The International Science and Technology Conference SDN&NFV - The Next Generation of Computational Infrastructure

Moscow, October 27 - 29, 2014

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Ethernet Forum 2014

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2014 International Science and Technology Conference SDN & NFV - The Next Generation of Computational Infrastructure (Modern Networking Technologies) information catalog

The International Science and Technology Conference «SDN & NFV – The Next Generation of Computational Infrastructure» will bring together SDN and NFV leaders of the international scientific community, research departments of corporations, and industrial enterprises of the Russian Federation, as well as academic institutions and public authorities to discuss the most urgent and promising technologies in the area of computer networking, virtualization and cloud computing, to share the latest developments and provide a platform for in-depth discussions on the state of the industry and how to move forward. The conference will provide excellent opportunities to interact with and influence the rapidly developing ecosystem of researchers, telecom and cloud operators, vendors and other stakeholders in Russia.

Software-defined Networking (SDN) is the hottest new networking trend of the past few decades. Network Function Virtualization (NFV) is a complementary trend and together they promise to shape the evolution of the Internet and Cloud infrastructure into a Software Defined Infrastructure (SDI) while transforming the industry. Network and cloud providers are already embracing these trends and early adopters are aggressively trialing and deploying SDN and NFV. Established and new vendors are busy creating their own SDN and NFV technologies and solutions and are competing for leadership positions in this rapidly growing international market.

Conference language is English.

NETWORKS 2014 — SDN & NFV: The Next Generation of Computational Infrastructure

CONFERENCE AGENDA

October, 27

9.00 – 10.00	**Registration, coffee break**	Lomonosov Moscow State University, Faculty of Economics, 2nd floor, auditorium П5
10.00 – 10.15	**Welcome speech**	
10.15 – 13.00	**Plenary Session** Moderator **Ruslan Smeliansky** • **Mark Berman.** Progress and Challenges in Worldwide Federation of Future Internet and Distributed Cloud Testbeds • **Joe Mambretti.** Software-Defined Network Exchanges (SDXs) and Infrastructure (SDI): Emerging Innovations In SDN and SDI Interdomain Multi-Layer Services and Capabilities • **Kuang-Ching Wang.** From Federated Software Defined Infrastructure to Future Internet Architecture • **Michael Zink.** A Measurement Architecture for Software Defined Exchanges • **Serge Fdida.** The EXPRESS SDN Experiment in the OpenLab Large Scale Shared Experimental Facility • **Ruslan Smeliansky, V. Antonenko, I. Baldin, Y. Gugel and Y. Izhvanov.** Towards SDI-bases Infrastructure for Supporting Science in Russia	
13.00 – 14.00	**Lunch**	Dining room, first floor
14.00 – 15.00	**Section «Information Security»** Moderator **Alexander Grusho** • **Svetlana Gaivoronski, Mikhail Belyaev.** Towards Load Balancing in SDN-Networks During DDoS-attacks • **Vladimir Krylov, Kirill Kravtsov, Eleanora Sokolova and Dmitry Lyakhmanov.** SDI Defense Against DDoS Attacks Based on IP Fast Hopping Method • **Alexander Grusho, Nikolai Grusho, Elena Timonina, Victor Piskovski.** Information Security in Software Defined Network • **Ruslan Smeliansky.** SDN for network security	Lomonosov Moscow State University, Faculty of Economics, 2nd floor, auditorium П5
15.00 – 15.30	**Coffee break**	Hall in front of the auditorium П5
15.30 – 18.00	**Section «Practice and experiments in SDN & NFV». Part 1** Moderator **Mark Berman** • **Maxim Perevedentsev, Vitaly Antonenko, Ruslan Smeliansky.** Localizing errors in controller applications • **Victor S. Altukhov, Eugene V. Chemeritskiy.** On real-time delay monitoring in software-defined networks • **Alexander Shalimov, Pavel Ivashchenko.** In-kernel offloading of an SDN/OpenFlow Controller • **Kostenko V, Nikolaev A, Plakunov A, Tabolin V, Shakhova M, Smelyanskiy R.** Selforganizing Cloud Platform • **Vasily Pashkov, Alexander Shalimov, Ruslan Smeliansky.** Controller Failover Algorithm for Software-Defined Networks • **Sergey V. Altukhov, Eugene V. Chemeritskiy, Vladislav V. Podymov, Vladimir A. Zakharov.** VERMONT - a toolset for checking SDN packet forwarding policies on-line • **Eugene V. Chemeritskiy Ruslan L. Smelansky.** On QoS Management in SDN by Multipath Routing	Lomonosov Moscow State University, Faculty of Economics, 2nd floor, auditorium П5
18.30 – 21.00	**Welcome Party**	Dining room, first floor

