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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : JURNAL ILMIAH

Judul Jurnal Ilmiah (Artikel) : A Policy-Based Admission Control Scheme for Voice over IP Networks

Jumlah Penulis : 2 orang (Sami Alwakeel and **Agung Prasetijo**)
Status Pengusul : penulis ke-2
Identitas Jurnal Ilmiah :

a.	Nama Jurnal	:	Journal of Computer Science
b.	Nomor ISSN	:	ISSN: 1549-3636 (Print), ISSN: 1552-6607 (Online)
c.	Vol, No., Bln Thn	:	Volume 5, Issue 11 (2009)
d.	Penerbit	:	Science Publications
e.	DOI artikel (jika ada)	:	https://doi.org/10.3844/jcssp.2009.817.821
f.	Alamat web jurnal	:	https://thescipub.com/abstract/jcssp.2009.817.821
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g.	Terindex	:	Scopus, Q4

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Nilai Pengusul = (40% x 37,88) = 15,15			

Semarang, 15 Juli 2021

Reviewer 2

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2. **Ruang lingkup dan kedalaman pembahasan:**
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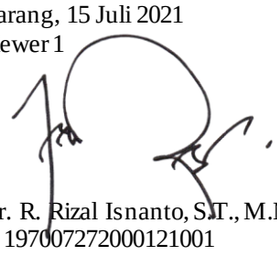

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b. Ruang lingkup dan kedalaman pembahasan (30%)	12,00			11,50
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2. **Ruang lingkup dan kedalaman pembahasan:**
   Paper membahas perbandingan metode Open window dan Leaky Bucket untuk menerima koneksi dari client VoIP pada saat utilitas bandwidth mendekati 100%. Pembahasan dilakukan dengan simulasi NS-2 membandingkan parameter kinerja seperti delay dan jitter yang merupakan faktor penting untuk aplikasi VoIP. Tidak hanya itu, pengukuran juga dilakukan untuk paket VoIP yang diproses, drop rate, serta packet loss sehingga memberi gambaran yang jelas dan lengkap.
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   Kualitas terbitan baik, terindeks Scopus dengan SJR 0,119 (Q4).

Semarang, 15 Juli 2021
Reviewer 2

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A policy-based admission control scheme for voice over IP networks

Alwakeel S., Prasetijo A.

Save all to author list

Department of Computer Engineering, College of Computer and Information Sciences, King Saud University, Riyadh 11543, P.O. Box 51178, Saudi Arabia

Abstract

Problem statement: In Voice Over IP (VOIP) network, when more calls are admitted to the network, more voice packet traffic is created. Since bandwidth is always limited, this may result network congestion and/or may affect voice quality. Thus, we needed a mechanism for improving the Quality of Service (QoS) by controlling VOIP calls admission. Approach: Given a specified bandwidth and a constant background data rate, we attempted to explore the effect of Open Window and Leaky Bucket admission schemes on VoIP calls quality. These policy-based admission controls were simulated using NS-2 Simulator. The inter-arrival time distribution for the network background data traffic was assumed to be deterministic with a Constant Bit Rate (CBR). Voice packets traffic inter-arrival time is assumed to have an exponential distribution. Each voice call has a rate of 64 kbps

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Application of a Database in the Monitoring of Workstations in a Local Area Network (/abstract/jcssp.2009.811.816)

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Journal of Computer Science **2009**, 811-816
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A Policy-Based Admission Control Scheme for Voice over IP Networks (/abstract/jcssp.2009.817.821)

Sami Alwakeel and Agung Prasetijo

Journal of Computer Science **2009**, 817-821
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Journal of Computer Science 5 (11): 817-821, 2009
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A Policy-Based Admission Control Scheme for Voice over IP Networks

Sami Alwakeel and Agung Prasetijo
Department of Computer Engineering, College of Computer and Information Sciences,
King Saud University, Riyadh, Kingdom of Saudi Arabia

