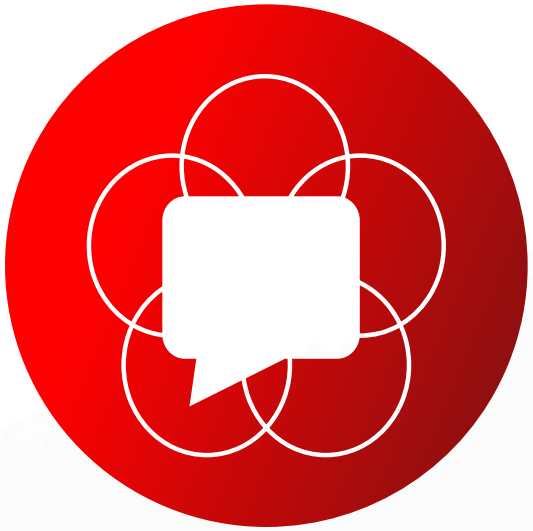


WEBRTC
ROLLS OUT IN BUSINESS APPS

twilio™

WebRTC, an emerging web standard, has the potential to be a game changer for enterprise communications. By simplifying the process of adding voice and video to any web browser, WebRTC can turn any device with a browser into a phone and make communications from inside web apps both ubiquitous and cost-efficient.

Applications include everything from online and mobile customer service to online and mobile sales call centers, logistics and fleet management, financial or medical advisory services and supply-chain management. Indeed virtually any app that contains information which can trigger a phone call can be made more efficient with WebRTC.

Though the standard is far from complete—it is currently being worked on by the World Wide Web Consortium and Internet Engineering Task Force—businesses have already begun to deploy WebRTC using Google's Chrome browser and the Twilio Client. In this white paper, we'll review the status of the standard and its performance in real-world business environments such as call centers. We'll also look at how WebRTC can deliver

on the promise of streamlined communications, increased engagement and richer, more satisfying interactions.

Steady progress toward a formal standard

WebRTC was born in the fall of 2010, when representatives from some of technology's heavyweights, including Apple, Cisco, Microsoft, Mozilla, Opera and Skype, came together at Google's Mountain View campus to develop a new peer-to-peer approach to communications. The goal of the group was to create a free and open standard that would make it easy for developers to create applications with high quality, real-time communications built-in.

Instead of requiring users to install plugins like Flash that must be downloaded and periodically updated, communications would be built into browsers, making it possible for users to talk to each other, share their screens and exchange videos from any web page.

Over the next two-and-a-half years, the standard moved forward quickly. In the fall of 2012, WebRTC became available for general use. It is currently supported by the most recent version of Google's Chrome browser and by the Nightly builds of Mozilla's Firefox browser, which are designed for testing new software. In February 2013, the Mozilla Foundation demoed WebRTC calls on Firefox for Android, and in April, Mozilla announced that WebRTC will be turned on by default in Firefox 22. Parts of the standard have also been implemented in Opera Software's Opera browser.

While Microsoft initially supported WebRTC and continues to work with the W3C WebRTC working group, the company has developed its own specification, dubbed CU-RTC-Web. Though CU-RTC-Web was rejected by the working group in 2012, Microsoft continued to push it. In January 2013, Microsoft released a working prototype that sought to demonstrate how CU-RTC-Web could help resolve outstanding issues around the draft WebRTC API. In particular, CU-RTC-Web can be helpful in addressing interoperability problems caused by a specification known as SDP, or session description protocol, which is used extensively in VoIP and video conferencing to describe the start of multimedia sessions.

In order for WebRTC to become a pervasive technology, it needs to support cross-browser compatibility. But the absence of interoperability today is not slowing WebRTC's growing momentum. In October 2012 the first WebRTC conference was held in Paris, France, with participation from carriers such as AT&T, Orange and T-Mobile. AT&T recently announced its support of WebRTC through a set of communication APIs and libraries with WebRTC "built-in".

Blue chip corporations like Home Depot and rapidly growing startups like Zendesk and Datalot have already started to experiment with incorporating the audio portion of WebRTC into mission-critical applications. We'll look at their implementations in detail below:

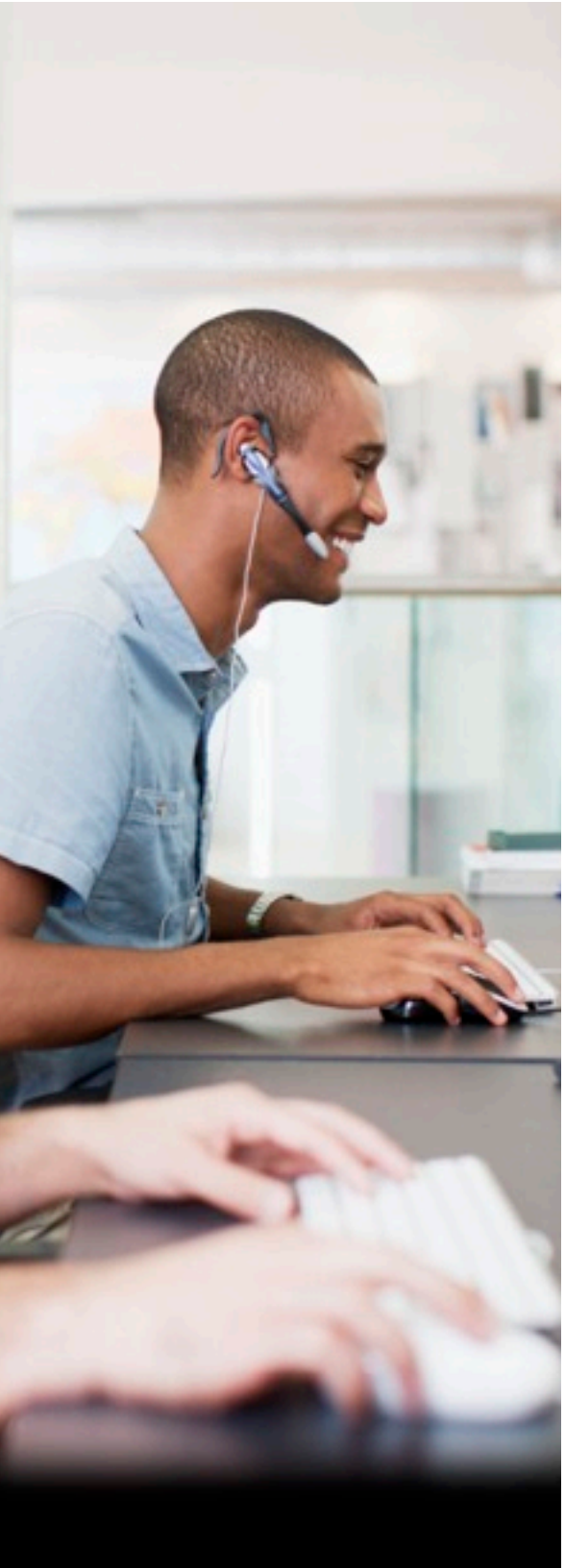
Case study: Zendesk

Online customer service has long been celebrated for offering customers faster resolution times and greater transparency. Zendesk, a leading provider of cloud-based customer support software, decided to see if increased human interaction would make the experience even better. It did. By adding Zendesk Voice, an integrated voice channel, to its popular help desk ticketing product, Zendesk created the “happiest channel.”

In just five minutes, a Zendesk customer can set up an online call center and begin answering questions about their product or service. Calls can be answered directly from a browser or from any landline or mobile device.

Four engineers built Zendesk Voice using Ruby on Rails and the Twilio communications API platform. Initially, they used a Flash plugin to stream voice calls through customers’ browsers. This approach worked reasonably well, but issues with browser compatibility sometimes affected voice quality. For example, new releases of the Chrome browser would sometimes conflict with certain versions of the Flash plugin, creating distortion and making calls hard to hear.

In addition, Flash didn’t always reliably detect when a USB headset was plugged in, and some agents had a hard time adjusting the volume of their microphone inputs.



When WebRTC became available, Zendesk decided to give it a try. They beta tested it with a few customers and found the audio quality was much better than with Flash, particularly for international customers. Zendesk rolled out WebRTC to the rest of their customer base in the spring of 2012.

“In terms of agent experience, it’s a big win,” said Steven Yan, a senior product manager. Instead of having to adjust the microphone input separately for the Flash plugin, agents can use their native settings, eliminating a potential headache. Adopting WebRTC was a “no-brainer,” Yan said.

Compared to all other channels—including email, chat and social—the WebRTC-enabled voice channel gets the highest satisfaction ratings. People seeking customer service who responded to automated surveys sent by Zendesk’s customers reported a 93 percent satisfaction rating with Zendesk Voice.

Case study: Home Depot

Home owners launching home improvement projects often find themselves struggling to find a handyman, plumber or painter to help them out. Redbeacon, Home Depot's online marketplace for professional services, solves that problem.

Customers can find home improvement help through Redbeacon either by requesting referrals online or through an iPhone or Android app. They can also speak with one of Home Depot's associates at a store or call 1-855-RBEACON. After the customer describes his or her project, RedBeacon automatically submits it to a group of carefully selected pros for a bid. It's not unusual for a customer to receive multiple bids within an hour.

Redbeacon offers the benefits of speed and of heavily vetted pros. Before referring a service provider, Redbeacon checks their licenses, service history and references. Each job comes with a $1,000 guarantee.

All communications around hiring a pro are handled by a customized call center application that is tightly integrated with Redbeacon's customer relationship management (CRM) application. This ensures customer satisfaction remains high. Customers don't have to repeat information about their jobs, and every interaction is logged, so problems are easy to troubleshoot.

Like Zendesk, Redbeacon initially streamed calls through the browser using a Flash plugin. But there were problems with dropped calls and jitter, a variation in latency that can cause audio to sound distorted. Aaron Lee, Redbeacon's CTO and cofounder, decided to investigate whether WebRTC could solve these problems.

Integrating WebRTC into the call center app and Redbeacon's custom-built CRM proved to be a snap. Only one line of code needed to be changed, Lee said.

