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Special Session

SS2: Cloud and SDN Network Security

Call for Papers

The communication networks are entering a new era where the cloud and virtualization technologies fundamentally change the network architecture as well as the way networks will be deployed and operated. Indeed, after virtualizing and sharing compute and storage resources, the upcoming Software Defined Networks (SDN) and Network Function Virtualization (NFV) approaches allow virtualizing and sharing network resources (e.g., routing, firewall). This new generation of virtualized and multi-tenant networks comes with various promises of CAPEX and OPEX optimization, rapid deployment of new services, agile and software-based network reconfiguration, etc. However, from a security point of view, this new paradigm of SDN-based virtualized network raises various security challenges as the network functions will no longer be embedded -and "protected"- within the network equipments. Indeed, the virtualization of network function induces new security threats (e.g., exposition of these functions running in cloud & multi-tenant environments) as well as sovereignty issues (e.g., related to the location, and migration, of the VMs handling these network functions). Besides, network virtualization brings also various opportunities regarding security such as the possibility to automatically integrate and configure software-based security functions (e.g., firewall, IDS/IPS) to enable a security-aware service orchestration.

This special session is then focused on novel research topics dealing with security for these emerging cloud and SDN-based networks. Paper submitted should provide new techniques or approaches to identify and address the critical security issues of such virtualized network environments or, conversely, to exploit these promising virtualization and SDN technologies in order to offer new security services. The topics of this special session include but are not limited to the following:

The session covers all related topics, including but not limited to:

- Security of SDN controllers and virtualized network applications
- Security of Network Function Virtualization (NFV)
- Security of multi-tenant virtualized networks
- New security services based on SDN and network virtualization
- Virtualization of security appliances (eg firewall, IDS)
- Security-aware network service chaining /orchestration
- Trusted computed in SDN and cloud network
- Embedded Secure Element for security and trust in virtualized networks
- SDN-based data mining for security
- Security assurance in dynamic virtualized network environments

- Security & privacy policy management in SDN and cloud network
- Sensitive data protection in virtualized and dynamic network environments
- Regulation and network sovereignty in SDN and cloud network

Important dates

Paper Submission: June 30, 2015
Notification of Acceptance: August 3, 2015
Final Paper: August 17, 2015

Session organizers

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Stéphane Betgé-Brezetz is a senior researcher in Alcatel-Lucent Bell Labs in France (Nozay). He received an engineering degree in 1991 from Hautes Etudes Industrielles (HEI Lille, France) and a PhD in 1996 from Toulouse University (at LAAS-CNRS lab); and then joined the research center of Alcatel (now Alcatel-Lucent). He has contributed and led several national and European research projects on software engineering, network and service management, and privacy and data protection. He was lastly leading the European research project SEED4C on security in cloud infrastructures and is involved in new research projects on security in cloud & SDN networks. He holds more than 50 publications in conferences and journals, and more than 20 patents. He serves in several conference Technical Program Committees (including CloudNet, CCNC, and GLOBECOM), as IEEE Communications Magazine reviewer, or as expert of the French National Research Agency (ANR). His research interests are in the fields of security in the cloud, privacy and data protection, regulation & sovereignty policy enforcement, trusted computing, cloud networking, SDN, and NFV.

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Dr. Emmanuel Dotaro received an M.S. degree in Computer Science from the University of Versailles, France in 1996. After three years spent in Institut National des Telecommunications Performance Evaluation lab. while holding a teaching position at the University of Versailles, he joined in 1999 the Alcatel Research and Innovation lab. at Marcoussis, France. He directed the research on networking topics at Bell Labs including Packet Transport Infrastructure and Semantic and Autonomic technologies. He joined Thales in 2009 and is now leading Network and Security labs. His current research interests are network softwarization, radio and mobile networks, cloud brokering, security as a service, security policies enforcement in 5G and IoT systems, detection and remediation related cybersecurity topics. He holds about 40 communications in international conferences and journals, as well as same number of patents. He serves in several conference and journal Technical Program Committees.