

Network Interconnection

This is the fourth in a series of white papers intended to facilitate a robust dialogue regarding modernizing the laws governing the communications and technology sectors. This discussion, informed in part by responses to [previous white papers](#), seeks comment on interconnection and peering agreements between communications networks and the role of government in regulating these agreements. As discussed in the first white paper, rapid changes in technology warrant an examination of how communications law can be rationalized to address the 21st century communications landscape.

Background

The interconnection of telecommunication networks has been at the heart of communications policy since the Kingsbury Commitment in 1913 when AT&T guaranteed interconnection with independent companies in exchange for a government-sanctioned monopoly on long-distance service. For the next 80 years, interconnection between AT&T's long-distance monopoly and the monopoly local incumbents was mandated by regulation.

In the Telecommunications Act of 1996, Congress adopted a pro-competitive and deregulatory framework to replace the traditional local telephone monopolies. Incumbent local exchange carriers (ILECs) (those who had local monopolies before the 1996 Act) were obligated by the Act to negotiate in good faith for interconnection of traditional, circuit-switched traffic at any technically feasible point in their network. This was required to be done at a quality comparable to its own service, and at reasonable and non-discriminatory rates and conditions. The Act also provided a backstop of state-by-state arbitration if two parties failed to come to agreement.

Also in the 1990s, the Clinton administration privatized the control of the Internet backbone. Unlike the public switched telephone network, the autonomous systems of the Internet voluntarily interconnected with one another using Internet Protocol (IP), which had been developed precisely to solve the problem of interconnecting disparate networks that relied on different physical media (or layers). Traditionally, the federal government has been reluctant to engage in disputes regarding IP interconnection.

Current Market and Emerging Issues

In the years since the 1996 Act, the market for communications services has changed dramatically. Voice networks have advanced to handle data, traditional video operators like cable and satellite companies now offer voice and data, and wireless providers offer voice, video, and data services along with the advantage of mobility. With all of these changes, the nature of interconnection is evolving.

The Revolution in Voice. According to the FCC's [June 2014](#) report on local telephone competition, there were 90 million traditional telephone lines in service as of June 30, 2013, accounting for only 20 percent of all local telephone connections. From 2010 to 2013, Voice over Internet Protocol (VoIP) subscriptions increased by 16 percent, while traditional telephone

lines decreased by 10 percent annually. There were 306 million mobile subscriptions in the U.S. – many of which constitute the primary or sole voice service for users.

The historic, “natural” monopoly that justified special rules to govern ILECs has faded in the years since 1996; there is inarguably more competition in the voice market today. Yet the rules remain in place as written nearly two decades ago, subjecting different technologies – and even the same technology deployed by different providers – to different rules although they often provide interchangeable services in the eyes of the consumer.

The Evolution of IP. Internet data exchange is achieved primarily through business arrangements called peering and transit. Peering is the exchange of traffic between broadband networks when traffic is roughly symmetrical and generally does not involve one party paying the other as there is reciprocal benefit. When traffic is asymmetrical, the parties may elect to enter a transit arrangement in which the party generating traffic pays the party receiving and delivering traffic. Modern IP-based networks may interconnect at just a dozen points in the United States, not at the hundreds or thousands of points of interconnection of the public switched telephone network. IP traffic usually transits the most efficient pathway to its destination, with the route chosen by the party delivering the traffic (for example, to avoid congestion or reduce transit costs).

Regulation of Interconnection

The applicable regulatory regimes governing interconnection also vary in many ways among platforms and technologies:

- Traditional public-switched telephone network carriers must abide by the Title II regulations regarding interconnection. Some traditional carriers may negotiate interconnection agreements freely, but incumbent local exchange carriers must do so under the knowledge that a state regulator may step in regulate the rates notwithstanding the commercial agreement.
- Wireless networks interconnect through commercial agreements between carriers, with limited mandates regarding voice and data traffic carriage outside of a carrier’s network.
- Voice interconnection still tends to occur using traditional Time Data Multiplexing (TDM) rather than IP, which requires the conversion of VoIP traffic and often the use of legacy networks for transport. The Federal Communications Commission only this past year completed an experiment allowing VoIP providers to interconnect directly with traditional carriers.

As voice service evolves from traditional telephone technologies to embrace IP and applications over IP networks demand increasingly larger shares of network resources, the regulation of network interconnection is again in question. At the core of interconnection policy are the questions of who is responsible for ensuring smooth, end-to-end delivery of traffic, what is needed to ensure quality of service, and how our legal and regulatory framework can foster high quality networks and services. As the committee considers updates to the Communications Act, informed discussion of the questions below will aid members in their decision-making.

Questions for Stakeholder Comment

1. In light of the changes in technology and the voice traffic market, what role should Congress and the FCC play in the oversight of interconnection? Is there a role for states?
2. Voice is rapidly becoming an application that transits a variety of network data platforms. How should intermodal competition factor into interconnection mandates? Does voice still require a separate interconnection regime?
3. How does the evolution of emergency communications beyond the use of traditional voice service impact interconnection mandates?
4. Ensuring rural call completion has always been a challenge because of the traditionally high access charges for terminating calls to high-cost networks. Does IP interconnection alleviate or exacerbate existing rural call completion challenges?
5. Should we analyze interconnection policy differently for best-efforts services and managed services where quality-of-service is a desired feature? If so, what should be the differences in policy between these regimes, and how should communications services be categorized?
6. Much of the committee's focus in the #CommActUpdate process has been on technology-neutral solutions. Is a technology-neutral solution to interconnection appropriate and effective to ensure the delivery and exchange of traffic?
7. Wireless and Internet providers have long voluntarily interconnected without regulatory intervention. Is this regime adequate to ensure consumer benefit in an all-IP world?
8. Is contract law sufficient to manage interconnection agreements between networks? Is there a less onerous regulatory backstop or regime that could achieve the goals of section 251?

While these questions address interconnection agreements and the FCC's role in the negotiation and enforcement of such contracts, the committee encourages comment on any aspect of interconnection policy and updating the Communications Act. Please respond by August 8, 2014, to commactupdate@mail.house.gov. For additional information, please contact David Redl at (202) 225-2927.