



WIRED TO THE WORLD

Hong Kong now enjoys cutting-edge connectivity thanks to Hutchison Global Crossing's ultra high-speed broadband network.

By Bilal Khan



Tony Chan didn't know how lucky he was. Working for a global investment bank in Hong Kong, he took the bank's speedy Intranet for granted and regularly used videoconferencing to conduct meetings with his office associates. At home, meanwhile, he could use his dedicated broadband line to download music and video from the Internet in a matter of seconds.

All this changed, however, when Chan was transferred to the bank's Chicago branch. Although one of the world's most connected cities, he soon learned that a slow network made videoconferencing impossible, while at his loft apartment the only available Internet connection was a dial-up service that would take over an hour to download a three-minute video clip. For Chan it was a depressing return to yesterday's technology.

This scenario may strike some as fanciful but is firmly rooted in reality. Chicago possesses a telecommunications infrastructure that pales in comparison to that of Hong Kong. The same, furthermore, can be said of London, Milan, Paris, Tokyo and Sydney. Despite their vaunted positions in the vanguard of global business, culture and style, the telecommunications networks of these cities are more 20th century than new millennium. Only New York's Manhattan district comes close to Hong Kong in terms of broadband penetration. The reason for this disparity in technology is largely due to the considerable efforts of Hong Kong's premier telecommunications provider, Hutchison Global Crossing (HGC).

With Hong Kong angling to become Asia's telecommunications hub — a position that many experts see as the Special Administrative Region's ideal role — HGC will undoubtedly be the driver behind its development. The company, formed in 1999 as a joint venture between Hutchison Whampoa Limited and backbone provider Asia Global Crossing (AGC), has set its sights firmly on reaching this target — so much so that CEO Peter Wong considers the issue almost moot.

"If Hutchison Global Crossing continues to develop its network, then Hong Kong will automatically become a hub in telecommunications," Wong says.

UNPARALLELED CONNECTIVITY

The network referred to is the key to the world-beating Internet and network speeds HGC is able to offer business and residential customers alike. Constructed from revolutionary fibre-optic cabling and stretching across the city through 2,000 km of ductwork, it allows the provision of significantly greater bandwidth, which enables the remarkable speeds that Tony Chan so missed when he moved to Chicago. Leveraging on both Hong Kong's geographical compactness and its high Internet penetration rates, HGC has been able to construct a network that is the envy of cities around the globe, where traditional copper wiring places severe constraints on network speeds.

"The reason why we're leading the world in this respect, is because of Hong Kong's unique topology," says Wong. "As it is a very small, compact place, we have been able to build a fully fibre-optic network relatively easily, compared with North America where you would need to lay miles and miles of fibre."

HGC's Broadband service is the most prominent beneficiary of fibre-optic technology. Offering Internet transmission speeds of 10 Mbps for both uploading and downloading data, HGC's service is significantly faster than the Hong Kong industry standard of 1.5 Mbps. Also, importantly, this speed is dedicated to each line, meaning that each household or business customer is guaranteed a speed of 10 Mbps. (In the past, broadband providers have been able to provide speeds of up to 10 Mbps, but with all the customers in each building sharing the service. Thus, if a building had two customers, transmission speed could drop to 5 Mbps each, and so on.)

Once you have experienced this kind of dedicated speed, it is difficult to return to a slower broadband offering or, worse, a plodding 56K dial-up service. The sheer range of applications is particularly attractive: The service is always on and extremely user-friendly — requiring only an Ethernet card and telephone socket to connect — and both residential and business users can take advantage of a number of services that are only realistically accessible with a HGC broadband line.



