

Final Project

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Information Technology Overview

This document contains an overall picture of the Information Technology setup for Swagger Distribution. It shall serve as a reference guide for current IT infrastructure and includes several recommendations for improvements in the current structure and beyond. This may be used as both a quick-start document for new employees in all departments to become familiar with common software used at the company, and for best practices for ensuring an understanding and good practice of security protocols.

Summary

A full understanding of the Information Technology implementation at Swagger Distribution is both key to efficiently using its systems, but also maintaining the security of company, employee, and client information. In order to ensure ease of use, full integration between workstations, software, databases, and servers has been achieved. This allows the IT department to effectively provide solutions to technology problems or concerns in the most efficient way. Client workstations are connected to the local network to provide inter-office communication throughout the office network (LAN). Internet access is then provided to each connected device through the LAN, and secured through the hardware firewall on the edge of the network. Database, email, and other servers are hosted in-house behind the firewall to provide ease-of-access and security to everyone on the network. This LAN is what enables each Swagger Distribution employee access to required software like Microsoft Word and Visio. Additionally, the customer and supplier database has been optimized to ensure accurate reporting in the future.

While the database currently stores billing information for customers, as you will see in the later recommendation it is suggested to move this to a third-party processor. A detailed description of the networking setup that provides this connectivity may be found in a later section.

In order to remain competitive in today's internet-based economy, several recommendations are available in the Web Technologies Consult section in order to modernize the Swagger Distribution website for ease of access. These changes are necessary to provide quick and easy communication with existing and new clients, and to make sure the website is easily accessible through any browser and device.

Finally, a security audit was performed and several recommendations are made to ensure the security of the Swagger Distribution network. The current IT solution allows for easy access to the Swagger Distribution LAN and all connected servers and devices, but this must remain secure to protect employees and clients. Making those changes will help to ensure that each part of Swagger Distribution's IT solution provide the network access required for all employees while maintaining a high level of security on the network.

Human-Computer Interface

Microsoft Word and Visio are two professional applications that make up part of the Microsoft Office suite of software developed specifically for users in a work environment. Word is a powerful computer word processing application that allows you to compose documents like memoranda and reports. Visio is an advanced application that allows for easy creation of flowcharts and diagrams, which can be helpful for presentations or written reports in Word.

You will primarily interact with both Word and Visio by using your keyboard and mouse, guided by descriptive tabs located in the "ribbon" navigation panel above your work. By using

visual effects such as differing text colors, numbers for font size, examples of fonts, and small icons, the ribbon in both Word and Visio, you are intuitively guided to the tools and features that you wish to use. The ribbon is present and consistently formatted throughout the Office suite of applications, so mastering it in one will allow you to quickly jump into using any other Office application.

Word and Visio attempt to mimic actions you may take in the real world within the ribbon, providing quick access to frequently used actions. The “File” tab within the ribbon, for example, works as a virtual filing cabinet. From here you are able to save, open, close, print, and create new projects - similar to many actions you would take with a physical filing cabinet. The “Home” tab functions as your virtual desktop within Word and Visio, allowing easy manipulation of the visuals for your project. Common functions include: text transformation, where you may apply bold, italics, and underline styles as well as changing the font itself, highlighting, or changing text color. Though the “Home” tab is different in both Word and Visio, they do share common functions and have separate areas for Word or Visio-specific actions like section headings in Word and shape styles in Visio. By clicking on any of the text transformation functions, as an example, Word presents you with an immediate visual cue of what the change will look like on the button. By selecting your desired text and clicking the “Bold” button, the selected text will be immediately updated by displaying thicker lettering for the selection. In Visio, selecting an existing shape and clicking the “Fill” button will allow you to change the color within the selected shape. A good tip to keep in mind is that the “Home” tab is primarily focused on modifying existing content rather than inserting new content into your project. Tabs like “Insert” in both Word and Visio provide specific tools for creating new content within your Word document or Visio flowchart/diagram. The “Design” tab located within the ribbon in Word

