

Simple network design

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Now, it would like to expand their enterprise into 2 branches in Malaysia which is on Juror Barr and Penman. This Kitty Store is selling variety of Hello Kitty dolls and toys. All of the products design by their own enterprise's designer. For Koala Lump is the main branches, it more focuses on the promoting. Penman branch is focuses on the production and Juror Barr branch is focuses on design products. Before that, all of the hosts in all the departments are connecting to one vast global network, it made the performance degradation due to the large volumes of data need to be transfer in single networks.

Besides that, some unauthorized user access to the network. Kitty Store requires a new enterprise network design to help their enterprise having cure and efficiency way to share their information for the departments and branches. It can separate the large network into smaller network that were interconnected. Besides that, group all the hosts with the common factor into the same network. Grouping can base on the host geographically (grouping host at the same location) and grouping hosts for special purpose (grouping host based on the department).

So that, they can earn profit from the effective way they managing information and it would also avoid unauthorized user to steal their enterprise's information. Business Goals and Technical Goals Goal is very important for a company. It is let people know whether their target is achievable. There are some business goals and technical goals set by the Kitty Store, this is what they want to achieve after the implementation of the network are done. Therefore, they can know by implementing the network

can help them to earn profit, secure of share information and allow them to work more efficiency and effectively or not.

Business Goals First is the cost reduction (Charlatan, n. D.). By dividing hosts into group, it improves network management and operation (Charlatan, n. D.). Therefore, it is reduces waste ND increase productivity (Charlatan, n. D.). For example: Juror Barr branch can send the new ideas of the Hello Kitty product to the File Transfer Protocol (FTP server), it can prevent unauthorized users to access. Second is making the internal departments process more efficiency (Charlatan, n. D.).

In one organization wants to share the information between the department, a network enables the employees to share information efficiency and effectively (Charlatan, n. D.). For example: If the designer was finished illustrate of the dolls and he wants to pass it to another designer to make color. Even if the file size is too big, the network would not be interrupted because designer has its own department networks. Third is expands the market over country (Charlatan, n. D.). An enterprise requires a network that can help their company easier manage and share information for departments or branches.

Even if wants to share the information over the country, it can finishes less than one minutes. Network for a company can be said is very important, security also important for the network. If implements the network can help the company increases profit and provide a better work place then it would not e a problem for the company to expand their business in other county.

Technical Goals Security is one of the important technical goals when

implement enterprise network design (Anon, n. D.). Without the security, information might be stolen by other unauthorized users.

For a company, information is the company's wealth. When transferring important information between the departments, unauthorized users are access to the network. The company information will be leak to other company. Therefore, a firewall can be implemented at the perimeter of the networks to only allow authorized user and trusted data to access the network. Next, the technical goal is the network scalability (Eugene, n. D.). It means that the network should able to handle large amount works or can be easily expanded if the company expand their market in other branch or country (Eugene, n. .). The company would not like to reinstall the network or any other works, they just want it can be directly added to the network. Availability is another important technical goal for an enterprise network. It means that how long the network can respond if transferring information is failure (Eugene, n. D.). For a company, employees are very afraid of the network down when their irking time. It is bringing a troublesome for them and wasting their working period it might cause them needs to have over time to finish their own Job.

A good network should provide few solutions to overcome the network down and it should recover as fast as possible. Network performance also becomes one of the technical goals (Anon, n. D.). Different users have different requirement for the network performance. Network performance can include how many bandwidths can be used for users to transfer transferred to the right destination (Anon, n. D.). A company might want to upgrade rent network performance to make it more efficiency. For example: Kitty Store <https://assignbuster.com/simple-network-design/>

wants to increase the bandwidth of the network, so that the designer can transfer larger size file as fast as possible.

Organization Unit Kitty Store Penman Koala Lump Juror Barr Human
Resource Marketing Finance Product Development Product Development
Production Development Production (Local vendors) (Overseas vendors)
Design Hierarchical Network Design To reach the business goal and technical
of the network, choose the appropriate devices and network design concept
for the network is considered. The network sign concept that I followed is
hierarchical network design. Using this design concept, it can help the Kitty
Store enterprise minimize the costs from the unnecessary features for a
layer.

