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ICOIN 2015

The 29th International Conference on Information Networking

Conference Program

January 12 (Mon.) - 14 (Wed.), 2015
Siem Reap, Cambodia

Sponsored by KIISE Information Networking Society

Technically Co-sponsored by IEEE Computer Society and IEICE Communication Society

Korean Institute of Information Scientists and Engineers

IEEE

IEEE computer society

IEICE

ICOIN 2015 Program at a Glance

TIME	Track 1	Track2
January 11, 2015 (Sunday)		
16:00-18:00	Organizing Meeting	
January 12, 2015(Monday)		
08:30-09:00	Registration Open	
09:00-10:45	Tutorial (Naga & Rainbow)	
10:45-11:00	Coffee Break	
11:00-12:00	Opening Ceremony/Keynote Speech (Naga & Rainbow)	
12:00-13:00	Lunch Break (Citadel Restaurant)	
13:00-15:00	Oral 1 : Ad hoc/sensor networks I (Naga) Chair : Oh-Soon Shin, Soongsil Univ., Korea	Oral 2 : Security and privacy I (Rainbow) Chair : Sungrae Cho, Chung-AngUniv., Korea
15:00-16:00	Poster 1 : Multimedia service (Hallway) / Coffee Break Chair : Sanghwan Lee, Kookmin Univ., Korea	Poster 2 : WLAN, LTE, cognitive radio technology (Hallway) / Coffee Break Chair : Sanghwan Lee, Kookmin Univ., Korea
15:30-17:30	Oral 3 : Ad hoc/sensor networks II (Naga) Chair : Osamu Muta, Kyushu Univ., Japan	Oral 4 : Security and privacyII (Rainbow) Chair : Jaruwan Mesit, Grambling State Univ., USA
18:30-21:00	Welcome Reception (Poolside)	
January 13, 2015 (Tuesday)		
08:30-09:00	Registration Open	
09:00-10:00	Poster 3 : Information-centric Networking and Software Defined Networking (Hallway) / Coffee Break Chair : Ha Yoing Hwang, Hansung Univ., Korea	Poster 4 : Internet of Things and Internet Applications (Hallway) / Coffee Break Chair : Ha Young Hwang, Hansung Univ., Korea
10:00-12:00	Oral 5 : Network modeling, monitoring and management (Naga) Chair : Hwasung Kim, KwangWoon Univ., Korea	Oral 6 : Cellular networks (Rainbow) Chair : Nam Tuan Le, Kookmin Univ., Korea
12:00-13:00	Lunch Break (Citadel Restaurant)	
13:00-15:00	Oral 7 : Power, Localization, and Pricing in wireless networks (Naga) Chair : Sungoh Kwon, Univ.of Ulsan, Korea	Oral 8 Internet and web applications (Rainbow) Chair : Taeshik Shon, AjouUniv., Korea
15:00-16:00	Poster 5 : Network measurement, performance and security (Hallway) / Coffee Break Chair : Sang-Chul Kim, Kookmin Univ., Korea	Poster 6 : Wireless, Multi-hop, Delay-tolerant Networks (Hallway) / Coffee Break Chair :Sang-Chul Kim, Kookmin Univ., Korea
16:00-18:00	Oral 9 : Communication technology (Naga) Chair : Sanghyun Ahn, Univ. of Seoul, Korea	Oral 10 : Implementation, measurement and performance analysis (Rainbow) Chair : Hayoung Oh, SoongsilUniv., Korea
18:30-21:30	Banquet (Phokeethra Ballroom)	
January 14, 2015 (Wednesday)		
08:30-09:00	Registration Open	
09:00-11:00	Oral 11 : Software defined networks (Naga) Chair : MyungsikYoo, Soongsil Univ., Korea	Oral 12 : Routing, QoS and resource management (Rainbow) Chair : KuochenWang,National Chiao Tung Univ., Taiwan

- **Welcome Reception** – Date : January 12, 2015 / Time : 18:30 / Place : Poolside
- **Banquet** – Date: January 13, 2015 / Time: 18:30 / Place: Phokeethra Ballroom

January 10, 2015 (Monday)

