

Advantages and disadvantages of war



**ASSIGN
BUSTER**

Assumption.

- The company consist of 4 buildings, one as headquarter which located in Kuala Lumpur, Malaysia and three as branches which located in Jakarta Indonesia, Bangkok Thailand and Manila Filipina.
- The company consists of 4 departments that are admin staff, IT department, marketing department and human resources department, which have total 40 employees in every office.
- Each department has 10 employees, which mean every departments room consist of 10 personal computers.
- LAN architecture will be the same between headquarter and branches.
- Every building Consist of 3 floors, 1st floors for administrator staff and human resources staff, 2nd floor for IT department and server room and the 3rd floor for marketing and meeting room.
- Every department has its own peripherals such as printer, scanner, and Photostat machine. Projector will be in meeting room.
- Have connection to the Internet and connection to each office.
- Headquarter office has external backup which located in Malaysia nearby headquarter office approximately 2 km, its provide backup for the database.

Problem identification.

- The company does not have network yet.
- The company does not have DBMS (Database Management System).
- The company does not have backup yet.
- Security issues.

WAN explanation.

There are five sites in the WAN diagram, consist of headquarter office which is located in Kuala Lumpur Malaysia, three branches offices which is located in Thailand Filipina and Indonesia and one external backup which is located nearby headquarter office. The function of external backup is to keep the data as the original data.

WAN topology.

Basically WAN topology is almost similar with the LAN topology consist of point-to-point topology, ring topology and star topology. There are several advantages and disadvantages for every topology. The advantages and disadvantages of each topology will be shown in table bellow.

For this company we suggest to use star topology because it is more scalable, provides shorter data paths between two sites and easy to add new nodes, if someday the company will expand the business by adding new branches in the other country it will easy to add to the existing WAN, the disadvantages of star topology is it has single point of failure at the concentrator routers. To overcome this problem network administrator tend to add some alternatives links between sites.

WAN transmission technology.

For WAN technologies we will do comparison between three technologies that are leased line, frame relay, X. 25 and PPP.

For WAN technologies we suggest to use frame relay because it can provide performance similar with the lease line with significantly less cost over long distance. Another reason is reduce internetworking cost because with frame

relay required fewer port to access other network, increase performance with reduce complexity and definitely it is cheaper than leased line. Lower cost over long distance makes frame relay is good for this company because the branches office located across the country.

Technology.

For WAN technology we suggest to use VPN (virtual private network). VPN is alternatives technology to replace the more expensive WAN technology. The advantages of VPN that available online on: (<http://www.universitydissertations.com/Communications/using-VPN.php>) are, provide well security method, less expensive when compare with the WAN technology, reduce setup times, fast network link, simple network topology and productivity improved due to less constraints when compared with other networking methods. And the disadvantage of VPN is limited security for wireless users.

According to the comparison above, we suggest to use star topology to each department. It is because star topology is more robustness, when one link fails only that link is affected and not the entire networks, and also it is easy to add new devices into the network if someday the company will expand the network. The major disadvantages of this topology is dependants on the hub or switch, if central hub or switch fails the entire network will be affected, but sometimes this dependency will becomes another advantages of star topology, because it make easy to troubleshoot the errors, if the entire network is not working it will be problems in the hub or switch.

And for connecting each floor, we use backbones cable. So overall LAN topology for each office is using tree topology that combines BUS topology and STAR topology. It will combine the advantages of both topologies, which is easy installation, expandable, combine between multipoint and point-to-point.

Transmission media.

According Michael Palmer and Robert Bruce Sinclair (2003), when choosing the best medium for LAN or WAN, it is important to consider the capabilities and limitations of each type, including factors such as: data transfer speed, use in specific network topologies, distances requirement, cable and cable component cost, additional network equipment that might be required, flexibility and ease of installation, immunity to interference form outside source, and upgrade options.