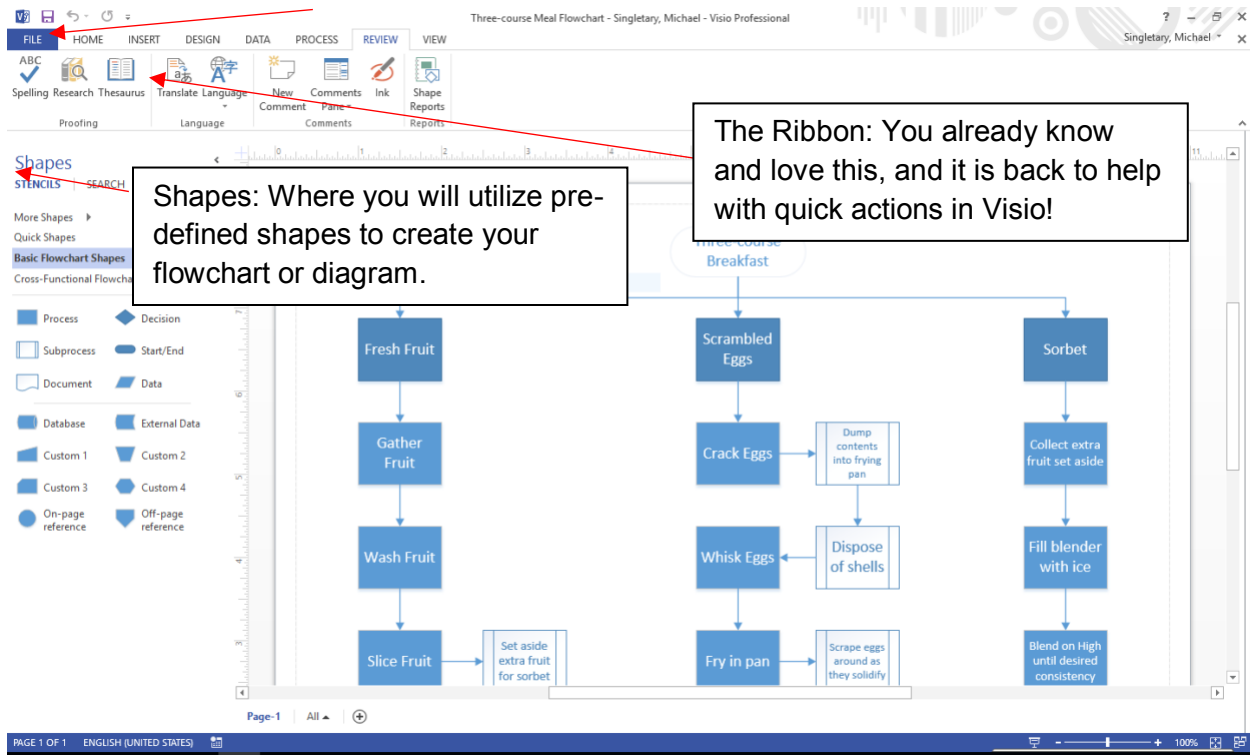
and Visio gives you quick access to making major visual design changes to your project. Both applications allow for sweeping color and style changes across your document or flowchart/diagram, like changing the color scheme or modifying fonts and text formatting. The similarities diverge from there, where the following ribbon tabs display functions directly-related to either Word or Visio editing. The tail end of the ribbon ties up loose ends with the “Review” and “View” tabs, enabling you to run spell check, translations, or control how the project looks on your computer. Think of those tabs as your editor and design assistant, respectively.

One enhancement that may benefit users of Word and Visio would be to better visually distinguish between the two applications. By utilizing the same color schemes and ribbon formatting, it may be easy to confuse the two applications when manipulating content in both during the same session. Like the differences in color between Word, Excel, and PowerPoint, Visio may deserve its own unique color scheme to prevent any confusion.

Visio Quick Tutorial

If you have used Word previously, learning to use Visio will be a fairly simple task. The similarities described above will ensure that you are at least comfortable with navigating the ribbon, with its close ties to the familiar ribbon in Word. There are some unique functions and menu options that are unique to Visio, however, and mastering them will be vital to creating effective flowcharts and diagrams. Below is an overall view of Visio. Notice the similarities to Word, and get ready to dive in!

File Menu: Present in Word and Visio, like your digital filing cabinet!

