

JSW - Southwest Mining Limited

Pioneering Connectivity with SkyX and OneX Solutions in the Remote Mines of JSW Southwest

A Quick Glance

Modern technology, including IoT, cloud computing, and AI, is transforming all sorts of industries, including retail, healthcare, manufacturing, and many more. However, one industry is rarely mentioned, and that's the Mining Industry.

Being in remote areas, often underground, and limited to confined spaces in a generally hostile environment, every aspect of the mining industry makes connectivity both unreliable and limited. Nonetheless, IoT devices are being implemented to improve operations productivity levels and provide a secure and safe work environment for miners.

For instance, explosives are commonly used in mining operations to crack mineral-bearing rocks open. Following the blast, toxic fumes can linger in the area for hours. The in-situ or environmental sensors ensure minimal downtime and that the workers do not enter the blast site until it is safe.

However, when it comes to connectivity, the mining industry is a nightmare. This is because wired networks are expensive to install, lack flexibility, and consume valuable resources like copper. Moreover, traditional wireless solutions are difficult to implement because mine tunnels and shafts are challenging RF environments. Conventional wireless solutions depend upon fixed transmission points, so reconfiguring and expanding them becomes difficult, especially in mining areas.

Despite all the problems, there is always a ray of light at the end of the tunnel.

The Mining Connectivity Problem



JSW's Southwest Mining Limited, situated in the Rangapuram village of Andhra Pradesh, faced a similar connectivity issue. The Rangapuram Dolomite Mine, which aims to produce 5 lakh tonnes of the mineral annually, is spread across 37,043 hectares of Government Waste Land.

Dolomite is a source of magnesium metal and magnesia (MgO), and its powder is used in steel-making, cement manufacturing, agriculture, ceramics, glass, rubber, and mining.

The mine site has offices, stores, workshops, and shelters for the workers. Besides, the operations require essential software running from that site to transmit crucial information to the upper management in different locations across the nation.

According to a 2023 news report, around 3,160 villages out of 17,328 villages in Andhra Pradesh are deprived of 4G services. Besides, what's even worse is that 1,700 villages lack mobile connectivity.

Underground mines are mission-critical environments, and many aspects of the mining area make it difficult to set up a reliable conventional wireless network. The corkscrew design of ramps, varying-sized stopes, numerous cross cuts, and increasing mine depths can severely affect the limit of traditional wireless signals' reach.

The mining company approached CelerityX to deliver an uninterrupted connectivity solution for their Rangapuram Mining Project. With our proven record of providing top-notch and reliable enterprise network solutions, our tailored and secure network provides lightning-fast data access and ensures improved application performance, even in remote areas.

Client's Requirements



- The mining operations required nearly 100% uptime connectivity.
- The operations wanted to make the IoT data available related to data parameters, energy production, etc.
- A reliable and secure network should ensure seamless connectivity and the ability to send and receive emails through Gmail or similar applications.
- It required uninterrupted access to business-critical SAP application data.
- The network should meet all the compliance related to the data as per the State Power Generation Authorities.

Solution Delivered

Since the mine was located in an area with poor connectivity, we proposed delivering a solution with fully managed services, including application control, link aggregation, monitoring, and more. Our SkyX solution enables organizations to break free from boundaries and embrace limitless BOS (Broadband-over-Satellite) and provides lightning-fast and uninterrupted connectivity to businesses worldwide.

OneX compliments SkyX, providing a necessary backup to ensure nearly 100% connectivity all the time. OneX with dual SIM ports ensures that the tunnel created by aggregating the bandwidth would be a secure, redundant solution and the right fit for a very difficult terrain.

