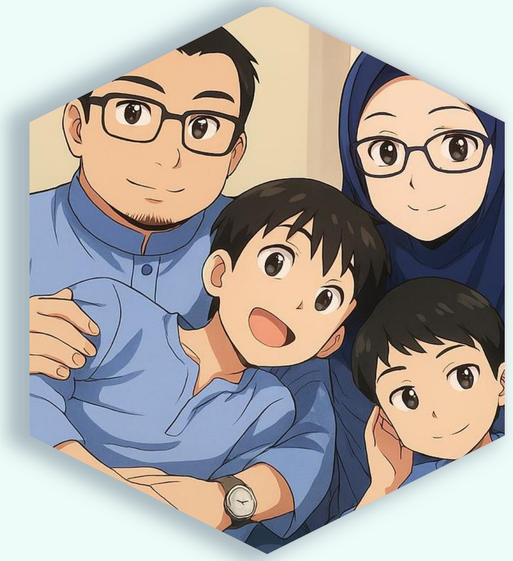
X86 NETWORK

Realities of Deploying High-Capacity DCI Network & Regional Interconnects

UNDER THE HOOD

Raja Akmal | Managing Director | X86 Network Sdn. Bhd.





RAJA AKMAL

ABOUT ME

ENTREPRENEUR | SEASONED NETWORK ENGINEER | FATHER OF 2 MINIONS | HUSBAND TO AN INSPIRING WIFE

18 Years experience as a network engineer, Founder & Managing Director of X86 Network Sdn. Bhd.

X86 Network is a Malaysian based connectivity service provider with focus on domestic & regional connectivity services specifically on Data Centre Interconnect (DCI), Dedicated Internet Access, and Ethernet Private Line (EPL).

Why DCI is now CORE PRIORITY?

Why DCI is now CORE PRIORITY

01 DATA CENTRES ARE EXPANDING AGGRESIVELY

02 LOW LATENCY & HIGH THROUGHPUT = BUSINESS DRIVERS

03 TRADITIONAL TELCO SERVICES ARE EXPENSIVE & RIGID

04 RESILIENCE & REDUNDANCY

ANALYSIS

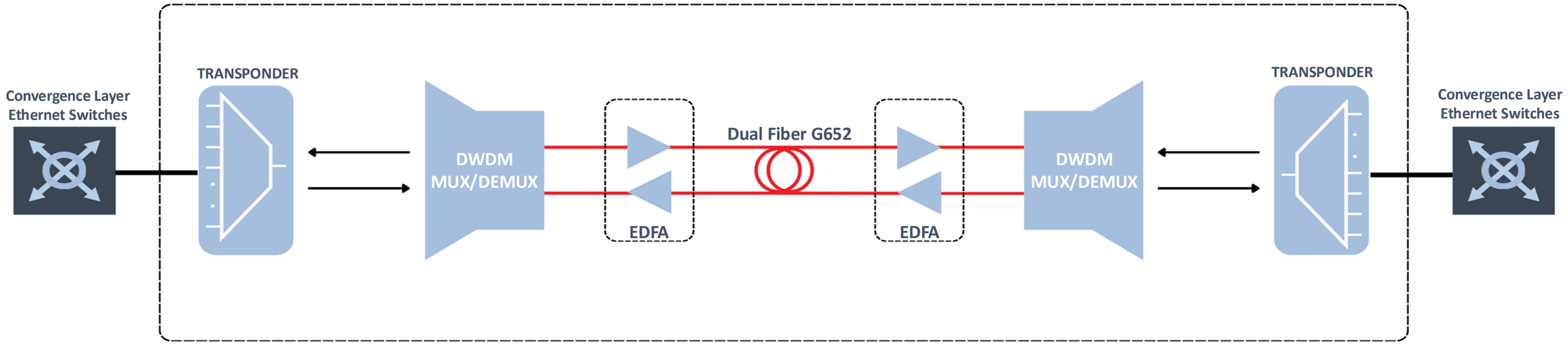
>65%

data centre nowadays have more east-west traffic instead of traditional north-south traffic.

