ABSTRACT

Network communications are increasingly important in the global work environment. The behavior of such networks have an impact on the operation of the computer systems. Network devices have become a ubiquitous fixture in the modern home and corporate networks as well as in the global communication infrastructure. Network devices such as Hub, Switch, Bluetooth, Wifi and Wimax reside on the same networks as the personal computers and enterprise servers.

The analysis of such network devices and the performance impact on a network are taken as the major part of this research work. This has been done using the Markovian model and Queuing Petri nets.

Data transmission is inefficient if a proper interface technology does not exist. Most of such interfaces come in the form of various network devices. The behavior of these devices depends on speed, time and rate of transfer. Hence, the initial work of this research work has been carried out for the efficient usage of such devices in a network by analyzing the inter arrival time and service time of each devices. Detailed analysis of various wired and wireless network for data transition is done using Markov Model M/M/(1,b)/1.

In addition to this, Job scheduling schemes such as FCFS, SJF, Priority and Round Robin algorithms are included in the above said models along with the network
programming through transition devices to process the clients request and server response in efficient manner.

A novel security mechanism is included which deals with the transformation of a message into a binary image which cannot be identified as a cipher text or stegno object. This mechanism is very much useful for transmitting a confidential data from client to server and vice versa.

A multi mechanism hybrid client server model with a novel security mechanism is developed to save the client waiting time in the queue. Integration of both wired and wireless technology, along with the proposed models in between client and server gives a new Hybrid model which provides the best performance when compared to existing topology. This model can be used for building distributed computing system in any corporate network where tasks such as sending packets through the devices can be done in efficient manner.