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#### Organized by

Department of Computer Science, Parvathy's Arts and Science College, Dindigul, Tamilnadu, India

# **Computer Network and It's Security Issues**

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**ABSTRACT :** In this contemporary society computer networks are growing in rapid bi for various reasons in this scenario actors significant to take care of the network security. On the other side cyber-attacks and crimes or also in a increased offence seen in various private and public sectors. This paper comprises the information's regarding the security strategies computer security and its connectivity to the network security and some of the data encryption security. Juice enormous development in the computer network brought as both positive and negative sides of convenience and threads. Probably network security hindrances exist in all the layers of computer network which focuses on the confidentiality 8 intensity integrity dependability availability and audit ability of the network that are the security objective we envelope on. Here this paper brings out the network security technologies including the authentication techniques data encryption firewall and intrusion detection system technology antivirus technology and some VPN.

#### **I.INTRODUCTION**

The computer network is network of telecommunication that allows the computers to to exchange transfer and transfers data source which is also known as data network. Indus network computing devices since the data two other along with the data connectivity links. Note connections are developing by using the wireless media or cables. The popular computer network is the internet. Network notes are defined as the network computer devices which originate route and terminate the data. This can comprises of host like PC, mobile phones, servers and some networking hardware. Networked together refers to exchange of information from one device to the other if or not they have an interrelated connection to each other. This data networks differ in the transmission medium which carries signals, communication protocols words to organise when it works graphics network size topology and its organisations. Most of the cases communication protocols are arranged one above the one in working sectors more specifically of communication protocols accept the physical layer which relates with transmission media.



Fig-1. Computer Networks



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#### **II.CHRONOLOGY OF COMPUTER NETWORK**

- In the late 1950s, communication networks include the military radar system semi-automatic ground environment with is popularly known as SAGE.
- In 1959 Kitov brought up the central committee of communist party of Soviet Union a detailed plan for reorganization of control in Soviet armed forces and economy on the basis of network of computing centres.
- In 1960, SABRE the commercial airline reservation system semi-automatic business research environment gone online with two connected mainframes.
- All along the 1960,Leonard kleinrock, Paul Baran and Donald Davies independently formulated the network systems which used packets to transfer or information is over networks.
- In 1965, Maril and Lawrence G. Roberts created the first wide area network which was an immediate precursor to the ARPANET.
- In 1979, Robert Metcalfe pursued making Ethernet an open standard.
- 1998 Ethernet supporter transmission speeds of a gigabit which has the ability to scale easily.

#### WIRED TECHNOLOGIES:

- FIBRE OPTIC CABLES This cable is used to transmit the light from one network node to the another network node in a computer.
- COAXIAL CABLE -This cable is mostly used in cable television systems office buildings and in work sites for LAN. It also consists of copper or aluminium wire which is encapsulated by UN insulating layer that is typically a flexible material which is also surrounded by the conduction layer. transmission speed ranges from 200 million bits per second to more than 500 million bits per second.
- TWISTED PAIR WIRE CABLE This is the most popularly used media for all telecommunication. Twisted pair copper layering also consists of copper wires which are Twister in Pairs where as ordinary telephone wire is of insulated copper wire twisted in Pairs. Computer network cabling consists of four purpose of copper cabling that is used for both voice and data twisted pair cabling is divided into two forms as

# UNSHIELDED TWISTED PAIR UTP SHIELDED TWISTED PACK STP

- OPTICAL FIBER optical fibre is a glass fibre which carries pulses of light denoting the data over metal wires which has very low transmission loss and high electrical interference. This can carry multiple wavelength of light at the same time that highly maximizes the trait which data sends and helps to enable the data rates more than trillion of bits per second. It is used in long run cable which carry maximum data rates and used in undersea cables to connect the continents.
- \*



Fig-2: Wired technology of computer network



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#### WIRELESS TECHNOLOGIES:

Price distinguishes wired and wireless technology options in a business sector with wireless commands a premium price making one to purchase via computers printers and the devices for financial beneficiaries. Vansh concluding with the decision to purchase hardwired technology materials a review of the selections on necessary things plays a significant role. Most of the computers in this current scenario of connected to the network through wireless links.

- TERRESTRIAL MICROWAVE: It communicates true Earth based transmitters and receivers which resembles the satellite dishes. These are in the low - gigahertz heights range all communications within the line of sights. Relay stations spaced estimated with 48 kilometre apart.
- COMMUNICATION SATELLITES: These satellites communicate through microwave radio waves that does not reflect Earth's atmosphere and are patterned in space as geosynchronous orbit 35400 kilometre above the equator. This earth orbiting systems are receiving and relying voice data and TV signals.
- CELLULAR PCS SYSTEM: This use several radio communication technologies which divide the specified region in two geographic areas of low power transmitter for radio relay and thana device formulating relay calls from one area to the other.
- RADIO AND SPECTRUM TECHNOLOGIES: Wireless LAN use a high frequency radio technology that is similar to digital cellular of low-frequency radio technology where is spread spectrum technology to make the communication between multiple devices within a restricted limits.
- FREE SPACE OPTICAL COMMUNICATION: this use visible or invisible light for communication where line of sight propagation probably be used with limits of physical positioning the communicating devices.



