2015 17th Asia-Pacific Network Operations and Management Symposium (APNOMS 2015)

Busan, South Korea
19-21 August 2015

Technical Session 1: SDN Management I

Date : Wednesday, 19th August 2015, 14:25-16:05, Ballroom A
Chair : Seung-Joon Seok (Kyungnam University, Korea)

TS1-1	Towards Consistent Software Defined Networking with Logic Programming 1 *Eric Lui*, Yu-Sung Wu*, Patrick Ngai*, Tung-Yueh Lin*, Hong-Wei Li*, Shih-Yi Huang*** *(National Chiao Tung University, Taiwan)*,(Chunghwa Telecom Laboratories, Taiwan)***
TS1-2	Ryuo: Using High Level Northbound API for Control Messages in Software Defined Network 7 *Shaoyu Zhang*, Yao Shen*, Matthias Herlich**, Kien Nguyen***, Yusheng Ji**, Shigeki Yamada*** *(Shanghai Jiao Tong University, China)*, (National Institute of Informatics, Japan)**, (National Institute of Information and Communications Technology, Japan)****
TS1-3	A Telco's Perspectives: Open and Flexible Transport SDN 13 *Choon-Gul Park, Chan-Kyou Hwang, Ki-Tae Jeong (KT, Korea)*
TS1-4	Towards a Detailed OpenFlow Emulator 19 *Yi-Jun Cheng*, Daniel Huang*, Cheng-Lin Lee*, Mu-Che Lee*, Bo-Wei Chuang*, Meng-Chen Tsai*, Xin Huang**, and Cheng-Hsin Hsu* (National Tsing Hua University, Taiwan), (Cyan Inc.,USA)***

Technical Session 2: Ad Hoc & Cellular Network Management

Date : Wednesday, 19th August 2015, 14:25-16:05, Ballroom B
Chair: Takumi Miyoshi (Shibaura inst. Tech., Japan)

TS2-1	Road Aware QoS Routing in VANETs 25 *Zubair Amjad, Wang-Cheol Song (Jeju National University, Korea)*
TS2-2	Performance Evaluation of Time Slot Based QoS Aware Ad Hoc Network Scheme for CBR and TCP Flows 31 *Jing Lin, Celimuge Wu, Satoshi Ohzahata, and Toshihiko Kato* *(University of Electro-Communications, Japan)*
TS2-3	IPv4 and IPv6 Performance Comparison in IPv6 LTE Network 37 *Jonghwan Hyun*, Jian Li*, Hwankuk Kim**, Jae-Hyoung Yoo* and James Won-Ki Hong**** *(Department of Computer Science and Engineering, POSTECH, Korea)*,* *(Division of IT Convergence Engineering, POSTECH, Korea)**, (KISA, Korea)****
TS2-4	Load-Sharing based on Relay-aided Cooperative Modeling in Uplink Two-Tier Cellular Networks 43 *Tuan LeAnh, Nguyen H.Tran, S. M. Ahsan Kazmi, Thant Zin Oo, Kyi Thar, Tai Manh Ho, Choong Seon Hong* *(Kyung Hee University, Korea)*

Technical Session 3: Wireless and Mobile Network Management

Date : Wednesday, 19th August 2015, 16:35-18:15, Ballroom A
Chair : Chih-Wei Yi (NCTU, Taiwan)

TS3-1	Location Selection with User Behavior Analysis for Telecom Operator's Service Halls 49 *Jie Zhang, Lanlan Rui, Shaoyong Guo, Xue-song Qiu, Ao Xiong* *(Beijing University of Posts and Telecommunications, China)*
TS3-2	Energy-efficient Method of Data Transmission in the Mobile Network 55 *Wonjun Choi*, Ramneek*, Woojin Seok*** *(Korea University of Science and Technology, Korea)*, (KISTI,Korea)***
TS3-3	Data Offloading in Heterogeneous Cellular Networks: Stackelberg Game Based Approach 60 *Tai Manh Ho, Nguyen H. Tran, Cuong T. Do, S.M Ahsan Kazmi, Tuan LeAnh, Choong Seon Hong* *(Kyung Hee University, Korea)*
TS3-4	A simple real-time handover management in the mobile satellite communication networks 66 *Wu Zhaofeng*, Hu Guyu*, Younes Seyedi**, Jin Fenglin** *(PLA University of Science and Technology,China)*,(Polytechnique Montreal, Canada)***

