Advantages of Broadband Phone Services

Why are so many people subscribing to broadband phone services, either as an additional phone line or as a complete replacement to their traditional phone service? The primary reason is cost. But as you will see, other advantages exist as well.

Lowering Your Monthly Phone Bill

What attracted most people to Voice over IP (VoIP), even when the quality was still questionable, was the fact that you could make free and unlimited long-distance calls. Now that the quality is good, and the calls are still relatively inexpensive, so much the better. How low is low? We examine different service plans available in Chapter 7, "Selecting an Internet Phone Service." The bottom line is, you can get a broadband phone service with unlimited calling and no nationwide long-distance charges (international calls do cost extra) for $25–30 a month.

How can broadband companies offer phone services more cheaply than the traditional phone companies? The following four primary factors make broadband phone services so inexpensive:

- Infrastructure costs
- Transport costs
- Regulatory compliance costs
- Taxes and fees

Infrastructure Costs

First and foremost, the costs for the public telephone infrastructure—that is, the central offices, long-distance switches, transport lines, and wiring into every home and business across the globe—are immensely expensive investments. Tens of billions of dollars are spent each year just to upgrade, expand, and maintain this network.

In contrast, broadband phone services do not have similar infrastructure costs. Instead, these services are made possible by strategically located VoIP gateways (which translate between VoIP and public switched telephone network [PSTN] systems) throughout the geographic areas they are serving. Beyond that, you are using your Internet connection, so you have no additional wiring costs. Keep in mind that we are referring to the telephone provider's cost, which is passed on to consumers.

VoIP, on the other hand, uses a data network that was a much less expensive network to set up and maintain. If that wasn't a good enough deal, the section of the network that is the most expensive (the part that goes from the local office to your house) is owned (and therefore maintained) by the phone or cable companies. Because the network treats voice the same way that it treats data (with unlimited uploading and downloading for a monthly fee), you can get unlimited long-distance for a great price.

Transport Costs

Similar to infrastructure costs, public telephone services incur certain costs when a telephone call must be carried long distances to more-distant central offices.

By their nature, broadband phone services use the public Internet as the primary transport. Because the conversion of your voice into packets works just like the packets that carry e-mail, it's easy to see why no additional cost is incurred with a call from one VoIP phone to another. To the Internet, a packet is a packet is a packet. The Internet service provider (ISP) simply charges you a monthly fee (in most countries) for the Internet connection and you talk away. This structure does fall apart though if the network runs out of capacity someday, because the ISPs would have to spend money to upgrade their networks. With the relatively low bandwidth required for VoIP calls, capacity is not really an issue today, but if Internet videophones take off, you could see costs go up.

The real trick to making VoIP worth a darn, however, is that the calls are still cheap when calling PSTN phones anywhere in the country, and in some cases even international calls are relatively cheap. With the strategic placement of VoIP gateways, your VoIP calls stay on the "free" Internet for as long as possible, jumping onto the PSTN only when necessary to complete the call.

Regulatory Compliance

Public telephone services are heavily regulated by the Federal Communications Commission (FCC) in the United States, and include myriad regulatory issues and orders that must be complied with. For example, mandatory regulations exist for 911 services, rural phone services, accessibility for persons with disabilities, and wiretapping access for police and government agencies (Communications Assistance for Law Enforcement Agencies [CALEA] in the U.S.).

Broadband phone services are not classified by regulators in the same way as standard telephony. Instead, they are classified as data services, and therefore many of the same regulations do not apply (not yet at least—this is currently being challenged by the U.S. traditional telephone companies).

Because VoIP is not currently subject to the same regulations, the recurring operational costs for VoIP providers are less than those of PSTN providers. This is an advantage from a cost perspective, but it might have a downside (see Chapter 4, "Knowing Your Limits.")

