BetterPrints

Technical Plan

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I. Facilities and Physical Plant

Rationale

Facility management and upkeep are crucial to the organization's overall aims and objectives. Facility management may improve the efficiency of operations and contribute to the company's success in a variety of ways.

BetterPrints not only maintains the facilities systems, but also thoroughly analyzes the facility in order to figure out where the maintenance-related requirements are lacking. This is established through the utilization of maintenance software, through collection of data on facility performance and pointing to the strengths and weaknesses in the current operations.

Despite the presence of remote work policies, select business units or departments must still conduct work within the offices of BetterPrints' HQ (Head Quarters). Such departments and jobs may include roles that deal with accounting, human resources, and sales/marketing roles.

Goals

<u>Facilities Operational Security</u>

- Facilities systems must be able to maintain operational security processes
- Facilities systems that allow the supervising and quantification of regulatory compliance

<u>Facilities Strategic Alignment</u>

- Facilities must be modified or configured to meet standards which will ensure the efficient flow of business processes.
- Facilities should be able to maintain hardware requirements, encourage a collaborative environment, as well as an easily monitored environment

<u>Facilities Transformation</u>

- Facilities are to be configured to easily adapt to changes in the business processes and increasing scale of the business

Strategic Capability Priorities

I&IT Facilities Monitoring and Accountability

Access cards or badges will be used by both personnel and visitors to control levels of authorization and maintain tight tracking of in and outs for increased security and monitoring. This will allow the close monitoring of movement throughout the facilities and accountability for unforeseen circumstances. Personnel access cards may only have access to offices and/or rooms that particular individual is assigned to, depending on their line of business (LOB). Visitors are provided with badges instead of access cards, as they can only be permitted to enter offices and/or rooms with the supervision of a company security guard.

I&IT Space Planning

Space Planning will be conducted gradually as the organization continues to grow in size and continue to scale. Considerations in space planning will include the different impacts of current and feasible space allocations. Ensuring the most efficient, flexible and effective space allocation and one that ensures the productivity and collaboration of different units of the organization.

II. Network

Rationale

A well-established network allows organizations to maintain internal communications systems. For example, Network email can be instantaneously delivered to all users, voice mail systems can be hosted via network and made available systemwide and collaborative scheduling software. While there are multiple network designs, BetterPrints' network will be established based off of the organization's specific requirements and scale. For example, a large company might implement a backbone network to connect departments that are located around the world, whereas BetterPrints' network topology is expected to be smaller but easily scalable and can easily install or add stations or nodes.