Technical Session 4: Traffic & Fault Management

Date : Thursday, 20th August 2015, 10:30-12:10, Ballroom B
Chair : Sangheon Pack (Korea University, Korea)

TS4-1	Efficient Payload Signature Structure for Performance Improvement of Traffic Identification 72 *Woosuk Jung*, Jun-Sang Park*, Jae-Hyun Ham**, Myung-Sup Kim** *(Korea University, Korea)*, (ADD, Korea)***
TS4-2	A Metric-Correlation-Based Distributed Fault Detection Approach in Wireless Sensor Networks 78 *Qian Liu, Yang Yang, Xuesong Qiu (Beijing University of Posts and telecommunications, China)*
TS4-3	Signature Management System to cope with Traffic Changes in Application and Service 84 *Kyu-Seok Shim*, Sung-Ho Yoon*, Mi-Jung Choi**, Myung-Sup Kim** *(Korea University, Korea)*, (Kangwon National University, Korea)***
TS4-4	Android Malware Detection using Multivariate Time-Series Technique 90 *KiHyeon Kim, Mi-Jung Choi (Kangwon National University, Korea)*

Technical Session 5: Contents-Oriented Network Management

Date : Thursday, 20th August 2015, 13:10-14:50, Ballroom B
Chair: Hiroaki Morino (Shibaura Institute of Technology, Japan)

TS5-1	Hybrid Caching and Requests Forwarding in Information Centric Networking 95 *Kyi Thar ,Saeed Ullah,Rim Haw,Tuan Le, Thant Zin Oo, Choong Seon Hong (Kyung Hee University, Korea)*
TS5-2	Routing for Content Oriented Networks using Dynamic Ant Colony Optimization 101 *Shintaro Manome, Takuya Asaka (Tokyo Metropolitan University, Japan)*
TS5-3	Dynamic lightpath establishment for achieving low power all-optical networks 107 *Kouji Hirata*, Kohei Ito**, Yutaka Fukuchi**, Masahiro Muraguchi*** *(Kansai University, Japan)*, (Tokyo Institute of Technology, Japan)***
TS5-4	Adaptive Multipath Routing for Large-scale Layered Networks 113 *Erina Takeshita, Naoki Wakamiya (Osaka University, Japan)*

Technical Session 6: Multimedia & Service Management

Date : Thursday, 20th August 2015, 15:20-17:25, Ballroom A
Chair: Louis Kuo (CHT, Taiwan)

TS6-1	A Media Distribution Tree Construction Method Using a Maximum Spanning Tree for Mobile Smart Devices 119 *Dongwoo Kwon, Hongtaek Ju (Keimyung University, Korea)*
TS6-2	Effective Resource Multiplexing for Scientific Workflows 124 *Young Choon Lee, Thomas Ryan (Macquarie University, Australia)*
TS6-3	A Real-Time Stream Recovery Scheme for Recording IPTV Programs 130 *Chih-Jung Lin, Chi-Shi Liu, Yin-Hwa Huang, Chun-Wei Hsu (Chunghwa Telecom Laboratories, Taiwan)*
TS6-4	Web Performance Acceleration by Caching Rendering Results 136 *Yuusuke Nakano, Noriaki Kamiyama, Kohei Shiomoto, Go Hasegawa, Masayuki Murata, Hideo Miyahara (Osaka University, Japan)*
TS6-5	Probabilistic Modeling for IPTV Network Diagnosis and Troubleshooting 142 *Kuan-Wei Wu, Yan-Yih Wang, Chih-Meng Huang, Chih-Chia Chan* *(Telecommunication Laboratories, Chunghwa Telecom, Taiwan)*

Technical Sessions

Technical Session 7: Distributed and Accounting Management

Date : Thursday, 20th August 2015, 15:20-17:25, Ballroom B
Chair: Woojin Seok (KISTI, Korea)

