***SEMINAR ANNOUNCEMENT***

**DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING**
**Faculty of Engineering**
Website: https://www.eng.nus.edu.sg/ece/

***Area: Communications & Networks***

***Host: Assoc Prof Mohan Gurusamy***

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| **TOPIC** | **:** | **Side Channel Leakage in NFV MANO - An Experimental Study with Cloudified 5G** |
| **SPEAKER** | **:** | **Mr Amogh Palleri Chettuparambil**<br>**Graduate student, ECE Dept, NUS** |
| **DATE** | **:** | **Friday, 21 August 2020** |
| **TIME** | **:** | **11.00AM to 12.00PM** |
| **WEBINAR** | **:** | **Join Zoom Meeting**<br>**https://nus-sg.zoom.us/j/8646094159?pwd=TXpzbnN3VktQd3RPYmlTRE1zN256QT09**<br><br>**Meeting ID: 864 609 4159**<br>**Password: 302279** |


**ABSTRACT**

Network function virtualization, software-defined networking, and cloud computing are the key technologies that enable dynamic, resource-efficient service provisioning in 5G networks. Auto-scaling mechanisms are an essential factor for efficient resource utilization and improved quality of experience in such networks. Autoscaling is also a defense against attacks such as Distributed Denial of Service (DDoS). Service providers can use different ETSI stack-based NFV management and orchestration platforms for autoscaling and dynamic resource provisioning. However, such platforms pose a risk of side channel information leak between the orchestrator and cloud. Tapping side channel information, an adversary can detect the auto-scaling policy, state of the system, scale-up/down, and cloud platform in order to maximize the damage of an attack. We emulate a scalable 5G network OpenAirInterface5G bundle using Juju as a service. We extend this open source realistic 5G emulator testbed, and experiment with various cloud platforms such as Openstack, Amazon Web Services (AWS), and Microsoft Azure clouds. We show how an adversary could infer the resource scalability and type of cloud platform by analyzing as simple information as packet flow between the orchestration platform and the cloud. We also demonstrate a way to intelligently craft the DDoS attack wave with UE bots adapting to elude the intrusion detection mechanism.


**BIOGRAPHY**

Amogh PC is currently pursuing Ph.D. in Department of Electrical and Computer Engineering, National University of Singapore. He received M.Tech. Degree in Computer Science and Engineering from Indian Institute of Technology (IIT), Hyderabad, India in 2018. His research interests include Network Functions Virtualization (NFV), Software-Defined Networking (SDN), Network Slicing and Security in 5G.

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