ALTA3 RESEARCH

# Network Fundamentals

## 3 days hands on

1. Introduction to Networking
    - Network architectures and the OSI Model
    - Cabling and network topologies
    - The big picture
2. Ethernet basics
    - Layer two basics
    - How data moves through an ethernet network
    - ARP
    - What happens when a router is added
3. Ethernet switching
    - Hubs and switches
    - Bridging
    - Spanning tree
4. IP routing
    - Routers
    - IP addresses
    - IP subnetting
    - The routing table
    - Routing protocols
5. TCP
    - Providing a Connection oriented service
    - Multiplexing, Reliability and Flow Control
    - Sliding Windows
    - Ports
    - Connections
    - Sockets
    - slow-start
    - Congestion Avoidance and Control
6. DNS and DHCP
    - Zone File
    - SOA
    - NS records

    - A and AAAA records
    - SRV
    - NAPTR
    - Dynamic DNS
    - DHCP scopes
7. Routing
    - Distance-vector
    - Link State
    - Static Route
    - OSPF
    - BGP
8. VLANs
    - 802.1Q
    - 802.1P
    - Access
    - Trunks
9. ACLs
    - How to write rules
10. SIP and RTP
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11. Quality of Service (QoS)

12. SDN and OpenFlow