**SMARTNET**

Aston University
BIRMINGHAM UK

TELECOM SudParis TELECOM ParisTech

National and Kapodistrian
UNIVERSITY OF ATHENS

# Network Security focusing on the hands-on experience

## Prof Kyriakos Vlachos

Computer Engineering and Informatics Department, University of Patras, Greece

### Week 1

- *Lecture 1.* **Presentation of Linux Distributions.** *Lab:* **Flashing and working in a VM running a headless linux distro.**
  5th July 2021, 9 am – 11 am (UK time);
- *Lecture 2.* **Linux Firewalls and basic examples.** *Lab:* **Creating iptables rules.**
  6th July 2021, 9 am – 11 am (UK time);
- *Lecture 3.* **Hardening Server security.** *Lab:* **On the use of fail2ban and ssh hardening tools**
  7th July 2021, 9 am – 11 am (UK time);
- *Lecture 4.* **Defending against Distributed Denial of Service Attacks.**
  8th July 2021, 9 am – 11 am (UK time);

### Week 2

- *Lecture 5.* **Distributed Denial of Service Attacks**
  12th July 2021, 9 am – 11 am (UK time);
- *Lecture 6.* **Introduction to DNS and DNS type pf attacks. Lab: Implementing a DNS server using BIND9**
  13th July 2021, 9 am – 11 am (UK time);
- *Lecture 7.* **AES: The Advanced Encryption Standard. Lab: Experimenting with DNS server cache poising.**
  14th July 2021, 9 am – 11 am (UK time);
- *Lecture 8.* **PGP, IPSec, SSL/TLS, and Tor Protocols**
  15th July 2021, 9 am – 11 am (UK time).

**Abstract:**
The proposed activity concerns lectures on Network Security focusing on the hands-on experience. The course will deal with the analysis, design, and management issues for achieving an effective network security zone. Key concepts and technologies that will be presented include linux firewalls, authentication, type of of attacks (DDoS/DOS/DNS) and possible mitigation techniques. An overview of encryption algorithms and security protocols will also be presented. Students must have access to a personal Virtual Machine (VM) in which they will flash a Debian OS (or other linux distro). By login to their VM they will experiment on using linux firewalls, hardening server security as well as monitoring potential malicious attempts for breaching security.

## Short Bio:

**Prof Kyriakos G. Vlachos** received his Dipl.-Ing. degree in electrical and computer engineering from the National University of Athens (NTUA), Greece, in 1998 and his Ph.D. in electrical and computer engineering, also from NTUA, in 2001. From 1997 to 2001 he was a Senior Research Associate in the Photonics Communications Research Laboratory (ICCS/NTUA). In April 2001 he joined Bell Laboratories, Lucent Technologies, working on behalf of the Applied Photonics Group. Prof. Vlachos conducted research on high-speed optical networks and DWDM transmission techniques. During 2003, he joined the National Regulation Authority of Telecommunication andPostal Service of Greece (EETT), where he served as a Scientific Advisor for various techno-economic issues for the promotion of broadband technologies. Since 2003, he was also a member of the Computer Engineering Laboratory of the Technical University of Delft,and since 2005 he has been a Faculty Member of the Computer Engineering and Informatics Department of the University of Patras,Greece. In 2007, he founded the Photonic Networks and TechnologyLaboratory (PNET) (http://ru1photonicslab.cti.gr/). His research interests are in the areas of high-speed protocols and technologies forbroadband, high-speed networks, optical packet/burst switching, and grid networks. Prof. Vlachos has participated in various research projects funded by the European Commission (IST-STOLAS, IST-PRO3, ESPRIT-DOALL, ephoton/ONe, ICT-BONE, and ICT-DICONET). Prof. Vlachos is a member of IEEE and the Technical Chamber of Greece, and he periodically acts as a scientific reviewer for the General Secretariat for Research and Technology of Greece (GSRT) as well as for the European Commission and the Netherlander Organization for Scientific Research, Technology Foundation. Prof. Vlachos is the (co)author of more than 100 journal and conference publications and holds 2 patents.