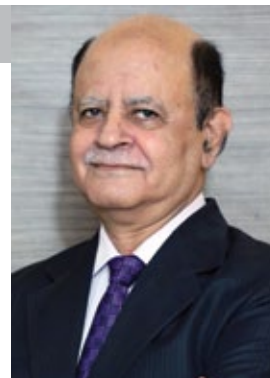


LT GEN DR SP KOCHHAR

# BUILDING SMARTER HIGHWAYS IN TELECOM'S NEW DIGITAL FRONTIER



Autonomous networks enable telcos to streamline operations, enhance services, and reduce costs, driving efficiency in a data-driven, hyperconnected world

The role of telecom networks has transformed significantly over the past few years, especially since the onset of the COVID-19 pandemic. As people increasingly turned to digital applications to perform everyday tasks, telecom networks evolved to provide the necessary digital infrastructure to address these requirements; be it education, entertainment, job, shopping, banking, healthcare needs, agriculture or others.

To address the evolving connectivity demands, Telecom Service Providers (TSPs) have integrated additional platform-based services powered by modern technologies such as the Internet of Things (IoT), blockchain and edge computing. While these efforts have significantly improved customer experience, they have turned network management into a complex, costly and time-consuming process. This is where the role of network automation comes in.



AI and ML have made network automation smarter, enabling advanced analysis through historical and real-time data while enhancing network discovery.



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Today, autonomous networks powered by Artificial Intelligence (AI) and Machine Learning (ML) are revolutionising telecom services delivery worldwide. They simplify every operation, from policy implementation to network testing, from predictive maintenance to problem resolution, and more.

### BENEFIT FOR INDIAN TELCOS

India has witnessed a staggering growth in Internet subscriptions over the past few years. With an overall Internet penetration of 85.85%, India is home to the second-largest telecom industry in the world. While the growth has provided TSPs in India with ample opportunities for revenue generation, the challenges associated with infrastructure build-out and management have outpaced those benefits. According to a report by Cisco, the cost of managing today's complex networks is two to three times more than the cost of the network itself. Thus, network automation has emerged as the way forward to reduce network management costs.

Network automation reduces or completely eliminates human intervention in network operations. With improved responsiveness and predictive maintenance capabilities, autonomous networks can resolve common network issues as they happen, without human involvement, significantly reducing the chances of network downtime while also saving associated labour costs.

Automation also simplifies application deployment, a key process in network management and also a major cause of network downtime for telcos. With automation, TSPs can gain complete control of the process by speeding up the application deployment and reducing human errors, thereby eliminating network outages.

With AI and ML, network automation has become even more intelligent. It provides advanced network analysis leveraging historical and real-time data and facilitates network discovery. With these insights, TSPs can identify possible issues associated with each network element and proactively address them to avoid performance issues. Furthermore, insights into customer intent can

help operators provide more targeted and personalised services.

Software-defined network (SDN), a programmable network management system in automated networks, is also gaining popularity among telcos. With SDN, TSPs can track network changes in real time and deploy new configurations, like adjusting routing paths based on real-time traffic conditions, ensuring efficient data delivery and minimising congestion. Automatic configuration of security controls also eliminates the risks associated with manual misconfigurations. With such insights and automated controls, networks become more agile and secure.

### NETWORK OPTIMISATION AND SUSTAINABILITY

Operators around the globe are striving to reduce greenhouse gas emissions and cut down electricity consumption in order to save costs and achieve the UN Sustainable Development Goals (SDGs). Automated networks are the answer to this, as they help optimise network resources.

