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# The Voice over Internet Protocol (VoIP) last challenge: Security and Data Protection

Workshop

Network and Information security: political and  
technical challenges

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# Agenda

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- Why Voice over Internet Protocol
- Security tasks: preserve C.I.A.
- Emergency calls issues
- VoIP Security State-of-the-Art
- VoIP Security next challenges



- Total Cost of Ownership (TCO)
  - VoIP based solutions provide an attractive TCO compared to a traditional PBX based one
- IP convergence: towards next generation *IP based* networks
  - Network convergence: IP Multimedia Subsystem (IMS)
  - Service convergence: MoIP – Multimedia (Text, Voice, Video, Data, Applications, Fax, etc. ) over IP
  - Application convergence: Universal Multimedia Access (UMA)



- Data network risks
  - Viruses, Worms, Trojan horses
- Confidentiality
  - VoIP sniffers (*eavesdropping*)
  - Phishing (*CLI spoofing, Enum poisoning*)
- Integrity
  - Man-in-the-middle attack
  - Voice alteration (*hijacking*)
- Availability
  - Denial of Service threats
  - VoIP Spam



- 100% guarantee?
  - Call connection in case of loss of power or poor QoS level
- Call location
  - ALI (Automatic Location Identifier)
  - Address provisioning at service registration
  - Communications Time Latency (NSA patent)



- IP encryption on network infrastructure
  - VoIP VPN Routers
  
- Encrypted IP soft-phone
  - Skype encryption
  - Zimmerman's zFone



- IP encrypted smartphone
  - Less environmental threats
  - Computational power required
- VoWLAN security
  - Re-authentication in handover lowers QoS
- How to Secure VoIP traffic
  - Standard security model for VoIP systems
  - Secure the infrastructure



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# Thank you

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