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Ask Ars

Help! I need VoIP service for my virtual office!

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In 1998, Ask Ars was an early feature of the newly launched Ars Technica. Now, as then, it's all about your questions and our community's answers. Each week, we'll dig into our question bag, provide our own take, then tap the wisdom of our readers. To submit your own question, see our helpful tips page.

Q: I recently quit my old job at a large company and started working for a startup. The startup is 100 percent virtual (we have no office, and everyone works from home), which is great, because I love doing conference calls in my boxers. But the downside is that I miss some aspects of my older, non-virtual job. Specifically, we all had landline phones with great sound quality, voicemail, and extensions—the usual phone features that everyone expects at an office job.

But now I'm stuck using either my cell phone, which drops calls when I'm inside my house, or my own personal landline, which I tie up for hours on end (this drives my wife nuts). I've recently started looking into business VoIP services, and I thought maybe Ars would have some insight there, since you guys are a virtual company as well. Any thoughts?

The good news is that you can indeed find a VoIP provider that gives you all the features that you're used to from your old office phone—extension dialing, voicemail, a directory, etc. The bad news is that finding a decent VoIP service for your startup or business is a lot like buying a new cellphone. There are lots of options to choose from, and with a myriad of add-ons and pricing plans, it can be difficult to tell them apart.

Ars currently uses a service called OnSIP, which offers such features as voicemail, extensions, call forwarding, and automated menu—essentially, everything you've described and more. We also have the flexibility of using OnSIP with both standard Polycom IP phones, which offer exceptional call quality, and with third-party software clients as well. (Seriously, the Polycom phones running over IP provide scary-good clarity for conference calls. Our editor-in-chief "jokes" about holding staff calls just to enjoy the experience.)

Other services, such as Aptela, 8x8 Inc., and Phonebooth, work in a similar manner but differ on a few key points that we'll examine shortly. In any case, you'd be wise to compare features, call quality, and most importantly, price—some of which we'll do here.

But before we dive into specifics, let's lay the groundwork by explaining what made your old office phone system work the way it did, and how VoIP phones differ.

A PBX primer

In your non-virtual office, it's likely that you had a private branch exchange, or PBX, handling all incoming, outgoing, and internal calls. For the sake of both cost and efficiency, this type of system also allowed multiple users and extensions to be directed—or multiplexed—through a single line. From an internal standpoint, this makes it easier for employees to contact each other within an office by dialing nothing more than an extension. Such inter-office calls stay within the PBX, as opposed to being unnecessarily routed to the phone company and back to a person who could quite possibly be sitting down the hall.

Because of the size and complexity of such systems, a PBX was once limited to larger businesses (or at least to those with money to burn). That meant smaller business and startups lacked access to useful features such as attendant menus, conference calling, and centralized monitoring—features now considered must-haves in many modern workplaces.

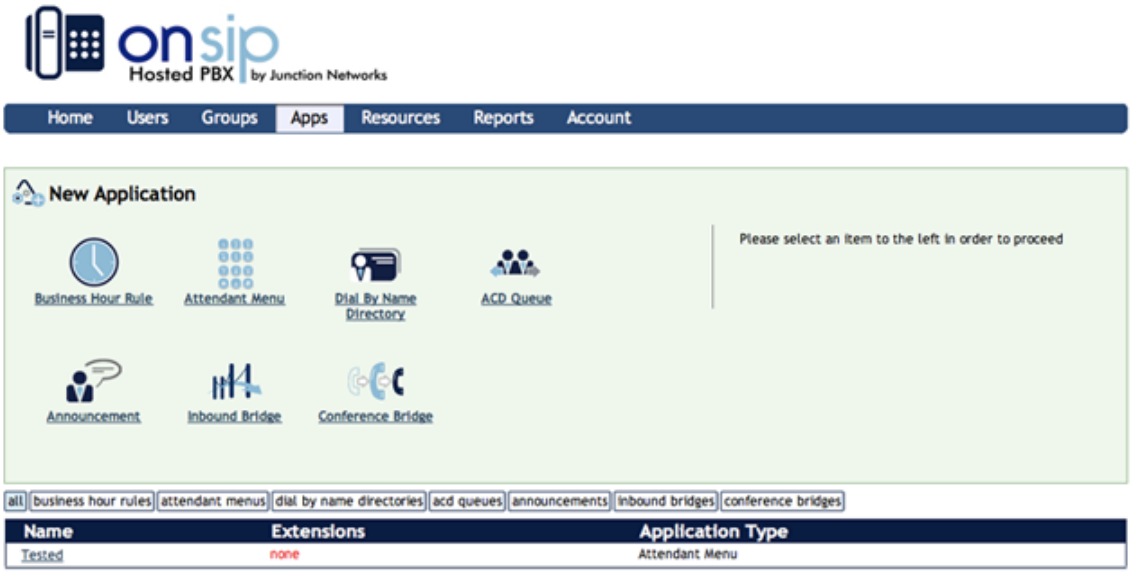
No surprise, then, that traditional hardware-based PBX systems are being replaced with virtual alternatives that are both far cheaper and more accessible. A piece of software