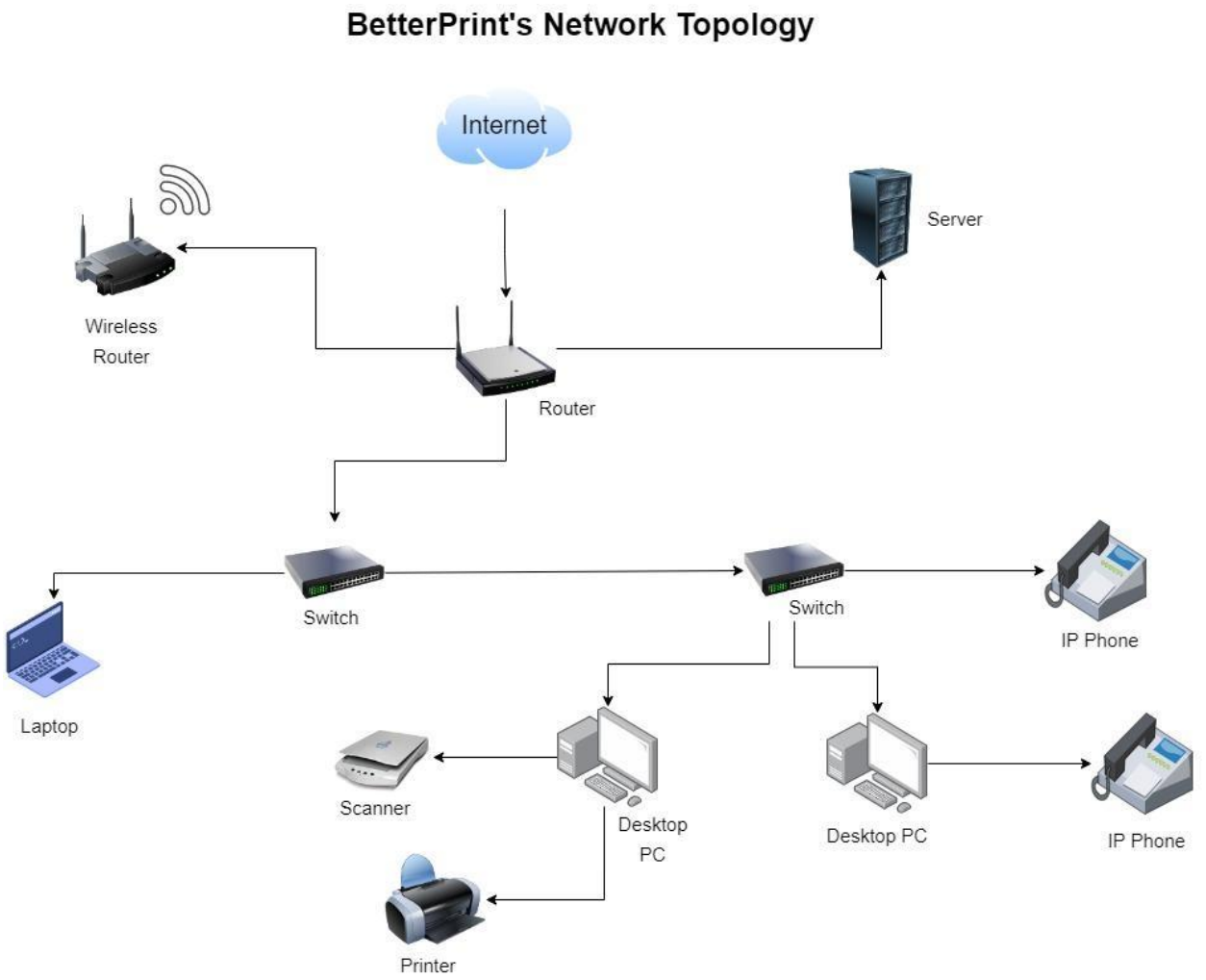
Goals

- Establish a scalable, reliable, cost effective and efficient, inexpensive network that is aligned with the organization and its goals.
- Integrate monitoring of network to benchmark performance and make adjustments and prevent anomalies
- Establish ways to ensure the control and management of network access

BetterPrints’ Network Diagram

The network diagram represents the organization's network topology. The organization will utilize the ***Bus Topology***. It is the easiest network topology for connecting computers in a linear fashion and is also easily scalable. Apart from this the bus topology has the following benefits and advantages:

- It works very efficiently and well when there is a small network
- It is easier to set up and cheaper than other network options
- A failure of one and any station does not affect the rest of the network
- Multiple nodes or stations can be installed for connected without difficulty



Strategic Capability Priorities

Network Access Control Deployment

The adoption of a role-based structure is one of the best practices of configuring network security in network access control, this will allow the organization to set up rules and policies based on the segmentation of employees into groups based on their job function. Network access control will also allow the organization to control the users entering the corporate network, control access to the applications and resources users aim to achieve, protect against cyberattacks by putting in place systems and controls that detect unusual or suspicious activity etc.

Optimizing Network Protocols

Network optimization must be ensured by ensuring the network design and performance are at the lowest cost structure. And this can be achieved by managing the network latency, traffic volume and network bandwidth and traffic direction. Monitoring software will be used to gain beneficial visibility of network performance issues from worksites and data centers. Encompassing both real-time and post-event analytics.

