Mobile Broadband™

SoftBank

Case study Series
Japan



Land of the Rising Speeds



Japan's fixed-line broadband infrastructure is among the fastest and most extensive in the world, but the country's telecoms companies are still being inundated with demand for Mobile Broadband services.

In fact, Japan today offers a glimpse of a future in which data traffic becomes more important to mobile operators than voice services. Data now accounts for 60% of SoftBank Mobile's service revenues, making the Tokyo-based operator the world's most advanced mobile data player, according to SoftBank's charismatic chairman and CEO Masayoshi Son.

With its data traffic doubling year-on-year and its revenues climbing, SoftBank Mobile, one of Japan's big three mobile operators, is planning to increase its capital spending almost 20% to 500 billion yen (US$6.25 billion) in the year ending March 31st 2012. Although a small percentage of that budget will be spent repairing damage from the massive earthquake which hit north east Japan in March 2011, most of the money will be used to upgrade Softbank's existing networks and roll out Mobile Broadband services in a new spectrum band.

SoftBank Mobile's sales climbed 14% in the year ending March 31, 2011 to 1.944 trillion yen (US$24.36 billion), as its customer base rose 16% to 25.4 million. SoftBank's data ARPU (average revenue per user) climbed 11% to 2,370 yen (US$30) in the quarter ending March 31, boosting its total ARPU to 3,940 yen (US$49).



Harnessing HSPA and HSPA+

SoftBank Mobile already has 122,000 3G base stations across Japan – six times as many base stations as it had in 2006 when Mr. Son's group acquired the business from multinational operator Vodafone. Most of this extensive 3G network has now been upgraded to run at broadband speeds using HSPA technology, enabling SoftBank customers to quickly and easily access web pages, online videos and other multimedia services. In 2011, SoftBank is also rolling out an HSPA+ network across metropolitan areas of Japan, enabling 60% of Japan's population to enjoy faster throughput speeds and more responsive services.

SoftBank is confident that further improvements to its Mobile Broadband networks will further increase usage and revenues. "Because the peak rate of HSPA and HSPA+ is higher, usage is higher," says Yoshihiko Nodera, General Manager, Wireless Technology Development Department, Mobile Network Division of SoftBank. "The traffic is only limited by the handset and network capabilities. If we improve the network, traffic rises and data ARPU, which is the lifeline of mobile operators, can also keep increasing."

SoftBank switched on its first HSPA+ base stations, which can offer theoretical peak downlink speeds of 42 Mbps and uplink speeds of 5.6 Mbps, in February 2011. SoftBank's HSPA+ solution makes use of dual-carrier (sometimes called dual cell) technology, which bonds two conventional carriers together to improve throughput and capacity, and 64QAM modulation technology, which boosts average connection speeds, while making more efficient use of the network operator's available capacity.

"We have an increasing number of HSPA and HSPA+ base stations," says Mr. Nodera. "We are using HSPA+ in the metropolitan areas and big cities. But smartphone users everywhere demand high speeds, so we are also expanding HSPA coverage in other areas."

Mr. Nodera says that the HSPA+ network typically provides SoftBank's customers with connection speeds above 10 Mbps, depending on how congested the cell is and the distance of the device from the base station.

Backhaul isn't a bottleneck, as most of SoftBank's base stations are connected to its core network via Japan's extensive and fast optical-fibre network. Where a fibre link isn't available, SoftBank uses ADSL for backhaul. In the area of Japan hit hardest by the earthquake, SoftBank was forced to use satellite links as a temporary backhaul solution until the fixed-line infrastructure was restored.



Seeking more spectrum

Having built out 3G coverage to 99% of Japan's population, SoftBank Mobile switched off its second-generation network in March 2010, enabling it use its 1500MHz spectrum for HSPA+ services, alongside the globally-harmonised 2100MHz band SoftBank was already using for HSPA services. But the high level of demand for Mobile Broadband in Japan means SoftBank needs more spectrum both to increase capacity and expand coverage. It is now looking to acquire spectrum in the 700MHz to 900MHz range, which is being freed-up by Japan's switchover from analogue to digital television broadcasting.

As radio signals at lower frequencies travel longer distances and are better at penetrating walls, spectrum below 1000MHz is particularly well-suited to providing cost-effective coverage both indoors and outdoors. SoftBank is looking to use some of the former analogue television spectrum to bolster coverage both in rural areas and the heavily-urbanised regions of Japan, in which the concentration of buildings can obstruct radio waves at higher frequencies.

