

Campus Area Network using Cisco Packet Tracer

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Abstract— A Campus Area Network (CAN) is an alternate sort of system where various gadgets, for example, PCs and other device are interconnected with one another. The systems administration hardware's, for example, switches, switches and transmission media, for example, optical fiber, copper plant, Cat5 cabling and so on are on the whole claimed a few colleges, schools, organizations, and so on. A Campus Area Network (CAN) is bigger than a Local Area Network (LAN) yet littler than a Metropolitan Area Network (MAN) or Wide Area Network (WAN). This paper speaks to a review of Campus Area Network (CAN) for example what are its points of interest and impediments, what extra highlights can be included into it, and so on.

Keywords: Local Area Network (LAN); Campus Area Network (CAN); Internet; Security threats

I. INTRODUCTION

A grounds arrange, grounds zone organize, corporate zone organize or CAN is a PC organize made up of an interconnection of neighborhood inside a restricted geological territory. Each zone has various arrangements of hosts or PCs associated with a switch. On the off chance that there are numerous squares in a territory, for e.g.: Block A, Block B and Block C, etc. Furthermore, every square is having a solitary independent framework, and afterward it turns out to be hard for the system chairman to deal with each square and furthermore prompts the expansion in the OpEx cost. Thinking about this issue, we have concocted an answer for have a unified framework or basically incorporated grounds arrange. On the off chance that the grounds zone organize is an independent framework it prompts the expansion in upkeep of the system, likewise expands the intricacy, since each Block having in independent system required committed talented individual to screen and report. This is prompting immense OpEx cost. We thought of making it somewhat less intricate and lessening the OpEx cost by interfacing every one of the squares together and make it a unified system. This would likewise make every one of the squares ready to send data to one another and in a more verified manner. Every one of the squares would then have the option to speak with one another and we would then be able to have a solitary chairman dealing with every one of the squares through a unified system.

It is typically set in Campus Area Network of universities or schools, however a similar sort of arranging can be applied for different purposes for e.g., army installations, place of business, mechanical edifices, open spots like store, theaters or excitement focuses, and so on. Another type of brief CAN exist during exceptional occasion, for example, rallies, strict celebrations. The basic can likewise emerge precipitously because of the separation of spread the radio signs from the passages that are not restricted by building dividers. It is likewise reasonable to have extra passages for the bigger and progressively complex Campus

Area Networks, situated at exceptionally puts picked for serving customers.

Today's, instruction framework, for example somehow, intends to shape understudy's capacities to work with data. Existing or preceding in the midst of training advancement give exceptional consideration to frame abilities of data handling, which later turns into the backbone of expert movement of graduates in the data society, i.e., it is a fundamental segment of data culture. In such circumstances, understudies will get the vital information to express them inventively, they additionally figure out how to assess the exactness of the data, create basic reasoning, and recognize data, information, and so on. Neighborhood systems are regular in the instruction field. Most schools and other instructive establishments and furthermore the little organizations, digital bistro has PCs associated with a nearby system. Simultaneously, present day advancements permit to interface even the PCs that are on various countries just as mainlands, and not just in a similar room or building. There are different quantities of instructive organizations have branches in various nations, with PC associated by means of neighborhood arrange. Neighborhood can associate PCs from various schools or colleges. Utilizing Internet, any understudy can get effectively access to training materials that can be displayed as introduction or Wikipedia (e-content), just as mind boggling intelligent frameworks, PC models of virtual learning situations, and so on. In the present age, the quantity of clients and data wellsprings of Internet is persistently expanding. Furthermore, there is a consistent nature of broadcast communications administrations improvement. Along these lines, organizations as well as working in the financial and different fields have an excellent access to the Internet, yet in addition instructive establishments.

