

SWITCHING TO BETTER TV

CISCO'S IP AND OPTICAL SOLUTION EMPOWERS HONG KONG BROADBAND NETWORK TO PROVIDE HIGH-TECH INTERACTIVE PAY-TV.

Hong Kong Broadband Network Limited (HKBN) is a leading Fixed Telecommunications Network Service (FTNS) Provider in Hong Kong. It is a subsidiary of City Telecom (HK) Limited, which is listed on both the Hong Kong Stock Exchange and Nasdaq in the US.

Today, Hong Kong's telecommunications market is one of the most open markets in the world and HKBN is one of the nine companies licensed to operate a local wireline-based FTNS.

To compete in this market, HKBN's revenue strategy is based on the delivery of three key services: broadband Internet access, telephony and Pay-TV services. HKBN needed outstanding networking solutions from trusted partners to develop a highly resilient, integrated and scalable infrastructure. The Company decided to invest in Cisco's Metro Ethernet IP Network and Optical Networking Solution.

THE CHALLENGE

HKBN NEEDED BETTER NETWORK INFRASTRUCTURE TO PROVIDE PAY-TV SERVICE TO CUSTOMERS.

Hong Kong is one of the most connected places in the world. There are about 4 million exchange lines in Hong Kong and the telephone density is 56 lines per 100 people, placing Hong Kong among the highest in the world.

To execute its stated strategy, HKBN knew they needed to invest in a state-of-the-art network infrastructure. Mr Ricky Wong, Chairman of HKBN, explained. "We needed a modern, robust and scalable network that could easily handle voice, video and data. Cost was a major factor, given the tough market conditions. We researched all the different options, and it was quickly clear that Cisco Metro Ethernet IP solution was the only one that really answered all our needs."

Work began on implementing the extensive Metro Ethernet IP network in September 2001, which called for the installation of over 10,000 Cisco Catalyst Series Switches and over 800 Cisco Routers. By June 2002, HKBN had made a splash on the global scene by installing the world's largest Metro Ethernet IP network, covering 1.2 million Home Passes in over 2,500 buildings, representing 60 percent of all Hong Kong households.

HKBN first rolled out its broadband access service in 2000 and its telephony

service in 2002. Because of these services, for the financial year 2003, HKBN was able to report a 183 percent increase in profit over the year before. Turnover had increased 13 percent and the gross profit margin increased to 75 percent.

Having delivered on the first two of its revenue streams, HKBN had to deliver the third part of its triple-play strategy: Pay-TV service. As HKBN did not own its own optical core, it had to lease circuits from other telecommunications operators to supplement its network. The Local Multipoint Distribution Services (LMDS) network required more bandwidth to deliver quality carrier class services.

"We knew that pay-TV would be vital for our success, and the sooner we got to market, the better," said Mr Wong. "We were faced with a difficult decision. We had to either make do with leased circuits, or upgrade our network and buy an optical core."

"When we factored in the likelihood of our introducing new services in the future, we knew we would definitely need more bandwidth. So the Company decided to invest in building our own network with an optical core."



MR RICKY WONG,
CHAIRMAN OF HKBN



THIS IS THE POWER OF THE NETWORK. NOW.



THE SOLUTION

A CISCO IP AND OPTICAL SOLUTION OFFERED HKBN AN OPTICAL CORE THAT PROVIDES BROADCAST-CLASS SERVICE.

Since Cisco had delivered HKBN's Metro Ethernet solution, HKBN asked Cisco to propose a solution for an optical core. At the same time, HKBN also examined options from other vendors.

"HKBN needed a reliable network to ensure smooth and uninterrupted services. Apart from this, cost was important as it directly impacts on our tariffs. We needed an advanced yet cost-effective technology," said Mr Wong.

In a study comparing Cisco's next-generation optical core solutions with legacy SDH/SONET solutions, Cisco's optical core solutions showed a three-year cumulative operating expenditure saving of 49 percent and a three-year cumulative capital expenditure saving of 39 percent. Cisco's optical core solution's support for Resilient Packet Ring topology also meant HKBN would enjoy double the bandwidth.

In addition, the capacity available to HKBN from using an optical core allows it to over-subscribe its bandwidth allocation while ensuring quality of service during periods of heavy traffic congestion from increased customer traffic, or circuit or equipment failure.

HKBN selected a solution which included the Cisco ONS 15454 Multi Service Transport Platform (MSTP) as the optical backbone core and Cisco Catalyst 4507R Series Switches.

According to Mr Sam Leung, the Technical Director at HKBN, Cisco's solution was also technically superior to the others. "Cisco's ONS dense wavelength division multiplexing (DWDM) platform is the only one available in the market that can offer HKBN all the optical legacy services to support our future revenue growth. At the same time, it is able to offer Layer 2

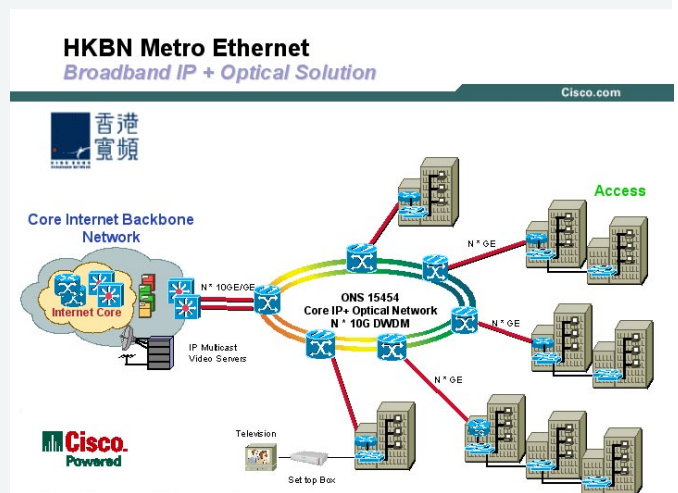
and 3 IP Services on the same platform using Cisco's industry-leading RPR-ready (Resilient Packet Ring) ML (Multi-Layer) functionalities, a feature we very much wanted."

