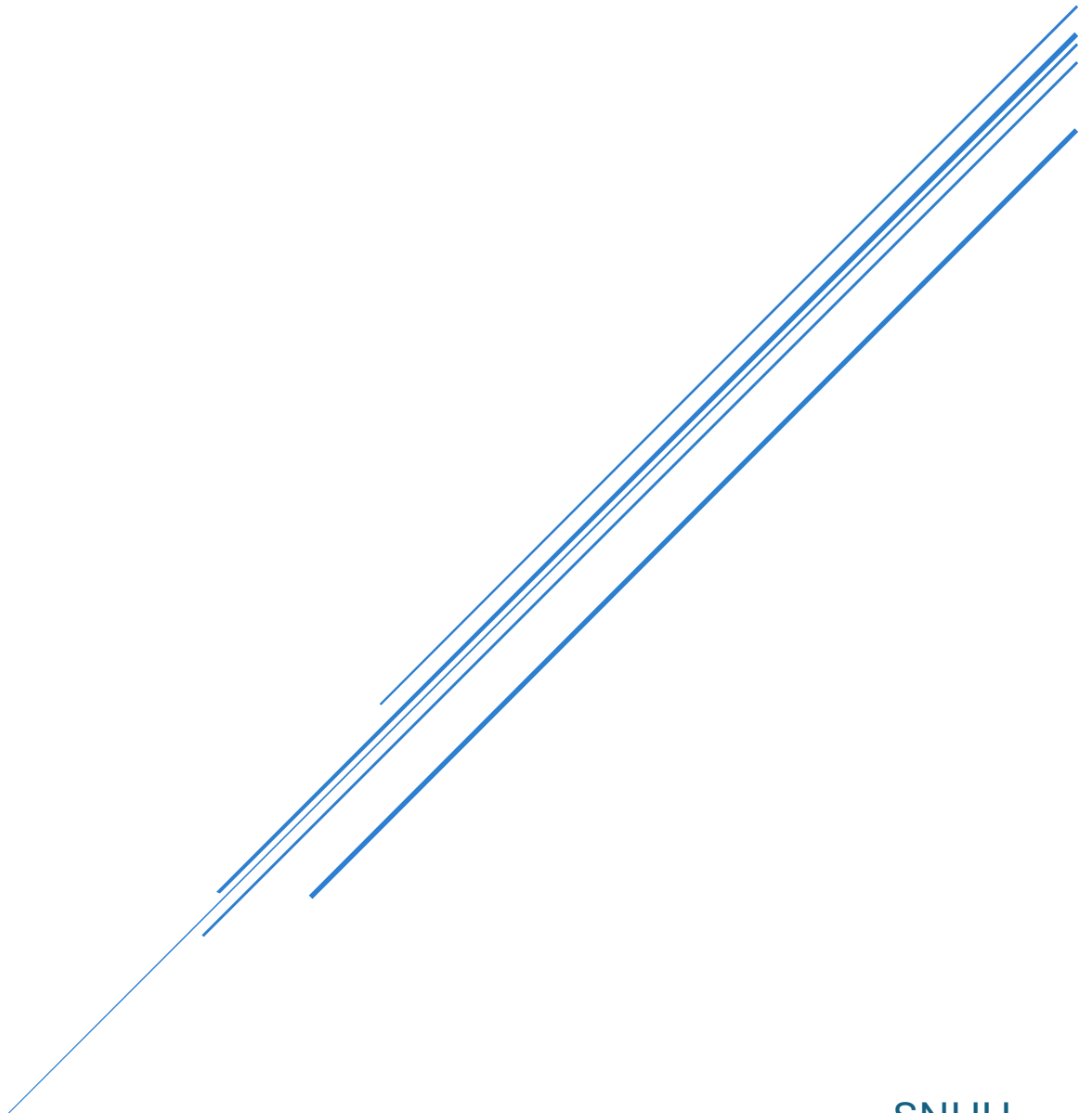


# BUSINESS TECHNOLOGY ASSESSMENT

MIS-490 Management Information Systems Capstone

Module Five Capstone | Due: December 1, 2024



SNHU

Deidre Massingale | Professor Grant Brosseau

# ABC Company

## Business Technology Assessment

### Introduction

As an ABC company consultant, I have been asked to perform a business technology assessment on each of the North, South, East, and West territories. In this assessment I will look at the company's current information technology (IT) infrastructure, to determine what technologies are needed to cohesively integrate all four offices. I will also examine the company's reporting processes as well as assess the risks and challenges associated with this integration.

