The introduction of new and advanced technologies in the telecom domain has accentuated the complexities involved in operator networks across the world. The large-scale roll-out of long term evolution (LTE) technology has resulted in a renewal of interest in the test and measurement (T&M) space, with operators increasingly looking to deploy advanced solutions for assessing and addressing network complexities. This has opened up a new window of opportunities for T&M players, which have stepped up their research and development (R&D) efforts to launch products that better match client requirements. For instance, vendors have taken the lead in offering innovative products and solutions for automated testing to service providers who increasingly prefer forward- and backward-compatible testing tools, which can be scaled up for use in future networks. Another key trend is the growing demand for integrated test equipment to deliver a higher price-to-performance ratio.

This scenario is also prevalent in India, where telecom operators have ramped up their networks in the past few years to make them 3G/4G ready. As more operators get on to the LTE bandwagon, the opportunities for T&M players in India keep increasing. According to industry reports, leading Indian operators like Bharti Airtel and Reliance Jio Infocomm Limited (RJIL) have already placed orders for procuring technology and equipment to plan and test virtual LTE networks in anticipation of a full-scale roll-out over the next few years. Other operators are also gearing up for a migration to next-generation networks, which is creating a demand for advanced testing tools at the R&D, field trial and deployment levels.

In addition, given the unprecedented rate at which data demand and service consumption are growing, operators are increasingly turning to T&M players to ensure that their networks can withstand traffic mixes and heavy data loads. Quality of service (QoS) and quality of experience (QoE) have emerged as key differentiating factors in this highly competitive environment, and there is a growing focus on providing subscribers with seamless connectivity and an enhanced user experience. This has necessitated the periodic and advanced testing of networks and equipment to ensure improved service delivery. The Telecom Regulatory Authority of India's increased vigilance and stringent penalty system to ensure operator compliance with QoS norms is also likely to result in the increased deployment of T&M equipment and solutions.

Market size and growth

After a hiatus of about two years because of policy and regulatory uncertainty and the dwindling

profitability of operators, 3G expansion plans and the commercial roll-out of 4G services are gaining traction in the Indian market. This stability is being reflected in the T&M space too, as industry estimates show that the communication segment within T&M grew by about 6 per cent between 2012 and 2013. During 2013, the market for telecom T&M instruments stood at about Rs 6.62 billion, accounting for over 50 per cent of the total Indian T&M instruments market, which was estimated at Rs 12 billion during 2013.

Wireless equipment and network testing continue to dominate the space, with LTE, voice over LTE (VoLTE), QoS, QoE, scalability and smart devices being the key growth drivers. On the other hand, the growth in the optic fibre cable (OFC) testing instruments market has largely been driven by the increasing demand for splicing machines.

On the network and infrastructure fronts, operators are ensuring that their networks are interoperable with currently available 2G and 3G services (and 4G services, in some cases), and can enable a seamless handover when moving from one technology to another. Increasing data usage and the introduction of smartphones and tablets, though, have made it difficult for operators to offer seamless connectivity without any downtime. Networks are loaded with data services and this requires appropriate testing tools to ensure adherence to high QoS norms.

Product and solution advancements

The requirement for T&M products and solutions emerges at several stages of wireless communication, right from the design and development of wireless equipment to network deployment and service assurance. In recent years, the T&M market has undergone a significant shift in its offerings in response to new technology demands by operators. The introduction of innovative applications such as mobile TV, m-banking, m-health, m-education and e-retail, and the convergence of technologies have also enhanced the demand for specialised T&M solutions.

The market is increasingly turning to a software-defined approach to instrumentation, which allows the expeditious upgradation of solutions as per changing network and technology requirements. Multicore parallel test systems, single-box test set solutions and vector signal transceivers are some popular products in the T&M space.

In the future, the industry will require testers that have more features, are modular in nature, and can ensure round-the-clock monitoring of network performance. These testers will have to provide actionable intelligence to operators and enable a player to enhance its QoS, revenue potential and ARPU.

Challenges and expectations

Over the past few years, limited operator investment in the T&M space has been a key challenge. The huge outgo on spectrum acquisition prevented operators from earmarking significant capital for deploying T&M solutions to address the growing complexity in their networks.

Low profitability, coupled with the high price of T&M equipment, has compelled operators to opt for renting and leasing of T&M equipment over making fresh purchases. Apart from making a significant dent in the revenue of T&M players, rented and leased equipment could be less advanced, non-calibrated or based on obsolete technology. These may not be suitable for the measurement of latest network parameters, thus affecting the monitoring of network performance and quality.

On the vendor side, a key challenge facing T&M companies is finding ways to constantly improve test capabilities under the excessive pricing pressure exerted by operators. T&M products typically come with a high capital investment, and these costs escalate further as the equipment needs to undergo constant upgradation because of the rapidly changing wireless technology environment. These regular advancements result in frequent hardware and software upgrades, which, in turn, translate into a significant yearly maintenance cost. International vendors operating in India also pay high import duties for bringing these products to the country.

Despite these challenges, there is significant potential for T&M vendors in India. As operators like RJIL, Bharti Airtel and Aircel gear up to launch and expand their 4G services, the demand for LTE and VoLTE testing equipment is set to grow. The growing proliferation of smartphones in the country will also result in a huge demand for wireless testing equipment as technology convergence takes place on mobile platforms. Smartphones create a challenging test field for vendors as they support multiple operating systems and wireless technologies, which are frequently updated. Newer versions also keep getting introduced at regular intervals, and test cycles need to keep pace to avoid obsolescence.

While wireless equipment testing will continue to be in the spotlight as LTE deployments gain traction, OFC testing will emerge as another important area in light of the expeditious roll-out of the National Optical Fibre Network and Network for Spectrum projects. T&M instruments worth Rs 1.5 billion are estimated to be required for the former, while the latter will need testing equipment worth about Rs 2.6 billion.

In recent months, the government has adopted a strict stance on the testing and certification of telecom equipment. It is planning to set up labs and testing centres for this purpose, which will go a long way in addressing problems faced by operators while simultaneously opening up new opportunities for T&M players in the country.

Net, net, the Indian telecom T&M space is set to witness a major turnaround over the next few years, assuring a strong growth market for vendors, a competitive edge for operators and high QoS levels for customers.

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