October, 28

9.00 – 18.00	**Industrial section** **Participation in the Third Moscow International Ethernet-Forum Program**	«InfoSpace» 1 Zachatievskiy lane, 4 m. Kropotkin, m. Park Kultury, estate Ostozhenka Participation - free
16.00 – 18.10	Joint Panel Discussion of the International Science and Technology Conference «Modern Networking Technologies: SDN & NFV» and of the Moscow Ethernet Forum. The meeting of the industrial and world academic communities **Questions:** • To what extend the SDN&NFV market is mature? • What way the SDN&NFV innovations are being implemented into industry? • SDN&NFV engineering human resources development in USA, EU, Japan, RF: state of the art. • What is your vision of the future INTERNET Architecture?	

OCTOBER, 29			
	9.00 – 10.30	**Plenary Session** Moderator **Serge Fdida** • **Jerry Sobieski, Michal Hazlinski, Blazej Pietrzak, Peter Szegedi, Fabio Farina, SDNI.** The GEANT Testbeds Service – Virtual Network Environments for Advanced Network and Applications Research • **Nikolaj Bjorner, Karthick Jayaraman.** Network Verification: Calculus and Solvers • **Ivan Seskar.** Towards Distributed Hierarchical SDN Control Plane • **Akihiro Nakao.** Ping Du Application and Device Specific Slicing for MVNO	LOMONOSOV MOSCOW STATE UNIVERSITY, FACULTY OF ECONOMICS, 2ND FLOOR, AUDITORIUM П3
	10.30 – 11.00	**Coffee break**	HALL IN FRONT OF THE AUDITORIUM П3
	11.00 – 13.00	**Section «SDN & NFV theory»** Moderator **Nikolaj Bjorner** • **Artem Plakunov, Valery Kostenko.** Data center resource mapping algorithm based on the ant colony optimization • **Valery A. Sokolov, Igor V. Alekseev, Mikhail A. Nikitinskiy, Denis V. Mazilov.** A network analytics system in the SDN. (Multi-client Application for the Management of Services and SDN Infrastructure Segment Provided by an Operator) • **Mikhail A. Nikitinskiy , Igor V. Alekseev .** A Stateless Transport Protocol in Software Defined Networks • **S.Ya. Shorgin, A.V. Pechinkin,Konstantin Samouylov, Yulia Gaidamaka, Eduard Sopin, Eugeny Mokrov.** Queuing System with Multiple Queues and Batch Arrivals for Cloud Computing System Performance Analysis • **Eugene V. Chemeritskiy, Vladimir A. Zakharov.** Consistent network update without tagging	LOMONOSOV MOSCOW STATE UNIVERSITY, FACULTY OF ECONOMICS, 2ND FLOOR, AUDITORIUM П3
	13.00 – 14.00	**Lunch**	DINING ROOM, FIRST FLOOR
	14.00 – 15.30	**Section «Practice and experiments in SDN & NFV». Part 2** Moderator **Serge Fdida** • **Vasily Balashov, Valery Kostenko, Alexander Shalimov, Ruslan Smeliansky, Pavel Vdovin.** An Analysis of Approaches to Onboard Networks Design • **Sergey Shorgin, Konstantin Samouylov, Irina Gudkova, Olga Galinina, Sergey Andreev.** On the Benefits of 5G Wireless Technology for Future Mobile Cloud Computing • **P.V. Likin, A.A. Vilchinsky, L.V. Vdovin.** Network utilization optimizer for SD-WAN	LOMONOSOV MOSCOW STATE UNIVERSITY, FACULTY OF ECONOMICS, 2ND FLOOR, AUDITORIUM П3
	15.30 – 16.00	**Coffee break**	HALL IN FRONT OF THE AUDITORIUM П3
	16.00 – 18.00	**Section «Practice and experiments in SDN & NFV». Part 3** Moderator **Ivan Seskar** • **Oleg L. Sadov, Vladimir A. Grudinin, Andrey Y. Shevel, Dmitry V. Vlasov, Sergey E. Khoruzhnikov, Alexander E. Shkrebets, Vladimir B. Titov, Arsen B. Kairkanov.** OpenFlow SDN testbed for Storage Area Network • **Sergey Monin, Alexander Shalimov, Ruslan Smeliansky.** Chandelle: Principles of integration wireless controller and SDN controller • **P.N. Polezhaev, L.V. Legashev, A.E. Shukhman, A.L. Konnov.** Development of educational resource datacenters based on software defined networks • **A.I. Mikov, E.B. Zamiatina.** Program Tools and Language for Network Simulation and Analysis	LOMONOSOV MOSCOW STATE UNIVERSITY, FACULTY OF ECONOMICS, 2ND FLOOR, AUDITORIUM П3