### Hardware platform

#### Server machines

Upon analyzing the company's existing hardware platform infrastructure, it can be determined that all four locations would need to replace their outdated server equipment and client machines. Currently, ABC companies on premises servers contain outdated 2008 and 2012 software. The company also has a mix of Dell and Hewett Packard (HP) client machines, which can cause issues with effectively managing security concerns (*Security feature comparison: Dell, HP, and Lenovo PC Systems: PT 2024*). Transitioning all company servers to the cloud will enable ABC company to also migrate their databases to the cloud.

Amazon Web Services, Inc. (AWS), can enable the company to upgrade and enhance their "computing capacity more quickly and cheaply". AWS provides on-demand cloud computing platforms that include computing and storage capabilities. With this service, ABC company can replace their existing hardware platform infrastructure as well as free themselves

from the financial resources needed to implement on premise servers and training (*Amazon Web Services 2024*).

Microsoft office 365 cloud is a Software as a Service (SaaS) solution, that provides multiple services including email. The company can eliminate their existing email server by utilizing Microsoft's cloud email services (*Office 365 cloud 2022*).

ABC company would benefit from replacing the existing mix of client machines with one computer system provider, HP or Dell. In a comparison study completed by Principled Technologies, both manufacturers' security and system management features were analyzed. The study compared ten specific PC features to determine their level of support, which included support for monitoring solutions, BIOS security and protection features, Microsoft Intune manage integrations, and remote management capabilities. Dell supported 9 of the 10 features whereas HP only supported 6 of the 10 features. Therefore, ABC company would benefit from replacing their mixed computer systems with Dell computers. This will ensure the continued support of remote workers, while mitigating the number of security threats that can put the company at risk (*Security feature comparison: Dell, HP, and Lenovo PC Systems: PT 2024*).

## Database hosting

Currently each location is responsible for hosting their own databases, with this integration, all databases would share cloud storage space or a platform as a service (PaaS) system. Cloud storage platforms are available through multiple vendors that provide these types of services to customers. Cloud platforms services can be customized, where you only buy the services that you need, they can also be made private so that just the company employees can gain access. Cloud platforms offer businesses a variety of solutions including greater elasticity,

reduced costs, faster deployment, and enhanced productivity, as well as tighter security, superior reliability and advanced mobility. These solutions enable businesses to easily expand into other territories, they reduce costs due to the unnecessary expense associated with on-premises data centers as well as the technical staff needed to manage it. The resources available for cloud platforms can be deployed within minutes, versus days, weeks, or months, and these platforms are managed, upgraded and maintained by the provider, freeing up the company's technical department. Cloud platforms also implement tighter security provisions than most organizations, making recovery from a disaster faster, and they support remote or hybrid workforces (*What is a cloud platform? 2024*).

PaaS systems are mostly known for providing organizations with the resources they need for software development. They help provide organizations with the key services needed to reduce costs and deployment time, but this system does not replace the entire IT infrastructure (*Discover platform-as-a-service (paas): 4 key takeaways: Sumo logic*).

After careful consideration, I recommend ABC company migrate to the cloud. I recommend selecting a single vendor that will service all four territories, as this will allow for a smoother integration. I also recommend a phased rollout, with one territory at a time completely migrating to the cloud-based platform. Migrating each territory one at a time will minimize implementation issues, as well as enable the IT teams to "apply the information learned" to the other territories. Using phased roll outs per territory will also allow the IT department to manage smaller groups of users, allowing them adjust to the new system gradually (*What is phased rollout?: Definition from TechTarget 2023*).

## Business systems

ABC company's current business systems include Lotus, Excel 2007, Excel 2010, Excel 2016, and Power BI, with Power BI being proposed to replace all other business systems in all four locations. Even though Power BI is a powerful business intelligence tool, the company needs an enterprise resource planning (ERP) system for all their business processes, while only using Power BI and Excel for reporting purposes.

ERP systems are used by companies to manage “essential parts of their businesses”. Many ERP systems integrate several processes including planning, purchasing, inventory, sales, marketing, and finance that provides “accurate” and “real-time data reporting”. There are many ERP vendors on the market including SAP, Oracle Corp., and Microsoft that provide ERP solutions to customers (*Enterprise resource planning (ERP): Meaning, components, and examples 2024*).

