**Networking Fundamentals**

**Duration: 2 days**

**Day 1**

**OSI model**

* Model theory
* Full review through all the layers (2 - 7)
* Protocols (Ethernet, IP, TCP and UDP)
* Networks model and topology (LAN, WAN)
* Network elements (Switch, Router, FW, Server)

# Network management

* What is SNMP and how to use it
* Network elements API - how to manage router or switch.
* FW - Allow and deny access.
* Protocols
  + Ethernet
  + IP
  + TCP, UDP
  + HTTP

# Day 2 – Protocols in depth

* Specials focus on IP headers flags and fragmentation
* Special focus on TCP flow
  + TCP retransmit
  + Previous segment lost
  + Ack lost
  + Segment not captured or not seen
  + Duplicate ack
  + Out of order segment
  + Windows full
  + Special focus on HTTP flow and headers
  + Special focus on UDP flow
  + TCP infinite state machine
* HTTP
  + HTTP payload structure
  + HTTP full session analysis and troubleshooting
  + HTTPS - understanding the flow.
  + HTTPS full session analysis and troubleshooting