***Operation Up-To-Date***

**Project Plan**



Tech Fitters, LLC

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Anthony Meunier

**February 25, 2015**

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# Executive Summary

Operation Up-To-Date

Operation Up-To-Date will provide a platform for Small Business Systems Inc. to stay competitive and up-to-date in their field by providing the company a high-tech, updated system of computer networks and resources. This project in itself serves as a stepping stone for greater things to come from the company because it enables the company to move forward in ways they previously could not, and opens avenues for potential future growth because the mainframe will be set in place by this project. The needs for this project are as follows:

* Updated, current computer and network systems
* Database of shared company data
* Linked resource-sharing systems
* Protection and safeguard of critical business data and equipment
* Ensured business continuity plan

Network setup is specific to the needs and office environment of said organization. In order to ensure this setup is achieved as needed, the following constraints and guidelines must be followed:

* All state and federal laws regarding data storage and use are adhered to
* Must work within scope of given ISP equipment and service
* Wireless functionality is implemented where available
* Administrator is available to maintain privileges and control file sharing and resource management

This project will meet the objectives of providing a network of computers and systems that will keep Small Business Systems Inc. at the forefront for conducting business efficiently, safely, and will provide all the necessary tools to enable future growth moving forward. By equipping the business with the most up-to-date systems, costs will be cut on maintaining current, outdated systems which could range in savings of $10,000-$25,000 per year, depending on failure rate of equipment. Lifetime technical support and troubleshooting are also part of this package and will help exponentially in reducing future business costs. Securing both the physical area with the included security system as well as virtual information by use of a VPN will add a layer of protection in order to minimize the impact of any potential disaster-recovery. In addition, an offsite/cloud backup plan of all company resources will help combat any potential downtime or loss that could come from a worst-case scenario.

# Project Charter

|  |  |  |  |
| --- | --- | --- | --- |
| **Project Name** | Operation Up-To-Date | Project Number | D0725 |
| **Project Team** | Tech Fitters, LLC | Prioritization | 1A |
| **Owner(s)** | Small Business Systems Inc. | Start Date: | January 16, 2015 |
| Scheduled Completion Date: | February 26, 2015 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Mission/ Purpose** | *Operation Up-To-Date will provide a platform for Small Business Systems Inc. to stay competitive and up-to-date in their field by providing the company a high-tech, updated system of computer networks and resources. This project in itself serves as a stepping stone for greater things to come from the company because it enables the company to move forward in ways they previously could not, and opens avenues for potential future growth because the mainframe will be set in place by this project.* | | | | | | | |
|  | | | | | | | | |
| **Project**  **Description and Project Product** | *Configuration of new computer systems, printers, and a server to manage these systems are the key components in the project. This project will create a unified, cohesive network of computer systems that will provide shared use of resources amongst the business. This will provide the business more efficient use of resources and help cut costs in the long run due to inadequacies or redundancies in equipment. In addition, increased profits from more efficient business operations will be exponential. Integrating a security system into this small network will also add extra benefits in the form of safety and security of the physical property and the network equipment contained inside of it. Hardware and software sharing will enable users to collaborate in new, productive ways that were previously lacking. Use of a Virtual Private Network (VPN) will also allow more safe and secure methods for the business to conduct operations and also provides means for potential external (off-site) business operations to be conducted. Finally, offsite backup of all network operations will ensure minimal loss in any worst-case scenario.* | | | | | | | |
|  | | | | | | | | |
| **Objectives** | | *This project will meet the objectives of providing a network of computers and systems that will keep Small Business Systems Inc. at the forefront for conducting business efficiently, safely, and will provide all the necessary tools to enable future growth moving forward. By equipping the business with the most up-to-date systems, costs will be cut on maintaining current, outdated systems which could range in savings of $10,000-$25,000 per year, depending on failure rate of equipment. Lifetime technical support and troubleshooting are also part of this package and will help exponentially in reducing future business costs. Securing both the physical area with the included security system as well as virtual information by use of a VPN will add a layer of protection in order to minimize the impact of any potential disaster-recovery. In addition, an offsite/cloud backup plan of all company resources will help combat any potential downtime or loss that could come from a worst-case scenario.* | | | | | | |
|  | | | | | | | | |
| **Business Need** | | *Operation Up-To-Date will provide the business with updated, current computer and network systems. This will provide Small Business Systems Inc. with the capacity to stay up-to-date with the competition in terms of fulfilling orders in a timely manner. With a slow system, many aspects of the business are hindered and limited, from processing orders to scheduling service, and ultimately completing jobs. Fast turnaround times are a byproduct of newer systems, and customer satisfaction will be squarely reflected in a positive manner due to this.* | | | | | | |
|  | | | | | | | | |
| **Milestones** | | 1. *Initial meeting, setup, and survey                  January, 16, 2015* 2. *Begin installation of wiring interfaces            January, 17, 2015* 3. *Installation of Servers                                   January, 19, 2015* 4. *Status of Servers Online                               January, 22, 2015* 5. *Installation of Computers                              January, 23, 2015* 6. *Installation of Computers Online                  January, 26, 2015* 7. *Installation of Printers                                   February, 1, 2015* 8. *Installation and setup of Software                February, 3, 2015* 9. *Installation of Cameras                                February, 6, 2015* 10. *Installation of Security System Software    February, 10, 2015* 11. *Installation of Cloud/Backup System          February, 13, 2015* 12. *All Systems Check and Online                   February, 26, 2015* | | | | | | |
| **Budget** | |  | | | | | | |
|  | | | | | Estimated Labor | | $20,000 | |
|  | | | | | Estimated Materials | | $7,500 | |
|  | | | | | Estimated Contractors | | $5,000 | |
|  | | | | | Estimated Equipment and Facilities | | $50,000 | |
|  | | | | | Estimated Travel | | $2,500 | |
|  | | | | | **Total Estimated Cost** | | **$85,000** | |
|  | | | | | | | | |
| **User Acceptance Criteria** | | | | *First and foremost, successful physical set-up of all required hardware is the basis for determining project success. Proper implementation of physical devices is key in connecting the systems as one, unified network. Software setup and configuration such as setting permissions and configuring sharing functions serve as the second point of emphasis. Implementing software security layers, such as the VPN, and then physical security by way of network-connected security devices serve as key elements in rounding out and completing the setup of the network. Finally, an offsite backup plan provides the final criteria for integration of all these devices and their successful set-up.* | | | | |
| |  |  |  | | --- | --- | --- | | **High-Level Project Assumptions** | | 1. *security system will require minimal external factors and will tie in directly to network* 2. *amount of networked devices will be easily controlled and operated by (one) server device* 3. *amount of networked devices will be achievable on fully wired system for best performance* 4. *wireless functionality is not needed, but will be integrated for future expansion* 5. *there will be a user with sufficient technical knowledge to be system administrator* 6. *pre-existing wiring is in stable shape and can contribute to new set-up* 7. *storage size of backup files will be sufficient for company’s needs* | | **High-Level Project Constraints** | 1. *amount of bandwidth received from Internet Service Provider (ISP)* 2. *quality of ISP’s physical equipment at location (i.e., degraded cable line)* 3. *Data Protection Act, client data will only be kept for relevant purposes and not longer than necessary for those purposes* 4. *must adhere to laws about notification of being filmed via security cameras* 5. *computer and network employee usage policy is important because all resources are now shared and managed* 6. *passwords and user account levels implemented for both company and client protection* 7. *encryption of data (such as VPN) must be lawful and compliant with any government restrictions for business dealings* 8. *size of remote backup files may exceed limits of third parties; third parties may charge additional fees for this service* | | | **Exclusions and Boundaries** | | 1. *cannot account entirely for future growth and needs* 2. *need to work within projected budget to provide services most needed now* 3. *implementation of server device now does not necessarily hold processing power for any future devices* 4. *physical security system can only be so in-depth while remaining under budget* 5. *more physical security cannot be added due to current space (i.e., server room or locked equipment); not necessary for only a small business* 6. *technical support limitations; can only provide troubleshooting for devices we installed* 7. *no additional backup equipment at the moment; all done via Cloud* 8. *integration for using outside devices, via VPN connection, lacking* | | | | | | | | | |
| **Major Risks** | 1. *availability of desired equipment* 2. *downtime involved in business operations while new network is configured* 3. *unforeseen electrical issues; faulty wiring* 4. *software incompatibility* 5. *damaged or faulty equipment received from manufacturer* 6. *issues with video quality from security cameras based on hardware and bandwidth factors* 7. *third party costs exceed projected values and cause project to be over budget* | | | | | | | |
|  | | | | | | | | |
| **KEY STAKEHOLDERS** | | | | | | | | |
| **Project Manager Authority Level** | | | Vice President of Systems Development | | | | | |
| **Project Core Team** | | | Systems Administration Expert  Information Technology Analyst | | | | | |
| **Subject Matter Experts (SMEs)** *(What resources will you need with special expertise?)* | | | Security Systems Information  Data Backup and Recovery Services | | | | | |
| **APPROVALS** | | | | | | | | |
| **Type Name** | | | | | | **Signature** | | **Date** |
| **Project Manager Approval** | | | | | | Anthony Meunier  Vice President of Systems Development  Tech Fitters, LLC | | January 16, 2015 |
| **Customer/Sponsor Approval** | | | | | | Dean Stanton  President, Small Business Systems Inc. | | January 18, 2015 |

