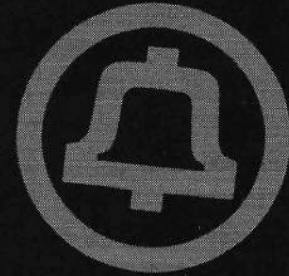




# TELECOM INFORMER



by The Prophet

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Hello, and greetings from the Central Office! It's election season, and I have been dispatched to our nation's capital to work on one of the nastiest presidential campaigns in recent memory. A client of my employer has paid a truly massive amount of money to blanket the country with horrible, negative robocalls at all hours of the day and night, and on every telephone possible. Naturally, I have been put in charge of this project, so when your phone rings later in the campaign season, you'll get a clearer picture of how effective my handiwork has been. This is perhaps the dirtiest job I've ever had, but it pays incredibly well. The organization behind the robocalls is truly sparing no expense.

All of this is happening at a particularly interesting time in the mid-Atlantic region - it's a wonder that anything is working for us at all, honestly. No sooner did I write about strike preparations in the last issue than two Verizon unions were on strike on the East Coast. As I write this, after about six weeks on strike, a settlement has finally been negotiated. It looks like employees will be back to work soon. They will then begin the long work of cleaning up the whale of a mess that management has made of the network. And so, the cycle continues.

One of the key issues in the Verizon strike was management's desire to offshore about 5,000 jobs to call centers in Mexico, India, and the Philippines. This isn't unusual in the industry. It has become commonplace to pick up the phone and reach someone abroad. However, at one point this was cost-prohibitive. It is only the emergence of VoIP services that allowed for this to happen.

I'll get to that and how it works, but first let's talk about my friend TJ. He's so annoyed that steam is practically coming out of his ears.

Amazon just called with a delivery - it's something he paid extra to have delivered today. However, he's at work and they can't actually deliver it. His roommate isn't at the apartment, and he doesn't have the gate code. You see, he rents a condo, and only homeowners are allowed to have the gate code. There doesn't seem to be any particularly good reason for this, but it's an issue.

This normally wouldn't be a problem because there is a "buzzer" door security system at the front. Although the homeowners' association won't give him the gate code, they *will* program the system with his phone number so he can individually buzz people inside. However, the homeowners' association, without explaining why, insisted that only phones in the 818 area code can be programmed to use the system. To TJ, this read like an intentional attempt to introduce an element of frustration. Naturally, his mobile phone isn't in the 818 area code. He attempted to get around this by subscribing to Google Voice, but it didn't work: Google assigned him a phone number in the 323 area code. The 818 area code is near exhaustion; this means number conservation measures are now in effect with most carriers and it's particularly difficult to obtain a phone number in this area code.

TJ was utterly perplexed by the 818 area code requirement, but after he explained it to me, it made complete sense. The buzzer system is truly ancient and was originally installed in 1991. A little research revealed that it was only capable of dialing seven-digit local numbers. This wasn't a problem back when the system was first put in, because everyone had land lines and those were all in the same area code. However, the way that we use telephones has changed, and area codes are now almost meaningless to most people. Mobile carriers will issue you a phone number

in the general geographic region where you're located, but you're not actually guaranteed to get a phone number that matches up with your ZIP code. And of course, these days, most people primarily use a mobile phone number and they bring their phone numbers with them when they move. While TJ's mobile phone carrier would (for a fee) allow him to change his phone number to one in the 818 area code, it would be a massive hassle for him to tell everyone his new number.

In the past, the solution would have been to subscribe to a land (POTS) line, wait days or weeks to get it installed, and once it was up and running, use call forwarding to send calls to his cell phone. All of the traffic would have been circuit-switched. And the solution would have cost TJ about \$30 per month - pretty expensive, all things considered, when you just want to be able to let in UPS to drop off packages at your apartment.

However, I was able to solve TJ's problem in about 15 minutes for \$4 per month plus one cent per inbound minute (and there won't be very many minutes). How? A "virtual phone number" obtained through a "cloud PBX" provider. What is a "cloud PBX?" Well, remember that "cloud" is just another way of saying "someone else's computer." In this case, the particular cloud PBX I recommended, hosted by a SIP provider, runs Asterisk behind the scenes, but has a user-friendly control panel that allows you to configure numerous services. While this particular provider doesn't have an actual service called "virtual phone number," they do let you subscribe to a SIP Direct Inward Dial (DID) number and then point this to either a SIP gateway (for free) or a forwarding telephone number (for one cent per minute). TJ set up a new account with the VoIP provider, ordered a new DID in the 818 area code, and specified a forwarding number. The whole thing was done in less than 15 minutes, and about half of that was spent booting up his laptop. TJ's building management finally agreed to accept his new 818 number, and he can now let delivery drivers into the complex. Problem solved for \$4 per month.

Calling a number a "virtual" phone number is something of a misnomer. It's actually a real telephone number. It has an OCN

and CLLI like you'd expect from any other phone number. However, most such numbers are issued by CLECs specializing in VoIP services. This means that - depending on where the call is routed from and to - calls may never hit a traditional circuit at all. Unlike in the past, where circuit-switched traffic was all exchanged via an access tandem, most carriers now happily route local traffic to one another via SIP, bypassing tandems entirely. This doesn't always (or even usually) happen over the public Internet - there can be dedicated private circuits as arranged by the carriers. However, the vast majority of inter-carrier traffic these days is routed via VoIP.

As it turns out, the way that TJ now routes calls to his cell phone is similar to how companies route calls to call centers in faraway countries. DIDs can be configured with one or multiple channels, and a DID doesn't even have to be a local number: it can be a toll-free number. Using a soft PBX, it's easily possible to configure a toll-free number in the U.S. to forward to a SIP gateway in Manila, Delhi, or Toronto with very high quality and at very low cost (just the cost of a suitable Internet connection in both places). Given that the phone calls cost next to nothing, they aren't a cost barrier to handling calls in other countries. Companies need only consider factors such as efficiency of call handling and cultural barriers.

Just as it's possible to take calls cheaply outside the U.S. using VoIP, it's possible to place calls cheaply from outside the U.S. And here is where it gets really interesting: the already weak and toothless regulations around campaign robocalls effectively apply only to companies and organizations inside the United States. One of my research items is whether campaign robocalls can be placed from outside the U.S., skirting both FCC and FEC requirements entirely. There is no real technical or cost barrier to doing this, so a decision will come from business considerations alone.

And with that, it's time to bring another column (and season) to a close. When your phone rings and it's a nasty campaign advertisement, think of me - and thank the power of VoIP making cheap global telecommunications possible.