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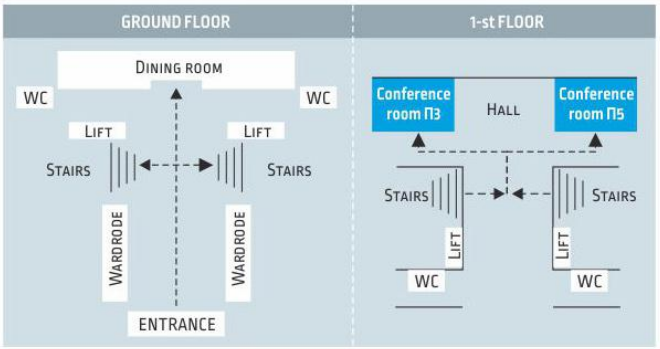

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Program Committee

Chairman: Ruslan L. Smelyansky

Corresponding member of the Russian Academy of Sciences, Professor (MSU, IEEE member), R&D Director at Applied Research Center for Computer Networks

Famous Russian scientist, specialist in the field of Computer Networking, Information Technology, Computational Mathematics, Information Security, Education, RAS Corresponding Member, Professor, Doctor of Sciences, Head of the Laboratory of Computing Systems at the Faculty of Computational Mathematics and Cybernetics of Moscow State University, Head of the Laboratory of Information Systems in Education and Research in MSU, Honored Scientist of the Russian Federation, Honored Professor of MSU, member of Science Council of Ministry of Science and Education of Russian Federation, member of international professional societies IEEE, Computer Society, Association for Computing Machinery (ACM). Author of six courses at the Faculty of Computational Mathematics and Cybernetics at Moscow State University. Published over 180 scientific papers, prepared 21 candidates of sciences.

Co-Chairman: Vladimir N. Vasilev

Corresponding member of the Russian Academy of Sciences, Professor (ITMO, IEEE member), Rector of Saint-Petersburg National Research University of Information Technologies, Mechanics & Optics (ITMO).

Vladimir Vasilev is the rector of the University, the supervisor of the RUNNet computer network and the head of the Department of Computer Technologies.Since October 20, 2004 he is Chairman of the Council of Rectors of St. Petersburg universities. He is e Vice-president of the Russian Rectors Union (2006). He is President of D. S. Rozhdestvensky Optical Society (2006). He is the Vice-chairman of the Higher Attestation Commission (HAC).

In 2000, 2002, 2003 he became the holder of the Government of the Russian Federation award in the field of education. He is the full member and corresponding member of several industry and international academies, member of Scientific and Technical Council of the Ministry of Education and Science of the Russian Federation, member of the Scientific and Technical Council on Informatization of Education, member of the Scientific and Technical Council of the Government of St. Petersburg, Vice-president of Association of Russian universities.

Co-Chairman: Alexander P. Kuleshov

Director of the A.A. Kharkevich Institute for Information Transmission Problems (IITP) of the Russian Academy of Sciences.

Alexander Kuleshov is a specialist in the field of information technologies and mathematical modeling. In 2006, he was elected Director of the A.A. Kharkevich Institute for Information Transmission Problems (IITP) of the Russian Academy of Sciences. At IITP, he also serves as the chairman of the Academic Council, Chairman of the Doctorate Dissertation Council, and Chair of Information Transmission and Processing. Throughout his academic career, he authored and co-authored 54 studies, including 4 monographs.

