

Case study

Assuring communications when the power goes out

Southern Linc meets
mission-critical demands
with dedicated LTE



ERICSSON



Southern Linc

Southern Linc pioneers mission-critical wireless telecom in the utilities industry

Case study:
Southern Linc

Industry:
Utilities

Executive summary

Southern Linc provides the mission-critical wireless network used to help keep Southern Company's electric utilities up and running, to enable emergency response teams to act promptly and efficiently, and to support everyday life and work across Southern Company's service territory in the southeast U.S. When the company's legacy iDEN network approached end of life and could no longer handle the data surge coming from an ever-growing number of connected devices, Southern Linc partnered with Ericsson to build the first dedicated mission-critical LTE network in the U.S.

Today, this 4G LTE Advanced network enables Southern Linc to deploy new applications and solutions 80 percent faster than in the past. Moreover, the LTE network scales to handle 100 times more data at speeds up to 1,000 times faster than was possible on the iDEN network, allowing Southern Linc to pursue more advanced solutions, such as transmission SCADA, line fault sensors, and advanced metering infrastructure (AMI) backhaul. With the success of its LTE network, Southern Linc is now working with Ericsson to roll out a fixed wireless access network to provide even more high-speed data solutions for Southern Company.

The importance of highly reliable communications

Flip on a light switch, plug in a piece of equipment, turn up the heat or air conditioning—every day homes, businesses, governments, and institutions everywhere depend on power being there for life, work, and public services. But sometimes severe weather, accidents, or system faults can disrupt service. When that happens, utilities need to pinpoint the location of the problem and promptly dispatch a crew to fix it. That requires highly reliable communications.

As Engineering Director for Southern Linc, Alan McIntyre has a keen understanding of those demands. He says, "When bad things happen, like a hurricane or tornado, a utility's

communication network still has to function. Restoration efforts depend on it. One of the founding principles of Southern Linc is to provide a highly reliable, resilient network for when those bad things happen."

He points out that the company's communication network also plays a key role in proactively identifying transmission and distribution issues to help prevent a service disruption from happening. That's where being able to handle data traffic from systems like supervisory control and data acquisition (SCADA) and IoT sensors is essential. The challenge was that Southern Linc's legacy network—an Integrated Digital Enhanced Network (iDEN)—was aging and could not support the anticipated data demands.

At-a-glance

Goal:

Support mission-critical services and applications with fast, reliable, and secure wireless network communications

Approach:

- Partner with Ericsson to build the first highly reliable, dedicated LTE network in the U.S.
- Expand capabilities on the LTE network with solutions like mission-critical push-to-talk
- Build a fixed wireless access network to provide high-speed broadband

Results:

- Enabled 80 percent faster deployment of new applications and services
- Improved network scale, supporting 100 times more data at speeds up to 1,000 times faster on LTE than iDEN
- Accelerated detection of and response to line faults and outages
- Enhanced safety with mission-critical push-to-talk communication services
- Created opportunities to develop new network-enabled revenue streams



“We knew data was going to explode,” Alan says. “Our affiliates were already looking at commercial carriers to get data services. With iDEN reaching its end of life, we saw an opportunity to transform our capabilities with an LTE network, which could give us wireless broadband to meet our data needs and provide a lot of runway to support growth into the future.”

Choosing the right partner for the long haul

Having decided to pursue private LTE, the question Alan and his team then faced was what technology partner to choose. After a rigorous evaluation of vendors and their offerings, the team selected Ericsson.

“We looked at Ericsson as the leader in 4G LTE,” Alan explains. “They have been in the game a long time and have a strong track record. We knew we would have the new network for many years and needed a partner we could count on for the long term. We felt Ericsson was that kind of partner.”

David Woodham, Southern Linc’s Manager of Network Engineering, adds that Ericsson technology also stood out. “Ericsson had a secret sauce where their platform performed better than others we considered.”

As with any complex network deployment, the LTE project came with a few challenges—and that’s where true partnership proved its value. For example, Southern Linc had a very limited amount of spectrum available for its network deployment, which required some modifications in the way the Ericsson platform was configured.

“Ericsson was willing to work with us and came up with some pretty neat ways to make the most efficient use of that limited amount of spectrum we had,” David notes.

Callan Kirschner, the Sales Director of Utility Markets for Ericsson, says, “Ericsson has a truly symbiotic relationship with Southern Linc. What we brought to the LTE project was flexibility—the willingness to listen and understand their challenges, go back to the drawing board, and bring additional options for how best to meet their needs.”

