



KANSAS CORPORATION COMMISSION
IP-to-IP Interconnection Report

2014

REPORT ON IP-TO-IP INTERCONNECTION

A Summary of Status of the FCC's Internet Protocol-to-Internet Protocol Interconnection Proceeding

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I. Introduction

The 2013 Kansas Legislature passed House Bill 2201 (HB 2201), and Governor Brownback signed the Bill into law on April 17, 2013. K.S.A. 66-2002 was revised by HB 2201 and subsection (n) was added. Subsection (n) requires the Commission to provide a Report by January 15, 2014, on the Federal Communications Commission (FCC) proceeding on Internet Protocol (IP)-to-IP interconnection.¹ Specifically, K.S.A. 66-2002(n), as revised, states that the Commission shall provide a:

“...report to the senate committee on utilities and the house committee on utilities and telecommunications by January 15, 2014, concerning the status of the federal communications commission’s further notice of proposed rulemaking regarding Internet Protocol to Internet Protocol interconnection in WC docket nos. 10-90 et. al., including, but not limited to, any final, non-appealable order issued in that proceeding regarding obligations to interconnect for the exchange of voice traffic regardless of technology used to transmit that traffic that requires implementation by the commission...”

The KCC files this Report pursuant to K.S.A. 66-2002(n).

II. Background

Consumers have historically made telephone calls by accessing the Public Switched Telephone Network (PSTN) through a landline telephone connected to a copper wire. Voice calls are routed on the PSTN using circuit-switching technology, which establishes a single path to transport the call, and voice traffic between networks is transmitted using a technology called Time Division Multiplexing (TDM).

¹ See generally *Connect America Fund; A National Broadband Plan for Our Future; Establishing Just and Reasonable Rates for Local Exchange Carriers; High-Cost Universal Service Support; Developing a Unified Intercarrier Compensation Regime; Federal-State Joint Board on Universal Service; Lifeline and Link-Up; Universal Service Reform – Mobility Fund*; WC Docket Nos. 10-90, 07-135, 05-337, 03-109, CC Docket Nos. 01-92, 96-45, GN Docket No. 09-51, WT Docket No. 10-208, Report and Order and Further Notice of Proposed Rulemaking, FCC 11-161 (rel. Nov. 18, 2011) (*USF/ICC Order and FNPRM*).

The PSTN is the aggregate of the world's circuit-switched telephone networks, consisting of telephone lines, fiber optic cables, microwave transmission links, cellular networks, communications satellites, and undersea telephone cables. Originally, the PSTN consisted of a network of fixed-line analog telephone systems, but is now almost entirely digital and includes mobile as well as landline telephones.

Technology continues to evolve and many carriers are now migrating from circuit-switched services to IP-based services. A voice call using IP-based technology is separated into packets that can travel across many different routes but are reassembled at the destination, as opposed to a circuit-switched call that is delivered over a single route. IP offers benefits over the traditional TDM framework such as increased efficiencies and redundancy, which is why many carriers are migrating to this technology.

Not only is technology shifting, but consumer choices are changing as well. Consumers are migrating to voice services that are not part of the traditional PSTN. As reported in the FCC's most recent *Local Telephone Competition Report*, between June 2009 and June 2012, interconnected Voice over Internet Protocol (VoIP) subscriptions increased at a compound annual growth rate of 18%, mobile telephony subscriptions increased at a compound annual growth rate of 5%, and retail switched access lines declined at about 9% a year.²

Because of the shifts in technology and consumer choices, the FCC has been considering how it can transition from a PSTN world to an IP-based world. One of the primary issues being examined by the FCC is IP interconnection.

² Federal Communications Commission, *Local Telephone Competition: Status as of June 30, 2012* (June 2013).

