

Rapid Fire Growth

While a 2G GSM network is still preferred for voice, 3G will aid in mobile broadband connectivity and pave the way for LTE for last-mile connectivity



The wireless infrastructure segment grew by 26% in FY 2009-10 against the previous fiscal's 44% rise. Wireless has an innate advantage where the cost for addition of new subscribers keeps decreasing as more subscribers are added to a network. The cellular infrastructure once laid can be used to add more subscribers without much additional cost. Most of the passive cellular infrastructure can now be used to roll out even broadband wireless networks in India.

The Indian telecom sector is experiencing revolutionary growth and a crucial turning point with the 3G wave. The current market is pegged at \$12 bn and is growing at an average of 25% y-o-y. With introduction of BWA in India, the growth rate is estimated to reach the \$50 bn market by 2015.

While 2G will continue to remain a

popular wireless technology, 3G will see tremendous gain this year with the offering of mobile broadband high-speed data transfer. Additionally, traditional wireless communication has been aided by new technologies such as WCDMA, HS-DPA, HSUPA, TD-SCDMA and CDMA2000 1xEV-DO. These technologies, in addition to the new telecom policy and the new National Frequency Allocation plan, is set to bring in big developments in the wireless infrastructure of the country, and will keep evolving based on the market requirements.

Wireless vs Wireline

According to Trai, the number of mobile subscribers in India increased by 22.62 mn in December 2010, taking the total number of subscribers to 752.19 mn in December 2010, from 729.57 mn in November 2010. The wireless subscriber

base registered a growth of 2.95% in 2010.

Wireless networks have been in existence for nearly a hundred years now, but failed to match wireline infrastructure, in terms of service reliability in the past. However, in the last 30 years, many technology advances have been made in the radio frequency domain and baseband technologies, both in the integrated chips and in technology standardization. Wireless has become a reliable and easily deployable medium of transport, and in the last 10 years, has become more popular than wireline, especially in emerging countries.

There are several reasons that have contributed to wireless growth scoring over that of wireline. These include easier installation, where wireline is difficult or impossible to install either physically or economically. Regulatory considerations also make wireline installations difficult and expensive.

Cheaper capex and opex per subscriber: Wireless networks tend to become cheaper on cost per subscriber as more subscribers are added. This allows operators to scale quite aggressively reducing the cost of subscription quite drastically.

Convenience for consumers: Wireless networks give convenience to consumers. They can get voice and broadband connectivity almost anywhere.

Closing the performance gap: For many years, wireless could not compete with the throughput and quality-



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of-service capabilities of wireline. This has now changed, and radically—Wi-Fi competes with Ethernet LAN, WiMAX competes with DSL, cable modem and optic fiber, both on cost in deployment and performance.

3G—The Wireless Aid

3G broadband is the best way to deploy wireless today, and will increase the spread of wireless and broadband usage. Cost to end user has come down with wireless as well, hence, no fixed infrastructure or location is needed. 3G broadband for enterprises will be popular, more cost-effective and better from a set-up point of view.

3G will allow operators to deliver more data-centric apps, which have been low till date on GSM and Edge. Rates will also be low. 2G infrastructure will have to be upgraded to 3G and higher infrastructure, thus, driving a change in infrastructure. While a greater number of BTS is needed for better coverage, 3G has a higher data-centric capability. According to Texas Instruments, by 2012, 60 to 80 mn mobile subscribers in India will be 3G-enabled and 30% of all future handsets will have 3G capabilities.

3G offers enhancements over previous wireless technologies, like high-speed transmission, advanced multimedia access and global roaming. It will enable high-speed data transfer and enhance the user experience with bandwidth-heavy services, such as live video streaming and many other graphic formats. 3G will act as a catalyst in bridging the urban-rural digital divide and facilitate socio-economic development of the masses. Especially in the rural areas, facilities like telemedicine, e-education and e-governance which can be offered through 3G, are bound to improve the quality of life.

3G has unveiled a new era of wireless communication; it has opened numerous opportunities for the users as well as operators. 3G will bring in more and more demand uptimes, speed and fast data transfers. With the coming in of 3G, the demand for wireless connectivity will witness a significant boost. 3G promises services like video conferencing, gaming, email/internet access, and more at very

Tips for CIOs

- CIOs should understand what they need and what makes a business case for them.
- A mix of wireless and wireline technologies is strongly suggested, with wireless being used for last mile, while wireline is used for long distance connectivity and for transport of aggregated data and voice channels
- New wireless technologies should be embraced only after sorting out the details of its strengths and weakness, and when there is a strong case for making a successful business out of it
- Many ISPs do not realize that one can operate in unlicensed spectrum which does not incur huge costs
- CIOs should insist on low power consumption and low maintenance, and not just get carried away with low cost equipment



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affordable prices. The rise in demand for faster and affordable connectivity will benefit the service provider in many ways. 3G will not be a replacement for existing leased line/VPN/MPLS services, but could serve as a backup option for their primary VPN/leased line connectivity.

Forward-looking Trends

While GSM remains the most popular wireless technology today, with 70% of mobile phones being GSM, as compared to 30% for CDMA, for cellular voice and data, 3G (UMTS) is the most widely deployed technology. In the developed world, the cellular networks will be based on 4G (FD-LTE) which will become a dominant standard in the next 5 years, shifting to WCDMA and LTE for BWA from private operators. Cost structures across the world will also drive volumes—LTE is largest growing, with a 130% CAGR growth projected in the next 5 years from a worldwide perspective. For broadband wireless, WiMax for last mile and Wi-Fi for last meter are the most popular technologies in the world.