15:00 - 16:00

POSTER SESSION 1

Multimedia service

Chair : Sanghwan Lee, Kookmin Univ., Korea

[P1-001] Considerations and Design on Apps for Elderly with Mild-to-moderate Dementia
Grantham Kwok-Hung Pang (The University of Hong Kong, Hong Kong); Enid Kwong (The Hong Kong Polytechnic University, Hong Kong)

[P1-002] Inter-symbol Interference Compensation for Bit Patterned Media Recording Storage
Seongkwon Jeong, Oh-Soon Shin, Chulhun Seo, Jaejin Lee (Soongsil University, Korea)

[P1-003] A Research on the QR Code Recognition Improvement using the cloud-based pre-generated Image Matching Scheme
Misun Ahn, Seunghyun Hong, Sungwon Lee (Kyung Hee University, Korea)

[P1-004] Media Synchronization Model based on Relation Flow for Multi-Screen Service
Svetlana Kim, Yong-Ik Yoon (Sookmyung Women's University, Korea)

[P1-005] New Interpolation Method Based on Combination of Discrete Cosine Transform and Wavelet Transform
Ramesh Kumar Lama, Goo-Rak Kwon (Chosun University, Korea)

[P1-006] Multimedia Delivery Mechanism Framework for Smart Devices based on Mega Data Center and Micro Data Center in PMIPv6 Environment
Aymen Abdullah Alsaffar, Eui-Nam Huh (Kyung Hee University, Korea)

[P1-007] Practical Design of Screen-to-Camera based Optical Camera Communication
Trang Nguyen, Nam Tuan Le, Yeong Min Jang (Kookmin University, Korea)

[P1-008] Effective Bandwidth Measurement for Dynamic Adaptive Streaming over HTTP
Jong-Min Jeong, Jong-Deok Kim (Pusan National University, Korea)

[P1-009] Transmission Model for Next-generation Digital Broadcasting Systems
Hyung-Yoon Seo (Pusan National University, Korea); Byungjun Bae (ETRI, Korea); Jong-Deok Kim (Pusan National University, Korea)

[P1-010] A Synchronized Playback Method with Dynamic Buffering Time Awareness for Media Streaming
Kisu Ok, Dongwoo Kwon, Hyeonwoo Kim, Huigwang Je, Taeyoung Kim, Hongtaek Ju (Keimyung University, Korea)

POSTER SESSION 2

WLAN, LTE, cognitive radio technology

Chair : Sanghwan Lee, Kookmin Univ., Korea

[P2-001] A Simulation Approach for Analysis of Multi-hop Connectivity in Cognitive Radio Ad-hoc Networks
Le The Dung and Beongku An (Hongik University, Korea)

[P2-002] Power Allocation Scheme for D2D Communications in an OFDM-Based Cellular System
Gil-Mo Kang, Jaejin Lee, Oh-Soon Shin (Soongsil University, Korea)

[P2-003] Hybrid Cooperative Spectrum Sensing Scheme for Cognitive Radio Networks
Nhu Tri Do, Beongku An (Hongik University, Korea)

[P2-004] Mitigation of the polarization sensitivity in OFDMA PON uplink transmission
Sang-Min Jung, Kyung-Hak Mun, Sang-Kook Han (Yonsei University, Korea)

[P2-005] Power Control for Cognitive Users in Coexistence with CSMA-based Primary Networks
Kwanhee Jeong (Samsung Electronics Co., Korea), Hyuk Lim (GIST, Korea); Hyunduk Kang (ETRI, Korea)

[P2-006] A Novel Medium Access Scheme for Cluster Based Device-to-Device Broadcast Communications
Jun Suk Kim, Jaheon Gu, Min Young Chung (Sungkyunkwan University, Korea); Hong June Seok (Kyonggi University, Korea)

[P2-007] A Design of 10 Gigabit Capable Passive Optical Network(XG-PON1) Architecture based on Software Defined Network(SDN)
Youngsuk Lee (Korea Gas Corporation, Korea); Younghan Kim (Soongsil University, Korea)

[P2-008] The Performance Evaluation of K-means by Two MapReduce Frameworks, Hadoop vs. Twister
Yunhee Kang (BaekSeok University, Korea); Young B. Park (Dankook University, Korea)