Mission-critical services can count on CriticalLinc™

When first deployed, Southern Linc’s LTE network was the first highly reliable dedicated LTE network in the United States. Now, years later, it remains a benchmark for the industry.

Today, the 4G LTE Advanced network—called CriticalLinc—stands apart from wireless networks offered by commercial carriers due to its high levels of security and resilience designed to support truly mission-critical services. It provides over-the-air encryption from devices to towers and supports encryption from the towers to Southern Linc’s core data centers. Moreover, redundancy is built in from cell sites and transports to power supplies. As Alan points out, “We know the lights do go out at times and when they do, the cell sites need to continue to work.” And they do—through hurricanes, tornadoes, floods, and winter ice storms that may disrupt normal operations for weeks at a time.

Another way the LTE network has made a difference for Southern Linc is the speed at which the company can deploy new applications. In fact, the company can now deploy new applications and solutions, on average, 80 percent faster than in the past. This has opened up numerous possibilities, including extending SCADA to transmission devices in addition to distribution, automating substation devices, and backhauling communications from the data collection points of its advanced metering infrastructure to the head end.

Alan notes, “The way we’ve designed and built our LTE network with the Ericsson technology created a lot of confidence within our operating companies and affiliates, which helped us expand the use cases and number of devices connected across the network. When our customers see that the network performs the way we say it will, it opens up a lot of new opportunities.”

One example is a line fault indicator solution that one of the Southern Company affiliates wanted to roll out quickly. In a matter of months they were able to deploy thousands of line fault indicators across the grid and feed data through the LTE network.

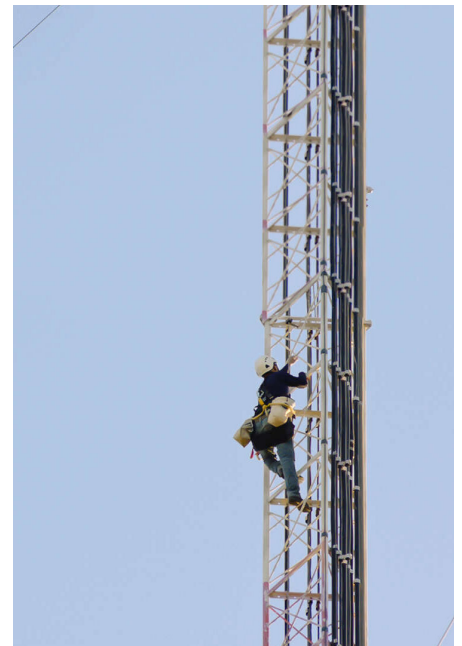
Brian Lee, Senior Product Engineer with Southern Linc, explains, “A line fault indicator helps isolate the location of a fault on the electrical line so when a crew is dispatched they know exactly where it is, which shortens their time to resolution. With our LTE network in place, we were able to support that important solution, saving the cost and added complexity of using a commercial provider’s wireless network.”

80%

Faster deployment of new applications and services

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In fact, the LTE network has become a platform for Southern Linc to continually support new applications and solutions for their customers. Also on the horizon are things like vibration monitoring on transmission towers, location-based services to streamline dispatching work orders, and automated lighting controls. The company can now pursue such advanced, data-intensive solutions because the LTE network is able to handle 100 times more data at speeds up to 1,000 times faster than was possible on the iDEN network.

Brian says, “The possibilities are endless and we look forward to working with Ericsson as we expand the applications we’re able to provide for our customers.”

Callan adds, “We know that utilities want to operate on a network that is tried and true, that’s tested and scalable, and one that is future-proof as well. That is exactly what we have worked to deliver for Southern Linc.”

Provides a platform for delivering new services

With its highly reliable LTE network fully operational, Southern Linc has begun implementing additional capabilities and services such as mission-critical push-to-talk—a solution Ericsson developed specifically to meet Southern Linc’s unique requirements, aligned primarily to 3rd Generation Partnership Project (3GPP) specifications for mobile telecommunications.

3GPP specifications focus on assuring reliability, low latency, and voice quality.

David points out, “When someone pushes the button, they need to know with absolute certainty that their voice is intelligible and getting through to the other party within very tight time parameters. That’s a big deal when there’s a safety incident and somebody needs help. It’s truly mission-critical.”

