

Telephony and VoIP Fundamentals

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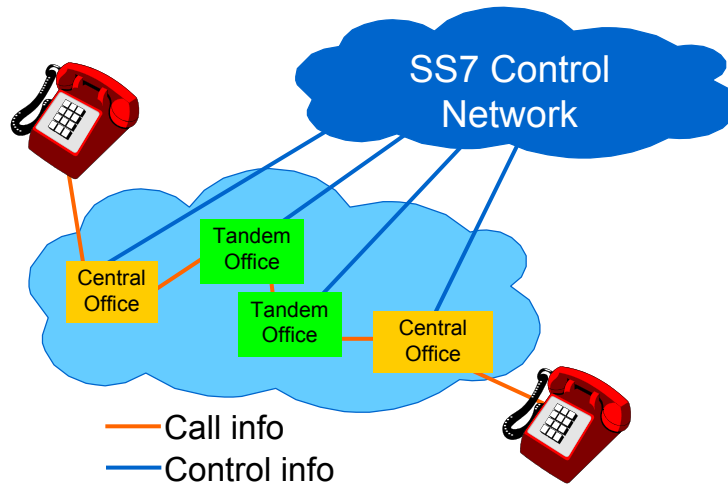
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Agenda

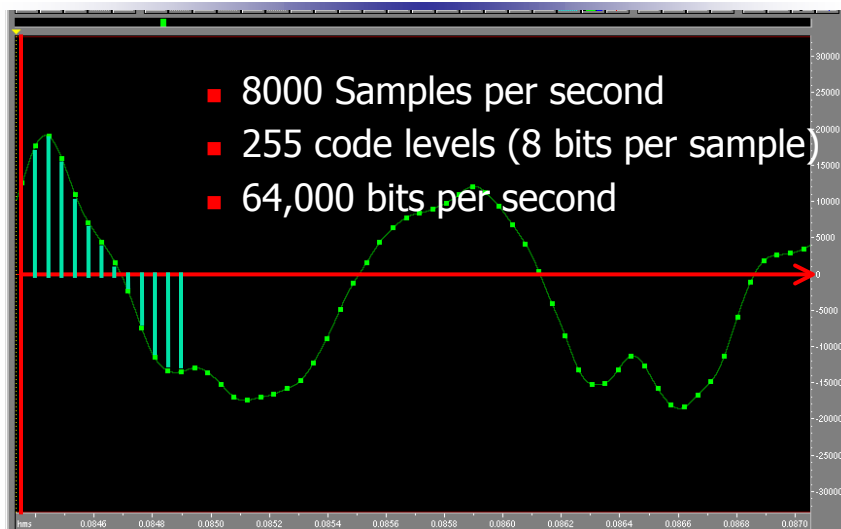
- The Public Switched Telephone Network (PSTN)
 - Architecture
 - Digital Voice
- What is Voice over IP (VoIP)?
- Implementing VoIP
- Unified Communications and Applications Convergence

PSTN Architecture



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Digital Voice Example (PCM)




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Source: Screen capture from "CoolEdit" - <http://www.syntrillium.com/>

Traditional Digital Hierarchy

- 64 kbps (DS0) is the fundamental building block
 - DS1 (T1) carries 24 DS0s in 1.544 Mbps
 - DS3 (T3) carries 28 T1s in ~45 Mbps
 - OC1 carries 3 T3s on ~150 Mbps
- Data speeds have been adapted to fit into this hierarchy

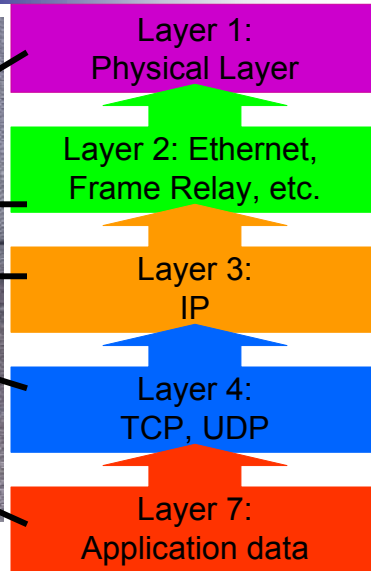
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Traditional Data Nets



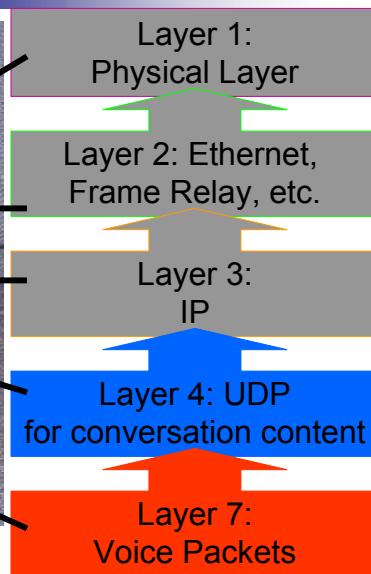
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VoIP




