



## Symmetric 100Mbps and 1Gps Mass Residential Broadband Services with Cisco's Metro Ethernet IP and Optical Network Solution

### EXECUTIVE SUMMARY

Hong Kong Broadband Network Limited ("HKBN"), a wholly-owned subsidiary of City Telecom (HK) Limited, is a leading Fixed Telecommunications Network Service ("FTNS") provider in Hong Kong. The company has been aggressively developing its end-to-end network infrastructure since it was granted a FTNS license in 2000. Building on Cisco's Metro Ethernet IP and Optical Network Solution, HKBN is dedicated to a "Multi-Play" strategy: broadband Internet access, local telephony, IP-TV and corporate data services, over a single all-IP network.

HKBN recently launched its 100Mbps broadband service and by 2Q 2005, will release its 1Gbps (1000Mbps) service. HKBN's 100Mbps service is the first of its kind in Hong Kong, introducing enterprise-class broadband access to the mass residential market. The 1Gbps service will be amongst the world's first residential broadband services at such high speeds. Overtime, HKBN expects to offer 100Mbps as its standard service, supplemented by the 1Gbps service as a premium flagship while its existing 10Mbps service will be positioned as entry level service.

### THE BUSINESS CHALLENGE

Hong Kong is one the world's most liberal and fiercely competitive fixed telecom network service markets with no limit on the number of facilities-based licenses. To date, there are nine licensed local fixed telecom network service operators. As of end 2003, Hong Kong's broadband penetration is the second highest in the world at 53% and there are at least five active facilities-based broadband service providers, including HKBN. To succeed in this environment, HKBN needed to offer both value and bandwidth benefits to the market place.

While HKBN has already established a strong market presence with its existing symmetric 10Mbps service, securing 200,000 subscribers or 16% market share, its recent 100Mbps service launch is a major breakthrough. HKBN's symmetric 100Mbps service is 16x and 155x faster respectively than the downstream and upstream speeds available from current ADSL implementation in Hong Kong.

### THE SOLUTION

The company decided to invest in Cisco's Metro Ethernet IP Network in 2000 and Cisco's Optical Network Solution in 2002 with a view to offering multiple services over a single all-IP network.

"To cut through the fierce competition, HKBN required more than just a me-too telecommunications infrastructure. We needed an advanced, reliable yet cost effective network to ensure smooth and uninterrupted services at a mass market price point," said Mr Ricky Wong, Chairman and co-founder.

"We researched various different options, and it became clear that Cisco's Metro Ethernet IP and Optical Network Solution was the one that best served all our needs," continued Mr Wong.

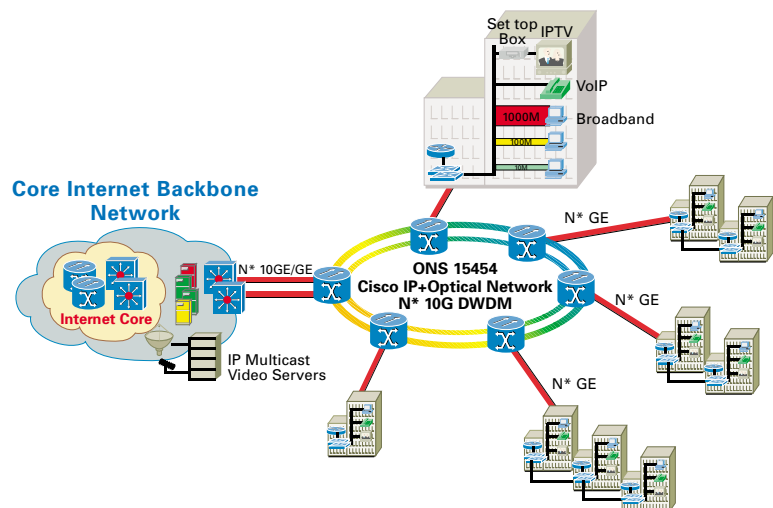


*"In Hong Kong, we have effectively created a Reverse Digital Gap, whereby the mass market on HKBN's network coverage now enjoys superior value and choice over other consumers," said Mr Ricky Wong, Chairman and co-founder of HKBN.*

Within buildings, HKBN chose Cisco's Metro Ethernet IP, which includes installing over 10,000 Cisco Catalyst 2900 LAN Switches and over 800 Cisco Routers. These LAN Switches are housed in a specially designed cabinet with power redundancy located in the MDF Rooms of the buildings. Category 5e copper cables are wired from the cabinet to the homes of the targeted residential customers, providing an end-to-end solution.