One example was a public safety incident where state agencies were searching for a missing child lost in the woods of rural Alabama. Alan recalls, “Push-to-talk allowed those emergency teams and law enforcement to reliably communicate with each other throughout the search. Fortunately, they found the child alive and everything turned out fine. But they really count on the communications being there—it doesn’t get more mission-critical than that.”

Connecting hard-to-reach remote areas with fixed wireless

Southern Linc has also begun another new initiative separate from the LTE network, leveraging the Citizens Broadband Radio Service (CBRS) and Ericsson fixed wireless access technology to reach more remote regions served by Alabama Power.

Alan notes, “Alabama Power has been on the forefront of deploying fiber for more advanced capabilities like grid automation. Using CBRS with fixed wireless is a good complement to their fiber strategy. It’s an efficient way to get telecommunications into remote areas that otherwise might be too difficult to reach with fiber.”

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One example of a use case for fixed wireless is distributed energy resources that have two-way power flow. Such applications have continually growing data demands and require reliable, real-time communications. CBRS is a way to support this need and potentially provide an entry point for Southern Linc into offering 5G services in the future.



“The driver for 5G in the utility industry is achieving lower latency, which opens the door for additional use cases like distributed power resources and grid segmentation,” Alan points out. “The more we can segment the grid, the easier and faster it will be to know where there could be an outage. Schemes like that require much lower latency than we have today. So, as we move into the future, there will be a need for wireless 5G.”

Looking to the future, partnership remains key

As Southern Linc continues to expand its range of service offerings, Alan says the partnership with Ericsson will play a key role. “Over time, our company has evolved, it has expanded. We started out with an 850 MHz LTE network; now we’re rolling out fixed wireless with 3.5 GHz CBRS; down the road we’ll be looking at 5G. Ericsson has been our partner on this journey all along the way.”

Callan adds, “Our relationship with Alan and his team is really about having a regular, ongoing dialogue. To us, partnership means we listen to what their needs are, understand where they want to head in the future, and bring ideas for how we can help them reach their immediate and longer-range objectives.”

Alan concludes with some words of advice for others in the utility industry exploring similar telecommunication opportunities: “There are many challenges with building a complex wireless network like ours. It requires a certain amount of perseverance and strong vendor relationships to get past those challenges. Having a partner to work with you through both the great moments and the tough times is key. We would not be where we are today without partnerships like the one we have with Ericsson.”

Solution Highlights

Delivering a wireless network for truly mission-critical needs

Southern Linc is leading the utility industry with its private, mission-critical 4G LTE network, helping utility crews keep services up and running safely, first responders get to an emergency scene quickly, and businesses enable employees to work productively and serve customers efficiently.

Transformational Solution

- First highly reliable dedicated LTE network in the United States, enabling mission-critical push-to-talk

Ericsson Hardware

- Private LTE
- Radio Access Network (RAN)
- Microwave
- Geo-Redundant Evolved Packet Cores (EPC)

Ericsson Software

- Mission Critical Communications
- Ericsson IP Multimedia Subsystem (IMS)
- Mission Critical Push-to-Talk
- Voice over LTE (VoLTE)
- Voice over WiFi
- Network Automation for zero-touch network operations

Ericsson Services

- Full Turnkey Services:
 - Site and Core Installation
 - Integration
 - Scripting
 - Network Optimization & Testing
 - Acceptance Test Plans
- Systems Integration (Communication Services, Packet Core)
- 24/7 Customer Support Services
- Software Upgrades

Solution Advantages

- Single future-proof network supporting multiple applications
- Lower total cost of ownership
- Faster return on investment
- Higher capacity and coverage
- Lower latency
- Reduced interference
- Lower cost per megabit

About Southern Linc

Southern Linc is a wireless communications network backed by the strength and reliability of Southern Company, the parent company of three electric utilities in the Southeast—Alabama Power, Georgia Power, and Mississippi Power—which are also Southern Linc customers. In addition, Southern Linc provides reliable wireless communications service, including mobile phones, to a wide range of businesses and public sector agencies within its 127,000 square-mile coverage area that includes Alabama, Georgia, southeastern Mississippi, and the Florida panhandle.

About Ericsson

Ericsson enables communications service providers to capture the full value of connectivity. The company's portfolio spans Networks, Digital Services, Managed Services, and Emerging Business and is designed to help our customers go digital, increase efficiency and find new revenue streams. Ericsson's investments in innovation have delivered the benefits of telephony and mobile broadband to billions of people around the world. The Ericsson stock is listed on Nasdaq Stockholm and on Nasdaq New York. www.ericsson.com

