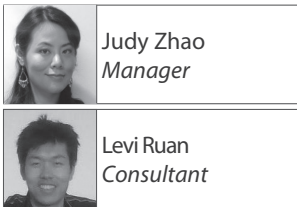


Broadband in China: Accelerate Development to Serve the Public

Suggestions from international best practice experts on China's broadband development



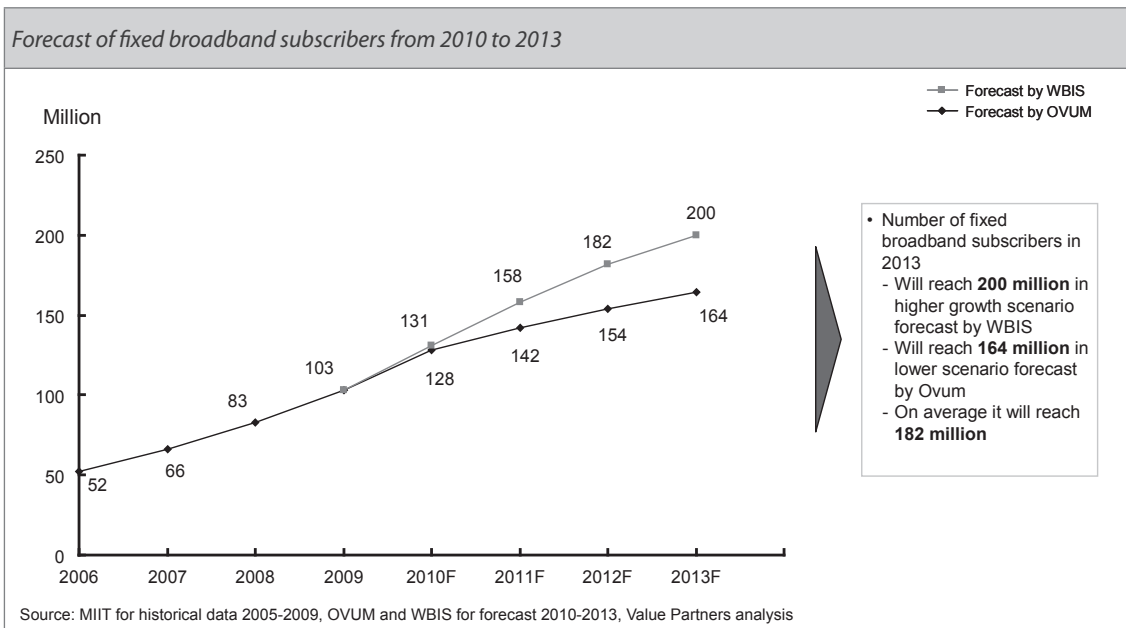
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Broadband is growing exponentially in China, and the momentum is expected to continue in the next few years. This rapid evolution is a vital component in the growth of the domestic economy: the development of China's dial-up and broadband Internet together may contribute a combined 2.5% to GDP growth for every 10% increase in penetration. Nevertheless, as this article also demonstrates, Chinese broadband development still lags behind the international leaders, such as South Korea and Japan, as well as some European countries. The time is ripe for Chinese companies to catch up and provide even more service to the public.

Current issues: too much investment and too few applications

Broadband – a high data rate Internet access with a speed greater than 1 Mb/s, as contrasted with dial-up access – is growing fast in China and the growth trend is expected to continue in the next few years. The number of fixed broadband subscribers, as contrasted with mobile broadband ones, is expected to reach 182 million in 2013. This represents a net addition of around 79 million subscribers between 2010-2013 – a growth of nearly 77% in just four years.

