# An intelligent scheduling for Network Traffic Management System in congestion Control using GA

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**Abstract**

NETWORK traffic management can prevent a network from severe congestion and degradation in throughput delay Performance. Traffic congestion control is one of the effective approaches to manage the network traffic. Traffic management involves the design of a set of mechanisms which ensure that the network bandwidth and computational resources are efficiently utilized while meeting the various Quality of Service (QoS) guarantees given to sources as part of a traffic contract.The general problem of network traffic management involves all the available traffic classes. In existing intelligent congestion control use the Intel Rate Controller for the instantaneous queue size alone to effectively throttle the source sending rate with max-min fairness while does not considered the non linearity of the traffic control systems and external attacks. In this dissertation we concentrate our efforts on intelligent optimization techniques, such as genetic algorithms (GAs), intrusion detection system (IDS). In GAs facilitate an efficient non-linear function optimization paradigm and avoid congestion in traffic management. The intrusion detection system (IDS) is can detect the attacks. These evaluation result shows our new techniques can achieve better performances than the existing schemes.

**Keywords:** Congestion control, GA, QOS.

## Introduction

Future wireless networks are expected to consist of a variety of heterogeneous components and will aim to support interactive applications, such as voice over internet protocol (VoIP), online multiplayer games, and live sharing of multimedia contents in terms of video, audio, texts, or images among distributed users. In such a context, a network should be designed to provide quality of service (QoS) to inelastic traffic such as video and audio and simultaneously provide high data rate for elastic traffic, e.g., e-mail and web traffic. Therefore, how to perform congestion control and scheduling efficiently is crucial to achieve these key features for a wireless network. Different from wireline networks, the joint congestion control and scheduling in wireless networks is particularly challenging due to unreliability, time-varying channel (TVC) gain, and interference among wireless channels. The joint congestion control and scheduling can be formulated as a network utility maximization (NUM) problem [1]–[7]. Under the setting that each node has no buffer, the NUM problem can be solved in a distributed manner by iteratively updating the link price, which is the sum of the per-hop prices [1], [5]. This mechanism requires that each link calculates and feeds back the per-hop prices to the source, thus inducing a lot of overhead. In predestination queueing networks, the optimal solution for the NUM problem can be obtained by the primal–dual algorithm within the network capacity region [8], [9], which requires that each node maintains a queue for each flow. Works such as [6] and [7] optimize the end-to-end delay performance by the NUM problem.

## Problem Statement

eXplicit Congestion Control (XCC) protocols have shown promising resultsin early simulation and implementation studies, helping to reduce networklatency and jitter, as well as to increase the throughput stability and theefficiency of resource utilization. These characteristics help to create a media friendly network, and to keep the network efficiency high even when thebandwidth delay product of networks scale. However, such benefits can onlybe enjoyed by fixed-capacity networks: the fundamental assumption of thedesign of XCC algorithms is that the capacity of the transmission mediumis fixed or, at least, known by the router.

## Related Work

The MAC source address of all packets sentto the medium - even those not destined to the monitoring station -and counting the number of unique addresses. The persistent queue length of the node, that is, the minimumlength of the queue observed during the control interval. The average number of link layer retransmissions. The authors donot specify how to obtain this value, hence we assume that it consists ina moving average of the number of link layer retransmissions performedby that station alone in each control interval.

Additionally, WXCP proposes a pacing mechanism and a loss recovery mechanismwhich improve throughput smoothness and robustness to packet loss.These mechanisms, in our opinion, are minor improvements to the basicWXCP since the core of the algorithm behavior will be driven by the explicitfeedback.The WXCP feedback function is similar to that of XCP, differing on thecalculation of the available bandwidth and on the inclusion of an additionalcongestion metric, the average number of link layer retransmissions. It consistsin an alternative algorithm, designed for XCP, but applicable to otherXCC protocols such as RCP, which enables the operation of XCC protocolsin IEEE 802.11, a variable capacity transmission medium.From our point of view WXCP has some limitations. Firstly, it requiresstations to constantly monitor the medium and inspect the MAC header ofevery packet - even if the packets which are not destined to the monitoringstation.

**Method**

**Genetic Algorithm**

**Initialization**

A multi-objective model to optimally control the resources allocated to the service stations in both approaches, namely resources as servers and resources affecting servers, using Genetic algorithm and multi objective programming.

Algorithm: The GA for Petri nets

Step1: generate initial population.

Step2: evaluate Process N(0).

Step3: for each process from the set n do

Step4: Select process N(i)

Step5: identify the transition path to visit all processes.

Step6: divide path into disjoint paths Ni.

Step7: perform crossover on Ni.

Step8: apply deletion mutation I to N(i).

Step9: apply deletion mutation II to N(i).

Step10: apply insertion mutation III to N(i).

Step11. Evaluate N(i).

end

End.

**b.Crossover Operation**

This network was represented as a network of queues, where several servers are in each service station and the capacity of the system is infinite.

**c.Mutation**

The probability that the project completion time does not exceed a certain threshold was considered as the last objective. Finally, the goal attainment method was employed to solve a discrete-time approximation of the primary multi-objective problem.

**Results and Discussion**

To demonstrate the feasibility of the proposed genetic algorithm method we solve 2 different cases, respectively for the following 5 sets of c to find a set of Pareto-optimal solutions in each case.

**Conclusion**

In this paper, we described a star-based architecture for multicast key management. Our schemes are based upon the genetic Algorithm cryptosystem that is the most popular technique and has been widely used in many years. Therefore, the security of our schemes is based on the difficulty of factoring large numbers. Compared with the k signatures schemes, our schemes do not require any attacking process as well as Reduce the processing time and ransmission size for a secure multicast.

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