LOAD BALANCING IN MPLS PROTOCOL ACROSS WIRED AND WIRELESS NETWORKS: A SURVEY

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ABSTRACT
Data communications is moving toward a single, public networking environment. The development in Switching technology for data communication has been phenomenal in the past—first using X.25 protocol where store and forward technique is employed and then the advanced frame-relay technique where variable frame structure signaling and data transfer mechanism across intelligent user-end devices is used and now advanced further to meet high end-users. Having failed to get quality of service (QoS) from the other protocols like Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP) and Exterior gateway Routing Protocol (EIGRP) from the studied literature regarding upgrade of routing policy. The packet will be admitted to some other path, if the current concerned failed to send the packet in destination location. In this paper, unequal networks (wired-wireless) include setting up modified load balancing technique in MPLS protocol to be run and acclaim to ameliorate the network performance.

Keywords: quality of service (QoS), Routing Information Protocol (RIP), Open Shortest Path First (OSPF), Interior Gateway Routing Protocol (IGRP) and Exterior gateway Routing Protocol (EIGRP)

I. INTRODUCTION
With the number of devices per person expanding every day, and every device — phones, laptops, tablets and even televisions — hungry for a data connection for the Internet, it makes sense to build a wireless network at every location. The Wireless Local Area Network (LAN), popularly known as Wi-Fi, they have successfully installed a wireless access point in the local area, together with a printer server. In effect it wirelessly enables any laptop or PC on board to access the Internet at the best speeds currently available 4 gigabytes per second and share a printer, which has also been installed. The network is satellite-linked to an Internet service provider on the ground to complete the access. We have to work on wired and wireless scenario in the network; in the current study MPLS protocol is working in the wired network.
A. MPLS (Multi-Protocol Label Switching)

To prevent the entry of unauthorized packets, the MPLS is put ingress and egress routers in the network boundaries. Only the vehicles with labeled packets issued by the ingress router will be allowed to enter the network. Outsider packets issued by the egress routers will have to advent at the designated places and commute by the switches to enter in the network.

In this paper, we aimed at checking congestion on the network. Notably, in the past [1] after congestion occurred due to high traffic has large number of congestion on the network. The entry of packets to the boundary routers near ingress routers was allowed during the verification by the egress routers.

In the absence of the competent authorized devices, granting of permission for the packets has not allowed in the network. Meanwhile, the MPLS traffic rates quite high and could be a reason for low congestion. The packets for the MPLS started from 512 bytes and go up to 1000 bytes. MPLS has reduced the congestion to a few right taps where anyone and everyone you want to target is within reach. It is also one of the expensive technology; the fastest and the safest. The life span of this technology is dependent on the networking devices: router, Switch. The bandwidth of an MPLS to the virtual private network can last up to 100 Mbps.

B. Packet-Labeling Mechanism

Multiprotocol Label Switching (MPLS) is to mark every packet on the networking that is entering on the network. It was improving the forwarding speed of the router and the forwarding the packets on the path is
dependent on the terms like IP address, MAC address, Network Identifier of the network and IP routing protocols. In the packet forwarding strategy, each packet is identifying with its label and when the label is

forward to its adjacent node then old label has removed and new label is inserted by the adjacent node. The MPLS is being working on two phases, the current one consisting of labeling of packets with allocated by the ingress routers. Other phase is to identifying the route to forward the packets and need not be label to the packet.

C. Quality of Service
In a recent survey, the number of technologies which are failing to meet the quality of service norms in network, especially on the parameter of WLAN packet drops. The highest call drop rate was that of 17 percent and we aimed to set the benchmark of the network related parameters. With the help of MPLS we identify the network related issues like packet drop rate, insufficient bandwidth, poor RX quality and low packet success rate.

II. LITERATURE SURVEY
In [1], Andrew Sagitta Jauhari, Achmad Imam Kistijantoro, problem in traffic engineering simulation in a traffic engineering simulator has supported all traffic engineering related protocols and has complete capability of to simulate available complete protocols. Proposed scenario has compare different taxonomies, compare different algorithms (that CSPF & TSLB actually algorithm with same way of work by examining final result of simulation). Solution to handle a parallel route problem in CSPF is by modify a stop condition for next-hop finding, selected next-hop must meet the bandwidth constraint Stop condition should stop when a next hop to a destination is a next – hop and meet a bandwidth constraint, not because next hop is a peer.
In [2], Subramanian Vijayarangam, Subramanian Ganesan, MPLS hierarchical architecture for label-switched networks can be used for supporting wireless users. This architecture involves requirements at the mobile terminal for initiating label switched paths at the air interface, and allowing end to end interconnection to the backbone network. The basic network architecture comprises of mobile hosts (terminals) capable of initiating traffic flows towards the base stations. The base stations aggregate traffic flows towards the Mobile Label Switching Nodes (MLSN) and terminate label switched paths. The packet core would simultaneously support multiple services, including 3G wireless applications/traditional data services/traditional voice services.