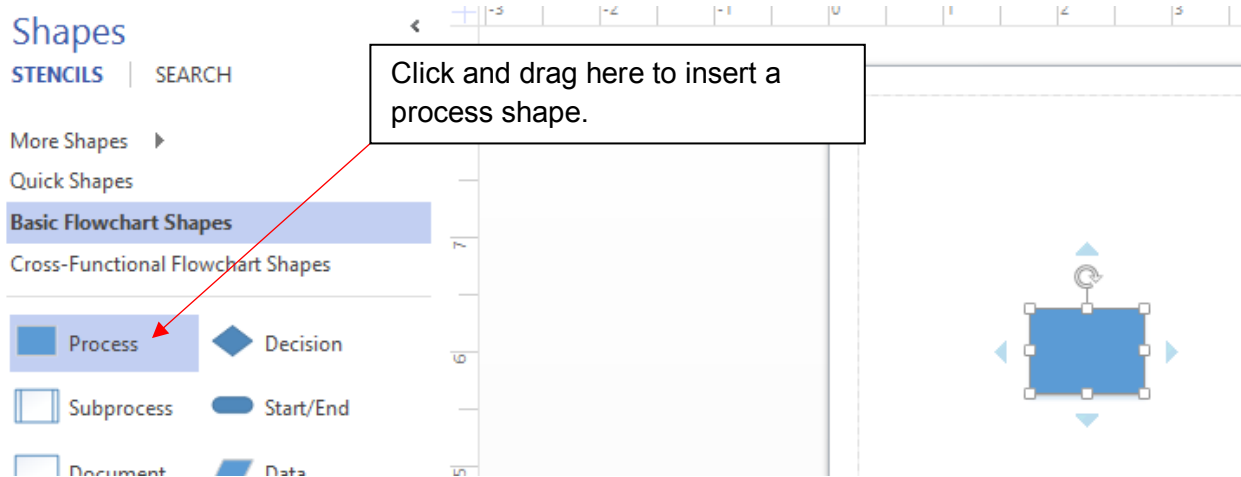


Above: The Visio “Command Center”, which is what we like to call your combination of the tools you will use most.

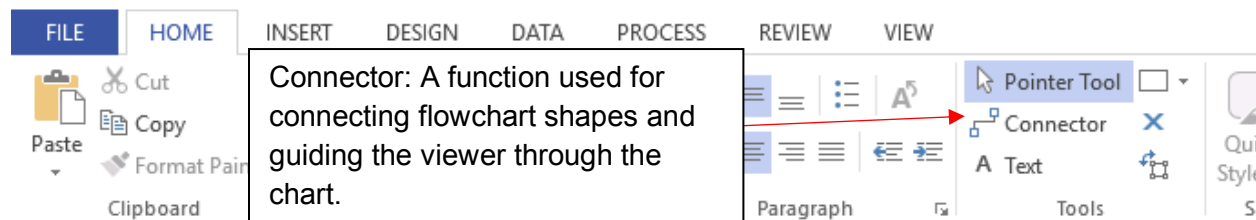
The three most important basic-yet-powerful tools that you will use within Visio are the “File” tab, the ribbon, and the “Shapes” window. These three functions comprise the “Command Center” that will likely take up most of your clicking, design, and editing within Visio. As mentioned previously, the “File” tab acts as your virtual filing cabinet and allows you to create new projects, save them, close them, or share/print them for others. The ribbon gives you quick access to common functions, like changing fonts, making connections between shapes, and changing the styles of the objects in your Visio project. These two functions are very similar to what you are familiar with doing inside of Word. Unique to Visio, however, is the Shapes window. This tool will allow you to draw pre-defined shapes for your flowchart or diagram and contain helpful descriptions next to each one. Knowing which shape is generally used for a step

(or “process” in Visio), or which is used when a choice must be made (a “decision”), the Shapes window will guide you to creating effective and understandable flowcharts and diagrams.

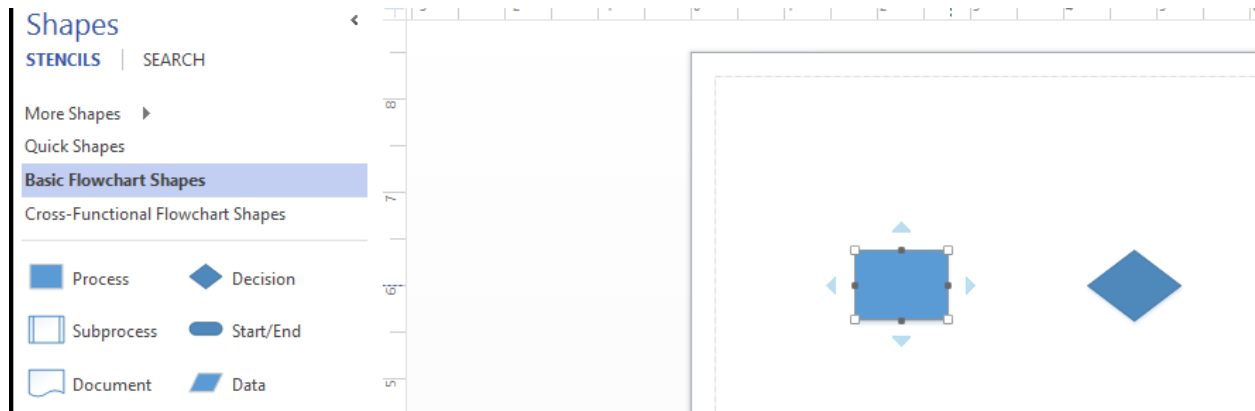
Inserting shapes is easy and fun. You can start by clicking on the “Process” shape located on the left, within the Shapes window, as seen below:



Then just click and hold down your mouse button on “Process” and drag the shape to your page on the right. This will insert the rectangular shape seen to the right. If you want to label the process, simply double-click within process shape you dragged to enter its edit mode, where you may give the shape a label. A “decision” can be inserted in the same way, by clicking and dragging on the “Decision” shape within the Shapes window, then dragging it to your page on the right. If you wish to connect the two, you may do so by clicking on the “Connector” function under the “Home” tab in Visio’s ribbon as seen below:



Once you have clicked on “Connector”, your shapes will be highlighted, with “hot spots” appearing around the shapes where connections may be started and terminated, as seen below:



By clicking and dragging on the middle-right connector dot of the rectangle over to the left point of the diamond, a connection between the two shapes will be made:



In the case described above, a human-readable version of the flowchart would say that you begin with the “Process” rectangle and then proceed to make a decision at the “Decision” diamond. In a complete flowchart, the decision diamond would be connected to another step in the “Process” or lead you to another “Decision” that must be made. These basic functions are all that are necessary to create a basic flowchart or diagram. More detailed versions may be made as you become more familiar with Visio’s functionality.

