What's Driving Real-Time Communications Convergence?

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From wired to wireless, the world's growing reliance on communication networks—both in enterprise and consumer environments—has put pressure on the industry to leverage the capabilities of existing infrastructure, devices, and networks to deliver cross-platform solutions. Providers are in a heated race to bring to market this next generation of real-time, unified communications, led by the rise of mobile workers, innovative technologies, and a changing vendor landscape.

In just the last few years, a slew of technology innovations have been introduced and adopted within the real-time IP communications arena. For example, the number of screens has expanded well beyond the PC and TV to a multi-screen environment with smartphones, tablets, point-of-sale, security systems, and much more. Connecting these devices to each other has become essential in order to create the best user experience.

Another important factor in this revolution is ubiquitous and reliable IP connectivity, whether at home, in the enterprise, or on the road. With Wi-Fi inside the building and high-speed LTE outside, it's now become a reality. In addition, cloud technology has made possible access from any device and any network, anywhere in the world.

To understand where this is all going, it's important to first take a look at the different forms of real-time communications over today's IP networks, as well as examine the current state of technology and where it's going in the future. For example, how do communications differ between wired and wireless devices, and what are the challenges when deploying these technologies on mobile devices versus desktops?

The communications needs and expectations for enterprise and consumer environments also vary and play a key role in the adoption of these technologies in different markets.

Evolving from Wired to Wireless

The concept of a "wired" device is changing. In today's world, a wired device isn't about connecting a physical Ethernet wire to a box for Internet connectivity. Now, devices such as set-top boxes, cable/DSL modems, and other traditional wired devices are generally defined by placing a box with a wireless connection at a fixed place that has good wireless reception and bandwidth.

When it comes to phones, the traditional plain-old-telephone-service (POTS) fixed device is literally in its last few years, even in developing countries. User experience with IP communication continues to improve and telecom and mobile operators have moved their focus to next-generation technologies and services. One obvious example is the support for VoLTE on the latest iPhone devices and launch of VoLTE by major carriers, such as Verizon, AT&T, and China Mobile.

the demand grows for these wireless communication technologies, the industry must improve service and bandwidth. Furthermore, as employees continue to work from anywhere, anytime, companies will be required to adopt full enterprise unified communications integration—from instant messaging to audio, video, and web conferencing, and even support for Wi-Fi-based enterprise services. On top of that, organizations will need to take a look at integrating 4G/Long Term Evolution (LTE) networks, which are expected to grow substantially due to the meteoric rise in mobile broadband usage.

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Deploying next-generation wireless communications technologies on mobile devices creates challenges in terms of bandwidth, packet losses, and latency. For example, latency can vary between a roaming mobile device and a device connected to a particular network. Quality and reliability of service depend on the infrastructure and what network is being used at the time. Some new technologies can reduce the latency in smartphones or tablets by integrating with the audio and network drivers, therefore improving service and preventing delays.

Another challenge concerns the handoff between networks. For instance, a mobile-device user could have Wi-Fi in the home; then outside of the home, the coverage switches to LTE, which could then be handed off to 3G (low bandwidth). The industry will need to deploy the infrastructure that can support seamless handoff across different access networks.

Increased use of 4G and other broadband and super band technologies will reduce the need for copper-line legacy systems, giving IP communications a stronghold in the communications world. To illustrate, let's compare an IP-to-IP call with a public switched telephone network (PSTN). An IP-to-IP call supports wideband or super wideband band calls, as well as enables video conferencing. PSTN, on the other hand, is a bit challenging due to the legacy infrastructure and lack of options to support applications like video conferencing. As users demand more real-time video and voice integration, PSTN will eventually phase out.

Advanced Collaboration Tools

Real-time communications over IP networks is leading to availability of more collaboration tools and, therefore, to increased productivity for organizations. Many companies are integrating easy-to-use collaboration tools to help their virtual teams boost productivity in light of increasing mobile and remote access to the corporate network.

One such example is Google's WebRTC technology, which enables a range of applications like multi-party video/voice conferencing, and enterprise collaboration tools with its popular data channel. Today, companies use WebRTC for collaboration, customer support, and education. The technology also allows real-time communications on various platforms with different operating systems, sizes, and functions, and on browsers with no plug-ins, which can save time and money.

WebRTC also helps improve customer service by allowing businesses to enhance their sites with what the industry labels "click-to-call" capabilities for their customers, making it possible to talk to a real person immediately via video. By using WebRTC, companies can potentially minimize their investment in trunks and 800-number services with calls coming in from the Internet.

Seamless Integration

erging real-time communications technologies are definitely good for business, but they do present some llenges, such as the BYOD (bring your own device) trend. Solutions coming into the market help ease the BYOD bottleneck, supporting features such as single voicemail and address book. With these integrations, the employee can use the same device for personal and business communication. It's important to remember that most companies already have the infrastructure in place to integrate these next-generation communications, so they needn't break the bank to get with the times.

Each company also has its own requirements and should be able to customize communication tools to fit their needs. Quality and reliability of service are critical, especially in the Wi-Fi environment, which experiences lots of packet losses. When choosing a vendor, make sure latency and all requirements are met in order to create a good user experience and seamless integration.

Conclusion

Companies that play their cards right will reap the benefits of real-time communications over today's IP networks—from VoIP to Internet Relay Chat, live video conferencing, mobile apps, and other chatting modes.

To maximize the next generation of real-time unified communications, service providers have already begun to improve bandwidth and launch services like Voice over LTE (VoLTE) and other applications such as rich communications suite (RCS). These communications must be agnostic across platforms, including Android, iOS, and other mobile platforms. It will be exciting to watch as all of these technologies and services converge to create the ultimate unified communications experience.

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