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# Project Scope and case study of Tech Savvy Solutions Pty. Ltd.

## Organization Overview

Tech Savvy Solutions Pty Ltd. is an IT services organization located in Melbourne, Australia. The company has 80 employees. Also, the focus of the company’s operations lies within delivering advanced IT services such as technological application development, cloud networking and IT consulting. There is some issue and breakdown of network centrality that Tech Savvy plans to transform and the organization accustomed widespread technology has a more tremendous and more reliance on the use of cloud services.

**Current Network Issues**

**Data Security:** The current network has not implemented the efficient security measures, there is a high risk of hacking that can threaten its clients’ data.

**Network Performance:** There are many technical problems that employees face in the organization, one of the main problems is connectivity challenges associated with slow networks and routers that may cause inconveniences and delayed services.

**Cloud Services Support:** At the moment, there is no proper support in the infrastructure where cloud applications and services can be integrated and run simultaneously with other traditional applications. Also it reduces the prospect of using scalable IT solutions within the company.

**Network Segmentation:** When VLANs are not used this leads to inefficient handling of network traffic and insecurity since no isolation of departments has been made.

## Project Objective

The plan of the project is in redesigning the current network topology of TechSavy to a hierarchical design migrating the company to VLAN, procuring and installing high end networking technologies and improving on the current security measures. Due to this change, the cloud services required will be well supported and beneficial for the company’s growth and operation necessities along with guaranteeing the network performance and the data safety.

## Points collected from the case study

**1. Data Security Vulnerabilities**

Currently, Tech Savvy Solutions Pty Ltd. suffers from critical data security risks associated with outdated technology and knowledge on security approaches. The current network has no additional security features implemented which poses a threat of data leaks and cyber-attacks. This leads to the vulnerability of the client's sensitive information on public platforms and for unethical actions and it also results in the invasions of the company’s client’s confidentiality.

**2. Network Performance Issues**

The current network that the company uses restricts easy flowing of data leading to cases of slow down and poor connectivity hence a negative impact towards organizational productivity and provision of service. These performance issues can be blamed on the existing networking equipment particularly old networking equipment which hinder efficient networking and data transmission. The issues associated with the inability of the network to handle a large number of users affect the employee productivity and contribution to customer satisfaction.

**3. Inadequate Cloud Support**

Cloud based applications and services have also been adopted in Tech Savvy Solutions at a higher rate. However, executing these cloud solutions is a challenge since the current infrastructure of the network does not support their integration. This limitation makes the company unable to implement scalable IT solutions and the new style of operations modern business entities are adopting hence limiting the company’s operational and growth positions.

**4. Lack of VLANs**

Lack of Virtual LANs in the current network architecture affects the means of controlling the flow of network traffic and exposes the network system to security threats. If VLANs are not used, there are no divisions between different departments meaning others can see information and the network is slower. This inefficiency of VLAN merges all the departments and it leads to weaknesses in the efficiency of the network as well as its security measures.

## Implementation of Information in Designing the Network infrastructure

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| --- | --- |
| **Information** | **Use of information in Network Design** |
| Data safety weaknesses | The application of updated safety protocols involving firewalls, intrusion identification and prevention processes will ensure safe data handling and safeguard against possible data breaches such as ransomware and malware [5]. |
| Network performance issues | Using high-performance routers and switches will identify problems associated to network speed and network blockages improving overall network performance and user experience. |
| Inefficient cloud support | Applying a sturdy network infrastructure having capabilities of supporting cloud services will help smooth engagement and operation of cloud applications coordinating with contemporary IT requirements [3]. |
| Inefficiency of VLANs | Applying VLANs will distribute the network to differentiate departments for example Management, HR, IT and Development in improving safety, traffic management and limiting the issue of data breaches and network blockage [2]. |

## Conflicting Needs and Resolutions

|  |  |
| --- | --- |
| **Conflicting Requirements** | **Resolution Aspects** |
| High safety versus efficiency of access for cloud services | Safeguard VLANs and access control procedures will be applied to balance sturdy safety with the need for easy access to cloud services. This method ensures that crucial data is safeguarded while managing necessary accessibility. |
| Cost limitations versus need for high-performance equipment | Crucial network upgrades will be focused, choosing cost-efficient and scalable processes to manage costs while improving performance. This method ensures effective upgrades are made without going beyond budget limits. |
| Enhanced safety methods versus user convenience | User-friendly authentication procedures such as single sign-on (SSO) and multi-factor authentication will be used to optimize security with the assistance of encryption without compromising user ease. This efficiency helps maintain both safety and ease of use. |
| Detailed network redesign versus minimum disturbance to business operations | The network redesign will be maintained into stages to limit issues and increase business regularity. By applying changes in stages, the Tech Savvy Pty. Ltd. can streamline operations while going for the novel networking aspects. |

## Detailed evaluation of planning and designing the network for Tech Savvy Pty. Ltd.

**1. Evaluation of Current Infrastructure:** A detailed survey shall be done to determine any obsolete and non-optimum hardware and inherent susceptibilities to threat among other things. This includes collection of information from both IT personnel and the end users where the focus lies on problematic areas, performance concerns and needs.

**2. Network Requirements Analysis:** Network requirements will then be determined in relation to problems and prospects obtained in the analysis. This consists of the need for advanced routers and switches to accommodate the new traffic, emphasis on security to customer’s data and adequate backend to support cloud needs [4].

**3. Network Architecture Selection:** A hierarchical network design option is going to be adopted where the arrangement of the networking layers will comprise of the core, distribution and the access layer. This design makes the application easily scalable, fast and secure at the same time. The first layer is responsible for fast data transmission whereas the second layer will be responsible for routing and policies; the final layer provides access to the end-users and devices.

**4. VLAN Implementation:** In this design VLANs will be created to separate different departments that include Management, Human resource, Information technology and development among others. These VLANs will have their own access policies and network security to increase the security levels as well as the flow of the traffic. This segmentation will help in preventing the leakages of data and also enhance the efficiency of the networks.

**5. IP Addressing Scheme:** An appropriate addressing plan is going to be to use private IP addresses to perform the configuration. The intended scheme will follow the CIDR policies as well the associated practices to avoid inefficiency of IP addresses and segmentation also.

**6. Security Enhancements:** This will help in making the network more secure through reinforced firewall, installation of security technology like firewall and enhanced encryption and VPNs for the business environments. Security check will ensue on a daily basis and access granted will be strictly controlled to provide maximum security on the clients’ data as well as the network.

**7. Performance Optimization:** Advanced routers and switches will be procured in order to relieve the network traffic hence making them faster. Network configurations are subject to maximizing traffic flow control and balancing the load of the network to the users’ optimum expectations. With the help of effective and good VLAN network will enhance performance of the network [6].

**8. Cloud Services Support:** Networking will be built to provide reliable support to the cloud environment, applications and services. Private connections with sufficient bandwidth to cloud service providers will be established with intents of secure cloud operation and compatibility with cloud solutions.

The network redesign for the firm will consider the following main areas of concern for Tech Savvy Solutions Pty Ltd. With VLANs structure and hierarchy, the replacement of low performing equipment as well as the bolstering up of the security procedures, the company will experience a network template that is both highly scalable and secure and efficient.

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