Databases

The database utilized by Swagger Distribution is a simple database used for easily tracking the distribution of products from clothing manufacturers to the retail stores that sell the product. The information stored within the database allows Swagger Distribution employees to track which products are sent to which retail stores, and what manufacturers supply those products. Details of each product are also tracked, including the name of the product, its color,

the wholesale price to retail stores, and the manufacturer's suggested retail price that the stores charge their customers. The data types used for each field enables the database to distinguish between descriptive text ("Short Text"), numbers ("Number"), or currency ("Currency") within each field in each table. These data types serve as a sort of metadata, describing what type of information is contained within the "Field Name" for each field in a table. Descriptions may also be used, providing a more detailed account of what the data in each field is, or what it will be used for. Utilizing accurate data types for the type of data that will be present makes generating readable reports quick and easy.

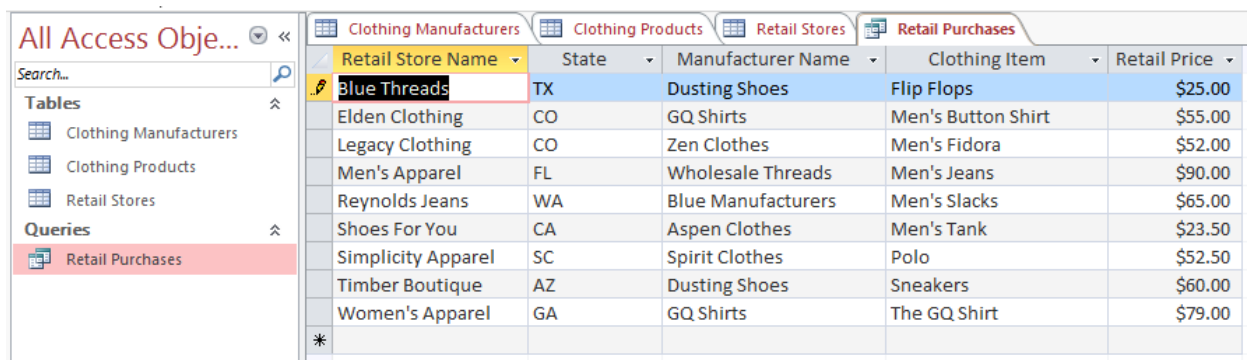
Specifically, the "Clothing Manufacturers" table includes specific information on each clothing manufacturer that Swagger Distribution receives product from. This table stores the name of the manufacturer, their street address, city, state, and ZIP code. Next, the "Clothing Products" table stores detailed information on each product that Swagger Distribution sells to retail stores. This table includes a short description of the product, its color, the name of the manufacturer that makes it, the wholesale price that Swagger Distribution sells it for, and the retail price that retail stores charge their customers for each product. Finally, the "Retail Stores" table contains information on each retail store that Swagger Distribution provides wholesale products to. This table includes each store's name, street address, city, state, ZIP code, and the clothing item that Swagger Distribution sells to them. Each table includes a "Primary Key", or unique identifier, that enables a relationship between relevant data in each table to be shared within the database.

By changing the data type of the "Retail Price" field within the "Clothing Products" table from "Short Text" to "Currency", the display output for values within the "Retail Price" field within that table are properly formatted to reflect an amount of dollars. Previously the retail price

was formatted as a simple number (like 25), but applying the “Currency” data type formats it correctly as an amount of money (like \$25.00).

The “Retail Purchases” query is currently a broken query because of the way that each table is linked together within the query. In order to link each of the tables together, a “Primary Key” is used from each table. In order for the query to run successfully, the value in the field that is assigned as Primary Key in each table must be present. Since the “Retail Stores” table is missing values in the “Clothing Item” field, the primary key from the “Clothing Products” table is not successfully linked to the retail store that it is sold from. The query is attempting to generate a report on which retail store sells which product (or products), in which state, by which manufacturer, and for how much it is sold to consumers. By selecting a value for the “Clothing Item” for each retail store listed in the “Retail Stores” table, these keys are successfully linked and the query returns the expected results.