Utilization of Network Monitoring Tools

With the use of network monitoring tools, clear visibility to benchmark everyday performance and the foresight to pick up on any fluctuations in performance standard. This way, anomalies may easily be detected. Effective network monitoring allows IT workers to see possible problems early on and fix them before they become severe problems that cause system downtime.

III. Data Center (Servers, Storage, Cloud)

Rationale

Data centers are frequently referred to as a single entity, but when they are indeed made up of several technical components. These are the components that IT needs in order to store and administer the most significant resources that are essential to an organization's ongoing operations. As a result, data centers' dependability, efficiency, security, and ongoing evolution are often high priorities. Security measures, including software and hardware, are required.

BetterPrints is expected to rely on types of data centers that will allow remote storage and third-party services to handle maintenance.

Goals

- Establish a scalable and flexible data center
- Utilize data centers that may also be used by clients (preferably inexpensive)
- Emphasize appropriate physical and information systems security principles, such as least privilege and segregation of duties within operational constructs to minimize risk.
- Establish security concepts for physical and information systems.

BetterPrints' platform will be utilizing cloud computing as one of its technologies. Cloud computing is the delivery of a variety of services through the use of a network of remote services hosted on the web that provide the ability to store, manage and process data, they may also provide resources such as servers, databases, networking, analytics and intelligence.

With the use of cloud computing, this will allow the organization to keep servers on the internet for easier access instead of being kept on a local server, a local storage device or a personal computer. This will also allow BetterPrints to avoid expenses associated with acquiring, installing, and maintaining a data center with physical or local servers.

The service model that BetterPrints will be using is the ***PaaS*** service model, also known as ***Platform as a service***.

The benefits and advantages of using the ***PaaS*** are:

- Provides simplicity and convenience for developers, developers are free from installing in-house infrastructure
- Decreases infrastructure management
- Automates or eliminate maintenance tasks
- Removes complexities
- Adopt new offerings and technologies (without overhauling business processes)

Refer to image below for services the third-party vendor is expected to provide as well as the model in comparison with other service models (e.g. ***IaaS*** and ***SaaS***)

