPA vs. WPA2 vs. WPA3": the wi-fi security types are explained." The article states the additional features WPA3 have are the following: "Brute Force Protection, Public Network Privacy, securing the InT Internet of Things, and stronger encryption." The second example of current technology addresses the weakness or threat of current usage of WPA encryption system is that using WPA2 for the best router security according to the article "Life wire, WPA2 vs. WPA", the WPA2 used for personal and Enterprise options while WPA have no enterprise solutions. WPA2 is usually best for corporate wi-fi while WPA is just appropriate for home use and lastly for WPA2 enterprise edition assigns unique authorization credential whereas using WPA requires no unique credentials.

I plan to stay informed accordingly about emerging technologies using two examples of emerging technologies keeping A Energy in the advantage competitively. The first emerging technology I would use is Blockchains according to the article: "How you can turn emerging technology into a competitive advantage." The article states that Blockchain technology is just one of the five major technological transformations that are moving through industry due to security, redundancy, and ability thus somehow preventing hacking or theft from within the infrastructure when applying processes to business transactions. The second emerging

technology I would use is the “Internet of Things (IoT) in which through personal knowledge after gaining a Certificate of Networking and Server Administration Specialist; I have gained the appreciation of using IoT integration of new businesses with how integration with existing businesses making business efficiently approachable and the way the speed of technology making business work more efficiently.

D. **Recommending one specific IT solution**

In the previous sections discussions were making recommendations of alternatives for the current WPA encryption. WPA encryption was regarded of being inferior quality, not providing or requiring security for encryption purposes where hacking can access vital data resources becoming a weakness which is a threat to the current IT infrastructure of A Energy. The two alternatives WPA3 and WPA2 were discussed. I would recommend the WPA3 using PMF Protected Management Frames augmenting the necessary privacy with security that includes Brute Force protection with public network policy with to secure I0T with stronger encryption. WPA3 offers greater security for example WPA3 provides encryption to the client even though the device has been hacked after one connects to the network. To reiterate the above discussion in comparison to WPA2 vs. WPA whereas WPA has nothing to do with Enterprise solutions while WPA2 can be used for personal and Enterprise while WPA is just appropriate for home use. WPA2 Enterprise Edition assigns unique authorization credentials whereas WPA requires no unique credentials; but WPA3 requires greater authorization and authentication processes than WPA2 which makes WPA3 more appropriate for the Enterprise wi-fi for A Energy which adheres to standards of promoting energy efficiency and energy generation to customers. In the research I have concluded that WPA3 encryption technology that is substantiated through

emerging technology system also recommending present and future use for the WPA3 for the business enterprise system.

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