Over the years, the global telecom industry has witnessed a transition from 2G networks to 3G and 4G. While the transition has been driven by the combined efforts of all stakeholders in the telecom sector, the testing and measurement (T&M) industry, in particular, has played a vital role in the process. The adoption of suitable T&M solutions has allowed network operators to test and deploy new technologies, bring down operating costs and deliver high quality services at all stages of the network lifecycle. This has been instrumental in facilitating the roll-out of telecom networks across the world.

Therefore, investment in T&M has become a critical component of the strategies adopted by communication service providers, network operators, mobile device manufacturers, equipment manufacturers, system integrators and enterprises. In the future, the increased penetration of telecom services, growing mobile data traffic, surge in the adoption of smart devices, and deployment of long term evolution (LTE), LTE-Advanced (LTE-A) and 5G technologies will continue to drive the demand for wireless testing equipment.

A look at the global trends in the T&M space...

Key growth drivers

The roll-out of 4G services and the advent of new technologies like 5G have been the key growth drivers of the global T&M industry in recent years. The proliferation of 4G services such as data-based video and over-the-top applications has led to a surge in data traffic, thus increasing the complexity of telecom networks. To cater to the growing traffic, the global telecom industry is looking to adopt new and more efficient network technologies. This is encouraging investment in T&M solutions to test performance, capacity and network management.

Further, there is a need to adopt adequate testing procedures to ensure compliance with global bandwidth and spectrum standards for 5G. Several operators in Japan, South Korea, Singapore and the US have started taking network testing initiatives for 5G. Global T&M vendors are

helping these operators to test the technology and identify the issues that need to be addressed for faster commercial roll-out. Further, quality tests are being developed to test the equipment supplied to operators. Meanwhile, limited spectrum availability is driving the demand for T&M equipment as operators need to ensure optimal spectrum utilisation before commercially rolling out networks. Further, the need to ensure quality of service (QoS) has become a key focus area for telecom stakeholders across the globe. The growing competition in the telecom industry is pushing service providers to conform to QoS standards. This has created an enormous demand for drive test solutions that communicate virtually with other tools and help in testing the QoS offered by operators.

In addition, increased research and development spending on protocol testing, wide area network optimisation testing, etc. has led to the growth of the T&M industry. The increasing smartphone penetration is also fuelling demand for T&M equipment.

Global growth scenario

While there has been significant growth in the communications T&M industry, it has been skewed towards select regions of the world. This is because wireless networks, which dominate the communications T&M industry, have been registering exceptional growth in these regions.

As per industry reports, the global T&M market is expected to grow at a compound annual growth rate of more than 5 per cent between 2016 and 2020. This growth would largely come from the Asia-Pacific (APAC) region, which offers immense potential for T&M providers. These providers help end-users such as enterprises and mobile device manufacturers in the region to test their level of service in terms of quality, performance and capacity. Furthermore, the APAC region has become the fastest growing market in the global communications sector, registering a considerable rise in the number of mobile internet subscribers, particularly in developing countries like India and China. This is expected to create demand for 4G capacity expansion in APAC countries, thus driving growth in the T&M industry during the period. Further, the rapid roll-out of LTE and LTE-A networks in India, the fastest growing smartphone market in the world, is likely to enhance the growth potential of the T&M market in the APAC region.

As per Anritsu Corporation, the total revenue of the global T&M industry is expected to reach JPY 59.3 billion in 2017. Of this, 37 per cent would be generated by APAC countries, indicating the highest growth potential for the T&M industry in this region. Further, the US would occupy the second largest share of the T&M industry in terms of revenue generation with a share of 27

per cent. Meanwhile, the revenues generated in EMEA (Europe, Middle East and Africa), and Japan would be 18 per cent each.

Challenges

Although the global T&M industry is witnessing significant traction, the growth path is not devoid of challenges. For one, the T&M market is extremely price sensitive. Given the excessive pricing pressure exerted by operators, test equipment companies have not been able to improve test capabilities and reduce testing time. Another challenge that global T&M vendors usually face is providing a testing solution that is best-suited to the skills and capabilities of end-users. Further, as operators deploy LTE and LTE-A networks worldwide, T&M equipment vendors are facing the lack of spectrum harmonisation for 4G services, and lack of standards for 5G networks. Globally, operators are using different spectrum bands for these networks. For instance, companies in the US use spectrum in the 70 MHz and 1800 MHz bands to provide 4G services while those in Europe utilise the 2.6 GHz band for the same. Meanwhile, operators in India use the 2.3 GHz band and those in Japan use the 2.1 GHz band. These bands conform to and operate on different standards and configurations. Thus, equipment vendors need to manufacture a wide range of testing instruments, each specific to different standards.

Further, as compared to the legacy networks, LTE technology offers higher speeds and spectral efficiency. Therefore, testing the components of a 4G network requires more comprehensive test coverage of radio frequency, protocol and system-level elements, including base stations, handsets and network infrastructure.

The way ahead

The challenges notwithstanding, the global T&M equipment industry is expected to expand on the back of upcoming technologies like 5G. Further, wired communication technologies such as Ethernet and fibre optics, providing up to 100 Gbps speed, are likely to open new avenues for T&M players. Meanwhile, the growing uptake of internet of things in the telecom domain will contribute significantly to the growth of the T&M market.

To cater to these segments, T&M equipment vendors will have to innovate and upgrade their offerings. Industry experts are of the view that vendors will have to develop

software-upgradeable instruments to meet the changing customer requirements. To this end, global vendors have already started adopting a software-defined approach towards instrumentation, which allows expeditious upgradation of solutions with changing network and technology requirements. Moreover, vendors will have to offer solutions based on predictive analytics, big data analytics and virtualised testing, and adopt new business models such as software-as-a-service to stay relevant in the market.

Going forward, the changing sector dynamics and the need for augmenting network performance will continue to create opportunities for the T&M industry

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