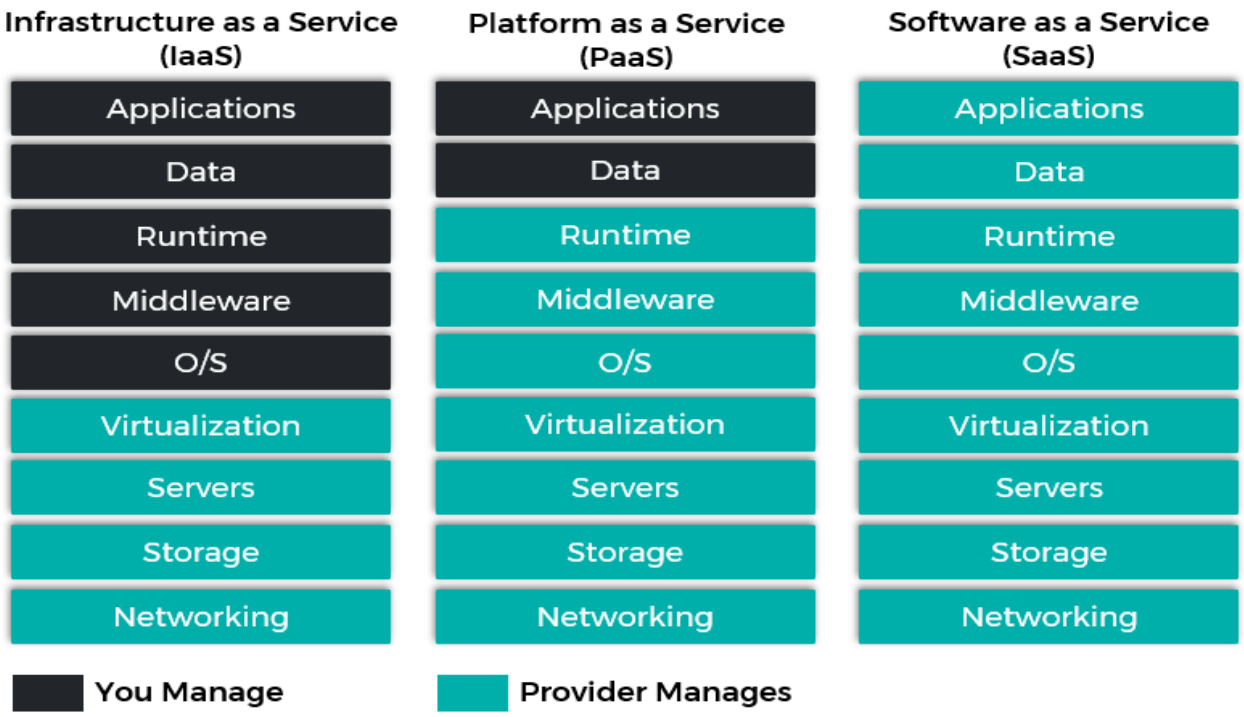


Image from INAP Hybrid Infrastructure Company

The third-party vendor is expected to provide operating systems, servers, databases, middleware, networking, storage services. While BetterPrints provides the applications and data.

Strategic Capability Priorities

Consideration of Physical Space

Data center planners may try to limit facility space to the organization's current demands in order to save money, but this can be a costly mistake in the long term. Having the room available to add equipment as the organization's needs increase is critical.

Data Center Security

Security of data centers especially for physical servers may include, keeping the networks protected with the installation and use of firewalls, IDSs (Intrusion Detection Systems), and ACLs (Access Controls), ensuring the encryption of all data where necessary or appropriate, require usernames and passwords and implement regular backups in order to limit or prevent data loss.

Implement Hardware Lifecycle

Implementing Hardware Lifecycle Management practices reduce hardware and maintenance costs, increase upgrade flexibility, extend the useful life of IT hardware, and maximize the value of servers and networking equipment by taking into account the entire useful life of a server, router, or tape storage library. Other benefits for IT Directors and Managers include fewer emergencies and predictable control throughout the hardware life cycle, in addition to minimizing the total cost of ownership.

IV. Clinical I&IT

Clinical I&IT focuses on clinical and scientific services, the company that is working all about Computer Building has its category. That's why the current services are not applicable in this type of business.

V. Laboratory I&IT

Laboratory I&IT focuses on the scientific approach of services or products. Laboratory I&IT are all about peopleware, and it acts as a repository for data relating to laboratory experiments. As a result, it is incompatible with our systems.

VI. Data and Knowledge Management (DKM)

Rationale

Data and knowledge management is very important especially for an organization. Data and knowledge management discusses the process by which data can be converted into information and then into knowledge, which are then turned into executable priorities or business goals and objectives. Organizations' ability of learning and knowledge sharing can determine their productivity and sustainable competitive advantage. The accuracy and completeness of the underlying data is critical, and a well-organized DQM (Data Quality Management) program is required.

Below are the key characteristics of good quality data to be considered, which are the basis for BetterPrints' approach to data quality

- ***Accuracy*** - Data should be sufficiently accurate for its intended purpose, representing clearly and in enough detail the interaction provided at the point of activity
- ***Validity*** - Data should be recorded in an agreed format and used in compliance with relevant requirements, including the correct application of any rules or definitions.
- ***Reliability*** - Data should reflect stable and consistent data collection processes across collection points and over time, whether using manual or computer based systems, or a combination.
- ***Timeliness*** - Data must be captured as quickly as possible after the event or activity it records and must be made available for the intended use within a reasonable time period deemed appropriate for its use
- ***Relevance*** - Data captured should be relevant to the purposes for which it is being used. Data must be reviewed periodically to reflect changing needs or circumstances.
- ***Completeness*** - Data needs to be complete, representative and unbiased. Sufficient information should be collected and to a suitable quality, as it is needed to draw significant or meaningful conclusions.
- ***Secured*** - Information is stored safely and with appropriate access controls. Sensitive information is only used for the purpose it has been collected for, and only retained for as long as it is needed.