called Asterisk, for example, is one of the most popular virtual PBX suites, and it emulates the functionality of a costly, complex hardware PBX setup on a something as small as a standard desktop server. As we explained in an article last year, "no longer is a PBX a giant box with hundreds of switching cards in it, making it look like it may attempt to take over the world at any moment. Now, it is simply one of the many servers in your datacenter."

(If you'd like a more in-depth explanation of how both private branch exchange systems and Asterisk work, be sure to read Joe Hancuff's original article in full.)

By using VoIP to route calls through pre-existing networking infrastructure (i.e., the Internet) any remote employee with an online connection can essentially become a part of your internal PBX network. The SIP protocol, which serves as the basis of most modern VoIP communication, means that your network can even extend across multiple devices thanks to the protocol's cross-platform support. Everything from an IP-capable desk phone to an Android handset can communicate through the protocol, making VoIP and SIP-based setups the ideal choice for pervasive corporate communication.

OnSIP



One of the most popular and comprehensive services in this space is called OnSIP, which offers both virtual PBX and VoIP functionality in one place. Unlike some competing products, OnSIP can be configured to work with any SIP-capable device, and the company even offers hardware and softphone reviews on its site, which should give you some idea of how your own setup can be expected to perform.

OnSIP offers three pricing tiers that bill on a per-month basis: SoHo for $39.95, Small Business for $99.95, and Medium Business for $199.95. Each includes access to OnSIP's

core functionality, with such features as user extensions, a dial-by-name directory, call monitoring via the My.OnSIP Web interface, and a customizable attendant menu.

The difference between tiers is in how some of OnSIP's core features are distributed to users. For example, while the SoHo package allows for unlimited users, it only provides voice mailboxes for five, or 15 with the Medium Business package (additional boxes can be purchased for $2.00 per user). Again, while the SoHo package lacks a conference-calling suite or automatic call distribution (ACD) queues, both Small and Medium Business packages include at least one of each.

Still, that's relatively cheap for a service that allows unlimited users, which is why OnSIP charges a flat-rate fee of 2.9 cents per minute for all ingoing and outgoing calls. This includes countries outside the United States as well, such as Canada, the United Kingdom, France, Australia and more (a full list is available from OnSIPs website). Fortunately, calls to other OnSIP users on your network are always free.

Managing and monitoring those calls via the JavaScript-based My.OnSIP interface is especially fast. The Web app functions much like a virtual phonebook, and you can easily monitor and transfer active calls between other online contacts. There's also a handy extension for both Chrome and Firefox users that can instruct your desk phone or SIP-capable device to dial numbers you encounter online, all from within your browser. It should be noted that this interface is separate from OnSIP's user administration panel, however, which is still accessible, but comparatively spartan, and somewhat harder to navigate.

