



785 Market St., Suite 1400/San Francisco, CA 94103

## **Rural Telecommunications Policy Briefing**

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Regina Costa, Telecommunications Policy Director, TURN

### **Rural Call Completion**

#### **1. What is the Rural Call Completion Problem?**

- Simply put, rural call completion problems occur when calls placed to customers with working landlines fail to complete. For example, someone calling a rural customer might hear nothing ("dead air"), a busy signal, endless ringing or receive a recorded message saying the number is incorrect or not in service, when they know this is not the case.
- This problem can also be associated with very poor voice service quality, with voices that sound choppy, or a significant echo on the line. There are transmission delays. When a caller tries to re-dial, sometimes repeatedly, the call quality is still very poor. Fax machines sometimes fail to successfully function for long distance transmission.
- Rural call completion problems affect all customers - residential, business, public safety. Example: a hospital in Iowa could not receive phone calls from its associated health clinics and had problems faxing medical records.<sup>1</sup>

#### **2. How do the Current Tech Transitions Affect Rural Call Completion?**

- The main causes of rural call completion problems are problems with how calls are routed between carriers. Technology transitions play a major role.
- The problems occur when multiple intermediate carriers are used to complete long distance calls. Telephone companies search for least expensive ways to get calls from Point A to Point B. This practice is known as Least Cost Routing. An intrastate long distance call can travel on as many as four or five intermediate networks. The intermediate networks have contracts with local carriers.
- These multiple networks are not always compatible. A problem on any one of these networks can cause calls to fail.
- The intermediate networks have contracts with local carriers. There can be hundreds of intermediate carriers operating within a state.<sup>2</sup> Some intrastate calls are actually routed through out-of-state intermediate carriers - they originate and terminate within one state, but are routed through other states. There are potentially thousands of carriers nationally that could be part of a chain of intermediate

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<sup>1</sup> Office of Consumer Advocate, Iowa Department of Justice, Report on Investigation, *In re Complaint of Rehabilitation Center of Allison*, Iowa Utilities Board Docket No. FCU-2012-0019, filed Dec. 19, 2014, at 3-6.

<sup>2</sup> *Id.*, at 3.



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carriers.<sup>3</sup> An intermediate carrier can subcontract with another carrier which, in turn, can subcontract to other carriers.<sup>4</sup> It is not always clear which carriers are actually involved in transmitting a call.<sup>5</sup>

- These carriers are fiercely competing with each other to carry traffic.

- IP Transition issues come into play because many of the intermediate carriers utilize IP transmission. Problems with VoIP include "bugs" in routing systems and the use of outdated routing tables - i.e., the information that defines the transmission of calls using IP networks.<sup>6</sup>

### 3. What Can Policy Makers Do?

- Key step is classifying VoIP telephony as Title II.<sup>7</sup> (This is not regulating the Internet.)

- FCC and state commissions should have clear authority to ensure that carriers terminate calls reliably. Authority is muddy in states that have passed legislation putting VoIP off-limits to state commissions.

- FCC and states should work together to develop policies establishing requirements for downstream carriers to achieve reliable call completion.<sup>8</sup> See Attachment 2 for specific proposals, developed by the Office of Consumer Advocate, Iowa Department of Justice.

- Collection, retention and sharing data between the FCC and state regulators is crucial.

- S-827 is a good start to legislation addressing the issue. Establishing a registry for intermediate carriers is a wise proposal. But in order to be effective, the FCC and states must work together and the role of states in establishing standards and requirements should be reflected in the legislation.

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<sup>3</sup> *Id.*, at 14.

<sup>4</sup> Before the Public Utilities Commission of the State of California, Order Instituting Investigation to Address Intrastate Rural Call Completion Issues ("CPUC OIR), I.14-05-012, May 21, 2014 at 28.

<sup>5</sup> Iowa Office of Consumer Advocate Report, at 34, citing to "April 2014 Multistate 911 Outage: Cause and Impact, Report and Recommendations," Public Safety Docket No. 14-72 (FCC Oct. 2014).

<sup>6</sup> See, for example, CPUC OIR at 27-29.

<sup>7</sup> See, e.g., in WC Docket No. 13-39, NASUCA Reply Comments, June 11, 2013 at 11-15.

<sup>8</sup> Comments of the National Association of Regulatory Utility Commissioners, WC Docket No. 13-39 at 4 and 9, NASUCA Reply Comments, WC 13-39, February 21, 2014 at 2-3.