TS7-1	Providing flexible authorization for shared group spaces by the attribute registration system 148 *Yosuke Seki, Kenji Matsuura, Masahiko Sano, Tetsushi Ueta (Tokushima University, Japan)*
TS7-2	MOE-A Framework Integrating Network Performance Monitoring, Optimization and Evaluation 154 *Fuliang Li, Jiahai Yang, Xingwei Wang (Northeastern University, China)*
TS7-3	An Hourly Day-Ahead Paris Metro Pricing Scheme for Mobile Data Networks 160 *Huai-Sheng Huang*, Po-Han Lee*, Yu-Chee Tseng*, Bo Ting Lin**, Wan-Hsun Hu*** *(National Chiao Tung University, Taiwan)*,(Chunghwa Telecom Laboratories, Taiwan)***
TS7-4	Oligopoly Competition in Time-Dependent Pricing for Improving Revenue of Network Service Providers Considering Different QoS Functions 165 *Cheng Zhang, Bo Gu, Liu Zhi, Kyoko Yamori, Yoshiaki Tanaka (Waseda University, Japan)*
TS7-5	A Distributed Bandwidth Assignment Method for Large File Transfer with Time Constraints 171 *Kensuke Saito*, Kazuhiko Kinoshita** Nariyoshi Yamai***, Takashi Watanabe** *(Osaka University, Japan)*, (The University of Tokushima, Japan)**, (Tokyo University of Agriculture and Technology, Japan)****

Technical Session 8: SDN Management II

Date : Friday, 21st August 2015, 10:30-12:10, Ballroom B
Chair: Kiyohito Yoshihara (KDDI Labs, Japan)

TS8-1	The New Architecture of FC Storage Network based on Controller 177 *Yifei Lu*, Dong xu Han*, Zhenwei Zhang*** *(Nanjing University of Science and Technology, China)*, (Huawei Technologies Co. Ltd, China)***
TS8-2	Networking Agent for Overlay L2 Routing and Overlay to Underlay External Networks L3 Routing using OpenFlow and Open vSwitch 183 *Piyush Srivastava, Saket Saurav (PDPM Indian Institute of Information Technology Design and Manufacturing, India)*
TS8-3	PID-based Adaptive Control Plane Management Method for Software-Defined Networks 189 *Jian Li *,Jae-Hyoung Yoo**, James Hong** (Division of IT Convergence Engineering, POSTECH, Korea)*,(Department of Computer Science and Engineering, POSTECH, Korea)***
TS8-4	Minimizing Flow Initialization Latency in Software Defined Networks 195 *Yi-Ying Huang*, Meng-Wei Lee*, Tao-Ya Fan-Chiang*, Xin Huang**, Cheng-Hsin Hsu** *(National Tsing Hua University, Taiwan)*, (Cyan Inc., USA)***

Technical Session 9: IOT Management

Date : Friday, 21st August 2015, 13:10-14:50, Ballroom A
Chair: Edmundo Madeira (University of Campinas, Brazil)

TS9-1	A Fog based System Model for Cooperative IoT Node Pairing using Matching Theory 201 *Sarder Fakhrul Abedin, Md Golam Rabiul Alam, Nguyen H. Tran, Choong Seon Hong* *(Kyung Hee University, Korea)*
TS9-2	Universal Fault Detection for NFV using SOM-based Clustering 207 *Tomonobu Niwa*, Masanori Miyazawa*, Michiaki Hayashi*, Rolf Stadler*** *(KDDI R&D Laboratories Inc., Japan)*, (KTH The Royal Institute of Technology, Sweden)***
TS9-3	A Shared Parking Model in Vehicular Network Using Fog and Cloud Environment 213 *Oanh Tran Thi Kim, Tri Nguyen Dang, VanDung Nguyen, Nguyen H. Tran, Choong Seon Hong* *(Kyung Hee University, Korea)*
TS9-4	Smart Home Web of Objects-based IoT Management Model and Methods for Home data mining 219 *Jeu Young Kim, Hark-Jin Lee, Jiyeon Son, Jun Hee Park (ETRI, Korea)*

