INDONESIA'S INTERNET EXCHANGE STORY

FROM FREE TO FEE

THE INDONESIAN IXP PARADOX

Community roots. Commercial realities. A sustainable future.



MICHAEL TAKEUCHI – Deputy Chief of IIX and Data Center, APJII

1997 — 2026

THE INDONESIAN IXP PARADOX / IN ONE SLIDE

THE MORE IT GREW, THE HARDER "FREE" BECAME.

1997

One conversation. One shared switch.

≈20 Tbps

IIX-APJII all-time peak traffic

61

Active IXPs in Indonesia today

695

Networks in one Jakarta facility: #1 worldwide

FOR DECADES, IIX ACCESS WAS FREE. WHAT HAPPENS WHEN FREE BECOMES FEE?

01 ORIGINS 02 SCALE 03 THE FREE MODEL 04 THE HIDDEN COST 05 FROM FREE TO FEE

Sources: IIX-APJII NMS (Oct 2026); Internet Society Pulse / PeeringDB (Oct 2026); Atlas Peering (June 2026). 695 = PeeringDB-listed network presence, not traffic.

LOCAL NETWORKS. GLOBAL DETOURS.

Two Indonesian networks could be geographically close—yet exchange traffic through overseas transit.



THE PROBLEM WASN’T DISTANCE.

IT WAS INTERCONNECTION.

NOT BORN
IN A BOARDROOM.

THE IDEA STARTED IN A MEN'S RESTROOM.

An informal conversation about connecting ISPs to one switch.

WHY PEER & CHEERS MATTERS

Some of the best Internet infrastructure ideas begin outside formal meetings.

Source: APNIC Blog (2015), Johar Alam Rangkuti's recollection.

THE MEMBERS-FIRST EXCHANGE.

IIX-APJII was built around an ISP membership model.

APJII ISP / NETWORK MEMBER

Eligible for member access under IIX policy

NON-MEMBER NETWORK

Recommendation + separate direct-member arrangements

SAME INTERNET. DIFFERENT DOORS.

THEN CAME OPENIXP.

A more open door for networks beyond licensed ISPs.

IIX-APJII · 1997

ISP association membership-based access

OPENIXP · 2005

Open peering for broader routable networks

SAME GOAL. A WIDER DOOR.

TWO PHILOSOPHIES.
ONE SHARED MISSION.

A membership-led exchange and a more open exchange helped shape Indonesia’s peering culture.

1997

IIX-APJII

Membership-led ISP interconnection

2005

OpenIXP

Broader network participation

TWO STARTING POINTS. MANY MORE EXCHANGES TO COME.

PART 2 · SCALE / 1997 → 2026

THE IDEA WAS SIMPLE.

THE GROWTH WASN’T.

What happened to Indonesia’s interconnection traffic over the next three decades?

NEXT: FROM MEGABITS TO TERABITS

PART 2 · SCALE / IIX-APJII TRAFFIC

FROM MEGABITS TO TERABITS.

Same exchange. Millions of times more traffic.

JAN 2000

≈3 Mbps

Historical IIX peak traffic

→

AS REPORTED IN 2026

≈20 Tbps

IIX-APJII all-time peak

AND THAT 20 Tbps IS ONLY IIX-APJII — NOT THE OTHER IXPs OR PNIs.

2000: APJII archival IIX MRTG (3.07 Mbps, Jan 2000). 2026: IIX-APJII NMS peak (20,103 Gbps).

Sources: ITU-hosted APJII indicators (2007) • nms.iix.net.id/index.html | Different eras and measurement scope.

229 MILLION USERS.
ONE ARCHIPELAGO.

Behind every terabit are people, spread across more than 17,000 islands.

