



Barrick Digs Deeper Into Data for Safety and Productivity

Reimagining mining processes with digital technology for better decisions, efficiency and cost savings.



Barrick Gold Corporation

Industry
Mining

Location
Toronto, Canada

Number of employees
11,000

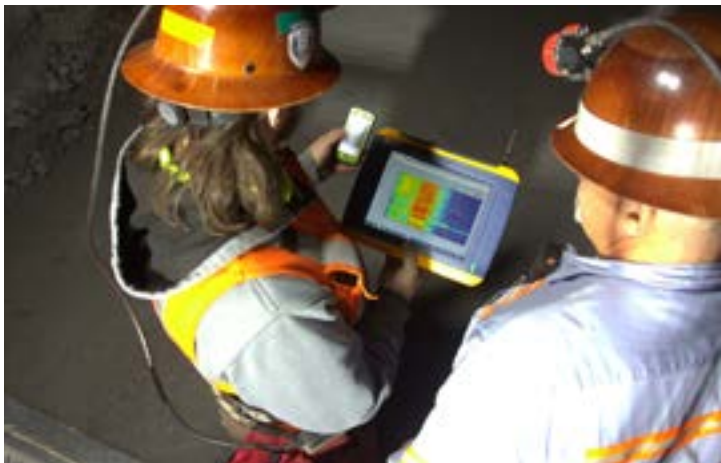
Website
www.barrick.com

Deep in the Mine, There's Real Value in Data

Hundreds of feet below the surface of the Cortez Gold Mine in Nevada lies a teeming hive of activity. Miners, equipment, and vehicles are constantly at work and on the move, bringing up valuable ore for Barrick, which is the world's largest gold mining company. The mine is not only a source of precious metal, but a treasure trove of rich data. To unlock the potential of this data and build a more collaborative, connected organization, Barrick is reinventing its operations with digital solutions from Cisco.

Based in Toronto, Barrick has interests in 13 mines in 10 countries and employs more than 11,000 people around the world. Always an innovator, the company has employed wired and wireless networking technology in its mines for years. The challenge is collecting all the data from connected vehicles and underground equipment like pumps and air-quality stations, and transmitting it across long distances—without losing speed. That's not easy in remote environments with harsh conditions that are always changing.

“Below ground, our network is constantly expanding because new work areas are being constantly created, so we have to follow them,” says Ethan Hull, Barrick's DevOps Manager.



Last year, with the goal of kick starting its digital transformation, Barrick decided to forge a partnership with Cisco. Barrick wanted to make it easier for employees across the organization to

get the insight they need to make better, faster decisions and work together more effectively, using timely, in-depth data.

Gaining Real-Time Insight from People and Equipment Everywhere

To extend and improve its network, Barrick is upgrading its entire infrastructure with Cisco wireless and collaboration solutions. At mine sites like the Cortez Gold Mine, Cisco Aironet 1500 Series Wireless Access Points deliver carrier-grade performance across long range areas to connect devices, people, and vehicles throughout the site. Cisco's network covers about 85 percent of the mine's 13.5-mile tunnel system.



“Wi-Fi is like oxygen for our business,” says Hull. “Wherever there are people breathing on the mine site, we want to have Wi-Fi.”

The wireless access points within the mine connect to Cisco Industrial Ethernet 2000, 3000, and 4000 Series Switches, which are designed to deliver security and performance in harsh environments. When the network needs to expand or change, its architecture is flexible enough to adjust quickly, with minimal hassle.

“We've partnered with Cisco to standardize equipment and create a network that is robust yet simple enough to install so that we do not require specialized equipment or specialists to install it,” says Hull.

The innovative Wi-Fi at the Cortez mine is just one example of the transformation happening across Barrick. For example, interactive data rooms outfitted with real-time data, analytics, and predictive tools let company leaders work together across the organization. Cisco Webex Teams (formerly Cisco Spark) Messenger and Webex Teams (formerly Cisco Spark) Boards make it easy for people to share or find information, ask questions, and make decisions quickly.

“Harnessing the potential of digital technology will unlock value across our business. In so doing, we will make ourselves into a leading twenty-first century company—enhancing safety, productivity and efficiency at our mines, and improving decision-making and performance across every area of our business.”

