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KEY WORD : NODE MODELING/PACKET NETWORK/SIMULATION

RUNGSUN CHANNARUKUL : NODE MODELING FOR A PACKET NETWORK. THESIS

ADVISOR : ASSO. PROF. SURIYAN TISHYADHIGAMA, PH.D. 145 PP.

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This thesis describes a design and development of a node modeling for packet network simulation. A node modeling consists of three functional units, namely : User Interface Unit, Network Interface Unit, and Node Control Unit. Important functions of each node are routing, buffer management, flow control, and error control. The packet will be mainly routed by primary path. But there is an alternate path in case the primary path fails. Receiving packets at each node are managed as First-In-First-Out buffer queues. To regulate the flow of packets, the transmitting node sends a continuous stream of packets and the receiving returns an acknowledgement after receiving a group of packets. The error packets will be retransmitted by using Go-Back-N ARQ technique. Functions of each unit are illustrated by state diagrams and implemented by software modules.

A simulated packet network will provide services using permanent virtual circuit (PVC) in accordance with the CCITT Recs. X.25 and the ISO Reference Model for OSI. The packet network consists of five nodes. The operations of each node are synchronized by a control program. Moreover, the program collects some meaningful statistical data to support the study of network operation, behavior, and performance.

The results of this research will provide a software tool supporting packet network simulation and offer background knowledges for further development.