Abstract

A novel bulk flow TCP and its routing performance of the optical IP networks is analyzed numerically. Four types of data transmission viz. fixed size flow discard, fixed size early flow discard, variable size flow discard and variable size early flow discard for the optical domain are investigated. Various probability density functions for the data transmissions are derived for the computation. State transition diagrams for the various flow transmission techniques are designed to study the steady state probability of the buffer usage. The variable size early flow discard technique provides good throughput of 44% for a load of 3.5 for a mostly congested traffic where as the conventional packet discard exhibits only 3% of good throughput under same load and traffic condition. Buffer usage is found to be a minimum value for the variable size early flow discard (43%) than the packet discard (99%).
A Numerical Model of a Bulk Flow TCP and its Routing Performance Analysis for the Optical IP Networks

Reference


Index Terms

Computer Science Networks
Key words:

Optical packet switching (OPS)  
Bulk flow TCP  
Round trip Time (RTT)  
Variable-sized packets  
Wavelength conversion  
Optical router