The results of the query quickly displays the products that have been purchased from Swagger Distribution, by which retail stores, the state the store is in, who makes it, and how much the retail store charges their customers for the product, as seen below:



The screenshot shows the Microsoft Access interface with the 'Retail Purchases' query selected. The query results are displayed in a table with the following columns: Retail Store Name, State, Manufacturer Name, Clothing Item, and Retail Price. The first row is highlighted in blue.

Retail Store Name	State	Manufacturer Name	Clothing Item	Retail Price
Blue Threads	TX	Dusting Shoes	Flip Flops	\$25.00
Elden Clothing	CO	GQ Shirts	Men's Button Shirt	\$55.00
Legacy Clothing	CO	Zen Clothes	Men's Fidora	\$52.00
Men's Apparel	FL	Wholesale Threads	Men's Jeans	\$90.00
Reynolds Jeans	WA	Blue Manufacturers	Men's Slacks	\$65.00
Shoes For You	CA	Aspen Clothes	Men's Tank	\$23.50
Simplicity Apparel	SC	Spirit Clothes	Polo	\$52.50
Timber Boutique	AZ	Dusting Shoes	Sneakers	\$60.00
Women's Apparel	GA	GQ Shirts	The GQ Shirt	\$79.00
*				

Programming

The changes requested by the new owner are displayed below:

[edit](#) [fork](#) [download](#)

[copy](#)

```
1.  /* package whatever; // don't place package name! */
2.
3.  import java.util.*;
4.  import java.lang.*;
5.  import java.io.*;
6.
7.  /* Name of the class has to be "Main" only if the class is public. */
8.  class Ideone
9.  {
10.     public static void main (String[] args) throws java.lang.Exception
11.     {
12.         int day;
13.         int month;
14.         int year;
15.
16.         GregorianCalendar date = new GregorianCalendar();
17.
18.         day = date.get(Calendar.DAY_OF_MONTH);
19.         month = date.get(Calendar.MONTH);
20.         year = date.get(Calendar.YEAR);
21.
22.         System.out.println("Welcome to Swagger Distribution!");
23.         System.out.println("Today's date is "+(month+1)+"/"+day+"/"+year);
24.     }
25. }
```

Success

[comments \(0\)](#)



[stdin](#)

[copy](#)

Standard input is empty

[stdout](#)

[copy](#)

Welcome to Swagger Distribution!
Today's date is 12/16/2015

The key components required to make the requested changes include inserting an additional “System.out.println” line, or program statement, within the applet. This tells the program to now print a second line’s statement to the welcome greeting displayed when employees login each morning, welcoming them to work. Additionally, text was modified with the original program statement to reflect the desired language change of the new owner,

informing users of “Today’s date” instead of “Current date.” The values of “Today’s date” are determined from the integer variable definitions made at the beginning of the program, telling the compiler how day, month, year should be generated based on the type of variable and that it is obtained through the calendar. Once these variables have been defined and determined by the program, they may be included in the output generated by the program statement.

Network Consult

The wired network for Swagger Distribution is a standard T1-based network consisting of expected devices like a main router, firewall, switch, servers, bridges to the office and warehouse, and user-level computers connecting to the network. Though the current network setup is good, there are a number of recommended improvements for greater networking speed and future-proofing.

Access to the internet (WAN) is currently provided via T1 connection from the Internet Service Provider (ISP), providing speeds of up to 1.54 Mbps. This is no longer sufficient for an internet-based business and should be upgraded to at least a T3 connection (if available from the provider) or a business-grade connection from a major cable company or Verizon FiOS (where available). A T3 connection will increase speeds up to 45 Mbps, while a cable company or FiOS can provide speeds in excess of 300 Mbps, potentially at a cost savings. A cable internet connection of DOCSIS 3 or better is recommended, but may be unavailable due to lack of cable service in area. Verizon FiOS may require fiber optic cables to be run outside and inside the building, but may be worth the investment for fast and reliable internet speeds.

