The IEEE Ottawa Section, **IEEE Ottawa Joint Chapter of Communications Society, Consumer Electronics Society, and Broadcast Technology Society** (**ComSoc/CESoc/BTS**), IEEE Ottawa Joint Chapter of Reliability Society, IEEE Ottawa Educational Activities (EA), IEEE Ottawa Young Professionals (YP), and Algonquin College Student Branch (ACSB) in conjunction with School of Advanced Technology, Algonquin College are inviting all interested IEEE members and other engineers, technologists, and students to ComSoc Distinguished Lecture on

Security in SDN/NFV and 5G Networks-Opportunities and Challenges

by

Dr. Ashutosh Dutta, Director, Industry Outreach-IEEE Communications Society, IEEE 5G Initiative Founding Co-Chair and Senior Scientist JHU/APL (Johns Hopkins University/Applied Physics Lab)

DATE: Wednesday April 3, 2019
TIME: Refreshments, Registration and Networking: 06:00 p.m.; Seminar: 06:30 p.m. – 07:30 p.m.
PLACE: **Ciena-Optophotonics Lab** **(Room T129),** T-Building, School of Advanced Technology,
Algonquin College, 1385 Woodroffe Ave., Ottawa, ON Canada K2G 1V8
PARKING: after 5:00 p.m. at Lots 8 & 9. Pay $5 flat rate at the machine and display the ticket on your car dashboard.
Admission: Free Registration. To ensure a seat, please register by e-mail contacting: Wahab Almuhtadi

Abstract

Software Defined Networking (SDN) and Network Function Virtualization (NFV) are the key pillars of future networks, including 5G and Beyond that promise to support emerging applications such as enhanced mobile broadband, ultra-low latency, massive sensing type applications while providing the resiliency in the network. Service providers and other verticals (e.g., Connected Cars, IOT, eHealth) can leverage SDN/NFV to provide flexible and cost-effective service without compromising the end user quality of service (QoS). While NFV and SDN open up the door for flexible networks and rapid service creation, these offer both security opportunities while also introducing additional challenges and complexities, in some cases. With the rapid proliferation of 4G and 5G networks, operators have now started the trial deployment of network function virtualization, especially with the introduction of various virtualized network elements in the access and core networks. These include elements such as virtualized Evolved Packet Core (vEPC), virtualized IP Multimedia Services (vIMS), Virtualized Residential Gateway, and Virtualized Next Generation Firewalls. However, very little attention has been given to the security aspects of virtualization. While several standardization bodies (e.g., ETSI, 3GPP, NGMN, ATIS, TIA) have started looking into the many security issues introduced by SDN/NFV, additional work is needed with larger security community involvement including vendors, operators, universities, and regulators. This tutorial will address evolution of cellular technologies towards 5G but will largely focus on various security challenges and opportunities introduced by SDN/NFV and 5G networks such as Hypervisor, Virtual Network Functions (VNFs), SDN Controller, Orchestrator, Network slicing, Cloud RAN, and security function virtualization. This tutorial will also highlight some of the ongoing activities within various standards communities and will illustrate a few deployment use case scenarios for security including threat taxonomy for both operator and enterprise networks. In addition, I will also describe some of the ongoing activities within IEEE Future Network initiative including roadmap efforts and various ways one can get involved and contribute to this initiative.

Speaker's Bio

Dr. Ashutosh Dutta is currently Senior Wireless Communication Systems Research Scientist and JHU/APL Sabbatical Fellow at Johns Hopkins University Applied Physics Labs (JHU/APL), USA. Most recently he served as Principal Member of Technical Staff at AT&T Labs in Middletown, New Jersey. His career, spanning more than 30 years, includes Director of Technology Security and Lead Member of Technical Staff at AT&T, CTO of Wireless at a Cybersecurity company NIKSUN, Inc., Senior Scientist in Telcordia Research, Director of Central Research Facility at Columbia University, adjunct faculty at NJIT, and Computer Engineer with TATA Motors. He has more than 90 conference and journal publications, three book chapters, and 30 issued patents. Ashutosh is co-author of the book, titled, "Mobility Protocols and Handover Optimization: Design, Evaluation and Application" published by IEEE and John & Wiley that has recently been translated into Chinese Language. Ashutosh served as the chair for IEEE Princeton / Central Jersey Section, Industry Relation Chair for Region 1 and MGA, Pre-University Coordinator for IEEE MGA and vice chair of Education Society Chapter of PCJS. He co-founded the IEEE STEM conference (ISEC) and helped to implement EPICS (Engineering Projects in Community Service) projects in several high schools. Ashutosh currently serves as the Director of Industry Outreach for IEEE Communications Society and is the founding co-chair for IEEE 5G initiative. He also serves as IEEE Communications Society's Distinguished Lecturer for 2017-2018. Ashutosh serves as the general co-chair for the premier IEEE 5G World Forum. He was recipient of the prestigious 2009 IEEE MGA Leadership award and 2010 IEEE-USA professional leadership award. Ashutosh obtained his BS in Electrical Engineering from NIT Rourkela, India, MS in Computer Science from NJIT, and Ph.D. in Electrical Engineering from Columbia University under the supervision of Prof. Henning Schulzrinne. Ashutosh is a senior member of IEEE and ACM.