# Project Scope Statement

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| --- | --- | --- | --- |
| **Project Name** | Operation Up-To-Date | Project Number | D0725 |
| **Project Manager** | Anthony Meunier | Prioritization | 1A |
| **Owner(s)** | Small Business Systems Inc. |

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| --- | --- |
| **Statement of Work—Project Description and**  **Project Product** | *Operation Up-To-Date will provide a platform of small office networking equipment and set-up for Small Business Systems Inc. that will allow them to stay competitive and up-to-date in their field of business. By providing the company a high-tech, updated system of computers and related systems and then configuring all these systems to work in tandem with one another, Small Business Systems Inc. will be equipped with the tools necessary to provide its customers the best in efficient and caring service.*  *By recommendation of our Information Technology Analyst after his survey and research of the company, fifteen PCs will be acquired and installed in the offices of Small Business Systems Inc. Two server systems will also be secured and configured in order to achieve resource sharing, database management and overall provide a platform for interoperability and interconnectivity with the business’s systems. All required networking hardware and equipment will also be provided and installed in order to achieve a secure, dependable wired network of systems to ensure the fastest possible throughput in relation to the office’s current ISP-configuration. All systems will have the capacity to be shared and managed by an appointed local system administrator, and services can be configured such as printer, fax, scan, and copier sharing. In addition to the mentioned pieces of equipment, all-in-one printers containing all these functions will also be integrated into the office environment in order to maximize productivity while keeping clutter and excess costs to a minimum.*  *Our Systems Administrator expert will configure all devices in a manner that will allow them access to a shared database and resource-pool of data in order to provide the business with direct methods of conducting business and processing orders. These databases and all relevant data will be configured to work jointly with a 3rd party remote backup service that will provide real-time data backup of all internal systems. This provides a reliable and stable means of disaster protection and outfits the company with additional means of storage capacity. In addition, a secure Virtual Private Network System (VPN) system will be configured to work directly within the server system that provides both the function of secure, encrypted access to the Internet and all business activities conducting while online in addition to serving as a framework for remote connections to access the business server and its database from external locations.*  *Finally, an extensive security system of surveillance cameras will be purchased and configured to work within the networked system. This security system will be provided by a 3rd party company who specialize in providing surveillance solutions to businesses. Cameras will be secured and affixed to multiple outside locations around the facility and will be directly connected to each and every other networked device. This will provide multiple sources of monitoring when desired and will also take advantage of all storage space available in the network to save security feeds.*  *This project not only provides a stable and up-to-date platform for Small Business Systems Inc. to achieve business success immediately, but it also serves as a stepping stone for the company’s future as well because it lays the framework for any future additions to the system. In order for any business to be successful, you first need strong underlying values and principles that help solidify and help your business plan come to life – Operation Up-To-Date provides the technological values and principles that will help take Small Business Systems Inc. to the next level of success!* |
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| --- | --- | --- |
| **Project Deliverables** | 1. *Business requirements document including approved blueprint with layout of system hardware in accordance with employee position requirements* 2. *Desktop computer systems* 3. *Computer server devices* 4. *Network hardware, including routers and switches* 5. *Printers, Scanner, Fax, Copier and similar resource-shared equipment* 6. *Security cameras* 7. *Software relevant to setup of each hardware component* 8. *VPN implementation* 9. *Cloud data service* 10. *Support document detailing included technical support and troubleshooting* 11. *Network specifications including management tools such as passwords, etc.* | |
|  | | |
| **Project Objectives** | *The objective of this project is to develop and provide a modern computer network set-up to the main office of Small Business Systems Inc. This project will completely replace any current system in place and is set to be complete by February 26, 2015 at a budgeted cost of $85,000. The goals of the project include the following:*   * *Develop a completely new network of computer systems based on amount of users working at the company office* * *Provide and install framework to enable functionality of network, including switches, routers, and cabling required to connect equipment* * *Provide and install all required network hardware, including computer, server, and printing systems* * *Load and configure appropriate software on computer and server systems* * *Integrate security camera system into network and configure related software* * *Configure Virtual Private Network* * *Provide system to enable automated backup of data to remote server* * *Include lifetime technical support and troubleshooting of products and system installed* * *Reduce repair and maintenance costs by unifying systems and resources and eliminating redundancies* | |
| **Project Assumptions** | 1. *Security system will require minimal external factors and will tie in directly to network* 2. *Amount of networked devices will be easily controlled and operated by (two) server devices* 3. *Amount of networked devices will be achievable on fully wired system for best performance* 4. *Wireless functionality is not needed, but will be integrated for future expansion* 5. *There will be a user with sufficient technical knowledge to be system administrator* 6. *Pre-existing wiring is in stable shape and can contribute to new set-up* 7. *Storage size of backup files will be sufficient for company’s needs* 8. *Pre-existing internet connection is sufficient* 9. *Periods of network downtime are considered acceptable to company* 10. *Areas in need of highest security will be included in camera placement without hindrance due to natural or building obstructions* 11. *External temperatures will allow proper function of outside security equipment* 12. *All components in system will interconnect and function as intended* 13. *Employees using system already have basic Windows operating system skills* 14. *No physical internal security is necessary* 15. *All ordered equipment is promptly available and will not have any physical or operational defects* 16. *Any and all required legal documents/notices relating to surveillance equipment and set up are attained by company* | |
| **Project Constraints** | 1. *Amount of bandwidth received from Internet Service Provider (ISP)* 2. *Quality of ISP’s physical equipment at location (i.e., degraded cable line)* 3. *Data Protection Act, client data will only be kept for relevant purposes and not longer than necessary for those purposes* 4. *Must adhere to laws about notification of being filmed via security cameras* 5. *Computer and network employee usage policy is important because all resources are now shared and managed* 6. *Passwords and user account levels implemented for both company and client protection* 7. *Encryption of data (such as VPN) must be lawful and compliant with any government restrictions for business dealings* 8. *Size of remote backup files may exceed limits of third parties; third parties may charge additional fees for this service* 9. *Client budget ultimately dictates size, scope, and technicality of the project* 10. *Accessibility of building structure; factors such as crawl space, etc.* 11. *Building layout and wall thickness, in the event of any wireless systems implemented* 12. *Usable and relevant life cycle of software being installed* 13. *Preservation of surrounding community privacy could be questionable due to security cameras* | |
| **Exclusions** | 1. *Cannot account entirely for future growth and needs* 2. *Need to work within projected budget to provide services most needed now* 3. *Implementation of server device now does not necessarily hold processing power for any future devices* 4. *Physical security system can only be so in-depth while remaining under budget* 5. *More physical security cannot be added due to current space (i.e., server room or locked equipment); not necessary for only a small business* 6. *Technical support limitations; can only provide troubleshooting for devices we installed* 7. *No additional backup equipment at the moment; all done via Cloud* 8. *Integration for using outside devices, via VPN connection, lacking* 9. *Management of computer software security systems such as basic firewall and virus protection (will be managed by client)* 10. *External methods of processing client orders, like payment or fulfillment, will not be addressed* 11. *Functionality and capacity for future users* 12. *Environmental conditions of office where equipment will be stored; heat generated from large number of electronic systems* 13. *Cleanliness of systems or methods to manage/address key issues such as dust build up over time* | |
| **Acceptance Criteria** | *First and foremost, successful physical set-up of all required hardware is the basis for determining project success. Proper implementation of physical devices is key in connecting the systems as one, unified network. Software setup and configuration such as setting permissions and configuring sharing functions serve as the second point of emphasis. Implementing software security layers, such as the VPN, and then physical security by way of network-connected security devices serve as key elements in rounding out and completing the setup of the network. Finally, an offsite backup plan provides the final criteria for integration of all these devices and their successful set-up.*  *The end result of this project will provide products and services that better encompass the scope of business operations for Small Business Systems Inc. The products, which include computer systems, networking equipment, printers, servers, and all relevant software services will enable to company to perform all business activities in a capacity that meets and exceeds the standards set forth in the industry for providing fast and efficient order processing and delivery of goods and services.*  *The following criteria outline key functions of the project and determine project completion:*   * *Interconnected network of local office computers* * *Shared access to all network resources, including devices such as printers* * *Server functionality which allows for user authorization levels* * *Network-connected security system which can be controlled and monitored via local network* * *Security integration via use of added VPN network* * *Remote access to business network via VPN connection* * *Backup of company data to remote cloud server* | |
