On Distributed Computer Networking by Paul bran Sourav Mangla

In 1960, during the Cold War, Paul Bran wrote a study in which he hoped to determine how long a decentralized network could withstand an attack on its nodes, connections, and combinations. When a central node in a centralized network is attacked, the entire network goes down. For a very long time, the centralized network was used in many countries. To connect a call, one had to call the operator at the station, give him the receiver's number, and then the operator would call the operator in the receiver's area and give him the number. After that, the receiver would be dialled, and the caller would be able to speak. Because these centralized nodes would be damaged, it used to be extremely challenging to call to your family number during natural disasters. To assess the network's usefulness, the author has specified a set of survivability criteria. To evaluate which redundancy level would be optimum for the decentralized network's survival and good operation, several amounts of redundancy levels were applied, and graphs of each redundancy level were drawn. As the number of redundancy rises, so does the network's cost.The author thus has two choices if he wants to fully utilize redundancy in the event of failures. A pre-selected path is one, while dynamic routing is another. The graphs' plotting demonstrates that dynamic routing outperforms pre-selected paths in terms of results. Pre-selected paths, in my view, would be particularly challenging since, in the event of great distances between nodes, you would need to plan out these paths before utilizing the network and also have backups in case those paths failed. While excellent switching will determine its own course as it moves across the network. Pre-selected routes can be used for short distances. We must strategize for constructing a reliable network at a minimal cost. Satellites and TV broadcast stations can be utilized to build a reliable dispersed network. Satellites are currently widely used by telecommunications firms to offer communication services. Source and destination addresses, as well as a hop count, are included in a conventional 1024-bit message block. To create the forwarding table, use this hop count. A store and forward approach is utilized, allowing users to send packets as soon as they are ready until the best outgoing link is available since as data volume rises, various users have varying throughput requirements. Since all of the packets will need to wait until the best available path becomes available, there will be a backlog of packets, making it very challenging to manage all the messages. As a result, the majority of messages will be in storage, waiting for the best link, rather than reaching their destination. These packets might sometimes get lost as well, which reduces efficiency. The other channels may be free, but the nodes must utilize them since the cost of transmitting over them is roughly equivalent to the cost of a packet overhead. The GPS used in maps is similar to the postman analogy discussed in the paper; just as the postman will determine the best path to send messages, the GPS also determines the best path by taking into account the feedback it receives from the path ahead, allowing us to reach our destination in the best route possible. The hot potato heuristic routing just forwards the packets through an alternate route to get rid of the packet and reduce latency because it wants to get rid of the packet from its network as soon as possible. Therefore, it doesn't wait for the best available path to open up. The hop count enables the creation of handover number entries that may be used to identify the ideal path and other options. The network must be adaptable because if a particular connection fails, the table must reflect this; otherwise, the nodes would keep transmitting packets, which won't go to their intended destination. As a result, our network must adapt to these changes automatically to create a strong network. Today, as anticipated in the study, there is a massive amount of data that needs to be sent every second, making the store and hold strategy ineffective. Dynamic routing techniques would be more effective in their place, and a responsive network would be more valuable in ensuring that the packets reach both ends.