How to Develop Proper Communication in Company Combination with Topologies?

U.M.G.B. Alahakoon, H.M.U.R. Herath, C.L.H. Liyanarachchi, E.A.A.N. Edirisinghe, K.A.A.D. Kumarapeli, Dhishan Dharmmearatchi

Sri Lanka Institute of Information technology Computing (Pvt) Ltd

Abstract- Many companies are using computer networks in modern days because to make easy their works. Not like earlier, it is actually easy to work with computer networks. People use different topologies to communicate with networks. There are different kind of topologies in the world. For an examples Ring, bus, Mess, Star, etc. Not only that wireless technology has vastly developed within 5 years. Although there are some difficulties when communicating in networks. It is hard to categorize different access levels in network. Many companies are using networks to communicate. Many of them used different topologies to communicate. Therefore those researches face so many difficulties while communication. For an example in ring topology if one cable broken down there is no way to fulfill the communication. Modern days lot of companies do not involve with Network topologies because it is not efficient. Consider both topologies and wireless together, these fields are different fields in network. Although combination of both together it can made efficient network topology with wireless technology. From this concept it helps to made proper network topology. This conceptual schema helps to do communication most secure and efficiently.

Index Terms- Topologies, Networks, Security, Wireless network, Protocol

I. INTRODUCTION

In earlier, communication is not easy like now a days. People used different kind of methods to communicate with others. The communication methods are birds, arrows, horses, etc. These methods are not faster and sometimes messages not reached to the correct place or person. These causes too many problems. After 1st world war human found so many concepts to communicate faster and efficiently. German used special kind of a script machine to do their communication. The machine known as "Enigma". After this machine data communication ways are expanding year by year.

The communication has always been the crucial part of mankind's social life. The means of communication has changed according to the changes in human life style and all other circumstances such as technological developments.

Throughout history, the technology has a huge impact on the means of communication. In the past, smoke was used as a means of communication from one mountain to another. Needless to say that only a few simple messages could be sent and received with this primitive method of smoke signals. People needed to send their messages further away and faster as the world population increased and started to be globalized. This period has influenced the methods of communication.

Today, People use telephones, mobiles, text messages, e-mail, and internet chat programs as oral and literal ways of communication. The inventers and producers are aiming to develop faster, cheaper, smaller-sized, multi-tasking gadgets for communication. The communication technology has been changing to fulfill customer needs. However, the means of communication also shapes human life styles. Mobiles have been the most important things to carry after the identity card, the keys and the wallet.

Future of communication is not difficult to predict. The trend of mobile, multi-tasking, wireless technology seems to continue to improve. … (HDTV's), hologram simulators are the clues for possibility of image transferring or the matter transferring at the speed of light in the future. People will be transferred to communicate our own messages to the other places in an instant one day. Who knows?

The proposed research is mainly focus on improve the accuracy of the network and congestions in an internal network of a company or an association. Today there are many modern technologies which are using to implement networks. Some of them are design an artificial topologies, Network topologies (Refer appendix), wireless networks, frameworks, using packet transfer methods, using mobile network, use database connections, Dynamic networks, provide analytical tools, Queue management systems, GPSR technologies, new network security systems, combine topologies with wireless networks and etc. We have discussed about these modern technologies with more details in the literature review. In this research there is different access levels to different levels of users. For an example head manger has all privileges in access in network. Sub managers don't have privileges than head manager, but they have privilege to handle their employee's computers. Likewise security levels divided according to authority levels.

The proposing system is also use some of these technologies. They are design an artificial topologies, using protocols, using topologies, wireless networks, queue management system, proper network security & combine topologies with wireless networks. All these concepts are not in one network at the present. Hence using all these concepts together there can be a fast & accurate system which can send all data packets to the correct destination. The proposed system can communicate with the inter company without data traffic and it has some access levels to the network which are using to stop unauthorized access.