Salesforce by Oracle is one of these systems. Salesforce is a platform as a service (PAAS) that provides applications for sales, customer service, marketing, e-commerce, and analytics. Salesforce offers several cloud solutions including sales and marketing cloud services. Other services include data integration and visualization as well as training services. (*Salesforce 2024*).

Except for Teams, Microsoft Office 365 E5 cloud includes all the popular applications of Office 365, including Excel and Word with the addition of Power BI Pro. This suite also includes added security benefits that perform real-time monitoring and protection from malicious attacks such as phishing and malware (*Office 365 E5 – enterprise solution upgrade from E3 2024*).

## Security/Security Policy

### Security Policies

Security is important to every business, and it is imperative that all of ABC company's hardware platforms are secure in this "cloud native world". Currently ABC company servers are using older outdated software that potentially exposes them to security risks. Each client computer has antivirus locally installed, with each employee responsible for updates. Active directory policies have not been enabled, giving employees full control over the system, which allows them to install unwanted software and save confidential information to external flash drives.

AWS has several account security tools available that will "lock down" the company's cloud security, enabling customer data and other systems to be safe from attacks. AWS Identity and Access Management (IAM) enables user roles and permissions to be created, to restrict access to "specific resources in the AWS environment". Using the policy simulator, the company can test and troubleshoot the permissions per user and role. Amazon GuardDuty looks for malicious activity in the AWS environments, and by using machine learning it can identify issues or detect malware or mining bitcoin. Amazon Macie is used to discover and protect sensitive data that's stored in the company's AWS S3 buckets. This tool protects sensitive data such as personally identifiable information (PII), and notifies the company if the information becomes unencrypted, publicly accessible or is shared with AWS accounts outside of the ABC company organization. Amazon Web Services offers many other tools including AWS Config, AWS CloudTrail, and Security Hub, that keeps records of changes, records all actions performed within the console as well as API calls, and combines all the information from the above services into on central unified view (Malmad, 2022).

AWS also has several application security tools such as Amazon Inspector, AWS Shield, AWS Web Application Firewall and AWS Secrets Manager. Amazon Inspector is “as security assessment services” that’s used for applications on EC2, then creating a report of its security finding by severity. The AWS Shield protects from denial-of-service (DDoS) attacks, while integrating with AWS WAF to prevent malicious traffic from reaching company websites and applications. Multiple accounts can be covered which ensures that all “internet-facing endpoints are protected from attackers”. AWS Web Application Firewall monitors traffic blocking access based on source IP address, origin country, and the values in headers and bodies. The AWS Secrets Manager stores and retrieves sensitive information and uses fine-grained permission to create, update, delete or retrieve secrets (Malmad, 2022).

AWS Directory Service for Microsoft Active Directory (AD) would enable the company to manage users and devices using AWS Cloud. With AWS Managed Microsoft AD, the company could use standard Microsoft Active Directory administration tools to create group policies. These policies include but are not limited to disabling removable media, restricting software installations, and enacting role-based access control. Disabling removable media mediates the risks of infection from viruses and malware, as well as data theft. Restricting software installation to system administrators allows the business to effectively manage their systems, as well as alleviating unwanted software installations that can potentially compromise the system (*Microsoft Active Directory | AWS Directory Service | Amazon Web Services (AWS)*).

Microsoft 365 offers several features that the company can use to ensure optimal security. These features include Exchange Online Protection (EOP), Advanced Threat Protection (ATP), Data Loss Prevention (DLP), email encryption, and Multi-Factor Authentication (MFA). EOP will protect company emails from spam, malware, and phishing attacks. ATP adds an additional

layer of protect that protects against “sophisticated threats by using machine learning, behavioral analysis, and threat intelligence. DLP prevents the leakage of sensitive data, such as credit card numbers, by detecting and blocking messages with sensitive information. Email encryption ensures the confidentiality and integrity of all messages, using office message encryption (OME), secure / multipurpose internet mail extensions (S/MIME) or Transport Layer Security (TLS). MFA requires two forms of identification to verify users during the login process, such as various authentication methods, conditional access, and app passwords. Various authentication methods can include phone calls or text messages; conditional access can include preventing access outside the network; and app passwords can include creating unique passwords for non-browser applications, such as mobile email clients (*Office 365 email security: Improving your security features 2024*).