III. Traditional Interconnection Regulation

Both the FCC and the states have a role in furthering competition, in particular with respect to interconnection requirements pursuant to the Federal Telecommunications Act of 1996 (Act). The Act requires all telecommunications carriers to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers.³

The Act further requires incumbent carriers (and requesting carriers) to negotiate in good faith for interconnection and provides states with the authority to arbitrate disputes when carriers cannot reach an agreement.⁴ The Act further requires incumbent carriers to provide physical collocation of equipment necessary for interconnection at any technically feasible point within the carrier's network as well as wholesale access to the local wire that goes directly into homes and businesses, otherwise known as the "last mile." In addition, such access must be provided on just, reasonable, and nondiscriminatory rates, terms and conditions.⁵

Kansas statutes also provide for interconnection. K.S.A. 66-2003(d) reiterates that, as required in the Federal Act, in order for telecommunications carriers to provide local exchange service and exchange access service, local exchange carriers shall provide the means to interconnect their respective customers, including, but not limited to, toll access, access to operator services, access to directory listings and assistance, and access to E911 service. And, K.S.A. 66-2005(y) provides that, notwithstanding the provisions of this act, and subject to any applicable exemption from interconnection generally, a telecommunications carrier is entitled

³ 47 U.S.C. § 251(a).

⁴ 47 U.S.C. § 251(c)(1) and 47 U.S.C. § 252(b).

⁵ 47 U.S.C. § 251(c)(2).

to interconnection with a local exchange carrier or an electing carrier to transmit and route voice traffic between both the telecommunications carrier and the local exchange carrier or electing carrier regardless of the technology by which the voice traffic is originated by and terminated to a consumer.

Pursuant to state and federal statutes, all telecommunications carriers are subject to interconnect directly or indirectly, and incumbent carriers are subject to a more detailed framework. However, the FCC has previously chosen not to monitor or exercise authority over interconnection among Internet backbone providers on the grounds that premature regulation might impose structural impediments to the natural evolution and growth process which has made the Internet so successful. Therefore, carriers have historically disagreed (and continue to disagree) over whether the interconnection requirements pertain to VoIP interconnection.

IV. FCC Activity

a. Universal Service Fund (USF)/Intercarrier Compensation (ICC) Order and Further Notice of Proposed Rulemaking (FNPRM)

On November 18, 2011, the FCC issued its *USF/ICC Order and FNPRM* in which it made clear the prospective payment obligations for VoIP traffic exchanged in TDM between a local exchange carrier (LEC) and another carrier, and adopted a transitional framework for VoIP intercarrier compensation. Specifically, the FCC established that default charges for “toll” VoIP-PSTN traffic is equal to interstate rates applicable to non-VoIP traffic, and default charges for other (non-toll) VoIP-PSTN traffic is the applicable reciprocal compensation rates. The FCC stated carriers may tariff these default rates in intrastate and interstate tariffs, in absence of an alternative agreement.

The FCC stated that the duty to negotiate in good faith has been a longstanding element of interconnection requirements under the Telecommunications Act, and the duty does not depend on the network technology underlying the interconnection. The FCC further stated that it expects all carriers to negotiate in good faith in response to requests for IP-to-IP interconnection for the exchange of voice traffic even while its Further Notice of Proposed Rulemaking (FNPRM) is pending.⁶ The FCC, however, as it has done over the past decade, continued to decline to classify VoIP retail service as a “telecommunications service” or an “information service.”⁷

The FCC also recognized the importance of interconnection to competition and the associated consumer benefits. The FCC anticipated that the ICC reforms it adopted will further promote the deployment and use of IP networks, and the FCC sought comment in the accompanying FNPRM regarding the policy framework for IP-to-IP interconnection.

The FCC requested parties comment on the Intercarrier Compensation related items, including IP-to-IP interconnection in the FNPRM by February 24, 2012, and Reply Comments by March 30, 2012.

b. FNPRM Comments

Industry members and state regulators provided comments to the FCC on how it should proceed with intercarrier compensation issues contained in the FNPRM, with opinions varying largely based on what part of the telecom sector they represent and on how the proposed changes would affect their profitability or regulatory authority. Commenters appeared to agree

⁶ Id. at ¶ 1011.

