

ABSTRAK

Azis, Abdul. 2025. Manajemen Bandwidth dengan *Hierarchical Token Bucket* untuk Meningkatkan Efisiensi Jaringan Internet di Kecamatan Semboro. Tugas Akhir. Program Sarjana. Program Studi Teknik Informatika.

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Pesatnya perkembangan teknologi informasi mendorong instansi pemerintahan untuk dapat menggunakan kemajuan tersebut untuk meningkatkan kepuasan masyarakat terhadap pelayanan publik. Banyaknya penggunaan aplikasi pada setiap pekerjaan mengharuskan adanya pengaturan terhadap bandwidth jaringan internet agar lebih efisien. Peneliti menggunakan manajemen bandwidth *Hierarchical Token Bucket* (HTB) untuk mengatur bandwidth. HTB dapat memberikan prioritas terhadap pengguna pada pelayanan umum akan tetapi tetap memberikan bandwidth pada pengguna lain sesuai prioritasnya. Peneliti melakukan observasi untuk menentukan prioritas pengguna yang ada di Kecamatan Semboro. Terdapat 4 prioritas pengguna antara lain : operator pelayanan umum, operator di setiap bagian, karyawan dan pengguna umum. Sesuai dengan standar TIPON Sebelum diterapkannya manajemen bandwidth *Hierarchical Token Bucket* (HTB) nilai throughput 21 k dengan indeks 1, nilai packet lost 0% dengan indeks 4, nilai delay 46,335 dengan indeks 4, dan nilai jitter 0,058 dengan indeks 4. Dari hasil tersebut total nilai QoS sebesar 13 dengan indeks 3,25. Setelah diterapkannya manajemen bandwidth *Hierarchical Token Bucket* (HTB) nilai throughput 41 k dengan indeks 1, nilai packet lost 0% dengan indeks 4, nilai delay 16,7 dengan indeks 4, dan nilai jitter 0,000035 dengan indeks 4. Dari hasil tersebut total nilai QoS sebesar 13 dengan indeks 3,25. Dari penerapan manajemen bandwidth *Hierarchical Token Bucket* (HTB) memperoleh peningkatan pada throughput, serta penurunan delay dan jitter. Hasil tersebut berdampak pada kestabilan jaringan internet yang didapatkan setiap pengguna terutama operator pelayanan umum di Kantor Kecamatan Semboro.

Kata Kunci: Bandwidth Management, Hierarchical Token Bucket (HTB), Internet Network

ABSTRACT

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Advisors : Miftahur Rahman, S.Kom., M.Kom.; Daryanto, S.Kom., M.Kom.

The rapid development of information technology encourages government agencies to take advantage of these advancements to improve public satisfaction with government services. The extensive use of applications in daily tasks requires proper management of internet bandwidth to ensure efficiency. The researcher uses Hierarchical Token Bucket (HTB) bandwidth management to regulate the bandwidth. HTB can provide priority to users involved in public services while still allocating bandwidth to other users according to their priority levels. The researcher conducted observations to determine user priorities in Semboro District. There are four priority categories: public service operators, operators in each division, employees, and general users. Based on TIPHON standards, prior to the implementation of Hierarchical Token Bucket (HTB) bandwidth management, the throughput value was 21 k with an index of 1, packet loss was 0% with an index of 4, delay was 46.335 with an index of 4, and jitter was 0.058 with an index of 4. From these results, the total QoS score was 13 with an index value of 3.25. After the implementation of Hierarchical Token Bucket (HTB) bandwidth management, the throughput value increased to 41 k with an index of 1, packet loss remained at 0% with an index of 4, delay decreased to 16.7 with an index of 4, and jitter decreased to 0.000035 with an index of 4. From these results, the total QoS score remained 13 with an index value of 3.25. The implementation of Hierarchical Token Bucket (HTB) bandwidth management resulted in an increase in throughput and a reduction in delay and jitter. These improvements contributed to greater internet network stability for all users, particularly public service operators at the Semboro District Office.

Keywords: Bandwidth Management, Hierarchical Token Bucket (HTB), Internet Network