

Emergency Radio Network Replaces Copper Leased Lines with Radio Over IP

Case Study

The Challenge: Replace Expensive Leased Lines

East Shore Radio Network (ESRN), located near Chicago, needed a replacement solution for its TELCO leased lines to combat rising usage costs that had reached \$84,000/year. What's more, support for the leased copper circuits had dwindled as telephone companies phased out the difficult-to-maintain lines.



Above: ESRN replaced their leased lines with 4 and 2 wire cards. They integrated PTP 650 radios, a 4.9 GHz public safety network, and an OSPF network.

The East Shore area stretching 2 counties and 6 cities relied on ESRN for their emergency and public safety communications. The network consisted of 12 radio sites connected to a dispatch site. Rather than continue using leased lines from the telephone company, they sought a more cost-effective solution.

Entre Solutions II was commissioned by ESRN to replace their leased lines, and manage the entire network installation and integration.

Obstacles

Entre Solutions II had successfully installed the backhaul and communications system for ESRN, which consisted of 15 microwave towers with some paths traveling 4 to 5 microwave hops to reach the dispatch center. Tom Blumenshine, President of Entre Solutions II, noted packet delays, lack of audio quality, and intermittent system failures. This led to loss of communications to fire and emergency departments for up to ten minutes at a time. As a result, fire departments experienced potentially critical communication difficulties. It was clear that a solution was needed quickly.

Objective

Transition away from expensive copper leased lines to a cost-effective IP Network

Products Used

- [JumboSwitch®](#)
- [TC3846-6: 4ch 600 ohm Analog and Dry Contact over IP Gateway](#)

Key Benefits

- Eliminated reliance on costly leased lines
- Leveraged existing radios to ensure minimal downtime
- Increased microwave hops without loss of signal quality
- Eliminated lock-ups, cold boots, and 10-minute communications downtimes

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Solution: The Right Ethernet Solution

Given the critical nature of the situation, Entre Solutions II contacted TC Communications find a solution that would restore reliable communications for emergency personnel. Having seen similar cases in the past, William Jeske, Radio Network Specialist at TC Communications, suggested they test out a pair of JumboSwitch 600 ohm Analog over IP (TC3846-6) cards to troubleshoot the issue and verify compatibility and function.

Entre Solutions II installed the units and, without any adjustments, the voice channel worked right away. Operators of ESRN saw an immediate improvement in audio quality. There were no more equipment lockups, failures, or downtime. Channels are now uncompressed 64K with no loss of packets or speech, and pass all status tones. In short, the TC3846-6 flat out works.



Integration

Two months after the initial call to TC, the JumboSwitch TC3846-6 solution was fully integrated into the OSPF microwave network for ESRN. After just a few programming adjustments for PDV on the longer paths, everything worked. A few locations traverse up to five hops to the dispatch center; all without loss of quality or issues. The ESRN JumboSwitch Network consists of 12 standalone units at the towers and two rackmount units, a 1U and 4U, at Central Dispatch with a mix of 4-wire and 2-wire interface cards (TC3846-6 Analog Radio over IP).

Results:

Cost savings & Reliability

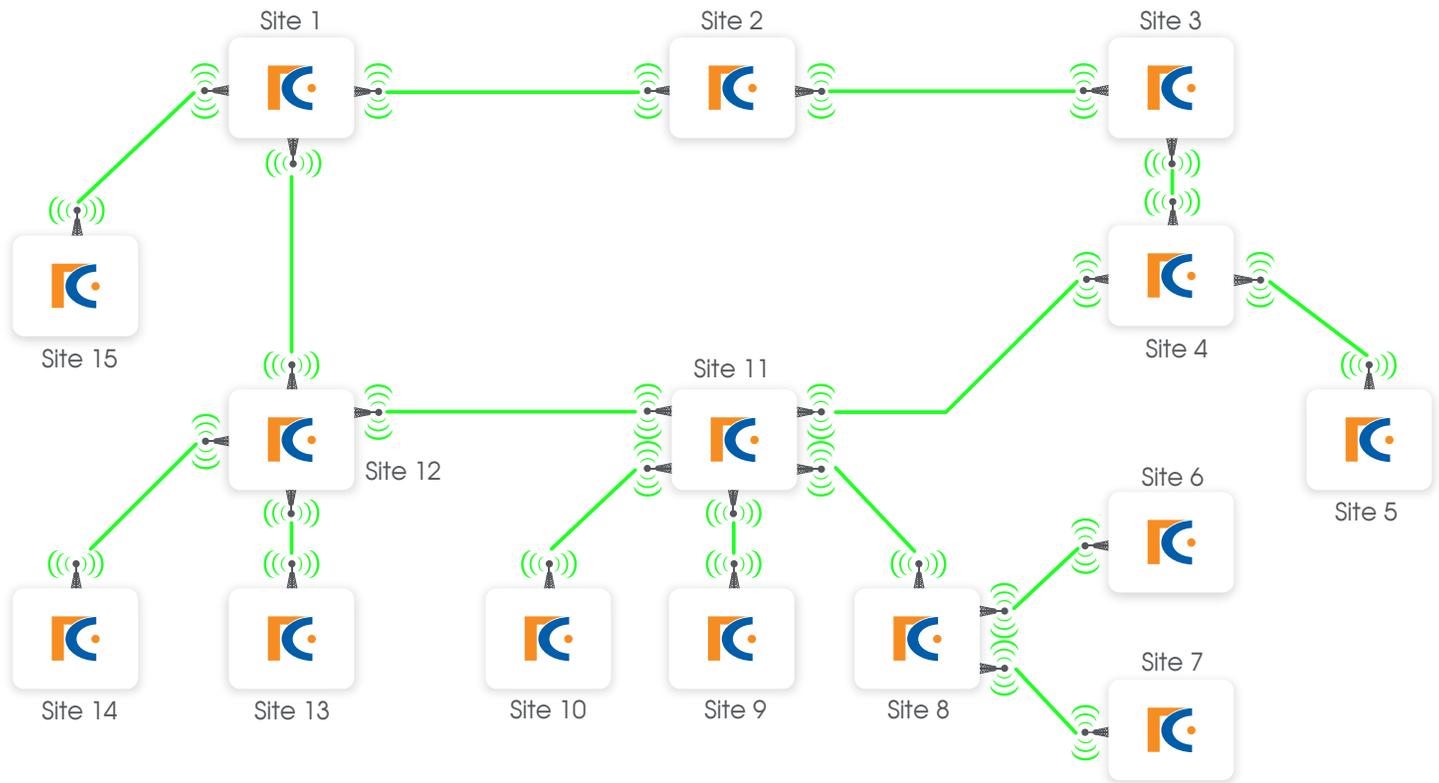
Since replacing the analog conversion equipment two years ago with TC JumboSwitch cards, there has been zero downtime and no frustrations. East Shore Radio Network has eliminated its leased lines, making \$7500/month in fees available for use elsewhere. By keeping the radios in place, Entre Solutions II ensured minimal downtime and required little training in the switchover. Most importantly, lock-ups, cold boots, and ten-minute communications downtimes are no longer a concern for emergency personnel.

East Shore Radio Network plans to expand operations to five more cities requiring four more radio receiver sites.

About TC Communications

TC Communications specializes in TDM over IP network solutions including Analog Radio, Voice, Serial and T1 products. Applications include Leased Line Replacement, Voter Comparator over IP and Multi-Service communication networks. Focused on mission-critical applications, TC products are designed to help Public Safety networks transition to IP/Ethernet without replacing existing analog equipment. All services including engineering, manufacturing, and support located in Irvine, California, USA since 1991.

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Above: East Shore Radio Network deployed JumboSwitch cards at 15 separate sites. TC equipment worked with microwave towers that traversed 2 counties and 6 cities.



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Note: Information contained in this document is subject to change without prior notice.
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