

Where Do Telephone Numbers Come From?

When I moved from Chicago to Denver in 2010, I got myself a Google Voice number as an easy way to have access to a local phone number. Once you have a Google Voice number in most cases you can port it away from Google for a small fee and that can be your new phone number.

When I switched from an Android phone to an iPhone (which doesn't support Google Voice natively) I figured it was time to port my Google Voice number to my account. I followed all of the steps necessary, but at the end of the day there was some restriction that prevented me from porting my number away.

"What gives?" I thought about it, and created another Google Voice number that had a different (less desirable, to my idiosyncratic mind) prefix, but the same last four digits. I was able to port this number away from Google.

Who Controls Phone Numbers?

In the United States, as in most other North American countries, telephone numbers are composed of ten digits. This is known as the North American Numbering Plan (NANP).

The breakdown of a phone number is familiar to pretty much everyone. The first three digits are the area code, which refers to a broad geographic region. The next three digits denote the prefix, which typically corresponds to a smaller area within the area code's region. With four remaining digits every local exchange has 10,000 possible unique numbers (from 0000 to 9999). This is known as the "line number."

It seems that almost every telecom provider these days includes free nationwide calling in their plans, but before they did (and any of those that still don't) prefixes and area codes signified to the Public Switched Telephone Network (PSTN) what counted as a local call and what was long distance.

But let's get back to those blocks of line numbers. When you think about all of the thousands of prefixes across the country, that's a lot of numbers to keep track of. That's why the FCC utilizes number pooling to manage and reallocate numbers. Now the FCC doesn't do all of this on their own. Neustar, a technology company, administers the number pooling efforts in the United States.

To foster more competition within a given area, FCC regulations don't allow any one company to come in and take all 10,000 numbers attached to a given prefix. Instead, these numbers are divided up into blocks of one thousand that local exchange carriers can then acquire.

I'll use my hometown of Rochester, Michigan as a hypothetical example. The area code there is 248, and growing up our prefix was 652. But as you can see from the table below, the last four digits of our phone number depended on our telecom carrier. If we had service with Carrier 3, our only options for a phone number would be from 2000-3999.

HYPOTHETICAL NUMBER BLOCKS	
Number Block	Carrier
248-652-0XXX	Carrier 1
248-652-1XXX	Carrier 2
248-652-2XXX	Carrier 3
248-652-3XXX	
248-652-4XXX	Carrier 4
248-652-5XXX	
248-652-6XXX	Carrier 5
248-652-7XXX	Carrier 6
248-652-8XXX	Carrier 7
248-652-9XXX	

Finding the Right Number

As mentioned above, Neustar administers number pooling in the US and you can actually see reports by region that detail which thousand-blocks are available, assigned, and retained throughout the country.

So, if you're looking for a new phone number or a phone number that includes specific digits or a sequence of digits and can't find an available one that's most likely because it's already in use.

Think of phone numbers like web domain names. Sure, it'd be great to own the domain name of a big brand, like Apple, or IBM, or Amazon, but those are already taken.

If someone else is already using that phone number or it's controlled by a different carrier, you may be out of luck.

Porting Numbers

Thanks to the Telecommunications Act (1996), the FCC mandated that all local carriers offer number portability. This was later expanded to include provisions specifically for mobile phones as well.

There are two types of number porting, Local Number Portability (LNP) for fixed lines (i.e. landlines), and Wireless LNP (WLNP) for mobile numbers.

In the U.S. there are three different types of number porting.

1. Inter-carrier: These transfers control the number from your incumbent carrier to your new carrier. This is the most common type of porting that end-users experience.
2. Intra-carrier: This moves a number from one switch on a carrier's network to a different one.
3. Number Pooling: This is when blocks of 1,000 numbers are assigned to a new carrier.

There may be additional conditions and/or fees associated with porting a number from one carrier to another. But those vary from one carrier to the next.

Porting Issues

In most cases porting numbers is a simple, seamless process. The FCC requires all carriers to allow customers to port their numbers out, but not all carriers can port every number in. Porting a landline to a mobile number, or a number from a pre-paid account to monthly billed account have been known to cause issues.

The reasons for this vary from one carrier to another. However, one reason proffered for the restriction relates to safety. Because an area code and a prefix are linked to a specific geographic area, restricting numbers ported into a given area ensure that help can reach you in the event of an emergency.

Regardless of the reason why, there are some numbers that carriers cannot port in to their system. If you're switching carriers make sure to check with them beforehand to ensure that your number will port properly.

Creating New Numbers

New phone numbers don't just fall from the sky. From time to time, an increase of new devices and services in a given region results in using up all of the available prefixes. When this is eminent, Neustar begins the process of creating a new area code to serve that area. Each new area code generates 792 new prefixes (note: prefixes cannot start with 0 or 1), and each prefix has 10,000 lines.

Toll-Free Numbers

Entities that have one or more toll-free numbers can port those numbers between different carriers as well. This process is more formal and is called a RespOrg, which is shorthand for Responsible Organization. The term is used as both a noun and a verb. How fun!

A responsible organization is any company that manages the registration for toll-free numbers in the U.S. A company called Somos (formerly SMS/800, Inc.) performs similar administrative duties for toll-free numbers that Neustar does for regular phone numbers.

Of course, the same limitations on number availability exist with toll-free numbers that exist with regular numbers. But as the number of toll free area codes grows, e.g., 800, 888, 877, there may be more opportunities to get the number combination you want.

All toll-free numbers are portable. “The FCC requires that toll free numbers be portable, meaning that a toll free number subscriber can ‘port’ his or her number to a new provider when changing toll free number service providers.”

If a customer has an outstanding balance on their account, or some other obligation to their incumbent carrier, that company may deny port requests for that customer’s toll-free number(s). But if all obligations are met, carrier resistance can come down to unwillingness or an attempt to retain a customer against their wishes. Of course, neither of these justifications reflect well on a carrier so it is in their best interest to release toll-free numbers for current accounts.

Sometimes I still wonder why I couldn’t port my original Google Voice number. It must have been one of those numbers that was simply unavailable. But I’ve made peace with that fact. Hopefully, you won’t experience that frustration and the information above helps you better understand where phone numbers come from, who controls them, and what options exist for porting numbers from one carrier to another.