Based on the hierarchical concept, I can know the appropriate device for
each layer that needs to be used. Hierarchical network design concept is a
design that group devices into multiple networks, from the highest to the
lowest layer (Anon, n. D.). This design concept consists of three basic layers:
core layer, distribution layer and access layer (Anon, n. D.). Highest layer is
the core layer which is the backbone of the network (Anon, n. .). It provides
a high speed connection transport between core routers and distribution
sites (Anon, 2009).

This layer usually connects to the internet, gateways and Internet Service
Provider (ISP) (Anon, 2009). Routers are used in this layer. Each port on a
router is connecting to a different network and it can break up the broadcast
domain and collision domain (Bradley, n. D.). The router is using Serial DCE
cable to connect to another router. Middle layer is the distribution layer

which interconnects the few smaller local networks (Anon, 2009). It provides the most tasks in the connectivity (Anon, 2009). Switch is used to connect to the access layers to the core layer (Anon, 2009).

In this layer, it also implements the network policy such as security, firewall and encryption (Anon, 2009). Switch is selected on this layer. On the appropriate destination port, switch receives a frame and regenerates each bit of frames (Bradley, n. D.). Although switch is expensive, but it helps to reduce collision. One larger switch is used at a central location; it can save the cost by using fewer switches. The longer cable is needed to connect routers and devices. Using straight-through cable connect the router and the end devices.

Lowest layer is the access layer which provides nodes connect to the network (Anon, n. D.). End devices include computer, printer, phones, server and etc. Using the straight-through cable connect the switch. Figure below is how I based on the hierarchical design concept to distribute the enterprise network. Figure 4. 1: Hierarchical Network Design Concept. Enterprise Network Design Based on the Hierarchical network design concept, it can be further more divided into three modular areas (Anon, n. D.). Different physical or logical connectivity is areas. First, is the enterprise building (Anon. N. D. In a single building or branch location, the network elements required for independent operation (Anon. N. D.). This is where the building access, building distribution and enterprise core located. Second is the enterprise edge (Anon. N. D.). In this area, it will filter the external resource when traffic comes into the enterprise network (Anon. N. D.). Secure information is provided between enterprise building and Internet in this layer <https://assignbuster.com/simple-network-design/>

(Anon. N. D.). Third is the server farm (Anon. N. D.). Server Farm is use to protect the server resource and provide reliable high-speed connectivity (Anon. N. D. Figure below is how I refer to the enterprise network design to construct Kitty Store enterprise network. By following the design concept, can help me to know more about the appropriate device that needs to use in the network. Figure 4. 2: Enterprise Network Design Concept. Local Area Network (LANA) and Wide Area Network (WAN) An enterprise network requires a group of LANA, WAN and intertwining devices to build up. Without this few of elements, network would not be form and might be insecure. Local Area Network (LANA) as a local network which connects workstations and hundreds of hosts (Anon, n. D.).

It is built within the company building as like all the departments' hosts connect to intertwining device to utilize sharing of information (Anon, n. D.). All the departments can share and access information within the department or other departments. Besides that, by using LANA, email is allowed to send to each other within a company (Anon, n. D.). For example: if secretary wants to inform all the departments the time of meeting, she just needs to send email to inform them, no need walk to all the departments to inform her colleagues. It helps them to save their time, energy and can utilize their time in doing other jobs. Figure 4. : Local Area Network (LANA). Wide Area Networks (WAN) is similar to LANA, but WAN are not only share information in one location. It can span long distances in different locations by uses connection of Telecommunication Service Provider (TTS) with smaller LANA (Anon, n. D.). TOSS increase the coverage area that company can shares information in separate networks (Anon, n. D.). For example: the information

from the main branch in Koala Lump can share to other branches such as Juror Barr and Penman. WAN is not managed by an administration, it is managed by simultaneous administrations in different locations (Photosynthetic, 2012).

