

# **2014 IEEE 3rd International Conference on Cloud Networking (CloudNet 2014)**

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# Program

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## Coffee Break

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Mauro Femminella and Gianluca Reali (University of Perugia, Italy); Dario Valocchi (University Of Perugia, Italy); Emilia Nunzi (University of Perugia, Italy)  
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Sevil Mehraghdam (University of Paderborn, Germany); Matthias Keller (University Paderborn, Germany); Holger Karl (University of Paderborn, Germany)  
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### ***SLA-aware Resource Scheduling for Cloud Storage***

Zhihao Yao and Ioannis Papapanagiotou (Purdue University, USA); Bob Callaway (NetApp & NC State University, USA)  
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Lotfi Mhamdi (University of Leeds, United Kingdom); Lisa Ye (HKUST, Hong Kong); Mounir Hamdi (HKUST, ? )  
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Syed Noor ul Hassan Shirazi (Lancaster University & InfoLab21, United Kingdom); Steven Simpson (Lancaster University, United Kingdom); Angelos K. Marnierides (Liverpool John Moores University, United Kingdom); Michael Watson and Andreas U. Mauthe (Lancaster University, United Kingdom); David Hutchison (Lancaster University & InfoLab21, United Kingdom)  
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***A Power Efficient Genetic Algorithm for Resource Allocation in Cloud Computing Data Centers***

Giuseppe Portaluri and Stefano Giordano (University of Pisa, Italy); Dzmityr Kliazovich and Bernabe Dorransoro (University of Luxembourg, Luxembourg)  
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Jochen W. Guck and Wolfgang Kellerer (Technische Universität München, Germany)  
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## Lunch

## S3: Cloud Federation and Hybrid Cloud Infrastructure I

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Obed Jules (Université de Montréal, Canada); Mohamed Adel Serhani (UAE University, UAE); Abdelhakim Hafid (University of Montreal, Canada)  
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Márton Sipos (Budapest University of Technology and Economics, Hungary); Frank H.P. Fitzek, Daniel E. Lucani and Morten V. Pedersen (Aalborg University, Denmark)  
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Gaetano Anastasi (CNR-ISTI, Italy); Emanuele Carlini (CNR ISTI, Italy); Massimo Coppola (CNR, Italy); Patrizio Dazzi (ISTI, CNR, Pisa, Italy); Marco Distefano (CNR-ISTI, Italy)  
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Rudraksh Shrivastava (NEC Europe Ltd., Kurfürsten-Anlage, 36 & NEC Europe Ltd., Germany); Salvatore Costanzo (University of Athens, Greece); Konstantinos Samdanis (NEC Europe Ltd., Germany); Dionysis Xenakis (University of Athens, Greece); David Grace (University of York, United Kingdom); Lazaros Merakos (University of Athens, Greece)  
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Franco Callegati (Universita` di Bologna, Italy); Walter Cerroni, Chiara Contoli and Giuliano Santandrea (University of Bologna, Italy)  
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## Coffee Break

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Nestor Hernandez (Aalborg University, Denmark); Janus Heide (Steinwurf, Denmark); Daniel E. Lucani and Frank H.P. Fitzek (Aalborg University, Denmark)  
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Xiangming Dai, Jason Min Wang and Brahim Bensaou (The Hong Kong University of Science and Technology, Hong Kong)  
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Weisheng Xie (University of Texas at Dallas, USA); Jiafeng Zhu (Huawei Technologies Co., Ltd., USA); Changcheng Huang (Carleton University, Canada); Min Luo (Huawei Technologies, USA); Wu Chou (Huawei Technologies Co., Ltd., P.R. China)  
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***Preventing Passive TCP Timeouts in Data Center Networks with Packet Drop Notification***

Yu Xia (Hong Kong University of Science and Technology, P.R. China); Ting Wang and Zhiyang Su (Hong Kong University of Science and Technology, Hong Kong); Mounir Hamdi (Hong Kong University of Science and Technology, P.R. China)  
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***Scheduling in Data center networks with Optical Traffic Grooming***

