

Goodbye landline, hello... ahm, what?

So you've looked at your local phone bill and it was... oh my, I'm paying *that* much for a simple phone number? This doesn't seem right! How can I be paying \$40 a month for a land line phone?¹²³



Well it doesn't matter how you wound up paying that much. The unfortunate answer is that you are. That monthly fee turns out to be \$500 per year after taxes. Yikes! But are there any real, viable, and safe options? And further, are you really ready for a change? I mean, it is only \$500 a year. Most of us pay more than that eating fast food every year.

If your answer is, "Yes! I am ready for a change! I'm ready to ditch my landline! I'm ready for an alternative that will save me some dough!", then you are in luck! This paper is for you. We'll talk about the pros and cons of different services, and even the "risks" that you will face with getting rid of your phone line.⁴

We'll be looking at alternatives from *your* point of view -- the customer. Who really cares about FXO, RJ11, 66 Block, ATA, and all that technobabble anyway? Well, to be honest, I do! But

¹ ATT Uverse Voice Unlimited, "Includes unlimited calls to anyone in the U.S., Canada, and Puerto Rico", \$35/month + taxes and fees (8/29/2012)

² Verizon FIOS FiOS Digital Voice - Unlimited Plan, \$44.99/month + taxes and fees (8/29/2012)

³ Verizon basic home phone service quoted by a "chat" specialist with no long distance, no calling features, unlimited calling, \$20/month + taxes and fees, could not be verified on the internet (8/29/2012)

⁴ For example, getting rid of your phone line also puts you at risk of losing E911 service.

this paper is going to focus on the *function* of the phone -- making phone calls! -- and functional alternatives to that \$500 yearly phone bill. We'll only touch on the technology when it makes sense. How does that sound? Okay, you are still with me, so let's get started.

This document has three parts. First, we'll figure out your needs. Next, we'll present some alternatives. Finally, we'll finish off with some suggestions..

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1. What are your needs?

Let's get down to it: What do you need in a land line replacement? And also, what will you have to do differently -- or are willing to do differently -- in order to save money? Sometimes just thinking about your needs and the alternatives will help you determine what you would rather be doing.

So what is it that we really want to be able to do? We want to be able to call our friends, family, and business associates. That's it. Oh, and the occasional E911 call. Anything else? Yes one more thing, how about the White Pages entry?⁵ In most cases, you will lose your white pages entry.⁶ Okay, now did we cover everything? Well, maybe not completely.

When exploring alternatives, be sure to remember what exactly you wish to replace. Phone service isn't just "tip and ring"⁷ any longer. What we call Basic service often includes Caller ID, Call Waiting, Call Forwarding, Three Way Conference Calling, 411, Fax, Visual Voicemail, SMS, MMS and E911 calling. E911 is vital enough to warrant a closer look, so it will be discussed for each of the options.

1.1. How many phones do you need?

The first thing to figure out is, exactly how many phones do you need, anyway? I mean, do you truly need your home phone, especially if you already have a cell phone? Maybe, but maybe not.

Let's face it, one of the common "First Thought" choices is to migrate away from a landline and use only your trusty cell phone for all communications. This works if you are living la vida solo. Moving to a single communications line is definitely practical -- and easy, too!

But how about if you are not living single? Say you live in a home with a couple of people, your wife, your husband, children, elderly parents, whatever the case. In this case the "Cell phone only" approach might not be ideal, and might not even be practical. You likely need a common "house phone".

⁵ Some countries have retired the white pages. End of the telephone directory?, <http://theforeigner.no/pages/news/an-end-to-the-telephone-directory/>

⁶ If you happened to see Steve Martin in "The Jerk", you'll remember his memorable quote, "The new phone book's here! The new phone book's here! Page 73 - Johnson, Navin R. I'm somebody now! Millions of people look at this book everyday! This is the kind of spontaneous publicity - your name in print - that makes people. I'm in print! Things are going to start happening to me now."

⁷ Tip and Ring are what drives the basic telephone system to your door step. Please see Google or Wikipedia for more information.

Or say you have a need for a fax machine. In the case of a fax machine, it can be replaced by an online service provider. But, again, you'll have to "do business" a little differently.

1.2. How your Internet can save you money



The "telephone" system as we know it today is going away. Even ATT wants to retire the hundred year old PSTN (Public Switched Telephone Network) in favor of a pure IP based system.⁸ What does this mean? It means that in the future, all phone calls will be Internet phone calls, known as Voice over IP, or VOIP.