Abstract: Problem statement: In Voice Over IP (VOIP) network, when more calls are admitted to the network, more voice packet traffic is created. Since bandwidth is always limited, this may result network congestion and/or may affect voice quality. Thus, we needed a mechanism for improving the Quality of Service (QoS) by controlling VOIP calls admission. **Approach:** Given a specified bandwidth and a constant background data rate, we attempted to explore the effect of Open Window and Leaky Bucket admission schemes on VoIP calls quality. These policy-based admission controls were simulated using NS-2 Simulator. The inter-arrival time distribution for the network background data traffic was assumed to be deterministic with a Constant Bit Rate (CBR). Voice packets traffic inter-arrival time is assumed to have an exponential distribution. Each voice call has a rate of 64 kbps for duration of 120 min. **Results:** Various performance measures of VoIP calls and packet traffic were evaluated including: packet loss, packet drop rate, delay, jitter and call rejection rate. Performance results of the experiment are summarized in a power ratio index which presented the impact of a collection of performance parameters on VoIP service quality. **Conclusion:** Implementing a policy based admission scheme on VoIP network will improve its QoS and the degree of improvement depends on the network setting parameters. If threshold rate for call admission is set above network ceiling bandwidth, leaky bucket will result a higher and unacceptable jitter. Overall, leaky bucket scheme was considered inferior when compared to open window for improving QoS of VoIP.

Key words: Voice over IP, Call admission control, Leaky bucket, Open Window Policy schemes

INTRODUCTION

Voice and video transmission over telecommunication networks requires specific performance quality. If such quality is not maintained, the receiving end will then suffer-e.g., the received video freezes or there will be unacceptable delay in voice. Similarly, transmitting voice over IP networks will have the same challenge. With this in mind, a call admission controller in VoIP networks is needed to maintain voice quality over a limited bandwidth link. Call admission control will determine if a call will be accepted or rejected based on network resource availability.

Several admission mechanisms are available for Call Admission Control (CAC) over the Internet. Example of these are IntServ architecture which uses RSVP signaling protocol for reserving resources in a router[1] and EMBAC protocol which use probes transmission to estimates networks state from sender to receiver[2-4]. Other techniques for conducting call admission control are based on diffusion approximation which calculates bandwidth for a number of connections with given cell loss requirement[5]. Various CAC schemes were also developed for ATM networks[6]. Besides, CAC mechanisms are considered for wireless networks and in IEEE 802.11e standard environment to enhance its performance[4,7].

In this study, we apply packet admission control schemes currently in use for ATM cell switching networks, to improve VoIP traffic QoS. Two schemes, namely leaky bucket and open window are simulated to evaluate their impact on VoIP performance in term of packet delay, jitter, call drop and VoIP packet loss.

VoIP policy scheme description: This study proposes a policy-based admission control scheme for VoIP traffic. With such a policy, a VoIP server will check the availability of bandwidth every time when there is a new call request. Two policy-based schemes were investigated namely: Open Window and Leaky Bucket. Both mechanism works as follows: First, they estimate the average network traffic rate and compare it to a threshold rate set by the server. If the average traffic rate is less than the threshold, the system will admit the

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Enhanced Utility Accrual Scheduling Algorithms for Adaptive Real Time System

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Abstract: Problem statement: This study proposed two utility accrual real time scheduling algorithms named as Preemptive Utility Accrual Scheduling (PUAS) and Non-preemptive Utility Accrual Scheduling (NUAS) algorithms. These algorithms addressed the unnecessary abortion problem that was identified in the existing algorithm known as General Utility Scheduling (GUS). It is observed that GUS is inefficient for independent task model because it simply aborts any task that currently executing a resource with lower utility when a new task with higher utility requests the resource. The scheduling optimality criteria are based on maximizing accrued utility accumulated from execution of all tasks in the system. These criteria are named as Utility Accrual (UA). The UA scheduling algorithms are design for adaptive real time system environment where deadline misses are tolerable and do not have great consequences to the system. **Approach:** We eliminated the scheduling decision to abort a task in GUS and proposed to preempt a task instead of being aborted if the task is preemptive able. We compared the performances of these algorithms by using discrete event simulation. **Results:** The proposed PUAS algorithm achieved the highest accrued utility for the entire load range. This is followed by the NUAS and GUS algorithms. **Conclusion:** Simulation results revealed that the proposed algorithms were more efficient than the existing algorithm, producing with higher accrued utility ratio and less abortion ratio making it more suitable and efficient for real time application domain.