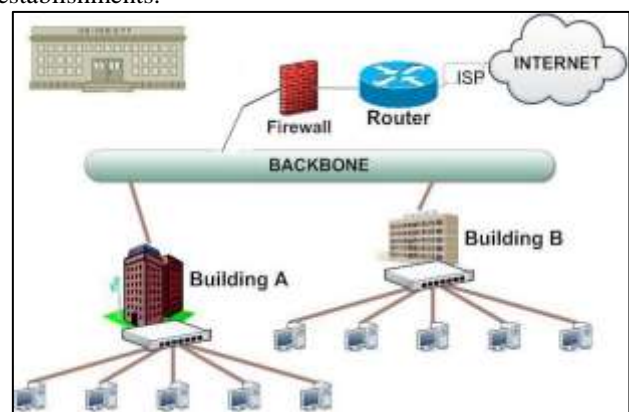


Fig. 1: Campus Area Network

II. BACKGROUND

There are different sorts of systems, for example, Local Area Network (LAN), Personal Area Network (PAN), Campus Area Network (CAN), Storage Area Network (SAN), Wide Area Network (WAN) and Metropolitan Area Network (MAN).

A PAN is a system which encircle itself around a distinct individual. Container regularly includes versatile PC, phones or handheld registering gadgets, for example, PDA. A LAN is a gathering of PCs in a specific region which are associated by means of links. A MAN is a system that interconnects clients with PC assets in geographic territory or district. MAN is bigger than the LAN and littler than MAN. Instances of MAN are FM Radio, and so on. A CAN is identifying with Local Area Network (LAN) or set of associated LANs. A Storage Area Network (SAN) is a fast system of capacity gadget that additionally interface those capacity gadgets to servers.

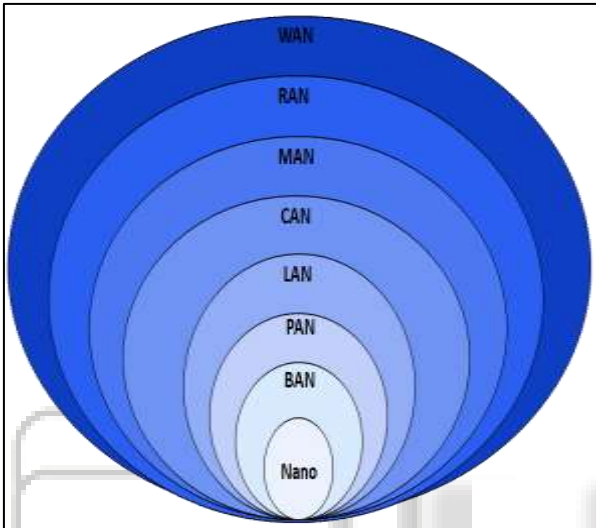


Fig. 2: Computer Network types by spatial scope

A. Engineering of Campus Area Network:

The grounds is structured in a various leveled way. It is normal practice in grounds and undertaking systems. A various leveled configuration maintains a strategic distance from the need of completely fit plan for example complex structures.

IP communication arrange is nearly all the more intriguing and energizing then grounds organize planning. Additionally, rising applications like these are based upon the grounds establishment. It is like the development of a house; in the event that the architects skirt the establishment level, at that point the house will break and in the long run breakdown.

B. Kinds of Network Attacks:

There are different kinds of dynamic system assaults, close-in assaults, misuses assaults by insider, assaults by the specialist co-op. Because of these the programmers can find a good pace the data, digital assaults can likewise done by different countries, and so on.

- 1) Inactive Attack
- 2) Dynamic Attack
- 3) Conveyed Attack
- 4) Insider Attack
- 5) Close-in Attack
- 6) Phishing Attack
- 7) Seize assault
- 8) Satire assault
- 9) Cradle flood
- 10) Endeavor assault
- 11) Secret phrase assault

III. CONTINUOUS INFORMATION: SOME SYSTEM ASSAULTS

A. Disavowal of Service (DoS)

Disavowal of Service (DoS) is an interference of administration, it very well may be held either because of framework is obliterated or it is briefly inaccessible. For models, incorporate wrecking a PC's hard circle, cutting off the physical foundation, and spending all accessible memory on an asset. Fig1 shows a constant assault information in a grounds organize utilizing Cyberoam security gadget. After Configure Firewall

