cradlepoint

Lightstone Generation Ensures Steady Electric Power Plant Operations in the Midwest

Cradlepoint Solutions Enable Secure Remote Start with 4G LTE, Cloud Management & Perimeter-Secured Overlay Networks

Summary

Lightstone Generation owns and runs four geographically dispersed electric power plants in the U.S., totaling 5,200 megawatts of generation. Its staff plant operators needed to be able to remotely start and stop the power plants to keep operations humming.

SOLUTION:

COR SERIES ROUTERS
NETCLOUD MANAGER
NETCLOUD PERIMETER

APPLICATION:

PRIMARY & FAILOVER
SOFTWARE-DEFINED PERIMETER
CLOUD MANAGEMENT
PARALLEL NETWORKING

MARKET:

ENERGY & UTILITY — IoT

To ensure remote starts happened on time, Lightstone Generation implemented Cradlepoint solutions including LTE-enabled COR Series routers for always-on connectivity, NetCloud Manager for cloud management, and perimeter-secured overlay networks through NetCloud Perimeter. Now, plant operators can securely and remotely start power plant operations from anywhere.

Company Profile

Lightstone is a private equity firm that acquired the four electric power plants scattered from Ohio to Indiana — Waterford Power LLC, Darby Power LLC, Lawrenceburg Power LLC, and Gavin Power LLC. The company generates and sells electric power for the Ohio deregulated market, and the plants are dispatched over the PJM Interconnect — the organization that coordinates the movement of wholesale electricity.

Business Needs

Lightstone originally purchased Cradlepoint solutions because the organization needed to remotely manage the Darby plant. The plant operators needed the ability to securely start the Darby units from work-provided devices anywhere and anytime — even during off-shift hours. A simple-cycle gas power plant makes its money by being able to be immediately started when called on and it was imperative to be able to remotely start the units.

> *"We have never missed a remote start opportunity since the system was installed and have performed this remote start function numerous times, and it always works, making the solution a money maker for the Darby plant,"* stated Kevin Gardner, principal coordinator for Lightstone.

To enable this remote start process, the generators at each plant required LTE functionality for failover and in some cases primary connectivity. Lightstone also needed the ability to create a secure network for IoT routers as well as the plant operators and their devices. This network had to be simple and fast to set up.

The organization's remote management system also needed to comply with NERC (North American Electric Reliability) security standards. These standards are designed to secure the assets required for operating North America's electric system. Because of these compliance standards, it's essential for Lightstone to protect its remote start capabilities from the outside world.

Solution

To solve Lightstone's remote start issues, it chose Cradlepoint's LTE-enabled COR Series routers for always-on connectivity, NetCloud Manager for cloud management, and perimeter-secured overlay networks through NetCloud Perimeter.

> *"We essentially had no solution until we got Cradlepoint,"* said Gardner. *"Now, we can ensure plant operations run smoothly and efficiently because of the Cradlepoint solutions."*

To address its IoT connectivity and security needs, the company installed Cradlepoint's COR Series routers at the Waterford and Darby locations, with the plant's generators connected on the LAN at each site.

Lightstone leverages Cradlepoint's NetCloud Perimeter (NCP) feature in the NetCloud platform to securely connect routers and IoT devices such as cell phones and laptops to a perimeter-secured overlay network — which can be set up in just minutes — that uses a private IP space to obscure devices and data from potential hackers.

Lightstone runs NCP on its Cradlepoint IoT routers, called NCP Gateways, as well as on field technicians' cellphones and tablets.

> **"We've never had a solution that would allow a tablet or smartphone to securely perform unit startups of a gas-fired power plant. This is a very innovative application."**
>
> — *Kevin Gardner, principal coordinator, Lightstone*

Benefits

SOFTWARE-DEFINED IoT SECURITY

With NetCloud Perimeter running on work-provided devices such as cell phones and tablets, operators can securely access files and applications and remotely start all Darby units.

> *We've never had a solution that would allow a tablet or smartphone to securely perform unit startups of a gas-fired power plant. This is a very innovative application,"* said Gardner.

Timing is an important part of the startup process of each unit. The on-call operator can log on to his or her work device from home, utilize perimeter-secure overlay functionality, and access the Darby remote screen quickly.

> *"The whole process takes about two minutes,"* said Gardner.

RELIABLE LTE CONNECTIVITY FOR PRIMARY & FAILOVER

Reliability and availability were also critical components of the organizations network needs.

> *"If operators were to miss a remote start opportunity of a unit, it would impact the profit margin for the entire year,"* explained Gardner.

At the Waterford plant, Cradlepoint routers provide seamless LTE failover when the primary router loses connectivity. At Darby, LTE serves as the primary WAN link for the generators — creating a Parallel Network, or physically air-gapped network, on-site.

### ABILITY TO REMOTELY START PLANTS — QUICKLY & SECURELY

The network consists of three components — the Cradlepoint router containing a SIM card for a primary connection, what the Darby plant calls a JUMP PC that can be accessed using mobile devices for the remote start function, and the Darby plant remote start control screen.

With this design, there is a secure connection to the JUMP PC and plant control network.

> *"The level of security necessary to get to the remote start screen is all provided by Cradlepoint, and is rapidly accessed,"* said Gardner.

Once an operator is logged in with a mobile device, the JUMP PC uses remote desktop functionality to jump to the Darby plant remote start control screen. Then, the off-site operator at home will see the same screen on their remote device. The operator has the ability to see all six units and he can start them all in just minutes.

As the operator leaves home to go to the plant, it will be started up by the time he gets there.
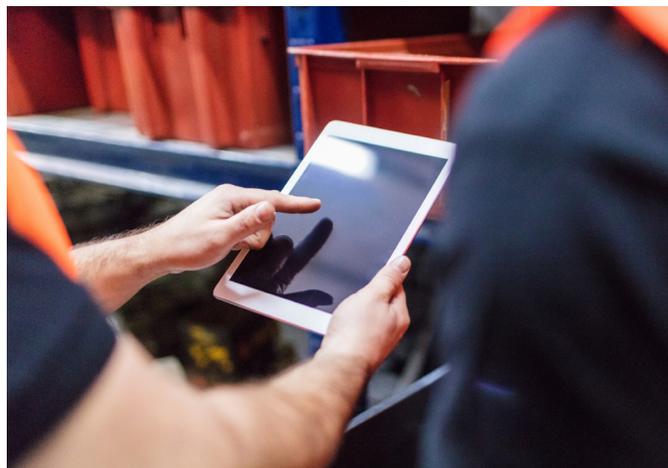
REMOTE MANAGEMENT THROUGH THE CLOUD

Cradlepoint NetCloud gives Lightstone a single-pane-of-glass system for monitoring and management of its LTE-connected IoT routers at each plant — from anywhere — reducing IT man-hours, troubleshooting, and truck rolls. The IT team also can use micro-segmentation with simple policies to remotely adjust which parts of its perimeter-secure overlay networks are accessible to each user, device, group, application, and resource.

SUPPORT & MAINTENANCE

Throughout the deployment process — from installing routers to creating perimeter-secure overlay networks — Lightstone's IT team found Cradlepoint's solution easy to set up, deploy, and maintain — with little to no troubleshooting.

"The upfront support with deploying Cradlepoint solutions was amazing. So far, this network has required little upkeep."

— *Kevin Gardner, principal coordinator, Lightstone*

Go to **cradlepoint.com** to learn more.