Microsoft 365 Enterprise E5 offers several security features that worked together to identify threats to “help stop damaging cyberattacks”. These features include Microsoft Entra ID P2, Microsoft Defender XDR, Microsoft Defender for Cloud Apps, Information protection and governance, Microsoft Defender for Endpoint, Microsoft Defender for Identity, Microsoft Defender for Office 365 Plan 2, Microsoft Purview eDiscovery, and Built-in non-Microsoft connectors. Microsoft Entra ID P2 provides access management solutions for multicloud environments, Microsoft Defender XDR protects against sophisticated attacks such as phishing and malware, Microsoft Defender for Cloud Apps allows you to view the apps used in the organization, it identifies and combats cyberthreats, Information protection and governance identifies risks and helps to safeguard data, Microsoft Purview Insider Risk Management identifies, investigates, and act on insider risks. Microsoft Defender for Endpoint unifies the endpoint security platform to prevent, detect, investigate and respond to security threats.



Microsoft Defender for Identity protects the companies' identities from multiple types of targeted cyberattacks, Microsoft Defender for Office 365 Plan 2 secure company emails, Microsoft Purview eDiscovery helps find relevant data quickly and Built-in non-Microsoft connectors ensures the compliance of data from data sources including social media and instant messaging platforms (*Microsoft 365 E5: Advanced security 365 2024*).

## Anti-virus software

Anti-virus software will protect ABC company's servers, network and computers from viruses, and malware as well as other types of malicious content (*Antivirus software 2024*).

When researching various types of anti-virus software, it's important to ensure that the software can be installed on both servers and computers, because having simultaneous active antivirus software can create back and forth blocking causing exposure to incoming threats "with no protection" (*Running more than one Antivirus program 2020*). Bitdefender GravityZone antivirus software for small business security can be used to detect viruses, and malware. Bitdefender has real-time protection, detecting threats before they can "wreak havoc", it contains a firewall that "secures potential entry points that cybercriminals might exploit". Bitdefender also has comprehensive virus scanning, anti-malware protection and behavior-based monitoring, which means that scanning can be customized, and "observes" the system for "anomalies or strange behavior" (Groves & McNally, 2024). Bitdefender Update GravityZone, updates the server on the internet, then makes those updates available to all the devices across the network (*Update GravityZone 2024*).

## Website

ABC company currently requires each territory to update, host and secure their own website. Having each territory maintain their own website allows for greater flexibility and

customization. However, multiple websites can cause customer confusion, and brand dilution, which can lead to “poor overall experience” and undermine “efforts to build a strong and cohesive brand presence”. Consolidating all four websites into one cohesive website will ensure the core messaging remains consistent, while reinforcing the brand identity which builds “brand recognition and customer trust” (Schor, 2024).

External website vendors have greater expertise, resources, time, and perspectives. By utilizing an outside vendor, ABC company will have access to experienced and talented people that can successfully design a cohesive brand presence and effectively market to customers. External vendors have more time, leaving the company to focus on more important business matters. External vendors can also bring a fresh perspective, as well as strategies that can improve customer conversion rates (Whittington, 2019).

## Operating Systems Platforms

Currently ABC company uses a mix of Windows XP, 8.0, 7.0 and Windows 10 operating systems. Windows 10 has been proposed to replace all other operating systems at all four locations.

Multiple operating systems (OS) can cause compatibility issues between the existing operating systems and the applications, files, and resources that are shared between them. Multiple operating systems can cause security concerns, with the systems administrator having to ensure that each OS is updated and working correctly. This requires knowledge of the antivirus software, firewall, and applications used for each specific OS (M., 2023). Using one OS for all computers within the network would mitigate these compatibility and security issues.

Windows 11 includes several security features including TPM 2.0 that enables “device encryption, secure boot, virtualization-based security, and windows hello facial recognition”.

With facial recognition, malware has been reduced by 60% on the devices where it's enabled (Alspach, 2021).

After considering ABC companies multiple operating system platforms, I recommend updating or replacing each legacy OS with the Windows 11 operating system. This is because Windows 10 will no longer be supported after October 2025, and Windows XP, 8.0, and 7.0 are no longer supported by Microsoft (*Windows 10 home and Pro - Microsoft Lifecycle 2024*).