Goals

- Implementation of systems and processes to secure good quality data
- Establish policies and procedures to facilitate and maintain data quality
- Implementation of framework for clearly defining data quality

Strategic Capability Priorities

Precision Reporting

Regular reporting of accurate information leads to good decision making and improved performance. Spot checks on performance indicators will be carried out on a sample basis to check data quality ensuring performance information is accurate.

Utilization of Data Quality Frameworks

Organizations can define a policy that establishes a clear definition of data quality and the approach's objectives by adopting a data quality framework. The frameworks assist companies in determining data quality dimensions. Key performance indicators (KPIs) must be implemented in all of these areas so that the company can assess what data quality implies in each scenario. To guarantee that the organization understands where its risks are and has appropriate procedures in place to deal with them, key risk indicators (KRIs) must be implemented and monitored. KPIs and KRIs should be communicated to all stakeholders and evaluated on a regular basis.

Presentation of Data

Information regarding the performance of an indicator needs to be presented in such a way as to give an easily understood and accurate picture of our performance to external inspectors and the public.

Maintenance Data Quality Policy and Procedures

Data owners should document the procedure undertaken to collect the date for external returns and any local assurance arrangements that are in place. All policies and procedures should be reviewed regularly to consider their impact on data quality so that the data collected remains fit for purpose.

Communication & Accountability of Data Quality

Staff must recognise the need for good quality data, and understand how they contribute towards achieving this. Policies should be communicated to all relevant staff. Every member of staff should be aware of policies relating to data quality and related policies.

VII. Website Communications

Rationale

Organizations rely heavily on communication, which is described as the spoken, nonverbal, or written exchange of ideas, messages, or information. Organizations cannot function without communication. The entire organization suffers when communication is restricted or impeded. The organization tends to be vibrant and effective when communication is full, accurate, and timely. Communication not just externally but also internally. Effective communication can help to foster a good working relationship between you and your staff, which can in turn improve morale and efficiency. The Internet provides you with the opportunity to speak to your customers directly. Websites act as a marketing platform, which can provide new ways to communicate, allowing the organization to convey the image it wishes to convey.

Goals

- Provide a platform that will encourage collaborations amongst organizations and other entities
- Ensure the monitoring of content, accuracy, and timeliness by giving information to individuals directly.
- Utilization of different kinds of testing (user acceptance testing, etc.) and feedback collection, to determine possible improvements and useful of technologies and features
- Proper application of principles UI/UX theories to increase appeal and improve user experience

Strategic Capability Priorities

Updating of Web Infrastructure

A simple lack of information about what's on the network is one of the main reasons for outdated network equipment. After years of mergers, personnel churn, and changes in IT support providers, it's likely that an organization will end up with at least some gear or software that has languished in a dusty corner, literally or figuratively. When new applications and technologies are released, they are designed for compatibility with the latest network iterations. Upgrading not just the web but possibly the network infrastructure as well, allows more flexibility in choosing new tech investments. Upgrading gives the organization better, more efficient hardware with less chance of failure. It also gives access to more computing power and storage space.

Establish a Web Content Lifecycle

Web Content lifecycle management plays a significant role in user experience and, subsequently, functionality and business revenues and business goals. The lifecycle must include the phases; Planning and Research, Designing and Writing, Peer Review, Fact checking, Publishing, maintaining and iterating, and lastly, Removal and archive. The content lifecycle creates a repeatable process that defines how meaningful communication will be managed.

Increased Utilization of Virtual Collaboration Applications

In order to align with BetterPrints' remote work policy, usage of collaborative applications is highly encouraged. This applies not only to internal communications but also externally, or to reach out to customers and clients, increased virtual meetings and communications is expected through web application, especially in cases where location may be constraint, these activities may be performed to reach a wider range of customers and clients, and in order for different business units within the organization to build and maintain rapport.