Poster Sessions 1

P1-1	Tele-Cardiotocography Enabled by Mobile Technology 224 *Chia-Wei Chang* , Hsin-Hsi Tsai*, Chih-Wei Yi* , Yi-Chang Wang**, Jen-Yau Kuo**,Ho-Hsin Lee** , Hsuan Wang***, Hui-Hsuan Lau***, and Tsung-Hsien Su*** (National Chiao Tung University, Taiwan)*, (Industrial Technology Research Institute, Taiwan)**, (Mackay Memorial Hospital, Taiwan)****
P1-2	A Preliminary Study on SPC-Crowd Pavement Indexing 228 *Tsung-Hsiang Wu*, Chih-Wei Yi* , Ching-Yao Chan**, Ya-Lan Chang*, Chun-Fu Chung*** (National Chiao Tung University, Taiwan)*, (University of California at Berkeley, USA)**, (Industrial Technology Research Institute, Taiwan)****
P1-3	Group Mobility Model Based Clustering Algorithm for Mobile Ad Hoc Networks 232 *Mengqing Cai, Lanlan Rui, Danmei Liu, Haoqiu Huang, Xuesong Qiu (Beijing University, China)*
P1-4	Router Offload Strategies with an Optical Flow Switch Based on LCoS Technologies 236 *Yuh-Jiuh Cheng, Yhi Shiau, Shu-Ying Cheng (Chunghwa Telecom, Taiwan)*
P1-5	Cloud Service Enabling Architecture for Multi-Vendor Environment 240 *Dah-Sheng Lee, Wei-Te Sung, Shuang-Mei Wang, Jin-Yuan Shun (Chunghwa Telecom, Taiwan)*
P1-6	Delay Insertion Based P2PTV Traffic Localization Considering Available Bandwidth of Logical Link 244 *Chitapong Wechtaisong, Kazato Ikeda, Takahiro Iijima and Hiroaki Morino (Shibaura Institute of Technology, Japan)*
P1-7	Weighted Routing in Hierarchical Multi-domain SDN Controllers 248 *Jian-Jhong Huang*, Ying-Yu Chen*, Chien Chen* and Yu-Huang Chu** (National Chiao Tung University, Taiwan)*, (Chunghwa Telecom Labs, China)***
P1-8	An Efficient Scheme of Bulk Traffic Statistics Collection for Software-Defined Networks 252 *Tse-Han Wang*, Yen-Cheng Chen**, Sheng-Kai Huang*, Chen-Min Hsu*, Been-Huang Liao*, Hey-Chyi Young* (Chunghwa Telecom Laboratories, Taiwan)*,(National Chi Nan University, Taiwan)***
P1-9	Integrating Machine-to-Machine Measurement Framework into oneM2M Architecture 256 *Amelie Gyrard*, Soumya Kanti Datta*, Christian Bonnet*, Karima Boudaoud** (Eurecom, France)*, (University of Nice Sophia Antipolis, France)**
P1-10	A Comprehensive Composite Digital Services Quality Assurance Application on Intelligent Transportation System 260 *Chiachun Chuang, Wen-Lin Cheng, Kai-Sheng Hsu (Chunghwa Telecom, Taiwan)*
P1-11	Optimal Location of Electric Vehicle Charging Stations Using Genetic Algorithm 264 *Shuangshuang Chen,Yue Shi, Xingyu Chen, Feng Q (Beijing University, China)*
P1-12	Design of a Media Stream Relay Engine on the Android OS 268 *Huigwang Je, Dongwoo Kwon and Hongtaek Ju (Keimyung University, Korea)*
P1-13	A robust group synchronization approach to network congestion based on control events for media streaming 272 *Kisu Ok, Dongwoo Kwon and Hongtaek Ju (Keimyung University, Korea)*
P1-14	A Model of SDN Controllers Supporting for Processing of Flows Based on the IMS 276 *Zeqi Liu, Jungho Kim, and Jae-Oh Lee (Korea University of Technology and Education, Korea)*
P1-15	Crowdsourced QoE evaluation of mobile device usage with consideration on user dependence 280 *Fumiya KOBAYASHI, Ginga KAWAGUTI, Hideki NOJIRI, Akira TAKAHASHI (NTT Network Technology Laboratories, Japan)*
P1-16	A Max-flow/Min-cut Theory Based Multi-Domain Virtual Network Splitting Mechanism 284 *Qinghong Zhong, Ying Wang, Luoming Meng, Ailing Xiao, Hongjing Zhang (Beijing University of Posts and Telecommunications, China)*

