

The telecom technology landscape in India is evolving at a rapid pace. The mass adoption of 4G, voice over long term evolution (VoLTE) and cloud, as well as the introduction of new technologies such as 5G, and internet of things (IoT) has created new requirements and challenges for operators. They are continuously looking for relevant technology support and solutions to make their networks future-ready. Radhey Shyam Sarda, chief technology officer, Huawei India, talks about the emerging technology requirements in the Indian telecom market and the role of 5G in future networks...

### **What are the key technology trends shaping the telecom market in India?**

Operators in India are increasingly focusing on increasing their network capacities to address the exponential data demand. However, adding new sites or spectrum is an expensive proposition. We believe that improving the efficiency of existing spectrum resources is the first step in cost-effectively increasing the network capacity.

In the existing spectrum bands, ensuring continuity of legacy technologies is a key challenge, making it difficult to refarm the spectrum for mobile broadband. Huawei's innovative CloudAIR solution enables dynamic spectrum sharing across radio technologies, thus efficiently accommodating legacy technologies. This increases the spectrum availability for mobile broadband. Massive multiple-input multiple-output (MIMO) is another key technology that addresses the exponential growth in data traffic in hotspot locations without adding new sites or spectrum. These technologies help operators increase spectrum efficiency and reduce cost per bit.

In the voice segment, the industry is deploying VoLTE to reduce the cost of producing voice minutes.

### **What are your views on India's readiness for 5G adoption? What are the key requirements and challenges for Indian operators?**

India is gearing up for 5G adoption in line with the global markets. The government's announcement to set up a 5G test bed in partnership with IIT is a significant move towards the same. Early this year, Airtel conducted its first 5G network trial under a test set-up, successfully demonstrating its 5G performance capability in the 3.5 GHz band.

In the case of 5G, one of the key challenges for operators is the lack of adequate fibre for last-mile connectivity. The other challenge is lower uplink coverage in the 3.5 GHz band. In addition to eMBB (enhanced Mobile Broadband), 5G enables a long tail of services posing different requirements on the same network. Thus, 5G will have to support various service-level agreements through end-to-end network slicing. This requires a very powerful, flexible and agile network. Huawei addresses these requirements through a range of solutions that help operators achieve network transformation.

### **What is the outlook for 4G services, with the industry now talking about 5G?**

4G will continue to be the foundation of mobile broadband even as we enter into the 5G era. 4G has witnessed unprecedented industry acceptance and has a very strong support ecosystem. Operators will continue to expand their 4G coverage and capacity depending on the MBB ecosystem in different countries. Also, the non-standalone option, which is the most widely adopted 5G architecture option, has 4G as an anchor.

The other interesting aspect is that while 5G roll-out is ushering in a new era, 4G capabilities are also evolving. Massive MIMO is an example, which leverages 4G network to create massive capacity using existing spectrum resources. The evolution of 4G to 4.5G enables us to introduce new services using technologies such as narrowband IoT (NB-IoT) by leveraging 4G infrastructure.

### **What are the benefits of NB-IoT for operators? What has been the response of Indian operators to this technology?**

IoT is becoming a key part of our cities, industries and lives and thus a new growth area for operators. As per Huawei IoT Market Intelligence, IoT is expected to contribute 20 per cent of

global operator revenues by 2025. Some of the reasons for NB-IoT to become the first technology of choice for cellular IoT are ease of deployment through reuse of 4G network infrastructure, 20 dB deeper coverage and more than 10 years of battery life, low module cost, wide applicability, strong industry chain and large ecosystem.

NB-IoT is witnessing strong traction. So far, more than 91 operators across 52 countries were investing in NB-IoT, including 39 commercial NB-IoT networks in 28 countries.

By end 2017, Huawei had delivered 29 NB-IoT networks in 21 countries. Our customers in India are actively evaluating use cases based on NB-IoT technology.

**What are the challenges faced by operators when moving towards automation and cloud architecture? How can these be resolved?**

It will be a gradual transition. The first step is to prepare cloud-based network architecture. Operators have already started working on this, especially from the core network perspective. For automation, standards are maturing. ETSI MANO standards will be finalised in 2018.

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