

3G Hopes

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There is a huge upside in opportunities for the growth of wireless products and infrastructure solutions in the Indian market, as it gradually moves towards maturity. Industry experts say that the Indian market will be driven by two things—continuous expansion of GSM and the advent of 3G—over the next two years. For GSM, there is a continuous need for being more efficient in carrying the traffic, as well as making the expansion of networks smooth and incur the lowest costs possible. 3G service will attract huge investments in wireless product, infrastructure, IP backhaul, terminal, and VAS.

Wireless growth has already taken over the growth of wireline in India. Driven by affordability, reduction in tariffs and taxes, handset prices, innovative packages to suit different segments, availability, network expansion, distribution reach, the Indian wireless infrastructure market is set on a growth path. However, in order to achieve a sustainable growth, adequate spectrum is required. The available bands for GSM spectrum are 900 MHz and 1,800 MHz. As of today, the 900 MHz band has been fully utilized and the 1,800 MHz band has miniscule availability.

The government has set up a committee for enhancing spectrum availability. In fact, India may never have adequate spectrum, but the country will keep getting its bit from time to time. Spectrum allocation by the government is a major concern among operators as well as infrastructure providers. Another concern for infrastructure providers is the dropping prices. Consolidation, restructuring to improve bottomline and technologies that can ensure market penetration and

cost efficiency will be the main trends in this space. Setting up a wireless infrastructure in urban areas is difficult, and hence a greater feasibility is available only in rural areas.

EXPERT PANEL



Vikas Giridhar, head, business development, South Asia, enterprise wireless and RFID, Motorola
DK Ghosh, CMD, ZTE Telecom India
Prem Nithin, senior technical consultant, Cisco India & SAARC
Subhashini Prabhakar, CTM, Dax Networks
Veli Pekka Saikkonen, head, network systems sales, India, NSN
P Balaji, VP, marketing & strategy, Ericsson

All big private operators are already undertaking 3G trials (WCDMA/HSPA and CDMA EVDO). A few of the big integrated operators are also planning to deploy WiMax networks as part of their strategy to provide connectivity to enterprises. However, with no clarity on BWA spectrum auction, some service providers have started evaluating the option of leaping to 4G or LTE. Trai is considering to float a consultation paper on LTE. The industry was expecting Indian operators to start moving towards this technology by 2011, but the stalemate over 3G hints that it is quite unlikely.

Trends in Focus

After the Hutchison-Vodafone transaction in 2007, some multinational operators

(Vodafone, Sistema, Etisalat, Telenor, Docomo, etc.) entered into this market and played together with Indian consortiums. In 2010, the capex and opex from these players in spectrum auction and 3G/2G rollout and expansion is expected to be more than \$10 bn. The investment patterns will be more and more diversified in this market, including direct investments from shareholders and strategic investors, borrowing from local and international financial market, vendor financing from suppliers, and hiving-off current assets like towers.

On the enterprises side, the market is witnessing the availability of 802.11n radio devices. Such high speed network capability is enabling enterprises to adopt wireless as the backbone and be able to roll out high bandwidth demanding applications.

2009 was marked by the economic crisis with global implications. The vendors faced some challenges in the market; however, the industry did see them expanding their product profile and global footprint, providing them an alternative avenue of growth.

The Pressing Need

Given the limited fixed infrastructure in India and the high cost of deploying fixed last mile connectivity, wireless technologies are essential to increase broadband penetration in India. Among wireless technology options that are available, 3G is an important one as it is the upgrade path for GSM operators, and their large existing subscriber base is the starting point for migrating customers to 3G. In addition, 3G can be used both for more efficient delivery of voice and for mobile broadband.

In emerging markets like India, the need is at two different levels. At the urban level, there are enterprises and consumers evolving in their mobile experience by using more and more data services; while at the rural level, it is about reducing the total cost of ownership to drive broadband adoption. 3G has evolved to address both these needs simultaneously. Thus, it has been keeping operators on the edge of their seats.

CIOs are demanding tools that help reduce network downtime; solutions that assure optimum network availability; and diagnostic tools that detect vulnerabilities in the network much before it impacts the network. Wireless intrusion, detection and prevention is another area of strong focus. Thus, a solution needed should be vendor-agnostic Wireless Intrusion Prevention System (WIPS). An enterprise solution that provides complete protection against wireless threats, policy compliance monitoring, robust performance monitoring and troubleshooting, and location tracking in an appliance can scale up to meet the largest global organizations' needs. The solution provides comprehensive protection and operational support for all 802.11n networks as well.

One of the main challenges any network operator faces is predicting customer demand and preparing the network to support it ahead of time. Improving or even sustaining a solid RoI is a big challenge for all network operators, more so in a country like India where ARPU's are one of the lowest in the world. By using converged and scalable infrastructure, operators are able to improve their RoI on network infrastructure

Tech Focus

Operators in their expansion modes are spending on 2G equipments, thus keeping vendors focused on SDR. UMTS/HSPA+ will be the first option for all operators, which can support both voice service and data access service.

WiMax is at the initial stages of take off. The incumbent service providers have come out with their RFPs for setting up WiMax networks for both rural and urban connectivity. In India, since mobile pro-

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liferation is higher than PC penetration, 3G is expected to drive the convergence between mobile and Internet platforms.

While 3G will revolutionize the way we work, upgrading and maintaining infrastructure will be a major concern.

other countries.

Also the adoption of mobility solutions based on the wireless platform by various industry segments like hospitality, manufacturing, retail, real estate, etc. is leading to more adoption and prolifera-

TIPS FOR CIOs

- There is no shortcut for proper pre-deployment RF survey, planning, and validation
- Insist on purpose built RF modeling tools to predict the behavior of your RF network at your site even before deployment
- Leverage the next generation WLAN controller based architecture for easy plug-n-play deployment and easy management
- Ensure a strong level of security
- Opt for dedicated wireless IDS/IPS appliance
- Integrated sensor and access point to lower TCO

- Consider dual radio 802.11n if you have legacy 802.11a/b/g clients.

