Proposed article for Broadband Library – Spring 2007 Issue
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The call from Cathy Wilson, inviting me to write about voice for Broadband Library, prompted reflection of 25 years of phone experience. None of this experience included employment by even one traditional *Telephone Company*. Voice technology was not in my early job descriptions, but I ended up being "the phone guy", whether it was running voice over coax for Tribune/United Cable in 1985, brokering early cell-phone roaming agreements for the MTV Networks production of "Amuck in America" in 1986, or in 1990 building cable's first SONET networks at Cablevision. In recent years much of my focus has been on the development of VoIP.

Cable VoIP works for all voice calls, local or around the world, incoming or outgoing. It offers superior voice quality, replacing much of the old telephone company infrastructure. We provide features that most conventional phone companies do not, such as voice mail to e-mail delivery, and there are more on the way.

Cable's success in seizing opportunities from challenges, especially when implementing new products, is demonstrated by the history of interoperability of alarm systems with Cable VoIP.

When Cable started installing VoIP, alarm system wiring was occasionally overlooked. If the customer's telephone-company line was disconnected outside the house and the VoIP line was wired to an available jack inside, the alarm system would experience communications failure. Detailed procedures were quickly established for connecting the cable line before the Network Interface, at least whenever an alarm system was present.

Conventional alarm systems use dial-up telephone facilities. Other than during an alarm, automatic daily, weekly, or monthly tests are the only times that the link to the central station is actually verified. To help fill the gaps, a "Cut Wire Detection" feature was developed to determine the availability of the phone line by detecting a loss of voltage.

In the copper phone line age, "open loop" voltage was supplied by the telephone company central office. With VoIP, this voltage must be supplied locally by the MTA. In the event of an outage (caused by a cut cable or fiber line, plant maintenance, failure etc.), most MTAs will stop supplying voltage.

How long will the alarm panel wait to act on the interruption, and what action will it take? The timing and action is ultimately determined by the programming of the alarm panel and a small percentage of residential installations are set to sound the alarm when a problem is detected.

This complex issue confronts not only cable or DSL based VoIP providers, but also operators using fiber-fed technologies. If the signal feeding an optical terminal (located curbside or on the side of a home) is disrupted, there is the potential for loss of open loop

voltage during maintenance events, or for voltage to be provided to the home when there is really no phone service available.

How may we give all our alarm customers a peaceful night's sleep while we maintain our plant? Cable modem MTA manufacturers are working to give operators options for controlling the open loop voltage under a variety of circumstances. This change should reduce the likelihood that a plant event will trigger the alarm, but might not always accurately detect the physical cut of a wire.

Cable can provide an elegant solution. An alarm panel that is IP-enabled and tied into a cable modem can access our always-on data connections to communicate with the central station in real time. Radio-based and/or wireless backup will provide a failsafe path.

The alarm equipment manufacturers have come to realize that the future is in IP communications, and are developing new security systems. They can provide new features for home monitoring, control, and video surveillance, optionally with self-monitoring using mobile phones. Just as broadband replaced dial-up for computers, it can do the same for alarms.

Opportunities exist in next-generation alarm and security services as another new product for Cable. Given the rate at which new technologies are evolving, we might find ourselves as "the alarm guys".

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