USERS · 2025

229.4M

Indonesians online, out of 284.4 million people

PENETRATION

80.66%

Up only about 1 point from 2024: the easy users are already online

STILL OFFLINE

≈55M

People not yet connected: the next growth wave

CONCENTRATION

58%

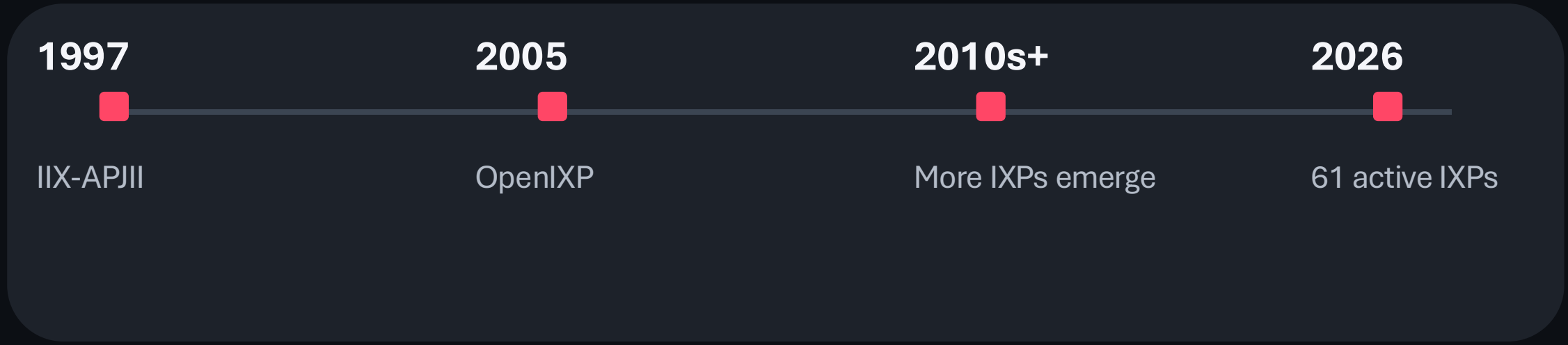
Share of users in Java. Maluku–Papua penetration: 69%

THE NEXT 55 MILLION USERS WON'T LIVE NEXT TO A JAKARTA SWITCH.

Source: APJII, Indonesia Internet Penetration Survey 2025 (released 6 August 2025).

FROM TWO MILESTONES TO 60+ IXPs.

Nearly 30 years of growth — different locations, participants, and operating models.



GROWTH IS REAL. BUT EACH IXP HAS ITS OWN STORY.

2026: Internet Society Pulse / PeeringDB, Indonesia active-IXP tracker. This is a milestone timeline, not annual counts.

MORE IXPs.
MORE PURPOSE?

Many exchanges may share a city — but not the same mission, access rules, or operating model.

01

MISSION

Who and what is this IXP designed to serve?

02

DIFFERENTIATION

Location, participants, reach, policy, or services?

03

REAL ACTIVITY

Are networks actually exchanging meaningful traffic?

DIFFERENT EXCHANGES. DIFFERENT ACCESS MODELS.

Next, one community-driven model I know first-hand: IIX-APJII.

NOT LOW-COST.
ZERO-COST IXP ACCESS.

Of all the models we just discussed, IIX-APJII historically offered something remarkable: free exchange access.

COLOCATION

Paid at APJII DC

IIX PORT

Free for eligible members

CROSS-CONNECT

Free within APJII facilities

OTHER DATA CENTERS: XC CHARGES COULD APPLY — OFTEN RELATIVELY LOW.

THE EXCHANGE WAS FREE TO ACCESS. THE PHYSICAL SPACE WAS NOT.

Historical practice described by IIX operations; charges varied by facility, eligibility, and period.

WHY WERE IXP PORTS FREE IN INDONESIA?

AS THE COMMUNITY JOKE GOES...

LINX PORT PRICES

£ GBP

→

CONVERT TO

Rp IDR?

TOO LAZY TO CONVERT? JUST MAKE IT FREE!

Community folklore, not a verified origin of IIX-APJII's pricing policy.

WHO PAID FOR THE FREE IIX?

Access could be free. Infrastructure never was.