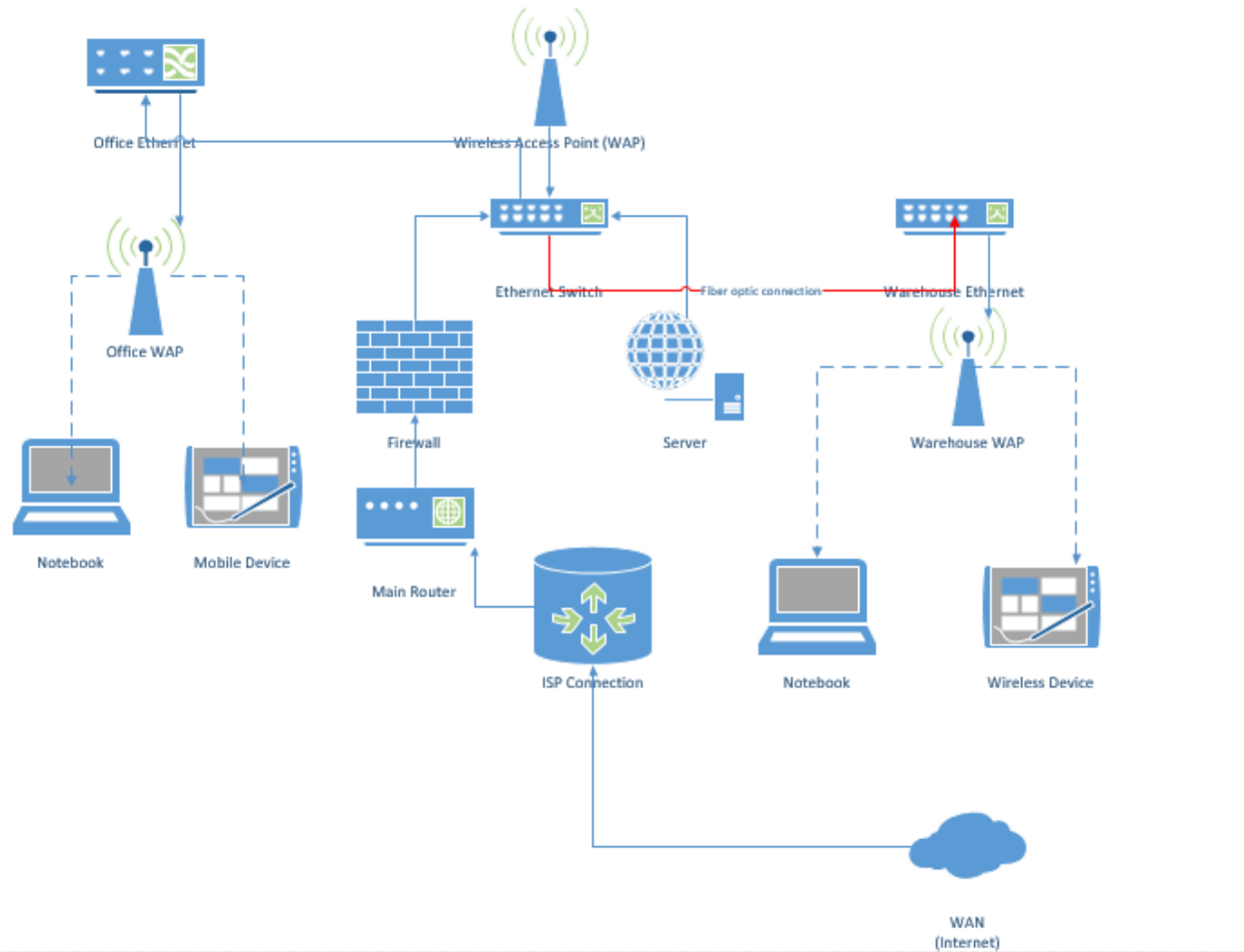
The WAN connection meets the local Swagger Distribution network (LAN) at the Main Router, which then connects to the firewall and main switch to bring WAN and LAN access to the buildings. According to Cisco, the PIX Firewall is no longer sold or supported, and their

recommended upgrade path is to the Cisco ASA 5500 Series Adaptive Security Appliance. The main Ethernet switch present should be upgraded to support gigabit speeds, if this is not already supported.

The Ethernet switch provides access to the Swagger Distribution LAN to each device on the network, which is then connected to the WAN for shared internet access across both buildings. The network connection to the offices is provided by the switch and run via Ethernet from a cross-panel patch to the drop cables and Ethernet terminals at each workstation. This cabling should be checked to ensure it is CAT6 cabling, to take advantage of the existing or new gigabit Ethernet switch. Office PCs are then connected directly to the network via Ethernet, providing reliable and fast connections to the office LAN and internet. Connectivity to the Warehouse is provided via fiber optic cabling, which is good but severely under-utilized by the slow T1 connection. Upgrading the internet connection as mentioned earlier will take greater advantage of the faster CAT6 Ethernet cabling and the faster and more reliable fiber optic cabling to the warehouse. A remote Ethernet switch in the Warehouse converts the fiber optic connection to Ethernet, which is then directly connected from the switch to each PC workstation in the shipping office. Depending on the distance between the main Ethernet switch and the Office PCs, an additional switch may be needed in between to ensure proper Ethernet cabling distance. CAT6 Ethernet cables are rated for a maximum of 100 meters, or 328 feet. If the distance between the main switch and workstations are greater than this, an addition switch should be added to increase the distance. The servers are connected directly to the main Ethernet switch to connect to the WAN and LAN and, due to their proximity to the switch, do not require additional networking equipment.