P1-17	The implementation of domain routing protocol in hierarchical domain network model 288 *Eun JeeSook, Jung HeeYoung (ETRI, Korea)*
P1-18	Network Operation Simulation Platform for Network Virtualization Environment 292 *Hongjing Zhang, Ying Wang, Xuesong Qiu, Wenjing Li, Qinghong Zhong* *(Beijing University of Posts and Telecommunications, China)*
P1-19	Detecting Network Neutrality Violations through Packet Loss Statistics 296 *Ramneek Sekhon* **, Patrick Hosein***, Wonjun Choi*, Woojin Seok*** *(Korea University of Science and Technology)*, (KISTI, Korea)**, (The University of the West Indies,* *Trinidad and Tobago)****
P1-20	Traffic Analysis of Social Smartphone Games 300 *Hyunsu Mun, Youngseok Lee (Chungnam National University, Korea)*
P1-21	The evaluation of next-generation copper-wire technology 304 *Kuo-Tsai Chen, Yang Shun-Kai, Kuo Fei-Hua, Rong-Ruey Lee* *(Chunghwa Telecom, Telecommunication Laboratories, Taiwan)*
P1-22	HiLiCLoud :High Performance and Lightweight Mobile Cloud Infrastructure for Monitor and Benchmark Services 308 *Dai Hoang Tran, Chuan Pham, Cuong T.D, Dung T.N, Nguyen H.T, Eui-Nam Huh, Choong Seon Hong* *(Kyung Hee University, Korea)*
P1-23	Scalable and Elastic Cloud Data Center for Self-Organizing Dense Small Cell Networks 312 *Yun-Ting Lee*, Hsi-Lu Chao*, Jin-Wei Tang** (National Chiao Tung University, Taiwan)** *(Chunghwa Telecom Laboratories Chunghwa Telecommunication Co., Ltd., Taiwan)***

Poster Session 2

Date : Thursday, 20th August 2015, 10:00-10:30 & 14:50~15:20, Lobby
Chair: Takumi Miyoshi (Shibaura inst. Tech., Japan)

P2-1	Framework for Multi-Level Application Traffic Identification 316 *Sung-Ho Yoon, Kyu-Seok Shim, Su-Kang Lee, Myung-Sup Kim (Korea University, Korea)*
P2-2	Research on Automatic Header-Signature Naming System for Internet Service Identification 320 *Su-Kang Lee, Sung-Ho Yoon, Myung-Sup Kim (Korea University, Korea)*
P2-3	A new method for constructing Dynamic VPN cooperating with OpenFlow control Technology and Healthcare PKI 324 *Joong-Sun Lee, Takashi Obi, Hiroyuki Suzuki, Kazushige Fujita, Masuyoshi Yachida, Nagaaki Ohyama* *(Tokyo Institute of Technology, Japan)*
P2-4	Traffic Offloading under Outage QoS Constraint in Heterogeneous Cellular Networks 328 *Thant Zin Oo, Nguyen H. Tran, Tuan Le, S. M. Ahsan Kazmi, Tai Ho, Choong Seon Hong (Kyung Hee University, Korea)*
P2-5	Resource Management in Dense Heterogeneous Networks 332 *S. M. Ahsan Kazmi, Nguyen H. Tran, Tai Ho, Thant Zin Oo, Choong Seon Hong, Tuan Le, Seungil Moon* *(Kyung Hee University, Korea)*
P2-6	Visualization of Elephant Flows and QoS Provisioning in SDN-Based Networks 336 *Muhammad Afaq*, Shafqat Rehman**, Wangcheol Song* (Jeju National University, Korea)*, (Air University, Pakistan)***
P2-7	Web server performance enhancement by suppressing network traffic for high performance client 340 *Yong Jin, Masahiko Tomoishi (Tokyo Institute of Technology, Japan)*
P2-8	A Fault Diagnosis Method for Smart Home Services 344 *Chung-Hao Hsieh, Pei Jung (Chunghwa Telecom Laboratories, Taiwan)*
P2-9	Management of IoT Traffic using a Virtualized IMS Platform 348 *Jae Man Been, Wooseok Yang, Jung Ho Kim, Jae-Oh Lee (Korea University of Technology and Education, Korea)*

