

The Malaysian Internet Exchange or MyIX for short is just over two years old and was conceived to efficiently route local Internet traffic by keeping it within local networks. Ahmad Razif Ramli provides an update on where MyIX is at today.

The Malaysian Internet Exchange or MyIX (www.myix.gov.my) for short was launched on 15 December, 2006 and allows Internet traffic between users and servers on more than 20 different Internet service providers' (ISPs) networks within Malaysia to flow between each other without having to pass through international gateways.

The intention is to reduce the number of hops and latencies when people in Malaysia access locally hosted websites and to reduce the massive costs of locally destined traffic routing through international links.

This has greatly helped reduced the outflow of foreign exchange in terms of charges for the use of expensive bandwidth on international networks, as well as response times.

The Rationale

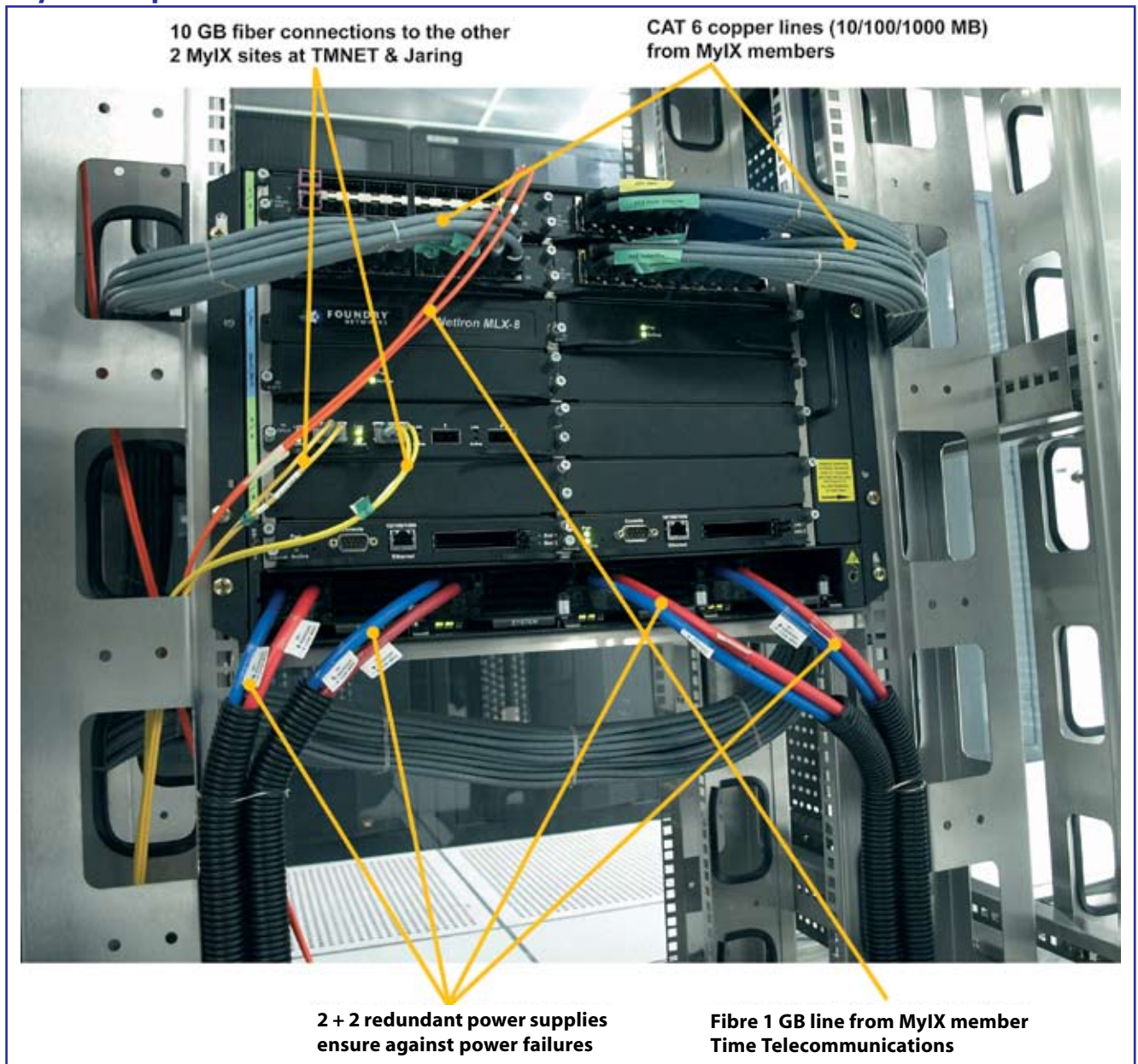
In the early days of the Internet in Malaysia or around the mid-1990s, an e-mail sent from a Jaring account holder to a TMNet address within Malaysia had to go all the way to the United States.