Ganesh Chennimalai Sankaran (Indian Institute of Technology Madras & HCL Cisco Offshore Development Center, India); Krishna M. Sivalingam (Indian Institute of Technology Madras, India)  
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José I Aznar (I2cat, Spain); Erik Ruiter (SURFsara, The Netherlands); Joan A. García-Espín (Fundació i2CAT, Internet i Innovació Digital a Catalunya & Technical University of Catalonia, Spain)  
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Kaliappa Ravindran (City University of New York, USA)  
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## **Welcome Reception**

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## **Coffee Break**

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Michal Vondra and Zdenek Becvar (Czech Technical University in Prague, Czech Republic)  
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### ***Mobiles on Cloud Nine: Efficient Task Migration Policies for Cloud Computing Systems***

Lazaros Gkatzikis (KTH Royal Institute of Technology, Sweden); Iordanis Koutsopoulos (Athens University of Economics and Business and CERTH & CERTH, Greece)  
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Stefania Sardellitti (University of Rome La Sapienza, Italy); Gesualdo Scutari (State University of New York at Buffalo, USA); Sergio Barbarossa (Sapienza University of Rome, Italy)  
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Hulya Seferoglu and Yuxuan Xing (University of Illinois at Chicago, USA)  
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### ***A PCE-based Architecture for the Management of Virtualized Infrastructures***

Pasquale Donadio (Alcatel-Lucent Italia, Italy); Giovanni Battista Fioccola, Roberto Canonico and Giorgio Ventre (University of Napoli Federico II, Italy)  
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## **Lunch**

## **S8: Energy Efficiency on Data Centers, Networks and Distributed Infrastructures**

### ***An Energy Efficient Approach to Virtual Machines Management in Cloud Computing***

Damien Borgetto (University of Toulouse, France); Stolf Patricia (IRIT Université Paul Sabatier UTM IUT de Blagnac, France)  
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### ***Efficient Auto-configuration of Energy-related Parameters in Cloud-based IoT Platforms***

Apostolos Papageorgiou (NEC Laboratories Europe, Germany); Ernő Kovacs (NEC Europe Ltd., Germany); Manuel Zahn (TU Darmstadt, Germany)

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**Controlling datacenter power consumption while maintaining temperature and QoS levels**

Sergio Nesmachnow (Universidad de la República, Uruguay); Cristian Perfumo (CSIRO Energy, Australia); Inigo Goiri (Rutgers University, USA)  
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**Priority-based Virtual Machine Load Balancing in a Scientific Federated Cloud**

Amol Hindurao Jaikar (KISTI, Daejeon, South Korea, Korea); Dada Huang and Gyeong-Ryoon Kim (KISTI, Korea); Seo-Young Noh (Korea Institute of Science and Technology Information & University of Science and Technology, Korea)  
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**Saving energy in WSNs with beamforming**

Juan F. Valenzuela-Valdés and Francisco Luna (Universidad de Extremadura, Spain); Pablo Padilla (University of Granada, Spain); Rafael Marcos Luque-Baena (Universidad de Extremadura, Spain)  
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## Coffee Break

## PDS: Posters and Demos Session

**P-TOSCA Portability Demo Case**

Sasko Ristov (Ss. Cyril and Methodius University & Faculty of Information Science and Computer Engineering - Skopje, Macedonia, the former Yugoslav Republic of); Magdalena Kostoska (University "Ss. Cyril and Methodius", Faculty of Computer Science and Engineering, Macedonia, the former Yugoslav Republic of); Marjan Gusev (University Sts. Cyril and Methodius, Macedonia, the former Yugoslav Republic of)  
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**Scalable Network Intrusion Detection on Virtual SDN Environment**

Chiwook Jeong and Taejin Ha (Gwangju Institute of Science and Technology, Korea); Jargalsaikhan Narantuya (South Korea & Gwangju Institute of Science and Technology, Korea); Hyuk Lim (Gwangju Institute of Science and Technology, Korea); JongWon Kim (GIST (Gwangju Institute of Science & Technology), Korea)  
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**Control of Sensitive Traffic in the Cloud based on OpenFlow**

Stéphane Betgé-Brezetz and Guy-Bertrand Kamga (Alcatel-Lucent Bell Labs, France); Ali El Amrani Joutei and Oussama Maalmi (Telecom SudParis, France)  
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**Optimal Negotiation of SLA in Federated Cloud using Multiobjective Genetic Algorithms**