First things first, though. The Internet phone deals will require a reliable Internet connection. Do you have Cable MODEM? Great! DSL or Uverse? Great! Wireless or Satellite internet? Hmm, maybe not so great. You'll need to test your connection for reliable internet service before purchasing one of these alternatives.⁹

Just as a reminder, a standard POTS phone is "powered" from the phone company. The tip and ring provide -48V to the phone, and a basic wired phone (but of course not a wireless phone!) will work without being plugged in. That said, if you do wind up with an alternative, you may wish to power the phone (and the Internet Devices¹⁰) through a low cost UPS.¹¹

If you don't have Internet at your home, you will be stuck with only the Cell Phone option when it comes to replacing your land line.

⁸ From a letter written to the FCC, ATT requests assistance to "facilitate the retirement of legacy TDM-based networks and services and transition to an IP-based Network/Ecosystem"
<http://stopthecap.com/2012/09/17/att-sends-brazen-checklist-to-fcc-for-abandoning-landlines-oversight-and-net-neutrality/>

⁹ VOIP relies on two measurable Internet components, (1) speed and (2) latency. Typically, speed will need to be at least 128Kbps up and down, and Latency needs to be consistent with only a small jitter component. Please see "Testing your internet connection for VOIP tolerance" for more information.

¹⁰ That is, the devices you need to connect the phone to the Internet. This may include a Cable Modem, Uverse 2Wire, DSL device, and router.

¹¹ Uninterruptible Power Supplies are different than "power strips". A UPS has a battery supply in it.

1.3. Keeping your existing number

The next serious consideration is, do you need to keep the landline phone number that you've used for so many years? I mean, reducing your phone bill is great, but you likely don't want to burden or inconvenience your colleagues, right? Right! Well, kind of. A little inconvenience may go a long way, depending on how much money you are going to save.

We'll discuss how to keep your existing number when we look at each option. To note, there are some companies that will not transfer your number, such as Skype. You'll have to keep that in mind as you are considering the options.

2. The options!

So let's jump right in. Here are some alternatives to your current Plain Old Telephone System.

2.1. Move to cell phone only

Is a single phone line an option? Let's face it, one of the common "First Thought" choices is to migrate away from a landline and use only our cell phone for all communications. But, is this really a feasible option? Sure, if you are living la vida solo, moving to a single communications line is definitely practical -- and easy, too!

Before we jump into how to make this happen, let's consider any issues we might encounter. It is important to know that moving to a Cell Only world comes with some changes and challenges. Consider,

1. You won't be able to call your cell phone from your landline when you lose the cell (to make it ring). In fact, you won't be able to make any calls until you find that phone!
2. You won't be able to answer any phone in your home when it rings, since you'll only have one phone (see the next section, "Cell phone only with Bluetooth enhancement", for a way to fix this).
3. You won't be able to let your neighbors or friends use the "house phone" when you are on the phone yourself. But, you can still let your neighbor use your cell phone, just not at the same time as you are using it.
4. You likely won't be able to send nor receive faxes from your cell phone. Yes, even in the 21st century, people still use fax. However, you can likely use an online fax service if necessary.
5. You won't have a whitepages entry.
6. You won't have a phone in every room, in case of an emergency. If you need to call 911, you will have to find your cell phone and hope that it is charged. You will retain use of E911, but please make sure you confirm how E911 works on your cell. Sometimes you have to register an address with your service provider. You don't want to find out that 911 is not available when you need it!

The list is not exhaustive, but is here to just get you motivated and thinking clearly.

How to do it

If you don't care about your cell number (or don't have a cell number? Is this possible in this decade?)¹², and don't want to lose your landline number? Then geat! Just port your landline number to a cell phone and poof! You are in business. All phone calls will go to your cell

¹² As of 2009, "The Associated Press (AP) reports that for the first time ever the number of households with cell phones only outnumbers those that have traditional landlines." <http://www.dailytech.com/Cell+Phoneonly+Households+on+the+Rise/article15073.htm>

number, and your colleagues and friends will not be any the wiser.

But what if you do care about both numbers? What then? Well, you are in luck since this is easy too. You can either port your landline number to Google Voice and have that number forwarded to your cell number¹³, or you can simply have an outgoing message saying, “Hi everyone, you have reached me on an old line. Please call me on my new phone number at 777-555-1212”.

This “cell phone only” approach works with multiple users, too. For example, say a married couple each have a cell phone and also a jointly used home phone. It might be that everyone who calls is looking for one or the other of you, not both of you. Transfer your home phone to Google Voice and mention both the alternate phone numbers in the outgoing message. Or, you can forward those calls to one of your cell phones. But, this requires a little bit of change of habits, and maybe more change than you are willing to put up with. It does get a little more complicated if you have more than one person using the landline.