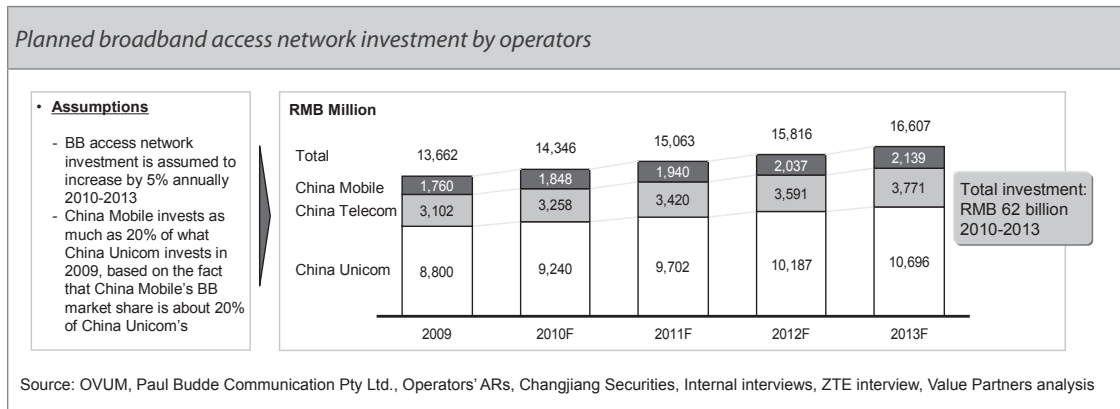


This rapid broadband development is vital to support the growth of the domestic economy, as well as an increasing demand for access to services and applications. World Bank experts have stated that the development of China's dial-up and broadband Internet may contribute a combined 2.5% to GDP growth for every 10% penetration increase. Together with mobile penetration, this is the biggest catalyst for economic growth among telecom services¹. High-quality broadband will be essential for the development of sectors such as the creative industries, financial services, software and IT services. Equally important is that broadband will be key to both critical information processing and innovation in education and health-care services. As already witnessed by major industry players, the acceleration of broadband development will serve both China and its people well.

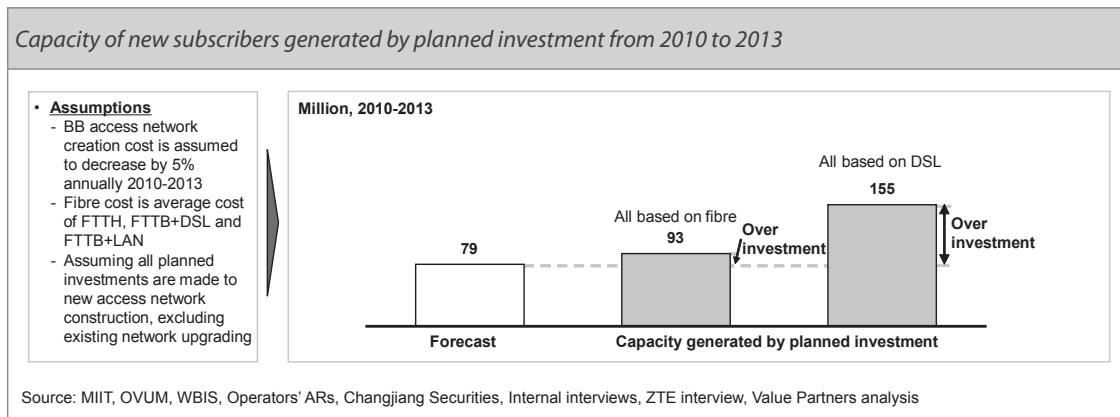
¹Source: World Bank, Christine Zhen-Wei Qiang, 2009

However, there remain some challenges for the development of China's broadband network. First of all, China's investment in broadband appears to be biased towards the fixed broadband infrastructure versus the application development. If telecom operators continue to invest consistently with their 2009 budgets and an annual growth of 5% over the next four years, investment in fixed broadband access network will far outstrip demand.

In 2009, China Unicom (CU), China Telecom (CT) and China Mobile (CM) collectively invested an estimated RMB 13.7 billion in the creation of a fixed broadband access network. Assuming a 5% annual growth, total investment from 2010 to 2013 will be RMB 62 billion.



This level of investment is expected to support the construction of 93 million lines that are all based on fibre technology – including FTTH (Fibre To The Home), a fibre optic cable that replaces copper wire; FTTB+DSL, a general fibre optic cable that is used for last mile telecommunications plus DSL, and FTTB+LAN, FTTB plus Local Area Network – or 155 million lines that are all based on DSL (Digital Subscriber Lines). Both of these figures are higher than the forecast of 79 million new subscriptions.



Although the above analysis may lead to a recalibration of investment, our international experience shows that putting bandwidth in place alone is not enough to promote usage: application availability and expansion, such as the spread of software that runs mainly on an Internet platform, are also required.

