ABSTRACT

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The increase in the production and demand of digital content, which uses computer networks as a mean of transfer, leads to the growth of the infrastructure of these networks. The monitoring of active network devices, in turn, is necessary to provide resilient quality service. Thus, the rapid and defined identification of possible network failures or changes depends on the mapping of the nodes involved in the forwarding decisions as well as the network links. Subnet Discovery is a concept of the link layer, represented by layer 2 (L2) of the OSI (*Open Systems Interconnection*) model, whose purpose is to map the topology through the interconnected network interfaces in the same broadcast domain. In the analyzed techniques of topology discovery, the location of L2 devices is more complex due to the difficulty of identifying them among the network devices, with L2 devices being more numerous than L3 devices in large private networks. This work aims to explore this difficulty through network discovery with the technique that uses the *Skeleton-tree* algorithm, changing the method of data collection of the technique to decrease the total time used in topology discovery. Changing the active method from ICMP (*Internet Control Message Protocol*) to ARP (*Address Resolution Protocol*) presents greater speed in the complete network topology discovery process, resulting from better efficiency in updating and collecting AFT (*Address Forwarding Table*) data in reduced timeout scenarios. This change results in better-quality input database for the *Skeleton-tree* algorithm, resulting in a lower probability of failure in the implementation of topology discovery.

Keywords: Topology discovery; layer 2; Network infrastructure.