[P2-009] A Hybrid Service Discovery Approach to Mitigate Overhead Concentration on Resource Directory
Yoona Kim, Ki-Hyung Kim, Taeshik Shon and Kim Jai-Hoon (Graduate School of Ajou University, Korea)

[P2-010] Critical-path Aware Broadcast Scheduling in Duty-cycled Wireless Sensor Networks
Giyeol Im, Duc Tai Le, Hyunseung Choo (Sungkyunkwan University, Korea), Dongsoo S. Kim (Indiana University-Purdue University, USA)

January 11, 2015 (Tuesday)

09:00 - 10:00

POSTER SESSION 3

Information-centric Networking and Software Defined Networking

Chair : Ho Young Hwang, Hansung Univ., Korea

[P3-001] A Research on Transmission of Message and Voice using CCNx
Cheolhoon Kim, Sangyoon Han, Sungwon Lee (Kyung Hee University, Korea)

[P3-002] Content verification in Named Data Networking
SunWook Nam (Sungkyunkwan University, Korea); Dohyung Kim (KAIST, Korea); Ikjun Yeom (Sungkyunkwan University, Korea)

[P3-003] ICN-OMF: A Control, Management Framework for Information-Centric Network Testbed
Hyunwoo Lee, Donghyun Kim, Junho Suh, Ted "Taekyoung" Kwon (Seoul National University, Korea)

[P3-004] Autonomous Handoff Management of Heterogeneous Wireless Links Using SDN
Yumi Oh, Sungwon Lee (Kyung Hee University, Korea)

[P3-005] Assessing the Impact of Resource Attack in Software Defined Network
Hiep Tuan Nguyen Tri, Kyungbaek Kim (Chonnam National University, Korea)

[P3-006] RAON: A Recursive Abstraction of SDN Control-Plane for Large-Scale Production Networks
Myungchul Kwak, Hyunwoo Lee (Seoul National University, Korea); Jisoo Shin (ETRI, Korea); Junho Suh, Ted "Taekyoung" Kwon (Seoul National University, Korea)

[P3-007] Cloud-based Service Function Chaining with Distributed VMs and its Underlay-aware Improvement
Taeheum Na, JongWon Kim (GIST, Korea)

[P3-008] A Refinement Algorithm for Rank Aggregation Over Crowdsourced Comparison Data
Narae Hwang and Sanghwan Lee (Kookmin University, Korea)

[P3-009] Phoneme based realtime taboo words similarity browsing system of new words using multi-lingual taboo words databases in web environments
Saim Shin, Dalwon Jang and Jong-Seol Lee (KETI, Korea); Da-Hee Kim (Yon-Sei University, Korea); Sukhan Yoon (Sogang University, Korea)

POSTER SESSION 4

Internet of Things and Internet Applications

Chair : Ho Young Hwang, Hansung Univ., Korea

[P4-001] Efficient Bloom Filter Design for Information Hiding in Peer to Peer Social Networks
Narae Hwang and Sanghwan Lee (Kookmin University, Korea)

[P4-002] A Measurement Model for Trustworthiness of Information on Social Network Services
Yukyong Kim, Eun-Wha Jhee (Soongsil University, Korea); Jongwon Choe (Sookmyung Women's University, Korea); Jong-Seok Choi, Yongtae Shin (Soongsil University, Korea)

[P4-003] Prediction Model for Mental and Physical Health Condition using Risk Ratio EM
Yuchae Jung and Yongik Yoon (Sookmyung Women's University, Korea)

[P4-004] Behavior Tracking Model in Dynamic Situation using the risk ratio EM
Yuchae Jung and Yongik Yoon (SookMyung Women's University, Korea)

[P4-005] IoT Service Framework based on Mega Data Center and Micro Data Center in PMIPv6 Environment for Smart Devices
Aymen Abdullah Alsaffar and Eui-Nam Huh (Kyung Hee University, Korea)

[P4-006] E-government Service The case of e-tax filing In Thailand
Nakanya Chunsombat (Assumption University, Thailand)

[P4-007] Design of A Compact UWB Antenna for Multi-band Wireless Applications
Martins. C. Ezuma, Santosh Subedi, Jae-Young Pyun (Chosun University, Korea)

[P4-008] Designing Multi-level Connectivity for IoT-enabled SmartX Boxes
JongWon Kim (GIST, Korea)