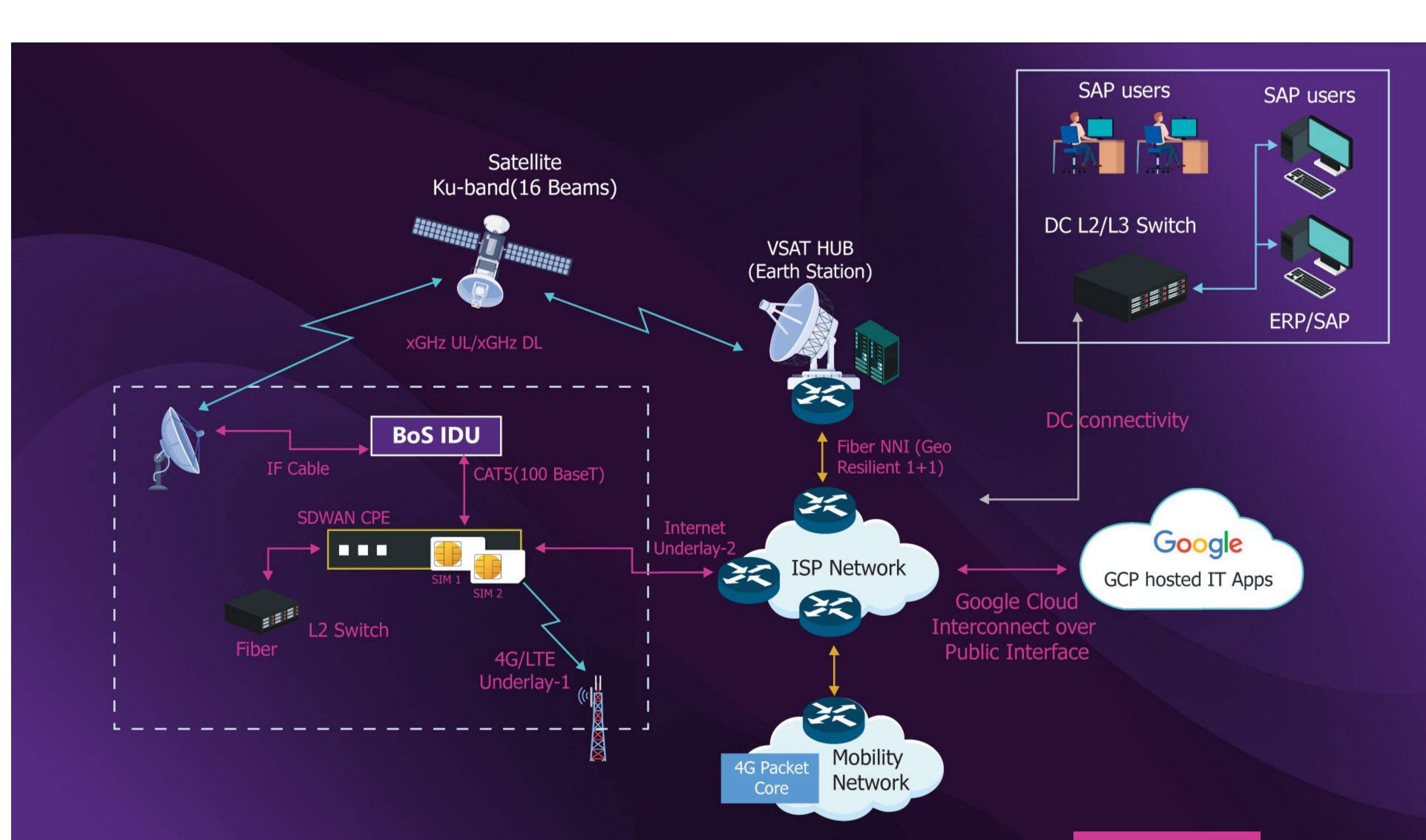
Our SkyX Satellite Systems comprised of a 1.2m Antenna with a mount, 3W BUC (Transmit/Receive), IDU (Indoor Unit) with Ethernet Interface. The SkyX Ethernet Interface is connected to the Ethernet Interface on the SD-WAN Unit.

Now, the SD-WAN system can be accordingly configured with WAN links, BoS links, and SIMs; link prioritization is based upon SLA parameters, which ensures 100% uptime on connectivity at all times.

The SkyX Satellite System is connected to the satellite system, and there are four teleports across the nation.



