

# Keeping Refinery Workers Safe with Cradlepoint and Nitro

## Worker Safety Is Primary Concern for Oil and Gas Refineries

In 2021, the American oil and gas industry brought in a revenue of roughly \$211 Billion. Keeping this massive industry running is a highly-skilled workforce comprised of nearly 100,000 people managing the day-to-day undertakings of oil and gas refineries.

These thousands of workers are regularly exposed to harmful chemicals, difficult environments, and — of course — the threat of chemical explosions and fires, undertaking proper safety protocols is of the utmost concern.

In ensure the safety of their workers, oil refineries utilize a wide variety of IoT devices to measure things like temperature, gas emissions, pressure within the refinery towers, as well as wearable devices for workers to monitor their location and maintain constant communication.

Additionally, to effectively perform their job duties, most workers require access to a range of voice and data technology, including tablets and radios. These devices not only allow them to review their job orders but also to receive important — and potentially life-saving — communications and alerts from IoT monitoring devices and colleagues.

## The Challenge | Ensuring Worker Safety Across Large, Difficult-To-Cover Areas

Oil refineries require constant connectivity not only to monitor operations but to ensure worker safety. Lives are on the line, and constant connectivity for the IoT wearables personnel utilize within towers and ocean vessels is crucial to ensuring that workers are safe.

Uninterrupted connectivity must also be ensured for a variety of other connected devices, including tablets, communications devices, gas monitors, and biometric monitors. However, given the sheer size of the platforms and towers, which can extend hundreds of feet into the air, getting adequate coverage throughout the entire area can be difficult.

Unfortunately, traditional Wi-Fi was not meeting the needs of refinery personnel. The odd proportions of the towers and the various structural and mechanical obstructions meant it wasn't quite possible to achieve 100% coverage. Similarly, Public LTE — an excellent WAN link in most situations — didn't work as network congestion was prohibitive.

### Insufficient Connectivity

*Requiring 24x7x365 connections everywhere means that a traditional Wi-Fi connection isn't stable, robust, or pervasive enough to meet the demands placed upon it by the business and safety applications that oil and gas refineries rely on. Additionally, Wi-Fi networks aren't able to provide the extensive coverage needed to ensure worker safety throughout the entire tower.*

### Network Congestion

*Low latency and continuous coverage is critical for oil and gas refineries. Unfortunately, Public LTE can fail to meet these needs. While the coverage is typically sufficient, network congestion can be prohibitive due to the high density of connected devices constantly relaying information. Since employee safety is paramount, and the work done within towers is often quite dangerous, transmission delays or dropped signals due to network congestion caused by lower-priority traffic could be catastrophic.*

## The Solution | Cradlepoint and Motorola NITRO Create A Robust PLTE Network

Creating a Private LTE network - leveraging the Citizens Broadband Radio Spectrum (CBRS) shared spectrum - was the perfect solution to get 100% coverage over a sprawling area and have complete control over the network and device connectivity.

Motorola Nitro, paired with Cradlepoint's purpose-built wireless edge routers, provides connectivity to CBRS through ruggedized communication kits.



### Industry Profile

- Oil and Gas Companies
- Crude Oil Refineries
- Natural-Gas Processors

### Technology Solutions

- Cradlepoint R500-PLTE
- Cradlepoint NetCloud for IoT
- Motorola Nitro™
- Poynting XPOL-1-5G

### Targeted Results

- Increased Bandwidth
- Reduced Latency
- Improved Security
- Remote Management
- 99.99% System Uptime



USAT delivers oil and gas enterprises the end-to-end private networking solutions they need to support their secure mission-critical fixed and autonomous operations.



## Cradlepoint R500-PLTE



Motorola Nitro, a best-in-class private LTE platform, supports business-critical operations and device connectivity by delivering lightning-fast and secure voice, video, and data across the scope of your enterprise. It supports each of your facilities entire communications ecosystems, including smartphones, tablets, IoT devices and sensors, and purpose-built radios.

Cradlepoint wireless edge routers are designed for persistent connectivity and in conjunction with Cradlepoint NetCloud for IoT services, oil and gas companies can create a Private Cellular Network that's secure, un-congested, cost-effective, and easy to manage.

In instances where there may be congestion issues, specific devices can be identified as top priority, with all other devices being turned off so that the priority devices of safety professionals always work.

### The Results | Persistent Connectivity and Reduced Operating Costs

With PLTE networks, oil and gas refineries are able to take complete control of their network. As mission-critical communications are vital for ensuring worker safety, devices and individuals integral to success can be given the highest priority for network performance and access.

## Nitro SLX 4000



#### Highly Reliable and Flexible Wireless LAN Connectivity

*By leveraging CBRS, a Private LTE solution is able to provide a Wireless LAN that can accommodate all of the edge IoT devices, from directly connected safety devices to cameras or sensors that rely on wireless routers and embedded modems. Additionally, the affordability and scalability of the PLTE network means oil and gas refineries can expand their video, monitoring, and communications capabilities by exploring and adopting new IoT technologies and applications.*

#### Control Over Quality-of-Service

*Safety officers are able to prioritize the mission-critical communications that are essential to protecting workers thanks to the unprecedented control they have on a Private LTE network.*

#### Reduced Operating Costs

*Since CBRS is a free, unlicensed spectrum, customers are able to eliminate fluctuating monthly cellular data feeds and instead budget around a fixed monthly cost solution.*

## Poynting XPOL-1-5G



#### Improved Security

*The level of security afforded by Cradlepoint's wireless edge solutions, the inherent encryption of data passed through LTE, and SIMs that are able to be controlled from everywhere is simply not possible with Wi-Fi.*

#### Seamless Network Management & Troubleshooting

*NetCloud API's allow your techs to seamlessly monitor detailed LTE uptime, battery life for communication kits, and network performance, and also make adjustments to configurations without leaving the platform.*

### The Team | Device Provisioning, Activation and Installation Services

USAT serves the nation's critical infrastructure by creating secure communication networks that pass data wirelessly between key systems - linking remote personnel, locations, and machine assets. USAT sells, designs, configures, and installs 4G, 5G, PLTE, and CBRS-based wireless data communications hardware and software, providing targeted connectivity solutions that fit our clients' exacting needs from top partners like Motorola, Cradlepoint, and Poynting.

CONTACT US TODAY TO ENGINEER YOUR PLTE NETWORKING SOLUTIONS

