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

Judul Karya Ilmiah : Simple Smart Algorithm for Flexibility of Dynamic Allocation in DHCP Server for SOHO Wireless Router

Jumlah Penulis : 3 Orang (Wahyul Amien Syafei, Yosua Alvin Adi Soetrisno, **Agung Budi Prasetyo**)

Status Pengusul : Penulis ke-3

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Total = (100%)	23,45	23,80	23,63
Nilai Pengusul = $(40\% \times 23,63) / 2 = 4,73$			

Semarang, 15 Juli 2021

Reviewer 2



Dr. Adian Fatchur Rochim, S.T., M.T.
NIP. 197302261998021001
Unit : Dept. Teknik Komputer FT UNDIP

Reviewer 1



Dr. Ir. R. Rizal Isnanto, S.T., M.M., M.T., IPM
NIP. 197007272000121001
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1. Kesesuaian dan kelengkapan unsur isi prosiding:

Isi Prosiding CENIM 2020 sudah cukup lengkap, paper-paper yang diterbitkan dalam prosiding ini juga sesuai dengan cakupan topik dari prosiding ini. Technical Program Committee dan Presentation Schedule telah sesuai, serta layak disebut sebagai prosiding internasional terindeks Scopus dan IEEE Xplore.

2. Ruang lingkup dan kedalaman pembahasan:

Ruang lingkup adalah membahas tentang algoritma Simple Smart untuk Fleksibilitas dari alokasi dinamik pada server DHCP untuk router nirkabel SOHO. Pada bagian *Performance Examination* dan *Conclusion and Future Works* telah dilakukan cukup mendalam dan terperinci. Tingkat kemiripan menggunakan Turnitin dari paper cukup bagus yaitu 5%

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

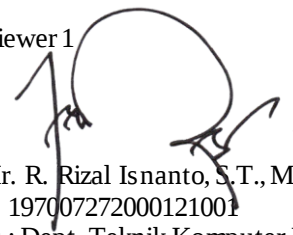
Data/informasi yang disajikan cukup mutakhir, terdapat 11 referensi yang digunakan yang berasal dari jurnal internasional, prosiding internasional, dan paten. Referensi cukup mutakhir dari tahun-tahun terakhir. Metodologi telah disajikan secara lengkap dan penyajiannya cukup lengkap.

4. Kelengkapan unsur dan kualitas terbitan:

Kualitas terbitan cukup bagus untuk kategori prosiding tercetak. Unsur terbitan dari prosiding sudah sesuai dengan kaidah yang biasa terdapat dalam prosiding internasional.

Semarang, 15 Juli 2021

Reviewer 1



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d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	7,50		7,30
Total = (100%)	25,00		23,80
Nilai Pengusul = (40% x 23,80) / 2 = 4,76			

Catatan Penilaian Paper oleh Reviewer :

1. Kesesuaian dan kelengkapan unsur isi paper:

Artikel memenuhi unsur yang ditetapkan pada petunjuk penulisan naskah konferensi. Topik tentang algoritma yang diusulkan diklaim 10 kali baik dalam melayani klien dibandingkan wireless router SOHO. Bidang kajian Teknik elektro/teknik komputer.. Kesimpulan dan saran (future work) tersedia di akhir paper.

2. Ruang lingkup dan kedalaman pembahasan:

Ruang lingkup sesuai dengan scope konferensi. Pembahasan dilakukan secara logis, dengan membandingkan secara langsung 3 kondisi: dengan router SOHO standar, OpenWRT yang dimodifikasi, serta OpenWRT dengan algoritma yang dimodifikasi. Pembahasan cukup mendalam disertai dengan eksperimen pada release time DHCP antara OpenWRT dengan mode DHCP dan mode DHCP relay. Python digunakan untuk membuat algoritma agen cerdas untuk menangani DHCP. Eksperimen dengan router SOHO standar, OpenWRT yang dimodifikasi. Hasil ditampilkan dalam satu tabel sehingga memudahkan pembaca dalam menganalisa hasil dan pembahasannya.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi:

Penggunaan referensi yang mutakhir (2019) dan metodologi *uptodate* mengakomodasi perkembangan riset dan studi literatur terbaru.

4. Kelengkapan unsur dan kualitas terbitan:

Jumlah negara baik editor maupun peserta konferensi memadai, serta terbitan terindeks Scopus.

