

Phone Company or Phony Company? — Part 2

by Dean K. Wilson, P.E.

In the March/April 2008 edition of *IMSA Journal*, I attempted to answer the following question:

Question: We don't know what to do! We just found out one of our major industrial clients plans to switch their telephone service from the public switched telephone network to one of the VoIP (Voice over Internet Protocol) service providers, specifically the local cable company. How will this affect the operation of our fire alarm system and its connection to a central supervising station?

The answer that I gave based on NFPA 72-2007, *National Fire Alarm Code*, accurately dealt with issues relating to standby power and monitoring the integrity of the telephone connection between the protected premises and the first telephone company wire center.

However, as the NFPA Technical Committees have struggled with public proposals and public comments to update the *Code* to the 2010 edition, a great deal of more information has emerged that materially affects the use of telephone circuits for fire alarm and supervisory signal transmission. And, because two of the Technical Committees took differing actions on similar public proposals and public comments, the NFPA Technical Correlating Committee on Signaling Systems for Life Safety and Property Protection formed a Task Group under the leadership of Wayne D. Moore, P.E. of Hughes Associates, Inc., to draft a Tentative Interim Amendment (TIA)

to bring the requirements in this newest edition of the *Code* into correlation and into synchronization with actual telephone service offerings.

Since the 1982 decision by Judge Harold H. Greene of the Federal District Court of the District of Columbia, as a consent decree that resulted in a Modification of Final Judgment in the landmark case known as *United States v. AT&T*, telephone service in the United States has undergone many profound changes.

Originally, an authorized common carrier (public utility telephone company) served each telephone subscriber by means of direct metallic conductors that connected the telephone subscriber with the nearest telephone company wire center (central office).

Over time, based on a desire to make better use of the installed telephone cable plant (wiring infrastructure), telephone companies began to deploy various schemes to transmit multiple telephone conversations over each pair of metallic conductors. This strategy coupled with significant technological developments, evolved into an increasing deployment of other communications pathways, such as fiber optic cable, microwave radio, and other radio frequency transmission systems.

The newer technologies no longer connected each telephone subscriber directly to the nearest telephone company wire center. Rather, it was more likely that each telephone subscriber would connect to a field-located terminal that would, in turn, connect whole neighborhoods to the wire center over a single communications pathway. These field-located terminals would have a local AC power connection and may or may not have any form of standby power.

At the same time that this new technology, coupled with this new telephone service, philosophy was evolving, the fire alarm industry and the *Code* development community continued to treat the entire telephone communications system as a “black box.” The *Code* specifically did not

attempt to regulate the service provided by the telephone company “black box.” Rather, the *Code* left the regulation of telephone service more properly in the hands of the Federal Communications Commission (FCC) and the state public utility control authority of the various states.

As telephone technology continued to develop, a migration from analog signals to digital signals began to proliferate. In addition, the authorized common carriers (public utility telephone companies) began to explore business opportunities that extended outside the normal scope of so-called “plain old telephone service” or POTS. Simultaneously, other communication service providers began to explore expanding their business opportunities to include the offering of subscriber telephone service.

Out of these new business opportunities, two approaches to providing subscriber telephone service emerged. The first approach uses a Managed Facilities-based Voice Network (MFVN). This first approach to the provision of various communications services, including subscriber telephone service, has been adopted and implemented by the authorized common carriers (public utility telephone companies). MFVN has also been adopted and implemented by numerous other communication service providers, including many providers of cable television service and broadband communications service that use TCP/IP (protocols). MFVN offers a robust, fully functional, carefully managed, precisely operated, and scrupulously maintained network that provides subscriber telephone service at the same level of quality assurance and reliability as has been typically and historically provided by the authorized common carriers (public utility telephone companies).