As previously mentioned, OnSIP will work with any SIP-capable device, though just how well it does will obviously depend on the model. At Ars, we use Polycom IP phones, which sound great. For the sake of this article, we also tested OnSIP using an open-source, Java-based SIP client called Jitsi, with nightly builds for Mac, Linux, and Windows PCs. As far as call quality is concerned, OnSIP supports the most popular SIP

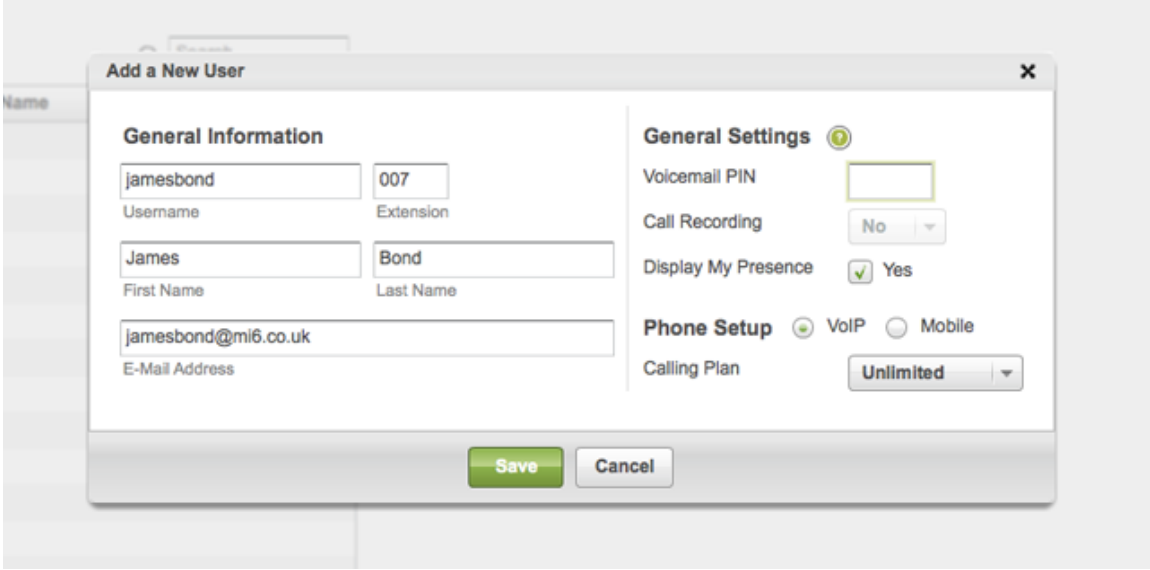
audio codecs used today (including the ITU G.711 standard) as well as wideband (G.729 "HD" support) should both your phone and router allow it.

With both the Java client and our Polycom phones, dialing HD-capable IP phones revealed OnSIP's call quality to be particularly impressive. Used with a decent headset, some callers felt the experience was similar to talking with someone in the same room. Of course, this is all dependent on the speed and quality of your Internet connection, and proper Quality-of-Service settings will also play a role here as well. Otherwise, audio artifacts will, in our experience, increase when bandwidth-intensive activities such as video streaming are added to the mix.

Aptela and 8x8

We've grouped Aptela and 8x8 together because they're two similar services that differ from OnSIP in a few ways. While both offer unlimited monthly calling packages, they each charge per user. In fact, "unlimited users" versus "unlimited calling" is how most hosted VoIP and virtual PBX services separate themselves from other options.

For example, Aptela's unlimited offering costs as little as $24.99 per user, per month, which includes a voice mailbox, auto-attendant, and other call monitoring features. Cheaper options are available, though there is a flat-rate charge per minute for calls. 8x8 is similarly priced at $29.99, with a cost of $24.99 for up to three additional users (for the company's Virtual Office Quick Start plan, at least). Compared to OnSIP, that total cost can add up quickly with a large number of users, but the tradeoff is near-unlimited minutes for those who require frequent calling.



Luckily, Aptela is fairly lenient with regard to allowed third-party phones; most SIP-capable devices and applications can be registered for use with the service, though Aptela obviously provides a list of recommended options. One of those options is the third-party, cross-platform softphone Zoiper, which we tested alongside Jitsi. The good news is that

