

Focus Areas for the Master Course Lecture

Network Security, WS2020, V5.1

Prof. Chen

1. ITU-T Quality of Service Parameters, A subset of network parameters determining QoS
2. Different sensitivities of Voice and Data communications with respect to the QoS parameter degradations, Jitter, Delay, Bandwidth etc.
3. Techniques to improve the QoS (Scheduling, Traffic Shaping, IntServ, DiffServ etc.)
4. Multimedia Signals, typical bitrates
5. JPEG compression principle (main functional blocks)
6. Construction of MPEG frames
7. H.323, RTP protocol stacks, RTCP for Real-Time Applications
8. SIP Principles, Messages
9. Parameters and end-to-end process steps affecting the QoS for VoIP in IP-based networks
10. Fundamental functions and aspects of Network Security.
11. Factors affecting the security of the network (physical, access, authentication, data, communications etc.)
12. Principles and different types of symmetrical and asymmetrical encryptions, typical examples, comparison of them, advantages and disadvantages. Hybrid Encryption Technique
13. Firewall functions, rules. Firewall types by using screening routers and DMZ.
14. Site-to-Site, Remote-Access-VPN. IKE and IPsec.
15. Different measures and mechanisms to ensure the security in different OSI layers (PGP, S/MIME, SSL/TLS, IPsec, VPN, Firewalls)

16. (optional) xDSL broadband (Spectral distribution, local loop limitations, bandwidth, typical values, typical trouble shooting processes etc.)

17. (optional) Attenuations and the distances between the customers and the Cable Distribution Cabinet (KVz), Limits for ADSL and VDSL

18. Major Network Management Functions, key words and brief explanations

19. TMN, NMS Main functions, Q3 Interface,

20. SNMP components and functionalities (Manager, Agent, MIB etc.)