Fig-3: Wireless technology of computer network

#### **III.NETWORK SECURITY ISSUES**

Network security consists of policies adopted by the network administrator which prevent and monitors the unauthorised access misuse and denial of the computer network accessible resources. This is the authorisation of access to day tasks in the network controlled by the network administrator and the users are allotted with an ID and password which access them to to informative programs within their authorised network area. This is based on the variety of networks used in public and private areas to secure the day to day transactions and communications among businesses government agencies and the individuals.

#### **GUIDE:**

When various business sectors connect their systems one deceased problem main effect everyone on the network, apart from the benefits of networks it also has a greater access for security issues like

- Data loss
- □ Security breaches
- □ Malware attacks



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□ Hacking and viruses

One May reduce the network vulnerability to un-authorized access or damage which may not be possible to eliminate all vulnerabilites for performing and IT risk assessment which is significant in deciding what measures to implement.

#### PREVENTIVE MEASURES IN AVOID IN NETWORK SECURITY THREATS:

- Using security devices like firewalls and antivirus software
- The router or the operating system of security settings
- Using data encryption system for sensitive data
- The use of side backup for data backup
- ✤ For authorised personnel restricting the access to the network infrastructure alone
- Training the staff in a safe and secure environment of using the equipment's along with the policies and rules for usage of system in the workplace where the misuse of network equipment main furnish in disciplinary actions.
- ★ To ensure the data security for regular housekeeping like
  - Backing up files
  - Password routines
  - System logs
  - □ Removing access from employees who leave



#### **.IV. VPN SECURITY**

Virtual private networks PPN security is used in the area where a staff need to access the network while using it in off site which creates a secured link and protects the data sent and received. Network security is spontaneously becoming a threat area where the company is tremendous focus demands on it. If or whether one corporation becomes a target of other then that happens to be here network attacks to create problems within the working sector. Following are the top 10 network security threats to avoid this malicious attacks.

MALWARE OR RANSOM WARE: The business sectors currently fall to the victims to ransom ware attacks each and every second probably these are growing more than 350 percentage annually with to 217.5 percentage yearly. This high increased ransom ware triggered the creation of crypto currencies such as Bitcoins that allow hackers to demand ransoms anonymously which attacks the secured database system encrypted data and threatening deletion or corruption of files and heavy amount is page.



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- ✤ BOTNETS: Botnets are considered as one of the biggest threats on the internet in the contemporary society where the powerful networks of machines can be remotely controlled and used to launch massive attacks. Here the attacks are used to overcome the victim and make them peyar and some amount and gain back the control of system.
- COMPUTER VIRUSES AND WORMS: Most of the PC are deceased by malware which are viruses that work as a host file and dormant the activated network. On the other hand worms decease the documents spreadsheets and the files utilising the macros. Once a virus or a worm enters one system it immediately propagates itself for the goal of the seasoning various network systems. This is happened during the transmission process in exploiting the software. They spread rapidly inside the system as a shoes fire when they found their loops.
- PHISHING ATTACKS: Those form of social engineering was formulated to steal sensitive data like passwords usernames credit card numbers etc., 88 impersonate the reputable websites which involves with messages or fizzing emails formulated to appear as a legitimate one. If F1 click the embedded uniform resource locator in the messages it will be prompted as credentials and the financial details since the information to the malicious Central source.
- DDos: Distributed denial of service attack is another overwhelming cyber attack. Does attack disease the companies data how to make money operating through social media bye by utilising the website information's. Probably thousands of computers or not used for DDoS virus attack but it's relative to the attacker and it is connected to the attackers network by malware sometimes distributed through global nets.
- CRYPTOJACKING: It had been the tool of choice for hackers looking to steal crypto currency from unsuspecting victims for their own profits. Those are similar to viruses accept the stealing of sensitive data the end goal of crypto jacking is to corrupt CPU data. With these exploitation atticus trick the victims into inserting mining quotes on their computers and use their fraud land techniques to access the the targets CPU for usage of stealing the data related to crypto currency.
- ADVANCED PERSISTENT THREATS: APT cyber attackshappens on an authorised attack code in the way of unsuspecting system network reminding without any process such as possessing the network for sometime. X architect is killed technique which abolished the kits. Once the hacker made it enter the network firewall it stays batao out movement until it finds the root for the login credentials and once if it is succeed it enters to disease all the other parts and forms of data systems.
- TROJAN HORSE: It is a program which appears to be legitimate but in fact the myriad of viruses. Once a connects with the network access then the access for stealing sensitive personal information process. Once it gets access to the computer then it corrupt the webcam and tap the sensitive data to exploit the every step taken further by the server.
- ROOT KITS: Dost our collective tools which place attack and exploits the system security area and therefore the hacker uses it to enable remote access of the victim system and to administer the level of access over there networks. Following it the connectivity to perform the malicious attack includes with key logging password stealing antivirus disabling etc.,.
- SQL INJECTION ATTACK: This attacks are exploited by malicious code and it destroys the private data which make its move faster becoming a danger to confidential data in the world for mini e commerce platforms in process of inventory and order processing. Most evidently E1 perfectly suitor SQL can attack a company a million times.

#### **V.CONCLUSION**

Therefore, the network security threats or possible in various ways and its significance to properly manage it through the high security walls implementation and it can be resolved in case of online attacks through cyber security organisation. It can be optimised through limiting the wall and abilities keeping patches innoway not to share database accounts between different websites or applications.

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