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KILLER APPLICATIONS

For residential customers, the promise of digital media and interactive television are the key drivers behind broadband demand. Users can watch streaming video and download music tracks in a matter of seconds (a practice that fuelled the rise of websites such as Napster and Broadcast.com). Online gaming is another popular pastime that relies on high-speed broadband access, and Video on Demand (VoD) looks set to revolutionise

entertainment in the coming decade. Uploading sophisticated content on to the Internet, meanwhile, is becoming increasingly commonplace, and HGC's 10 Mbps-upload speed provides users with the ability to transmit complex documents, pictures and video in seconds.

HGC's Peter Wong is quick to point out that entertainment services are only one aspect of broadband's attractiveness. One "killer application", Wong says, is the Hutchison Global Crossing broadband school project, in which a number of schools have been provided with broadband connectivity at discounted rates (*see sidebar, below*). The advantages for both teach-

SPEEDS OF 10 MBPS FOR EACH CUSTOMER

ers and students are eye opening: using a high-speed school Intranet, students can send movie projects or music recitals, and engage in distance and remote learning courses.

For business users, high-speed Internet connectivity is just one aspect of the advantages HGC's fibre-optic network can deliver to the office. Wong draws an unusual analogy to illustrate the value businesses can derive from increased bandwidth.

"Bandwidth is just like opium," he says. "The more you have, the more you want and need it."

From such mundane tasks as storing e-mail to advanced applications like videoconferencing and multi-

LESSONS FROM SCHOOL

At Shatin Government Secondary School, Assistant Headmaster Allan Chan Yau is a great believer in developing his students' creativity. Unfortunately, for years he had been stymied by poor resources. Things began to change three years ago when the school was chosen to spearhead a Government pilot scheme to bring computers, the Internet and students together to enhance education in Hong Kong. With increased funding, Chan filled four labs with computer workstations. But his dream of seeing students learn in a fully networked interactive environment remained elusive, with inadequate bandwidth placing severe constraints on network speeds.

Enter Hutchison Global Crossing (HGC). Several months ago, the company started providing broadband connectivity to schools via its pioneering fibre-optic network. By offering schools substantial discounts on their 10 Mbps-bidirectional speeds, HGC has effectively revolutionised teaching and learning at a number of pilot scheme schools.

These days Chan is a much happier man. The increased bandwidth has opened up a whole new world of project-based learning applications for his students. For example, in addition to researching the subject and downloading images from the Internet, students now use one of the school's digital video cameras to shoot video clips for their projects. Once they are finished they can present the project to teachers and their peers by uploading it onto the school Intranet, utilising HGC's superior broadband speeds. Chan believes that this kind of multimedia technology is key to student development.

"We teach students how to make films because we believe it is a very effective tool to develop their potential creativity," he says. In addition, Chan has found that English language skills in his school are improving. With students becoming increasingly conversant in making complex, colourful multimedia presentations to teachers and fellow students alike, their confidence and communication skills have increased.

Peter Wong, CEO of Hutchison Global Crossing, believes that educational initiatives like this are a "killer application" for the

media advertisements, HGC's fibre-optic technology provides the necessary medium to deliver the requisite levels of bandwidth to corporate customers. Consequently, HGC's broadband network supports a wide range of high-speed data services for wholesale customers such as mobile operators and Internet Service Providers. These dedicated lines are also leased by large corporations for their private communication networks, and provide the highest bandwidth levels currently available in Hong Kong.

China to be directly routed to Hong Kong, from where in turn it can be sent through Asia Global Crossing's undersea cables to the rest of the world.

As a result of this extensive, ultramodern network, HGC is able to provide customers with a universal international broadband network through a variety of services such as International Private Leased Circuits (IPLCs) and International IP (Internet Protocol) transport services. An invaluable resource, IPLCs have proved particularly popular with Taiwanese businesses operating in China. By ordering IPLCs from HGC, these businesses can route their private communication networks through Hong Kong, then on to China Telecom's network to reach their

PROVIDE THE ABILITY TO TRANSMIT COMPLEX DOCUMENTS, PICTURES AND VIDEO IN SECONDS.

