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IT Strategic Solutions – MMT2 Task 4

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# Growth Strategy

The key aspects of the IT infrastructure that must be in place to support the growth of the company are as follows:

1. Online ordering system. The expanded online system that will allow customer to simulate the appearance of the bicycle they would like to order including accessories. The customer will be able to use the system to track the order from to delivery at a licensed dealership.
2. Broadband Internet Access. Each location will need to have Broadband Internet Access to be able to collaborate between sites and to benefit with additional expansions to the infrastructure.
3. Software Defined Storage (SDS) - File Servers can be setup in the headquarters location and use ISCI targets to host the physical drives. By having the document and design files centrally stored, backups can be done at the server level instead of individual computers. Additionally, backups can also be stored to a cloud-based solution such as Microsoft Azure. Distributed File Services (DFS) can then be implemented at each location to replicate the data to be locally accessible to each site.
4. Active Directory Domain Services (ADDS) with multiple Sites. This will create a networked intranet and a move away from stand-alone machines. By using ADDS documents and files can be secured using group-based permissions as well as Dynamic Access Control (DAC).
5. Uninterruptible Power Supplies (UPS) and Backup Generators. This is already in the proposed plans for the network because of power outage in a few sites. These should be implemented at each location.
6. IT Monitor and Management System for the renewable energy systems that will be put in place at each of the participating locations.
7. Custom built Performance Management database application located at the U.S. headquarters site that will be used to store training and evaluation data. This system should not be integrated into other applications.
8. Integrated System for Personnel, Payroll, and Human Resources into a single comprehensive system. This system will be a web-based application with a shared database hosted on a virtual server. This system will be accessible from each location so that all employees can access their payroll and benefits. In addition, by having it on servers, good backups can be taken as necessary and replicated to cloud-based storage.
9. Virtual Server for 3D software. This will allow the software to be accessible from every location for collaboration and approvals.
10. Office 365 for Email. This will allow for additional users as needed, the storage for future growth, and backups of email managed by Microsoft.
11. Upgrade Financial System to a web-based reporting system with data stored on SDS. By storing the data from the Financial System that is located at the headquarters office on the SDS. Backups can happen more often and to a more secure location. Using a web-based reporting system in conjunction with broadband internet will solve the inaccessibility issue.
12. Windows Deployment Servers (WDS) – By using WDS, the IT staff will be able to push down operating systems and application images to employee computers as needed for repair or initial setup.
13. Customer Resource Management System – This will include a FAQ section attached to a knowledge database. Additionally, accurate management of customer data can improve call center response times.

# GAP Analysis

|  |  |  |
| --- | --- | --- |
| Strategic Objective | Current Standing | Action Plan |
| Develop Online Ordering System | Internet Orders are currently not available. Orders are made through phone calls or dealership locations. Orders are reconciled by a monthly report sent via email. | Expand online system that will allow customers to order and track custom bicycles online. |
| Employees need to manage their own hours and vacation requests and allow for approval of manager | Not adequate for future growth and does not meet current company sizing needs | Implement web-based application accessible from each location to allow for strategic objective. |
| Allow users in each site access to the 3D software to build, print, and test prototype parts | Sharing limited to Rome facility. Unable to share with other locations. Limited to only screen sharing of images. | Implement a virtual server for 3D Design and Testing Application that can be accessible from each location to share and collaborate designs. |
| Email system needs to allow for an increased headcount and support spam filtering. Storage capacity for messaging needs to be expanded. | Current email system is only adequate for up to 100 users. Limited space and speed for filtering more than 100 users | Office 365 for Email. This will allow for additional users and the storage needed for future growth. Spam filtering and backup of messages provided by Microsoft as part of the Software as a Service package. |
| Performance Management System that stores Human Resource records of training and evaluations on a custom database that is not integrated with other applications. | Current system does not exist | Custom built Performance Management database application located at the U.S. headquarters site that will be used to store training and evaluation data. This system should not be integrated into other applications. |
| Improved Internet Access to be scalable and highly available that will support high bandwidth applications. | Currently modem access to a local provider is being used at each location. | Each location will need to have a subscription to broadband internet access to be able to collaborate between sites and to benefit from additional expansion of infrastructure. |
| Upgrade Financial System to a web-based reporting system with data stored on SDS at the main headquarters | Currently financial reports are only accessible from HQ site and reports are duplicated. Backups are occurring to external drives. | By storing the data from the Financial System that is located at the headquarters office on the SDS. Backups can happen more often and to a more secure location. Using a web-based reporting system in conjunction with broadband internet will solve the inaccessibility issue. |
| Implement a Windows Deployment Services (WDS) to manage computer images. | Users currently use the operating system supplied with the computer. Software is loaded one program at a time. Administrator need to image computers. | Implement a WDS solution that will allow the IT staff will be able to push down operating systems and application images to employee computers as needed for repair or initial setup. |
| Implement Customer Resource Management System. | A 50-seat limit is currently in place at the Call Center with an additional 50 seats needed soon. Long wait times and lack of a knowledge base. | Implement a Customer Resource Management System – This will include a FAQ section attached to a knowledge database. Additionally, accurate management of customer data can improve call center response times. |