John L. Thornton
Executive Chairman, Barrick



Barrick is also setting up an enterprise-wide analytics hub to support performance management, and financial and operational benchmarking. New digital tools will improve scenario planning and portfolio management. Cisco’s Advanced Services team is working closely with Barrick to help the company define security and other strategies to get the most out of its digital infrastructure.

A Safer, More Efficient Mining Environment

Barrick’s underground Wi-Fi network is paying off big dividends in terms of visibility, safety, and dependability. Now mine operators can see and understand what’s happening in real time by tracking equipment, people, and ore as they are on the move. Collecting and analyzing all this data as part of a consolidated data platform gives them the insight they need to make better decisions, streamline processes, and be sure they’re always getting the highest possible production.

“Realistically, until we have real-time data, we can’t make accurate and fast decisions about moving our people or equipment to where they’re needed, so this is going to speed up those processes and enable the business to work more efficiently,” says Michelle Ash, Barrick’s chief innovation officer. “That’s essentially what Wi-Fi is: enabling the business to analyze and direct all of those things instantly.”

For example, operators and supervisors can use data visualization tools to develop reports for Underground Short Interval Control (UG SIC) to confirm equipment availability and usage during shift to optimize production. In early trials with detailed SIC data, the site gains about 33 minutes of active productive time per day, creating a daily throughput gain of 198 tons.

Safety is always critical in mining environments, and the Cisco Wi-Fi solution lets miners spend less time underground, reducing their exposure to risks. First implementations of tele-remote and autonomous technology allow them to operate equipment from the surface via remote control. When miners are working remotely, there’s no need to clear them away from blasting and other hazardous underground activities, so production keeps moving forward smoothly. In addition to enhancing safety, automated drilling has added between three and 13 additional drilled tons per day.

The Cisco solution also helps Barrick improve predictive maintenance, providing visibility into issues like engine oil pressure or faulty cooling systems before they can escalate. Discovering and addressing these issues before a failure occurs can save up to 72 hours of downtime, or a \$500,000 engine replacement cost.

If a piece of equipment does break down, underground operators can get immediate video support from off-site experts anywhere in the world, using a Wi-Fi tablet or other devices. Support staff can see the equipment and help identify and fix the issue. Miners can even order spare parts right from their tablet, to save time and minimize any service disruptions.

Barrick is well on its way to fully connecting not only its mines, but all of its offices and remote sites, with the most advanced Cisco solutions. With connectivity and intelligence everywhere, Barrick's leaders are putting digital technologies to work for faster, smarter decisions, reduced risk, and greater transparency for its business partners.

The Barrick + Cisco Partnership Extends Beyond the Mine

Since the signing of the partnership, Barrick and Cisco have worked together to find creative ways to leverage what some might see as an unconventional collaboration between a tech and mining company. "We are constantly thinking of ways to plug Cisco technology, culture and talent into Barrick's ecosystem" says Tyler Godoff, a member on Barrick's Innovation Strategy team. "Whether it is involving Cisco in our global hackathon strategy or providing Barrick team members the opportunity to visit Cisco HQ to participate in Executive Briefings, we are finding innovative ways to deepen the partnership."

A great example of the partnership extending beyond the mine is the commitment Barrick made to bring Cisco's NetAcad program to the communities where it operates mines. In Northern Nevada, Barrick is investing \$400,000 over three years to bring NetAcad to Great Basin College. The funds will cover costs associated with hardware, software,

instructor training, instructor salary and course fees. "This is a critical step in our digital transformation and innovation strategy, to ensure we are building a sustainable, skilled workforce to support our business in the future. In doing so we will also support the continued expansion and diversification of the economy of rural Nevada and the state as a whole" says Michael Brown, president of Barrick USA.

Now it is Time to Accelerate

At the most recent Cisco Connect, Barrick was featured for its digital transformation efforts. Cisco CEO Chuck Robbins spent time on stage with Barrick's chief innovation officer, Michelle Ash, and chief digital officer, Sham Chotai, to understand what it takes to lead such a massive transformation. At the end of the interview, Chuck Robbins asked Sham, "so what's next?" Sham's response: "we want to accelerate!"