| |  |  | | --- | --- | | **Technical Requirements** | *In order to implement this project there must first be a thorough assessment of business requirements. From this assessment it can be determined how many systems are required in developing and connecting the network as a whole. Because the office houses 15 employees, all of whom need regular access to a computer system in order to access and process orders required to process and fulfill job requirements, it is imperative that each user is provided and maintains their own, unique computer system to conduct business on.*  *The goal of this project aside from physical assessment and setup of all required hardware is to develop and integrate a shared database of company-wide resources. In order to accomplish this, all computer and network systems will be connected to a pool of servers which can manage and distribute any and all necessary documents between each unique computer. Essentially, all users have the capacity to operate independently while also being able to tap into a shared network of documents and resources when desired.*  *The resource sharing of network components exists both at the physical and software levels. Firstly, (15) individual HP ProOne 600 G1 All-in-One PCs will be used in this network setup. These PCs provide the capacity for related products (primarily from the HP-line of enterprise computing products) to communicate with one another via a simple wired or wireless connection. Interfacing is done simultaneously across integrated network chipsets included on the motherboard that enables these devices to receive commands and processes from one another. This in itself addresses the notion of interconnected, shared network devices. However an external, centralized device is recommended to best manage and allocate traffic amongst these devices. Additionally, these All-in-One workstations serve as a cost-efficient method of outfitting the business capable business machines because the fact that they are all in one means no extra monitors are required to be purchased. Also, these systems can be bought directly from the manufacturer with no preloaded (Windows) software in bulk packages which saves on cost.*  *Expanding on that concept is the introduction of an HP ProLiant MicroServer Gen8 into the network system. For this size office, (3) HP ProLiant MicroServer Gen8’s will be added in order to provide sufficient processing power to allow the network to be self-sustaining and dependable under load. While these systems do come with HP-side software solutions to interconnect all the devices, its best left to only let the HP products interface with one another via the hardware chipset on the motherboards and use an external means of interfacing the hardware with each other from a user-level software solution.*  *Appropriate software makes integration and management of the systems a breeze. In this case, Windows is the preferred operating system due to user-experience and history. Therefore, (1) Windows Server 64-Bit will be installed on all hardware systems to provide a platform for cohesive user interaction and resource management. This operating system comes in various versions at multiple price points, but for this project a more expensive Enterprise edition will be used because there are no user limits or installation caps. This will allow only one copy of the product to be purchased and then be used to fulfill all 15 computers’ and 3 server devices’ software requirements. In addition, any future users or computer systems that are introduced in the company will theoretically have access to the same software platform as all existing computers, without the need for extra added cost down the line.*  *Windows Server will provide the required tools in the form of a domain to configure user accounts and designate an appropriate administrator-level user to manage the domain accounts. From this administrator account, functions can and will be configured to enable common network sharing functions such as printer and device sharing which is performed from within the administration settings available on Windows Server. Not only will this enable sharing potential amongst office devices and data, it will also provide the ability to restrict access of information where and when desired.*  *All of the devices mentioned have software-enabled (via HP chipset) wireless interfacing capability, so all additional network equipment will be wireless-compatible as well in order to enable this function if it is ever needed, perhaps due to company growth. For this set-up, though, all network equipment will be physically connected and wired. Although this is initially requires more set-up, the results are faster, more reliable transfer speeds.*  *To achieve a fully wired set-up, appropriate network cables must be integrated. For an office of this size, we will need an estimated 1,000 feet of Cat5E Network Ethernet Cable. The caveat is each device will need to be plugged in individually to its respective port on network equipment. To achieve this we can splice the bulk cable and use IDC junction blocks to essentially transform each section of spliced cable into an individual cable of appropriate length with like-ends on each side for proper connection.*  *The Ethernet cable will then be plugged from each one of the networked devices to their closest appropriate network hub. We will split the office in sections of three. Essentially five computers per section dictates that we use one network-hub per section, for a total of (3) network hubs. Cisco FastHub 400 Series serves as a good choice for these devices because they provide a cost-effective way to blend the features of performance, manageability, flexibility and redundancy. 10BaseT/100BaseTX uplink ports ensure that full bandwidth is received from the existing ISP modem (to parent hub), and then to all child hubs.*  *To go along with interconnectivity of all office-systems, there will also be shared use of printing, faxing, scanning, and copying devices. In order to help consolidate resources, (3) HP LaserJet Pro 400 MFP M425dn multifunction laser printers will be acquired and installed in this set-up. These devices, again, will be implemented into each “divided” section of the office – one per every five computer systems/users. These multifunction printers include faxing, scanning, and copying in addition to printing, which will help eliminate redundancy in devices within the office. They are also rated to print up to 50,000 pages per month which should be suitable for the business’s needs.*  *After the network hardware and software is configured and performing at maximum specifications, an additional layer of security will be added to the network by the set-up and use of a Virtual Private Network. To keep this as simple and cost and time effective as possible, an SSL (Secure Sockets Layer) encryption method VPN will be created locally on one of the server systems. This method of VPN is clientless and does not require a specific software to be configured on each machine that uses the VPN. This implementation is done via the Microsoft Config and Network Connections menus, and then the matching key/login information is simply entered into a web browser on the client computers which establishes the secure connection for the duration. Theoretically this VPN will also allow access to the network-server and all its data even via remote connection sources that successfully login using the SSL credentials. This will allow business to be conducted in locations outside of the physical office which can add exponential potential to business operations as a whole.*  *As a final layer of security, a fully network-integrated security camera system will be implemented on office property in order to protect all of the valuable resources now housed within the building. In order to achieve this, we will need to contract out some devices and labor from Axis Communications who specialize in providing security and surveillance systems. All cameras will be fixed and arranged on the exterior of the building, and in this case we will use (6) AXIS M1113-E Network Cameras. By using six devices we can have full coverage by affixing two cameras to each side of the front of the building, two cameras to each side of the rear of the building, and then one device per each side of the building. These cameras are unique and suitable for this set-up because they function by power over Ethernet, which can be plugged directly into our existing network system and each computer can then individually access the camera feeds.*  *The final point of emphasis in effective implementation and completion of this project is a remote backup system capable of storing all of the business’s data in a remote, off-site location. What this provides is a means of disaster-recovery in a worst case scenario. If any point/device in the network experiences a hardware malfunction which results in a complete loss, this backup system provides a platform where all the data is stored and can easily be attained via a downloadable system-clone for each unique computer. For this service, Carbonite will be purchased and installed for every PC on the network. What Carbonite specifically provides is real-time Cloud backup. When the software is run on a system, all files are sent to the Cloud automatically and continually. In addition, SSL encryption is once again used to ensure the safest file transfers, adding yet a final layer of security to round out the new network setup that Tech Fitters will provide during Operation Up-To-Date.* | | | |
|  | | |
| **APPROVALS** | | |
| 1. **Type Name** | 1. **Signature** | 1. **Date** |
| **Project Manager Approval** | Anthony Meunier  Vice President of Systems Development  Tech Fitters, LLC | January 22, 2015 |
| **Customer or Sponsor Approval** | Dean Stanton  President, Small Business Systems Inc. | January 22, 2015 |