## Reporting

ABC company's current business systems include Lotus, Excel 2007, Excel 2010, Excel 2016 and Power BI. Power BI is a business intelligence software released by Microsoft that provides cloud-based analytics services, as well as other implementation solutions that meet customer mobile capability needs. Power BI has cloud-based services that enable data visualization, data warehouse, data preparation, data mining, and interactive dashboard capabilities (*Microsoft power bi 2024*).

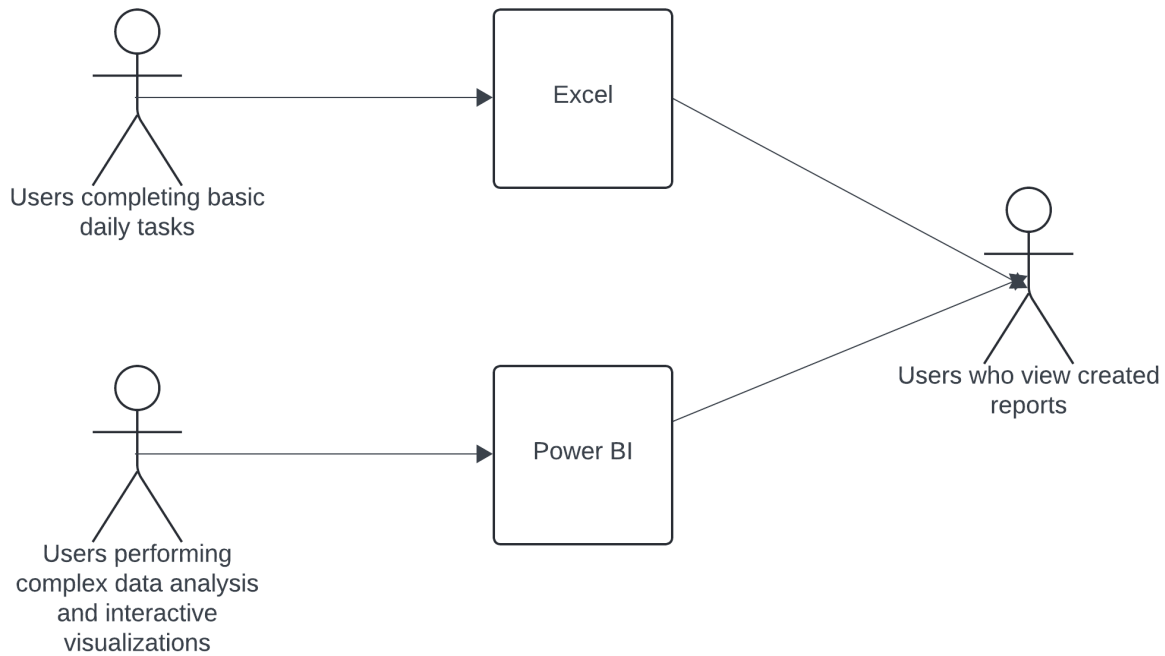


Figure 1 - Excel versus Power BI users

As you can see from Figure 1, users within an organization that use excel often use it to perform basic daily duties such as performing basic data analysis and manipulating small data sets to create basic charts and graphs. However, users that perform more complex data analysis and visualizations as well as collaborative report capabilities use Power BI. For both Power BI and Excel, end users are the ones that view and interact with the dashboards and reports, enabling them to make better informed business decisions (Mihart, 2024).

After careful consideration of ABC company’s current business systems, I recommend all four territories implement Power BI. This software offers “real-time business intelligence and scalable data visualizations”. With Power BI each company can create interactive dashboards that are easier to share across the organization, which will provide consistency between submitted reports. I would also recommend using Excel for smaller data sets that can be manipulated to find trends before being imported into Power BI. (Acterys, 2024).