Deploying High-Capacity DCI Network

Basic pillars of DCI infrastructure

Typical modern day OPEN LINE SYSTEM



DWDM

Dense Wavelength Division Multiplexing

Maximizes fiber utilization, 40/80/96 channels (or more) on a single pair of fiber

COHERENT OPTICS

Plugged to transponder and uses phase/amplitude of light + DSP

Enables 100G – 800G per lambda over metro/regional distance. 100G has become a new norm in current environment, DSP based coherent optics make this possible.

EDFA

Erbium-Doped Fiber Amplifier

Boost optical signal strength across long-haul optical paths to ensure signal integrity

FIBER QUALITY

OSNR, Optical Loss, Dispersion

Quality metrics affect throughput and how far you can go. Determines compatibility with with high-speed DWDM/coherent modules setup.



Challenges

Fiber Infra Politics in Malaysia

01 **LIMITED DARK FIBER PROVIDERS/ WHOLESALE LAMBDA SERVICES**

Without the infra, nothing much you can do. You may have to result on getting wholesale ethernet instead at a higher cost, forget about setting up open line system without the fiber/lambda infra-access.

02 **REGULATORY**

Deploying fiber infra is a costly affairs, licensing cost/council permit just add up significantly to the bill, not just the build cost.

03 **EXCLUSIVITY ON ACCESS**

Exclusive arrangements with selected telco by local council/state limit the growth on this silo.





Geopolitics in Infra Gear Procurement

Chinese Vendor Solution has been a long time go-to vendor in Asia, now face with restrictions & bans on telecommunication equipment and services

U.S. Vendor Solution, faces longer lead time due to supply chain constraints, export/import due to stringent restrictions

Operators need to re-strategize on addressing the restrictions/constraints

CHINESE VENDOR UNDER GLOBAL SCRUTINY

U.S. VENDOR LIMITATIONS & EXPORT CONTROL

MULTI-VENDOR PROCUREMENT STRATEGY



Our DCI Journey



“We didn’t just talk about building resilient, scalable network… we did it, and we learned plenty along the way. Here’s how X86 went from idea to operating a leading domestic DCI network linking key data hubs across Malaysia.”

RAJA AKMAL | MYNOG-12 2025

X86 NETWORK

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HOW WE DO IT?

Metro & Regional Ring Design

- Initial build KL-Cyberjaya
- Extension phase into Singapore
- Further expansion driven by market demand
- Outer & Inner ring network design for peace of mind

PLAN

DEPLOY

Technology Stack

- Multi-vendor approach for metro runs and long-haul segments
- Hybrid Open Line System (OLS) to address geopolitics friction
- Some short haul setup migrated to 400ZR recently reducing the needs of traditional DWDM system.

