

CASE STUDY

100 Gb/S Ready Backbone Network for Malaysian Carrier's Carrier



CUSTOMER NAME FIBERAIL

CHALLENGE

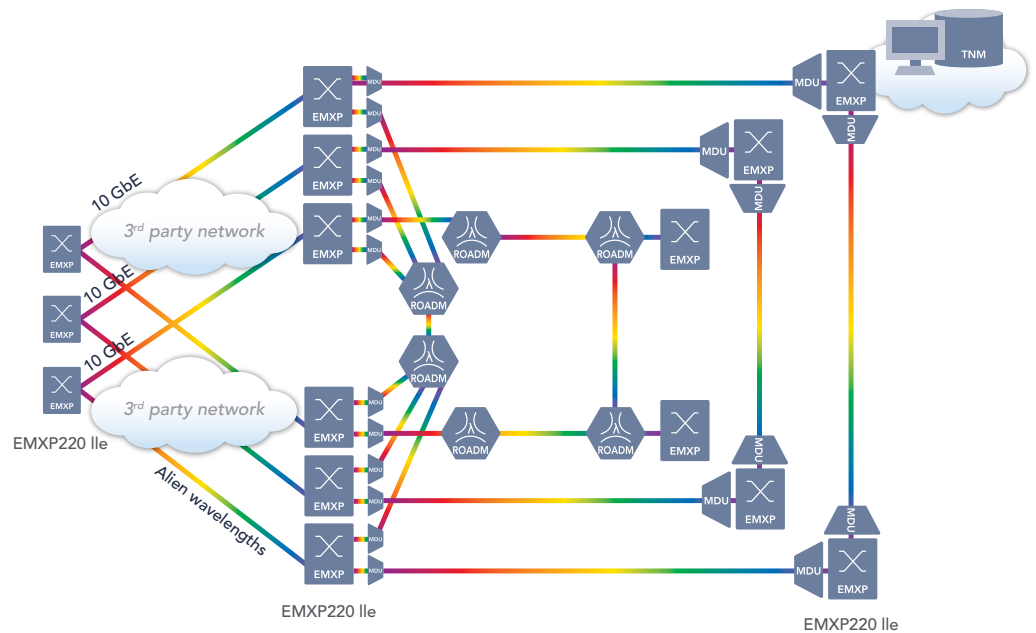
- Upgrade of the backbone network across Malaysia
- Initial requirement was 10 Gb/s services, but easy network upgrade to 100 Gb/s in the near future was required
- The network must run alien wavelengths over 3rd party equipment, while providing end to end service level agreement (SLA) monitoring

SOLUTION

- The Infinera TM-Series packet optical network, initially providing 10 Gb/s networking and later upgrade to 100 Gb/s via easy addition of 100 Gb/s pluggable optics
- EMXP220 Ile packet-optical transport switch, reconfigurable optical add-drop multiplexers (ROADM), Transport Network Manager (TNM)
- The solution was provided by Nera Networks, a regional systems integrator in Malaysia

RESULTS

- Cost efficient upgrade to 100 Gb/s simply by adding C form-factor pluggable (CFP) to existing EMXP220 Ile units when needed
- A robust and scalable Ethernet network for maximum protection of Fiberail's high speed services



The Infinera 100 Gb/s Ready Network Using the EMXP220 Ile as a Cost Efficient Upgrade Path from 10 Gb/s to 100 Gb/s. Following a Staged Approach, Parts of the Network Run Over an Existing 3rd Party Network Using Alien Wavelengths.

Fiberail is a regional carrier's carrier in Malaysia owning three fiber optic networks along the railroad and gas pipeline corridor from Pedang Basar in Northern Malaysia to Johor Bahru in Southern Malaysia. With an extensive fiber network in place, Fiberail provides the backbone infrastructure and ancillary services to telecommunications providers.

Fiberail Sdn Bhd (Fiberail), is a joint venture between Telekom Malaysia Berhad, Keretapi

Tanah Melayu Berhad and Petrofibre Network Sdn Bhd. It offers wavelength division multiplexing (WDM), time division multiplexing (TDM) and metro Ethernet services to Tier 1 and Tier 2 service providers in Malaysia and their customer base includes many well known international brands.