Soumya Maity (Indian Institute of Technology, Kharagpur, India); Arindam Chaudhuri (Samsung R & D Institute Delhi, India)  
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**Empowering Users of Cloud Computing on Data Confidentiality**

Khaled Md Khan and Mahboob Shaheen (Qatar University, Qatar)  
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**Shared storage performance of cloud computing: OpenNebula case**

Alexander Russkov (Keldysh Institute of Applied Mathematics & Scientific Center Chernogolovka, Russia)  
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**War against Mobile Malware with Cloud Computing and Machine Learning forces**

Fauzia Idrees (City University London & NUST, United Kingdom)  
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## IND: Industrial Session

Telindus: What type of cloud are you?

Everybody speaks about cloud , nobody means the same thing. In this presentation we will browse through the concepts of cloud, and more importantly, analyse which is the right cloud for you, the customer; or , in other terms, we will recommend the type of cloud that will deliver business value to you.

Lorenz Meis - International Business Development - Connectivity & Housing Solutions

**With over 15 years progressive experience in the ICT sector, Lorenz Meis joined Telindus Luxembourg in 2013. In the last years he was responsible for operations, business development and consulting management in highly competitive divisions of the Data Center and Cloud Service industry. While leading the international business development of Telindus' Cloud services, Lorenz now uses his experience to provide a new services approach in order to respond to the current challenges of the Cloud service market.**

BULL: The Cloud Computing after a few years: promises vs realities

Cloud solutions are still supporting an high rate of promises and growing reasonable (or not) demands. In 2011, Bull was one of the first European IT providers to develop a consistent methodology and offer framework of services and technology to support companies in their cloud strategy. 3 years after, the speaker will present an analysis of customers' requests related to cloud offers, a synthesis of trends and Bull' vision. He will conclude with successful use cases.

Jean Pierre Le Treut is Business Development Director in the Cloud Division of Bull company.

He developed a high experience in the Outsourcing/Managed Services Division of Bull, where he had a wide range of responsibilities such as Outsourcing Project Director, Customers Director, Pre-sales Manager, Service Desk Operational Units Manager and Software Support.

As a Cloud Business Development and Outsourcing Director, he contributes to defining and developing "The Cloud by Bull" offer.

Jean Pierre Le Treut is 53 ans and is graduated from the « Ecole Centrale Paris » (83). After 5 years in computer simulation in the Schlumberger Industries Research Laboratories, he joined Bull company in 1989 to develop expert systems configuration of Bull Group's products.

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Prof. Jesus Carretero - Sustainable Ultrascale Computing Systems: Converging parallel and distributed systems

Abstract:

Ultrascale systems are envisioned as large-scale complex systems joining parallel and distributed computing systems that will be two to three orders of magnitude larger than today's systems. This speech will introduce the EU NESUS COST Action which major goal is to establish an open European research network targeting sustainable solutions for ultrascale computing aiming at cross fertilization among HPC, large scale distributed systems, and big data management. The network will contribute to glue disparate researchers working across different areas and provide a meeting ground for researchers in these separate areas to exchange ideas, to identify synergies, and to pursue common activities in research topics such as sustainable software solutions (applications and system software stack), data management, energy efficiency, and resilience. Many of the most active research groups of the world in this area are members of this proposal. The Action pursues to increase the value of these groups at the European-level by reducing duplication of efforts and providing a more holistic view to all researchers, while promoting interactions and networking with industry to promote the leadership of Europe and to increase the impact on science, economy, and society.

Short bio:

Dr. Jesus Carretero is a Full Professor of Computer Architecture and Technology at Universidad Carlos III de Madrid (Spain), where he is responsible for that knowledge area since 2000. He is also Director of the Master in Administration and Management of Computer Systems, which he founded in 2004. His research activity is centered on high-performance computing systems, large-scale distributed systems and real-time systems. He is Action Chair of the IC1305 COST Action "Network for Sustainable Ultrascale Computing Systems (NESUS)", and he is also currently involved in the FP7 program REPARA "Reengineering and Enabling Performance And poweR of Applications". He has participated and leaded several national and international research projects in these areas, founded by Madrid Regional Government, Spanish Education Ministry and the European union. Prof. Carretero is Associated Editor of the journal Computer and Electrical Engineering and International Journal of Distributed Sensor Networks. He has published more than 180 papers in journals and international conferences, editor of several books of proceedings, and guest editor for special issues of journals as Intenational Journal of Parallel Processing, Cluster Computing, Computers and Electrical Engineering, and New Generation Computing, and he is coauthor of several text books related to Operating Systems and Computer Architecture. He has participated in many conference organization committees, and he has been General chair of HPCC 2011 and MUE 2012, and Program Chair of ISPA 2012, EuroMPI 2013, C4Bio 2014, and ESAA 2014. Prof. Carretero is a senior member of the IEEE Computer Society and member of the ACM. He also serves and has served as a Technology Advisor and in applied projects with several companies such as RENFE, EADS, INDRA, SIEMENS or ISOLUX, developing research and innovation projects. He is a project reviewer for Spanish research ministry and also European Union. He was teaching in Facultad de Inform tica of the Universidad Polit cnica de Madrid (Spain) since 1989 until 1997. In 1997 and 1998 he was a visiting scholar at the NorthWestern University of Chicago (Ill, USA). He works currently at Universidad Carlos III de Madrid, where he has been teaching since 2000.

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EBRC: When IT saves lives! : the Luxemburgish eHealth plan powered by TrustedCloudEurope

M'hamed Zlitni, Sales Manager, EBRC

EBRC enables health professionals to ensure better patient care Historically recognised as an expert in the management of sensitive Banking information, EBRC today ensures the highest level of security and confidentiality in managing critical information such as personal health data. EBRC forms part of the consortium that has developed the Luxembourg national eHealth services platform, which is operated and managed in the highly secured EBRC infrastructure. "EBRC is the natural partner found. We have been

immediately attracted by the EBRC TrustedCloudEurope Services, offering both security and flexibility to ensure and support the platform development. Agility makes the difference!" said Didier Barzin, Chief Information Security Officer (CISO) at Agence eSanté.

## Gala Dinner

## Registration

## Keynote 3: Service Security in Cloud

## Coffee Break

## S9: Cloud Federation and Hybrid Cloud Infrastructure II

### ***An approach for economic evaluation of cloud-based applications***

Raúl Peña-Ortiz and Josep Domenech (Universitat Politècnica de València, Spain); José A. Gil (Politechnic University of Valencia, Spain); Ana Pont (Universitat Politècnica de València, Spain)  
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### ***Cloud4NFV: A Platform for Virtual Network Functions***

João Soares (Portugal Telecom Inovação e Sistemas, Portugal); Bruno Parreira (Instituto de Telecomunicações, Universidade de Aveiro, Portugal); Miguel Dias (Portugal Telecom Inovação e Sistemas, Portugal); Jorge Carapinha (PT Inovação S.A. Telecom Group, Portugal); Susana Sargento (Instituto de Telecomunicações, Universidade de Aveiro, Portugal)  
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### ***Federated Clouds for Biomedical Research: Integrating OpenStack for ICTBioMed***

Paul R Brenner (University of Notre Dame, USA); Cezary Mazurek (Poznan Supercomputing and Networking Center, Poland); Anil Srivastava (Open Health Systems Laboratory, USA); Michael Sullivan (Internet 2, USA); Devdatt Dubhashi (Chalmers University of Technology, Sweden); Hemant Darbari (DIT, MIT, Govt. of India, India)  
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### ***Game Theoretic Approaches for Revenue Sharing in Federated Cloud***

Bassem El Zant and Isabel Amigo (Telecom ParisTech (Ecole Nationale Supérieure des Telecommunications), France); Maurice Gagnaire (Telecom ParisTech (Ecole Nationale Supérieure des Telecommunications) & Institut Telecom, France)  
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### ***Bi-Objective Online Scheduling with Quality of Service for IaaS Clouds***

Andrei Tchernykh and Luz Lozano (CICESE Research Center, Mexico); Uwe Schwiegelshohn (TU Dortmund University, Germany); Pascal Bouvry and Johnatan E Pecero (University of Luxembourg, Luxembourg); Sergio Nesmachnow (Universidad de la República, Uruguay)  
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### ***ADON: Application-Driven Overlay Network-as-a-Service for Data-Intensive Science***

