

How Midwest Water Services Agency Upgraded Their Radio Network Without Compromising Operations

Producing up to 240 million gallons of water each day and delivering it to 170,000 customers required the Midwest Water Services Agency to monitor their equipment to ensure it is working properly in remote locations, like water supply pump stations and pressure points. The agency' electronics technician supervisor, and the team rely on their radio network for continuous communication, giving them the opportunity to detect and resolve problems before they jeopardize their mission of delivering safe and reliable drinking water to the community.

To monitor and maintain communication, the agency had relied on GE MDS 9710 radios and 9790 repeaters for many years. They utilized Modbus communications from each site in order to relay all information, through seven separate channels, back to their main hub, which hosted the master site within their SCADA system. When informed that the GE MDS 9710 radios were reaching their end-of-life, the agency opted to replace them with the GE SD9 radio.

Backward-compatible with the GE MDS 9710 radios, the SD9 radios could continue to communicate with 9790 repeaters and were an affordable solution to replacing the obsolete 9710 radios. Alas, in the fall of 2016, the agency was informed that the SD9 radios would no longer be available, and they would need to upgrade their entire radio network.



The Aprisa SR+ Migration Station

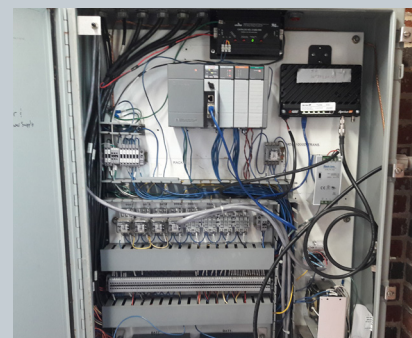
THE CHALLENGE

Upgrading the entire system at once, changing out seven channels of radios, and training staff would be costly and time-consuming for the agency. The company began to research other options, and in a timely meeting with their systems integrator, Black and Veatch, 4RF Aprisa radios were suggested as a better-performing, secure, and reliable radio with a solution to upgrade their network gradually. Tom Mundell, with Logic, Inc., described the challenges the company faced. "The team worked long days ensuring that pump stations and pressure points were operational with no downtime. To expect them to change their entire communication system overnight was unrealistic. We needed to offer a solution that provided an incremental path forward." Mundell arranged a migration solutions demonstration with 4RF's Midwest Sales Manager, Joe McFadden.

Mundell described how the team tested during installation. "The test mode allows one to perform a visual test of the signal strength of each radio without being connected to the radio via a computer. The LEDs on each radio gives an indication for good signal strength and antenna connectivity. These tests can be performed at each radio individually or through the master site radio. It is a valuable tool that saves time when assessing any communication problems or when verifying that each site is communicating."

Ease of use extends past testing each radio and into management of the entire system with 4RF's SuperVisor web-based browser application.

Case study



THE SOLUTION

4RF offers utilities mission-critical wireless communications between their control center and utility assets such as pump stations and pressure points. The Aprisa SR+ radios are smart, secure, narrow band point-to-multipoint radios that are optimized for SCADA and telemetry applications. This smart radio, with its compact form factor, does not require manual component tuning (no moving parts) and maintains its high-power output over a wide temperature range, thus providing reliable and robust performance.