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## **Attachment 1 FCC Description of Rural Call Completion Problems.<sup>9</sup>**

If your landline telephone is working (for example, you can make calls and are receiving local calls) but you learn that long-distance or wireless callers have been unable to reach you at your home or business -- even when you are there or have an answering machine on -- you may be experiencing "failure to complete" problems.

Typical "failure to complete" symptoms include the following:

Long distance or wireless callers tell you they repeatedly hear nothing or "dead air" for 10 seconds or more after they dial your number. If they stay on the line, the call may seem to be dropped or they may eventually hear a busy signal.

Long distance or wireless callers tell you they repeatedly hear prolonged ringing on their end after they dial your number (e.g., the callers wait 10-20 rings before they finally hang up).

Long distance or wireless callers tell you they repeatedly hear a recording such as "The number you have dialed is not in service" or "Your call cannot be completed as dialed" when they know they've correctly dialed your number.

Rural customers also report "poor call quality" problems. Typical symptoms include the following: Long distance or wireless callers tell you they repeatedly hear nothing or "dead air" for 10 seconds or more before hearing ringing and you answer your phone.

Long distance or wireless callers tell you they repeatedly hear prolonged ringing (e.g., 10-20 times or more) before you answer the phone -- when you are sure the phone actually rang only a couple of times before you answered.

Consistently after you answer a call, the voice quality is unacceptable. For example, one person cannot hear the other, the sound is choppy, there are awkward transmission delays after speaking, or there is an echo.

Fax machines fail to interoperate.

After a caller reaches the person they are calling, the voice quality is unacceptable. For example, you are not calling on a wireless phone but only one person can hear the other, the sound is choppy, there are awkward transmission delays after speaking, or the speaker hears an echo. Perhaps you even try re-dialing but the unacceptable quality persists.

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<sup>9</sup> [FCC - Rural Call Completion: Problems with Long Distance or Wireless Calling to Rural Areas](#)



## **Attachment 2**

### **Suggested Elements of Effective Downstream Intermediate Carrier Management<sup>10</sup>**

Prepared by Office of Consumer Advocate, Iowa Department of Justice

Each originating and intermediate carrier that makes use of downstream intermediate carriers should have sound policies in place addressing each of the following elements.

Establish and conduct standardized testing routines;

Investigate on an ongoing basis whether downstream carriers have properly designed and properly functioning equipment, including properly designed and properly functioning software;

Investigate on an ongoing basis whether downstream carriers have sufficient capacity in their switches and call paths to carry the traffic to the intended destinations;

Require each downstream carrier on an ongoing basis to provide specific information regarding its system and the limitations of its system, including information regarding any difficulties its system may have interoperating with other systems using a different technology;<sup>11</sup>

Require each downstream carrier on an ongoing basis to provide specific information regarding any bandwidth or other capacity constraints that would prevent its system from completing calls to particular destinations at busy times;

Require each downstream carrier to have properly designed and properly functioning alarms in its system so as to ensure immediate notice of any outages on its system;

Require each downstream carrier to have properly designed and properly functioning mechanisms in place to ensure that the downstream carrier, if unable to complete a call, timely releases the call back to the upstream carrier (ATIS Handbook § 5.3);

Require each downstream carrier to have properly designed and properly functioning mechanisms in place to ensure that the downstream carrier, if making successive attempts to route the call through different lower-tiered downstream carriers, timely passes the call to a second (or third or fourth) lower-tiered downstream carrier if a first (or second or third) lower-tiered downstream carrier cannot complete it;

Require each downstream carrier to have properly designed and properly functioning mechanisms in place to detect and control looping, including the use of hop counters or other equivalent mechanisms that alert a carrier to the presence of a loop (ATIS Handbook § 4.1.3);

Establish direct measures of quality and require downstream carriers to meet them (ATIS Handbook, § 5.6 and Table 2);

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<sup>10</sup>From Office of Consumer Advocate, Iowa Department of Justice, Report on Investigation, *In re Complaint of Rehabilitation Center of Allison*, Iowa Utilities Board Docket No. FCU-2012-0019, filed Dec. 19, 2014.

<sup>11</sup>The need for such sharing of information will commonly override a carrier's desire to treat the information regarding its system as confidential.



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Establish and implement appropriate sanctions for intermediate carriers that fail to meet standards;

Require downstream carriers to manage lower-tiered downstream carriers and to hold lower-tiered downstream carriers to the same standards to which they themselves are held (ATIS Handbook § 5.8);

Define the responsibilities of downstream carriers in an agreement (ATIS Handbook § 5 introduction).