Wireless Access Points (WAP) may be used to provide Wi-Fi connectivity throughout the offices and warehouse, enabling mobile device usage for employees and guests. Given the ample Ethernet cabling available and the existing router in place, these WAPs may be configured as wireless bridges, extending the existing LAN into a wireless network. At least once WAP should be installed in the Computer Room, the Offices, and Warehouse, to ensure maximum wireless coverage. Each WAP should be directly connected to an Ethernet connection to extend the wireless network's range without degrading signal quality. The WAP in the Computer Room may be connected to the main switch, while the Office WAP can connect to any unused Ethernet terminal, and the Warehouse WAP will be connected to the existing Warehouse switch. Each WAP should support 802.11AC and dual-band 2.4 and 5 GHz technology, which supports the full range of a/b/g/n, and 2.4 and 5 GHz devices as well. Any a/c devices connecting to the wireless network will take advantage of increased Wi-Fi signal distance and speed, additionally.

Providing wireless internet access throughout the buildings will enable both employees and guests to utilize mobile devices like smartphones, tablets, and notebook computers on the network and internet, and may increase productivity. Wireless connectivity can inherently be affected by other signals in the area, and so wireless speeds may vary. Additional WAPs may be added where Ethernet connections are available if slow speeds are noticed. This connectivity may be achieved by purchasing high-end consumer-grade WAPs (like Apple's Airport Extreme) or through an enterprise wireless offering, which usually involves a wireless survey to ensure proper placement of the enterprise-level wireless equipment. A diagram is available below.



Web Technologies Consult

Building a website for Swagger Distribution is a highly recommended next step for taking the business to the next level. Building websites has become much easier over the years, and this can now be done with little to no experience. The first step is to select a domain name (web address), like google.com for example, for the company so that potential customers can find it easily online. A good rule to remember is that a short domain name that is easy to remember and ends in .com is usually best. Unfortunately SwaggerDistribution.com is no longer available, but a good alternative may be SwaggerDistribution.us. The .US extension signifies that Swagger Distribution is a US-based company, and is widely used and memorable. After

selecting your domain name, you need to find a registrar that will process and manage the registration for you. Many companies, like GoDaddy and NameCheap, offer domain registrations and provide powerful tools for managing them. It is best to avoid registering your domain name with the same company used for web hosting, as any issues or disputes that arise with your web hosting company may impact your ability to access your domain registration. Your domain name registrar is like the title company for a new car purchase, where your car is the domain name itself. By separating the web hosting company and domain name registrar, you can park your car in any garage (web hosting company) that you choose. If you finance your car and garage with the same company, a late payment on your garage may impact the ability to move your car to another garage.

Once your domain name is registered, it is time to find a web hosting company to host your actual website. This can be done in-house using the servers available on-site, but to reduce costs and labor it is recommended to select a web hosting company instead. This will free up your technology resources to focus more on your actual business, instead of managing web and email servers as well. There are two options that would suit Swagger Distribution best. The first, recommended, solution is to use a Content Management System (CMS) like WordPress to design and manage your website. CMS offer powerful editing tools and themes that do not require any knowledge of coding in HTML and JavaScript (HTML5), and can also automatically handle the creation of a mobile website for visitors on smartphones. A theme will allow you to easily create a website that displays information regarding your business, displays images of sample products, provides a list of retailers you partner with, a map with contact information, and more. There are even themes and addons that may be used to include features like shopping carts and personal/corporate accounts so that customers may manage their relationship with Swagger

Distribution online. Themes allow you to modify the look of the website automatically, without having to worry about the code or needing to understand HTML tags to ensure proper formatting. It is recommended that an online form, used to submit information from visitors to you, be utilized so that potential customers may provide you with contact information and questions regarding a quote or information on services provided. This interactive tool will allow customers to begin the acquisition process, further reducing the need to reach out to potential leads directly. A mobile version of the website will also ensure that potential customers can obtain more information about Swagger Distribution easily and at any time.

Finally, the second option for hosting your website is to go with a full-service provider like Squarespace. Squarespace takes the hassle out of web hosting, so that you do not have to manage uploading and modifying files on the web server or keeping any software up-to-date. Squarespace websites come with a number of themes already installed and available, providing quick and easy access to shopping carts, accounts, contact forms, maps, and more. While this may be a good option, you do lose some functionality like managing email accounts on your domain. This can be offloaded to a company like Google by simply modifying Mail Exchanger (MX) records in the Domain Name System (DNS), but at an added cost.

An example of a website incorporating the contact form and mobile website that are necessary and described above, are included below:

Contact form so that customers can reach you easily.

SCORPIONDESIGN
INTERNET MARKETING EXPERTS

ABOUT SCORPION WHO WE SERVE WHAT WE DO WHY SCORPION? LATEST NEWS CONTACT US 888.278.2762

CONTACT SCORPION

You'll be glad you did.

Fill out the form below to submit your inquiry and one of our representatives will contact you shortly. Please also feel free to contact us via phone toll-free.

