

Rajant Eliminates Wires On A Fracking Pad Amidst Congestion And High-Power Equipment

Connectivity on a frack pad is critical to operations, from blending the correct material to safety monitor to emergency shutoff. Before wireless, every vehicle was connected via an expensive, weatherized data wire, which took a lot of work. This wire sometimes connected 40, 50, or 60 devices on a pad. These data cables were strung out across pipes and heavy equipment, potentially into dangerous areas. Not only time-consuming to place but often broken throughout operations, cables soon became a constant problem. Crew worked often to reestablish data connections from broken wires rather than maintenance on massive blenders or pumps.

The Challenge

The need for communications that are not only precise and constant, but able to handle the multiple data types used in a frack network quickly became an issue on site. Cables were working, but the constant breaking and hazard they became meant the safety messages carried by the wires could no longer be guaranteed. Due to the proximity of the equipment, the communications needed to handle self-congestion along with heavy EMI. The fleet's mobility meant the communications necessary to handle all types of environments, from the tip of Alaska to the heat of South Texas. But most of all, the product needed to be as reliable as possible. Other wireless products were considered; however, most could not handle proximity to other units or the strange, nonstandard data types. No product checked all boxes except one.



Company Profile

- Large United States-based Fracking Organization with 40 fleets of Fracking Vehicles

The Challenge

- Create a wireless network in a densely populated area without self-interference
- Reliable for the Safety Emergency Shutoff
- Integrating Physical Contact Closures onto a Data Network
- Create a wireless network in a densely populated area without self-interference
- Communications to be Interchangeable and Automatic

Typical Applications

- Emergency Shutoff System
- Vehicle Telemetry
- Pump and Flow Control
- Mixture Control Monitoring
- Wi-Fi for Internet Access

The Solution

- Rajant Kinetic Mesh® Private Wireless Network
- Rajant ES1 BreadCrumb®
- Rajant SlipStream

Test & Kinetic Mesh Solutions Partner (KMSP)

- Leader in the Fracking world, with strong ties to Technology at the forefront of Oil & Gas innovation.

Test Date

- May - August 2019

With safety driving the need for a network and safety hazards littering the site daily, it quickly became apparent a new solution was required. However, the solution needed to be simple and easy to implement. Busy technicians could not spend their entire day adjusting antennas and searching for clean wireless signals. The solution needed to work well with minimal input from the field to free up time for other tasks. The total installation and management time required to be very little, as the ability to take fleets offline for even minor changes meant that it was not producing revenue for the company.

The Solution

The Rajant ES1 was introduced to the network and provided instant positive results. The first issue failed by competitors was self-congestion. 40+ Radios in 1-2 acres. The Rajant automatic power adjuster, Dynamic Transmit Power, helps accomplish this goal easily. Automatically raising and lowering the power meant each radio on the pad limited self-interference in a dense mesh scenario, easily defeating the issue.

The next issue is the EMI from heavy trucks. Rajant InstaMesh® works around the clock, routing traffic around EMI on the most reliable route. Rajant BreadCrumbs are built for all challenging areas, and the ES1 product is no different. Able to go in all areas, the fleet operated with little concern for being in the elements. Rajant Instamash ensured the data coming from each pump and truck reached its destination in even the worst scenarios. When compared to a physical wire on a live site, Rajant had a higher uptime of 99.8%. The final issue of a frack pad is the nonstandard data. Rajant BreadCrumbs and InstaMesh are layer two communication devices. This gives Rajant BreadCrumbs the ability to not worry about data types in the network. Built-in serial and TRoIP servers allow virtually any communication packet type to traverse the network. After testing, there were no issues left for fracking fleets to consider.

Rajant also enables rapid deployment and minimal management. Rajant BreadCrumbs mesh and pass

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Because Rajant was able to accomplish all of the goals for networking and safety while being a straightforward and simple solution, fracking fleets are now more safe and secure than ever.

— **Cody Robinson**

Senior Sales Engineer - Rajant Corporation

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traffic out of the box on default settings, and with a few security changes, information is secure and flowing. Using Rajant BCICommander, network admins can monitor an entire network in the blink of an eye and provide management as they see fit. From minor tweaks to significant firmware upgrades, the BCICommander software is built to handle all requests simply and efficiently. Using these abilities, setting up a new fleet or upgrading an existing fleet transformed from a weeklong endeavor for local IT teams to a single afternoon. Able to accomplish all goals meant switching from wire to wireless was finally achievable

The Results

Today, frack fleets operate with peace of mind and little downtime as communications happen seamlessly and automatically. A total Rajant solution delivery has enabled on-site personnel to focus on tasks related to fracking operations rather than constantly fixing communications. With increased precision and reliability, fracking fleets can now work out upgrading their abilities. Several fleets are moving to a more electric and data-heavy setup. This innovation is propelled forward today by a seamless and reliable communication experience. The safety system works on a reliable wireless system with no downtime recorded