

Saving \$\$\$ with IP Telephony

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Overview

- Introduction
- Choosing an ATA
- Choosing a SIP Provider
- Demo
- Tweaking

Introduction

Audience

- Anyone with home phone service and thinks they pay too much
 - Requires active Internet service
- Anyone who would like another phone number cheap
 - No dedicated Internet required
- Anyone who has friends or family with either situation

My Case

- Wife required me maintaining a “landline”
 - Her mother wouldn't call her cell phone since “cell phones are for emergencies only”
 - She wanted to give out a number other than her cell's
- I got tired of paying \$36/mo for something virtually worthless
- And I got tired of watching the price spiral up and up over the years from \$12/mo → \$15 → \$24 → \$27 → \$31 → \$33 → \$36. That's just crazy for 100+ year-old tech!

POTS Alternatives

- VoIP/SIP (this presentation)
- Using cell phone for home phone
 - Cell phone to home phone adapter
 - Bluetooth or wired

Basic Telephony Terms

- VoIP (Voice over IP)
 - How voice is encoded into data and decoded back into sound
- IP Telephony
 - Providing telephone service via the Internet usually using RTP
- RTP (Real-time Transport Protocol)
 - How the data of phone calls are streamed over the Internet
- SIP (Session Initiation Protocol)
 - How phone calls are initiated over the Internet
 - Many people misuse VoIP when they mean SIP

What do you need?

- Internet connection with reasonable speed
- An Analog Telephone Adapter (ATA) or SIP Phone
- A SIP Broker (VoIP/IP Telephony provider)

Choosing an ATA

Analog Telephone Adapters

- Consider alternatives
 - Softphones
 - SIP phones
 - PCI/PCIe cards
- ATA's are great if you want to reuse your old phones and home phone wiring
- Prices for most home users are between \$40 and \$75

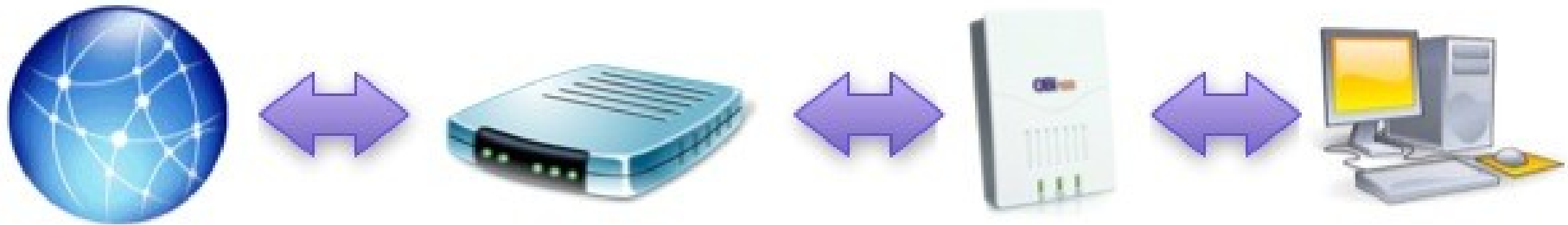
ATA Terms and Tech

- FXS ports
 - Connects to existing analog house phone wires
- FXO ports (optional)
 - Connects to a Telco or PBX circuit
 - Allows bridging to access long distance services via a local call
- Internet port
 - Wired ethernet port that connects to the Internet
- Ethernet port (optional)
 - Wired ethernet port that can connect house network

Optional ATA Features

- Bridging (FXO port)
- Multi-line (multiple FXS ports)
- Ethernet port (Quality of Service)
- Google Voice
- Bluetooth Adapter
 - Calls to cell ring home phone
 - Calls from home phone go over cell
- Too many little ones to cover here

ATA Network Configurations



Network with Quality of Service
Requires optional ATA ethernet port and
network bridge or double NAT



Network more robust but without Quality of Service
Requires port forwarding

Important ATA Features

- “Locked” vs. “Unlocked”
 - ATA's can be like cell phones, locked to a provider
 - “Free” equipment with service often means “locked”
 - When buying (new or used) be sure to ask
- Firmware upgrade
 - Make sure your ATA firmware is current

Possible ATA's to Consider

- Obihai (all Google Voice)
 - OBi100 (\$40): 1 FXS, 0 FXO, no ethernet
 - OBi110 (\$50): 1 FXS, 1 FXO, no ethernet
 - OBi202 (\$74): 2 FXS, 0 FXO, with ethernet (QoS) and optional Bluetooth for cell phone adapter
- Cisco
 - SPA112 (\$45): 2 FXS, 0 FXO, no ethernet
 - SPA122 (\$61): 2 FXS, 0 FXO, ethernet
 - SPA3102 (\$70): 1 FXS, 1 FXO, ethernet

Choosing a SIP Provider

Data to Gather Before Looking

- Calling Patterns
 - Check several months of old phone bills
- Incoming vs. Outgoing calls
- Local and Long Distance
- Local Number Porting (LNP)
 - Keeping your current home phone number
 - Some areas not eligible

Diving into the Fray

- There's almost an overwhelming number of SIP companies to sell you service
- Lots of fine print and gotchas running about

Factors to Keep in Mind

- Don't overbuy for what you need
- Learn what you can about the plethora of features offered and which ones matter to you
- Avoid being locked in (contract or equipment)
- Be sure to count everything!
- Can you try out the web site or service for free?
- What do good (trusted) review sites have to say

What's the Initial Costs?

- Setup fees for
 - General service and account
 - Porting your home number (LNP)
 - Direct Inward Dial (DID) Number
 - Equipment
 - Additional services (voicemail, etc.)

What are All the Monthly Costs?

- Maintaining your DID (Direct Inward Dial)
- Rate Plan
- E911 service
- Additional services

My Setup (Hardware)

- Cable Modem: Motorola SB5101, then SB6120
- Router: Apple Airport Extreme
- ATA: SPA2102 (2 PXS, 0 PXO, ethernet)
 - Voice calls are extremely clear, no one suspects it's not landline
 - Although I have an ethernet port (for QoS), don't use it and don't miss it, even when daughter is watching Netflix and wife surfing
 - Extremely reliable, never had any problems at all with it
- UPS for cable modem and ATA

My Setup (Service)

- ISP: Comcast
- SIP Provider: CallCentric
 - Low DID monthly fee (\$1.95)
 - Low E911 monthly fee (\$1.50)
 - Offers rate plan for low calling pattern
 - 1.5¢/2.0¢ Pay-per-minute
 - Short calls (<1 min) aren't billed
 - Initial one-time fee for LNP (\$25)
 - Excellent web site and features
 - call treatments

Demo

- SPA2102 Web Interface
- CallCentric Web Site
 - Actual Bill
 - Call history report
 - Monthly charges
 - Voicemail
- Call Treatments
 - Killing an annoying robo-caller with disconnect tone

Router Tweaking

- SIP
 - Forward UDP and TCP ports 5060-5080 to ATA
- RTP
 - Forward UDP and TCP ports 16384-16394 to ATA

ATA Tweaking

- Compression algorithms
- Dial plan

Notes

- <http://tinyurl.com/cucugata>
 - Research on various IP Telephony providers
 - Configuration settings for my SPA2102
 - These slides (soon)