Taxes and Fees

Public telephone services are also heavily taxed by the local, state, and federal governments. Really take a close look at your phone bill some day. It contains some of the steepest taxes of anything in

our lives, and don't even look at the taxes in your cell phone bill, lest you faint. Taxes and fees tacked onto a typical $59-per-month cell-phone plan include the following:

Federal Universal Service Charge	$1.06
Regulatory Cost Recovery Fee	$0.56
Telecom Relay Service Surcharge	$0.11
Federal Excise Tax	$1.13
State Telecom Sales Tax	$4.04
911 Monthly Fee	$0.70
Total	$7.60

That's roughly 13 percent being tacked onto a cell-phone bill, some of which are charges you probably didn't even know you were paying.

Again, broadband phone services are classified as data services (for today at least), and are therefore not subject to many of the same local, state, and federal taxes. I think we can safely say that this is a temporary condition. We have already seen several studies done by state governments that pointed out how much tax revenue states stand to lose by widespread VoIP service adoption. But for now, enjoy the hole in the tax code.

Phone Number Flexibility

Broadband phone services offer a number of cool options related to phone numbers. For example, with most VoIP providers, you can keep your existing phone number from the traditional phone system if you switch over. In addition a couple of cool options also exist for virtual numbers. The sections that follow discuss these options in greater detail.

Keeping Your Same Phone Number

In Chapter 1, "Traditional Phone Systems," we mention something called Local Number Portability (LNP). Recall that for a long time, a PSTN switch had a set of numbers assigned to it so that if you moved (even if it was a local move, say within the same town), you were probably forced to get a new phone number. Many people were reluctant to go out and pursue a different phone service provider because they didn't want their friends and family to have to learn a new number. This was true for both wired and wireless phone services.

This changed in the United States with the passing of legislation in 1996 (many countries passed similar laws about the same time). Although it took several years to roll out, the advent of LNP means that people can now move across town and keep the same phone number. The following figure shows how number portability works. Suppose the subscriber with phone number 444-555-1002 changes his local phone service to a different provider and chooses to keep his same phone number (with LNP). An entry is created for that subscriber in the Number Portability Administration Center (NPAC) database with the phone number and the real location of the subscriber in the phone network.
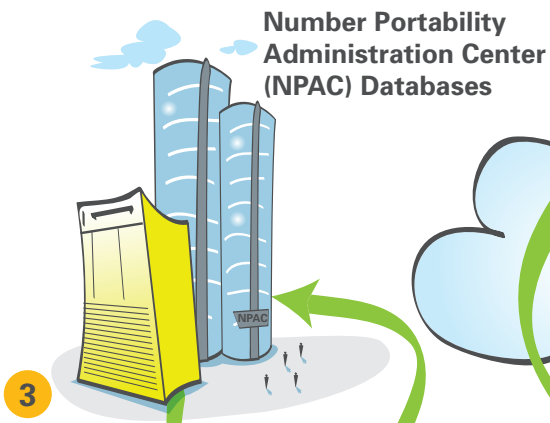
Local Number Portability
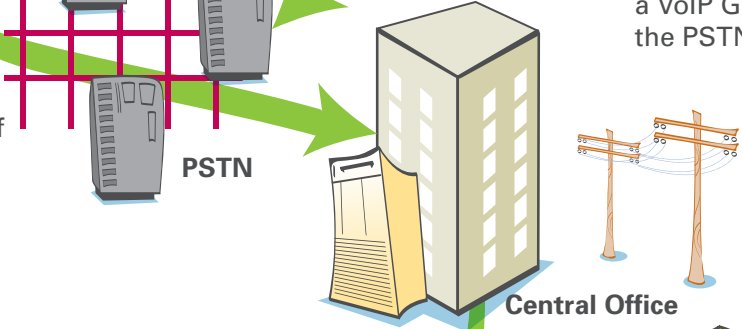
1 A subscriber dials 444-555-1002.