MFVN has been described as “...a physical facilities-based network that is managed, operated, and maintained by the service provider to ensure service quality and reliability from the subscriber location to public switched telephone network (PSTN) interconnection points or other

MFVN peer networks. Transmission of signals is accomplished in real time and faithfully preserves signal formats unchanged. The service provided is functionally equivalent to traditional PSTN-based services provided by authorized common carriers (public utility telephone companies) with respect to dialing, dial plan, call completion, carriage of signals and protocols, and loop voltage treatment. Managed Facilities-based Voice Network service provides all of the following features: (1) A loop start telephone circuit service interface; (2) Pathway reliability that is assured by proactive management, operation, and maintenance by the MFVN provider; (3) 8 hours of standby power supply capacity for MFVN communications equipment located at the protected premises and throughout the Network's communications pathways; (4) 24 hours of standby power supply capacity for MFVN communications equipment located at a central office; (5) Installation of network equipment at the protected premises with safeguards to prevent unauthorized access to the equipment and its connections..."

In addition, when providing telephone service to a new customer, MFVN providers give notice to the telephone service subscriber of the need to have any connected alarm system tested by authorized fire alarm service personnel to make certain that all signal transmission features have remained operational. These features include the proper functioning of line seizure and the successful transmission of signals to the supervising station. In this way, the MFVN providers assist their new customers in complying with a testing procedure similar to that outlined in the *Code* for changes to providers of supervising station service.

The authorized common carriers (public utility telephone companies) have already chosen to deploy the use of this first approach for at least the last 25 years or longer. In fact, the common carriers have essentially folded POTS into their implementation of a MFVN. Numerous other providers of subscriber telephone service—such as many providers of cable television service and

providers broadband communications service that use TCP/IP (protocols)—have also begun to deploy the use of this first approach. For these reasons, and because this first approach offers the most appropriate level of operational reliability, the *Code* will likely only recognize this method of subscriber telephone service for transmission of fire alarm, supervisory, trouble, and other emergency signals.

The second approach to providing subscriber telephone service includes those entities that offer telephone service using means that do not offer the rigorous quality assurance, operational stability, and consistent features provided by a Managed Facilities-based Voice Network. These may include a host of voice over internet protocol (VoIP) service providers that do not use an MFVN. Because this second approach does not provide the highest level of operational reliability as the MFVN approach, the *Code* will likely not recognize this method of subscriber telephone service as an acceptable means of signal transmission.

Some Authorities Having Jurisdiction (AHJs) may seem shocked that the field-located equipment only has standby power for 8 hours. However, as the Task Group has learned, this same level of service has existed for more than 25 years wherever subscriber telephone service used various pair sharing schemes that employed field-located terminal units.

In addition, following the disaster of Hurricane Katrina, the FCC took action regarding the *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, EB Docket No. 06-119, WC Docket No. 06-63, Order, 22 FCC Rcd 10541, ¶¶76-78 and Appendix B (2007) (“Katrina Panel Order”). The FCC issued rulemaking to modify 47 CFR 12.2 to require telephone service providers (including all MFVN providers and cellular telephone service providers) to provide 24 hours of standby power for all equipment

located at the respective central offices and to provide 8 hours of standby power for all field-located equipment, including remote terminals, cellular telephone towers, etc.

The fire alarm industry and the *Code* development community will likely propose a Tentative Interim Amendment (TIA) to NFPA 72-2010, *National Fire Alarm and Signaling Code*, to bring the requirements up-to-date in light of the information that the Task Group has learned during its investigation of the provision of subscriber telephone service in the United States.

Authorities Having Jurisdiction (AHJs) should become familiar with the difference between the two approaches to providing subscriber telephone service: Service providers employing the approach that uses MFVN = acceptable. Service providers using the approach that does not use MFVN = not acceptable.

It seems as if all the “Phony Companies” are not quite as “phony” as I thought when I wrote in this space just one year ago.

IMSA member Dean K. Wilson, P.E., FSFPE, C.F.P.S., now retired on disability, formerly worked as a Senior Engineer in the Erie (PA.) office of the fire protection engineering and code consulting firm, Hughes Associates, Inc. (www.haifire.com). The opinions expressed in this article are strictly his own. You may reach him by e-mail at deanwilson@roadrunner.com or by telephone at 814-397-5558.