Chapter two (II) explains about the referred research papers (Literature review). Chapter three (III) explains about example of an As Is System. Chapter four (IV) contains about Implementation of Wireless Network Topology that the research team proposing. Chapter five (V) explains about advantages of proposed concept. Chapter six (VI) contains Conclusions that research team had after development of the concept. Chapter seven (VII) research team propose some concepts that can be develop in future researches and finally in chapter eight (VIII) an acknowledgement for those who help in research. This research paper contains a reference list and an appendix.

II.   LITERATURE REVIEWS

Simulations can be consider as an important factor in network research. As the selected topology often influences the outcome of the simulation, realistic topologies are needed to produce realistic simulation results. The research first discuss the different types of topologies and present their collection of real-world topologies that can be used for simulation. The research define several similarity metrics to compare artificially generated topologies with real world topologies. The research use them to find out what the input parameter range of the topology generators of BRITE, TIERS and GTITM are to create realistic topologies.

These parameters generate artificial topologies that researchers can work as a valuable starting point. Artificially generated topologies are practical or judge by the pure visual inspection. Equality is a common objective and measurable metrics that define tomorrow as two network topologies objective criteria to measure the similarity. The topology graph to capture the basic connection properties. The research focus is the shortest way, the distance between nodes and the network for the connection to the degree simulation [1]

Network congestions lead to lost packets while the packet is travelling resource to the destination. The research paper covers Proactive queue-management (PQM) algorithm called GREEN which is applying knowledge of steady behavior of TCP connections to intelligently and proactively drop packets. GREEN (Generalized Random Early Evasion Network) keeps packet queue lengths relatively low and reduces bandwidth & latency jitter. GREEN achieves maintaining high link utilization and low packet loss. GREEN router classifies and ensures fairness between flows, [2] compare GREEN with two flow-based AQM (Active Queue-Management) schemes that are derivatives of RED [11] and BLUE [12]. The research does not focus on Design an artificial topologies, using protocols, using topologies and wireless network. The proposed system will be built with capability of high speed network usage, protection & queue management [2].

Research Cloud Research Simulation Toolkit (CREST), the new cloud computing and simulation research to enable cloud providers before continuing to test your system design tool introduction. The research compared to other known cloud crest with device simulation and a variety of delivery protocols and middleware for robustness and reliability related subscription network topologies evaluate crest shows the utility. The results expand on previous work and included in the published literature shows inaccuracies. With the intention crest, Source Forge in the

Creative Commons license has been issued under the open source as it can be used and expanded by cloud computing research community [3].

The research paper covered the area about the wireless network virtualization. This paper discuss framework based on architectures. Thus this research can be enables to reduce the significant of wireless network operations and deployment. Therefore there have some technologies like radio access technologies and remain some research challenges such as control signaling, resource discovery, security, etc. The proposed system will be built a secured system using artificial topologies and without using these technologies [4].

Wireless sensor networks (WSNs) is a dangerous component in the formation of modern computing applications; His size, process and communicate information, and the ability to feel the stimuli, they are part of what the Internet is a promising. However, they are plagued with problems of reliability and node failure. There is research to find the gene regulatory network (GRNs) by using the organism Escherichia coli-believe these problems are randomly generated and broadcast WSNs structure derived from the genetic study of broadcast-quality signal failure such as gene networks to strengthen against obstacles. Select the middle of the network nodes is crucial to the performance; Select four middle-node technology research here Introduction: Two high opinion-based based an attractor and a high degree of performance based approach and to assess their extensive simulation performance. Especially, we under varying channel loss model specific random deployed sensor network topologies, such as against the structure of the packet transmission communication Grn- derived robustness properties to evaluate use NS-2 simulation. Receipt Rate WSNs packets rather than randomly generated, communications structure which is shown to be higher for the GRNs use these networks, are compared between. The proposed project also offers strong communication communications structure to assess their applicability derived from existing organic network performance evaluation model generation. This gene regulatory network topologies based on the inherent properties of signal transmission robustness and fault-tolerant routing algorithms in the future use and development of strong WSN paves the way for [5].