# Work Breakdown Structure / Project Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task Name | Duration | Start | Finish | Predecessors |
| **Operation Up-To-Date: Small Office Network Set-Up** | **1.55 mons** | **Fri 1/16/15** | **Thu 2/26/15** |  |
| **Determine Business Requirements** | **2 days** | **Fri 1/16/15** | **Sun 1/18/15** |  |
| Meet with and interview management | 1 day? | Fri 1/16/15 | Fri 1/16/15 |  |
| Determine client's requirements | 1 day? | Fri 1/16/15 | Fri 1/16/15 | 3 |
| Determine project budget and scope | 1 day? | Fri 1/16/15 | Fri 1/16/15 | 3 |
| Define performance requirements | 1 day? | Sat 1/17/15 | Sat 1/17/15 | 3 |
| Assemble and brief project team | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 6 |
| Develop blueprint for topographical placement | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 6 |
| **Install Desktop Computer Hardware** | **12 days** | **Sun 1/18/15** | **Mon 2/2/15** | **2** |
| Determine and select appropriate systems | 2 days | Sun 1/18/15 | Mon 1/19/15 | 2 |
| Price and order desktop PC systems | 5 days | Mon 1/19/15 | Fri 1/23/15 | 10 |
| Receive and install hardware | 5 days | Tue 1/27/15 | Sun 2/1/15 | 11 |
| Connect mouse and keyboard to each computer | 1 day | Sun 2/1/15 | Sun 2/1/15 | 12 |
| Connect devices to power | 2 days | Mon 2/2/15 | Tue 2/3/15 | 12 |
| **Install Systems Software** | **3 days** | **Tue 2/3/15** | **Thu 2/5/15** | **9** |
| Determine software needed for each system component | 1 day? | Mon 1/19/15 | Mon 1/19/15 | 2 |
| Price and order software packages | 1 day? | Mon 1/19/15 | Mon 1/19/15 | 2 |
| Install software on each network device | 1 day? | Tue 2/3/15 | Tue 2/3/15 | 17 |
| Install and configure Windows Server software | 1 day? | Wed 2/4/15 | Wed 2/4/15 | 17 |
| Configure appropriate settings for each software installation | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 18 |
| Create user accounts | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 20 |
| **Install Networking Hardware** | **4 days** | **Thu 2/5/15** | **Tue 2/10/15** | **2** |
| Install and run ethernet cable | 1 day? | Tue 2/3/15 | Tue 2/3/15 | 9 |
| Route network cable through walls | 1 day? | Wed 2/4/15 | Wed 2/4/15 | 23 |
| Connect network equipment via wired ethernet connection | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 24 |
| Install and configure switches | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 24 |
| Connect ISP modem to switch | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 26 |
| Install UPS power supplies | 1 day? | Mon 2/2/15 | Mon 2/2/15 | 14 |
| Open up port forwarding protocols to allow all switch devices to communicate | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 26 |
| Assess building structure for wireless signal strength | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 2 |
| Configure routers to enable wireless functionality | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 25 |
| Place network equipment in prime areas to enhance wireless signal | 1 day? | Mon 2/9/15 | Mon 2/9/15 | 31 |
| Acquire backup generator power supply | 1 day? | Mon 2/9/15 | Mon 2/9/15 | 14 |
| Wire UPS systems secondarily to generator | 2 days | Mon 2/9/15 | Tue 2/10/15 | 33 |
| **Configure Server Devices and Administration Privileges** | **4 days** | **Tue 2/10/15** | **Fri 2/13/15** | **22** |
| Determine appropriate amount of server systems | 1 day? | **Tue 2/10/15** | Tue 2/10/15 | 2 |
| Price and order server devices | 2 days | **Tue 2/10/15** | Wed 2/11/15 | 36 |
| Install Oracle SQL database | 1 day? | Wed 2/11/15 | Wed 2/11/15 | 17 |
| Upload current internal records to database | 1 day? | Wed 2/11/15 | Wed 2/11/15 | 38 |
| Designate a network administrator user | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 38 |
| Configure user permissions | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 40 |
| List and authorize network devices | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 40 |
| Configure zones and distribute devices evenly amongst zones | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 42 |
| Interface server systems with client devices | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 43 |
| Push automatic updates to clients | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 44 |
| Create server map image for backup | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 45 |
| **Configure Resource-Shared Equipment** | **2 days** | **Fri 2/13/15** | **Mon 2/16/15** | **35** |
| Determine number of required network-shared devices | 1 day? | **Fri 2/13/15** | Fri 2/13/15 | 2 |
| Price and order network devices | 1 day? | **Fri 2/13/15** | Fri 2/13/15 | 48 |
| Attain printers, fax, scan and copy machines | 2 days | **Sat 2/14/15** | Sun 2/15/15 | 49 |
| Wire devices to system hubs | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 50 |
| Configure sharing settings on printers | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 51 |
| Enable wireless printing from compatible devices | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 52 |
| Sync devices to server | 1 day? | Mon 2/16/15 | Mon 2/16/15 | 53 |
| Follow Universal Naming Convention for all devices | 1 day? | Mon 2/16/15 | Mon 2/16/15 | 54 |
| **Install Security Camera System** | **5 days** | **Mon 2/16/15** | **Fri 2/20/15** | **47** |
| Contract Axis Communications to provide security system | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 2 |
| Assess building exterior for ideal camera postions | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 57 |
| Assess building structure for stability and connectivity ability | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 58 |
| Price and order camera hardware | 3 days | **Mon 2/16/15** | Wed 2/18/15 | 57 |
| Affix cameras in weather-proof housing to exterior of building | 2 days | Wed 2/18/15 | Thu 2/19/15 | 60 |
| Attain permits | 1 day? | Thu 2/19/15 | Thu 2/19/15 | 61 |
| Place notification of CCTV recording | 1 day? | Thu 2/19/15 | Thu 2/19/15 | 61 |
| Interface cameras to client computer systems | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 61 |
| **Implement Virtual Private Network** | **1 day?** | **Fri 2/20/15** | **Fri 2/20/15** | **35** |
| Define settings for Remote Access Server | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 38 |
| Identify client computers | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 46 |
| Select appropriate Internet Protocol and enable VPN | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 67 |
| Connect local computers to the configured VPN IP Address | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 66 |
| Enable VPN auto-connect on each client | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 69 |
| **Implement Cloud Data Backup Service** | **1 day?** | **Sat 2/21/15** | **Sat 2/21/15** | **35** |
| Contract service plan with Carbonite | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 46 |
| Purchase data plan with sufficient storage | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 72 |
| Install Carbonite software on all client computers | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 72 |
| Configure options for real-time backup | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 74 |
| Backup clients to server | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 75 |
| Send from server to cloud service | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 76 |
| **Create Support Document** | **2 days** | **Sat 2/21/15** | **Sun 2/22/15** | **71** |
| Provide details of offered technical support | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 2 |
| Outline manufacturer hardware warranties | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 79 |
| Catalog external resources for support avenues | 1 day? | Sun 2/22/15 | Sun 2/22/15 | 79 |
| Include FAQ and solutions to common issues | 1 day? | Sun 2/22/15 | Sun 2/22/15 | 79 |
| **Provide Network Specifications Guidelines** | **2 days** | **Sun 2/22/15** | **Mon 2/23/15** | **71** |
| List all relevant login information | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 21 |
| Detail computer permissions | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 41 |
| Highlight limitations of network setup | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 5 |
| Illustrate and present physical topology | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 8 |
| Show groups of connected devices | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 43 |
| Present detailed list of software configuration methods and settings | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 20 |
| **Test Systems and Final Checks** | **4 days** | **Mon 2/23/15** | **Thu 2/26/15** | **77** |
| Test user permission levels for security | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 41 |
| Each client desktop PC can successfully print | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 55 |
| Ensure each client system is securely connected to VPN | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 70 |
| Each client PC can access and control camera systems | 1 day? | Tue 2/24/15 | Tue 2/24/15 | 64 |
| Each system successfully backs up to cloud server | 1 day? | Tue 2/24/15 | Tue 2/24/15 | 77 |
| Client can successfully connect to systems via provided credentials | 1 day? | Wed 2/25/15 | Wed 2/25/15 | 84 |
| All equipment functions via power from generator | 1 day? | Wed 2/25/15 | Wed 2/25/15 | 34 |
| All systems pass check and brought online | 1 day? | Thu 2/26/15 | Thu 2/26/15 | 97 |
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# Risk Management Plan