GLOBAL REACH

In addition to local data transport services, HGC provides business customers with international bandwidth through its undersea cable network and unique links to China Telecom. After being given the go-ahead to provide these services in January 2000, the company has connected its Hong Kong fibre-optic network to China Telecom's Mainland telecommunications network through the Guangzhou-Shenzhen-Hong Kong SDH (Synchronous Digital Hierarchy) ring. This enables data traffic from

factories in southern China. With this facility, they can control their inventories online using HGC's superior bandwidth.

"There is a lot of latent demand for international services from China and we are well positioned to serve that demand," says Wong. "We have a direct and reliable connection with China."

The key to HGC's ability to provide a full range of international bandwidth services is the East Asia Crossing submarine cable provided by Asia Global Crossing (*see sidebar, p.12*). This cable, which stretches from the USA to Hong Kong via Japan, landed in Tseung Kwan O on January 10, 2001, and allows HGC to offer, in effect, a one-stop service



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company's innovative fibre-optic technology.

"We are into something that is very cutting edge," he enthuses. "If we are doing it right then we are not just leaders in Hong Kong but possibly in the region and the rest of the world."

In the future, when transmission speeds increase even further, the possibilities appear endless. However, Chan does not feel that a virtual classroom, where everyone learns from home, would be an ideal development. "Personal interaction is still vital if children are to grow up healthy," he says. "We must use technology opti-

mally, to produce the best results for students, teachers and parents."

Teachers, for their part, have had to learn a whole new set of skills; they now teach in schools that are worlds apart from those they attended as children. The Government scheme provides funding for this, and Shatin Government Secondary School now boasts a number of teachers who are either at an intermediate or advanced

level of Information Technology (IT) competence.

The scheme has attracted a great deal of interest from other schools in Hong Kong, with many visiting Chan's school to learn more about his IT programme. The eventual adoption of broadband technology by schools, Wong believes, has the potential to effect some significant changes to the regular debate regarding man and machine.

"In the past we have always viewed computers according to man-to-machine interaction," says Wong. "Now we can use technology as a tool for human-to-human interaction."

for customers looking for international bandwidth.

"We have formed a seamless, end-to-end connection with Asia Global Crossing," says Wong of HGC's parent company. "Seamless because we have a very strict and tight service support agreement with AGC, so the customer receives a single point of support rather than having to deal with multiple providers."

Reaching this stage has not been easy for HGC and illustrates the difficulties incumbent in rolling out a fully fibre-optic network. The process is time-consuming and prohibitively expensive, with only a handful of companies worldwide able to surmount these barriers to market entry.

INVESTING IN INFRASTRUCTURE

Development of the network began in 1995, when the Hong Kong Government deregulated the telecommuni-

cations market and awarded a Fixed Network Telecommunications Services (FNTS) licence to Hutchison. The company had already decided on its long-term strategy and eschewed slower alternatives in order to build a fully fibre-optic network across the city.

The decision was not taken lightly. Laying new fibre-optic cabling is considerably more expensive than tapping in to existing copper or coaxial cable alternatives. But Hutchison believed that only fibre-optic technology would stand the test of time and provide the kind of bandwidth that is now regularly in demand. In addition to cost considerations, a number of logistical difficulties have had to be overcome.

"Obviously there were a lot of challenges along the way," says Wong. "That's why it has taken a long time to lay the network, over five years so far."

BANDWIDTH IS JUST LIKE OPIUM, THE MORE YOU HAVE, THE MORE YOU WANT AND NEED IT.



SPANNING THE GLOBE

If you build it, they will come. Asia Global Crossing's (AGC) simple strategy has revolutionised the world of fibre-

optic networking, and brings substantial benefits to Hutchison Global Crossing.

To begin with, the private company has access to the largest telecommunications network in the world. Backed by major shareholder US-based Global Crossing, AGC has rolled out submarine cables throughout Asia as part of Global Crossing's 160,000-km network. Global Crossing, in fact, was the first company to build its own cable, and its foresight has proved particularly prescient.

