

City of Rockford Saves \$4.8M from Analog-to-IP Migration that Supports the Fire Department's Mission Critical Communications

Case Study

As a result of rapidly rising costs on AT&T leased lines used on their fire department analog radio system, the City of Rockford, Illinois chose TC Communications to provide an Ethernet-based solution that allowed them to keep their radio systems operational while reducing their leased line costs by \$4.8M over a five year period.

City of Rockford is the largest metropolitan city outside of Chicago with a population of 150,000 residents. The analog radio system is used by their fire service and is a vital link in the safety of the city's residents and businesses.

Background

The Federal Communications Commission (FCC) has voted to retire copper leased lines and shift to next-generation broadband networks and IP-based voice services.

While replacing phone-system-based copper leased lines is easy when using VOIP, this technology does not address another important use, particularly analog radio systems, which rely on leased lines for successful operation.

Major vendors, such as Verizon and AT&T, have come up with various plans to eliminate leased lines. Verizon is on a multi-year plan to eliminate all lines through service cancellation, whereas AT&T has been significantly increasing costs for existing leased lines.

Because of this, City of Rockford was stuck with exorbitant leased line costs, averaging over \$1,500 per line per month, resulting in over \$1M per year. Additionally, prices were continuing to increase by over 40% annually. The solution they needed was something within their budget.

Challenge: Find Ways to Decrease IT and Leased Line Costs

City of Rockford needed a swift, reliable, and cost-effective solution to their leased lines. Not only were the expenses a concern, but the integrity of the lines was declining as well. The lack of maintenance to the AT&T network and shortage of AT&T staff impacted the radio network operations and contributed to the frequent outages. Converting their analog radio system to digital was considered cost prohibitive. It also came with a significant operational impact in both the time required to convert the system and train the staff appropriately.

A consultant was hired to help find a solution and they explored a couple of options: changing the radio system or moving to a fiber-based Ethernet. Using fiber-based Ethernet was an attractive option due to its very low cost, however City of Rockford's radio equipment was not compatible with Ethernet connectivity.

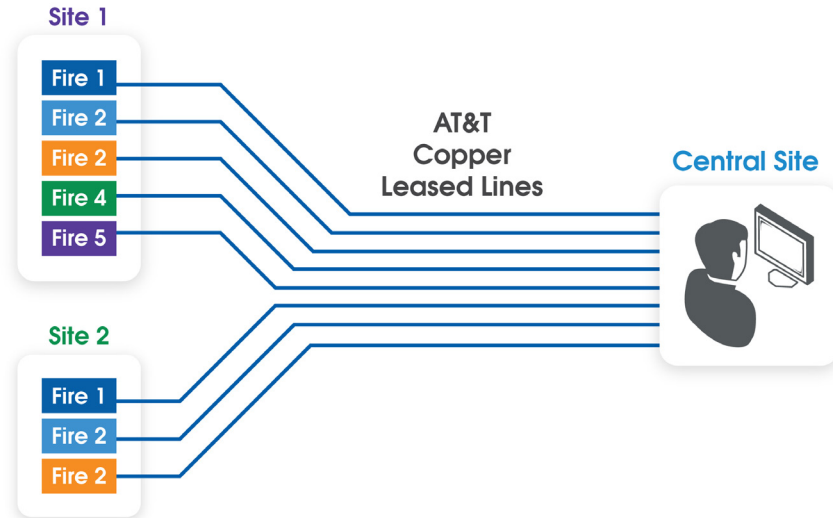
Solution: Upgrading with JumboSwitch

City of Rockford hired a consultant, Client First Technologies, to dramatically decrease their IT and phone costs. Ultimately it was decided to use TC Communications' [JumboSwitch](#) and commercial Ethernet.