# IT Infrastructure Upgrade Project Proposal

Project Proposal: After the initial GAP analysis and reviewing the key strategic needs of Shore and More Bicycles a three-year project plan will be put into place to upgrade the current infrastructure. The scope of this project is limited to addressing the needs discovered through the initial analysis and infrastructure investigation of the company.

## Physical Implementation:

The first physical process will be to upgrade each location to a broadband internet service provider. This will enable full collaboration between physical locations and allow for the implantation of the project to proceed at a faster schedule.

An Active Directory domain infrastructure with multiple sites will be put into place to create a networked intranet to move away from stand-alone machines. Files servers will be purchased to share documents and design files. The storage for these file servers will be located on Software Defined Storage servers using ISCI targets to host the physical drives. Distributed File Services (DFS) will be incorporated to replicate files to the appropriate sites. Backups will be done to an external SSD drive at the Headquarters location with an additional backup to an Azure cloud service. Uninterruptible Power Supplies and Backup Generators will be purchased for each location to protect against power outages. A physical server will be needed for the Windows Deployment System. Storage for images will be on the Software Defined Storage servers. One last physical server will be needed to monitor and manage renewable energy systems at each location.

## Virtualization Implementation:

Two enterprise-level servers will be used to create virtual servers to maintain and manage the various remaining systems. This includes the Online Ordering System, the integrated system for Personnel, Payroll, and Human Resources, the Customer Resource Management software and the 3D designing software.

## Cloud-based Implementation:

An Office 365 subscription will be implemented to handle the messaging systems and spam filtering for the company. Azure AD Connect will be used to synchronize the on-premises Active Directory with the Azure based Active Directory to provide single sign-on access to both the intranet and email services.

## Software Development Implementation:

The first step is to bring the web hosting and development in house. Salesforce Software is recommended for the CRM solution. ADP Software would be the selected vendor for the Personnel, Payroll, and Human Resources systems. The 3D design software will be moved to a virtual server. The online ordering system will use eCommerce software from LiteSpeed.

## Currently Available Hardware:

Dell PowerEdge Rack Servers will be purchased for the Active Directory Domain Controllers, the Financial Management server, and the Renewal Energy Management Servers. These servers will be located at the main headquarters in Jacksonville, Florida. It is suggested to purchase two physical servers for fault tolerance. For cost purposes, a lower end server can be used for these servers. My recommendation would be the PowerEdge R230 Server which is currently priced at $699.00. Six servers total would then be $4194. (PowerEdge R230, May 9, 2018)

The server I would suggest for the enterprise level virtualization server is the PowerEdge R7415 Rack Server that is currently prices at $2,379. Again, needing two for fault tolerance the price for these servers would be $4,758. (PowerEdge R7415, May 9, 2018)

Additionally, two more PowerEdge R7415 servers would be purchased for the File Server and Software Defined Storage (SDS) services at the main headquarters. To support File Servers and Distributed File Service at each location 6 additional PowerEdge R230 Servers will be procured.