Created in 1999 as a partnership between Global Crossing, Microsoft and Softbank, AGC was formed to meet the rapidly growing demand for new communications capacity and services in Asia. The company has built the first pan-Asian network, connecting countries in the region to each other and the rest of the world. Upon completion, the AGC network will consist of more than 40,000 km of submarine cable, providing state-of-the-art broadband communications services in East

Asian countries, including Japan, Taiwan and Korea. Additionally, the company is ready to connect its network to China, as and when regulations permit.

The key to the company's growth in the region is strong partnerships with quality local providers. In this respect, AGC's Vice President for Greater China, Alex Ng, is particularly happy with his company's association with Hutchison.

"Hutchison is the ideal partner for us," says Ng. "Hutchison shares the same standards of service quality and we share a common vision about how we will develop telecom growth in Asia."

In other Asian countries, AGC has teamed with companies such as the Marubeni, DACOM and Singapore Technologies to deliver its "next-level networks" to local markets. Most recently, in partnership with Microelectronics Technology, it celebrated the landing on July 25 of its subsea cable system in Taiwan. The synergies that its participation in these ventures produce are particularly attractive, and underline its importance to HGC. In addition to the East Asia Crossing, which links Hong Kong to Japan and on to the United States via the Pacific Crossing, the company also brings a well-established reputation of providing services to blue-chip multinational clients. These include Bear Stearns, the UK Government and Swift — an industry-owned cooperative that supplies software and services to 7,000 financial institutions.

Ng sees Hong Kong as the key regional market, pointing out its ideal geographic location. "Hong Kong is the telecommunications hub for Asia," he says. "It is the logical choice for connections to both North and Southeast Asia."

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Those challenges might have broken the resolve of a less established company, but Hutchison has demonstrated admirable perseverance. The entire operation proceeded through three distinct stages, each presenting its own set of obstacles.

Stage one saw the building of a fibre-optic cable backbone, connecting all the major areas of Hong Kong, including the crucial landing points for submarine cables and border inter-

connection points. The construction of this backbone required permission from various government departments. For example, a permit is required to dig up a road, and once a permit has been granted the road in question cannot be opened up again for the same purpose for a restrictive time period. For a small road, typically, this period is only one or two years, but for major roads it can be considerably longer.