The Japanese Government is scheduled to license the new spectrum at the end of 2011, which would enable SoftBank to launch commercial services in the summer of 2012.

SoftBank is also looking to harness higher frequency spectrum to increase its capacity. Wireless City Planning, which is part of the SoftBank group, has a license to use unpaired spectrum at 2.5GHz and is planning to launch A-XGP services, which are fully compatible with LTE TDD (LTE time division duplex) services, in this band during the second half of 2011. "Where we have a capacity shortage, we will be able to offload traffic on to this network." says Mr. Nodera. Once it has sufficient paired spectrum, Softbank Mobile also plans to launch LTE FDD (frequency division duplex) services.

Rolling out femtocells

In the meantime, SoftBank is expanding coverage and adding capacity through an innovative programme supporting the roll out of HSPA femtocells – very small base stations designed for use indoors. SoftBank offers its customers a free femtocell connected to a free ADSL broadband line on the condition that other SoftBank customers can also use the femtocell. "We are one of the most active femtocell operators in the world," says Mr. Nodera. "The main usage is in the home, but we also put them in indoor public spaces, such as a shopping mall, a café or a pub." Mr. Nodera says the main objective is to improve coverage and increase customer satisfaction.

SoftBank has installed femtocells across Japan. Each femtocell can offer a maximum downlink speed of 14.4 Mbps and a maximum uplink speed of 5.6 Mbps, but again the actual throughput depends on local factors, including the bandwidth available on the fixed line it is connected to. SoftBank is also providing free WiFi routers for customers to use in their homes or offices.

Selling *Ultra Speed* services

Most Japanese homes and businesses have high-speed connections to the Internet, but that hasn't dampened demand for Mobile Broadband services. On the contrary, Mr. Nodera believes one fuels the other. "People have fast fixed lines at home and want to enjoy the same services outside, while on the move," he says. "SoftBank offers both fixed and mobile services and has attractive tariff plans for customers who take both."

Although SoftBank's HSPA+ network is as fast as many fixed-line broadband connections, it doesn't position the service as a fixed-line substitute. Marketed under the brand name *Ultra Speed*, SoftBank promotes HSPA+ devices as offering a superior mobile experience

When a customer walks into a SoftBank store or visits its web site, he or she can choose from scores of HSPA devices, branded *3G High Speed*, and a growing selection of HSPA+ devices, labelled with the *Ultra Speed* branding. In addition to Apple's iPhone and iPad, which SoftBank sells exclusively in Japan, SoftBank's HSPA portfolio encompasses feature phones, smartphones, dongles, tablet computers, netbooks, laptops and even digital photoframes. During 2011, SoftBank plans to expand its *Ultra Speed* portfolio significantly.

SoftBank customers can also connect WiFi-enabled devices, such as a games machine or PC, to its Mobile Broadband network via SoftBank's Pocket WiFi device – a standalone HSPA / WiFi modem that can connect five devices to the Internet simultaneously.

Even before the arrival of the iPhone and other smartphones, the mobile Internet was well-established in Japan and widely-used by everyone from teenagers right through to the elderly. SoftBank Mobile provides its own suite of dedicated mobile Internet services, such as games, transport updates, news and ringtones, under the Yahoo! Keitai brand, aimed at the tens of millions of Japanese people with advanced feature phones, which have large colour displays and web browsers. SoftBank offers a broad selection of data plans, ranging from 390 yen (US$5) to 5,985 yen (US$75) a month, with varying caps on usage and varying degrees of flexibility.

Surging smartphone and tablet sales

The Japanese are now buying smartphones, such as the iPhone and Android-based devices, in very large numbers. Unlike feature phones, smartphones can download sophisticated applications designed specifically for that device. Mr. Nodera says that YouTube, motion pictures, social networking and online gaming are among the many services proving popular with smartphone users.

Apple's iPad is also selling well in Japan among both consumers and business customers, according to Mr. Nodera. SoftBank is encouraging companies to equip sales people with the device, so they can use it to show customers new products and services. "The iPad is a strong weapon," says Mr. Nodera. "Companies are using it to access their intranets and email, as well as for sales support."