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  | Risk Register |  |  |  |  |
| **ID** | **Risk Name** | **Risk Description** | **Impact** | **Probability** | **Risk Ranking** | **Positive/Negative** | **Proactive Response Plan** | **Trigger Event** | **Reactive Contingency Plan** |
|  |  |  | VH,H,M,L,VL | VH,H,M,L,VL | What is the risk color code ? | Is this a positive or negative risk from the risk matrix? | What proactively can be attempted to make the risk happen or prevent it? | What do you think will trigger the event? | What are your backup plans if the risk should occur? |
| 1 | Weather conditions impact security camera device proper operation | If the weather is hotter or colder than devices are rated to operate at, they could malfunction and not record | H | M | Yellow | Negative | Detail limitations in project scope of camera equipment and acknowledge said operating temperatures. If company office exists in a climate that experiences extreme temperatures, may want to consider alternate equipment that may be more expensive. | Extreme outside temperature conditions which cause the camera to freeze or overheat | Keep devices both physically secured to prevent theft as well as software-secured, such as through passwords and controls which prevent access |
| 2 | Insufficient bandwidth | Amount of bandwidth throughput from ISP will not support all systems | H | M | Yellow | Negative | Conduct speed tests to get a general idea of throughput; if found insufficient, consult with ISP about higher package availability and secure installment/setup of this package | Does not possess Internet service pacakage with enough bandwidth | Find a new ISP in area with greater bandwidth packages |
| 3 | Data Protection Act | Pressure to follow laws regarding management of client data | L | L | Green | Positive | Use pressure of the law and potential punishments/sanctions as an opportunity to set systems in place beforehand that further increase security of client data. | Failure to meet standards set in place by Data Protection Act; not lawfully storing data | Manually manage and clean up client data to fall back in compliance with laws stated |
| 4 | Equipment does not arrive on time | If equipment delivery is not within projected WBS window, critical path would fall behind because other systems cannot be setup without equipment first | H | H | Red | Negative | Talk with manufacturer before project starts to get an idea of available equipment and make checklist of any potential issues or slow downs. Work with manufacturer directly to ensure order is processed, shipped, and delivered in a timely manner. | Hardware is out of stock or does not ship on time | Have backup selections of equipment in place and order this equipment if issues arise with original orders |
| 5 | Faulty wiring | If any pre-exisitng, internal wiring is faulty it could cause shorts in systems and potentially be a fire hazard | H | L | Yellow | Positive | Add for Project Scope to also include a full diagnostic and walk-through by certified building inspector to assess pre-existing building conditions such as wiring already in place. | Sparks or surges when systems are plugged in, turned on and operated | Connect all equipment to UPS power strips in order to reduce/prevent surges and possible damage to equipment |
| 6 | Structural incompatibility with wireless systems | Hallways and/or walls impede wireless signal strength | M | M | Yellow | Positive | Hard wire all systems with ethernet cable. This will ensure that the strongest signal is passed to and from all devices, which is ideal for conducting quick and accurate business. | Wireless systems have poor signal strength and operate slowly and may disconnect from access point | Purchase wireless equipment that provides better signal replication and strength |
| 7 | Structural incompatibility with camera systems | Walls are too thick and do not allow for proper routing of cable to camera systems; camera systems cannot be mounted to exterior walls | M | L | Yellow | Negative | Steps can be added to the WBS to include assessment of the structure, particularly the outside areas where cameras will be affixed, in order to determine if camera placement if viable | Cameras cannot be affixed to outside of building due to material of building walls | Work with contractor to learn details about ways to make camera system work or even potentially consider different type of surveillance system |
| 8 | Hacks, viruses, malware attacks | Systems can be easily accessed and compromised by these attackers | H | M | Yellow | Positive | Include appropriate antivirus and firewall protection in project scope and WBS and make sure this protection software is installed and up-to-date on every system on the network. | Systems on the network are the target of viruses and integrity is compromised | Completely wipe and recover affected systems and restore them to full working order. |
| 9 | Privacy laws relating to security camera placement and filming | Laws exist that state one must be notified if they are being recorded; must inform surrounding area of filming | M | L | Yellow | Negative | Properly post signs in accordance with laws and regulations; place these signs around perimeter of building where filming is taking place. | Do not have proper notification of security camera filming | Reassess placement of signs and make sure their text and description is in accordance with what the law states |
| 10 | Internal compromise of client data | A user can potentially access files they are not meant to if access controls are not properly set | M | VL | Green | Positive | Implement firm user permissions and access controls by setting up an administraot and client user accounts. This admin will be able to share and set file permissions specifically with certain users in mind which will ensure integrity. | A user accesses or changes a file they should not be viewing | Put physical locks and controls on equipment in order to prevent systems from even being turned on and accessed |
| 11 | External compromise of client data | If data at a remote backup location is damaged or accessed illegally, the company is responsible and liable for customer data | M | M | Yellow | Negative | An external factor like this cannot be totally prevented. Instead, what we can do is implement security measures like encryption to make sure that any data sent out by the company is already protected so in the event of a compromise it will not be a large deal cause the data is hidden. | A fire or natural disaster occurs; a piece of hardware malfunctions, or data is compromised by hackers at the remote location | Disassociate servers from remote servers so data immediately stops being backed up to the compromised entity |
| 12 | Software incompatibility with other features on system | If some of the hardware components allow interfacing with one another by physical component but software is installed over that, there may be conflicts | L | L | Green | Negative | Project Charter dictates that resource sharing via server devices and permissions is imperative criteria of project completion. Resource sharing is easily achieved via this software layer and also allows for easy backup and integration with external systems. | Network sees double of each system due to hardware-linking and then server/client integration via software | Disable each component's physical hardware ability to interface via BIOS settings; remove any hardware adapters that enable this functionality |
| 13 | Users cannot perform basic resource sharing functions | Some users may have trouble understanding which group of systems they are part of and which printer, etc. they have access to which could result in malfunction | VL | L | Green | Positive | Include detailed support documents in WBS that explain how each system is physically linked and how appropriate software allows systems to share resources; provide FAQ for common issues | Users of system cannot properly do tasks such as sending a document to a shared printer | Instruct users to refer to support documents or at the very least have a more knowledgeable user instruct the task |
| 14 | Blueprint cannot be followed as drawn up | Layout of building and internal factors are not conducive to placement of systems | H | M | Yellow | Negative | Have multiple solutions implemented in anticipation of this - Have more than one printer location, more than one server, and so on. Introducing enough solutions into the system will allow for the systems to function as intended. | Factors such as walls, building material, pre-existing wiring may cause discrepancies in systems placement | Enable wireless functionality available in all equipment which will allow the equipment to connect if any challenge is presented logistically. |
| 15 | Not enough power being supplied to support all systems | If exisiting power lines do not have enough capacity, the systems could overload and cause power outages | M | VL | Green | Positive | Include a backup power supply such as a generator as part of the project scope and WBS. This will allow for additional and continued power to all systems as necessary. | Office experiences power outages that neighbors are not experiencing | Keep generator permanently running to prevent any power failures |
| 16 | No user with technical knowledge to be systems administrator | Project cannot be successfully run/operated without firm administrator management | M | L | Yellow | Negative | Detail the need for a technical-minded user/employee in the Project Scope so company can be aware that it is a necessary component in successful completion of the project; this may extend the budget to accommodate. | No user can manage or set permissions for file sharing and control | Provide temporary administration services to the customer at an additional fee until someone permanent can be hired for the position |
| 17 | Local systems failure or corruption | If a piece of equipment fails, data could be lost and other systems may not function appropriately | H | VL | Yellow | Positive | Include and detail appropriate backup methods in project scope as well as list in WBS how each aspect of backup is to be implemented so a clear picture can be presented for where and how files can be recovered. | A local piece of server equipment malfunctions and becomes corrupt/inaccessible | Refer employees to support documentation that details information needed to login in to remote server to import and download saved files |
| 18 | ISP equipment restricts proper port usage and access | Port forwarding may not be set up properly which will mean weaker controls and functionality | L | L | Green | Negative | Test systems as soon as possible after receiving and installing equipment to gauge whether ports are restricted or open in manner needed. If restricted, allow time in WBS to communicate with ISP about removing restrictions. | Ports are closed and cannot be opened in network settings | Setup equipment with most stringent rules and ports available, but notify company of minor vulnerability |
| 19 | Ordered equipment comes defective or malfunctioning | If any equipment does not work properly, it will delay the setup of other systems as well since they are all interconnected | VH | VL | Yellow | Negative | Test all equipment as soon as possible after arriving to search for any potential malfunctions so that they can be discovered and taken care of immediately so the critical path is affected minimally, if at all. | Equipment does not function or operate properly upon being tested | Have backup plan in place to expedite exchange of defective equipment to manufacturer ASAP |
| 20 | Issues with project team availability | If a member of the small project team becomes ill or can not work fully throughout project timeline, project could be severely delayed | VH | L | Yellow | Negative | Realize extent of work to be performed by project team; consider updating project scope to require larger budget to potentially bring in additional project team members. This could condense project schedule immensely and provide coverage in a worst case scenario. | A project team member is sick and cannot perform vital duties related to setup of network | If possible, bring in another employee with same technical background to fulfill duties in meantime |