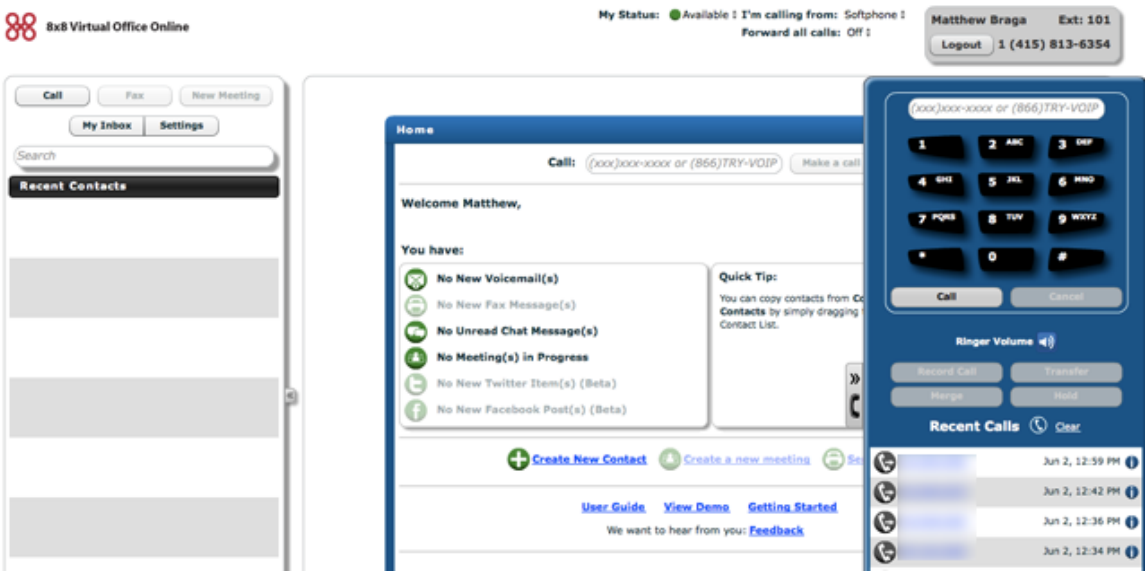
both applications produced near-identical results—clear, with the occasional audio hiccup, though they proved especially impressive when used to connect with other SIP clients and wideband-capable phones.

Unfortunately, the same can't be said of 8x8, whose own browser-based softphone is less than stellar. Worse still, the company doesn't give out SIP credentials, so this is your only software-based choice. Obviously, the in-browser applet is a conscious effort to provide the utmost in cross-platform compatibility—assuming you have both Flash and Java installed—but it's slow to navigate and more clunky than a standalone app.

Calls were never quite as clear compared to the other services we tried, and there was even a noticeable background hiss identified by some callers on both ends. In fact, calls which we might have considered "high-definition" on Aptela or OnSIP sounded far from "in the same room" on 8x8.

This is by no means a definitive test. An 8x8 representative warned us that available computing resources and bandwidth would directly influence call quality. However, neither factor posed a problem in previous tests on alternate services. We can only hope that the service performs better with a traditional hardware phone—a limited number of which can be purchased through 8x8's website—though this approach might not be quite as ideal for frequently mobile clients.

It's not all bad, however. What's interesting about the 8x8 online portal is that your address book can store not only internal company contacts, but external numbers as well. Thanks to beta Facebook and Twitter integration, in addition to standard Google contacts and Microsoft Outlook support, you can consolidate contacts from most major online networks and services into one place. It's not a revolutionary feature by any stretch—this sort of thing has been a common smartphone feature for years—but it's a welcome addition that's absent from traditional PBX services.