SoftBank's position as exclusive distributor of the iPhone and the iPad in Japan has had a significant impact on the operator's business. "We have been adding more subscribers than the other networks for the past couple of years. The Japanese market is saturated, but our market share is increasing," Mr. Nodera says. "On the negative side, we have capacity issues."

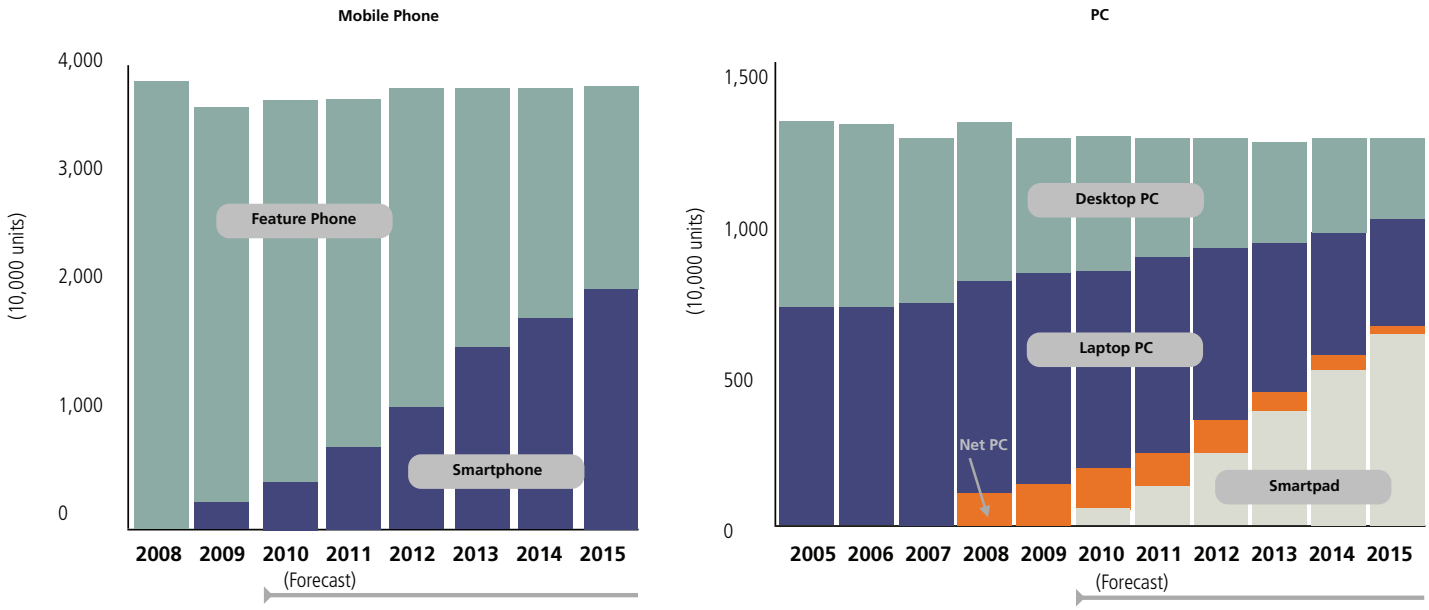
The demand for Mobile Broadband services is so strong that even SoftBank's state of the art network is seeing congestion in some cells during the busiest hours of the day. "In central Tokyo, traffic is very heavy and we use several technologies, such as small cells and cell-splitting, to help us manage that. If a user's consumption goes over a certain threshold, we limit their speed," says Mr. Nodera.

Reinventing data roaming

SoftBank has launched an innovative unlimited, data plan for roamers using handsets or tablets. Subscribers to the plan pay 1,480 yen (US$18.5) a day for unlimited web browsing and email or 2,980 yen (US$37.2) a day if they also want to watch videos. Although the plan requires the roamer to stay on the network of a SoftBank partner when roaming, the predictable flat rates are proving popular, according to Mr. Nodera.

"The unlimited roaming plan is aimed at everyone, especially consumers, who are more sensitive to the charges. We are seeing a lot of demand – most roaming customers use the flat-rate," he says. "With the flat-rate, people are more likely to use roaming services. In the past, they would only have used WiFi in the hotel. But we have made it more predictable and it is more popular." The unlimited data roaming plan can be used in North America, Europe, most of Asia, Oceania, Egypt and the Canary Islands.

Forecast of Smartphone and Smartpad in Japan



Reference: MM Research Institute Ltd (Partly rearranged with SoftBank's forecast)



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