The research present a framework to unify different notions of sign consistency and propose a refined method for data discretization that considers uncertainties in experimental profiles. The research furthermore introduce a new constraint to filter undesired model behaviors induced by positive feedback loops. Finally, they generalize the way predictions can be made by the sign consistency approach. In particular, they distinguish strong predictions (e.g. increase of a node level) and weak predictions (e.g., node level increases or remains unchanged) enlarging the overall predictive power of the approach. The research then demonstrate the applicability of our framework by confronting a large scale gene regulatory network model of *Escherichia coli* with high-throughput transcriptomic measurements [6].

The research it mainly discusses about a network of dynamic agents with fixed and switching topologies. Main contribution of this paper is to define and address consensus problems under network topologies. Hence in the research analyze some time delay and switching topology cases and

introduce linear and nonlinear protocols for each case. And provide some analytical tool like matrix theory, control theory etc. The proposed system will be built a wireless network with queue management [7].

The research [8] focuses Greedy Perimeter Stateless Routing (GPSR) protocol. It is a novel routing protocol for wireless datagram networks that uses the positions of routers and a packet's destination to make packet forwarding decisions. When mobility's frequent topology changes, GPSR can use local topology information to find correct new routes quickly. The research [8] describes about extensive simulation of mobile wireless networks to compare its performance with that of Dynamic Source routing. This research [8] is used protocols, topologies, mobile wireless technology, and GPSR technology as the components. The proposed system is not discussing about the mobile networks. The proposed research designs an artificial topologies and queue management methodology to handle wireless network congestions and makes a fast network communication in inter network of company [8].

Wireless network, an attacker tune a receiver and between two nodes can communicate. Get some meaningful information by touching a wireless connection depends on whether or not to use the security protocol. Cryptographic techniques can be used to secure a communication to. Article safe alternative way between the two points we discussed. Based on the research network topology to provide wiretapping attacks against the simple security protocol. Although a theoretical point of view to study the problem can, their protocol is easily implementable. At least these attacks as any other protocol is secure. Only the sender and receiver and an attacker research links between that wiretapping is essential for any meaningful information shows that you can get. Network encoding techniques used in the research. Including cycle network protocol, any network topology works for [9].

Sensor Networks usually consists of several kinds of nodes, The Gateway node is used for applications of transmitting data from the WSN to long distance data server region) measured from sensor nodes is send to the gateway nodes, and then the gateway transmits the data over a long Recently, there are 3 kinds of gateway used in WSN: Ethernet WSN gateway, WLAN WSN gateway, and the Ethernet WSN gateway. Kind of those gateway node is to connect the sensors in WLAN WSN gateway WLAN WSN gateway node is an improving to the wired Solutions about GPRS/CDMA WSN gateway node can node and surveillance center in this design of WSN gateway [10].
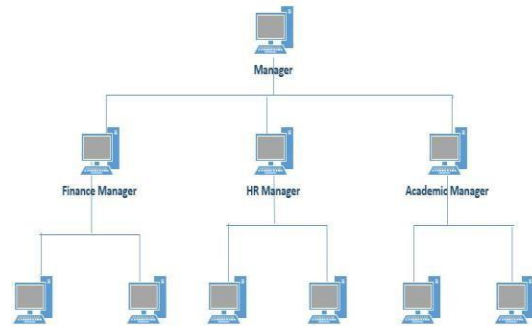
III. EXAMPLE FOR AS IS SYSTEM

Figure 1: As Is System

ABC Company currently using above (figure 1) network topology. Hence the company faces lots of difficulties because this network has main drawbacks. Such as:

- Communication failures (Failure of one computer can impact the rest of the network);
- Low security;
- Difficult to troubleshoot;
- Limited cable length and number of stations;
- Network is highly dependent on the wire which connects different components.