Terminal Adapter

Internet

Number Portability Administration Center (NPAC) Databases

Soft Switch (VoIP Provider)
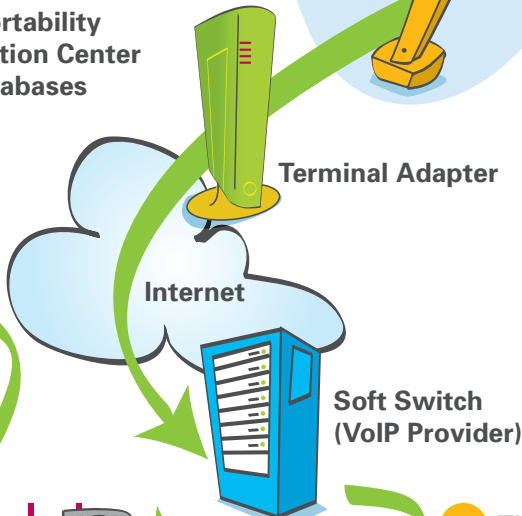
2 The call is routed via a VoIP Gateway to the PSTN.

3 The PSTN queries the NPAC Database.

4 The location of the subscriber 444-555-1002 is found.

PSTN

Central Office

5 The call is delivered.

Ring!
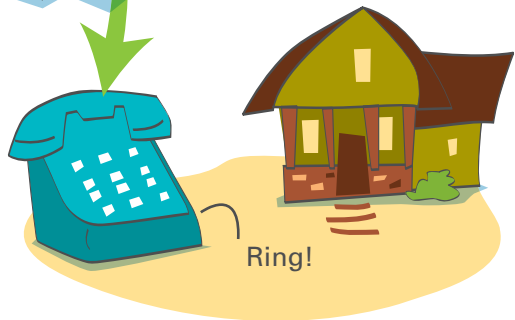
Now when a caller dials 444-555-1002, the phone system queries the NPAC database to obtain the real location of the called phone, and then routes the call to the appropriate central office for completion. This is very similar to the way 800-number services have worked for many years.

So with any local phone service change, whether wired, wireless, or broadband phone service, you have the option to keep your existing phone number (sometimes for a small one-time fee). This makes switching to a broadband phone service (or any other service) pretty painless for you and your callers. It is worth noting that it physically takes about 1 minute to make the database change, but the request can take up to 30 days to work its way through the system. You might not always be able to keep the same number, so check with your provider to see whether your number can be transferred or whether you must select a new one.

Virtual Phone Numbers

We already discussed that when using broadband phone services, all outgoing calls (local or long-distance) are already included in your monthly rate. However, what about when your friends and family call you? They might still be on the PSTN and be getting a long-distance charge for calls to you. Fortunately (for them) you can get a virtual phone number.