However China has opted for TD-LTE and is keen on pushing the same into India. Government initiatives for LTE, which is data-centric, liberalizing regulations on VoIP, to allow voice and data convergence on a single platform, and local manufacturing incentivization and imports should be strengthened further, going forward.

Mobile broadband will be the growth driver for the wireless segment across the world, and especially India with the ongoing rollout of 3G services. Ericsson foresees 3 bn new mobile broadband subscriptions by 2015, a 10-fold increase over 5 years, and envisions 50 bn connected devices by 2020. Data traffic is forecast to grow 90% annually over the next 5 years, according to the same report.

India can benefit a lot if it frees up more frequency spectrum and brings transparency into allocation of spectrum in a fair manner. Certain parts of the spectrum should be unlicensed so that ISPs can pose a challenge to the incumbent telecom operators. This will benefit the consumer in the long run and also will allow far wider deployments reaching rural India.

Going forward, there will be more applications for consumers riding on data services provided by 3G data throughputs. Video uploads and downloads, movie clips, mobile TV channels, and mobile banking, are just some of the applications that consumers will be able to use at affordable prices. There will be a parallel network of broadband wireless to provide broadband to homes and en-

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terprises, thereby increasing broadband penetration in India. Applications like telemedicine and tele-schooling will become available. E-governance initiatives will become a reality. Kiosks and ATMs will be widely deployed, even in villages and remote areas. Fixed-line phone connections will be available on wireless networks with unlimited talk time for a fixed rate per month. Operators will install more base stations than ever before, accounting for far less expenditure. They will move towards running their networks using solar power and much less power consumption.

LTE will strongly emerge as the next generation wireless technology that will lead the growth of mobile broadband services into the next level. India continues to be the hottest market in the wireless networking space. The wireless industry has witnessed heavy competition in the past few years. New applications and usage of wireless like VoWLAN, WiMax, 802.11n, ultra-wideband UWB can be a driving factor. The implementation of state-WAN across all states will drive last mile wireless implementation in rural areas with e-governance initiatives. The rapid growth in mobile density and a steep growth in VAS services will further fuel the wireless infrastructure growth.

Challenges to Wireless Uptake

The key challenge in introducing new wireless technologies is the operators' ability to learn the strengths and weaknesses of the new technology and then to come up with a viable business model tailored around it. Other challenges include providing a secure and reliable network in deteriorating radio conditions where signal strength is low or interference is high. Proper radio planning is required which is a complex problem involving many parameters. Security is another challenge where networks have to make a tradeoff between providing secure network while keeping their solutions less complex and nimble.

Project implementation and wireless management, also present huge challenges, in terms of the line of sight.

Moreover, in order to cover large distances, great height is needed. So, tower erection increases the implementation costs. Secondly, as enterprises move to capitalize on the benefits of wireless networking, the need for cost-effective WLAN management tools becomes acute. Solutions that revolve around planning the wireless network, maximizing network performance and minimizing network downtime, maintaining security over wireless links, and keeping device settings 'in step' throughout the wireless network despite everchanging requirements, can all help in overcoming these 2 challenges.

Wireless will increase connectivity in India. A reliable wireless transport will come as an alternative to wireline connectivity. Naturally, it will aid convergence solutions and cloud computing.

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Keeping Alive the Old-world Charm

2G/3G will co-exist in India as in the other markets. Mobile broadband will be a key driver for the wireless technology offering higher speeds and access to a whole gamut of services/applications to the end users. These technologies—old and new—will co-exist, and only last mile technologies like DSL may be replaced by LTE for last mile connectivity, and backhaul.

Wi-Fi will continue to be a dominant technology for WLAN, but will lose its role in wide area networks to new technologies such as WiMax and LTE. With nearly 1 bn devices in service, Wi-Fi is arguably one of the most successful wireless technologies. However Wi-Fi will be replaced by WiMAX and LTE technologies in long

distance point-to-point applications and wide area point to multipoint applications. Wi-Fi is a disruptive technology that came unexpectedly and has grown by leaps and bounds, mainly because it is inexpensive and fills a need. Wi-Fi enables wireless voice-applications (VoWLAN or WVoIP). Most agree that wireless networking represent the future of computer and internet connectivity worldwide. Wi-Fi continues to be the pre-eminent technology for building general purpose wireless networks. Legacy WLANs today, must handle more complex mobility services and mobile device connectivity. In order to establish WLANs for mobile data, voice and video services, aging 802.11a/b/g WLANs must be upgraded.

NGN to Drive Wireless Networks

The launch of 3G and LTE will aid the demand for bandwidth-hungry applications, forcing operators to upgrade their networks and spend more on infrastructure to provide for the data based services on mobile broadband. MNP will make operators improve service quality. These emerging technologies could effectively be used for smartening the environment, as well as for improving the socio-economic status of the rural areas and government systems as such.

While in urban areas, a switch to technologies which are more efficient and greener is preferred for remote sites, where the electricity grid is unavailable or unreliable, local power solutions are needed, and solar, bio-fuel, wind and other alternative energy sources are increasingly both economically as well as technically feasible alternatives.

Growth of wireless in India will continue on an accelerated path for at least another 10 years. We will now witness a broadband revolution in India, where most of the last mile access will be wireless. New technologies like 4G, WiMAX and LTE definitely provide better spectrum usage, faster data speeds, and far robust radio coverage to give subscribers convenience of mobile and fixed broadband.

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