[P4-009] DLNA Protocol Analysis Tool for Smart Device Interoperability Test
Yong-Suk Park, Se-Ho Park, Kyung-Taek Lee, Myung-Hyun Yoon (KAIST, Korea)

[P4-010] Research about relation of music preference and brain-wave
Dalwon Jang; Yoon Jung Park; Saim Shin; JongSeol Lee; Sei-Jin Jang; Tae-Beom Lim (KETI, Korea)

15:00 - 16:00

POSTER SESSION 5

Network measurement, performance and security

Chair : Sang-Chul Kim, Kookmin Univ., Korea

[P5-001] Deanonymizing Schemes of Hidden Services in Tor Network: A Survey
Sabita Nepal, Saurav Dahal and Seokjoo Shin (Chosun University, Korea)

[P5-002] Potentialities and challenges of VLC based outdoor positioning
Trong-Hop Do, Myungsik Yoo (Soongsil University, Korea)

[P5-003] An Improved NLOS Detection Scheme Using Stochastic Characteristics for Indoor Localization
Manato Horiba, Eiji Okamoto (Nagoya Institute of Technology, Japan); Toshiko Shinohara, Katsuhiko Matsumura (Daifuku Co., Ltd., Japan)

[P5-004] Prediction technique for resource allocation in Micro Data Center
Cong-Thinh Huynh, Eui-Nam Huh (Kyung Hee University, Korea)

[P5-005] Ethernet Switch/terminal Simulators for Novices to Learn Computer Networks
Yasuei Kanada (Kogakuin University, Japan)

[P5-006] Homomorphic Encryption in Mobile Multi Cloud Computing
Maya Louk, Hyotaek Lim (Dongseo University, Korea)

[P5-007] Cryptanalysis of An Anonymous Multi-Server

Multimedia Delivery Mechanism Framework for Smart Devices based on Mega Data Center and Micro Data Center in PMIPv6 Environment

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***Abstract*—Now days, big data (e.g. multimedia content, document, data in social network, etc) is growing fast and requiring more big storage area which is capable to process all that data efficiently in short time as well as having efficient delivery system to deliver that data to diversity of devices when they access the internet anytime from anywhere.**

Keywords—component; mega data center; micro data center; pmipv6; smart devices; big data; cloud computing

I. INTRODUCTION

Now days Wireless Network Technology is rapidly developing and adding more capabilities to it [1]. Variety of smart devices (e.g. smart phones, smart TV, smart tablets, etc) are able to connect to wireless network to preform diversity of services (e.g. shopping, receiving and sending multimedia, etc) [2]. Most of the services are preformed wirelessly outside user's resident (e.g. vehicle, airplane, walking, etc) [3]. Most of these services are accomplished by continuously sending and receiving small/big size of data to centralized data storage which might lead to long respond delay, long data delivery delay, long overhead to the network and limited data storage because of continuously re-sent data [4].

As a result, close by Micro Data Centers that is geographically located nearby user location and connected to Mega Data Center which is capable to process that data is an efficient approach to overcome above mentioned issues. The mega data center will act as a storage area for a diversity of multimedia contents as well as software. Software-led infrastructure will be the foundation of mega data center where network function, computer and storage will be provided by layers of control software running on commodity hardware [5]. Mega data center reduces the cost of IT management, ability to access limitless amount of internet and internet industrial internet data [5]. Micro data center is a versatile combination of software, hardware and cabling that servers as an end-to-end network hub which is similar to telecommunications network [6]. Micro data center can act as standalone system that can run application such as 1) process and monitoring event, 2) manage and control network, 3) IoT tracing and manage assets, and 4) scheduling [6]. In wireless network, mobility management and security protection are very critical and important issues that must be considered for users and service provider. Most of the services are done using wireless network. Mobility management is achieved by implementing Proxy mobile IPv6 which was developed by Internet Engineering Task Force (IETF) [7].

Our contribution in this paper are to 1) provide mobility management, 2) provide security protection for wireless communication, 3) provide unique methods to deliver and receive data, and 4) provide new communication protocols between MN, mega data center, micro data center and 3rd party mega data center in order to retrieve and send data in short time, and 5) guarantee Quality of Service (QoS) not only from user home mega data center but also from 3rd party mega data centers.