How much is this going to cost?

Your cell phone bill, that’s it. Do you already have a cell phone? Great. Just keep in mind that you might be using more minutes, so you might need to increase your monthly minute allotment. If you don’t have a cell phone, you might consider a prepaid account that will cost around \$40 to \$50/month for all you can eat service.¹⁴ For more information, please see the whitepaper, “Cell Phone Vendor alternatives”.

So this “living only with a cell phone” method doesn’t really save any money. You still wind up having a monthly cell phone bill. The goal was to save money, not spend more money, or have more features, or whatever. It was to reduce expenditures! Unless you already have a cell phone, you don’t get any savings with this option. But if you do already have a cell phone, then you’ve just saved \$500 a year.

Cell phone only with Bluetooth enhancement

So great, you’ve decided to move to Cell phone only. But how about when you are home? You like the convenience of having all the phones in your house ring, so you don’t have to “find the phone” when it rings. An easy option is to use multiple wireless handsets with Bluetooth integration. Problem solved! Cost is a one time fee of less than \$100.

2.2. Nettalk & Magic Jack

¹³ Please see the whitepaper, “Google Voice integration”

¹⁴ This is not an endorsement for any of the following services, but rather a reference to price. As of December 2012 all you can talk services include Simple Mobile (\$40/month), Straight Talk (\$45/mo), T-Mobile (\$50/month).

Have you seen the cheesy commercials? Most of us have. Cheap VOIP service can be provided by both NetTalk and MagicJack, and likely many other service providers. You'll purchase a branded ATA (Analog Telephone Adapter) that will have three plugs -- (1) one to the Internet connection, (2) one to the Phone (you can use a Wireless phone with multiple extensions), and (3) a power plug. Remember, you'll need a good Internet connection to make this work.

So why are these two services "broken out" from the rest of the VOIP services? Only because of cost. These services are marketed as lower cost alternatives to the traditional VOIP service.

Do you lose anything with either of these services? Sure, you do. You'll lose your whitepages entry, and in most cases you'll lose your outgoing Caller ID Name. That is, when people see your call on their caller ID, it will only show your phone number, not your name.¹⁵ You won't be an anonymous caller nor a blocked caller, but neither will you have a name. If you need outbound caller ID name, you'll have to look elsewhere.

An additional word of warning: MagicJack does not guarantee E911 service calls.¹⁶ NetTalk is a little more generous,¹⁷ but it is very important that you understand the difference between traditional E911 and the E911 provided by these services. If your internet goes down, so does your ability to call E911. If you lose your power, you will lose your service. If you lose internet, you will lose your service. That said, if you are going with one of these services (or any service not powered off the phone line), you should definitely look into a battery backup UPS.

And just one more word of warning. NetTalk¹⁸ and MagicJack¹⁹ are not "unlimited" services. If you go over the "allotment" of minutes, they'll cancel you -- and you'll likely lose your number, too, the very number that you've been trying to keep!

However, you do get something out of these services. If your IP network goes down, or your power goes off, or you are struck with a horrible storm or natural disaster, you'll likely retain voice mail service through these carriers since the voicemail is "cloud based".

2.3. Other VOIP providers

Wait a second, VOIP? Isn't that like some kind of parallel universe phone thing? Not really. The fact is, even ATT is migrating to an IP only network, doing away with the circuit switched PSTN that has been around for 100 years. There are numerous VOIP providers in the world,

¹⁵ Caller ID Name is referred to as CNAM

¹⁶ Per the MagicJack Terms of Service, "The services are not traditional telephone services, so we are not required to provide you with access to emergency 911, E911, or similar access to emergency services"

¹⁷ Please read the NetTalk Terms of Service section entitled, "3. netTALK.com SERVICE 911 EMERGENCY DIALING"

¹⁸ Per the NetTalk Terms of Service, section 5(c)(1), NetTalk maximum use is 3000 minutes per month, .

¹⁹ Per the MagicJack Terms of Service, "Calls of long duration may be terminated"

including RingCentral (around \$20/month), ATT Uverse (exactly what we are trying to avoid in price!), and Vonage (around \$20/month). These providers will sell you (or give you, maybe?) an ATA (Analog Telephone Adapter) to which you can plug an RJ11 POTS²⁰ connector and you'll be up in no time -- at likely a huge monthly cost, the exact thing we wish to avoid! Our advice? Just say no.