- CIOs must keep in mind the availability and adoption of standards
- Interoperability between equipments of different technologies and vendors
- Choice and availability of spectrum



While upgrading network infrastructure, service networks for voice, video, and data—to meet the expanding data/video traffic—will complicate infrastructure providers who are focused on keeping the costs low. Adding a separate layer and maintaining quality will become a nightmare for operators.

India benefits from the fact that it can leapfrog in terms of technology in its quest to connect subscribers. Hence, Indian operators have the option of choosing advanced technology and vendors with broader experience of offering LTE in

tion of WLAN. Government SWAN's and rural connectivity are also leading to more adoption of wireless in the country. Thus, vendors are enhancing their profile in this space.

Adoption of IEEE 802.11n standard represents an important step towards the realization of dual band (2.4GHz and 5GHz) radios. A major infrastructural issue here is the lack of reliable power supply. The limited battery life of mobile devices is a key bottleneck, especially since the backup power available is not sufficient. Also, deploying a wireless LAN, especially in unlicensed 2.4GHz ISM band used by 802.11b and 802.11g as different devices compete for the same spectrum. Other

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concerns persisting enterprises while setting up a wireless infrastructure include security, reach, interference, interoperability, and manageability.

The increasing need for anytime connectivity is creating new challenges for today's networking professionals, who must respond to the growing demand for WLANs in an era of tight budgets and reduced resources. These networking professionals are discovering that in the absence of a corporate sanctioned wireless network, employees are deploying their own unauthorized access points that put the entire network at risk.

WLAN adoption is still relatively new and niche in India and the region. It is only now that enterprises and other segments are forced to rethink their wireless strategy and realize that an integrated approach by having a seamless integration between fixed and wireless deployment would lead to more flexibility and productivity.

With respect to WAN network the growth remains stagnant because of the spectrum issues. However, where LAN is concerned vendors have been focusing on developing more products. Vendors are enhancing their product profile and releasing new product with integrated functionalities like ADSL with wireless to address the growing demand of wireless market.

Network assurance is another area where a significant cost saving can be achieved. Solutions and diagnostic tools that enable this are available which can help enterprises to reduce network downtime and cost on rectifying the outage, and prevent loss of working time due to network outage. These tools offer early Rol and improve the availability of optimum network performance at all times. This is why the industry will see development in this segment.

Wi-Fi deployment have taken off in India, with verticals such as hospitality, manufacturing, academic institutions being early adopters. The response to public hotspots (Wi-Fi) was tepid till recent. 2010 will also see a concentrated focus on the development of wireless cities. With recent announcements like the government's move to delicense the 2.4 GHz and 5.1 GHz bands, on which the Wi-

Fi platform works and with incumbents looking at this space actively, the adoption is set to grow. However, the government needs to clarify some of the bottlenecks that have arisen such as:

- Low power level of the delicensed 2.4 GHz devices have to be restricted to 100 mW of radiated power output (26 dBm)

- Coverage area restriction placed 'within the single contiguous campus of an individual, duly recognized organization or institution'

- Hotspots in public areas still need licenses from the wireless planning & coordination wing (WPC) and violations are illegal and liable for a penalty

- The outdoor use of the same spectrum requires a license

- Spill over of signals to a public area (like roads or streets) is liable to punishment

Some part of the growth comes from the use of wireless connectivity for physical security applications such as video

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surveillance across enterprises and municipalities.

Green Brigade

Vendors in India have been marketing green well. They have been focusing on solutions to reduce energy consumption of base stations. There are solution providers in the market with station site energy efficient up to 70%. In a typical network with approximately 10,000 base station sites and five year-old equipments. the annual energy savings from these innovations is 51 GWh or 30% using the existing sites and hardware. With new hardware, the energy saving results in 109 GWh or 64% per year. This equals 55,000 tons of less CO₂ emissions.

In addition, many vendors are innovating with energy solutions, which

run on solar and wind energy. As mobile networks expand into rural areas, operators cannot always rely on infrastructure, as power grids are not always reliable or readily available and base station sites need to run autonomously. A sustainable alternative is to use renewable energy sources such as wind and solar power.

By 2011, renewable energy will be the first choice for all remote base station sites that they install. Vendors are working on flexi base stations that help in lowering operators' costs as it is small, efficient and energy efficient for unreliable power grid/ autonomous sites. The weatherproof flexi BTS does not need shelter of air conditioning for the site, and thus low cost sites can be used with low rent, optimal site location and low power requirements. Also savings on transmission can be achieved with local switching. So, most connections can be handled locally avoiding the need for excessive transmission to the operator core sites.

An interesting innovation is the concrete tower solution that has a lower environmental impact than traditional steel, using one-tenth of the steel compared to traditional sites. It consumes up to 40% less power from a lifecycle perspective. This is because concrete results in less energy and CO₂ (at least 30% lower) than steel during production and transport. But the most important fact is that during operation feeder losses are substantially reduced, and no active cooling is needed.

On the efficiency front, one of the key breakthrough technologies we expect to gain momentum is in the domain of spectrum optimization as part of evolution of GSM. Given the hyper competition in the India telecom industry, CTOs should deploy solutions that reduce their total cost of ownership. This means solutions that bring around efficiencies in power and spectrum utilization and offer high capacity and coverage in a given area. Therefore, the thrust is on how to make the best of the spectrum that is available, which is so scarce and the demand for the services so high.

Heena Jhingan
heenaj@cybermedia.co.in