Because you are using the Internet as your phone system, your phone number is no longer tied to a specific geographic location. Your phone (really your terminal adapter) is known by an IP address, much like your computer or home router. Because of this, your actual phone can be close to other phones with similar exchange numbers on the public telephone network, or it can be thousands of miles away. There is really no difference from the broadband phone service provider's point of view. You are simply a device on the Internet with an address.
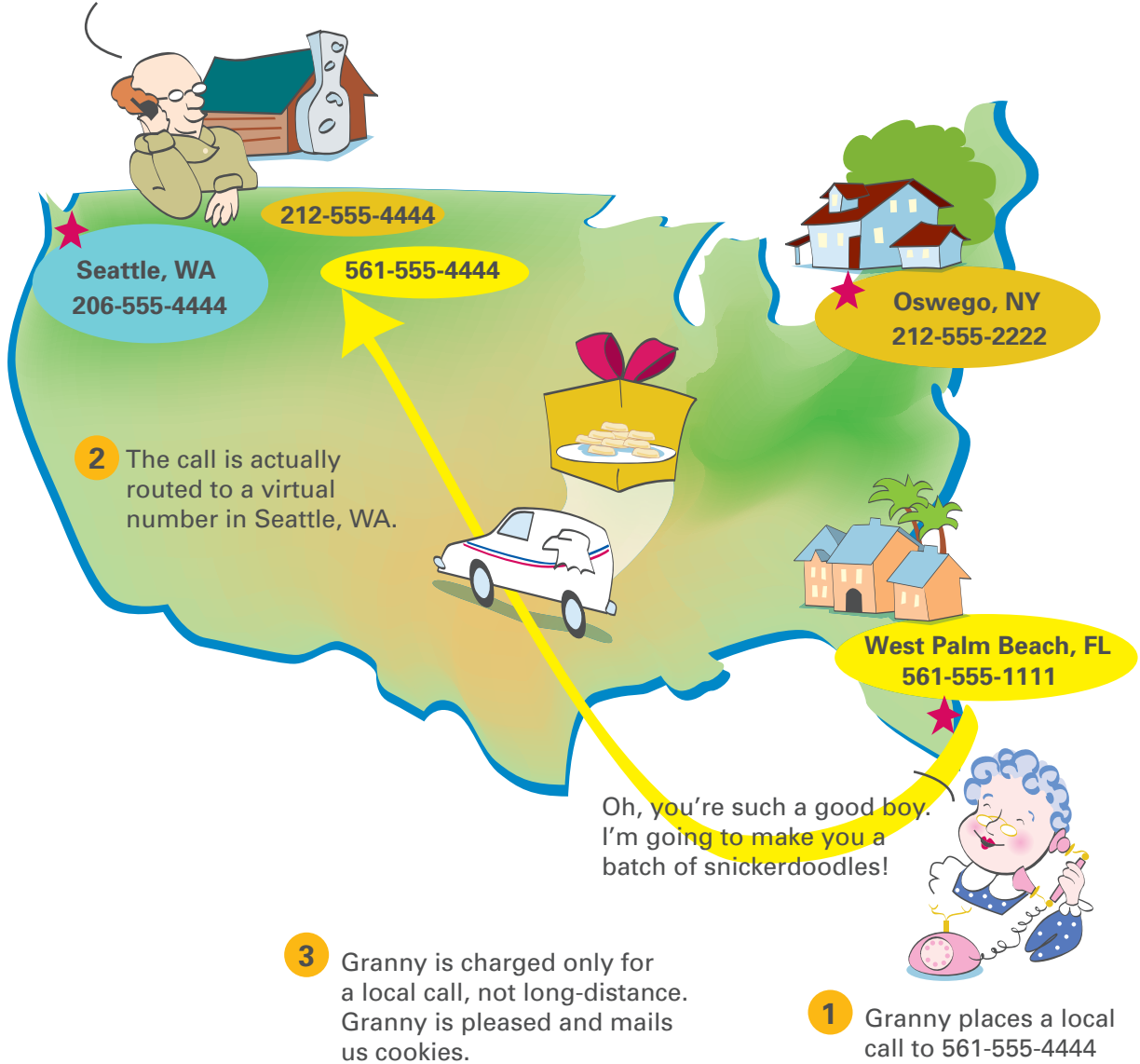
> We know of several examples of companies and individuals signing up for virtual numbers in the U.S., taking their VoIP terminal adapter back to another country, and still having good voice quality. Their friends and family members in the U.S. can call them internationally for the price of a local call (usually free). VoIP terminal adapters can be plugged in anywhere on the planet where Internet service is available.

Because of this flexibility, the concept of *virtual phone numbers* was created. This allows you to pick a broadband phone number practically anywhere you like—in other towns and even in other area codes. Your single phone line always has a primary phone number, but then you can choose as many additional phone numbers as you need (you are charged a fee for each extra number). You can pick pretty much any number you want as long as someone else is not using it.

The implications of this are pretty big because it not only allows you to make free calls over long distances, but it also allows you to use a phone number that is local to people who call you frequently. This essentially gives them free long-distance service when they call you. For example, suppose that you live in Seattle, Washington, and your grandparents live in West Palm Beach, Florida, as shown in the following figure.

Virtual Phone Numbers

O.K! Remember, I'm in Seattle right now.