Any other options in the VOIP area? Sure. There are "computer phone" services out there that are reasonably priced. For example, Skype is currently \$3 a month²¹ (\$36/year plus taxes), and you can purchase a Skype ATA²² for around \$50. If you don't purchase the ATA, you'll be forced to make calls from your computer. Right now, Skype does not allow porting your phone number, so that won't be an option. Basic Skype will not integrate with a PBX.²³ Also, an important note, Skype cannot be used for E911 services.²⁴

2.4. Google Voice

Google Voice is a little more complicated than the other solutions, but not nearly "too" complicated -- especially if we can save some money! The gvoice service is provided by, you guess it, Google. As of this writing the service is free for inbound and outbound calls to the US and Canada. Free is good, especially since the whole purpose of this paper is to reduce our phone bill, right?

Before we discuss anything else, it is important to know that Google Voice is not a voice service provider. You heard this right. Google Voice does not officially provide phone call termination. As such, Google is not under FCC "phone call" jurisdiction for the data that traverses their network (the data that looks an awful lot like a phone call). Also, as a non voice provider, you get no E911 service.²⁵ Try to dial 911 and you'll get the response, "Please enter a valid number". Not exactly what you'll want to see during a heart attack.

But, with a little work, you will have E911 service. This might be deal breaker for you. Or... maybe not. You'll have to decide for yourself just how much work you are up to.

Okay, you've made it this far. Since Google Voice is not a telephone service provider, how can we use it as one? We want to be able to make calls and receive calls. That's it. That's what

²⁰ POTS is the Plain Old Telephone Service (no lie!), which is a part of the PSTN Public Switched Telephone Network. These terms are often used interchangeably.

²¹ As of December 2012, Skype is \$2.99/month

²² Skype FreeTalk Connect Me Analog Telephone Adapter, used to connect Skype to a standard POTS telephone, <https://support.skype.com/en/faq/FA11047/what-is-the-freetalk-connect-me-box>

²³ Per Skype TOS, PBX integration requires Skype for Business.

²⁴ Per Skype web site, "Skype is not a replacement for your telephone and can't be used for emergency calling"

²⁵ Per the Google Voice TOS, "You understand and agree that Google Voice is an enhanced call management application and that Google Voice is not capable of placing or receiving emergency services calls."

my current phone company does, and that's what I'd like to do here. Can Google Voice do this? You bet!

Basic Google Voice works off your computer, just like basic Skype. Is this enough for you? If you are like me, no, it isn't enough! So, first things first: How can you make and receive phone calls on your standard phones with Google Voice? Well, that is a good question. Google Voice does not provide direct access to a POTS -- remember, Google Voice isn't a telephone service provider. So what are our options? One option is to purchase an ATA and configure it appropriately. Obihai has done the hard work for you with the Obi²⁶ device family. Configured correctly, you can use your home phones connected to the Obi for all calls, including E911 calls.²⁷ The Obi devices are around \$50.

So what are the things to keep in mind?

1. Google Voice is not a voice service provider! Just keep this in mind. It really doesn't mean much to you as the consumer.
2. There is no E911 service available. At all.
3. If your power goes down, your phone goes down. If your Internet goes down, your phone goes down.
4. Google Voice will answer all inbound calls in 25 seconds, routing them to voicemail. This is certainly not ideal. It would be nice to be able to have the Google line ring for longer than 25 seconds, but this is set and cannot be changed.

Of note, since you want a "common" phone number for everyone in the house to use, you should likely create a new Google account devoted to this solution. This is easy, and free. For example, you can create a new google account called "phone7775551212@gmail.com". Then, port your landline number to the google account.²⁸ Just remember, there are restrictions when it comes to forwarding google voice numbers to other google voice numbers, so if you want your new gvoice home phone to forward to your cell phone, and your current gvoice number forwards to your cell phone? Yeah, that doesn't happen without a few tricks.²⁹

The Google Voice solution is going to cost only the cost of the Obi ATA (\$50), plus the optional E911 subscription if not native into the Obi you select. Up until now, Google has not charged for the Voice service.³⁰ This is by far the least expensive option available as a land line replacement.

²⁶ Obi is here, <http://www.obihai.com/>

²⁷ As of December 2012, the Obi110 can be configured to call 911 through the FSX POTS line at your home, and all Obi devices can be configured to use E911 subscription services.

²⁸ Transferring your land line number to Google Voice is straightforward, but requires an intermediate port to a temporary Cell Phone. That is, Google Voice cannot transfer in directly from a Landline. This is not difficult but will take a few days to complete. For more information, see the associated document.

²⁹ Send me an email and I'll show you how those tricks work in your favor!