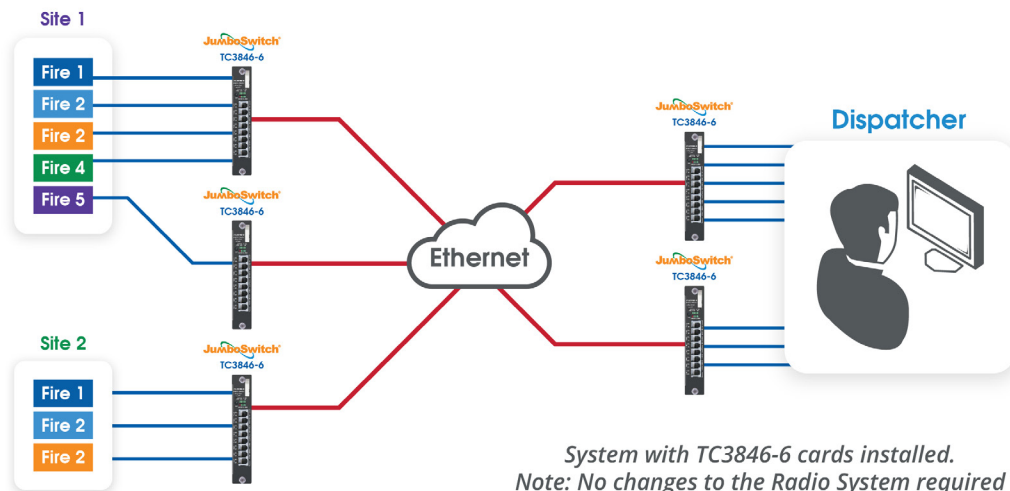
Specifically the [TC3846-6](#), allowed their radio system to connect over the low-cost Ethernet without the need to change their existing equipment. It was the costs saving solution they were looking for, while also enhancing the reliability of their radio network. This allowed for a replacement of the leased lines with an Ethernet-based solution. City of Rockford has 16 sites (one central site and 15 remote sites) with 1-5 lines per site.

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Initial System



New System



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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The following diagrams show the transition from the original system to the Ethernet-based solution. As an example, we are illustrating 2 sites of the complete system.

With the help of TC Communications' JumboSwitch TC3846-6, there was no need to make any changes to their radio systems. It provided a transparent 4W E&M circuit over Ethernet which is a direct replacement for the previous leased lines.

The JumboSwitch TC3846-6 is directly compatible with Simulcast radio systems, radio dispatch, and analog voters. Added benefits include crystal clear audio with no compression of the audio circuit, ensuring that the radio system both retains the best audio performance, and also 100% compatible with lone-operated systems.

To provide Ethernet, City of Rockford used commercially provided Ethernet over fiber. Once the Ethernet was installed, it was easy to connect the TC Communications equipment to the radio network. TC Communications engineers were on site to ensure the system switchover. There was a contingency plan in place to ensure the radio system remained operational at all times through the transition.

For long term support, City of Rockford was provided with a 24/7 support contract which was coupled with TC Communications' [TCView](#) Network Management software. TCView provides the capability to both manage the network and to alert maintenance staff in the event of a system error. The alerting is done via email notifications to the maintenance staff ensuring that they are informed of any issues immediately on the fault condition being detected.

The 24/7 support contract is a standard offering by TC Communications.

Our support staff in Irvine, CA, are available 24/7 to resolve any issues with the TC Communications system. Additionally, spare equipment are maintained at TC Communications for immediate overnight dispatch in the event of any hardware failure. Software and firmware upgrades are automatically provided along with bi-weekly reports of any detected issues that may affect future operation.

TC Communications' staff provided training to local maintenance staff and the support contract includes annual maintenance visits and refresher training on an annual basis.

Results: Significant Cost Savings and Improved Reliability

- **Significant Cost Savings**
The savings for switching over is \$900,000 per year for 5 years.
- **No New Radio Equipment Needed**
No need to update existing radio system (central voting site, radio equipment, radios on the fire trucks didn't need to be changed).
- **Simple Installation and Commissioning**
City of Rockford was able to continue to use the leased lines while installation was in place and the transition was smooth moving over to the IP solution.
- **High Reliability Equipment**
The new equipment (TC3846-6) replaced very expensive leased lines and are very reliable compared to unreliable leased lines.

In conclusion, City of Rockford saved over \$4.8M over 5 years by using a TC Communications system operating over commercial Ethernet.

TC Communications provides a mission-critical IP-based solution to replace the expensive and obsolete AT&T leased lines. This system was backed up by U.S.-based support staff offering 24/7 support along with a state-of-the-art network management solution called TCView.

This is just one example of TC Communications saving a customer significant cost while replacing an obsolete system with a mission-critical new system.