Program Committee Members

Akihiro Nakao, professor, The University of Tokyo

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Nate Foster, assistant professor, Department of Computer Science Cornell University

Kuang-Ching Wang, associate Professor (Department of Electrical and Computer Engineering Clemson University, IEEE senior member

Serge Fdida, Professor UPMC - University Pierre & Marie Curie (Paris VI) senior member of IEEE and a Distinguished ACM Member

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Reza Nejabati, PhD, senior lecturer, University of Bristol, senior member of IEEE.

Keynote and invited speakers

Akihiro Nakao

Professor at Applied Computer Science Course, Interfaculty Initiative in Information Studies, Graudate School of Interdisciplinary Information Studies, The University of Tokyo. He received Ph.D. degree in Computer Science from Princeton University. He is a member of PlanetLab Consortium. He also jointly organizes PlanetLab Japan Consortium.

Akihiro Nakao received B.S.(1991) in Physics, M.E.(1994) in Information Engineering from the University of Tokyo. Worked in IBM Yamato Laboratory/at Tokyo Research Laboratory/at IBM Texas Austin from 1994 till 2005. He received M.S.(2001) and Ph.D.(2005) in Computer Science from Princeton University Aki has been leading NakaoLab at the University of Tokyo since 2005.

Nikolaj Bjorner

Nikolaj works in the area of Automated Theorem Proving and Software Engineering.Currently working with the state-of-the art theorem prover Z3, which is used as a foundation of many software engineering tools, including test-case generation, smart fuzzing, static analysis, program verification, software model checking, model-based software design and synthesis. Previously, designed the DFSR, Distributed File System — Replication, shipped with Windows Server since 2005 and before that worked on distributed file sharing systems at XDegrees (a startup acquired by Microsoft), and program synthesis and transformation systems at the research company Kestrel Institute. Received his Master's and Ph.D. degrees in computer science from Stanford University.

Jerry Sobieski

Director for International Reserach Initiatives Americas & Asia Pac at NORDUnet. NORDUnet is a joint collaboration by the 5 Nordic National Research and Education Networks in Denmark (DeIC), Finland (Funet), Iceland (RHnet), Norway (Uninett) and Sweden (SUNET) and operates a world-class Nordic and International network and eInfrastructure service for the Nordic research and educational community. Jerry Sobieski joined NORDUnet as Director of Research Initiatives for the Mid-Atlantic Crossroads (MAX), a consortium of almost 50 research and higher education institutions in the Washington, DC region. He was responsible for developing strategic and multi-institutional network research programs that addressed the needs of the next generation of globally distributed "e-science" applications.

Jerry headed up the NSF DRAGON Project, an experimental optical testbed in the Washington DC metro area developing GMPLS based dynamic hybrid service architectures. Besides his work on DRAGON, Jerry also headed up the Testbed Support Center for the Internet2 Hybrid Optical/Packet Infrastructure (HOPI) - a US national research effort funded by the Internet2 organization exploring next generation internet architectures. His team also supported the Global Information Grid Experimental Facility (GIG-EF) - a DoD funded advanced technology testbed also in Washington DC. Jery Sobieski served on the Internet2 Technical Advisory Committee for the Abilene network, and the Design Team for HOPI.

Michael Zink

Michael Zink is currently Assistant Professor in the Electrical and Computer Engineering Department at the University of Massachusetts in Amherst. He received his PhD in 2003 from the Multimedia Communications Laboratory at Darmstadt University of Technology. He works in the fields of sense-and-response sensor networks, distribution of high-bandwidth, high-volume data, and the design and analysis of long-distance wireless networks and Systems Engineering. Further research interests are in wide-area multimedia distribution for wired and wireless environments and network protocols. He is one of the developers of the

KOMSSYS streaming platform. From 1997 to 1998 he was employed as guest researcher at the National Institutes of Standards and Technology (NIST), where he developed an MPLS testbed. In 2003 he received his Ph.D. degree (Dr.-Ing) from Darmstadt University of Technology; his thesis was on Scalable Internet Video-on-Demand Systems.