## Currently Available Software:

For the Customer Relationship Management software, the recommend solution would be the Salesforce CRM Platform. Which provides a cloud-based platform to manage sales and marketing. (What is Salesforce?, May 9, 2018)

For the Personnel, Payroll, and Human Resource software, the recommend solution would be ADP services which provides a comprehensive cloud-based solution to streamline the needs of employee management. (Why ADP?, May 9, 2018)

For the Online Ordering system, LightSpeed software will be recommended to provide the eCommerce solution needed for this project. (About LightSpeed, May 9, 2018)

## Hardware and Software Selection Justification:

The justification for the preceding software and hardware purchases are that the vendors selected are widely used in the industry and have the features and support needed to fill the needs identified in the GAP analysis while providing scalable and highly available solutions.

## Company’s Need for System Support:

Most of the software services are supplied with online support for issues related to their products. However, a help desk should be setup to be able to answer frequently asked questions from employees. Additionally, a Server Manager at the main headquarters will be needed to maintain and monitor the physical and virtual servers. An IT technician can be located at each site for as needed support.

## Emerging Technology:

The current project plan is geared toward embracing emerging technologies. First the use of Office 365 is already using a Software as a Service (SaaS) technology. The usage of Azure for backups and Azure AD Connect is an example of using Platform as a Service (PaaS), and finally by virtualizing many of the applications, as growth continues, these virtual machines can be easily lifted and shifted to an Infrastructure as a Service (IaaS) platform such as Azure Virtual Machines.

# D1. Three-Year Plan

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| --- | --- |
| Year One | |
| First Quarter | 1. Present the Project Plan to Stakeholders 2. Begin hiring process of implementation personnel 3. Identify broadband internet service providers 4. Develop purchasing plan for hardware, software, and services. |
| Second Quarter | 1. Connect each location to new ISP 2. Purchase physical servers 3. Purchase UPS and generators |
| Third Quarter | 1. Setup Microsoft Azure Services 2. Install and setup Active Directory Domain Services 3. Setup Office 365 subscription. 4. Setup Azure AD Connect and synchronize Domain Services |
| Fourth Quarter | 1. Migrate messaging mailboxes to Office 365 2. Train employees on new email system 3. Backup data at each location 4. Begin hiring process for long term IT administration team |
| Year Two | |
| First Quarter | 1. Install and setup Software Defined Storage 2. Install and setup File Servers 3. Restore data to new file servers. |
| Second Quarter | 1. Install and setup Distributed File Services 2. Setup backup software and external drive for File Servers 3. Setup secondary backup to Azure Services 4. Begin training of IT administration team |
| Third Quarter | 1. Install and setup Windows Deployment Services 2. Install new UPS and generators at each location 3. Re-image employee computers 4. Move website management and development in-house |
| Fourth Quarter | 1. Purchase enterprise level servers to create virtualized environment 2. Move 3D design software to new virtual server 3. Create virtualized server for Online Ordering system 4. Purchase and install Online Ordering system from LightSpeed 5. Train employees on new Online Ordering system |

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| Year Three | |
| First Quarter | 1. Create virtualized server for CRM system 2. Purchase and install Salesforce software for CRM 3. Train employees on new Salesforce software |
| Second Quarter | 1. Create virtualized server for ADP software system 2. Purchase and install ADP software for Payroll, Personnel, and HR. 3. Train employees on new ADP software |
| Third Quarter | 1. Setup server at each site to monitor and manage renewal energy systems 2. Train IT staff on monitoring and managing renewal energy systems |
| Fourth Quarter | 1. Follow up training for all IT staff and company employees. 2. Finalize meeting with stakeholders to sign off on project completion |

## Business Justification for Upgrade Project

The business justification for the upgrade project is based on the following issues needing to be addressed that were identified during the initial GAP analysis:

1. Orders need expanded to Internet with delivery at a licensed dealership for adjustments.
2. Online system needed to simulate the appearance of the bicycle to be ordered.
3. System needed for a customer to follow the bicycle from order to delivery with images of the bicycle at completion stages and the timeline for processing.
4. IT System needed to be integrated to share documents and design files with other location in a secure manner.
5. The 3D software used in Rome was on a standalone machine.
6. Files needed a way of being backed up for storage and to prevent loss.
7. Two sites had lost electrical power during the work day.
8. Data losses occurred for those workstations and desktops.
9. Need for the integration of UPS and generators.
10. Need for IT monitoring and management of the renewable energy systems.
11. Personnel and Management systems were on standalone machines.
12. Integration need of systems for all sites like the self-report payroll system
13. Payroll system was not adequate for future company growth
14. Unable to share 3D system between sites for collaboration and approvals
15. E-mail system needed updated for additional users, storage space, and spam filtering.
16. Needed performance management system that can record employees and dealership performance, training and other categories
17. Needed to have a single Internet based ordering system to reduce order loss.
18. Internet Access was through modem and could not support high bandwidth applications
19. Financial Systems were limited to weekly backups to an external drive at Headquarters.
20. Financial System had duplication of reports and lack of integration.
21. Employee Computers needed to have image for faster setup of computer.
22. Employee Computers needed improved security measures
23. Employee Computers needed Administrative Remote Access for repairs.
24. Call Center was limited to 50 seats
25. Call Center reported wait times of 20 minutes.
26. Call Center needed FAQ for electronic responses.
27. Call Center needed a system that is more efficient.

# D2. Human Resources

The company needs to hire 50 new customer support representatives for the additional 50 seat expansion of the customer service department. An IT Systems Manager and a Server Manager need to be hired at the main headquarters to manage, maintain, and monitor the new IT infrastructure. Two or three consultants will need to be hired for the three – year role out of the planned upgrade. A helpdesk of two to three individuals will be need for ongoing support, as well as, a technician at each site (7-8 in total). Finally, training will need to be scheduled through Human Resources to make sure each employee is properly trained on the new software being deployed for each of the departments.

# D3. Globalization

By implementing the Online Ordering system, the company is immediately entering into the global market providing that their products and pricing is competitive to other sellers in the Bicycle industry. Proper marketing will allow for Shore and More to attract the experienced biking enthusiasts, as well as, the opportunity to gain new customers. By bringing web development in house, data collection can be implemented on the company website to find out what exactly the customers are looking to purchase. This also allows the company to survey customers on what products they would like to see in the future. By virtualizing many of the systems, the company will be able to quickly expand into other locations around the world. This would include emerging markets that may benefit more from purchasing bicycles as their primary mode of transportation. Improvements in the Customer Service Relations application will allow customers to have answers or issues resolved in a timelier manner, which could encourage repeat business.

# D4. Emerging Technology

As the Internet of Things (IoT) expands, companies can take advantage of our cloud first, mobile first world and Shore and More should not be an exception to the brave new world. The prevalence of wearable devices that track heartbeat, mileage, and calories burned have become increasing popular over the last several years, especially among the fitness conscious. Shore and More can extend this to include new features into their bike parts that would calculate similar data as a smart watch, but also warn bicycle riders of low tire pressure, sensors to recovery or track lost or stolen bikes or maybe suggest bicycle routes based on feedback of other riders.

# Sources

PowerEdge R230 Rack Server. Retrieved May 9, 2018 from <http://www.dell.com/en-us/work/shop/povw/poweredge-r230>

PowerEdge R7415 Rack Server. Retrieved May 9, 2018 from <http://www.dell.com/en-us/work/shop/povw/poweredge-r7415>

What is Salesforce? Retrieved May 9, 2018, from <https://www.salesforce.com/products/what-is-salesforce/>

Why ADP? Retrieved May 9, 2018, from <https://www.adp.com/why-adp.aspx>

About LightSpeed. Retrieved May 9, 2018, from <https://www.lightspeedhq.com/about/>