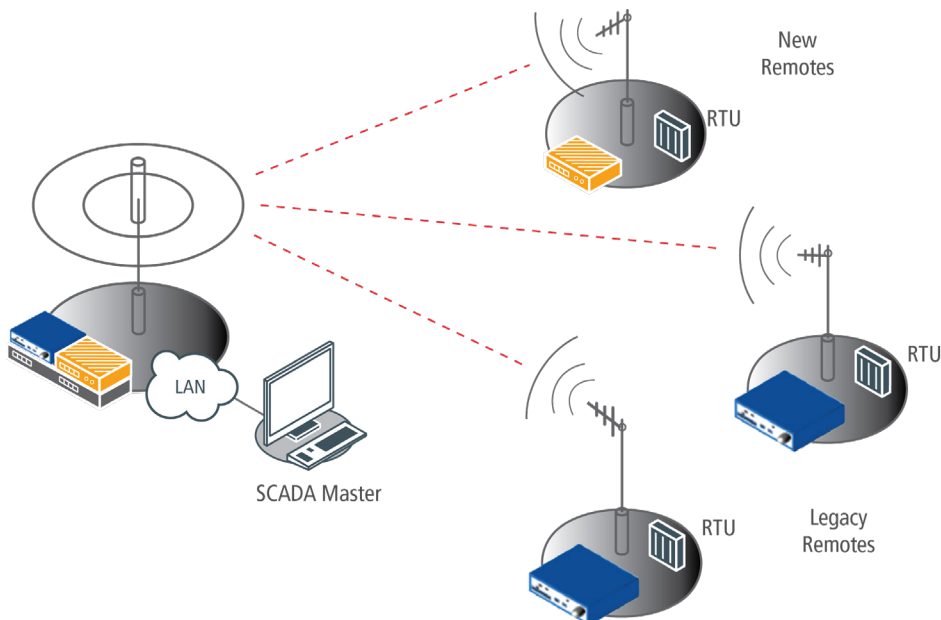
The Aprisa SR+ radio is an ideal radio for the water industry, with its unmatched security and easy testing, configuration and management.

The 4RF Migration Master Station (MMS) would provide a smooth migration from the agency' legacy radios. As McFadden explained, "Our Aprisa SR+ Migration Master Station (MMS) works alongside the legacy master station, utilizing the existing infrastructure and frequency assets, thus enabling the agency to set up a high-speed radio network with the Aprisa SR+ radio in parallel with their legacy network and reduce the stress and cost of upgrading to their operations. Ultimately, we could provide them with a better performing radio incrementally.

HOW IT WORKS

The MMS system is comprised of two main components: the standard Aprisa SR+ protected or non-protected master station and the migration switch, a fully redundant RF switch. The MMS is installed side-by-side with the legacy master station. The Aprisa SR+ network uses the same frequencies and antenna as the existing radio network. The migration switch connects to the 4RF antenna and shares this with the legacy master or the Aprisa SR + master station, as required by the remotes.

The migration switch is managed by the advanced logic in the Aprisa SR + protected master station. All SCADA traffic is directed through the Aprisa SR+ master, which passes traffic destined for the legacy network to the legacy base station, in addition to setting the migration switch for the antenna.



GE, MDS 9710, MDS 9790 and SD9 are trademarks and/or service marks owned by the General Electric Company.



Aprisa SR+

The Midwest Water Services Agency has a history and reputation for making smart investments in their infrastructure. The work and money they put in today should also benefit their water customers for years to come. Logic, Inc. and 4RF were confident that the Aprisa SR+ MMS solution would not only ease the agency' challenge of upgrading their communications, but would also address future communications needs.

To prove it, the team set up a pilot program to demonstrate the solution on one channel for 30 days. After the 30 days concluded, the agency agreed that 4RF SR+ MMS solution could achieve their goal of upgrading the system without disrupting operations or incurring high costs as well as upgrading the radio platform to deliver maximum user traffic with maximum range, reliability, robustness, and efficiency across the network. Not only could the agency avoid the huge undertaking and cost of upgrading a new radio system all at once, but they also found installation and testing was seamless with the Aprisa SR+ radios.



ABOUT 4RF

Operating in more than 150 countries, 4RF provides radio communications equipment for critical infrastructure applications. Customers include utilities, oil and gas companies, transport companies, telecommunications operators, international aid organisations, public safety, military and security organisations. 4RF point-to-point and point-to-multipoint products are optimized for performance in harsh climates and difficult terrain, supporting IP, legacy analogue, serial data applications.

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