P2-10	IPlug and dSocket: Decoupling Network API for Injecting Applications Intent 352 *Cinyoung Hur*, Jeong-Hwan Kim*, Jung HeeYoung*, Woojik Chun*** *(ETRI, Korea)*, (Hankuk University of Foreign Studies, Korea)***
P2-11	Network-Assisted Congestion Control for Information Centric Networking (ICN) 356 *Anselme Ndikumana, Saeed Ullah, Rossi Kamal, Kyi Thar, Hyo Sung Kang, Seungil Moon, Choong Seon Hong (Kyung Hee University, Korea)*
P2-12	Adaptive flow monitoring in SDN architecture 360 *Seongbok Baik, Youggil Lim, Jongwoo Kim, Youngwoo Lee (KT, Korea)*
P2-13	Automatic Detection of Vulnerabilities for Advanced Security Analytics 363 *Marian Gawron, Feng Cheng, Christoph Meinel (Hasso Plattner Institute, Germany)*
P2-14	Architectural Perspective on Collaborative Multipath TCP in Mobile Environment 367 *Moon-Sang Lee, Woo-Tae Kim, Jaebong Lee, Youngwoo Lee (KT, Korea)*
P2-15	Towards Selecting Optimal Features for Flow Statistical Based Network Traffic Classification 371 *Ming Xu, Wenbo Zhu, Jian Xu, Ning Zheng (College of Computer, Hangzhou Dianzi University, P.R. China)*
P2-16	A study on Shared and non-Shared Billing for Mobile Service 375 *Jo-Ching Wu*, Yi-Bing Lin*, Yung-Ching Wang*, Yun-Wei Lin** Bo Ting Lin*** , Wan-Hsun Hu**** *(National Chiao-Tung University, Taiwan)*, (Academia Sinica, Taiwan)**, (Chunghwa Telecom Laboratories, Taiwan)****
P2-17	A Method for Service Identification of SSL/TLS Encrypted Traffic with the Relation of Session ID and Server IP 379 *Sung-Min Kim*, Young-Hoon Goo*, Soo-Gil Choi**, Mi-Jung Choi**, Myung-Sup Kim** *(Korea University, Korea)*, (Kangwon National University, Korea)**
P2-18	High performance payload signature-based Internet traffic classification system 383 *Sung-ho Lee, Jun-Sang Park, Sung-Ho Yoon, Myung-Sup Kim (Korea University, Korea)*
P2-19	A Testing-Based Approach to SLA Evaluation on Cloud Environment 387 *Yuan-Hsin Tung*, Shian-Shyong Tseng**, Yung-Yu Kuo* (ChungHwa Telecom, Taiwan)*, (Asia University, Taiwan, Taiwan)***
P2-20	RNEP: A Scalable, Economic and Energy-efficient Data Center Network N/A *Hao Fu, Xin Sun, Yan Ze Jiang (Beijing Institute of Technology, China)*
P2-21	User Satisfaction Fairness based Optimal Charging Algorithm for Multiple Devices 391 *Jisoo Choi, Hyunggon Park (Ewha Womans University, Korea)*
P2-22	Is Container-Based Technology a Winner for High Performance Scientific Applications? 395 *Theodora Adufu, Jieun Choi and Yoonhee Kim (Sookmyung Women's University, Korea)*
P2-23	Optimal Middlebox Function Placement in Virtualized Evolved Packet Core Systems 399 *Haneul Ko, Giwon Lee, Insun Jang, Sangheon Pack (Korea University, Korea)*

Poster Session 3

Date : Friday, 21st August 2015, 10:00-10:30 & 14:50~15:20, Lobby
Chair: Wonyong Yoon (Dong-A University, Korea)

P3-1	The study of Document Filter for Smart Device 403 *SuHyung Jo, JuHan Kim, DooHo Choi (ETRI, Korea)*
P3-2	Reduced-Reference Video QoE Assessment Method based on Image Feature Information 407 *Wenjing Li, Qian Luo, Peng Yu, Xuesong Qiu (Beijing University of Posts and Telecommunication, P.R. China)*
P3-3	A Light-weight Application Monitoring and Statistical Debugging for a Black-box Application 411 *Toshio Tonouchi (NEC, Japan)*