Attack Type	Source		Destination	
	Applied	Traffic Dropped	Applied	Traffic Dropped
SYN Flood	Yes	44844	No	0
UDP Flood	Yes	48240	No	0
TCP Flood	No	0	No	0
ICMP Flood	Yes	27	Yes	429

UDP Flooders	
IP Address	Last Seen
103.21.42.205	Sat 20 June 14:04:48
103.21.42.206	Sat 20 June 14:56:31
172.16.20.141	Sat 20 June 15:19:15
172.16.20.222	Sat 20 June 16:22:57
172.16.21.140	Sat 20 June 16:04:01
172.16.22.22	Thu 18 June 16:59:49
172.16.22.82	Sat 20 June 13:11:56
173.194.49.104	Sat 20 June 14:03:06
173.194.49.112	Sat 20 June 13:48:55
182.48.85.204	Sat 20 June 15:13:37
182.48.85.206	Sat 20 June 15:56:10
185.23.127.61	Fri 19 June 17:06:11
216.58.220.37	Sat 20 June 23:27:40
52.74.248.98	Fri 19 June 17:02:37
74.125.214.208	Sat 20 June 13:58:12

Fig. 3: Attacker IP List

B. ARP Spoofing Attack

ARP parodying assault is a sort of assault where a malignant entertainer sends misrepresented ARP (Address Resolution Protocol) messages over a neighborhood. This outcomes in the connecting of an assailant's MAC address with the IP address of a real PC or server on the system.

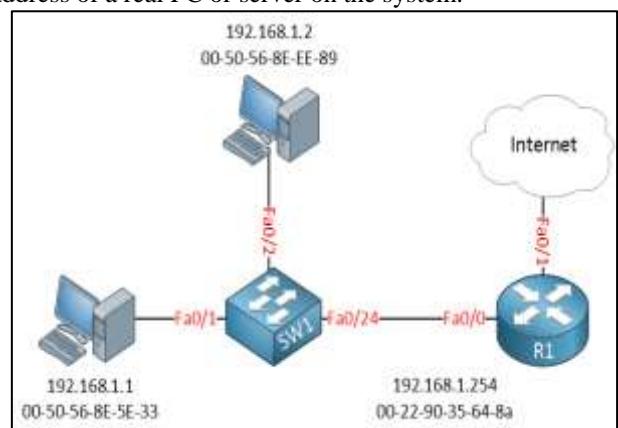


Fig. 4: ARP Spoofing Attack in Campus network

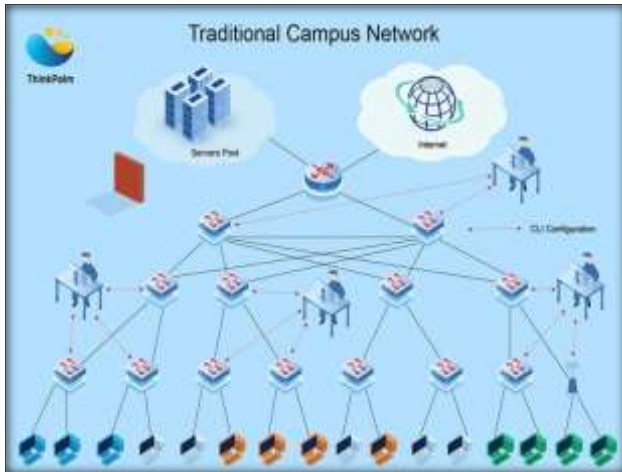


Fig. 5: Traditional Campus Network design

IV. PROBLEM DEFINITION

The issue identified with grounds systems are the kind of wired media or remote are to be utilized between structures, outside link particulars, privileges of-way, shirking of characteristic boundaries, underground or ethereal cabling prerequisites, line of site for underbuilding remote transmissions, and security issue. Each Block in the structure was having an independent system which expanded the OpEx cost. Since, each square having in independent system required committed gifted individual to screen and report. This is prompting tremendous OpEx cost.