212-555-4444

561-555-4444

Seattle, WA
206-555-4444

Oswego, NY
212-555-2222

2 The call is actually routed to a virtual number in Seattle, WA.

West Palm Beach, FL
561-555-1111

Oh, you're such a good boy. I'm going to make you a batch of snickerdoodles!

3 Granny is charged only for a local call, not long-distance. Granny is pleased and mails us cookies.

1 Granny places a local call to 561-555-4444

This is about as far apart as two phones can be and still be in the continental United States.. Let's also assume that your granny in Florida likes to call you every day to check up on you. If you both have a VoIP phone, all your calls are free, but if Granny sticks with a PSTN phone (for example, 561-555-1111), the fact that you get free long-distance doesn't help her much. With VoIP, you can request a phone number from the West Palm Beach area (for example, 561-555-4444) so that when Granny calls you, she dials a local number and incurs no charge, no matter how long she talks.

Virtual numbers are pretty neat. One limitation we have found is that outgoing calls from you always have the primary phone number as the calling party. There does not seem to be a way to have any of the virtual numbers appear on someone else's caller ID.

Another issue with virtual numbers is that because of their popularity and a general shortage of phone numbers in some area codes, virtual numbers might not be available in certain area codes. Do your research upfront to see whether you can get the numbers you want. Most of the VoIP providers that offer virtual numbers have a page on their website where you can check the number or area code you want to see whether virtual phone numbers are available.

Online Call Management

A number of pretty neat features are also provided for broadband phone services. These features are not necessarily exclusive to broadband services, but the nature of the service being tied to the Internet does seem to make it easier to deploy and use. The next few sections discuss these features in more detail.

Voice Mail

Voice mail is typically offered by a broadband phone provider as a standard service (although some providers do charge for it). Voice messages are stored in digital form on disk-storage devices at the broadband phone provider, kind of like a sound file is stored on your computer.

Then to check your messages, you have a couple of possibilities. You can listen to the message over the phone by dialing a special code. You could also log on to the provider's web page, click the message in your inbox, and listen to it using your computer. In most cases, you can even send the voice message in an e-mail as an attachment. Finally, you can usually set up an option to send you an e-mail or a page notifying you of a new voice message.

Call Forwarding

Call forwarding is a feature that you have probably become familiar with in the traditional phone system. You will find a few small differences with broadband phone services.

First, you can manage the forwarding online with the click of a button on a web page. Second, you can typically do a bit fancier forwarding, such as regularly scheduled forwarding or advance scheduling. For example, you can set up forwarding to occur during a week-long vacation you have planned.

Finally, one important feature is typically called *offline* or *out-of-service* forwarding. This means that in the event your broadband phone service is either not working or perhaps your home network is not turned on, a number can be set up to receive calls in the event that your broadband phone cannot receive the call.

Call Logs

Very common with broadband phone services is the idea of a call log that you can use to view and manage calls online using a web page. Therefore, you can view incoming calls you received as well as calls that you placed. This service could certainly be provided for traditional phone services (it often is for cell-phone accounts), but it seems to be pretty standard for broadband phone services.

Click to Dial

In addition to viewing incoming and outgoing calls, one interesting feature you can use with a broadband phone service is called *click to dial.* With this feature, you can go online to your call log on the web page, click a number, click **Dial,** and the phone service calls the number. This is just an alternative to manual dialing.

Similarly, with some services, you can establish an address book online that includes phone numbers, and you can click to dial these numbers from the address book as well as the call log.

One question we often get asked is whether someone can listen in on our phone calls if she hacks her way into an online VoIP account. The short answer is no, you cannot listen to calls in progress from an online account-management website. However, someone might be able to listen to a voice mail stored there, so protect your account and password information just like you would any other valuable online asset.

Summary of Advantages

We have discussed several advantages of broadband phone services over traditional PSTN phone services, including lower cost, flexible phone numbers, and advanced features leveraging the Internet.

Chapter 4 discusses a few limitations. You will then have detailed information to make a decision about whether broadband phone services are right for you, and if so, how you should take advantage of them.