Exploration of Different Forms of Media

Different forms of media can be used in web communications to appeal, attach and reach the target market. To effectively communicate with the market, whether it be by collecting feedback or maintaining as closed-loop as possible, following market trends and gaining more overall knowledge of the market. The organization may take this opportunity to figure out what form of media fits and is most suitable for the organization's, in terms of branding.

VIII.Non-Commodity Software

Rationale

Both the development of custom software and the purchase of pre-packaged software demand a significant investment in terms of both time and money, and will have an effect on your business for a number of years to come. If the chosen vendor is able to produce highly customized flexible solutions that are simple to use and maintain, then bespoke software may be an option worth considering. Ready-made solutions are constructed on the basis of the generic requirements of the category for which they are designed, which may or may not correspond to the manner that particular firms carry out their daily operations. Software that is not considered a commodity is a popular choice for businesses that require one-of-a-kind solutions to address issues that are unique to their organization. Building custom software has a number of options for process optimization, which, if taken advantage of, can result in increased productivity for the business.

Goals

- Identify what business needs can be solved or be supplied by custom built software or non-commodity software, that off the shelf software cannot.
- Communicate proper utilization of custom built tools to staff and personnel, in order to ensure efficiency and cost effectiveness compared to off the shelf software.
- Establish a procedure that will allow the close monitoring and continuous development of the software to keep up with the business' requirements and scale

Strategic Capability Priorities

Non-commodity software maintenance

Software maintenance is complex and challenging, to the point that skilled maintenance teams are required in order for proper application and implementation of software maintenance practices. Maintenance processes may include problem identification and tracing, analysis and determination of priorities, design, implementation, testing, lastly, delivery and documentation updates.

Software Development Life Cycle Guidelines

The Software Development Life Cycle (SDLC) is a comprehensive program development process that systematically verifies that the quality and accuracy of the software meet the corporate and industry requirements. This life cycle aims to ensure that the software that is being manufactured in the industry is properly falling under the expectation bracket of

the customer. One thing it ensures is that the development process of the software stays inside the already agreed upon cost and time frame. This life cycle strives to verify that the software being created in the industry is appropriately meeting the customer's expectations. One thing it assures is that the software development process stays within the previously agreed-upon cost and time schedule.

IX. Commodity Business Computing

Commodity business computing refers to packaged software that is used to support and manage standard enterprise systems, such as personnel, software, and hardware.

Commodity business computing includes packaged software that is deployed for Commodity business computing supports and maintains general enterprise systems, including providing staff expertise, software, and hardware. This section includes packaged software for workplace productivity, corporate operations, and communications, as well as packaged software installed, which are all examples of commodity business computing.

Goals

- Provide the organization's workforce with sufficient productivity resources that will allow them to perform tasks efficiently and effectively
- Provide hardware capable of carrying out day-to-day tasks with as little downtime and maintenance as possible. Preferably hardware capable of executing large volumes of data and overall workload
- Encourages collaborative effort between different units of the organization
- Aligned with the business and system needs of the organization
- Enables accurate tracking of internal data and business metrics for business analysis
- Hardware that requires as little supervision as possible, and can be automated
- Maintains a secure and protected infrastructure that ensures regulatory compliance to the organization’s security and privacy policies

Software/Applications

For productivity and communications, BetterPrints has chosen the following software to utilize:

- Microsoft Office Apps (Microsoft Word, Microsoft Powerpoint, Microsoft Excel, etc.)

The Microsoft Office package has become the company standard and most common set of applications for companies to use due to its ease-of-use, accessibility, interactivity, and adaptability across operating systems.

For graphics software, BetterPrints has chosen the following software to utilize:

- Adobe Creative Suite (Adobe Photoshop, Adobe Illustrator, Adobe Acrobat DC, etc.)