## Management Concerns

To address ABC company's security concerns, the following security plans will be implemented:

### **Amazon Web Services (AWS) account security options:**

- Enable AWS Identity and Access Management (IAM)
  - Enables user roles and permissions
  - Restricts access to specified resources based on user or role
  - Policy simulator: test and troubleshoot user and role permissions
- Enable Amazon GuardDuty
  - Searches for malicious activity
  - Identify and detect malware or mining bitcoin
- Amazon Macie
  - Discover and protect sensitive data
  - Protects personally identifiable information (PII)
  - Sends alerts if data becomes:
    - Unencrypted
    - Publicly accessible
    - Shared with outside AWS accounts
- AWS Config
  - Keeps records of changes
- AWS CloudTrail
  - Records all actions performed
- Security Hub

- Combines all information into a central unified view

### **Amazon Web Services (AWS) application security options:**

- Amazon Inspector
  - Provides security assessment services
- AWS Shield
  - Protects from denial-of-service (DDoS) attacks
  - Integrates with AWS WAF to prevent malicious traffic from reaching company websites and applications
  - Protects multiple accounts
- AWS Web Application Firewall
  - Monitors traffic blocking based on:
    - source IP
    - Origin country
    - The values in headers and bodies
- AWS Secrets Manager
  - Stores and retrieves sensitive information
  - Uses fine-grained permissions to:
    - Create secrets
    - Update secrets
    - Delete secrets
    - Retrieve secrets

### **Amazon Web Services (AWS) & Microsoft Active Directory:**

- Enables the management of users and devices
  - Disable removable media
  - Restrict software installations
  - Enact role-based access control

### **Microsoft office 365 security options:**

- Exchange Online Protection (EOP)
  - Protect emails from spam, malware, and phishing attacks
- Advanced Threat Protection (ATP)
  - Protects against sophisticated threats
- Data Loss Prevention (DLP)
  - Prevents sensitive data leaks
- Email encryption
  - Ensures confidentiality and integrity of all messages using:
    - Office message encryption (OME)
    - Secure / multipurpose internet mail extensions (S/MIME)
    - Transport Layer Security (TLS)
- Multi-Factor Authentication (MFA)
  - Requires two forms of identification during login including:
    - Various authentication methods
      - Phone calls
      - Text messages
    - Conditional access
      - Prevent outside of network access

- App passwords
  - Require unique passwords for mobile email clients

**Microsoft Office Enterprise 365 E5 security options:**

- Microsoft Entra ID P2
  - Provides access management solutions for multicloud environments
- Microsoft Defender XDR
  - Protects against sophisticated attacks
- Microsoft Defender for Cloud Apps
  - View apps used within the organization
  - Identifies and combats cyberthreats
- Information Protection and governance
  - Identifies risks and safeguards data
- Microsoft Defender for Endpoint
  - Prevents, detects, investigates, and responds to security threats
- Microsoft Defender for Identity
  - Protects company identities from targeted cyberattacks
- Microsoft Defender for Office 365 Plan 2
  - Secures company emails
- Microsoft Purview eDiscovery
  - Helps find relevant data quickly
- Built-in non-Microsoft connectors
  - Ensure the compliance of data from other data sources including:
    - Social media



- Instant messaging

**Dell computer security includes but are not limited to:**

- Support for monitoring solutions
- BIOS security and protection features
- Microsoft Intune manage integration
- Remote management capabilities

**Windows 11 security includes but are not limited to:**

- TPM 2.0
  - Enables device encryption
  - Enables secure boot
  - Enables virtualization-based security
  - Enables Windows Hello Facial Recognition

## Summary

ABC company's current infrastructure for their North, South, East, and West territories includes outdated physical servers with 2008 and 2012 operating systems. The company has a mix of Dell and HP client machines that run a mix of Windows XP, 8.0, 7.0 as well as Windows 10. Their business systems include Lotus, Excel 2007, Excel 2010, Excel 2016, and Power BI, creating reporting inconsistencies. Anti-virus is currently installed on each machine, with employees being responsible for updates. Group policies are not applied, enabling employees to be administrators on their computers, which gives them the ability to install software and download confidential information to external flash drives. Each territory is also responsible for hosting, securing and updating their own website.

## Recommendations

For this assessment, I was asked to look at the company's current information technology infrastructure to determine what technologies and strategies are needed to cohesively integrate all four offices. By following these recommendations, the business can operate as one cohesive unit. These recommendations will be implemented using a phased rollout, with one territory at a time completing the following steps. As each preceding territory completes these improvements, the next territory will begin. Using phased rollouts will minimize issues and allow the information learned to be applied to succeeding territories.

