

Goldcorp Porcupine Gold Mines Strengthens Private Wireless Networks and Security



Revitalizing a historic gold mine adjacent to the city of Timmins, Ontario into an open pit site is no small feat.

Goldcorp Porcupine Gold Mines (PGM) faced this challenging task when it launched the Hollinger Project. The project itself was quite an undertaking initially, but the end result was positive for all involved.

The Challenge

When the site closed in 1989, the mining activity that had taken place from 1910 to 1968 had left its mark. PGM had to contend with mine shaft openings, near surface stopes, small pits and ground subsidences. After an extensive review, PGM decided that an open pit mine was the best option for the property. While determining the set-up was a good first step, PGM had major considerations to address on the way to fully operationalizing the site. One of the most important considerations was implementing and maintaining a private wireless network for communications. PGM required a private network, as broadcasting over a public Wi-Fi network posed security risks.

The Solution

After an exhaustive search, PGM decided to move forward with an LTE solution for the level of security it offered. Jamal Mohammed, of high-tech solutions provider SITECH Mid-Canada, was adamant that Rajant could resolve PGM's wireless communication issues.

"We truly believe Rajant's network is the most reliable solution and a perfect fit for PGM. It has the airtight security required and is designed for rugged environments, both priorities for PGM," Mohammed said.

Rajant Kinetic Mesh networks have demonstrated the ability to adapt to on-the-fly network changes better than other type of networking technologies. In addition, these networks can handle interference crossing multiple channels, as well as movement onto or off the network, with extreme precision. These variables have made Rajant's Kinetic Mesh network a suitable match for mining operations.

Project Profile

- Goldcorp Porcupine Gold Mines (PGM) launched the Hollinger Project to convert a historic underground gold mine located adjacent to Timmins, Ontario into an open pit mine operation.

The Challenge

- Improve communications across the mine's private wireless network with a solution built to withstand a rugged, mobile environment plagued with interference issues.

Solution Components

- Rajant Kinetic Mesh™ private wireless network consisting of 37 BreadCrumb® nodes

Solution Providers

- Integrator: SITECH Mid-Canada
- Designer: Ambra Solutions

Outcome and Impact

- Full network implemented within 2 weeks
- Enabled PGM to operate all data communication over a common wireless infrastructure with no single point of failure
- Provided solution that prevented costly downtime, with network communications unaffected despite a fiber breakage

The Results

It was impossible for SITECH to make the September deadline because it had to order equipment, which took a minimum of six to eight weeks to arrive. The team was able to begin work when the equipment arrived in October. PGM did not want to fall too far behind regardless of circumstances. Given the priority to implement the mesh network as quickly as possible, SITECH and Rajant collaborated to keep the project moving at a steady pace. The team worked day and night for two weeks, and completed the implementation on October 17.

“PGM was very pleased. We worked together to complete the project in a timely manner. My crew performed well and Rajant was fully supportive,” Mohammed said.

SITECH installed 30 nodes on mobile equipment and seven fixed nodes at important communication points throughout the site, including the drills, haul road and main office building. Since the network does not require the level of power usage that others might, SITECH was able to install some of the nodes on solar trailers. This was important to PGM, as the company is passionate about environmental preservation.

Nodes are the backbone of Rajant’s Kinetic Mesh wireless network. Each node, which Rajant brands as BreadCrums®, serves as an intelligent repeater, a wireless access point and a wireless-to-wired bridge. BreadCrums are available in various frequency bands, and can be battery- or DC-powered.

BreadCrums have the flexibility to transmit and receive data through a myriad of connectivity solutions, including LTE, satellite, point-to-point wireless or wired networks. Since the nodes are able to communicate with each other rather than relying on a single controller node, PGM is able to operate data communication over a common wireless infrastructure with no single point of failure.

In addition, voice, data and video communications can “hop” from node to node with very little administrative overhead burdening the network. The network also can rebuild and “heal” itself based on whatever wireless nodes are available, and nodes can be added as desired to

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— Jamal Mohammed
SITECH Mid-Canada

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further enhance network performance. In a true ad hoc wireless mesh, the network’s strength improves with the addition of nodes.

While Rajant’s network is set up for success, every site has its challenges, and a main issue at PGM is the five-mile distance between the open pit and the crusher. Telecommunications company Ambra Solutions designed the network for PGM. Eric L’Heureux, President of Solutions at Ambra Solutions, addressed the distance issue by using fiber as the backbone. Fiber is subject to break, so L’Heureux incorporated redundancy to maintain communications between the two points.

L’Heureux’s hard work has already paid off, most recently by preventing costly downtime in March 2015. Rajant’s network continued to communicate with the drills despite a fiber breakage. PGM’s drills are equipped with a high precision GPS navigation system to direct them. Without the requisite data delivered on the Rajant network, they will not function correctly.

Cybulski was surprised to discover that the drills remained in operation even after the fiber broke, with network communications unaffected by the breakage. L’Heureux confirmed to Cybulski that as long as it did not lose connectivity in the main hub, the network would continue functioning. This is a significant benefit on a mining site such as the Hollinger Project.