



# Iron Ore Company of Canada Meets **Demanding Wireless Data Requirements with Rajant**



The **Iron Ore Company of Canada (IOC)** is **Canada's largest iron ore producer** and a leading global **supplier of iron ore** pellets and concentrates. IOC is a key employer in the communities in which it operates, employing almost 1,900 people in the provinces of **Newfoundland, Labrador** and **Quebec**.

As the largest manufacturer of iron ore pellets in Canada with a customer base covering North American, European and Asian steel producers, IOC operates a mine, concentrator and a pelletizing plant in Labrador City, Newfoundland and Labrador, as well as port facilities located in Sept-Iles (Quebec).

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## **Challenge**

Create a robust wireless network to support all mine applications, from dispatch, drill management and equipment monitoring to pump control, remote video and general Wi-Fi networking to cover 3 distinct pits & deliver all data to a central point, with no existing cellular/3G/Wi-Fi coverage available to assist.

## **Solution**

IOC selected Rajant BreadCrumb wireless mesh system InstaMesh, with each BreadCrumb node serving as an intelligent repeater, a wireless access point, and a wireless-to-wired bridge. 117 nodes are installed on IOC's drills, loaders, haul trucks, starters & deep wells and infrastructure components.

## **Results**

Rajant's wireless BreadCrumb network enables the mine to reliably operate all data communication over a common wireless infrastructure with no single point of failure. Applications, video and remote sensor & switch data seamlessly ride on the same network, which also powers "office in a box" laptops in vehicles.



## Mine-Strength Wireless Networking

In the fall of 2008, fresh off the successful deployment of a 200-plus node wireless mesh network at Rio Tinto's Kennecott copper mine in Utah, Rajant began installation of a mine-wide wireless network at IOC's above-ground mine near Labrador City, Newfoundland. IOC required a single, robust wireless network to support all current and planned applications, ranging from dispatch, drill management and equipment condition monitoring to pump control, remote video and general Wi-Fi networking.

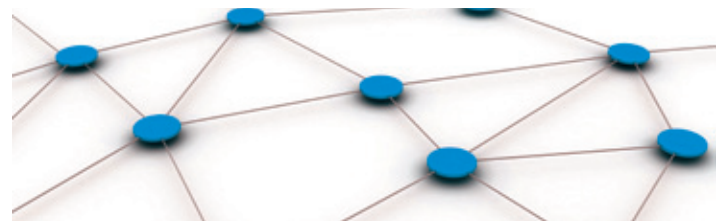
IOC selected Rajant BreadCrumb wireless mesh system and the InstaMesh protocol. Each BreadCrumb node is an intelligent repeater, a wireless access point, and a wireless-to-wired bridge. Specifically designed for the harsh, rugged environments of mining and military applications, they are available in various frequency bands and can be battery or DC powered.

Rajant's wireless BreadCrumb network enables the mine to reliably operate all data communication over a common wireless infrastructure with no single point of failure. At the IOC site, mining operation applications such as dispatch and equipment condition monitoring seamlessly ride on the same network as digital video from remote cameras and process control information from remote sensors and switches.

## The Complete Connected Mine: Site & Infrastructure

In a true ad hoc wireless mesh, the robustness of the network actually improves as the number of nodes increases. Only Instamesh has demonstrated this in real-world deployments. The fleet of IOC equipment consisted of shovels, drills, auxiliary equipment and haul trucks located throughout the massive facility, along with a number of semi-stationary communication trailers used to ensure coverage in remote areas. Today, 117 Rajant BreadCrumbs are installed on a full range of drills, loaders, light vehicles and haul trucks, starters and deep wells and infrastructure components.

With three distinct pits and a need for equipment monitoring data to be delivered to a central location, the facility did not offer a high degree of flexibility for transmitting signals. The mobile units, consisting of Rajant BreadCrumb nodes, solar- and wind-powered battery charging units and related controllers ensures constant network availability in spite of the changing topography, obstructions, and climate extremes.



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**117 Rajant BreadCrumbs are installed** on IOC's Drills, Loaders, Light Vehicles and Haul Trucks, Starters & Deep Wells and Infrastructure Components.

## Robust Performance in a Rugged Environment

As in the battlefield, mining operations consist of numerous vehicles and personnel in rugged terrain – requiring secure, reliable, constant high-bandwidth connectivity while on the move. Similar to military scenarios, there is no existing cellular, 3G or Wi-Fi infrastructure available to assist with the network for the ‘boots-on-the-ground’ foot soldiers. The Rajant BreadCrumbs alleviate this situation by building a resilient, scalable wireless mesh capable of any-node to any-node communications. If a wide area link is required, the BreadCrumb network can easily transmit and receive data through a satellite, point-to-point wireless or wired link.

At IOC, like many surface mines, mine-wide line-of-sight wireless communication is nearly impossible due to obstructions. A multi-hopper repeater network might improve coverage in some areas, but experience shows that the constantly changing topography in a mine usually results in the need for full-time monitoring and repositioning of repeater trailers.

In addition to the remote health monitoring of major machines, drill management, pump analytics and machine-grade control, the network also powers laptops in vehicles – providing “office in a box” capabilities leveraging VMWare. Today, the 400-plus access points at the IOC site in Newfoundland have been in constant operation for over two years – reliably supporting all aspects of mining operations.

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**400 +** access points

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“Mining operations require the careful, continuous orchestration and availability of many people and machines dispersed over a wide, inhospitable terrain. The number and constant mobility of the personnel and equipment on the typical mine site require a network that is robust, flexible and able to handle a wide range of applications and massive data volume. Rajant BreadCrumbs and InstaMesh technology deliver the broadband connectivity that keeps things running smoothly, efficiently and safely.”

- **Bob Schena, CEO**, Rajant

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## About Rajant

Rajant Corporation is the provider of the world’s most reliable, scalable and flexible portable wireless network technology. Through the combination of Rajant BreadCrumb wireless devices and InstaMesh meshing software, wireless networks can be created that can support hundreds of moving nodes without crippling the network with overhead. By preserving valuable bandwidth for communications, a Rajant network also unlocks higher levels of productivity and speed than other available solutions.

Rajant technology is designed for and proven in the most demanding applications, and is rapidly becoming the ideal choice for ultra-resilient networks that are equally adept in everyday situations and in times of crisis. Rajant also provides its technology to service providers and manufacturers who are looking to extend their own offerings with the power of Kinetic Mesh Networking.

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