Semarang, 15 Juli 2021

Reviewer 2



Dr. Adian Fatchur Rochim, S.T., M.T.
NIP. 197302261998021001
Unit : Dept. Teknik Komputer FT UNDIP

CERTIFICATE

it is hereby certified that

Wahyul Amien Syafei

has contributed as

PARTICIPANT

in International Conference of Computer Engineering, Network, and Intelligent Multimedia 2020
with topic "Advancing Computer Engineering, Network, and Intelligent Multimedia to Support Society
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Simple Smart Algorithm for Flexibility of Dynamic Allocation in DHCP Server for SOHO Wireless Router

Syafei W.A. ✉, Soetrisno Y.A.A. ✉, Prasetijo A.B. ✉

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Diponegoro University, Department of Electrical Engineering, Semarang, Indonesia

Abstract

Author keywords

SciVal Topics

Funding details

Abstract

An inherit problem exists in the small office home office (SOHO) wireless router is the connectivity issue, specially when dynamic host configuration protocol (DHCP)'s pool is running out. SOHO wireless router is designed to serve a small number of wireless clients. The modification of the OS is possible with some restrictions, especially the size. This research has modified the wireless router OS using simple smart algorithm to enhance the flexibility of dynamic allocation in DHCP server for SOHO wireless router. It switches the selection process of DHCP server that considering resource allocation of each joined DHCP relays. The modified wireless router is able to serve more than 10 times connected clients compared to using the original firmware with more than twice longer service time duration. This paper deals with the examination of the proposed simple smart algorithm in real SOHO wireless router. © 2020 IEEE.

Author keywords

Cisco; DHCP; network; relay; server; simple algorithm; SOHO; wireless router

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(2019) *2019 6th International
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(2017) *Proceedings - 2017 International Conference on Computer Network, Electronic and Automation, ICCNEA 2017*, 2017-January, pp. 268-271. Cited 3 times.
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Simple Smart Algorithm for Flexibility of Dynamic Allocation in DHCP Server for SOHO Wireless Router

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Abstract— An inherit problem exists in the small office home office (SOHO) wireless router is the connectivity issue, specially when dynamic host configuration protocol (DHCP)'s pool is running out. SOHO wireless router is designed to serve a small number of wireless clients. The modification of the OS is possible with some restrictions, especially the size. This research has modified the wireless router OS using simple smart algorithm to enhance the flexibility of dynamic allocation in DHCP server for SOHO wireless router. It switches the selection process of DHCP server that considering resource allocation of each joined DHCP relays. The modified wireless router is able to serve more than 10 times connected clients compared to using the original firmware with more than twice longer service time duration. This paper deals with the examination of the proposed simple smart algorithm in real SOHO wireless router.

Keywords—SOHO; wireless router; DHCP; relay; server; Cisco; network; simple algorithm;

I. INTRODUCTION

Nowaday, wireless router becomes an essential device due the need for internet connectivity. It is used widely in small office, home, or dormitory because of its simplicity. User do not need any cable to connect to the internet which makes a tidy environment. The wireless router could support a network with several clients that require an Internet connection. Each client is provided both private and public internet protocol (IP) address. The IP distribution process could be helped by the DHCP server. It distributes the IP address to several network segments that joined in the network. However, the DHCP service can be unavailable because of the limit of the memory happened and a DHCP starvation attack [1]. In other side, the DHCP pool must always be available when clients in the specific part of the network request the connectivities.

In the network type C, a wireless router is able to provide IP address version 4 (IPv4) up to 253 clients [2]. However, for small coverage purpose as SOHO (small office home office) the number of connected client is limited to 15. Other problem is the connection may become unstable when it serves full clients for longer than 24 hours. Clients or other activities could overload the wireless router with low memory and low CPU so it is needed to be resetted. Switching of DHCP service served by the wireless router to DHCP relay could become an alternative solution for this problem because the DHCP relay takes the handling of the load.

Other solution is reprogramming the DHCP server. It can mitigate problems due to the lack of DHCP information because of the low resource. It is found that the resource of DHCP could be overwhelmed by the running service or by the attack. This solution also can handle the proprietary limitation of branded wireless router. Some of them which act as the DHCP server for DHCP relay only can be connected to the same brand. In this situation, the OpenWRT can be used to bridge this problem. After some modifications, the wireless router can be connected to some generic brand routers. [3].

Several researches have been done in DHCP field. Relay agent was used to add information and comprise a DHCP option in a generic router [4]. A combination of adaptive IP lease time and dynamic IP pool range was used to reduce IP peak usage based on usage pattern and user roles [5]. To limit DHCP broadcasting, MAC address of the client was stored somewhere in the network [6]. Factory firmware was modified by [8] to allow backward compatibility and co-existence of IP based application for different routers.