Also, if an Internet user in Malaysia on one ISP accessed a web server connected to another Malaysian ISP's network, the data transactions between users and server had to pass through the nearest server overseas before reaching each other, which not only resulted in delays but also high costs to both ISPs.

With MyIX, the edge routers of local ISPs are now no more than four milliseconds away from each other.

While users might not enjoy a drastic drop in Internet charges, they are experiencing faster browsing when accessing local websites because of the reduced latencies.

MyIX setup



That enhances the broadband experience of users and at the same time attract international content providers to host their content in the country.

While announcing MyIX on September 14, 2006, the then Minister of Energy, Water and Communications Tun Dr Lim Keng Yaik said that MyIX would reduce local ISPs' costs for routing local Internet traffic and thus save the country some RM2.36bil in foreign exchange outflow over five years.

With 70% of Internet traffic going out from Malaysia, it makes sense for content providers to establish servers in Malaysia. Tun Dr. Lim made it clear that MyIX was part of the MyICMS 886 strategy to propel the country to becoming a respectable Internet hub in the region.

After its launch, MyIX took a record three months from conceptualization to be up and running.

MyIX

When Tun Dr. Lim announced MyIX, he said it would be a neutral IX and that the Malaysian Communications and

Multimedia Commission (SKMM), the communications regulator, would be the body in charge of it.

MyIX's neutrality is ensured by the fact that it is operated by a consortium of ISPs. Its 20 founding members are AIMS, Airzed, Bizsurf, Clearcomm, CNX, DiGi, Extreme BB, FreeNet, Heitech Padu, Izzinet, Jaring, Maxis, MyKris, Nasioncom, NTT MSC, Packet One, Pan Eagle, TimeNet, TMNet and VDSL.

A major milestone for MyIX in July 2008 was the registration of the Persatuan Pengendali Internet Selangor & Wilayah Persekutuan (Association of Internet Operators of Selangor and the Federal Territory) with the Registrar of Societies, with its members comprised of the heads of each MyIX member organisation.

Now that it is registered, the consortium can consider new applicants. These applicants will be scrutinised for their nature of business as the consortium will only accept local ISPs with a local Autonomous System (AS) number as members.



Entrance to AIMS



The server rack that houses the MyIX exchange

“AS numbers” are globally unique identifiers for autonomous systems, which is a group of Internet protocol (IP) networks having a single clearly defined routing policy, run by one or more network operators.

Currently there are 22 members peered with each other and 17 of them are hosted by AIMS at MyIX at Menara Aik Hua near the KL Tower. Maxis and Jaring are hosted by Jaring at MyIX in Technology Park Malaysia, while TMNet and Celcom are hosted by Telekom Malaysia TM at MyIX-NCC which is located at the headquarters of Keretapi Tanah Melayu Bhd (Malaysian Railway).

Infrastructures are funded by seed money provided by SKMM and there are three reference sites. AIMS is the control centre of MyIX. Another site is at Fiberail which is located at the headquarters of Keretapi Tanah Melayu Bhd (Malaysian Railway) and which is operated by Telekom Malaysia. The third site is at Jaring in Cyberjaya. All 3 sites are connected via optic fiber. Each site has equipment in over 1000 square feet of space each.

Because of the technology used, these machines do not need much attention. All they need is a low temperature clean-room. Nevertheless, network performance is managed through a Network Management System Platform by engineers on a round the clock basis. These engineers are tasked with monitoring and reporting performance levels of the MyIX. They troubleshoot issues that arise and more importantly, pre-empt potential problems. These are usually in the nature of links that are down or faulty port connections.

Two Years On

2007 was the year MyIX attained maturity, since its infrastructure had to go through a proof-of-concept, including its configuration, peering technology and so on. Many of the finer points related to Internet Exchanges were not generally known about by local ISPs and SKMM had to educate their engineers.

However, it greatly helped that Jaring and TM engineers had some experience, which when coupled with that of the engineers from the vendors which commissioned the equipment, enabled a series of training sessions to be held for the others.

Traffic through MyIX has certainly grown since it was launched. Initially MyIX had 1 Gbps pipes between its nodes. Towards the end of 2007, it encountered traffic congestion with 98% packet drops plus some diversion which led to the bandwidth of connections between nodes being increased to 10 Gbps.

This has ensured that capacity is more than enough to meet current and foreseeable growth in network traffic.

IPv6

MyIX is peered through the creation of virtual circuits done at OSI Layer 2, the Data Link Layer, which requires knowledge of multi-protocol layer switching (MPLS), unlike



Network Management Team

the earlier attempt at creating an Internet exchange in Malaysia.

