

Cellular Backhaul over Satellite



A Grand Plan: A network solution that will be ideal, efficient, and futuristic for pan India connectivity

Reliance Jio Infocomm, a subsidiary of Reliance Industries Limited, has built a 4G LTE network with 4G LTE technology. It can be easily upgraded to support even more data, as technologies advance on to 5G, 6G, and beyond. It envisions to provide ubiquitous and seamless connectivity to each and every part of India. As part of an aggressive expansion strategy, the company wants to create a captive network of their own to connect 4G/LTE sites especially those beyond the reach of terrestrial backhaul solution. The company wants to establish a network solution which will be ideal and efficient to support their ambitious plan.

The Challenges:

- Lack of backhaul infrastructure and connectivity, especially in the rural and remote areas.
- High deployment costs and right of way (RoW) issues in laying fiber to connect towers.
- Challenging timelines to ensure seamless connectivity across hilly areas and islands due to height and difficult terrain.

Solutions Offered:

- Reliance Jio was offered a first-of-its-kind nationwide satellite backhaul-based network, using state-of-the-art technology from Hughes Communications India (HCIL) and a managed service to include network planning, implementation, operation, and maintenance.
- The network deployed Hughes JUPITER™ System to offer high-throughput terminals and future-proof multiservice capabilities and connect more than 400 cell sites of Reliance Jio with bandwidth in the range of 30–50 mega-bit per second.

- The proposed network was designed to be under different phases of deployment varying from areas in mainland in Maharashtra, Orissa, Chhattisgarh, Karnataka, and Himachal Pradesh, to remote, hilly, and island areas in North East, Jammu and Kashmir, Uttarakhand, Andaman Nicobar, and Lakshadweep.
- As part of the solution, Reliance Jio in partnership with Hughes will also set up two earth stations in Mumbai and Nagpur, and two mini hubs in Leh and Port Blair for the latest satellite backhaul-based services.

Highlights of Impact:

- Hughes' satellite network being used by Reliance Jio provided 50% advantage in terms of bandwidth, offering compression and acceleration natively for LTE traffic.
- Hughes JUPITER delivered more than 200 Mbps of TCP throughput per terminal and included built-in 4G/LTE optimization capability that yielded 30% to 60% bandwidth savings versus that of standard satellite backhaul solutions.
- The Army base in Kargil and Siachen have recorded maximum traction and are benefited significantly, followed by temple towns like Kedarnath and Badrinath successfully uplifting these rural areas from 2G/3G coverage to 4G/LTE services.

Sustaining the Impact:

- Satellite has proven to be the ideal technology for extending 4G service to remote and rural communities beyond the reach of terrestrial networks.
- Reliance Jio's Nationwide Satellite Backhaul Network in association with Hughes aims to connect 400 remote sites in India by 2019 with mobile broadband over satellite.
- Hughes is committed to evolving and extending the satellite network as India plans to welcome 5G in the country.

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