³⁰ As of December 2012, Google Voice remains free

2.5. PBX Anyone?

Okay, now yer squawkin! Yes, I'm an engineer, I had to add this section. Just skip it if you aren't interested in a little creativity discussion. With a PBX, you can have an Interactive Voice Response system and different calling patterns for different times of the day, and even different voicemail accounts for each person in your home.

What you will need

The list of necessary components is pretty small. Here they are:

1. First things first, you'll need software. One of the more popular open source products is Asterisk. There are a number of packaged Asterisk solutions, including PBX In A Flash (PBXIAF). Also, look into hosted services such as pbxes.org.
2. A computer to run the software.
3. A phone. If you wish to connect standard POTS phones to the system, you'll need an ATA. Instead, you could use an IP Phone, or "soft phone" applications that will run on any of the major operating systems available (Android, iPhone/iOS, Windows, Linux).
4. A "service provider". Most VOIP service providers will provide a SIP connection with either unlimited minutes or a charge per minute. PBXIAF actually allows you to use Google Voice as a service provider, thereby reducing your monthly fee to zero.

Things to consider

Running a PBX is very easy, but there are things to consider.

1. Maintenance and upkeep. You will have to maintain the system. You will be responsible for making sure the hardware remains up.
2. Power outages. Best to put the system on a UPS to eliminate problems with problem power. Internet outages? You've lost your phone.
3. E911. Yes, you will have to buy an E911 service, or buy an FXO board to plug directly into your existing RJ11 jack and route calls appropriately.
4. A bonus, you can have the service answer in however many rings you wish.

Configuring and installing a PBX system is beyond the scope of this document. However, take a look at the other documents available on this site for assistance. Feel free to email me as well.

3. Conclusion & suggestions

In this paper, we've explored several truly viable alternatives to the traditional phone service.

If you are living single, moving to a Cell Phone only world is certainly a choice to consider. On the other hand, if you have more than one person living in your household, Google Voice with an Obi ATA is the least expensive option available (total cost around \$50). Hosted services like NetTalk, MagicJack, and Skype are going to provide about the same level of service as Google Voice at a marginally increased cost. In all these choices, keep in mind your E911 needs.

Options that I've been using

1. Cell Phone Only

I've been using the "cell phone only" solution with Google Voice for years, which has worked out great -- except for the occasional time I've lost my phone and haven't been able to call it from a landline to help find it! I migrated my old phone number to a secondary gvoice account for \$20, and have an outgoing message that reads back the new number that I'd like people to reach me on. As of now, gvoice doesn't allow two gvoice numbers to reach the same cell phone, so I can't have both numbers ring my cell phone without a little tweaking. Cost: \$20 to move my number to Google (for the outbound message), and \$50/month recurring for prepaid T-Mobile (\$600/year total). Savings: No land line number (\$45/month).

To note, the only E911 service I have is through my cell phone now. So, if I don't have handy access to my cell phone, then I'm in trouble. This really isn't an issue for me right now, but as I get older, I may be more interested in the E911 service being available throughout the home.

2. Google Voice with Obi

My dad has had his home phone number for a long, long time -- he certainly doesn't want to lose the number. Also, it is convenient to have multiple phones around his house -- in the bedrooms, in the computer room, in the library, in the den. We've set up a Google Voice with Obi100 ATA and DECT wireless phones for him, and the solution works great. Cost: One time \$50 for Obi100 (plus the wireless phones), one time \$20 fee to Google to port his home number, no recurring fees, yay! E911 service is only available on his cell phone, which truly is an issue.

There are three alternate solutions to the E911 issue. One is to buy an Obi110 that will provide a LINE port to access the PSTN. In theory, this will allow 911 calls to route through the local Warm Lines. However, this is not a long term solution, since the Warm Lines are being dismantled (with FCC approval).³¹ This solution will require a UPS on the DECT system and on

³¹ "Warm lines' for 911 calls face dismantling", <http://www.capitolweekly.net/article.php?xid=yywtegnq0w1ut9>

the Obi110.

Another E911 option is buying a Bluetooth Bridge ATA, to connect the DECT wireless system to his cell phone. What this provides is E911 service on all his wireless phones through his cell phone. Of course, an easy extension is to take an "old" bluetooth capable cell phone that is no longer being used and permanently bridging that device to the ATA. That way, no matter where his cell phone is, the house is still E911 capable.

A third E911 option is a "virtual" or "online" 911 service provider, routing the DECT wireless E911 calls through the existing OBI100 to a SIP E911 provider. These providers are available for a couple of dollars a month. A UPS will need to be on the DECT system, on the IP Router, and on the Internet device. If the Internet goes down, so does the E911 service.