RUN

EXECUTE

Operational Champion

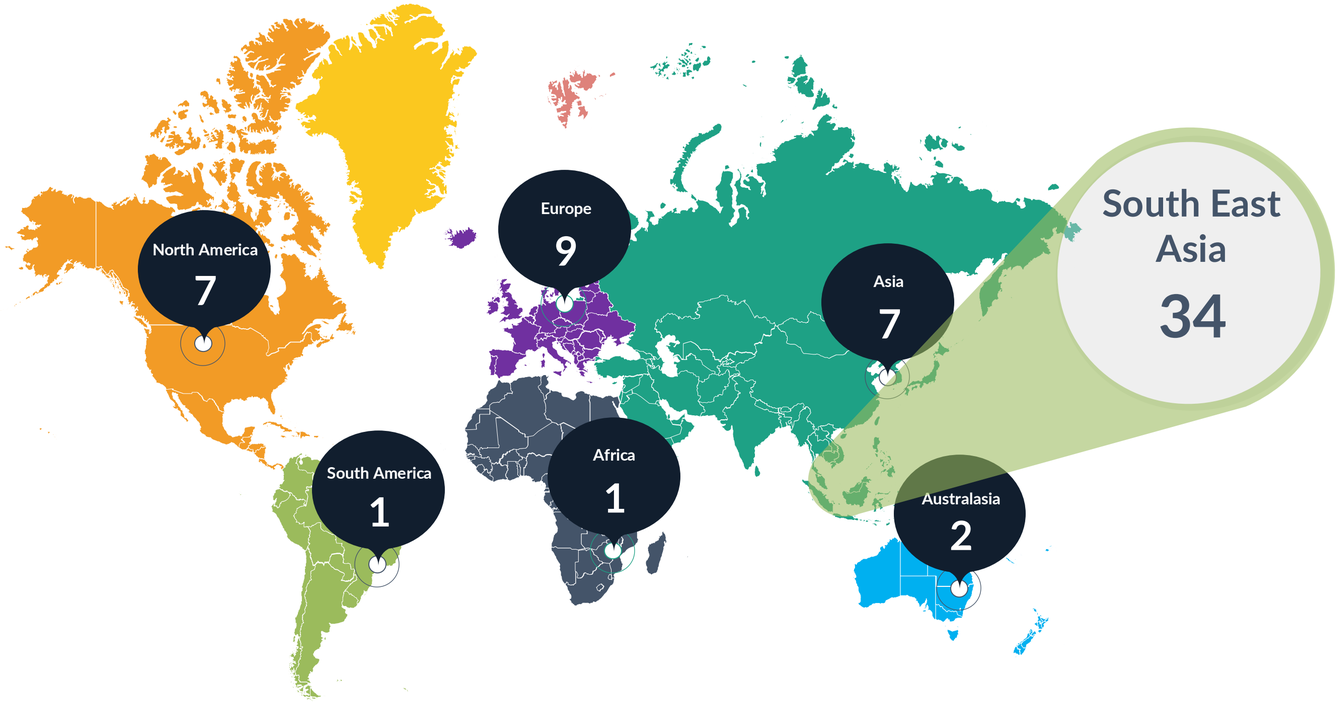
- 90% of overall team members are technical role
- Strict internal SLA for performance optimization
- Regular fiber path audit

Interconnect Strategy

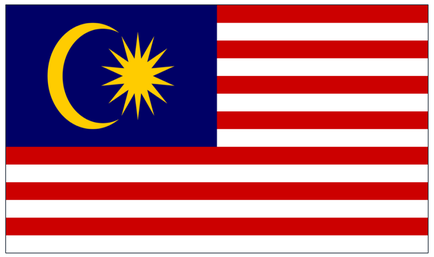
- Long/short term Dark Fiber leasing
- Collaborate with domestic fiber infra owner
- NNI partnership with International DCI operator for rapid node expansion

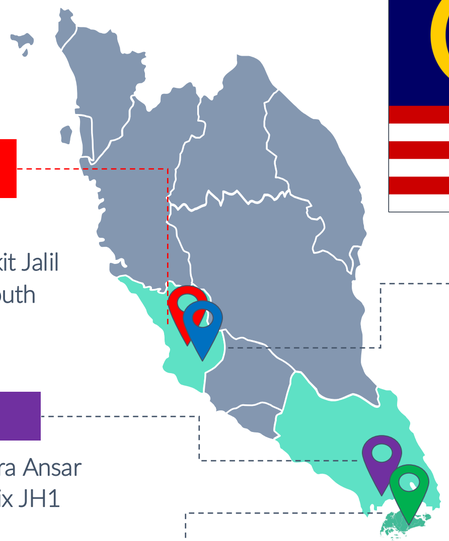
Blood, Sweat and Tears

Our Own Operating PoP Today



..and over 100+ Data Centre's Across the globe via NNI arrangement





Kuala Lumpur

- AIMS KL
- EXSIM Bukit Jalil
- Bangsar South
- KL Sentral

Johor

- Menara Ansar
- Equinix JH1

Cyberjaya

- CSF CX1
- BDC MY01
- BDC MY02
- NTT CBJ1
- TM KVDC
- Vantage KUL11
- Equinix KL1
- AIMS CBJ1