IV. IMPLEMENTATION OF WIRELESS NETWORK TOPOLOGY

In most companies mostly use single topology to communicate with company members. Such as Star, Bus, Mess, Ring, etc. Therefore it cannot increase the efficiency in network.
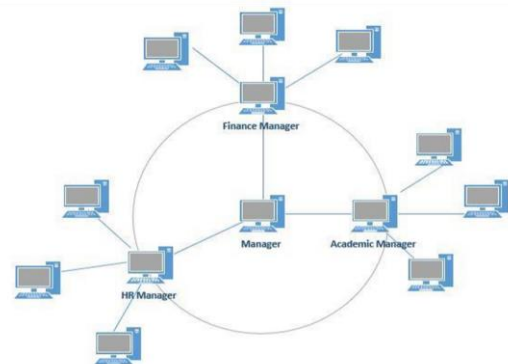

Figure 2: Conceptual Design

Consider the network above (figure 2). It is the example that implement as solution. This is the concept of efficient communication between users in company. Manager is the main person in this company and he can contact other members easily with this topology. Basically Manger PC uses Star topology to connect with this system. HR, Finance, Academic Managers connect with manager via Star topology and they connect with each managers with ring topology. Sub Managers can connect with their employees via Star topology. In some topologies there are some issues in connecting with other users. For an example in

ring topology if it is token ring topology when ring break down in one place, communication will disconnect in ring. To avoid this kind of problems it is better to implement wireless network among users. This is the conceptual idea in our research.

Basically wireless routers connect with star topology. If device makers can implement wireless router to other topologies and router can maintain access levels of internal users according to their positions also can increase efficiency and security in the network. In this system different users have different access levels. It can improve security in this system.

V. ADVANTAGES OF PROPOSED CONCEPT

- Rather than calling meetings with company members, as network like this can save cost and time in company.
- Top management can easily communicate with their group members with this system because every user connect with the system categorize clearly.

If implement this system with real topologies it takes more cost to switches, cables, bridges, etc. In wireless technology it can save the cost of those equipment.

VI. CONCLUSION

The term topology, or more specially, network topology, refers to the arrangement or physical layout of computers, cables and other components on the network. Topology can also determine how computers communicate on the network. Different topologies require different communication methods, and these methods have a great influence on the network.

The research team consider about the ring topology, it connects, computers on a single circle of cable. Unlike the bus topology, there are no terminated ends. The signals travel around the loop in one direction and pass through each computer, which can act as a repeater to boost the signal and send it on to the next computer. We can mention lots of advantages having a ring topology as network topology.

Advantages:
- System provides equal access speed for all computers.
- Performance is even despite many users.

A ring network is usually very reliable, but it may occur some problems such as,
- If one of the cables in the ring breaks, causing the network stop functioning temporarily.
- If one of the cables in the ring becomes disconnected, causing the network to temporarily step functioning.

So failure of one computer can impact the rest of the network. It may affect the network performance. So the best solution to overcome of those problems is to use an efficient network topology with wireless technology. The research paper bring out a conceptual network design to communicate efficiently, using the wireless technology.

VII. FUTURE

The main drawback to implement this network is lack of devices suites for the implementation. Future developments research team propose to develop wireless devices consist with network topologies for implement efficiency and security of internal office network. The team also propose to develop an artificial intelligent device which can make decision when a section of the wired network failed, make a new connection path or wireless connection with other computers automatically, without human interference, like as in electricity failure diesel generators starts automatically.

Implement system like this can do big different in Network communication in future. There is no device to allocate ring topology with wireless network now a days. In present most of routers works on star topology. As a result of this there are limitations in implementing network as purposed. From this research, developers can change their view from traditional method. Developing wireless system can do evolution in networking in future.

Appendix
A. Star topology

In figure 3, Star topology, cable segments from each computer are connected to a centralized component called a hub. Signals are transmitted from the sending computer through the hub to all computers on the network. This topology originated in the early days of computing when computers were connected to a centralized mainframe computer.