Between the buildings, HKBN deployed Fiber-To-The-Building (FTTB) using Cisco ONS15454 Multi Service Transport Platform (MSTP) as the optical backbone core and Cisco Catalyst 4507R Series Switches. The HKBN's optical backbone can support up to 64 Tbps. At least 90% of HKBN's total homes pass is expected to be serviced by its self-owned fiber by mid 2005.

#### ***Hong Kong Broadband FTTB/Metro Ethernet Network Architecture***



As of Dec 2004, HKBN has established end-to-end, full vertical and horizontal broadband coverage to 3,100 residential and 600 commercial buildings, reaching 1.2 million homes pass, with committed expansion plans to 1.8 million homes pass, which is over 80% of total homes in Hong Kong. Despite its relatively late entrance into the market, HKBN has become the largest alternative end-to-end residential broadband network in Hong Kong.



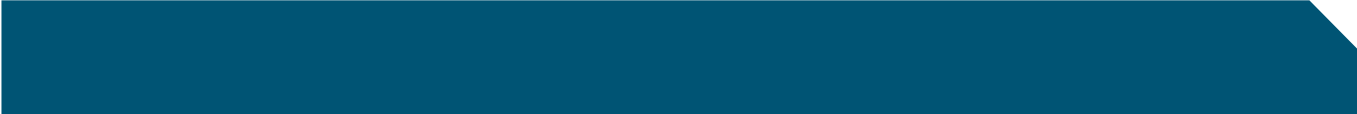
## THE BENEFITS

HKBN launched the 100Mbps service in late 2004, and targets to release its symmetric 1Gbps service by 2Q 2005. Similar to the 100Mbps service, the 1Gbps service will be delivered through HKBN's existing in-building Category 5e copper cables, which avoids the need to build additional fiber within the buildings. As HKBN's Metro Ethernet is capable of 10/100/1000Mbps progression path, only minimum additional investment is required for deploying the ground breaking 1Gbps service.

Hong Kong is a densely populated city characterized by very compact high-rise buildings. It provides a perfect environment for deploying Metro Ethernet IP and Optical Network Solution in a cost efficient manner. Thanks to the scalable Cisco Metro optical pipeline, HKBN can now leverage the same Cisco network used to deliver existing services to rollout the new 100Mbps and 1Gbps broadband services with minimum additional investment. Overall cost of HKBN's core Metro Ethernet IP and Optical Network Solution has been contained to approximately US\$130 per home pass - a fraction of comparable bandwidth networks around the world.

Commenting on the scalability and performance of the Cisco network, Mr Wong said, "The 100Mbps and 1Gbps services showcase the inherent bandwidth and cost advantages of HKBN's next-generation network over legacy platforms -- we are fully satisfied with the results."

By offering the first residential 100Mbps access in Hong Kong, HKBN plans to expand its customer base and fortify its leadership in the competitive broadband market. HKBN is confident that the service will be picked up at a rapid rate by upgrading its existing customer base of 200,000 subscriptions from entry level 10Mbps broadband service to 100Mbps, as well as targeting existing users from other platforms. The new 100Mbps and 1Gbps services are expected to translate into higher average revenue per user, as well as lower acquisition and retention costs.



Users are able to upgrade their existing 10Mbps broadband services to 100Mbps via web site registration or by simply calling HKBN's service hotline and the upgrade can be effective almost real time. HKBN's staff is not required to enter the customer premise and there is no need to change configurations on the computer.

## **THE FUTURE**

The rollout of HKBN's state-of-the-art broadband connection makes Hong Kong a standout in the global telecommunication arena. In the network age, the Internet is where knowledge and power integrates. Not only can enterprises enhance their productivity through the networked world, residential users can also learn, work and play individually or collaboratively over the web. The sophisticated home networking infrastructure strengthens Hong Kong's competitive position in the knowledge-based economy.

With its strong business presence in Hong Kong, combined with Cisco's world-class networking technology, HKBN is poised to build an Internet Autobahn in the upcoming years - a cyber freeway with no effective speed limit.

"With the soaring growth of multimedia and interactive content spanning different genres of video, voice and data, consumers are demanding higher and symmetric bandwidth to meet their appetite for advanced digital entertainment exchange. It will not be long for the 100Mbps and 1Gbps services to become the mainstream of the local fixed telecom network market," concluded Mr Wong. "The flexibility and superiority of Cisco solutions has laid a solid foundation for our future growth. Together we are building a cyber-freeway, where the only limitation will be the processing speed of the users' machines."