| 21 | Desired equipment is backordered or out of stock | If equipment cannot be ordered as planned, there may be incompatibility amongst systems | M | M | Yellow | Negative | Contact manufacturer with order list and inquire about product availability; also project potential equipment failure and ensure replacement equipment would be available if needed as well. | Manufacturer is short on products and does not have required amount of equipment needed for project completion | Consider alternate equipment packages to order and ensure beforehand that these are in stock and on time as required by the project |
| 22 | Cables cannot be physically routed to some devices | If building structure such as walls, etc are in the way, not all systems may be able to be physically connected | L | L | Green | Negative | Project Scope and WBS both provide a platform for wireless connections to be established and used. Although this is not as reliable of a connection platform as wired, it will still allow network setup and functionality. | Physical obstructions prevents cables from being routed through walls | Continue network setup as planned but implement wireless settings on devices which cannot be reached with ethernet cable |
| 23 | Cloud backup systems go offline | Remote backup files have critical client information that may be compromised | H | VL | Yellow | Positive | This can be avoided if we use strong encryption methods and apply these methods to every piece of information that "leaves" the office systems - i.e., sent to the cloud. | Data cannot be sent from local servers to remote backup site | Write files temporarily to encrypted USB devices until servers are back online and stable, then import USB files to server in addition to regular backup |
| 24 | Software does not install or is not configured properly | If sotware is not configured with appropriate settings, resource sharing may not be fully implemented | H | L | Yellow | Negative | Spend proper amount of time and care to ensure that proper settings are found and implemented on each and every system to allow for full compatibility. Change WBS to allow for more time and resources to be spent on this aspect of setup in place of less vital tasks. | Software cannot be accessed or used properly or in ways intended | Spend most amount of time in WBS task ensuring that "main" server and at least one computer system achieve full functionality, then use them as a clone for other devices |
| 25 | Poor weather conditions impact setup of outside equipment | If inclement weather occurs, work progress may be slowed which could delay project completion | L | L | Green | Negative | Structure WBS in a manner in which not all deliverables are dependent on the previous step; this will allow some steps to be performed ahead of or even behind schedule and still keep critical path on same schedule. | Rain or weather that preventing working outdoors with electronic systems has occurred | Rearrange WBS tasks priority to substitute in-door tasks in place of these outdoor tasks at time of inclement weather |
| 26 | Camera video signal or path is obstructed | External factors such as trees may hinder or block cameras from being able to properly conduct surveillance | H | L | Yellow | Positive | Include proper controls in Project Scope Statement to assess and determine any external risk factors, such as trees, to cameras accurately functioning before camera systems are set to be ordered and installed. | Cameras do not have a clear line of sight of proper area in which they should be monitoring | If necessary, hire an outside contractor to cut down trees so they are no longer impeding cameras ability to function properly. |
| 27 | Remote backup storage limits | In order to stay within budget, a cloud backup service plan may be limited in storage space which the company could exceed | L | H | Yellow | Negative | Describe in scope statement that remote backup is not a required functional aspect of the network, merely an addition. Unless project budget can be increased, only a limited amount of storage can be purchased. | Data backups can no longer complete successfully due to insufficient space provided by remote backup company | Split data saves amongst local servers to maximize security as well as space; can also backup to cheap external drives as well. |
| 28 | Legality of storing and managing client data | Follow laws according to Data Protection Act or face government action | H | L | Yellow | Negative | Ensure standards are set in place that directly address aspects of client data protection. Outline these standards and dictate their practice in Project Charter and Scope | Laws are not followed to properly secure and manage client data | Accept responsibility for failure and turn risk into an opportunity to further secure systems |
| 29 | Users become locked out of their own devices | If credentials are not tracked or remembered, a user may not be able to get into the system | VL | L | Green | Positive | Add documents to the WBS that keep track of all system credentials and provide these documents to customer as part of successful project completion | Users will not remember login information for either their own computer or to connect to various aspects of the system | Users in office can refer to the appropriate support documents provided by WBS to get proper credentials to log back in |
| 30 | Server overloads and/or crashes | If too many tasks or demands are being placed on the server, it may crash and disconnect all client systems | H | L | Yellow | Positive | Detail in project scope the need for multiple server systems precisely for events such as this; including multiple systems allows for extra copies of data as well as enables systems to keep functioning in the event that one becomes corrupt. | Server becomes inaccessible or malfunctions in a manner which impacts (slows) client computers | Allow client systems to temporarily disconnect from network and operate independetly but note that resource shared equipment like printers and file sharing/backup will not function at this time |
| 31 | VPN connection is unreliable and can't always be connected to | If the VPN cannot be accessed, business may have to be conducted on unsecured network which could compromise data | M | L | Yellow | Positive | The project scope can be modified to include local encryption of data; this would provide encryption at the raw local level, secured (VPN) local level, and also when the server sends data to a remote location. Triple protection would amp up safety overall. | Client system times out or generally cannot connect to VPN connection | Use local, non-encrypted Internet connection but do not access or process important client details without encryption enabled. |
| 32 | VPN connection provides slow speeds | The VPN may reduce overall Internet speed and capability because it uses your local Internet connection and routes to another physical location, which may have different capacity | M | M | Yellow | Negative | Ensure that best possible VPN service and protocols are selected in order to allow for bandwidth to be as close to maximum throughput as possible. | Bandwidth is reduced and slowed when connected via VPN; this results in slow transfer speeds | VPN may only be implemented on some computers which would be used to process client information in order to keep it secure, while other computers could be taken off VPN to allow for faster use of other business activities |
| 33 | Overheating of equipment | Too much equipment in a small office space may cause increased temperatures resulting in systems overheating | L | L | Green | Positive | May need to add proper cooling solution, such as air conditioners, to project in order to adequately cool and manage internal conditions to allow equipment to run at optimal capacity. | Internal office ambient temperature far exceeds comfortable/acceptable temperature and equipment feels very hot to touch | Bring in fans and open windows if possible until further, more extensive solutions can be implemented |
| 34 | Software life cycle is not relative/appropriate to project scope | If software packages considered for project are at end of life cycle, they may not support updates | VL | L | Green | Positive | Extend project budget and scope to include newer versions of software to ensure longevity appropriate to conduct business functions to best possible capacity for an extended period of time. | Software is no longer eligible for updates and product support from manufacturer | Notify company that software will still function entirely as needed, but if support is no longer included then they will be on their own if any software issues arise |
| 35 | Community encroachment/violations due to security cameras | May violate community policies and/or trust by installing security cameras which may end up recording private property in surrounding areas | VL | L | Green | Positive | Discuss new surveillance system with surrounding neighbors and ensure them that the system is only to be used for lawful and protective reasons; explain that this system may benefit them as well as a by product. | Neighbors raise complaints about cameras watching them or their property | Secure and provide proper documentation and permits which allow surveillance to lawfully take place |
| 36 | Equipment or systems malfunction after project completion | If a piece of equipment fails any time after the project is complete, whether due to user or mechanical error, the system will be limited in functionality until a replacement is secured | H | M | Yellow | Positive | Include support document in WBS that details manufacturer warranty process for each and every product included in project. Support document will also detail compatible devices and include options and recommendations for substitute products. | Equipment no longer turns on or works in an acceptable manner; equipment performance has degraded | Refer to proper support documents provided by WBS to assess options for repair and/or replacement of systems |
| 37 | Loss of current data by converting to new system | Old system does not support unified collection of records, so no backup can be imported in new setup | L | M | Yellow | Positive | In order to compensate for current company records, a database management software will be installed and all records will be manually inserted into the system. This will allow for unified collection and sharing of information. | New systems/software have no information attached to them; completely fresh installs and setup | Save as much data as possible from old systems to USB drives and use as basis for database construction and implementation |
| 38 | Inability to determine which components and users belong to which group | If users are unaware of which group (servers and printers) their systems operate on, they could lose work thinking they saved to proper system | L | L | Green | Positive | Define user groups with topographical map of network and include in WBS. In addition, use proper naming conventions to more easily differentiate unique devices on main network. | User unknowingly saves file to wrong server and then cannot find where to access it later on | Provide copies of topographical network layout to each user/system and specifically highlight which components belong to their user group |
| 39 | Slow Internet speeds | Bandwidth received from ISP at a low speed and transfer level | M | M | Yellow | Positive | Isolate issue as being on ISP's-end. If so, contact ISP to either 1) receive troubleshooting and diagnostic to increase speeds or 2) secure better equipment/plan from ISP to ensure most up-to-date speeds possible | Bandwidth capacity received from ISP is limited or hindered | Upgrade to a higher Internet service package from ISP |
| 40 | Outside contractor experiences delays | If one of the multiple outside contractors becomes overbooked or has unforeseen complications it could delay a part of this project | M | M | Yellow | Negative | Clearly dictate timetable in WBS for contractor services and expected dates which they will be needed. Contact contractors at very start of project to verify these times will be available for booking. | Contractor can not schedule project for dates projected or for time and resources projected by project scope | Devise backup list of contractors to contact in the event any issues occur with main contractor; tentatively have appointments scheduled for dates with backups |