South Korea, as the Asian country with the highest penetration rate (32% in 2009) of broadband subscribers as a percentage of population², and the world's highest access speed, with an average download speed of 20.4 Mb/s³, provides an illustrative example. South Korea leads the world in its commercial application of broadband technologies. This achievement was reached not only by the government's significant infrastructure investment, but also by the wide distribution of Internet applications.

²Source: Gartner
³Source: CWA survey in 2009

In 2003, South Korea launched a plan to build a next-generation network called Broadband Convergence Network (BcN) to provide a major nationwide convergent network of TV broadcasts, voice telecommunications and Internet, with transmission speeds of 50-100 Mb/s by 2010. One of its key achievements, by 2007, was the commercialization of 14 services, including TV portals, after identifying 25 new application services in the areas of voice-data integration, wired-wireless integration, and communication-broadcasting convergence. The IPTV service is considered to be the epitome of BcN service. The availability and popularity of content for broadband services, such as online gaming, have further spurred sales and services subscription. As of 2006, South Korea had a larger percentage of its Internet users downloading videos from the web than any other nation.

Another example is the popularity of various video applications in the UK. The on-demand video of, for example, BBC's iPlayer, or YouTube, has further boosted broadband usage. In 2008, video traffic accounted for 50% of the total broadband traffic in the UK.

Finally, in another developed broadband market like France, the usage and market demand are driven by triple-play services and the rapid take-up of VoIP. France is Europe's largest VoIP base and enjoys a leading position in IPTV. Among 16 million broadband subscribers, around 2.9 million households subscribed to an IPTV offering by the end of 2007.

According to existing global trends, therefore, it is obvious that application availability and expansion are essential drivers in the process of broadband development.

<i>Examples of internet application's impacts on broadband infrastructure</i>		
	Application examples	Impacts/accomplishments
South Korea	<ul style="list-style-type: none"> • VoIP • IPTV and VOD • E-government: G4C (government for citizens), HTS (home tax service), GePS (government e-purchasing service) • E-education: Educational Broadcasting system (EBS) broadcasting high school education programs via the Internet • Online video and gaming • E-banking • Ubiquitous network • E-business Integration (eBI) 	<ul style="list-style-type: none"> • One of the most penetrated broadband markets in the world with 31.8% in 2008 • Highest access speed with average download speed of 20.4 mbps in 2009 • More than 3 million VoIP subscribers by April 2009 • The E-government ratings of Brown University in the US placed South Korea at the top of international e-government ratings from 2006 to 2008 • As of 2006, South Korea had a higher percentage of its Internet users downloading videos from the web than any other nation • NIDA's 2008 Internet survey showed 40.0% of all Internet users over 12 years old were using E-banking services
France	<ul style="list-style-type: none"> • VoIP • IPTV 	<ul style="list-style-type: none"> • Broadband penetration is 28.9% in 2008 which is driven by triple play services and the rapid take-up of VoIP • Europe's largest VoIP base • Leads in IPTV, around 2.9 million households subscribed to an IPTV offer among 16 million broadband subscribers at the end of 2007
UK	<ul style="list-style-type: none"> • BBC's iPlayer 	<ul style="list-style-type: none"> • Broadband penetration is 29.1% in 2008 • In 2008 video traffic accounted for 50% of the total broadband traffic in the UK

Source: OVUM, Paul Budde Communication Pty Ltd., Point Topic, LTD, Value Partners analysis

Some suggestions for policymakers and industry leaders

If both the Chinese government and the telecom operators could jointly strengthen the promotion of application usage, broadband development in China would probably be greatly accelerated.

For the related policymakers and supervisors, we are glad to see that the Ministry of Industry and Information Technology (MIIT) and the State Administration of Radio, Film and TV (SARFT) have made significant efforts to cooperate. However, with our expertise and international perspective, we would suggest that a more open dialogue and sharing of experiences would help China join the group of leading broadband countries.

First of all, an accelerated convergence of three networks – telecoms, Internet and broadcasting – should be considered, in order to promote applications such as IPTV and VoD. To accomplish this convergence, further co-operation between MIIT and SARFT will be required, and both will have to work even more closely together to overcome the challenges of developing the country's broadband network.