The previous attempt at a Malaysian exchange, MIX, used Layer 3 or Network Layer switching, which resulted in a mass of RJ-45 ports. Layer 3 also requires much overhead, including cyclic redundancy character check (CRC) and other headers which not only consume bandwidth, leaving less for the useful payload. While it makes peering simple to set up, its configuration is rigid at 10 Gbps, 100 Gbps and so on, with re-configuration for higher speeds complex.

SKMM decided to adopt the state-of-the-art Layer 2 peering used by the London Internet Exchange (LINX). With Layer 2, bandwidth is charged on a pay-per-use basis according to the average bandwidth throughput in Mbps (megabits per second), so if for example, the average bandwidth is 480 Mbps, the user would be charged for say 500 Mbps, irrespective of the actual speed of the connection.

Layer 2 peering also requires much fewer packet headers and together with MPLS, Layer 2 is embedded with IPv6 (Internet Protocol version 6) features.

SKMM has a sub-committee working on IPv6. At a meeting of the 22 ISPs in Malaysia on 22 September 2008, SKMM discovered that five did not have IPv6 blocks, so it still had to use dual stacks.

SKMM wants MyIX to be a leading Internet exchange worldwide. However IPv6 was announced less than 10 years ago and it took time to learn as not all network vendors are well versed with IPv6 compliance.

Still, awareness of IPv6 has been growing and the MYNIC domain name Registry has commissioned IPv6 services and it has IPv6 addresses to offer, so there is no excuse now to not use it.

With IPv6, all desired features such as IPSec, multi-casting, stateless address autoconfiguration, many times larger address space than IPv4 which eliminates the need for network address translation and others are included at no extra cost. Furthermore according to APNIC (Asia-Pacific Network Information Centre), IPv4 addresses will be depleted by 2011.

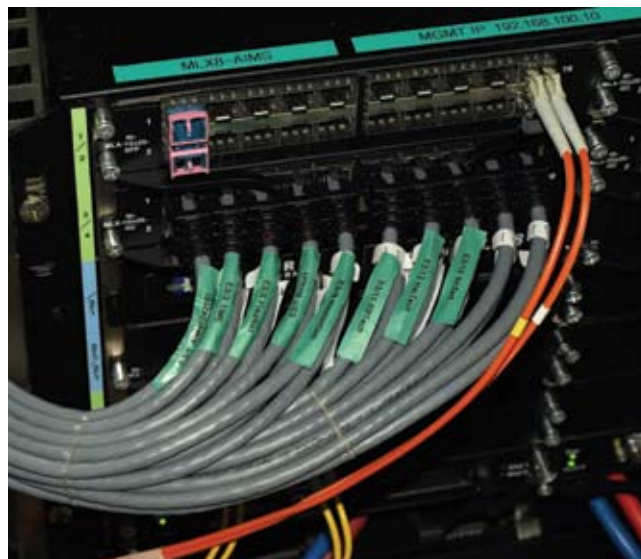
To align Malaysia with the goals of the MyICMS 886 national ICT strategy, the Government wants the industry to be IPv6 enabled from the beginning.

Besides NTT MSC, Jaring also began offering IPv6 services, while TM will follow soon. The banking sector will benefit most due to its in-built IP security (IPSec) features.

Upgrades and Strengthening

When MyIX was conceptualised, it was designed with redundancy in mind but lacked resilience. Resilience is based on backups, which means that if the fibre is cut in one location, there is an alternative channel for the data to flow which minimises the effect of the cut or other possible mishaps which could otherwise disrupt communication.

SKMM is now working towards MyIX upgrading its resilience to achieve 99.99% uptime. Achieving redundancy and resilience require that there be two rings which take different routes. However that will cost another RM9 million



■ Closer look at the connections from MyIX members

on top of the RM3 million already spent and it will require Ministry of Finance approval.

The development of MyIX is divided into three phases. The first phase is about the proof of concept and ironing out infrastructure needs which was already completed in March 2007.

The second phase will extend the number of MyIX nodes to Penang, Johor Bahru and Kuantan based on traffic demand and the network will be divided to cover the Northern, Southern and Eastern regions of Peninsular Malaysia. For now these centres will be connected to the current centres at 1 Gbps. When second phase is complete, it would have cost RM12 million.

The final phase will be to connect to Sabah and Sarawak as well so that they are able to enjoy the benefits of the national IX.

There is also an ongoing initiative by the Terengganu State Government to set up their own IX but in actual fact it is a super data centre or a node that will be connected to the MyIX.

The total budget committed to MyIX rollout is RM30 million, which is a small sum to pay compared to the RM2.36 billion in foreign exchange which would be saved in five years. [.my](#)

Ahmad Razif Ramli is Director,
Technology & Standards Development,
SKMM.
He can be reached at razif@cmc.gov.my