Other use of smart agen was proposed in [7], after detecting insufficient memory allocation, it switched to the nearest DHCP relay as a backup, automatically. [8] proposed the DHCP agent that could operate in multi-IP connection and pool scenario. It was located between two routers to monitor different network segments. Smart agent also could detect the presence of users requesting a route planning in a certain path. The path planning was used to reroute the DHCP load to another router when low service reservation happened [9].

As a continuation of the previous research [1], the main contribution of this research is developing a smart agent to control the DHCP packet and auto triggering router command. It is an alternative solution for connecting multi proprietary limited device. This solution overcomes the limitation of a connected client and enhances the durability of the service. The smart gen is developed by using Phyton and installed on the PC. This paper presents performance examination of the proposed simple smart algorithm in real SOHO wireless router under Cisco old series.

II. THE METHODOLOGY

In this section, the research methodology is briefly exposed in two aspects, i.e. the simple smart algorithm and the parts of the proposed system.



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Stroke is a cerebrovascular disease which could lead to physiological impairment, which affects one's ability to do activities of daily living. Several previous studies state that only small number of patients regain useful motoric abilities. This is due the fact of which patients' psychological needs are often neglected in a conventional rehabilitation. Hence, the development of rehabilitation methods which ease patient's psychological burden is necessary. The system used functional electrical stimulation with PID control, combined with repetitive game scenario. Seven normal subjects participated in this study. Average impaired hand movement error was 5.66° from target and range-of motion of 87.86% maximum flexion. Game object control accuracy reached 100%. Moreover, subjects showed improved accuracy by 37.18% at the end of the rehabilitation sessions. Impaired hand trajectory also follows control hand movement, proving the system feasibility for rehabilitation use. Future studies with real hemiplegic patient may provide further validation to the system effectiveness.

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Contents

I. Introduction

Stroke is a cerebrovascular disease involving blood vessels inside the brain, hence giving it ability to impair one's motoric ability if damaged. Two main causes of stroke attack are blood clotting and internal blood vessel ruptures [1]. According to World Health Organization (WHO), stroke world's second largest killer and third largest cause of disabilities [2]. Negative effects on stroke are multidimensional, affecting the patient's life quality, as well as their families and caregiver.

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High Priority Vehicles (HPVs) provide emergency services that require them to arrive at the service destinations without unexpected delays. Traffic regulations across the work emphasize this need by giving HPVs the highest priority on the road. However, prioritizing HPVs does not guarantee rapid emergency services in big cities, e.g., Surabaya, Indonesia, where roads are usually congested. In this paper, we present a smart navigation system as a mobile application that routes HPVs through the fastest paths to their destinations using Dijkstra's algorithm. It also communicates with the traffic lights so that HPVs can preemptively control the traffic signals in order to reduce delays at the intersections. We implemented the application on Android OS and built a traffic-light controller unit, which enables the application to interact with the traffic-light system seamlessly. We validated the efficacy of the proposed system through extensive experiments in a simulated environment.

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 Contents**I. Introduction**

Vehicles that provide various emergency services, e.g., rescue and security missions, require to arrival at the service destinations without unexpected delays. Traffic regulations around the world emphasize this need by giving these vehicles certain priorities on the roads. For example, ambulances and fire trucks have the privilege to drive through red lights at the intersections. Therefore, these vehicles, commonly known as High Priority Vehicles (HPVs), have the highest priority on the road that is shared by all road users (i.e., vehicles).

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The Autonomous Car is one of Artificial Technology's innovations in the driving field. Many features of Autonomous Car which are using a sensor. One of its navigation feature which use camera sensor to navigate using the traffic sign. But this navigation feature, which uses Traffic Sign, is implausible to be found in Indonesia. In this paper, it will be developed a Detection System for Autonomous Car to navigate using the Traffic Sign, so Autonomous Car can navigate according to the Traffic Sign, which is detected with the Autonomous Car. Using a camera sensor and YOLO Deep Learning, Autonomous Car will recognize the Traffic Sign and classified Traffic Sign as with its function. From this classification, Autonomous Car will respond as the detected Traffic Sign means and will activate Autonomous Car's Actuator.

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Contents

I. Introduction

Driving is an activity with many variations in decision-making and action. Based on the driver's effort, driving activities are divided into three tasks: strategic effort, tactical effort and operational effort [2].

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