At a recent conference held by MIIT, officials announced that the ministry, together with other stakeholders, is currently studying feasible solutions for the trial of convergent networks. It is scheduled to test the convergent communication-broadcasting networks from 2010 to 2012 and the three full-fledged convergent networks from 2013 to 2015. These measures are widely recognised as very positive steps towards the final goal of all three networks converging.

Secondly, the development of applications for Internet content will be advanced if telecom operators and broadcasters create a stimulus for the development of online multimedia content, by furthering existing copyright protection, facilitating co-operation between broadcasters, content developers and telecom operators to create more applications that are attractive to end users, and working to expand online video availability.

Finally, in order to promote E-government, E-education and E-healthcare as a benefit to the public, we may need to develop more solutions and define clear targets and development processes. More E-government development will help citizens become more familiar with such services and encourage their use. An advanced Internet service platform has the potential to transform online learning and job training. It is also critical to invest substantially in the research and development of existing and new telemedicine applications and techniques.

As for telecom operators, they need to offer more application services in the areas of voice-data integration and wired-wireless integration with three main aims: boosting broadband demand and usage; finding a feasible way to co-operate with broadcasters to provide large-scale applications of communication-broadcasting convergence, e.g. IPTV, to boost the market demand for bandwidth; establishing long-term co-operative relationships with content providers to address the end users' demand as well as generate further financial benefits. The recently launched CNTV is an important step that the broadcaster is taking to promote online application usage, although more could be done to enrich the functionalities of the applications.

Mobile broadband is taking off and has the potential to grow fast. It is complementary to fixed broadband: the synergies between the two should be leveraged to accelerate application expansion and usage.

China is investing heavily in 3G, with RMB 450 billion announced by the government in the next two to three years. This leads to great potential for mobile broadband development, such as the 260 million subscribers in 2013, as forecast by ICT research firm Ovum.

Mobile broadband is not a substitute for the fixed version, but is actually a stimulus for it. Compared with fixed broadband, mobile broadband tends to have a speed disadvantage, and therefore it can't replace fixed broadband to enable increasingly bandwidth-hungry applications.

Mobile broadband may add, in fact, further competitive pressure to fixed operators and potentially spur the development of fixed broadband (e.g. by increasing fixed broadband speeds to 5-10 times the mobile broadband speed to create a competitive advantage).

Mobile broadband can be potentially complementary to the fixed one in China's vast rural areas, where no fixed broadband coverage exists, thereby reducing the digital divide. In addition, its implementation costs are lower than for fixed services. Mobile broadband development can also leverage existing mobile network facilities (e.g. towers). China Mobile has very good mobile network coverage in many rural areas and has signed an agreement with the Ministry of Agriculture to reach 98% of rural areas by 2012. Ovum suggests that a mobile-only player could aggressively position mobile broadband as a substitute for fixed broadband, since 32% to 70% of the potential market in China does not have fixed broadband.

Fixed broadband and mobile broadband can be a bundled offer, aiming to spread applications via multiple access terminals and also boost market demand.

Applications such as e-mail, instant messaging and multimedia, for instance, can be extended from fixed broadband to mobile broadband to meet the market demand. Another potential is that FMC solutions – i.e. fixed-mobile convergence, the trend towards seamless connectivity between fixed and mobile networks – of fixed broadband and mobile broadband bundling can be offered by operators to attract more users.

Moreover, an increasing number of devices that will simultaneously exchange symmetric information on the Internet create opportunities for fixed and mobile broadband convergence to provide applications such as surveillance, building control and management, which could also boost overall broadband usage.

What are the priorities for action?

It is time to launch specific initiatives to provide momentum to application expansion. The previously mentioned convergence of three networks (telecoms, Internet and broadcasting) should be accelerated by MIIT and SARFT's further concerted action. The industry also needs creative stimulus for content and application development, as well as a specifically defined implementation path for the creation of E-government, E-education and E-healthcare.

The delivery of high speed broadband requires a framework that includes the definition of the combination of digital technologies – fibre, DSL and mobile – which co-exist in different parts of the country, and the mobile broadband roadmap design that will position itself properly to avoid cannibalising fixed broadband.

China also needs to establish a structured and permanent benchmarking process to monitor the development of broadband.

As for telecom operators, they need to strengthen innovations in application development and establish long-term co-operative relationships with content providers to provide more attractive applications, in order to meet end user demand.

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