⁷ Id. at ¶¶ 718, 954, 974, 1387.

that, ultimately, future interconnection for voice traffic would occur using a public communications network consisting of interconnected managed IP networks that will ultimately replace the TDM network and accommodate additional forms of real time communications. Consensus between the parties ends there.

Parties' positions on whether there is a need to create a regulatory scheme for VoIP interconnection were across the board. Generally, commenters seemed to prefer individual commercial negotiations to regulatory mandates if all participants are equally motivated to seek a fair and equitable agreement. Many parties expressed concern that all parties are not equally motivated and, as such, believe regulatory intervention will be required.

The large incumbent LECs assert that IP is an "information service" and not subject to the interconnection requirements of the Act and that Internet backbone contracts demonstrate that commercial negotiations will be successful and are a model for VoIP interconnection.

Other parties contend that the Act is technology neutral and interconnection requirements of the Act extend to managed VoIP, and that the market power of the largest providers could create the opportunity to force unbalanced and unfair agreements. They opine that the FCC will ultimately need to create rules and processes to facilitate the transition.

c. *Notice of Proposed Rulemaking, Order and Notice of Inquiry on VoIP Numbering*

On April 18, 2013, the FCC issued a *Notice of Proposed Rulemaking, Order and Notice of Inquiry* on IP numbering issues.⁸ To determine whether a more streamlined approach is

⁸ See generally *Numbering Policies for Modern Communications IP-Enabled Services; Telephone Number Requirements for IP-Enabled Services Providers; Telephone Number Portability; Developing a Unified Inter-carrier Compensation Regime; Connect America Fund; Numbering Resource Optimization; Petition of Vonage Holdings Corp. for Limited Waiver of Section 52.15(g)(2)(i) of the Commission's Rules Regarding Access to Numbering*

appropriate in the Internet era, the FCC sought comment on whether interconnected VoIP providers should have direct access to numbers. In addition, the FCC sought comment on easing access for other services that require numbers, such as IP access to emergency services, home security systems, text messaging services, programmable appliances and telematics like hands-free cellular modems in automobiles.

The FCC also launched a limited, six-month trial of direct access to numbers in order to test a number of technical issues related to the proposals. Vonage and other VoIP providers with pending direct-access waiver petitions at the FCC will be allowed to test direct access for 5% or fewer of the numbers they currently access through intermediaries – phased in over 6 months – and a very limited amount of new numbers. Participants are required to report monthly on the progress of the trial and will be required to return the numbers if problems arise.

d. Technology Transitions Policy Task Force

Citing the ongoing evolution from TDM to IP, from copper to fiber, and from wireline to wireless, the FCC announced on December 10, 2012, that it was forming a cross-agency internal working group, referred to as the Technology Transitions Policy Task Force (Task Force). Among other issues, the Task Force would coordinate the FCC's efforts on IP interconnection, resiliency of 21st century communications networks, business broadband competition, and consumer protection with a particular focus on voice services. The Public Notice further indicated that the

Resources; Petition of TeleCommunication Systems, Inc. and HBF Group, Inc. for Waiver of Part 52 of the Commission's Rules; WC Docket Nos. 13-97, 04-36, 07-243, 10-90, CC Docket Nos. 95-116, 01-92, 99-200, Notice of Proposed Rulemaking, Order and Notice of Inquiry, FCC 13-51 (rel. April 18, 2013) (Notice of Proposed Rulemaking, Order and Notice of Inquiry).