- Replace existing physical servers with Amazon Web Services (AWS). This initiative will begin immediately and is set to be completed within the next 30 days.
  - o Set up external training for all information technology (IT) system administrators, with multiple sessions over a 90-day period.
- Replace existing email server with Office 365 Cloud services. This initiative will begin immediately and is set to be completed within the next 30 days.
  - o Set up in-house training for employees, with multiple sessions over a 30-day period to familiarize themselves with Office 365 cloud email services.
- Implement Microsoft Office 365 Enterprise E5 cloud services. This initiative will begin once all physical servers have been replaced with Amazon Web Services (AWS).
  - o Set up in-house training for employees, with multiple sessions over a 60-day period to familiarize themselves with Power BI Pro.
- Replace all existing HP computers with Dell computers. This initiative will begin immediately and set to be completed within a 30-day period.

- Upgrade to Windows 11 or replace the outdated client computers with Windows 11 computers. This initiative will begin immediately and is set to be completed within 90 days.
  - o Notify management once the upgrades / replacement is completed
  - o Set up in-house training for employees, with multiple sessions over a 30-day period to familiarize themselves with Windows 11
- Implement security & group policies for:
  - o Amazon Web Services (AWS)
    - Client Computers:
      - This initiative will begin once all servers have been replaced with AWS, and IT personnel have been trained, and it is set to be completed within 30 days.
- Install Bitdefender anti-virus software on all AWS servers, enable push installs and updates to all client computers. This initiative will begin once all servers have been upgraded, and IT personnel have been trained, and it is set to be completed within 30 days.
- Replace each database with Salesforce cloud solutions. This initiative will begin immediately and is set to be completed within 4-6 months.
  - o Set-up in-house training for employees, with multiple sessions over a 60-day period.
- Implement enterprise resource planning (ERP) cloud system. This will begin within the next 90 days and will be completed in phases, with a go-live goal of 1-3 years. I can conduct research, or you can choose to independently research ERP cloud vendors. This

research needs to be completed immediately. The ERP implementation lifecycle includes (Schomaker, 2024):

- Phase 1 (Timeline: 3 months): Discovery and Planning, this phase includes:
  - Developing the project team
    - Executives
    - Software manager
    - Functional Team Members
      - Accounting
      - Sales
      - Purchasing
      - IT
      - Marketing
    - IT Manager
  - Identify issues and solutions
  - Analyze business processes to determine potential challenges and risks
  - Develop a cohesive project plan, timeline, and budget
- Phase 2 (Timeline: 6-8 months): Configuration, this phase includes:
  - tailor the ERP system to match existing processes
  - map out workflows and data flows
  - define user roles, individual permissions, and access levels
  - integrate ERP systems with current software and databases
  - establish data migration strategies

- Phase 3 (Timeline: 6-8 months): Development and Customization, this phase includes:
  - Develop or customize functionalities that are not available in the ERP system
  - Create tailored solutions that are not available “out of the box”
  - Conduct thorough system testing and analysis
  - Analyze the system and adjust accordingly
- Phase 4 (Timeline: 3 months): Data Migration and Testing, this phase includes:
  - Review data migration plan, understand ERP requirements to ensure efficient data transfer
  - Clean and format data
  - Perform test migrations
  - Create process manuals for each position
  - Conduct comprehensive system testing (with both systems running parallel)
- Phase 5 (Timeline: 3 months): Training and Change Management, this phase includes:
  - Create user training plan
    - Onsite training (Timeline: 2 weeks)
    - Online training (Timeline: 1 month / 6 three-hour sessions per department user)
    - Online training courses for further support
  - Emphasize ERP system benefits

- Implement change management strategies
  - Address concerns
  - Provide ongoing training and support
  - Phase 6 (Timeline: 1 month): Deployment and Go-live, this phase includes:
    - Finalize data migration from legacy to new ERP system
    - Verify ERP system is ready for go-live
    - Set deployment date
    - Consider implementing in phases
      - Customer & Vendor data
      - Accounts Receivables data
      - Sales / Marketing data
      - Purchasing data
      - Employee data
      - Help desk data
    - Continuously monitor the progress and system performance
    - Identify and address immediate issues
    - Establish a thorough support system
  - Phase 7 (Timeline: 3 months): Post-Implementation Support, this phase includes:
    - Providing ongoing support
    - Collect feedback from users
    - Conduct frequent audits and reviews of system processes
    - Monitor return on investment (ROI) and impact
- (Schomaker, 2024)

- Combine all company websites into one, using an external vendor. This will be implemented within the next 90 days. I can conduct research, or you can choose to independently research web consulting and hosting companies. This research needs to be completed immediately.

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