Ilya Baldin

Ilya Baldine leads RENCI's network research and infrastructure programs. He is a networking researcher with a wide range of interests, including high-speed optical network architectures, cross-layer interactions, novel signaling schemes and network security. Before RENCI, Baldine was the principal scientist at the Center for Advanced Network Research at the Research Triangle Institute, and a network research engineer at the Advanced Network Research group at MCNC, where was a team member and a leader of a number of federally funded research efforts. He holds Ph.D. and MS degrees in computer science from North Carolina State University. His areas of expertise are advanced networking, network infrastructure as service.

Serge Fdida

Serge FDIDA received his PhD in 1984 and Habilitation a Diriger des Recherches in 1989 both from the University Pierre & Marie Curie (UPMC). His research interests are related to the Internet technology and protocols, with an emphasis on innovative wireless networks, large-scale content distribution systems as well as the design of federated test-beds to support experimentally driven research. He worked as Visiting Scientist at IBM Research (North Carolina). He was leading or involved in many research projects in High Performance Networking in France and Europe. Currently, he is also leading the Equipex FIT, a large-scale testbed on the Future Internet of Things. Serge Fdida is a senior member of IEEE and a Distinguished ACM Member.

Kuang-Ching Wang

Dr. K.-C. Wang works as Associate Professor at the Department of Electrical and Computer Engineering at Clemson University as well as Member of the Technical Staff at Big Switch Networks, researching and developing software defined networking and next generation cloud computing technologies. He received his Ph.D. degree in Computer Engineering from UW-Madison in 2003. Dr. Wang is the PI for several NSF GENI future Internet projects deploying SDN, WiMAX, and compute racks for nationwide research experimentation. He is also the PI for "Clemson NextNet" - a NSF campus cyber-infrastructure project for deploying university wide SDN and building a SDN support team in the IT organization. He is a member on the US Ignite mentoring team for integrating SDN with broadband applications. He was recently on sabbatical with Stanford's Open Networking Lab and was on the team that developed the first demo of SDN-BGP wide area networking support. Prior to participation in GENI, he has developed a range of network testbeds with different wireless technologies including Wi-Fi, WiMAX, and Zigbee for infrastructure, ad hoc, and sensor wireless networks sponsored by NSF, USDOT, SCDOT, BMW, Cisco Systems, and CH2M Hill.

Joel J. Mambretti

Currently works at International Center for Advanced Internet Research is focused on developing digital communications for the 21st Century. The Center, which was created in partnership with a number of major high-tech corporations, focuses on large-scale next-generation communications infrastructure, networks, and applications (metro, regional, national, and international). The Center also undertakes public policy projects related to large-scale communications infrastructure.

Ivan Seskar

Associate Director at WINLAB, Rutgers University, responsible for experimental systems and prototyping projects. He was one of the co-PIs and a lead project engineer for ORBIT testbed, with responsibility for development, integration and deployment of the radio grid emulator system for which the team received 2008 NSF Alexander Schwarzkopf Prize for Technological Innovation. He is currently the PI for the NSF funded WiSER cognitive radio project and for the NSF/BBN funded GENI-wide WiMAX deployment, as well as co-PI on the NSF funded research MVNO project. Ivan is a Senior Member of the IEEE, member of ACM and co-founder and CTO of Upside Wireless Inc.

Mark Berman

As Project Director in GENI, he has overall responsibility for GENI technical direction and successful implementation. Mark works with the GENI community, which spans dozens of universities, government and industry partners, to ensure that GENI is well designed, technically feasible, and satisfies its research requirements.

As Vice President for Technology Development at BBN Technologies, Mark works to bring technical innovations into practical use. He has pursued this goal for more than a quarter century at BBN, beginning in the 1980s when he participated in a successful effort to bring new user interface technology and AI-based pattern recognition and rule-based systems to bear on a major sensor and processing system for the US Navy. Mark has served as Principal Investigator or Project Manager for several research efforts, with emphases in the areas of user interfaces and distributed computing. Mark holds A.B. and S.M. degrees in computer science from Harvard. He has twice (1996, 2006) been named Time's Person of the Year.

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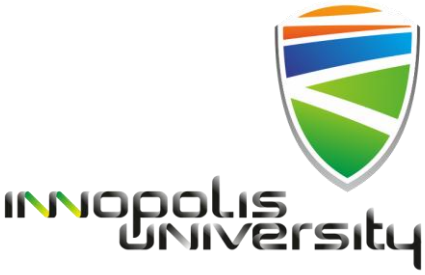

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