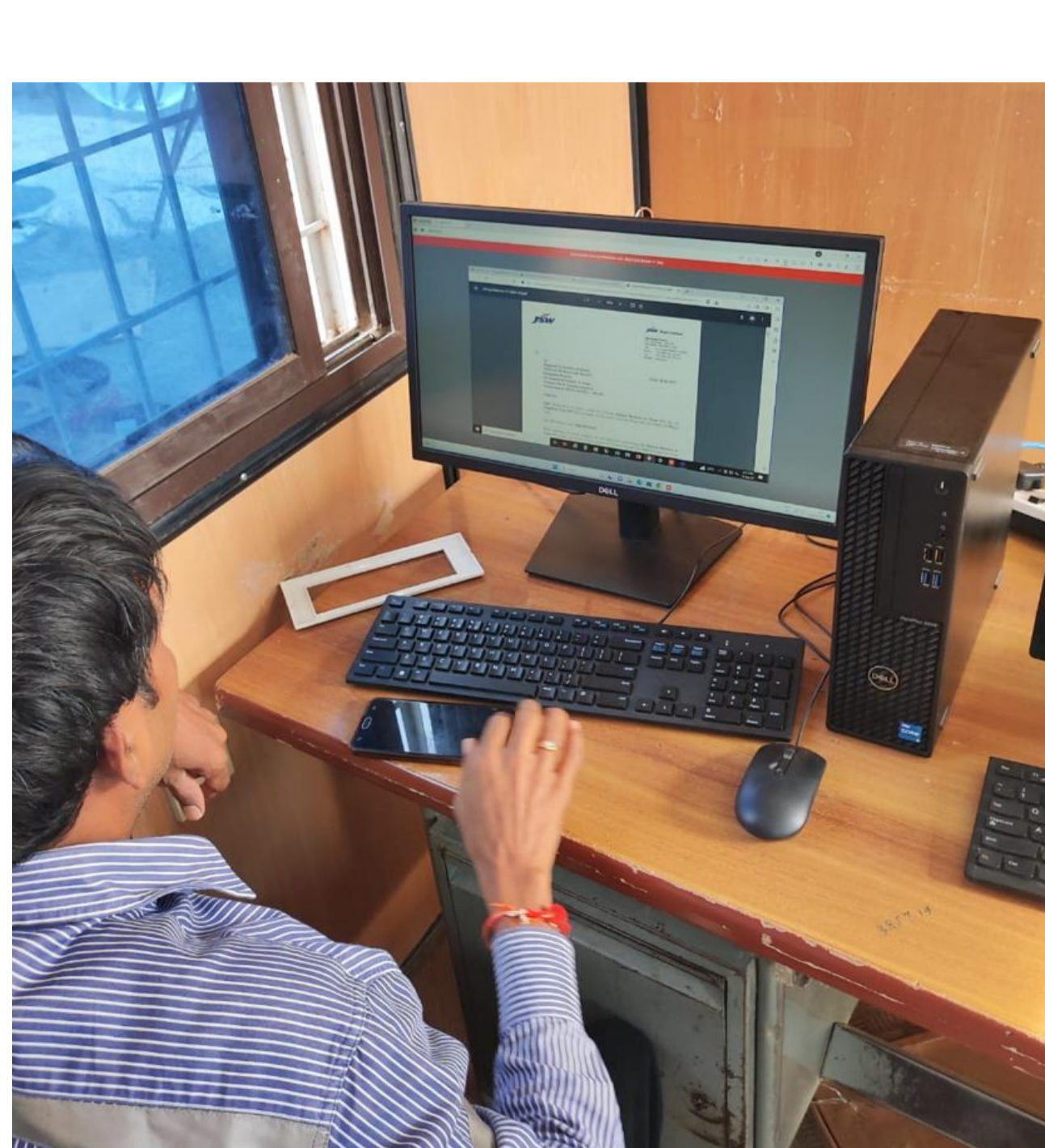
So, the traffic is routed from the remote mine to the satellite and then to the VSAT teleport. Through the teleport, it is connected via MPLS to Internet Gateway through the Redundant Part via Delhi and Mumbai Teleports.



Results Achieved

We installed the BoS equipment in the mine premises and the OneX in the server room, and the whole solution was plug-and-play in three days. Now, let's look at the benefits that the mining company enjoyed with our tailored SkyX + OneX solution:

- ✓ High availability and reliability of network achieving nearly 100% all time.
- ✓ Smooth connectivity to all the business locations, facilitating streamlined business communication
- ✓ Timely and all-time availability of business-critical information to upper management, including senior management/functional heads in the HQ/remotes, to make timely and well-informed decisions.
- ✓ Uninterrupted and seamless availability of IoT data from Controller PC (Production, Electricity Generation, and Control Systems).



Conclusion

From the moment the solution was installed and commissioned, the client had a great user experience with near-zero downtime. As a result of our strategic planning, all the applications are running smoothly without any interruptions.

Mines are becoming digital; this transformation fetches lots of benefits in terms of reduced errors, seamless operations, less manpower lives at risk, the creation of a secure and well-regulated work environment, reduced operational costs, and better business outcomes.

According to McKinsey reports, the implementation of AI and IoT can save upto \$390 billion annually in the mining industry.

However, real-life reports show exactly the opposite. When it comes to implementation, a study conducted with 100 global mining companies found that only half of them have invested in IoT devices for cost savings opportunities.

Transition to new technologies can be expensive, especially in mining industries, where risk is present at every step. At CelerityX, we understand the challenge and provide cost-effective, reliable, and high-performance network solutions to make mining operations safe and always connected.