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**Unit 5 Case Study 1**

**Nishida Kitchens is a medium-sized company that makes packaged Japanese foods including noodle and sauce combinations. Their foods are distributed to grocery stores and specialty food stores throughout Canada, Europe, and the United States. The company is moving into a new building and has hired the company you work for, Network Design Consultants, to help them create a new network. Before the move, their head network administrator accepted a job with another company and his inexperienced assistant has been promoted as the head network administrator.**

**Nishida Kitchens has a business and sales unit of 42 computer users. The plant in which the foods are produced, packaged, and shipped has 45 computer users. The company has both Windows Server 2003 and Red Hat Enterprise Linux servers. The business and sales unit uses Windows 10 Professional workstations. The plant users have a combination of Windows 10 Professional and Red Hat Enterprise Linux computers on user's desktops. The company plans to have Internet connectivity available to all network users. Nishida Kitchens has an outlet store across town which provides the public with direct sales of their products. The outlet store also has Internet connectivity on a small network of 12 computers that are running Windows 10 P Professional.**

1. **What protocol do you recommend for this network and what are its advantages?**

I would recommend to first map out the specific requirements of the network based on the hierarchy.

* + **Sales Unit Department:** Contains 42 Computer Users. (Win 10 Professional)
  + **Food Processing Plant:** Contains 45 Computer users. (Win 10 Professional)
  + **Central Server Farm:** Contains many Linux (Red Hat) & Windows Server 2003.
  + **Small network Outlet:** Contains 12 Windows 10 Professional.

**IP Configuration/ Subnetting:**   *Configuring a network super-net that will allow* ***254*** *hosts in total.* ***3*** *Subnetworks allowing:* **( 64 | 64 | 16 | 8 )**

**4 Routers:** with serial Link interfaces connecting 4 Networks. I will order **4 Leased SONET OC-3 Lines.** Routers will be configured with **DHCP**.

**Security Configurations:** Using **ACL** to specify which connections are allowed into which network nodes.

**Routing Protocol: EIGRP** routing table updates, using routing summary between the 4 routers.

**NAT**: Network Will separate resources to enable access into the public internet.

**Internet**: Company will get a single **OC-48 SONET** Connection into the Internet, Routed through a single Router on the network. All routers will be able to forward connections made into the internet.

**3 Switches:** Connecting switch port security, all devices are connected through wire. Security can filter subnetworks in VLANS when required. Switches are used on the Small network outlet, Food processing plant & Sales Unit Department.

**Windows Server 2003:** Configure a shared Active Directory service (**LDAP**). Internal **DNS** Service & service. **SQL Service** & hosting internal Business **Web-Applications**. (**IIS** Service)

**Red Hat Service:** Red Hat can be configured with **SNMP**, **Proxy** monitoring solution, **Solar wind application, Security Firewall, VPN Service** ( To enable external users to use intranetwork resources), **Kerberos** (for authentication into resources)

**Client Computer Machines:** Computers are configured to use Shared drive storage, folder sharing to share work between machines.

1. **For WAN communications, such as remote communication over the Internet connection, what protocol should be used by the Windows 10 Professional and Red Hat Enterprise Linux workstations? What are the advantages of this protocol?**

Since I will design the network to allow **VPN** authentication. I will configure Client machines to use a secure VPN connection (pre-configured) with a profile to enable connection into the intra-network resources. I can use applications like **Secure-VPN.** Once authenticated into the VPN service, Users can access connections into the windows servers or other resources by **RDP** protocol. The Red Hat Linux workstations can be configured with **VNC** with **SSL.**

**References**  
**(1)** Tomsho, G. Guide to Network Essentials 6th ed.