Key words: Adaptive real-time system, utility accrual scheduling, accrued utility ratio, discrete event simulation

INTRODUCTION

A real time system is a system where the time at which event occurs is important. Real-time scheduling is fundamentally concerned with satisfying application time constraints. In adaptive real time system an acceptable deadline misses and delays are tolerable and do not have great consequences to the system.

One of the scheduling paradigms in adaptive real time system environment is known as Time/Utility Function (TUF)[1]. A TUF specifies the utility of completing a task as an application function of when the task completes as shown in Fig. 1. The urgency of a task is captured as a deadline on X-axis and the importance of a task is measured by utility in Y-axis.

As illustrated in Fig. 1, completion of a task within the deadline (i.e., within the StartTime and TerminateTime) will accrue some positive utility (i.e., MaxAU) or zero utility otherwise.

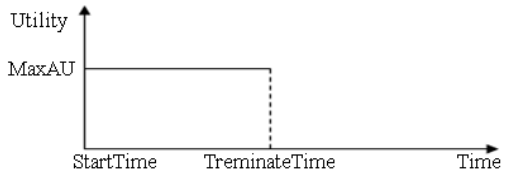

Fig. 1: The step TUF[1,2]

Objective: The scheduling objective of this research is to maximize the accrued utility from all executed tasks in the system. These criteria are named as Utility Accrual (UA) criteria[2]. A UA scheduling algorithm that maximizes the sum of tasks' attained utilities will seek to meet all task deadlines and naturally tend to favor task that are more important (from whom higher utility can be accrued) when the system is overloaded.

As suggested in the recent overview of the UA scheduling domain[3], one of the existing algorithms

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Application of a Database in the Monitoring of Workstations in a Local Area Network

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University of Calabar, Calabar, Nigeria
[2]Department of Electrical Engineering, Ahmadu Bello University, Zaria, Nigeria

Abstract: Problem statement: Computer hardware fault management and repairs can be a big challenge, especially if the number of staff available for the job is small. The task becomes more complicated if remote sites are managed and an engineer or technician has to be dispatched. **Approach:** Availability of relevant information when needed could ease the burden of maintenance by removing uncertainties. Such required information could be accumulated in a database and accessed as needed. **Results:** This study considered such a database, to assist a third party hardware maintenance firm keep track of its operations, including the machines that it services, together with their owners. A software application was developed in Java programming language, in the form of a database, using Microsoft Access as the database management system. It was designed to run on a local area network and to allow remote workstations to log on to a central computer in a client/server configuration. With this application it was possible to enter fault reports into the database residing on the central computer from any workstation on the network. **Conclusion/Recommendations:** The information generated from this data can be used by the third party hardware maintenance firm to speed up its service delivery, thus putting the firm in a position to render more responsive and efficient service to the customers.

Key words: Software application, database, fault logging, fault management, client/server

INTRODUCTION

Since the advent of computers, virtually every facet of human endeavour has been greatly influenced. Computers have made inroads into virtually every area of human activities, and their use has become so widespread that it is rather difficult to identify an area where computers have not yet been used to improve processing. The easy availability of computers for application in almost all areas of human endeavour has resulted in computers being found in most establishments. The use of the machine has developed so much that users do not now require deep knowledge of the inner workings of the systems to be able to use them for their daily and routine businesses. As a consequence, there is now a proliferation of computer systems, even in developing countries such as Nigeria. However, even though the operations of the systems have been made as simple as possible, systems still do break down. Unfortunately, the process of repairs has not seen a corresponding simplification. This is due to the very complex nature of the hardware. Apparently, in a bid to simplify the operations of the machines for the benefit of users, the machines have invariably become a lot more complex. This complexity is transparent to the user, but when faults occur, only the most basic of such faults can be cleared by the regular user. The rectification of other faults requires personnel with some reasonable measure of expertise.

Since it is not practicable, for various reasons, for all establishments that use computers to have on their payroll personnel with the required level of expertise to handle all of their computer system problems, the practice is for a specialist firm to be established specifically to render these services to computer user-organizations. Ideally, such a third-party service firm would need to keep track of its operations.

The objective of this study is to describe a software application package, developed in the form of a database that can be employed by the third-party service firm to improve its services to the customers. With the data held in the database, and the information generated from it, the firm should be in a position to render more efficient service to the customers.

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