Singapore

- Equinix SG1/SG3
- Global Switch TS
- Equinix SG2
- Equinix SG5
- DXC The Fort
- M1 MiWorld
- Epsilon Global Hub
- NTT Serangoon
- Keppel DCS1
- BDx SIN1
- STT TaiSeng
- Racks Central
- 1-Net 750D
- 1-Net 750E
- Digital Realty SIN10
- Digital Realty SIN11
- Digital Realty SIN12



You don’t need to be a full-fledge telco anymore!

Welcome as a Tier-2 Telco

Regulatory landscape is more open but still costly

You can lease/ IRU dark fiber and build your network without owning any telco infrastructure.

Lower CapEX

Open Line System kits make this possible, its affordable and modular.

Being Tier-2 = More agile

Faster provision, multi-site customization, direct control, less corporate bureaucracy

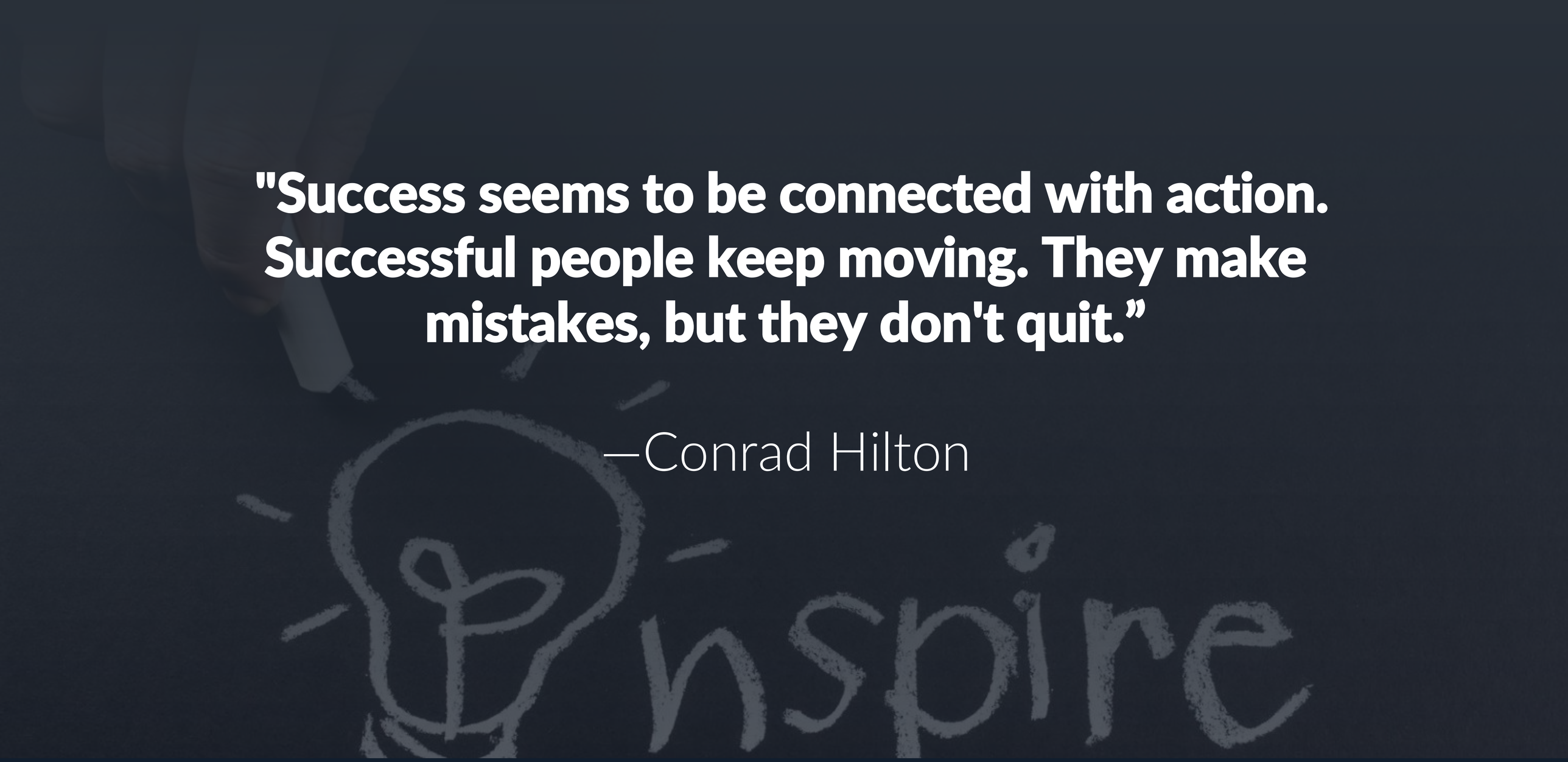
Growing interconnect ecosystem

Private Peering, NNI arrangement, cross DC aggregation, neutrality. No incumbent telco involvement needed

Building a high-performance optical network used to requires millions in CapEx, a very deep pocket.

Today, thanks to technology shifts and market liberalization, mid-sized operators, like X86 Network can design and deploy robust DCI networks without being legacy telcos.




"Success seems to be connected with action. Successful people keep moving. They make mistakes, but they don't quit."
—Conrad Hilton
Inspire

Lesson Learned

from deploying & operating DCI network infrastructure

We learned what worked and what didn't the hard way. These are the key takeaways from X86 Network's DCI rollout that can save you time, money, and pain.

OPEN SYSTEM = FLEXIBILITY

Faster deployment, easy to scale with lesser restriction, no vendor lock-in.

COHERENT OPTICS = CURRENT WAY TO GO

100G is current norm, go with 400G per lambda and your cost per Gbps lower down significantly.

AUDIT YOUR FIBER PATH

Ask for diagrams, proof of route path when you build your network. ALWAYS!

SPARING IS A MUST!

Lead time can be brutal, practice 4:1 sparing ratio

Equipment, optics, cables etc.