Task Force would conduct a data-driven review and provide recommendations to modernize the FCC's policies in a process that encourages the technological transition, empowers and protects consumers, promotes competition, and ensures network resiliency and reliability.⁹

As part of the data-driven and transparent review, the Task Force held its first workshop on March 18, 2013. This workshop solicited data and analysis on three critical ongoing transitions: the evolution in network protocols, including from TDM to IP; the replacement of copper networks with fiber; and the shift from wireline services toward greater use of wireless services. Panelists also described underlying network technologies and identified the advantages and limitations that various technologies present in different contexts. Finally, the workshop sought input on the factors driving the market's transition to new technologies.

On May 10, 2013, the Task Force issued a Public Notice seeking comment on a set of procedural trials to assist the FCC in ensuring the policy decisions related to ongoing technology transitions are grounded on sound data. The Task Force sought comment on: (1) a VoIP interconnection trial that would gather data to determine whether there are technical issues that need to be addressed in regard to the transition from TDM to all-IP networks and gather information relevant to the appropriate policy framework; (2) a trial that would elicit data on the impact of network resiliency and public safety more broadly as consumers migrate to wireless and IP-based services that are dependent on commercial power; and (3) a trial in which a provider would serve customers using wireless service instead of wireline service in a particular geographic area that would analyze the impact of doing so and focus on the

⁹ http://fjallfoss.fcc.gov/edocs_public/attachmatch/DOC-317837A1.pdf

consumer experience. Comments were due July 8, 2013, and Reply Comments were due by August 7, 2013.¹⁰

The Task Force held a second workshop on October 15, 2013, to focus on the consumer and competitive impacts of two key technology transitions: (1) the replacement of copper networks with fiber; and (2) the shift from wireline services toward greater use of wireless services. Specifically, the workshop solicited data and analysis on the potential effects on residential and business consumers as well as the competitive marketplace when providers retire or discontinue copper-based services and replace them with IP-based fiber and/or wireless service.

On December 12, 2013, during the FCC's monthly Open Meeting, the Task Force provided a status update on its work towards making near-term recommendations related to the FCC's expectations and role in the IP transition to the FCC during its monthly Open Meeting. The Task Force indicated that, through its IP transition work thus far, it has learned that technology transitions are ongoing and benefits include innovative services and further investment; however, important issues remain to be resolved. The Task Force believes that "natural experiments" highlight the impact of ongoing network changes to consumers, businesses, wholesale customers, competition, and the importance of regulatory and public involvement. Experiments are best suited for evaluating consumer impacts and policy/legal questions should be informed by, but not decided as part of, experiments. The Task Force recommends the FCC initiate experiments and commissioned research that focuses on impact to consumer services and protects fundamental values.

¹⁰ See generally Technology Transitions Policy Task Force Seeks Comment on Potential Trials; GN Docket No. 13-5, Public Notice, DA 13-1016 (rel. May 10, 2013).

The Task Force is working toward an Order for the FCC's consideration during its January 2014 Open Meeting¹¹ that would invite, on a rolling basis, service-based experiments with short timelines for submission, establish criteria for experiments that focus on the impact on consumers, and create a speedy process for public comment and FCC evaluation. The Order is expected to also recommend FCC actions to support targeted experiments and research and establish a timeline for the adoption of a managerial framework to resolve the important legal/policy questions raised by the technology transitions.¹²

V. Conclusion

The IP transition is complicated, time and resource-consuming, and (of course) controversial. Copious resources have been spent sorting through the legal, technical, and policy issues related to the IP transition in an effort to ensure the transition from TDM to IP is as seamless as possible, and a lot has been learned thus far. But, as FCC Chairman Wheeler stated, it is only a start and there is much more work to do.¹³

¹¹ The January 2014 FCC Open Meeting is currently scheduled for January 30, 2014.

¹² Technology Transitions Policy Task Force December 12 Presentation. See: <http://www.fcc.gov/document/technology-transitions-policy-task-force-december-12-presentation>.

¹³ Technology Transitions Policy Task Force December 12 Presentation, Statement of Chairman Thomas E. Wheeler, December 12, 2013.