In September 2014 Fiberail approached Infinera, who already provides parts of Fiberail's Layer 1 network, with a requirement to transport data traffic across northern half of Malaysia.

The traffic would grow from a relatively low number of 10 Gb/s circuits initially to a higher number in the future, following Fiberail's customer demand. Hence the new solution had to be easy and cost efficient to grow and follow a pay-as-you-grow pricing approach.

Since part of the existing network was provided by a 3rd party vendor, the Infinera solution had to run as alien wavelengths over parts of the network.



The EMXP220 provides a cost efficient 10 Gb/s to 100 Gb/s upgrade by the simple addition of 100 Gb/s CFP pluggable optics.

Easy and Cost Efficient Growth from 10 Gb/s to 100 Gb/s

Fiberail's customer needed to transport multiple 10 Gb/s links across northern half of Malaysia. Parts of the network – from Padang Basar, Malaysia to Kuala Lumpur was required to run over 3rd party dense wavelength division multiplexing (DWDM) equipment.

The Infinera packet-optical transport switch EMXP220 Ile proved to be ideal for aggregating and transporting the 10 Gb/s links in the network. This was due to the high density capability and high transport reliability that the solution provided.

Also, playing a key role in choosing the EMXP220 Ile was its support for Ethernet ring protection switching version

2 (ERPSv2) providing multiple handoff recovery sites and the flexible bandwidth allocation per service.

The EMXP220 Ile features 12x10 Gb/s + 1x100 Gb/s, and thanks to the easy addition of 100 Gb/s CFP optics, it fits perfect with Fiberail's strategy of starting offering 10 Gb/s services to its customers and then later optimizing the internal fiber utilization even more using the 100 Gb/s capabilities.

The EMXP220 Ile is one of the vital parts of the Infinera award winning 100 Gb/s metro/regional solution together with the 100 Gb/s OTN transponder and 100 Gb/s OTN muxponder.

By using the Infinera ROADMs in combination with the EMXP220 Ile, the 10 Gb/s traffic could easily be aggregated and routed in the network according to Fiberail's needs. With the Transport Network Manager (TNM), an end-to-end SLA monitoring could also be provided, even with the 3rd party equipment in the overall network.

Additional Values of the Infinera Solution

The entire Infinera packet-optical solution is based on pluggable optics. This enables a high level of scalability, flexibility and a pay-as-you-grow characteristics. This is especially true with the EMXP220 Ile as it enables a future growth from 10 Gb/s to 100 Gb/s without having to invest in new traffic units or rack space.



Fiberail can easily obtain 100 Gb/s capacity without having to invest in more equipment and/or rack space.

The unequipped 100 Gb/s port is there from the start, the network operator only needs to purchase and plug in the CFP-based 100 Gb/s optics into the existing traffic unit when they decide they need the additional capacity.

Fiberail needed high resiliency within its network and the Ethernet ring protection version 2 (ERPSv2) feature in the EMXP range was ideal to address this. This feature in combination with end-to-end Ethernet service provisioning successfully fulfilled Fiberail's requirement of a very robust and scalable Ethernet network that supports both Layer 1 and Layer 2 packet-optical applications.

Conclusion and Future Outlook

Fiberail needed to transport a number of 10 Gb/s links across its network in northern half of Malaysia.

Fiberail initially considered this as a Layer 1 upgrade to their existing network. However, Infinera worked with Fiberail to develop a Layer 2 approach that would be more cost efficient and would provide the greatest value to Fiberail.

One highly significant contributor as to why the Layer 2 approach was selected by Fiberail was the TM-Series packet optical transport switch,

the EMXP220 Ile. With this product Fiberail was able to aggregate the 10 Gb/s links required by its customer, and at the same time it had automatically invested in a 100 Gb/s ready network.

When needed, Fiberail can simply add 100 Gb/s CFP optics to its existing EMXP220 Ile units and with that simple addition obtain 100 Gb/s capacity without having to invest in more equipment and/or rack space.