Formal Implementation of Routing Information Protocol Using Event-B

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Abstract : The goal of this paper is to explore the use of formal methods for Dynamic Routing, The purpose of network communication with dynamic routing is sending a massage from one node to others by using pacific protocols. In dynamic routing connections are possible based on protocols of Distance vector (Routing Information Protocol, Border Gateway protocol), Link State (Open Shortest Path First, Intermediate system Intermediate System), Hybrid (Enhanced Interior Gateway Routing Protocol). The responsibility for proper verification becomes crucial with Dynamic Routing. Formal methods can play an essential role in the Routing, development of Networks and testing of distributed systems. Event-B is a formal technique consists of describing rigorously the problem; introduce solutions or details in the refinement steps to obtain more concrete specification, and verifying that proposed solutions are correct. The system is modeled in terms of an abstract state space using variables with set theoretic types and the events that modify state variables. Event-B is a variant of B, was designed for developing distributed systems. In Event-B, the events consist of guarded actions occurring spontaneously rather than being invoked. The invariant state properties must be satisfied by the variables and maintained by the activation of the events.

Keywords : dynamic rout RIP, formal method, event-B, pro-B

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