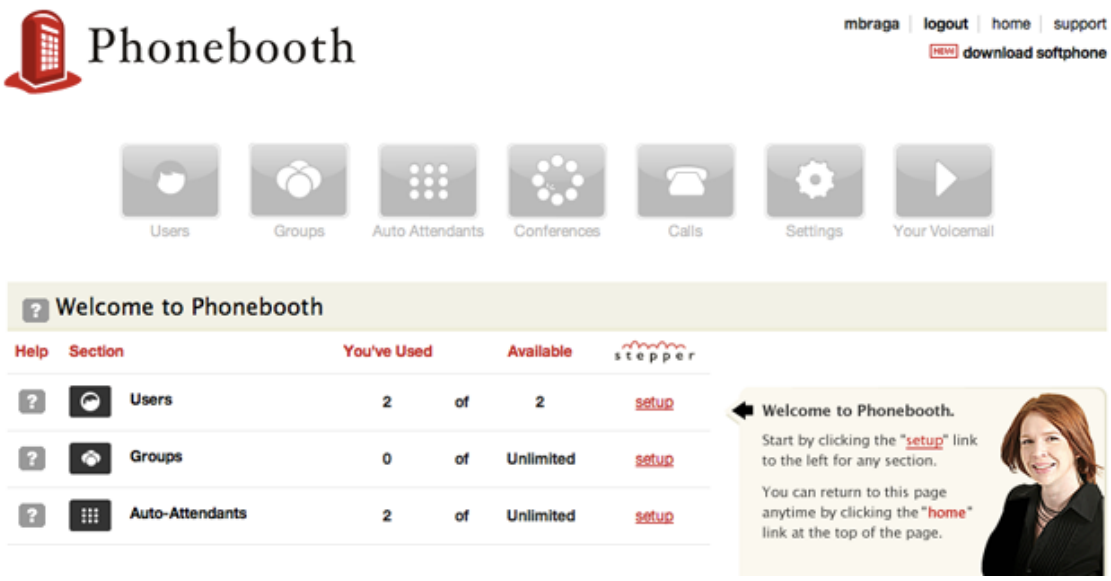


Finally, we might be nitpicking, but a potential downside to Aptela (and 8x8 to an extent) is the inability to set up a new subscription online. In our book, this is one of OnSIP's greatest strengths, and it gives new users the opportunity to make and receive calls in mere minutes (and on a 30-day trial, too). We can understand the rationale; by funneling potential users through Aptela and 8x8's representatives, less advanced users can be led through the process with ease, and appropriate discounts can also be applied. Still, it would be nice to have a self-serve option for those with previous hosted VoIP and PBX experience.

Phonebooth

Phonebooth is a relatively new VoIP service from Bandwidth.com, and it's one of the most interesting services in this space. The company currently offers a free consumer-oriented service, called Phonebooth Free, but the real draw is its business-focused OnDemand package.

Unlike the other providers we've examined, Phonebooth eschews the multi-tiered price structure and per-minute billing of other services in favor of a flat-rate monthly fee. For $20 per month, per user, the company offers unlimited nationwide calling, groups, virtual attendants, conferencing minutes, and even voicemail transcriptions.



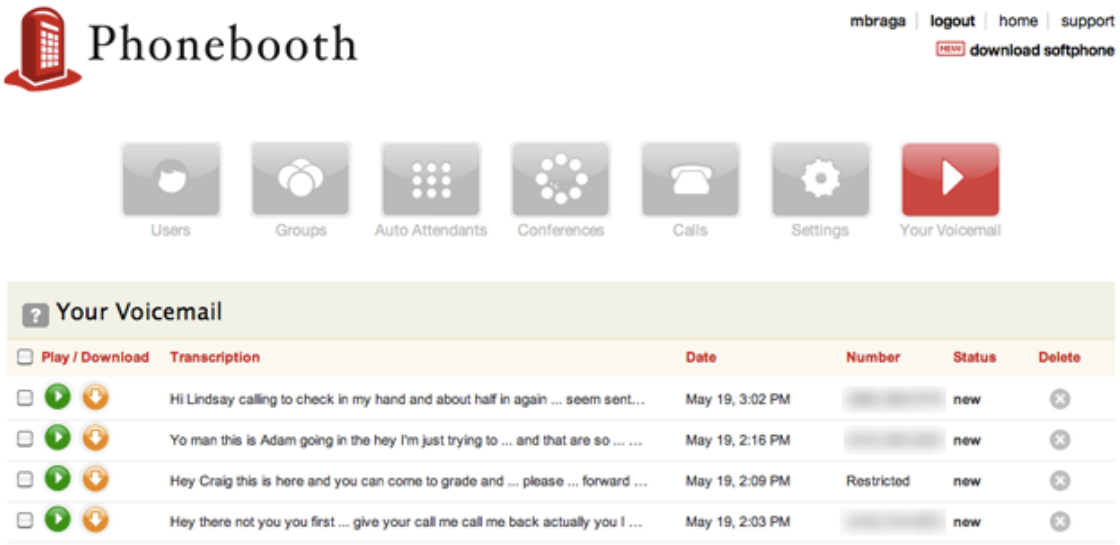
The downside, of course, is that as you add more users, you end up re-paying for features you already have. In other words, you still get all of those unlimited options whether you have one user or twenty—compared to other services where an auto-attendant is paid for once—which can make adding extra employees pricier for larger companies.