LANA and WAN very useful for an enterprise network. It is very useful for transfer information between the company's departments or other branches. WAN has few characteristics. First, the communication facility, as what we discussed just now, by (Anon, n. D.). It helps people that are separated on different areas can get instant communication through the network no matter how far they are separated (Anon, n. D.). Second will be the remote data entry. It is just like the function of internet, it allows users to access any information anywhere, any time whenever the service is on (Anon, n. .). The last will be the centralized information. It allows the organization to store their confidential information in centralized data storage (Anon, n. D.). It makes the organization feel easier to manage those data and can further secure the database (Anon, n. D.). Example of WAN: Ethernet is developed by Xerox Corporation (Anon, n. D.). . Figure 4. 2: Wide Area Network(WAN). Server Farm Server farm is a group of servers that is located in one location to provide network management services for the enterprise (Anon, n. D.).

Server farm includes a few types of services such as email, Domain Name System (DNS), File Transfer Protocol (FTP), Hypertext Transfer Protocol (HTTP), Dynamic Host Configuration Protocol (DHCP) and etc (Anon, n. D.). I will explain some of the services that use in the Kitty Store enterprise. An enterprise requires DHCP server for those hosts that do not have a pre-allocated IP address (Bradley, n. D.). DHCP is a protocol that gives the <https://assignbuster.com/simple-network-design/>

device a unique address when it connected to the network and IP address will be released after the devices leaved the network (Bradley, n. .). DDCD server assigns the IP address, subnet masks, gateways and other IP networking parameters for the host from a range of available address (Bradley, n. .). The IP address for the host is not permanently, it is Just a leased for temporary period (Bradley, n. D.). People could not memorize all the numeric Internet Protocol (P) address for every websites; they Just remember the domain name of the websites. For example: In the Kitty Store enterprise, employees Just need to enter wry. Keystroke. Com is much easier than enter actual IP address 172. 16. 2. Therefore, DNS was used in the enterprise network to provide the function of automotive converts Internet domain and host names to IP addresses (Bradley, n. D.). By the DNS automotive converted IP address, people can Just simply enter website name or sending email (Bradley, n. D.). Even the websites have change their name, the IP address will still remain the same. To secure sending the email within the departments or branches that would not be access by unauthorized user, an enterprise required their own email services in the server (Margaret, 2006).

For example: employee A can Just attach the document on email and forward it to the employee B, they no need to worry data lost. Email uses two application layer protocols which is Post Office Protocol 3(POOP) and Simple Mail Transfer Protocol (ESMTP) (Margaret, 2006). ESMTP is uses for sending e-mail and POP is for receiving e-mail (Margaret, 2006). Employees to upload and download files, the services is known as File Transfer Protocol (FTP)

(Margaret, 2007). For example: Penman branch upload the vendors' information to the server.

So that, when main branch wants to view the information they can directly download the information from the server (Margaret, 2007). It is much easier and avoids unauthorized user access when transferring data. Hypertext Transfer Protocol (HTTP) is an application protocol which is used for data transfer on the World Wide Web (Anon, n. D). HTTP is operating when user enter a URL in browser (Anon, n. D). It will defines the format of the message that sent by users and the message types from the server uses to respond (Anon, n. D).

Topology In network, topology means the ways the network devices are arranged and the interconnection between them (Oak, 2011). Topology can be viewed in two layouts: physical topology and logical topology. Physical topology is how the physical media is connecting with the nodes to communication and the arrangement of the nodes (Oak, 2011). Logical topology is how the frames are transmitting over the physical media to each the destination (Oak, 2011). There are four major types of network topology: Bus Topology, Ring Topology, Mesh Topology, Star Topology and etc (Oak, 2011).

Based on the topology, I can clearly to understand which topology I used to design the Kitty Store enterprise network. Types of Topology Bus Topology In bus topology, all the nodes are connected to a single cable (known as backbone) to share the media (Oak, 2011). One node can send the data at any time when the backbone is free (Anon, 2012). When one node sends the

data, all the other nodes will receive the information (Oak, 2011). Only one node that has addressed will accept the information, other nodes will ignore the data (Oak, 2011).