The apps that come within the package, shall serve as tools for the marketing department and graphic design roles within the organization. Packed with tools and resources for image creation, graphic design and photo editing, built to increase design capabilities. The Adobe Creative Suite contains tools such as Adobe Photoshop and Adobe Illustrator are well-known applications and/or software in the graphic design industry.

Software engineers and developers play a vital role in the organization's operations. From the planning stage to the maintenance stage of a software or systems life, software engineers and developers require applications and software that is multi-purpose and can perform different tasks but is also collaborative building applications and can be heavily integrated with the organization's hardware.

BetterPrints will be using the following building applications:

- Microsoft Visual Studio Enterprise Edition
- Microsoft Visual Studio Code
- Microsoft SQL Server
- MySQL
- Git/GitHub

Hardware

Remote work is an employment arrangement the organization encourages and is sought after, as the company believes this will further extend the range for search in acquiring talents and skills required for the successful operation of the organization, alleviating problems in the geographical aspect of employment.

To enable the organization's staff remote work capabilities, a majority of the staff will be provided with laptops instead of desktops unless they are required to perform operations in the office. These laptops need to be flexible in a sense that it can be portable and powerful to handle large scale and volumes of data and code to be executed, without compromising quality and speed, hardware chosen is required to meet the following criteria:

1. A minimum of 8 GB of DDR4 RAM
2. Integrated graphics or built-in processor (for developers and non-graphic intensive roles) & Dedicated GPU w/ minimum of 2 GB (for graphic intensive roles)
3. Weighs a maximum of 1.75 KG
4. Battery life can last up to a minimum of 5 hours of light usage (email correspondence, word processing tasks, web research, etc.)
5. Includes a 480P built-in webcam for business meetings

For software developers:

- Lenovo ThinkPad X1 Carbon Gen 10

For graphic design and marketing roles:

- HP Envy x360

For other roles:

- Acer Travelmate P2

X. Continuity of Operations (COOP) and Disaster Recovery

Rationale

The significance of having a Continuity of Operations plan is it ensures that essential functions continue to be performed within individual organizations, during a disruption of normal operations or during a wider range of emergencies, including localized acts of nature, accidents, technological or attack-related emergencies. These conditions have increased the need for viable continuity of operations capabilities and plans that enable agencies to continue their essential functions across a spectrum of emergencies. While the severity and consequences of an emergency cannot be predicted, effective contingency planning can minimize the impact on BetterPrints' missions, personnel, and facilities.

Goals

- Protect essential facilities, equipment, records and other assets, in the event of a disruption
- Reduce or prevent the effects of disruptions to operations.
- Ensure and verify continuity preparedness via a dynamic integrated continuity testing, training, and exercise program as well as operational capabilities.

Strategic Capability Priorities

Immediate Alert and Notification Procedures

Plans and procedures for communicating and coordinating activities with personnel before, during and after a continuity event must be established without delay. The ability to send and receive vital information to coordinate actions with personnel, partners and emergency responders is critical during an emergency. Continuity of operations plan must include strategies for communication with local emergency management authorities, local emergency responders, facility staff/residents, residents' families, regulatory agencies and suppliers/vendors. Redundant communication systems must be established. Communication systems with back-up communication channels built into it are known as "redundant communication systems".

Identification of Vital Records

Vital records are those records that the facility will need in order to continue operations and specify how each program will function during an emergency or interruption in business operations. Vital records can include client information, government and legal documents, financial documents, vendor information, databases and personnel contact lists. Vital records must be identified beforehand so as to make gradual back ups and add priority in the cases of emergency or disruption in business operations. Vital records may be identified by asking questions such as; which of the records are impossible to recreate? and are there copies stored offsite?

Proper Recording of Development and Maintenance of COOP

Responsible personnel must maintain the COOP. It is to be updated annually, annual plan review and update must be done from the date of publication. The COOP will be updated or modified when there are contact information changes or other events that affect continuity processes or procedures. Comments and suggestions for improving the plan may be provided directly to the personnel or department responsible for the COOP.