Sripriya Seetharam (University of Missouri, USA); Prasad Calyam (University of Missouri-Columbia, USA); Tsegereda Beyene (Cisco, USA)  
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## S10: IaaS, PaaS, SaaS

### ***Hadoop MapReduce for Tactical Clouds***

Johnu George, Chien-An Chen and Radu Stoleru (Texas A&M University, USA); Geoffrey G Xie (Naval Postgraduate School, USA); Tamim Sookoor (Army Research Laboratory, USA); David Bruno (United States Army Research Laboratory, USA)  
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**Considering VM migration between IaaS Clouds and mobile Clients: Challenges and Potentials**

Bernhard Katzmarski (OFFIS, Germany); Andreas Herrholz (OFFIS Institute, Germany); Michele Paolino and Alvis Rigo (Virtual Open Systems, France); Wolfgang Nebel (OFFIS - Institut für Informatik, Germany)  
pp. 327-332

**Enabling Location-based Policies in a Healthcare Cloud Computing Environment**

Sebastian Zickau (Technische Universität Berlin & Service-centric Networking, Germany); Dirk Thatmann (Technical University of Berlin & Technical University of Berlin, Germany); Tatiana Ermakova and Jonas Repschläger (Technische Universität Berlin, Germany); Ruediger Zarnekow (Berlin Institute of Technology (TU Berlin), Germany); Axel Küpper (TU Berlin, Germany)  
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**A probabilistic multi-tenant model for virtual machine allocation in cloud systems**

Zhuoyao Wang and Majeed M Hayat (University of New Mexico, USA); Nasir Ghani (University of South Florida, USA); Khaled Bashir Shaban (Qatar University & College of Engineering, Qatar)  
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**Characterizing Microsoft Lync Online in Mobile Networks: a Quality of Experience Perspective**

Pedro Casas (Telecommunications Research Center Vienna (FTW), Austria); Andreas Sackl (FTW Telecommunications Research Center Vienna, Austria); Sebastian Egger (FTW - Telecommunications Research Center Vienna & Signal Processing and Speech Communication Laboratory, Graz University of Technology, Austria); Raimund Schatz (Telecommunications Research Center Vienna (FTW), Austria)  
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**In-Vehicle Application for Multimodal Route Planning and Analysis**

Marius Noreikis, Pranas Butkus and Jukka K. Nurminen (Aalto University, Finland)  
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## Lunch

## S11: Security, Privacy, Confidentiality and Cloud Networking

**CORNER: Cost-efficient and Reliability-aware virtual NETwork Redesign and embedding**

Yiheng Chen, Sara Ayoubi and Chadi Assi (Concordia University, Canada)  
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**Virtual Network Scheduling Design**

Hao Bai (University of South Florida, USA); Feng Gu (University of New Mexico, USA); Jorge Crichigno (Northern New Mexico College, USA); Samee U. Khan (North Dakota State University, USA); Nasir Ghani (University of South Florida, USA)  
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**An autonomous Cloud management system for in-depth security**

Aline Bousquet and Jeremy Briffaut (INSA Centre Val de Loire, University of Orléans, France); Toinard Christian (Ensi Bourges, France)  
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**Enhanced Learning Classifier to Locate Data in Cloud Datacenters**

Biswajit Biswal, Sachin Shetty and Tamara Rogers (Tennessee State University, USA)  
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**Towards Corporate Confidentiality Preserving Auditing Mechanisms for Clouds**

Roland Bless and Matthias Flittner (Karlsruhe Institute of Technology (KIT), Germany)  
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## S12: Cloud Traffic Characterization and Measurements, Cloud Traffic Engineering and Control-Plane Architectures

### ***SDN-based Virtual Machine Management for Cloud Data Centers***

Richard Cziva and David Stapleton (University of Glasgow, United Kingdom); Fung Po Tso (Liverpool John Moores University, United Kingdom); Dimitrios P Pezaros (University of Glasgow, United Kingdom)  
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### ***Cloud Storage Service Benchmarking: Methodologies and Experimentations***