Apart from this, the Cisco ONS 15454 MSTP solution offers efficient protection and restoration schemes that span all layers of the network. The platform also simplifies the delivery of new services such as Optical Virtual Private Networks (VPN), wavelength leasing, and bandwidth exchange.

HKBN SELECTED THE CISCO IP AND OPTICAL SOLUTION TO PROVIDE A COST-EFFECTIVE PLATFORM THAT WOULD DELIVER RELIABLE AND HIGHLY AVAILABLE SERVICES.

Because HKBN is offering data, voice and video services over the same pipe, it is critical that the network is able to prioritise the different types of traffic. This is achieved using Cisco Catalyst Series Switches. The Cisco Catalyst Series family of switches offers wire-speed, multilayer switching with integrated resiliency, control and intelligent services, including granular Quality of Service, predictable performance, advanced security, and comprehensive management for converged network deployments. For example, the Cisco Catalyst 4507R Series deployed by HKBN has a seven-slot chassis and is redundant Supervisor Engine capable.

Implementation for the optical core began in late 2003 for 11 nodes and was handled by Macroview Telecom, the Cisco System Integrator Partner, supported by Professional Services from the Cisco Customer Advocacy Organisation.



THE RESULTS

INNOVATIVE PAY-TV SERVICE MADE POSSIBLE BY CISCO IP AND OPTICAL NETWORK. HKBN BENEFITS FROM A FUTURE-PROOF NETWORK THAT PROTECTS ITS LEGACY INVESTMENTS.

Like its earlier Metro Ethernet rollout, HKBN's optical network was implemented quickly and smoothly and the Pay-TV service was launched in August 2003.

"The Cisco optical network solution means that we can now offer broadcast-class service with its higher and more flexible bandwidth. We no longer have to lease expensive circuits from our competitors. Plus it enables us to offer Pay-TV as well as IP and legacy services over the same infrastructure," said Mr Leung.

"Our decision was made easier as Cisco clearly demonstrated the business case for investing in their optical network solution. The savings we will enjoy over the next three years in operating and capital expenditure more than make up for our investment in the Cisco solution."

**"THE FLEXIBILITY AND TECHNOLOGICAL SUPERIORITY OF CISCO'S SOLUTIONS HAS LAID A SOLID PLATFORM FOR OUR FUTURE GROWTH."
RICKY WONG, CHAIRMAN, HKBN**

The HKBN Pay-TV service now has 33 TV channels, including a 24-hour news channel, movie channels, EUROSPORTNEWS, CCTV 4, CCTV 9, cartoon channels, a channel on Chinese Opera as well as a tourism information channel. And this is just the beginning,

as the network actually allows HKBN to deliver up to 200 channels with DVD-quality video.

Because HKBN is running IP over the optical core, it can offer a host of services that most Pay-TV operators cannot. For example, HKBN's Pay-TV service offers another 11 interactive channels that allow its customers to send and receive emails and mobile short messages, to get live stock quotes, to do online shopping and play TV games. It has also introduced a unique tuition channel which allows customers to answer questions on HKBN's TV platform and view their ranking among other players.

Mr Wong explained, "The launch of the Pay-TV service is very important to us. We have been exploring the potential of interactive media on TV over our existing infrastructure, and the launch is the culmination of that investment. It also symbolises a significant step forward for HKBN as we transform HKBN into a comprehensive telecommunications operator and become an essential participant in the industry."

"The flexibility and technical features of Cisco's solutions have been invaluable. We have an enormous amount of bandwidth for the very latest technology, and yet we are able to keep our costs in check. It is possible for us to introduce a range of new services on the same network platform, and that means we can expand our business in different fields, strengthening our dominance in the market."

HKBN is expecting Pay-TV to provide revenue contribution in a few years' time. To generate additional revenue, HKBN plans to use its optical core platform to provide other high-quality and cost-effective services, and is actively looking into the possibility of other new services.

THE PARTNERSHIP

CISCO AND HKBN HAVE A LONG-TERM, STRATEGIC RELATIONSHIP.

The rollout of the optical core is progressing well and is likely to be completed ahead of schedule. HKBN has been very pleased with the service from Cisco and its partners.

"Considering the size of the project, and how much we were pushing the team, things are going smoothly," said Mr Wong.

He added, "We have a long-term partnership with Cisco which began with the use of their products in the provision of our IDD and data services. We have been careful to consider all vendors, but we keep returning to Cisco for our solutions because Cisco understands us. The customer service has been great and both the Cisco sales and technical teams have been supportive and helpful."

HKBN's belief that innovative solutions are necessary for it to become an all-rounded fixed telecom network operator has reinforced the case for investing in Cisco solutions.

"We need to be able to do everything, and to do it very, very well. Cisco's networking solutions enable us to achieve that," he explained. "We are extremely likely to use Cisco solution again because their solutions are simple to deploy, making it easy to integrate with our existing infrastructure. Cisco is aware that we need to stay on the forefront to compete, so they've been active in helping us look ahead. It's a good relationship."

HKBN HAS CONFIDENCE IN CISCO'S ABILITY TO DELIVER PRODUCTS AND SERVICES TO SUPPORT THE COMPANY'S CORPORATE GOALS.



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