ABSTRAK

Ketersediaan alamat IPv4 saat ini sudah semakin berkurang. Di sisi lain, produksi dari perangkat telekomunikasi berbasis IP terus meningkat yang dan berpotensi menimbulkan persoalan pemenuhan kebutuhan alamat IP ke depan. IPv6 hadir untuk menjawab permasalahan tersebut dengan menyediakan alamat IP hingga sekitar $3{,}4\times10^{38}$. Sehingga menjadi penting mempelajari protokol routing yang dapat mendukung IPv6.

Pada tesis ini telah dilakukan studi dan analisis protokol routing RIPv2 dan RIPng pada aplikasi real time seperti voice over ip (VoIP). Topologi menggunakan model mesh mengacu pada jaringan VoIP di PT. Telekomunikasi Indonesia, Tbk di Regional Jawa Barat.

Hasil dari simulasi RIPng memiliki convergence duration 2,144 detik lebih cepat dibandingkan RIPv2. RIPng memiliki total update message memperoleh 15.668 bps sementara RIPv2 155.066 bps. Untuk end-to-end delay RIPv2 memperoleh nilai maksimum 60,691 ms dan RIPng memperoleh 60.765 ms. Untuk delay variation RIPv2 memperoleh nilai maksimum 12,4 ns dan RIPng memperoleh 12,83 ns. Untuk throughput, RIPv2 memperoleh nilai maksimum 3,1 Mbps dan RIPng 2,9 Mbps.

Kata kunci – RIPv2, RIPng, protokol routing, IPv6, VoIP, QoS

ABSTRACT

The availability of current IPv4 address is getting depleted. On the other hand, the production of IP-based telecommunication devices is increasing. In the future, to fulfill the needs of IP address may cause problems. IPv6 is presented to solve these problems. It can provide $3,4 \times 10^{38}$ *of IP addresses so it is important to learn the routing protocol to support this IPv6.*

This thesis studied and analyzed the RIPv2 and RIPng routing protocols on real time applications such as voice over ip (VoIP). The topology applied mesh model refering to the VoIP network at PT. Telekomunikasi Indonesia, Tbk in West Java Region.

The results of the simulations showed that RIPng had convergence duration of 2.144 seconds faster than RIPv2. RIPng had a total update received message of 15.668 bps and RIPv2 had 155.066 bps. The end-to-end delay maximum value of RIPng was 60.765 ms and RIPv2 was 60,691 ms. The delay variation maximum value of RIPng was 12.83 ns and RIPv2 had 12.4 ns. The throughput maximum value of RIPng was 2.9 Mbps and the RIPv2 was 3.1 Mbps.

Key words – RIPv2, RIPng, protokol routing, IPv6, VoIP, QoS