Test, Training and Exercises of COOP

An effective test, training and exercise program is to be established to support the organization's preparedness and validate the continuity capabilities, program and ability to perform essential functions during any emergency. The testing, training and exercising of continuity capabilities are essential to demonstrating, assessing and improving the ability of the personnel or department responsible in executing the COOP.

XI. Security and Privacy

Goals

- Determine best approach and practices in security implementation
- Provide procedures and protocols for special security threats & concerns
- Establish a model that will guide the implementation of security policies and regulations

Implement Best Practices

Data is one of the most important assets an organization can have. It is unique in its detail and context and can be used strategically to ensure the organization remains relevant and viable. Policies and regulations implemented by an organization make a significant impact in the protection and security of this valuable asset, since these regulations not only protect the external data of an organization but also poses threats and risk towards the privacy and data of the customers, which is part of the organization's internal data.

The ***top-down approach*** is BetterPrints' approach to information security implementation, as it has a high probability of success. Upper management initiates the project by issuing policies, procedures, and processes, dictating the project's goals and expected outputs, and determining who is responsible for each of the required tasks. Strong upper management support, a devoted champion, dedicated financing, precise planning, and the chance to impact company culture are all advantages of the ***top-down approach***. A formal development method known as a systems development life cycle is also included in the most successful ***top-down approach***.

Protection against Technological Obsolescence

Management's probable lack of preparation and failure to foresee the technology needed for increasing business requirements can lead to technological obsolescence, which poses a security risk. Technological obsolescence occurs when the infrastructure becomes outdated, which leads to unreliable and untrustworthy systems. As a result, there is a risk of loss of data integrity from attacks.

BetterPrints’ strategy to prevent this is through proper planning by management. This will be done by considering how security risk management practices are designed, implemented, monitored, reviewed and continually improved. BetterPrints is obligated to develop a security plan that sets out how they will manage the security risks and how security aligns with their priorities and objectives.

Outdated technologies must be replaced if they are detected. Information Technology workers must assist management in identifying potential obsolescence so that any essential technology replacement (or upgrade) may be completed on time.

Apart from these procedures and objectives, BetterPrints also implements and abides by a common model known as the ***"CIA Triad"*** or ***"CIA Triangle"***, which is used to guide the policies for information security, which stands for ***Confidentiality, Integrity and Availability.***

The efforts of an organization to keep data secret or private are referred to as ***confidentiality***. Access to information must be restricted in order to prevent data sharing that is not permitted, whether intentionally or accidentally. Making sure that anyone without legal authorization cannot access assets critical to your organization is a vital part of maintaining confidentiality. An effective system, on the other hand, guarantees that those who require access have the required permissions.

Integrity refers to ensuring that the organization's data is accurate and unaltered. Only original, accurate, and reliable data can be used to ensure data integrity. Hashing, encryption, digital certificates, and digital signatures can all be used to protect the ***integrity*** of an organization's data. Trustworthy certificate authorities (CAs) can be used to validate the legitimacy of the organization's system or website, ensuring that visitors obtain the site they intended to see.

The organization can utilize redundant networks, servers, and applications to assure ***availability***. When the primary system is disrupted or broken, these can be designed to become available. Staying on top of software and security system improvements can also help the organization improve ***availability***. BetterPrints makes it less probable for an application to fail or for a new threat to breach an organization's system in this way. Backups and comprehensive disaster recovery plans also aid a company's recovery from a negative incident.

Lastly, BetterPrints seeks to implement the following information security policy development practices:

1. Identify all relevant security regulations—corporate, industry, and government
2. Align the policy with the needs of the organization
3. Inventory all systems, processes, and data
4. Assess security related to systems, data, and workflows
5. Document procedures thoroughly and clearly.
6. Review procedures carefully to ensure they are accurate and complete.
7. Train everyone who has access to the organization's data or systems on the rules that are outlined in the information security policy.
8. Review and update the policy regularly.