Enrico Bocchi and Marco Mellia (Politecnico di Torino, Italy); Sofiane Sarni (École Polytechnique Fédérale de Lausanne, Switzerland)  
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### ***SDN-based Multi-Class QoS-guaranteed Inter-Data Center Traffic Management***

Jason Min Wang, Ying Wang, Xiangming Dai and Brahim Bensaou (The Hong Kong University of Science and Technology, Hong Kong)  
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### ***Virtual Network Mapping for Cloud Services Under Probabilistic Regional Failures***

Mahsa Pourvali (USF, USA); Hao Bai (University of South Florida, USA); Feng Gu (University of New Mexico, USA); Khaled Bashir Shaban (Qatar University & College of Engineering, Qatar); Mahshid R. Naeini (Texas Tech University, USA); Jorge Crichigno (Northern New Mexico College, USA); Majeed Hayat (Center for High Technology Materials, USA); Samee U. Khan (North Dakota State University, USA); Nasir Ghani (University of South Florida, USA)  
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### ***Mutualized OpenFlow Architecture for Network Access Management***

Benjamin Villain (Université Pierre et Marie Curie, France); Julien Ridoux (University of Melbourne, Australia); Julien Rotrou (Ucopia, France); Guy Pujolle (University Pierre et Marie Curie - Paris 6, France)  
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## Coffee Break

## S13: Optimization Models for Cloud Computing

### ***Impact of workload assignment on power consumption in software-defined data center infrastructure***

Takaaki Deguchi (Osaka University, Japan); Yoshiaki Taniguchi (Kindai University, Japan); Go Hasegawa and Yutaka Nakamura (Osaka University, Japan); Norimichi Ukita (Nara Institute of Science and Technology, Japan); Kazuhiro Matsuda (NTT-AT, Japan); Morito Matsuoka (Osaka University, Japan)  
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### ***A Model for Carbon Footprint Optimization in an InterCloud Environment***

Valerie Justafort (Ecole Polytechnique de Montreal, Canada); Ronald Beaubrun (Université Laval, Canada); Samuel Pierre (Ecole Polytechnique de Montreal, Canada)  
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### ***Dual Direction Load Balancing and Partial Replication Storage of Cloud DaaS***

Klaithem Al nuaimi and Nader Mohamed (UAEU, UAE); Maryam Al Nuaimi (United Arab Emirates University & AAM, UAE); Jameela Al-Jaroodi (University of Pittsburgh, USA)  
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### ***Unrelated parallel machines with precedence constraints: application to cloud computing***

Sebastien Martin and Mohammed-Albarra Hassan Abdel-Jabbar (Université de Lorraine, France); Imed Kacem (Université of Lorraine, France)  
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### ***Fuzzy Cloud Service Selection Framework***

Masoumeh Tajvidi (Shahid Beheshti University, Australia); Rajiv Ranjan (CSIRO, Australia); Joanna Kolodziej (Cracow University of Technology, Poland); Lizhe Wang (Chinese Academy of Sciences, P.R. China)  
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## **S14: Mobile Cloud Networking and ITS**

### ***Ethernet-based mobility architecture for 5G***

Andrea F. Cattoni and Preben Mogensen (Aalborg University, Denmark); Seppo Vesterinen (Nokia Siemens Networks, Denmark); Matti Laitila (Nokia Siemens Networks, Finland); Laurent Schumacher (FUNDP - The University of Namur, Belgium); Pablo Ameigeiras and Juan J. Ramos-Muñoz (University of Granada, Spain)  
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### ***Efficient Delta Synchronization Algorithm in Mobile Cloud Networks***

Giwon Lee, Haneul Ko, Sangheon Park and Chul-Hee Kang (Korea University, Korea)  
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### ***Performance evaluation of ICN/CCN based service migration approach in virtualized LTE systems***

Triadimas Satria, Morteza Karimzadeh and Georgios Karagiannis (University of Twente, The Netherlands)  
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### ***Smart Traffic Framework Based on Dynamic Mobile Clusters***

Essam Algizawy (Egypt-Japan University of Science and Technology, Egypt); Ahmed El-Mahdy (Egypt-Japan University for Science and Technology, Egypt); Hisham ElShishiny (IBM, Egypt)  
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## **Closing Remarks**