P3-4	Inter-Vessel Traffic Service Data Exchange Format Protocol Security Enhancement of User Authentication Scheme in Mobile VTS Middleware Platform 415 *Donghyuk Lee*, Namje Park*,Dooho Choi** (Jeju National University, Korea)*, (ETRI, Korea)***
P3-5	The upcoming new standard HTTP/2 and its impact on multi-domain websites 418 *Heejung Kim, Jongseok Lee, Ikhyun Park, Hyungkyung Kim, Dong-Hoon Yi and Taesung Hur (KT, Korea),*
P3-6	Network information sharing system with peer-to-peer network applications 422 *Kazunori Ueda, Norio Kimura (Kochi University of Technology, Japan),*
P3-7	Power Consumption Modeling of Base Stations Based on Dynamic Factors 426 *Man Yu, Ao Xiong, Peng Yu, Wenjing Li (Beijing University of Posts and Telecommunication, P.R. China)*
P3-8	Fault Location Algorithm Based on Probe in Electric Power Data Network 430 *Xiaohan Gong, Kaixuan Wang, Shaoyong Guo, Ao Xiong (Beijing University of Posts and Telecommunications, P.R. China)*
P3-9	Virtualized Traffic Monitoring Function and Resource Auto-scaling in Software-defined Networks 434 *Taesang Choi, Sangsik Yoon, Chunglae Cho, and Younghwa Kim (ETRI, Korea)*
P3-10	Time-based DDoS Detection and Mitigation for SDN Controller 438 *I Gde Dharma N., M. Fiqri Muthohar, Alvin Prayuda J. D., Priagung K., Deokjai Choi (Chonnam National University, Korea)*
P3-11	Security analysis based on trusted environment (TRE) of M2M/IoT 442 *Khamdamboy Urunov, Jung-Il Namgung, Soo-Hyun Park (Kookmin University, Korea)*
P3-12	Semantic Resource Classification Using Statistical Analysis for Application Characteristics in Intercloud Environment 446 *Younsun Ahn, Yoonhee Kim (Sookmyung Women's University, Korea)*
P3-13	Lightweight Service Discovery Protocols for Constrained Environment 450 *Sardorjon Vakkosov, Jung-Il Namgung, Soo-Hyun Park (Kookmin University, Korea)*
P3-14	Cooperative Content Delivery for Cost Minimization in Wireless Networks 454 *Yeonghun Nam, Jong-Moon Chung (Yonsei University, Korea)*
P3-15	Single-sided Quality Measuring Method for Giga Internet 457 *Junsuk Oh, Hoongon Kim, Jongwoo Kim, Youngwoo Lee (KT, Korea)*
P3-16	Improved User Mobility Management Scheme for supporting Fast Data Transmission 461 *Myoung Ju Yu, Ju Man Park, Ju Hyun Jung, Jong Seong Lee (Agency of Defense Development, Korea)*
P3-17	Mobile application access design for user-defined network infrastructure 465 *Muhammad Fiqri Muthohar, I Gde Dharma Nugraha, Deokjai Choi (Chonnam National University, Korea)*
P3-18	SDN Based Optimal User Association and Resource Allocation in Heterogeneous Cognitive Networks 468 *Seungil Moon,Tuan Le, S. M. Ahsan Kazmi, Thant Zin Oo, Choong Seon Hong (Kyung Hee University, Korea)*
P3-19	OF@TEIN Resource-Level Visibility for SDN-enabled Distributed Cloud Testbed 472 *Muhammad Usman*, Aris Risdianto*, JongWon Kim*, Teck Chaw Ling*** *(Gwangju Institute of Science and Technology, Korea)*, (University of Malaya, Malaysia)***
P3-20	Network and System Management Object Modeling for Smart Grid Infrastructure 476 *YooJin Kwon*, Yong-hun Lim*, Myung-Sup Kim**, Jongin Lim*** *(Korea Electric Power Research Institute, Korea)*, (Korea University, Korea)***
P3-21	Defense Technique against Spoofing Attacks Using Reliable ARP Table in Cloud Computing Environment 480 *Hyo Sung Kang, Jae Hyeok Son, Choong Seon Hong (Kyung Hee University, Korea)*
P3-22	A Procedure to Achieve Cost and Performance Optimization for Recovery in Cloud Computing 484 *Pham Phuoc Hung*, Xuan-Qui Pham*, Ga-Won Lee*, Tuan-Anh Bui** , Huh Eui-Nam** *(KyungHee University, Korea)*, (The Catholic University of Lovain, Belgium)***
P3-23	SDN and NFV Benchmarking for Performance and Reliability 488 *Taek Hee Kim, Tae Hwan Koo, Eun Kyung Paik (KT, Korea)*