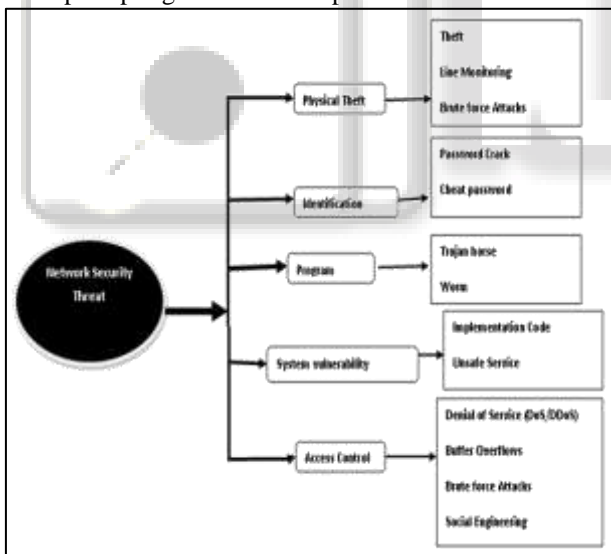


Fig. 6: Security threat of Network

Grounds Area Network is bound to have bothersome communications between hubs. It brings about more consumption for programming advancement and support. Most extreme number of hubs is likewise not determined in grounds region arrange. It additionally bolsters 64 hubs because of electrical stacking.

V. SOLUTIONS OF IDENTIFIED PROBLEMS AND ADVANTAGES

A. Solutions:

As there are numerous inconveniences of Campus Area Network, it very well may be comprehended by utilizing following techniques:-

- 1) Design brought together system and Connect all Block with OFC Single mode (SM) 8 center link spine organize:-
- 2) Design and Implement arrange excess at Layer 3 center switch level
- 3) Implement Centralized checking System.
- 4) Implement distinctive VLAN at Zone Level to stay away from arrange car accident.
- 5) Implement Inter VLAN Connectivity by empowering the steering abilities.

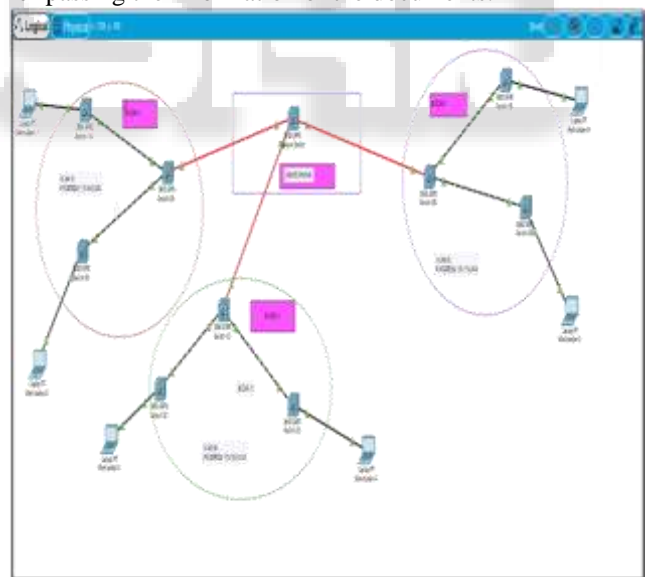
B. Advantages:

The upsides of Campus Area Network are as per the following:-

- 1) Economical: Campus Area Network is practical since it utilizes less centers, switches, switches, and so on.
- 2) Sharing of information is simple: In CAN the message is sent on the double and it moved to all the connected divisions.
- 3) Wireless correspondence: CAN is a remote association for interfacing various kinds of offices, structures, or different associations.
- 4) Transferring documents is quick: In CAN record can be moved with rapid over the Internet.

VI. IMPLEMENTATION ON CISCO PACKET TRACER

So, here by using Cisco Packet Tracer we had done the solution the Campus Area Network. In this, we had created three departments and they are connected through switches for passing the information or the documents.



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