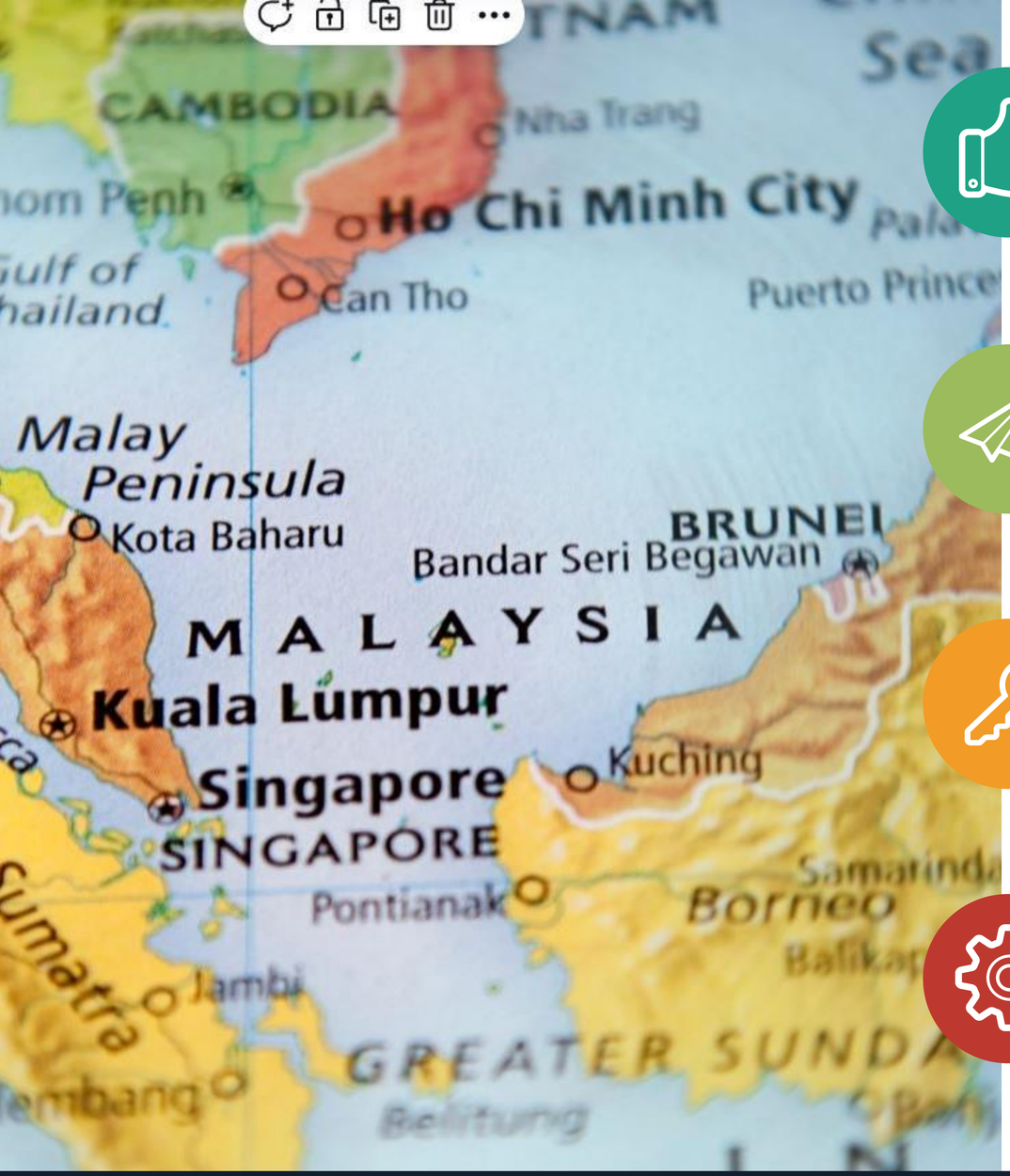
DON'T SIGN LONG TERM IRU/CONTRACT

Be strategic, use the benefit of current running rate and factor in cost erosion. Its eroding faster than you think.

OVER RELIANCE TO VENDOR

Get your hands dirty, build your own lab, tweak, break, restore. Repeat, rinse & cycle.

The Road Ahead



SIMPLICITY

Revamp and simplify our setup with 400ZR coherent setup effectively reduce clutter of traditional DWDM setup. We're piloting it between two DCs in Cyberjaya in 2023 and plan to expand setup across our domestic nodes.

BRIDGING THE LATENCY DIVIDE

Exploring DCI node extension to East Malaysia. We should not see East Malaysia as secondary market, but a strategic frontier. A true DCI King of Malaysia must cross the sea!

JOHOR-SINGAPORE AS STRATEGIC SETUP

Johor DC boom has been a hot thing for the past 2 years and continue to evolved, its now a regional compute zone! Our strategy is to amplify the "spillover" extended up to central nodes!

DYNAMIC CIRCUIT PROVISIONING

Our vision is to make DCI provisioning as simple as spinning up a VM, fully API-driven, dynamic, and monitored. We tested through partner platform, and it fail, we need to address it and make it work.

At X86, we’re not just here to sell bandwidth

We want to co-create infrastructure

That means

INTERCONNECT WITH YOU

So, if you’re building fiber, deploying a DWDM network, running a Data Centre, or just want to learn

Let’s talk
Let’s build Malaysia’s next-gen DCI together



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