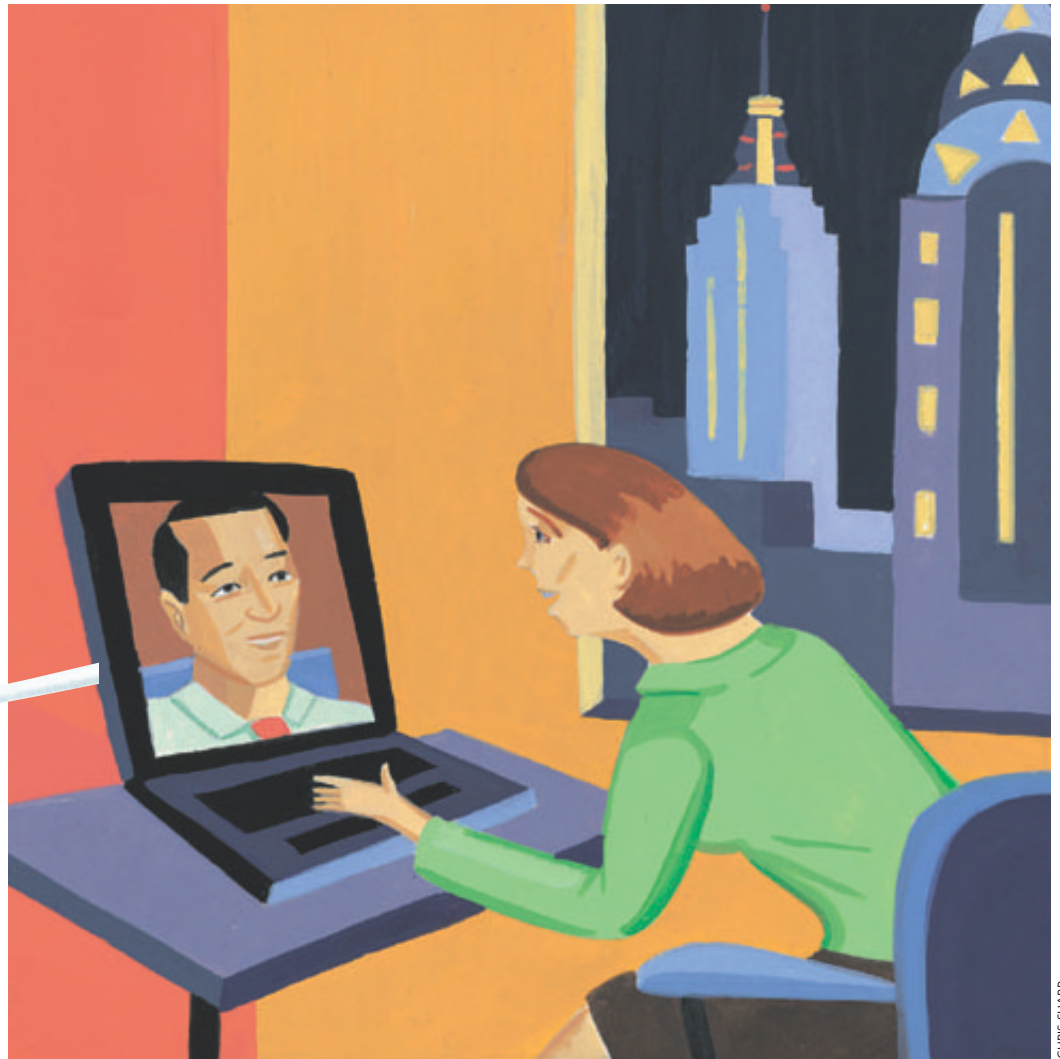
“For some routes you have a once-in-a-lifetime chance,” confirms Wong.

Stage two was the rollout of the access network connecting the backbone to major residential and business areas. In this respect, HGC has been helped by the relative lack of delineation that exists between residential and business areas in Hong Kong.

The third stage was to construct the in-house infrastructure in the buildings themselves. This has been a particularly delicate operation, due largely to space constraints — the “telecom room” in most Hong Kong buildings is, typically, no more than a square metre and already houses the incumbent’s equipment.

“You need to hang your very delicate equipment on the walls or ceilings — it’s a major, very complex project,” says Wong.

Connecting building floors to the telecom room poses an additional challenge. Wires must be routed through the building ducts, known as risers, and, again, space is very limited. The whole process, consequently, has been complicated and time-consuming, and HGC is only now beginning to reap the rewards of its exhaustive long-term planning.



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FUTURE PROSPECTS

The operation received a major boost in 2000, when Hutchison partnered with Asia Global Crossing, resulting in a 50-50 joint venture: Hutchison Global Crossing. With AGC’s international infrastructure and technical expertise bringing immediate benefits to the company, Peter Wong is now understandably confident about its prospects. He notes that HGC’s impressive network will be able to deal with increased bandwidth as and when the technology becomes available, and he has good reason to feel secure about a positive market reception.

“Our intention is to cover half of Hong Kong’s population within the next few years,” he states. “There are numerous examples from overseas that show how long it can take the second operator to penetrate the market. We’re very happy with the progress we have made, and with our market share.”

HGC’s bankers appear to share Wong’s confidence. The company recently enjoyed a very positive response in securing a HK\$4.4 billion (approximately US\$564 million) loan to fund its infrastructure expansion plans.

As Peter Wong succinctly puts it, for Hutchison Global Crossing, “the future looks very good indeed.”