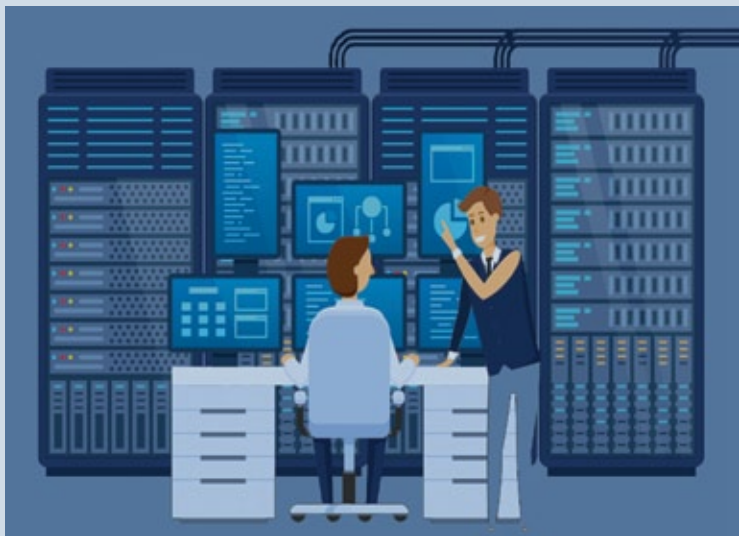
With AI integration, network provisioning becomes even more intelligent, significantly saving resources. AI automation can improve the energy efficiency of networks by maximising network utilisation without impacting the performance of energy-saving features. As per Nokia estimates, it can reduce energy consumption by up to 30%, cutting CO2 emissions and cooling costs by 70%.

### NETWORK AUTOMATION BY INDIAN TSPS

TSPs in India have realised the value of automating their networks to drive operational efficiency and cost savings. The four major operators have invested heavily and collaborated with leading tech companies to bolster their networks with advanced AI/ML technologies.

Reliance Jio has partnered with Guavus to leverage their AI-based solutions to provide real-time consumer experience and predictive analytics that would enable the telco to automate network troubleshooting and garner

With network management costs two to three times higher than the networks themselves, automation stands out as the essential path to cutting expenses.



## IN BRIEF

- **Telecom's digital evolution:** As daily tasks go digital, telcos provide crucial infrastructure, yet face challenges in complex, costly network management.
- **AI-driven network automation:** AI and ML-powered autonomous networks simplify operations, improve policy management, predictive maintenance, and problem resolution.
- **Boosting efficiency for Indian telcos:** With high internet penetration, India's telcos find automation essential to handle rising demands and cut operational costs.
- **Intelligent insights with SDN:** Software-defined networking enables real-time control, agility, and security, tracking traffic and adjusting configurations as needed.
- **Driving sustainability goals:** Automated networks cut emissions and improve energy efficiency, aiding global telecom operators in meeting UN SDG targets.
- **Automation for growth:** Indian TSPs adopt automation to enhance service, stay competitive, and support innovative business models in a rapidly evolving market.

key marketing insights. Similarly, Bharti Airtel has deployed Avanseus's predictive maintenance (PdM) solution across its operations. It has also partnered with IBM, Red Hat, Cisco, and Ericsson to enhance its networks through automation.

Vodafone Idea also has partnered with Cisco and Red Hat. Its strategic partnership with Red Hat to automate its IT infrastructure has helped reduce costs and improve operational efficiency. It has also partnered with Nokia to deploy the massive MIMO solution for network flexibility. State-owned BSNL, too, has partnered with Nokia for industrial automation solutions. It also signed a Memorandum of Understanding with Ciena for its 5G network solutions.

As network automation stays at the heart of innovative business models for telecom operators in India, its implementation requires a strategic and step-by-step approach. First, a thorough network analysis is required to identify key areas for automation and then select the right tools based on the requirements. As networks evolve to address the new demands, automation efforts will also have to undergo innovations to stay agile and responsive to market requirements. By adopting appropriate network automation strategies, TSPs can stay on top of the digital innovation curve and drive efficiency across the entire value chain. 🧠

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*The author is a decorated military veteran who retired as Signal Officer-in-Chief, the head of the Indian Army's ICT. He was also the first CEO of the Telecom Sector Skill Council (TSSC) and is the Director General of the Cellular Operators Association of India (COAI).*

[feedbackvnd@cybermedia.co.in](mailto:feedbackvnd@cybermedia.co.in)