For LAN transmission media is using UTP and fiber optic. UTP or Unshielded Twisted Pair also known as 10BaseT is one of twisted pair type. There are several category of UTP, namely, cat3 has a maximum transmission rate 16 Mbps, cat4 maximum rate up to 20 Mbps, cat5 has transmission rate 100Mbps, cat5e transmission rate up to 1000Mbps and cat6 has a transmission rate up to 1000Mbps. For cat5e and cat6 is support for using gigabyte Ethernet. For UTP cable in this LAN we use cat5e and cat6. Cat5e is using to connect workstations and peripherals to the switch and switch to the backbones in each departments room. The reason why we select the UTP cat5e because it has high-speed networking capabilities of up to 1000 Mbps. Another UTP that we use is cat 6 to connect between backbones cable and server. This cable can carry twice the bandwidth of cat5 and has less

crosstalk than cat5e. Whereas for backbone cables we suggest for using fiber optic, no doubt about it that now a day's fiber optic is the best cable. Why we suggest using fiber optic, it is because highest bandwidth than other cable, resistance to electromagnetic interference and Radio frequency interference, secure transmission and early detection of cable damage. The main disadvantage of this cable is very high cost.

LAN protocol.

We use TCP/IP (Transmission Control Protocol/Internet protocol) for protocol.

The reason why we use TCP/IP because: according Michael Palmer and Robert Bruce Sinclair (2003), it has many advantages includes:

- It is used on most networks and Internet, which makes it the international language of translation.
- There is a wide range of network device designed compatible with TCP/IP.
- Most computer operating system now uses TCP/IP as their main protocol.
- There is a larger body of network professionals who understand TCP/IP.

There are several protocol and application of the TCP/IP suite. In our network we only use application that we need such as FTP, DNS, STMP, Telnet, HTTP.

FTP (File Transfer Protocol)

There is three transfer protocol that support with TCP/IP: FTP, TFTP and NFS.

For our network we use FTP because it is the file transfer protocol options preferred by Internet users. FTP is an application that enables to transfer data from one remote device to another, its very useful application in our network because the user in branches office can log in into the headquarter <https://assignbuster.com/advantages-and-disadvantages-of-wan/>

office and download one or more data files, the user have an authorized user ID and password on the host.

DNS (Domain name system)

DNS is used to converts a computer or domain name to an IP address or that converts form IP address to a computer or domain name.

STMP (Simple Mail Transfer Protocol)

STMP is used for sending email. SMTP can only send text files, so files in other format must be converted into text files before sending through STMP. By using this application the staff can send and receive the email.

Telnet (telecommunication network)

Telnet is used to communicate with host computer usually mainframes minicomputer and to ensure that all network devices connect properly.

HTTP (Hyper Text Transfer Protocol)

HTTP is used World Wide Web communication. Using this application protocol the staffs can use internet properly in their workstations.

Security.

Proxy server.

“ Proxy servers are devices that operate as intermediary agents on behalf of clients that are on a private or protected network. Clients on the protected network send connection requests to the application proxy in order to transfer data to the unprotected network or the Internet. Consequently, the application proxy sends the request on behalf of the internal client.” (Jazeb Frahim and Omar Santos, 2005).

According to Michael Dance in (http://www.ehow.com/facts_5016663_functions-proxy-server.html) the functions of proxy server are, caching: proxy server will save frequently accessed resources to save the bandwidth and faster loading, content filtering: it will filter the accessed web, by blocking certain web, security: when accessing the website proxy servers send Internet requests through a proxy before reach website destination. The proxy will encrypt the information, such as a password, before passing it onto the website.

DMZ (Demilitarized zone)

Basically DMZ is separate between public server and the LAN to allow external user to access into public server without access the internal server. Benefit of using DMZ is, by separating the public server with the private servers if someone hacks into one of public server does not mean that he can hacks into the private servers and also does not afford any easy route to the LAN.

Multimedia devices.