The star network offers the advantage of centralized resources and management. However, because each computer is connected to a central point, this topology requires a great deal of cable in a large network installation, also if the central point fails, the entire network goes down.
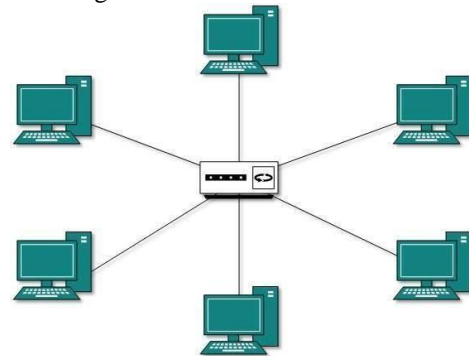

Figure 3: Star Topology

B. Ring topology

In figure 4, Ring topology is a Local Area Network (LAN) in which all the devices are connected two other devices forming a ring shape. Packets will be sent around the network until it reaches its destination. Other devices will drop the unnecessary packets. However Ring topology is rarely used nowadays. Because of the disadvantages like the packet having to travel through all the devices, network being highly dependent on the media it is connected with.

The major disadvantage of the ring topology is if in case of a failure in one node the whole network will be terminated. However there are advantages of ring topology as well, such as

all data flows in one direction, reducing the chance of packet collisions. Hence a network server is not needed to control network connectivity between each workstation.
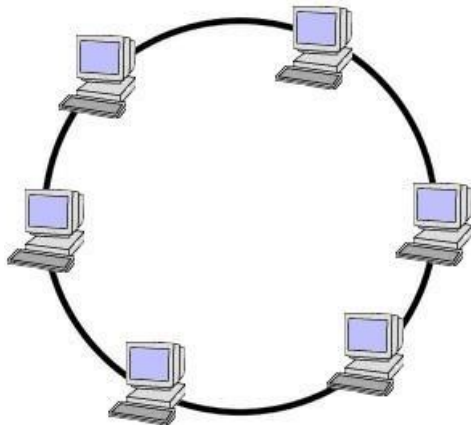

Figure 4: Ring Topology

C. Wireless network

Wireless technology is rapidly evolving, and is playing an increasing role in the lives of people throughout the world.

For mobility, **Wireless LAN** technology is a key enabling technology that allows institutions to extend their existing network into areas where hardwiring would be expensive or difficult. It allows users to achieve total PC portability and location independence. The technology can now go to the class rather than the reverse, allowing for rapid deployment anywhere–even outdoors – without the inconvenience of taking students out of their normal learning environment because they need network access.

Wireless LAN or local area networks -- provide flexibility and reliability for business computer users.

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AUTHORS

First Author – U.M.G.B. Alahakoon, under graduate student, Sri Lanka Institute of Information technology Computing (Pvt) Ltd., gayanupi@gmail.com

Second Author – H.M.U.R. Herath, under graduate student, Sri Lanka Institute of Information technology Computing (Pvt) Ltd., umaherath2014@gmail.com

Third Author – E.A.A.N. Edirisinghe, under graduate student, Sri Lanka Institute of Information technology Computing (Pvt) Ltd.,amithaedirisingha@yahoo.com

Fourth Author – C.L.H. Liyanarachchi, under graduate student, Sri Lanka Institute of Information technology Computing (Pvt) Ltd., Lakshani1132@gmail.com

Fifth Author – K.A.A.D. Kumarapeli, under graduate student, Sri Lanka Institute of Information technology Computing (Pvt) Ltd., akiladanindu.k1992@gmail.com

Sixth Author – Dhishan Dharmmearatchi, lecturer of Sri Lanka Institute of Information technology Computing (Pvt) Ltd., Sri Lanka Institute of Information technology Computing (Pvt) Ltd. dhishan.d@sliit.lk

Correspondence Author – K.A.A.D. Kumarapeli.
akiladanindu.k1992@gmail.com