

Internet Phone Services

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Overview

- What is Internet Telephony?
 - Common Terms
 - How it works
 - Things to Consider
 - Regulation
 - Summary
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What is Internet Telephony?

- Use the Internet or private network to make and receive voice telephone calls

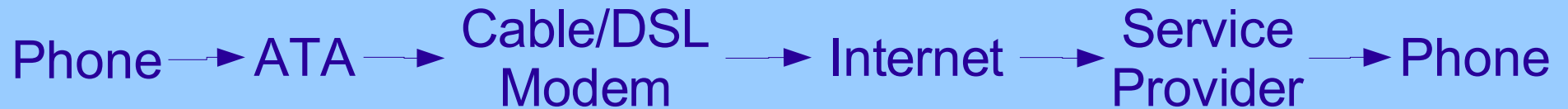


Common Terms

- ATA – Analog Telephone Adapter
 - E911 – Enhanced 911 (emergency service)
 - FoIP – FAX over Internet Protocol
 - PSTN – Public Switched Telephone Network
 - QoS – Quality of Service
 - SIP – Session Initiation Protocol
 - Softphone – PC software for Internet phone calls
 - VoIP – Voice over Internet Protocol
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How Internet Phones Work

VoIP to PSTN (e.g. SunRocket, Vonage)



PC to PSTN (e.g. SkypeOut)



PC to PC (e.g. Skype)



Cost

- Typically much lower than traditional phone service
 - Many PC-PC services are free for all calls
 - VoIP-PSTN domestic rates are ~\$25/month, unlimited calling
 - VoIP-PSTN international rates as low as 3¢/minute
- Additional costs to watch for
 - Installation
 - Equipment
 - Cancellation penalties

Features

- More features included
 - Caller ID and Call Blocking
 - Use existing number or select number
 - Some services offer area code selection
 - Multiple numbers and distinctive ring service
 - Call forwarding
 - Voicemail
 - Retrieval by phone, e-mail, web
 - Notification by e-mail, pager
 - Web services
 - Call logging
 - Feature selection
 - Portability
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Reliability

- Internet service
 - Third-party providers subject to ISP service
 - ISP VoIP services may be independent of Internet service
 - Electric power
 - Unlike traditional phones, Internet phones are dependent upon electric utility
 - Power outage = no phone service
 - Use an Uninterruptible Power Source (UPS) for backup power
 - Existing Cell Phone or traditional phone service as emergency backup
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Security

- Eavesdropping on VoIP possible, but technically challenging
- Encryption available, but rarely implemented
- ATA vulnerability to hacking not a significant problem (yet)
 - ATA usually installed outside router/firewall
 - ATA may work behind firewall
 - Depends upon service provider (contact tech support)
 - Advanced firewall configuration required
 - Google!





Security

ATA Firewall Configuration Example: SunRocket Gizmo and Dlink DI-624 rev C

Static DHCP Client List

	Host Name	IP Address	MAC Address	
<input checked="" type="checkbox"/>	Gizmo	192.168.0.100	00-A0-12-0C-67-3A	 
<input checked="" type="checkbox"/>	shadow	192.168.0.102	00-A0-CC-E7-B3-31	 
<input checked="" type="checkbox"/>	TiVo	192.168.0.101	00-0B-AD-88-0C-A1	 

Firewall Rules List Apply Cancel Help

	Action	Name	Source	Destination	Protocol	
<input checked="" type="checkbox"/>	Allow	VoIP	*,*	LAN,192.168.0.100	*,5060-5061	   
<input checked="" type="checkbox"/>	Allow	StealthIdent	WAN,*	LAN,192.168.0.200	*,113	
<input checked="" type="checkbox"/>	Deny	Default	*,*	LAN,*	*,*	
<input checked="" type="checkbox"/>	Allow	Default	LAN,*	*,*	*,*	

Quality

- Sound Quality depends upon network
 - Echos
 - Delays
 - Dropped calls
 - 13 July 2005 - “NEW YORK (AP) - Internet-based telephone services are still very inferior to traditional phone connections in reliability and sound quality, according to an extensive study that judged Vonage and AT&T CallVantage best among the top providers.”
 - VoIP capability tests available on the Internet
 - Example: <http://www.testyourvoip.com/>

Compatibility

- ATAs allow use of existing phone equipment
 - Cordless phones encouraged for easy setup
 - Existing household phone line can be used only if
 - Traditional phone service physically disconnected
 - Respect limits on Ringer Equivalence Number
 - Modems and FAX equipment may not work
 - Higher data rates ($>9.6\text{Kbps}$) sensitive to delays
 - Lower data rates may work
 - Check with VoIP provider (FoIP service)
 - TiVo dial-up uses a modem and could be affected
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Regulation

- FCC mandates that VoIP providers have E911 service
 - Emergency services tied to registered service address
- FBI wants VoIP providers to allow wiretap access
- Congress may apply Universal Service to VoIP services
 - Currently exempt from local and state taxes and fees that apply to traditional phone service, as well as 3% Federal Excise tax (aka “Spanish American War” tax)

Geof's Experience (SunRocket)

- March 10: Request Annual Service Online
 - Registered numbers with Do Not Call Registry
 - March 19: Install “Gizmo” VoIP Adapter
 - Submit number transfer form through SunRocket (not phone company)
 - April 8: Number transfer complete
 - Request removal of original Household Number
 - Customer Service by phone slow, not effective
 - Customer Service by e-mail very quick
 - May 13: Validation of E911 service address
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Summary

- Internet phone service offers an impressive array of features at a very low cost
- Service plans vary widely
 - shop around for what works best for you
- Recognize limitations of service if considering replacement of traditional phone service

