



ComSoc DL Talk Title: Security Challenges and Opportunities in SDN/NFV and 5G Networks

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Abstract: Software Defined Networking (SDN) and Network Function Virtualization (NFV) are the key pillars of future networks, including 5G. Telecom operators and service providers 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 (EPC), virtualized IP Multimedia Services (IMS), 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., IEEE, 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 talk will address various security challenges and opportunities introduced by network virtualization, network slicing, and software defined networking. I will also highlight some of the ongoing activities within the standards communities and will illustrate a few

deployment use case scenarios. I will end the talk with an overview of recent IEEE 5G Initiative (5g.ieee.org) and how it is going to help with the evolution of 5G eco system.

Biography: Ashutosh Dutta is currently Lead Member of Technical Staff at AT&T's Chief Security Office in Middletown, New Jersey. His career, spanning more than 30 years, includes Director of Technology Security 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 was recently translated into Chinese language. An active IEEE and ACM volunteer, 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 co-lead for IEEE 5G initiative. He was recipient of the prestigious 2009 IEEE MGA Leadership award and 2010 IEEE-USA professional leadership award. Ashutosh serves as IEEE Communications Society's Distinguished Lecturer for 2017-2018. 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 was honored as a Star Alumnus by his Alma mater NIT Rourkela. Ashutosh is a senior member of IEEE and ACM.