

Voice over Internet Protocol

The technology and its applications

A two day seminar

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Seminar Outline

1.- Transport network vs. access system

2.- Transport networks and access systems evolution

- *The telephony network and access*
- *Data over telephony network and access*
- *Data network*
- *PSTN as access to data network*
- *Voice over data network*
- *Packet switching based access*
- *Data system / voice system*
- *Packet switching integrated access*
- *Networks coexistence / voice services*

3.- Voice over circuit switching networks

Voice over packet switching networks

- *Phase one - Analog telephone, analog exchange*
- *Phase two - Analog telephone, digital exchange*
- *Digitizing analog signals*
- *Digitizing voice signals*
- *Phase three - Digital telephone, digital exchange*
- *The need for voice over packet switching*

4.- Voice over circuit switching networks

- *Generating IP voice packets*
- *Connecting VoIP systems to PSTN*

5.- VoIP Applications

- *Internet telephony*
- *Private services*
- *VoIP based access*
- *Global toll free calling*
- *Web / phone integration*
- *Retrieving voice mail via Internet*
- *Call forward to PC*
- *Call forward to email*

6.- VoIP Quality of Service (QoS) issues

- *Delay*
- *Jitter and order*
- *Dropouts*
- *Improving IP network QoS*
- *Regulatory requirements*

7.- Basic VoIP System Architecture

8.- VoIP Call Flow

- *Voice and VoIP entities identifiers*
- *Phone number to IP address conversion*
- *GK conversion table*
- *VoIP device to VoIP device*
- *VoIP device to voice device*
- *Voice device to VoIP device*
- *Voice device to voice device*

9.- VoIP System Architecture

- *Generic building blocks*
- *ITU-T H.323*
 - *Terminal*
 - *Gateway*
 - *Gatekeeper*
 - *Multipoint Control Unit*
 - *Servers*
- *SIP*
 - *Basic entities*
 - *Basic call flow*
- *Gateway decomposition*
- *SIP vs. H.323 vs. GW Decomposition*

10.- VoIP Standards

- *Standardization fields*
- *Standardization activities*
- *Main standards*
- *Media processing standards*
 - *Audio*
 - *Video*
 - *Data*
- *Media transport standards*
 - *RTP*
 - *CRTP*
 - *RTP redundancy*
 - *RTCP*
 - *NTP*
- *Hand-shaking standards*
 - *ITU-T SG16 H.323 suite*

- RAS
- Call signaling (Q.931)
- Call signaling (H.450)
- Capabilities exchange (H.245)
- Typical call set-up
- SIP suite
 - SIP
 - Methods
 - Responses
 - Registration
 - Call signaling
 - Capabilities exchange
 - RTSP
- Media Gateway Control Protocols
 - MGCP
 - Commands
 - Responses
- Other related standards
- Index of standards