# Project Schedule and Budget with assigned Resources

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Task Mode | Task Name | Duration | Start | Finish | Predecessors | Resource Names | Estimated Hours Billed | Cost Per Hour | Fixed Cost |
| **Manually Scheduled** | **Operation Up-To-Date: Small Office Network Set-Up** | **1.55 mons** | **Fri 1/16/15** | **Thu 2/26/15** |  |  |  | **$0.00** | **$70,505.00** |
| **Manually Scheduled** | **Determine Business Requirements** | **2 days** | **Fri 1/16/15** | **Sun 1/18/15** |  |  | **16** | **$75.00** | **$800.00** |
| Manually Scheduled | Meet with and interview management | 1 day? | Fri 1/16/15 | Fri 1/16/15 |  | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Determine client's requirements | 1 day? | Fri 1/16/15 | Fri 1/16/15 | 3 | Client |  | $0.00 | $0.00 |
| Manually Scheduled | Determine project budget and scope | 1 day? | Fri 1/16/15 | Fri 1/16/15 | 3 | Client |  | $0.00 | $0.00 |
| Manually Scheduled | Define performance requirements | 1 day? | Sat 1/17/15 | Sat 1/17/15 | 3 | Client |  | $0.00 | $0.00 |
| Manually Scheduled | Assemble and brief project team | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 6 | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Develop blueprint for topographical placement | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 6 | Project Lead |  | $75.00 | $0.00 |
| **Manually Scheduled** | **Install Desktop Computer Hardware** | **12 days** | **Sun 1/18/15** | **Mon 2/2/15** | **2** |  | **65** | **$85.00** | **$25,525.00** |
| Manually Scheduled | Determine and select appropriate systems | 2 days | Sun 1/18/15 | Mon 1/19/15 | 2 | Project Lead,IT Specialist |  | $125.00 | $0.00 |
| Manually Scheduled | Price and order desktop PC systems | 5 days | Mon 1/19/15 | Fri 1/23/15 | 10 | Project Lead,Equipment |  | $50.00 | $20,000.00 |
| Manually Scheduled | Receive and install hardware | 5 days | Tue 1/27/15 | Sun 2/1/15 | 11 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Connect mouse and keyboard to each computer | 1 day | Sun 2/1/15 | Sun 2/1/15 | 12 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Connect devices to power | 2 days | Mon 2/2/15 | Tue 2/3/15 | 12 | IT Specialist |  | $50.00 | $0.00 |
| **Manually Scheduled** | **Install Systems Software** | **3 days** | **Tue 2/3/15** | **Thu 2/5/15** | **9** |  | **25** | **$70.00** | **$3,250.00** |
| Manually Scheduled | Determine software needed for each system component | 1 day? | Mon 1/19/15 | Mon 1/19/15 | 2 | IT Specialist,Project Lead |  | $125.00 | $0.00 |
| Manually Scheduled | Price and order software packages | 1 day? | Mon 1/19/15 | Mon 1/19/15 | 2 | Project Lead,Equipment |  | $75.00 | $1,500.00 |
| Manually Scheduled | Install software on each network device | 1 day? | Tue 2/3/15 | Tue 2/3/15 | 17 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Install and configure Windows Server software | 1 day? | Wed 2/4/15 | Wed 2/4/15 | 17 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Configure appropriate settings for each software installation | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 18 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Create user accounts | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 20 | Database Analyst |  | $60.00 | $0.00 |
| **Manually Scheduled** | **Install Networking Hardware** | **4 days** | **Thu 2/5/15** | **Tue 2/10/15** | **2** |  | **32** | **$50.00** | **$6,100.00** |
| Manually Scheduled | Install and run ethernet cable | 1 day? | Tue 2/3/15 | Tue 2/3/15 | 9 | Materials |  | $0.00 | $2,000.00 |
| Manually Scheduled | Route network cable through walls | 1 day? | Wed 2/4/15 | Wed 2/4/15 | 23 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Connect network equipment via wired ethernet connection | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 24 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Install and configure switches | 1 day? | Thu 2/5/15 | Thu 2/5/15 | 24 | Equipment,IT Specialist |  | $50.00 | $750.00 |
| Manually Scheduled | Connect ISP modem to switch | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 26 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Install UPS power supplies | 1 day? | Mon 2/2/15 | Mon 2/2/15 | 14 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Open up port forwarding protocols to allow all switch devices to communicate | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 26 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Assess building structure for wireless signal strength | 1 day? | Sun 1/18/15 | Sun 1/18/15 | 2 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Configure routers to enable wireless functionality | 1 day? | Fri 2/6/15 | Fri 2/6/15 | 25 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Place network equipment in prime areas to enhance wireless signal | 1 day? | Mon 2/9/15 | Mon 2/9/15 | 31 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Acquire backup generator power supply | 1 day? | Mon 2/9/15 | Mon 2/9/15 | 14 | Equipment |  | $0.00 | $1,750.00 |
| Manually Scheduled | Wire UPS systems secondarily to generator | 2 days | Mon 2/9/15 | Tue 2/10/15 | 33 | IT Specialist |  | $50.00 | $0.00 |
| **Manually Scheduled** | **Configure Server Devices and Administration Privileges** | **4 days** | **Tue 2/10/15** | **Fri 2/13/15** | **22** |  | **32** | **$90.00** | **$7,880.00** |
| Manually Scheduled | Determine appropriate amount of server systems | 1 day? | **Tue 2/10/15** | Tue 2/10/15 | 2 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Price and order server devices | 2 days | **Tue 2/10/15** | Wed 2/11/15 | 36 | Project Lead,Equipment |  | $125.00 | $5,000.00 |
| Manually Scheduled | Install Oracle SQL database | 1 day? | Wed 2/11/15 | Wed 2/11/15 | 17 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Upload current internal records to database | 1 day? | Wed 2/11/15 | Wed 2/11/15 | 38 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Designate a network administrator user | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 38 | Client |  | $0.00 | $0.00 |
| Manually Scheduled | Configure user permissions | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 40 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | List and authorize network devices | 1 day? | Thu 2/12/15 | Thu 2/12/15 | 40 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Configure zones and distribute devices evenly amongst zones | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 42 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Interface server systems with client devices | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 43 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Push automatic updates to clients | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 44 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Create server map image for backup | 1 day? | Fri 2/13/15 | Fri 2/13/15 | 45 | Database Analyst |  | $60.00 | $0.00 |
| **Manually Scheduled** | **Configure Resource-Shared Equipment** | **2 days** | **Fri 2/13/15** | **Mon 2/16/15** | **35** |  | **16** | **$85.00** | **$4,860.00** |
| Manually Scheduled | Determine number of required network-shared devices | 1 day? | **Fri 2/13/15** | Fri 2/13/15 | 2 | Client,IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Price and order network devices | 1 day? | **Fri 2/13/15** | Fri 2/13/15 | 48 | Equipment,Project Lead |  | $125.00 | $0.00 |
| Manually Scheduled | Attain printers, fax, scan and copy machines | 2 days | **Sat 2/14/15** | Sun 2/15/15 | 49 | Equipment |  | $0.00 | $3,500.00 |
| Manually Scheduled | Wire devices to system hubs | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 50 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Configure sharing settings on printers | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 51 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Enable wireless printing from compatible devices | 1 day? | Sun 2/15/15 | Sun 2/15/15 | 52 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Sync devices to server | 1 day? | Mon 2/16/15 | Mon 2/16/15 | 53 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Follow Universal Naming Convention for all devices | 1 day? | Mon 2/16/15 | Mon 2/16/15 | 54 | Database Analyst |  | $60.00 | $0.00 |
| **Manually Scheduled** | **Install Security Camera System** | **5 days** | **Mon 2/16/15** | **Fri 2/20/15** | **47** |  | **6** | **$50.00** | **$15,800.00** |
| Manually Scheduled | Contract Axis Communications to provide security system | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 2 | External Contractor |  | $0.00 | $6,000.00 |
| Manually Scheduled | Assess building exterior for ideal camera postions | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 57 | External Contractor |  | $0.00 | $0.00 |
| Manually Scheduled | Assess building structure for stability and connectivity ability | 1 day? | **Mon 2/16/15** | Mon 2/16/15 | 58 | External Contractor |  | $0.00 | $0.00 |
| Manually Scheduled | Price and order camera hardware | 3 days | **Mon 2/16/15** | Wed 2/18/15 | 57 | Project Lead,Equipment |  | $75.00 | $9,500.00 |
| Manually Scheduled | Affix cameras in weather-proof housing to exterior of building | 2 days | Wed 2/18/15 | Thu 2/19/15 | 60 | External Contractor |  | $0.00 | $0.00 |
| Manually Scheduled | Attain permits | 1 day? | Thu 2/19/15 | Thu 2/19/15 | 61 | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Place notification of CCTV recording | 1 day? | Thu 2/19/15 | Thu 2/19/15 | 61 | External Contractor |  | $0.00 | $0.00 |
| Manually Scheduled | Interface cameras to client computer systems | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 61 | External Contractor |  | $0.00 | $0.00 |
| **Manually Scheduled** | **Implement Virtual Private Network** | **1 day?** | **Fri 2/20/15** | **Fri 2/20/15** | **35** |  | **8** | **$50.00** | **$400.00** |
| Manually Scheduled | Define settings for Remote Access Server | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 38 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Identify client computers | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 46 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Select appropriate Internet Protocol and enable VPN | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 67 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Connect local computers to the configured VPN IP Address | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 66 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Enable VPN auto-connect on each client | 1 day? | **Fri 2/20/15** | Fri 2/20/15 | 69 | IT Specialist |  | $50.00 | $0.00 |
| **Manually Scheduled** | **Implement Cloud Data Backup Service** | **1 day?** | **Sat 2/21/15** | **Sat 2/21/15** | **35** |  | **10** | **$50.00** | **$2,050.00** |
| Manually Scheduled | Contract service plan with Carbonite | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 46 | External Contractor |  | $0.00 | $750.00 |
| Manually Scheduled | Purchase data plan with sufficient storage | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 72 | Equipment |  | $0.00 | $800.00 |
| Manually Scheduled | Install Carbonite software on all client computers | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 72 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Configure options for real-time backup | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 74 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Backup clients to server | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 75 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Send from server to cloud service | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 76 | IT Specialist |  | $50.00 | $0.00 |
| **Manually Scheduled** | **Create Support Document** | **2 days** | **Sat 2/21/15** | **Sun 2/22/15** | **71** |  | **14** | **$75.00** | **$1,050.00** |
| Manually Scheduled | Provide details of offered technical support | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 2 | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Outline manufacturer hardware warranties | 1 day? | **Sat 2/21/15** | Sat 2/21/15 | 79 | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Catalog external resources for support avenues | 1 day? | Sun 2/22/15 | Sun 2/22/15 | 79 | Project Lead |  | $75.00 | $0.00 |
| Manually Scheduled | Include FAQ and solutions to common issues | 1 day? | Sun 2/22/15 | Sun 2/22/15 | 79 | Project Lead |  | $75.00 | $0.00 |
| **Manually Scheduled** | **Provide Network Specifications Guidelines** | **2 days** | **Sun 2/22/15** | **Mon 2/23/15** | **71** |  | **12** | **$70.00** | **$840.00** |
| Manually Scheduled | List all relevant login information | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 21 | IT Specialist,Database Analyst |  | $110.00 | $0.00 |
| Manually Scheduled | Detail computer permissions | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 41 | Database Analyst |  | $60.00 | $0.00 |
| Manually Scheduled | Highlight limitations of network setup | 1 day? | **Sun 2/22/15** | Sun 2/22/15 | 5 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Illustrate and present physical topology | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 8 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Show groups of connected devices | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 43 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Present detailed list of software configuration methods and settings | 1 day? | **Mon 2/23/15** | Mon 2/23/15 | 20 | IT Specialist |  | $50.00 | $0.00 |
| **Manually Scheduled** | **Test Systems and Final Checks** | **4 days** | **Mon 2/23/15** | **Thu 2/26/15** | **77** |  | **30** | **$65.00** | **$1,950.00** |
| Manually Scheduled | Test user permission levels for security | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 41 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Each client desktop PC can successfully print | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 55 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Ensure each client system is securely connected to VPN | 1 day? | Mon 2/23/15 | Mon 2/23/15 | 70 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Each client PC can access and control camera systems | 1 day? | Tue 2/24/15 | Tue 2/24/15 | 64 | External Contractor,IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Each system successfully backs up to cloud server | 1 day? | Tue 2/24/15 | Tue 2/24/15 | 77 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | Client can successfully connect to systems via provided credentials | 1 day? | Wed 2/25/15 | Wed 2/25/15 | 84 | Client |  | $0.00 | $0.00 |
| Manually Scheduled | All equipment functions via power from generator | 1 day? | Wed 2/25/15 | Wed 2/25/15 | 34 | IT Specialist |  | $50.00 | $0.00 |
| Manually Scheduled | All systems pass check and brought online | 1 day? | Thu 2/26/15 | Thu 2/26/15 | 97 | IT Specialist,Project Lead |  | $125.00 | $0.00 |

**Part 1: Project Budget (Cost Management)**

1. Explain your approach to estimating the project cost (e.g., top down, bottom up, etc.) and why that method was chosen.

The project cost was estimated through a fairly standard approach as dictated by a bottom-up approach. This approach was more than suitable for the type of project at hand and the resources involved. In IT work and network setup, you first get an overall view of the setup and systems at hand, or those desired, and you can then make tangible projections of what equipment is needed and what kind of setup is involved in configuring those systems. Based on previous and/or similar experience in setup (like needs, similar amount of systems, etc.) you can fairly easily “predict” what will best work for another client of similar needs. In this case, a network of 15 total systems and their included components could be determined, purchased, and allocated hours needed to be installed and configured. Outside work was contracted at a set package rate making the IT-setup easy to focus on and stay on track. Team input is also relied on and valued in this approach, and for this setup much of the decision making was left in the hands of the product team members with final approval and authorization coming from the project manager. In this approach, team members are empowered to think creatively and are given the reins to make decisions as they see fit to accomplish milestones and work packages; this is vital in a setup such as this – e.g. take necessary steps to configure server hardware and software to suit client needs.