However, there's no denying that Phonebooth's Web-based interface is both incredibly slick and simple to navigate. For example, adding users and sorting them in groups is a clearly marked process, and it takes no more than a few clicks. Even creating an auto-attendant menu, which can appear downright terrifying on other virtual PBX services, is presented in an extremely logical manner. You can have the software call an extension or phone number with which you can record your greeting, or you can upload your own pre-recorded audio in WAV or MP3 format. It should also be noted that Phonebooth places no limit on the number of menus you can create or nest, which is rare for most services we've encountered.

One of Phonebooth's unique features is voicemail transcription; it's offered for free with your subscription, and not as an additional third-party service. But that's as good as it gets, because the service simply doesn't work. In fact, we can't understate how poorly the system performed when faced with even the simplest and most well enunciated speech. A typical transcription looked something like this:

"Yo man this is Adam going in the hey I'm just trying to ... and that are so ... downstairs around dinner hey I was in a little more if you have any hi Jim call hey"

If there's a silver lining in all of this, it's that both the transcription and original audio message can be emailed to an address of your choosing together. Or, you can always dial your voicemail in the usual manner. However, we definitely wouldn't base any purchasing decisions on Phonebooth's transcription features alone.



Luckily, actual calls sound great, with one friend even describing the experience over her cellphone as "amazingly clear" in comparison with our usual conversations. Calls placed to other IP phones and SIP clients were also successful, free of both static and other hiccups, and as with OnSIP, pleasantly resilient to changing network conditions.

Our tests were conducted with Phonebooth's included softphone (basically a rebranded Counterpath SIP product) that took mere minutes to install and configure. Overall, we'd say Phonebooth is about on par with OnSIP's offerings, which is impressive given the price.

But herein lies another potential deal-breaker, at least for some businesses: Phonebooth only works on a set of approved devices, and unlike OnSIP, the service does not give out SIP credentials. The company has cited various reasons for the decision, from security concerns to customer needs but it's still a bit of a drag for those looking to migrate preexisting systems. After all, the list of supported hardware isn't large, limited only to select Yealink and Polycom desk phones.

Conclusion

Thankfully, none of the services discussed here require long-term contracts or charge exorbitant setup and cancellation fees. OnSIP even offers a free, 30-day trial, while Phonebooth users can test the company's free variant before upgrading to the full OnDemand service. Having such an option certainly lowers the barrier to entry for potential customers, and in the case of OnSIP and Phonebooth, it offers a great way to evaluate your needs before committing.

When you're looking for your own VOIP provider, whether it's one of the three we looked at here or another one of the many solid services out there, here are some other things to watch out for:

- Unlimited calling or unlimited users? Most VoIP services offer one or the other. If you need both, be prepared to pay a lot.
- Be wary of which add-ons are included, and which you'll need to pay extra for. Not all of your users will have voicemail access, for example, so be prepared to pay a few extra dollars per extension.
- While most VoIP services tout free long-distance calling, such plans don't always include cellphones. Make sure the service you're considering caters to both landlines and mobile phones if necessary.
- Some services refuse to give out SIP credentials, forcing you to use specially configured phones or devices instead. If you have pre-existing equipment, don't assume it's compatible.
- Not all softphones are created equal. Due to network limits and available resources, mobile SIP clients may not always perform as well when compared with conventional IP phones or desktop.
- Chances are, your old office had a high-speed, corporate network connection that could handle multiple simultaneous calls without issue. Your remote employees are unlikely to have the same conditions. Make sure you have the bandwidth necessary to handle VoIP calls in addition to day-to-day office activities.

It can be difficult to find third-party providers that offer both decent business VoIP service and IP-PBX capabilities, while also remaining simple and open. Your needs, of course, will vary, and there's rarely one service that will satisfy them all. However, the services we've looked at here offer a comprehensive set of features at competitive prices. This doesn't necessarily mean that one of these will be right for you, but hopefully we've given you a starting point from which to explore your options and make a decision of your own.