



# Get Ready for the IP Transition Wait, What?

~ BY JEFFREY COHEN, WITH ROGER WESPE & MARK REDDISH

Back in November, Tom Wheeler, the newly-confirmed chairman of the Federal Communications Commission (FCC), weighed in on a major issue impacting the nation's communications infrastructure via a blog post on the FCC's website. In it, he laid out the steps the commission will take to encourage technological change as part of the ongoing transition of current communications infrastructure to Internet protocol (IP)-based technologies. Not only is this path forward a major step for consumers, it holds a number of implications for APCO and public safety communications. But to appreciate the significance of this announcement, it's important to understand the technology the IP transition is beginning to unseat.

For more than a century, our nation's communications infrastructure was largely comprised of a network of copper wires that were fed in to almost every house in America. These lines collectively formed a telecommunications backbone known as the public switched telephone network (PSTN), which allowed for nearly ubiquitous calls within the U.S.

There are a few reasons behind the PSTN's longevity. From a design perspective, the infrastructure was built to serve a singular purpose: voice communication. Users in rural and urban areas alike were all connected through the PSTN and had a consistent user experience. The copper network was also quite reliable. The phone lines receive power from an independent source; if a tree knocks out power in



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a neighborhood, in all likelihood the landline phones will still work. And for APCO members, a call placed from a landline phone on the PSTN to 9-1-1 provides an emergency calltaker with the exact location of the caller in distress.

## IP-based technology is set to replace the 9-1-1 infrastructure

However, advances in technology and evolving consumer preferences have begun to change the way in which we communicate with one another. An example of this transition is the increasing adoption of IP-based communications technology. IP networks deliver voice information and other data in the form of packets. While these data

packets can be transmitted over a copper line, these wires are not optimized to provide this service. Consequently, fiber optic cable, which is better suited for IP traffic, is being deployed to residences and businesses throughout the U.S. This new technology leverages an

IP-based backbone to deliver and share content rich information, including calls, video, voice and multimedia messages, not to mention Internet access that we have all come to rely upon in our daily lives.

The transition to IP-based technologies will also affect the public safety communications ecosystem. Much like the technology behind the PSTN, the 9-1-1 networks are based on decades-old, circuit-switched technology

consisting of selective routers and traditional phone trunks linking the selective routers and PSAPs. IP-based technology is set to replace this 9-1-1 infrastructure, leading to new redundancies for these communications paths much like the public Internet. Further, PSAPs and comm centers deploying IP-based Next Generation 9-1-1 (NG9-1-1) systems will increasingly be able to process new forms of communication, as well as exchange and share data with other PSAPs and systems, such as in the event of a PSAP outage or for coordinated incident management and response.

For all of its advantages, we need to remain vigilant to ensure this technology promotes public safety objectives similar to what we have achieved with today's networks. Copper networks have been built to 99.999% reliability, and IP fiber-based networks should be designed to a reliable, redundant standard under real world conditions faced by public safety. Additionally, IP-based communications present new cyber-based and other security-related vulnerabilities that we need to be prepared for. Further, IP-based networks are reliant on power from the consumer electric grid, making them more susceptible to power outages. Thus, we need an increased focus on stand-by power, battery back-up and other contingency plans for power supply. And finally, we should be mindful of the need to ensure a good mechanism for obtaining location information for 9-1-1 calls. While IP technology permits innovative solutions that can improve upon existing location technologies, we will need to encourage development of techniques to provide reliable and accurate location.

With the IP transition already well underway, the chairman stated in his blog post that he is looking to quickly press for FCC action to begin experiments that will allow the commission and the public to observe the impact of the IP transition, collect data that will supplement lessons learned from these experiments, and initiate a process for the commission to consider the other legal, policy and technical issues that may not fit within the confines of the proposed experiments.

In comments filed with the

commission in July, APCO stated that it supports the eventual transition to IP networks, and advocates for well-designed and comprehensive trials to ensure a smooth transition, especially for 9-1-1 services. APCO's government relations team will closely monitor the upcoming proceedings. ||PSC||

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APCO International. Roger Wespe, government relations manager, and Mark Reddish, government relations associate, also contribute to this series. Like us on Facebook and follow @GRO\_APCO on Twitter for timely updates and information. Our blog provides a forum to interact directly with the GRO team. Join the conversation at <http://apcointl.org/tabletopx/>.



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