Performance Evaluation & Enhancement for the Network of Oman Chamber of Commerce & Industry

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Abstract

In today's high speed networks that can support various applications with different requirements; congestion control is an important issue, one of the methods to prevent congestion is using queuing scheduling algorithms. Queuing scheduling algorithms in network can provide guaranteed performance by reducing delay, delay jitter and packet loss. The main objective of this thesis is to analyze and evaluate the performance of the traffic over the Oman Chamber of Commerce and Industry (OCCI) network. Study the effect of differentiated Services classes (Diffserv), "Queuing scheduling algorithm" on the traffic especially the videoconferencing traffic. There are many queuing scheduling algorithms and each has its own advantages and disadvantages. We investigated the performance of different queuing mechanisms (FIFO, PQ, WFQ, CQ) using a powerful simulation package called OPNET IT Guru. The network is simulated twice once without any Quality of Service and once after applying differentiated Service. By comparing the results obtained 011 both cases, we can observe the effect of differentiated Service in a congested network. In addition, we can evaluate Differentiated Services and illustrate its advantage and disadvantages over 11011- Differentiated data flows. Two scenarios are considered in the first one a 384kpbs bandwidth is used in the simulated network .In the second one a 1. SMpbs is used. The Diffserv algorithm helped in reducing the end-to-end delay and jitter for real-time application, such as videoconferencing