The next hurdle to overcome was user experience. Lee was initially concerned that agents would be confused by a workflow that required them to give Google's browser permission to use their microphone and audio each time they logged in. There was a workaround that would enable the browser to remember the settings from session to session, but it required Redbeacon to implement an encryption connection—not a trivial exercise.

Unsure that the benefits would be worth it, Lee first tested WebRTC with a handful of agents. Their verdict: the WebRTC-enabled app was easy to use and offered excellent audio quality. "We heard great things about it," Lee recalled. He ordered a full rollout.

Today, all of Redbeacon's agents use WebRTC.

Case study: Datalot

Datalot wants salespeople to be able to concentrate on what they do best—turning opportunities into sales. It offers a product called DialDrive that promises to optimize the sales process from the beginning of a web-based or mobile marketing campaign to the close of a deal.

A salesperson who is ready to sell can fire up DialDrive, plug in a USB headset and start calling leads. Or, if good leads happen to be in short supply, he or she can bid on high-quality leads in a real-time auction to fill the day's pipeline.

As a salesperson engages a lead, all the information about that lead pops up in the browser. There is a script to follow and buttons to press that make it easy to further qualify the lead; for example, noting that a customer is interested in life insurance or a long-term care policy. When the call is over, all the information from it is automatically saved in a CRM system, ensuring there is one complete customer record.

DialDrive also includes traditional call center features like an automated IVR or interactive voice response system, call recording and call routing. "It's basically a distributed, cloud-based call center," said Adam Varga, the lead engineer.

From the beginning, DialDrive was conceived as a single app with communications built in. Reznick believed this architecture would streamline the sales process—a theory that was borne out by practice.

As soon as Google released WebRTC in the Chrome browser and Twilio incorporated it into the Twilio Client, Datalot began experimenting with it in DialDrive. Once it was clear WebRTC was ready for prime time, an engineer was able to switch DialDrive over from a Flash plugin to WebRTC by altering just one line of code.

The result was much clearer audio and an improved experience for DialDrive customers. “WebRTC has been far superior to Flash,” Reznick said. In addition to offering improvements to customers, Datalot’s support agents no longer have to worry about whether a Flash plugin on a customer’s DialDrive is compatible with the latest version of Chrome.

Case study: SendHub

SendHub aspires to be Google Apps for business phones. Just as Google Apps makes it easy for a business to provide employees with everything from online email, calendars and document sharing, SendHub offers an online service as well as iPhone and Android apps that dramatically simplify the process of provisioning business phone lines.

All a company needs to do to provide new phone lines for its employees is to sign up for SendHub with a name and a primary phone number. After SendHub verifies the number, the company is ready to start adding as many new lines as it wants.

Customers who use SendHub's iPhone or Android apps can make or receive calls and send or receive texts directly from their personal devices using their business phone numbers. Customers who use the web interface have the option of making or receiving calls through their browsers and a USB headset, or having SendHub route calls to their device of choice, including a basic feature phone.

Meanwhile, companies retain all call information, regardless of whether their employees choose to use their own devices or the web interface for business communications. At a glance, managers can review a snapshot of real-time communications activity in an online dashboard that includes an aggregate of calls and texts, along with more detailed breakdowns by individual employees and teams.

WebRTC was incorporated into SendHub in early 2012. Like Zendesk and Home Depot, SendHub was hoping to fix glitches caused by Flash. Today, when a SendHub customer logs in via the Chrome browser, the application automatically defaults to WebRTC.

Ash Rust, SendHub's co-founder, said the result was a "noticeable difference in quality between browsers." The sound quality of calls made with non-WebRTC-enabled browsers such as Internet Explorer was "nowhere near as good," Rust said.

Although only a portion of SendHub's calls are currently being transmitted with WebRTC, Rust predicts that the technology as eventually change the future of communications. "WebRTC is ultimately going to mean that any device can become a phone as long as it has a microphone and speaker," he said. "I think that's a huge deal because for the last 150 years the telecom industry has had control over what device you use. They are losing that control and that will change how people connect to telecom."

Conclusion

Though WebRTC has yet to be approved as a formal standard, companies large and small have begun to incorporate its audio-streaming capabilities into business apps. These early adopters are reporting benefits such as a streamlined user experience, improved audio quality and painless integration with other apps. Home Depot and Datalot were each able to integrate WebRTC into custom-built CRM solutions simply by changing a line of code.

In the future, as WebRTC matures and becomes more pervasive, companies will be able to use their browsers to share video and data, in addition to the current capability of exchanging audio streams. Every browser-based app will have the ability to communicate, and the idea of having separate apps for talking, texting, chatting and for accomplishing other business goals will become an anachronism.

By incorporating communications into business apps, companies will be able to engage more directly with their customers than ever before. Today, forward-thinking companies are working to integrate communications into their CRM systems so they don't have to ask a customer repeatedly to provide the same information. Tomorrow, companies will be conducting video chats and sharing their screens. If WebRTC fulfills its potential, it will literally put companies and their customers on the same page.