

ABSTRACT

The basic rule of network interconnection in communication between elements to exchange information so that every single router knows about available resources. The information exchange pertaining network availability is done by routing protocol run by the routers. *Routing protocol* is a method to collect all valid routes in the internetwork and calculate optimum path to destination network, at it is done, the internetwork is considered converged. Routing protocol function is critical to the network for its purpose to make routers know where to forward data. An autonomous system should implement Interior Gateway Protocol (IGP) that converges quickly and efficiently to minimize network outages. This paper will explain the implementation of routing protocols inside the autonomous system and analyze the network convergence. The IGPs used are *distance vector* Routing Information Protocol version 2 (RIPv2), link-state Open Shortest Path First (OSPF), and balanced-hybrid Enhanced Interior Gateway Protocol (EIGRP).

Measurement shows that EIGRP has the fastest event detection which is 60 ms per hop, compared to OSPF which 229 ms and RIPv2 which 1982 ms. For update process, EIGRP is the slowest due to prioritize the routing update that has 13 ms per route, 5 ms for EIGRP and 5 ms for RIPv2.

On throughput and packet loss measurement, EIGRP that implemented a feasible successor on routing table, has the biggest throughput value which is 127.9 kbps, while OSPF is 121 kbps and RIPv2 is 104.4 kbps when it is given a traffic flow at 128 kbps.

Keywords: Convergence, routing, RIPv2, OSPF, EIGRP, IGP