The rest of this paper is organized as follow; in section II we explain our system architectures and scenarios. In section III, we explain possible multimedia delivery scenario and present our new communication protocols. In section IV, we present our conclusion and future.

II. PROPOSED SYSTEM ARCHITECTURE AND SCENARIO

A. System Architecture

Fig.1 illustrates our system architecture and system components. It consists of Proxy Mobile IPv6 domain component (e.g. MN, MAG, AAA Server, and LMA), Micro data center, Mega data center, Broker server, MDC location server and 3rd part Mega data center. Micro data center will act as a huge cache storage area which also capable of computation located near user's location. Mega data center will act as main storage area. Broker server will act similar to service provider where it receives requests and provide the service to users (e.g. Multimedia, data, voice, etc). Micro Data Center Location Server (MDCLS) will store all micro data center location for fast retrieval/obtain information about stored data current location and finally delivery to user locations.

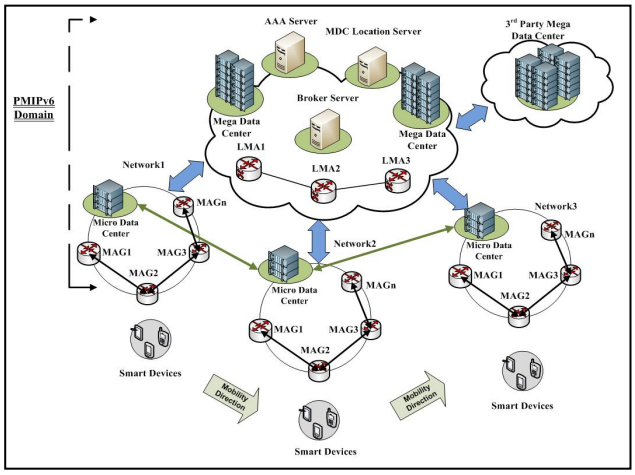

Fig. 1 Our Proposed System Architecture

B. *Service Scenario*

The user request any services (e.g. video on demon, etc) by sending request to broker server in cloud computing. The broker will request it from nearest micro data center. Upon authentication , the user receive the services from nearby micro data center. The issues here, is how to create efficient methods (e.g. new communication protocol, fast authentication mechanism, fast handover etc) in order to provide a variety of services. In case the user home service does not have the requested MIPTV service, the broker will request the service from nearby 3rd party mega data center which in return will forward the service to micro data center. The issue here is how the 3rd party know the location of micro data center to send the service.

III. MULTIMEDIA DELIVERY CASES AND COMMUNICATION PROTOCOLS

Fig. 1 illustrates our system architecture which consists of many network areas.

A. *Multimedia Delivery Possible Cases*

Multimedia delivery can be divided into inter domain multimedia delivery and intra domain multimedia delivery and the same apply to user authentication. In both domains, we can have many micro data centers connected to each other. The user can request multimedia from nearby micro data center or from mega data center. The user request can be obtained from multiple data centers as well. The issues here are; 1) How can we guarantee the existence/searching of multimedia in these location or not, 2) How can micro data center contact other micro data centers as well as mega data center to request multimedia, 3) How can we delivery multimedia content efficiently in short time without long delays, and 4) How can we protect service, user and multimedia content from other security threat.

B. *New Communication Protocol for Multimedia Delivery*

Communication protocol is need between mobile node, mobile access gateway, micro data centers and mega data center. This will allow all these entities to efficiently communicate with each other's in order to deliver data efficiently which will reduce delivery time, efficiently use the resource and bandwidth, provides quality of service and quality of experience for users. Multimedia content will be delivered from 1) Mega data center to micro data center and finally to user device or from Micro data center to another one and final to user devices. It is also possible that multimedia content can be delivered from more than one micro data center. As a result, we have three possible cases of delivering multimedia content to user's devices.

IV. CONCULSION

In this paper, we have proposed multimedia deliver mechanism framework for smart devices based on mega data center and micro data center in pmipv6 environment. We presented possible case for delivering multimedia content or any other services to smart devices from mega data center, micro data center, and 3rd party mega data center. The developed method will overcome the following issues long hand over, long authentication, long overhead in the network and long delay for data delivery.

ACKNOWLEDGMENT

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