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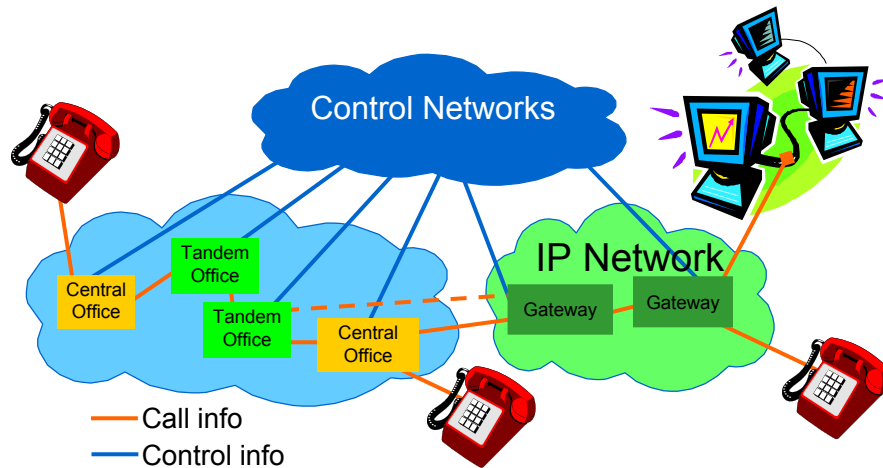
Voice Variables

- Three distinct functions may or may not be used:
 - Compression
 - Could packetize 64 kbps PCM
 - But usually implies a more efficient coding scheme
 - Packetizing
 - Same low-bit-rate algorithms can be used over a dedicated connection
 - VoIP is always packetized
 - Silence Suppression

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Integrated Traditional and VoIP Network



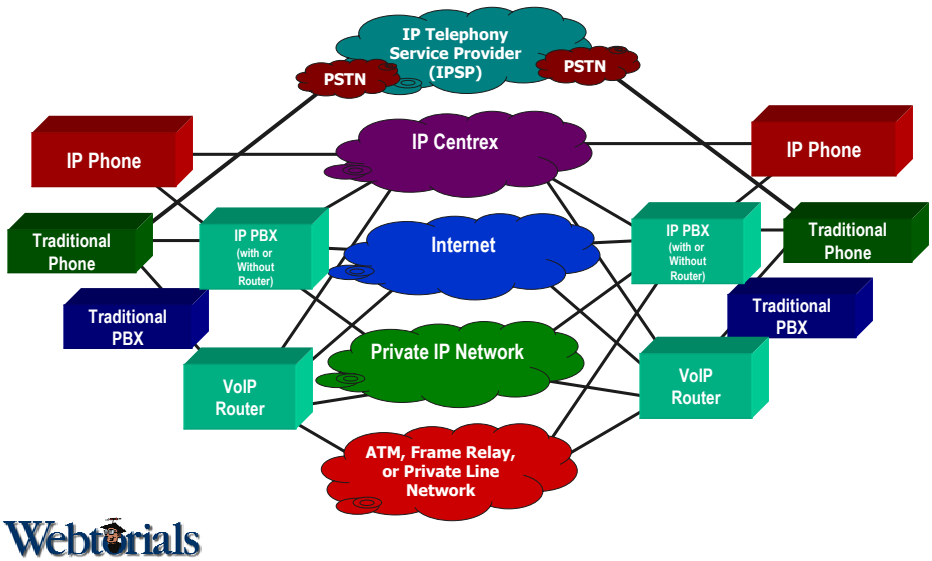
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Typical VoIP Components

- Hardware / Premise Equipment
 - Gateway Function
 - Usually embedded into another device
 - VoIP-enabled routers
 - IP PBX and IP-enabled PBX
- Services
 - "IP Centrex"
 - IP-based transport of POTS/PSTN calls

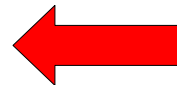
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VoIP Network Architecture

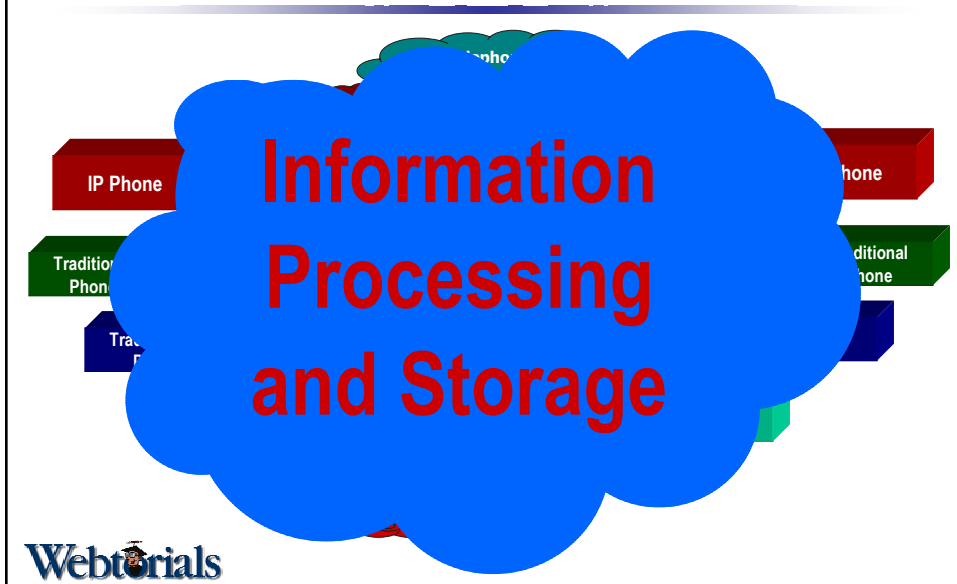


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Converged IT Network Architecture



Thank you!

- Summary
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