1. Create a table that shows the original budgeted cost (from the charter) and the actual budgeted cost (side by side). Include line items for labor, materials, contract, equipment, travel cost, and so on.

|  |  |  |  |
| --- | --- | --- | --- |
| Estimated Labor | $20,000 | Actual Labor | $19,705 |
| Estimated Materials | $7,500 | Actual Materials | $2,000 |
| Estimated Contractors | $5,000 | Actual Contractors | $6,000 |
| Estimated Equipment | $50,000 | Actual Equipment | $42,800 |
| Estimated Travel | $2,500 | Actual Travel | $0.00 |
| **Total Estimated Cost** | $85,000 | **Total Actual Cost** | $70,505 |

1. Compare the budget from the charter to the final budget and explain any variances that occurred from your original budgeted cost in the project charter and the current project cost (include your original estimated cost for the project).

The budget from the Project Charter was considerably higher. At a projected $85,000 budget to start with, the estimated total cost was about 17% higher than the final budget dictates. First of all, labor costs were pretty much spot on. Considering there are various “steps” involved in ordering, installing, and ultimately configuring network equipment it is generally pretty easy to determine how many man hours are needed to accomplish the tasks involved in each work package. Materials cost were projected to be much higher than final costs pin them at, and this is mostly attributed to some overhead being projected for contingency and also integrating some of the costs into additional contractors costs. Contractors came out at $1,000 more than projected because we are allowing them to handle every facet involved in camera equipment installation and setup. This flat fee package helped us save on costs like materials fees and also additional labor costs on our end. Equipment budget came out $7,000 under estimated budget which falls within a good range in balancing performance/needs/budget. We managed to include all equipment desired and determined in the scope of the project while still leaving some room for overhead or potential issues that may arise. Travel costs were projected as more of a contingency plan for damaged products, expedited shipping, and so on. It was also not known at the time how contractor fees would pan out and if they would require any special payment or arrangement for travel.

1. Explain your budget contingency plan and how much is budgeted for contingency.

Essentially all unused budget can end up being applied to a contingency reserve. This allocates nearly $14,500 in remaining budget to be funded towards the project’s contingency. It is imperative that this project finishes on schedule considering that it involves an everyday, operating business. The fact that we are replacing their entire computer network means they will potentially be without access to these systems, jeopardizing and/or greatly impeding business activities during this time. This contingency fund may even be applied to crashing the project in order to compress the project schedule if the client so desires. If not, all contingency can be preserved for a worst-case scenario, such as inclement weather conditions delaying aspects of setup and other various delays such as building structure issues or repairs needed to allow proper function of the systems being installed. All in all, considering the budgeted and projected costs, there will most likely be a decent amount of budget remaining even after contingency. This project is more than likely to successfully complete on time and under budget.

**Part 2: Resource Management**

1. Explain the results of your resource assignments. Did you assign enough people to the project? Were there any resources over-allocated? What approach will you take to fix any allocation problems?

Considering that all aspects of the budget came out less-than-projected, I would eagerly say that resource assignments were perfectly allocated for this project. The driving factor in this project is schedule. Again, it is imperative that this business’s operations be minimally impacted by new network setup. In addition, it is critical that the projected timetable for the setup is completely accurate as it affects not only the business itself but also all of its customers as well. In order to meet and stay within the projected schedule, resources such as hourly employees had to be assigned a strict timetable and duration for each task attributed in their respective work packages. The fact that the project was under budget but labor costs were exact (when comparing estimated to actual) indicates that there is no wiggle room in labor allocation. It can easily be determined from the budget comparison that the only resource over allocation came in the original projected materials budget. In actual implementation, though, this cost was simply moved to contracting with the rest going to projected contingency. Aside from the scope of the project, more allocation could possibly be attributed to labor in order to crash the schedule and minimize business downtime. The fact that labor is on a strict timetable and only 2-3 employees are working on the project really emphasizes a high value being placed on each worker.

1. Develop a plan to manage your project team and define how you will motivate your team and how you will handle team conflicts.

Open lines of communication are first and foremost at the root of developing a management plan in a project of this nature. From the start, it must be emphasized that communication makes this project successful. By involving the project team in critical decision making processes, they become empowered and possess a notion that their input is vital to each of their respective tasks and work packages. In some cases, as dictated by the WBS, some tasks simply cannot be started until its predecessor/s is complete. This gives each team member a heightened sense of responsibility and causes them to feel that the work they do makes an actual difference in the project proceeding to each and every following step.

Any potential conflict directly impacts the other team member/s. Since the project manager oversees only two assigned team members on this project, each team member holds essentially a 50% stake in the project’s success. This emphasizes the transparency that needs to exist in an environment like this. There simply cannot be persistent, negative conflict – the project does not have the resources to spare. First, any conflict must be acknowledged amongst the team members (through open lines of communication) and then the project team must discuss the impact of any conflict. A cooperative process must then be developed that allows each team member and their respective work packages to carry-out as is dictated for the project schedule. Due to the nature of these systems and how they interoperate, each team member needs to closely work with one another and be open and honest about expectations for how each other’s system will function with their own. Through this open communication, positions can be clarified and facts about project expectations can be listed. An agreement can then be reached after this analysis to ensure project flow continues appropriately.

1. What structure would you select for your project: functional, weak matrix, balanced matrix, strong matrix, or pure project? Why?

For this project I would select pure project as the organization method. I believe that pure project has many strong points that tie directly in to what this project needs and provides a platform for it to flourish. For example, in this project there will be one appointed project manager that has full authority over the project, and each team member is directly responsible to this manager. The project team in a pure project also has a strong identity (in this case, each to their respective field/specialty in regards to its proper implementation) and a high level of commitment. Since there are only two members and one manager in this project, it is imperative that this commitment exists – the members often will need to work together to make informed decisions about their system/s that will directly tie into and affect the others. Another key point in why pure project suits this project is that the project team is structurally simple which makes it easy to implement. Tasks can be easily assigned to each respective specialist and lines are not blurred in who is performing which task/s. In addition, a holistic view is placed on the project in this method of organization, which is exactly what needs to occur during network setup. Each aspect directly ties into the next, and together an overall and cohesive system is created. A project of this nature is also repetitive in a sense that once the amount of pieces needed are determined, a network setup usually entails many similar aspects from one project to another. A pure project allows for successive similar projects to more easily be executed thanks to its structure and the fact that experts skilled in a particular area or skill are assigned to these projects.

# Communications Management Plan

Communication Objectives

This document outlines the plan of communication for the Operation Up-To-Date Project Team.

The key communication objectives for this project are:

* Determine and address information and communication needs of project
* Establish and catalog key contact methods for project
* Present accurate and timely information pertaining to project

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| VERBAL COMMUNICATION | | | | |
| WHAT | WHEN | WHERE | OWNER | ATTENDEES |
| Formal Status Meetings | Biweekly  Start of Day  Monday | TBD | Project Manager | Small Business Systems Inc. Stakeholders |
| Training Courses | Monthly  During Project Cycle | On-Site | Project Manager, Project Team | Small Business Systems Inc. Stakeholders,  Staff |
| Ongoing Project Status | Weekly  Start of Day  Tuesday | Home Office | Project Manager | Project Team Members |
| Third Party Expectations and Requirements | As Required | Conference Call | Project Manager | Contractors,  Project Team Members |
| Determine Project Requirements | Beginning of Project,  As Needed | On-Site,  Phone Calls | Project Manger | Small Business Systems Inc. Stakeholders |
| Technical Design Meetings | As Needed | TBD | Project Manager | Project Team Members |
| Project Briefing | After Requirements Are Gathered | TBD | Project Manager | Project Team Members |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WRITTEN COMMUNICATION | | | | |
| WHAT | FREQUENCY | METHOD OF DELIVERY | COMMUNICATOR | AUDIENCE |
| Agenda and Review of Meeting Minutes | Weekly | EMAIL | Project Manager | Project Team Members |
| Project Updates  Action Item Status | As Required | EMAIL | Project Manager | Project Team,  Small Business Systems Inc. Stakeholders |
| Project Proposal | Once | Formal Report | Project Manager | Small Business Systems Inc. Stakeholders |
| Status Reports to Project Manager | Weekly  Tuesday  By End of Day | Paper Copy | Project Team Members | Project Manager |
| Detail System Implementation and Provide Critical User Information | As Required | EMAIL | Project Team Members | Small Business Systems Inc. Staff |
| Timeline Update | Every 2 weeks  Thursday By 12pm | Update Project Schedule then EMAIL | Project Manager | Project Team,  Small Business Systems Inc. Stakeholders |
| Support Documents and FAQs | Once, End of Project | Manuals, Procedure Documentation | Project Manager | Small Business Systems Inc. Stakeholders,  Staff |
| Issues Log | As Required | Electronic Database | Project Team Members | Project Manager |
| Project Risks | As Needed | Risk Document | Project Manager | Small Business Systems Inc. Stakeholders,  Project Team Members |
| Product Availability and  Order Status | As Needed | EMAIL | Project Manager | Manufacturers |
|  |  |  |  |  |

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