First Name Last Name

Email

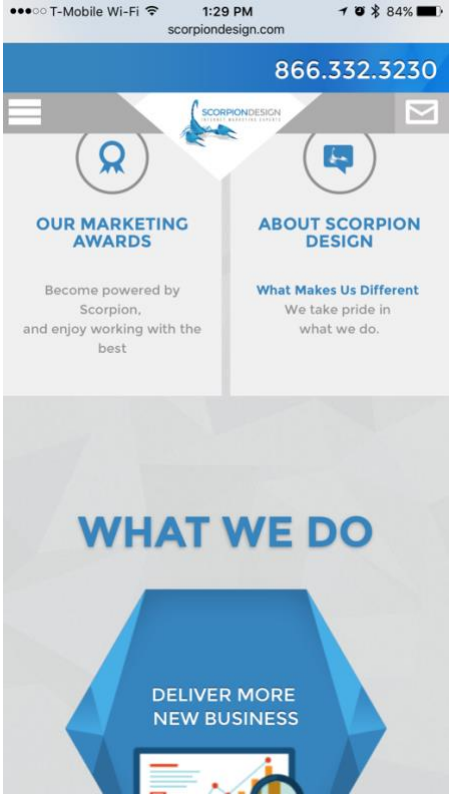
Phone State

Industry Type Select

Current Website URL

What Goals Do You Have For Your Marketing?

Mobile website with proper formatting for all screen sizes:



Importance of Information Security

Information Security is an important aspect of any company's Information Technology implementation and must be taken seriously. Proper Information Security practices help to ensure the security of Swagger Distribution, its employees personal information, and the privacy of the customers. By employing standard Information Technology and Security practices, we will be well prepared to protect the security of the company and the privacy of any personal information that is stored in databases and servers that Swagger Distribution operates. By failing to implement either of these two key practices, Swagger Distribution opens itself up to penetration that may result in: destruction or loss of data, leaked personal information of employees like Social Security Numbers, and the compromise of sensitive customer information including credit card numbers, and sensitive corporate operations. Failing in any of these ways will open the company to litigation and loss of a hard-earned and respected corporate image in the industry.

Recommendations

A good foundation of basic security principles is required for any effective IT solution, and so these recommendations will focus on ensuring the basics are implemented. A more comprehensive security solution is recommended after implementation of this needed baseline to ensure any further efforts are effective.

First, Swagger Distribution will implement a comprehensive password policy that impacts every employee. In order to ensure that employee passwords are secure and not easily guessable or exploited through Brute Force attacks, this new policy will require that passwords meet the following criteria:

1. No less than eight characters long.
2. Must include at least one capital letter.
3. Must include at least one numeric digit.
4. Must include at least one special character (like !, @, #, \$, etc.)

In addition to the new password policy, mandatory password resets will be implemented automatically by the access control server every sixty (60) days, and re-using the same password within the last twelve (12) month period will be disallowed. Research has shown that passwords that do not adhere to these standards are much more easily guessed, exploited through Brute Force login attempts, and are easily matched with existing words in a dictionary (Microsoft n.d.). Enforcing the above policies will ensure that passwords can not be easily guessed and that Brute Force attempts will be largely impractical due to the incredibly high number of possibilities per password that follows these policies. Additionally, forcing employees to change their passwords regularly will help mitigate any unauthorized access if a password were to be compromised.

Next, private customer information stored in our databases will be fully encrypted using a salted hash that requires this salt (key) for decryption. The key will be kept separate from the encrypted data at all times, and not be available outside the internal network. Storing of credit card and other payment information will also be outsourced to a PCI-compliant third party, to remove the possibility of any compromise on Swagger Distribution's end affecting that of our customers. This also has the benefit of removing liability from the company, and ensures that sensitive data is entrusted to a third party practicing the data protection standards in the industry. This will also bring the added benefit of more secure and automated payments for customers that purchase frequently and may desire automated billing. By encrypting other information obtained from Swagger Distribution's customers, we will be operating at a higher than normal industry

standard for protecting the personal information of our customers. Though the unintentional leak of the non-secure information we store may not be wholly damaging to a customer, ensuring that we protect the information we store removes the possibility of that being used to attack our payment processor or any other company using private information obtained from Swagger Distribution. As was seen with the recent Sony Pictures hack, obtaining any amount of personal information through a security compromise may be deeply embarrassing and damaging to both parties involved (Peterson 2014).

Conclusion

By implementing both of these basic security practices, Swagger Distribution will be well positioned to protect the personal and private information of its employees and customers. This will also lay the groundwork for a more comprehensive security solution that works to secure each server and workstation directly, preventing malicious software from mitigating the implemented security practices described above. Additionally, any compromise that may occur either on Swagger Distribution's end or that of the new payment processor should be limited in scope. Access to customer records will not reveal any plain-text information identifying them, as the encryption must be broken for any readable data. By migrating payment processing to a more secure third party, we also ensure that neither employees nor attackers have access to the most sensitive customer information that, when misused, may cause the most damage to the business and its customers.

References

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