In [3], M. Abdel-Azim, M.M.Awad, H.A. Sakr, explained extensive network simulations using MPLS compared with network using VoIP. The authors had analyzed several important parameters such as end-to-end delay, packet delay variation, MOS, traffic send and traffic received. The experimental results had providing a great improvement in overall performance for voice traffic transmission and receive with lower voice packet delay, higher MOS value, and higher signal quality.

In [6], Ali A. Khan, et al. point out a set of paths of packet advancing and reducing the hand off. The research work is also about the uniting of multi-layer communications requirement. This research is very important regarding the calculation of strength of mobility over existing technology. The most efficient protocol in the network routing is MPLS and this protocol is the protocol of the core. This is the preliminary sketch towards the mobility. Although the mobility is the future of the communication but the wired communication standards are bases for mobility.

In [7], Anurag Goyal, et al. presented the new approach of Relay Race transmission using LSRs for amplifying, forwarding and switching the signals in MPLS technology to address severe problems which may occur due to signal amplification with repeaters and amplifiers. The proposed approach of Relay Race transmission is best suited for MPLS technology because of its low overhead in switching and forwarding the packets among label switched routers. The research enhances the amplification procedure of signals in MPLS and hence providing quality of service among different autonomous systems with low processing overhead, forwarding overhead and routing overhead.

In [11], Imad J. Mohamad et al. stated that Flow Label values previously used with a specific pair of source and destination addresses must not be assigned to new flows with the same address pair within the flow state lifetime of 120 seconds. Using the advantages of MPLS with IPv6 is still one of the migration challenges at the backbone.

III. MOTIVATION
Each of the major cellular providers has 3G networks that provide coverage across most of the country. There are two competing 3G technologies currently being used: Global System for Mobiles (GSM) and Code Division Multiple Access (CDMA). The 4G technology is the successor to the 3G technology. Cellular providers are still building out their 4G networks. 4G is based on the WiMAX or LTE (Long Term Evolution) systems, and has a theoretical maximum speed of 100Mbps. Not everyone has 4G or 3G. Many only have 2G where the connection speed is less. Asynchronous Transfer mode is a technology that can support a wide variety of applications in several different network environments. The effect of congestion in the packet switched networks is performance degradation in ATM. So we have MPLS-modified approach which is a service that consumes way less bandwidth, so that if you have a slower net connection, you can still get access. But if we want to connect everyone, we have to look for the Routers and we have to able to serve those with the weakest connections — living in rural villages, lacking traditional infrastructure (which is not economical for them). With regard to spreading access and load balancing; a new option for data networking is being heralded, as transport of data moves from circuit-switching to packet-switching technique. To meet requirement of efficiency and quality of service (QoS) each algorithm is tailored to the switch architecture, buffering and scheduling principles for a particular service.

IV. LOAD BALANCING

The basic idea is to unbundle the information, transmission and distribution under network into separate entities with the aim to identifying problems in the load distribution. An MPLS significant limitation is its inability to dynamically load balance. To ensure that the load is equally balanced between the set of nodes, configure half of the nodes to access one router (ingress) primarily and the other half to access the other router primarily. Then, configure the opposite router (egress) as a secondary or alternate for each node to get the benefits of fault tolerance. In addition, be sure that the nodes act as replication partners. In order to handle the load properly, you should add additional routers for every 100 nodes served. If you want to increase the performance of a single node or server, you can turn off logging. If the ingress router crashes, you will lose recent changes to the database, but the secondary router performs better with logging off. If you would increase the network performance then add other router in the Network portion.

V. CONCLUSION

The development and standardization process are currently underway for defining suitable efficient integrated architectures and are a challenging task that needs a lot of research efforts. The growing worldwide deployment of MPLS on a WLANs has a growing impact on what public wireless networks will look like and how public mobile services will be provided in the near future. This research continues with choosing MPLS as the best
choice for high switching rate and QoS maintenance because 4G networks does not cover the area everywhere.

MPLS will be capable for providing a higher transmission data rate up on wireless network. It provides a user’s to download a maximum download of data. This is packet oriented approach and we should do to debug the network. The MPLS technique makes improvement towards the existing network by means of probe count, delay and throughput.

REFERENCES