01 IDNIC REVENUE

Resource management activities

02 DATA CENTER REVENUE

APJII colocation services

03 SPONSORSHIPS

Financial & in-kind support

04 MEMBERSHIP FEES

Historically around US$200/year

COMMUNITY ACCESS ≠ ZERO OPERATING COST

Funding streams identified for APJII; precise allocation to IIX requires financial records.

THE COMMUNITY MAKES THE RULES.

Open Policy Meeting (OPM) • collective policy discussion, formal organizational decisions

01 DISCUSS

Members and stakeholders bring operational needs and policy proposals.

02 FORMULATE

OPM deliberates on access rules, port capacity, and applicable fees.

03 FORMALIZE

Adopted decisions are documented through APJII leadership decrees (SK).

POLICY IN PRACTICE

2025: port and cross-connect fee decisions (SK No. 133/2025)

Source: APJII Open Policy Meeting decisions, SK No. 133/2025.

THE BANDWIDTH GROWS.
SO DOES THE BILL.

More capacity means more than swapping a port.

1G	10G	100G	400G
PORT CAPACITY	PORT CAPACITY	PORT CAPACITY	PORT CAPACITY

CAPACITY IS ONLY THE VISIBLE PART OF THE UPGRADE.

- New line cards
- Faster optics
- Denser power & cooling
- Migration & spares

WHO FUNDS THE NEXT CAPACITY UPGRADE?

Illustrative port-speed evolution; not a claim that every Indonesian IXP currently offers 400G.

WHEN PORTS ARE FREE, UTILIZATION MATTERS.

Limited ports meant the APJII team had to allocate capacity where it was actually needed.

01

FREE ACCESS

Eligible members received exchange ports at no separate port charge.

02

EARN THE UPGRADE

High utilization (historically around 70%) justified requests for larger ports.

03

RECLAIM IDLE PORTS

Persistently underused ports could be downgraded or reclaimed for other members.

BUT EVERY FREE PORT ALSO NEEDS A PHYSICAL CABLE.

Historical operational practice. Formal thresholds vary by policy and period (OPM 2022: 80%; FAQ 2025: >70%).

EVERY PORT NEEDS A CABLE.
AND THE CABLES WERE FREE TOO.

A cross-connect (XCON) is the physical fibre from a member's rack to the IIX switch port.

MEMBER RACK

Router / switch

Owned by the member

↔

CROSS-CONNECT

Fibre across the data center

Free in APJII facilities

↔

IIX SWITCH

The exchange port

Free for eligible members

THE PORT

Logical and scarce

Monitored, upgraded by utilisation, and reclaimed with a configuration change.

THE CABLE

Physical and free

Once installed, it stays in the tray until someone traces it and removes it.

WE COULD RECLAIM A PORT IN MINUTES. A FORGOTTEN CABLE JUST STAYS.

Simplified illustration of IIX-APJII physical interconnection; actual cabling paths vary by facility.

32,000 ORDERS.
NOT 32,000 ACTIVE CABLES.

Historical orders, active connections, and physical cleanup are different measures.

12,000+
RECORDED ACTIVE XCONs
Current active connections on record

≈32,000
CUMULATIVE ORDERS
Includes active and dismantled orders

≈2,500
DISMANTLED SINCE FEES
Cables removed after charging began

≈350/mo
NEW CABLE INSTALLATIONS
Gross monthly installs despite fees

THE CLEANUP IS REAL. SO IS THE GROWTH.

Presenter-reported approximate figures. 32k is an order history, not today's live inventory; 350/month is gross installs, not net growth.

FROM BRING YOUR OWN CABLE TO MANAGED INSTALLATION.

01

MEMBER-PULLED

Participants ran their own cables across the facility.

→

02

MEMBER-SUPPLIED

APJII installed cables supplied by participants — sometimes much longer than needed.

→

03

APJII-SUPPLIED

APJII supplies and installs the cables for more consistent handling.

DIRECT RACK-TO-RACK · NO INTERMEDIATE PATCH PANEL

Historically, connections went directly between racks rather than through a central patching layer.

Presenter's account of historical APJII workflows; timing and applicability may vary by location.

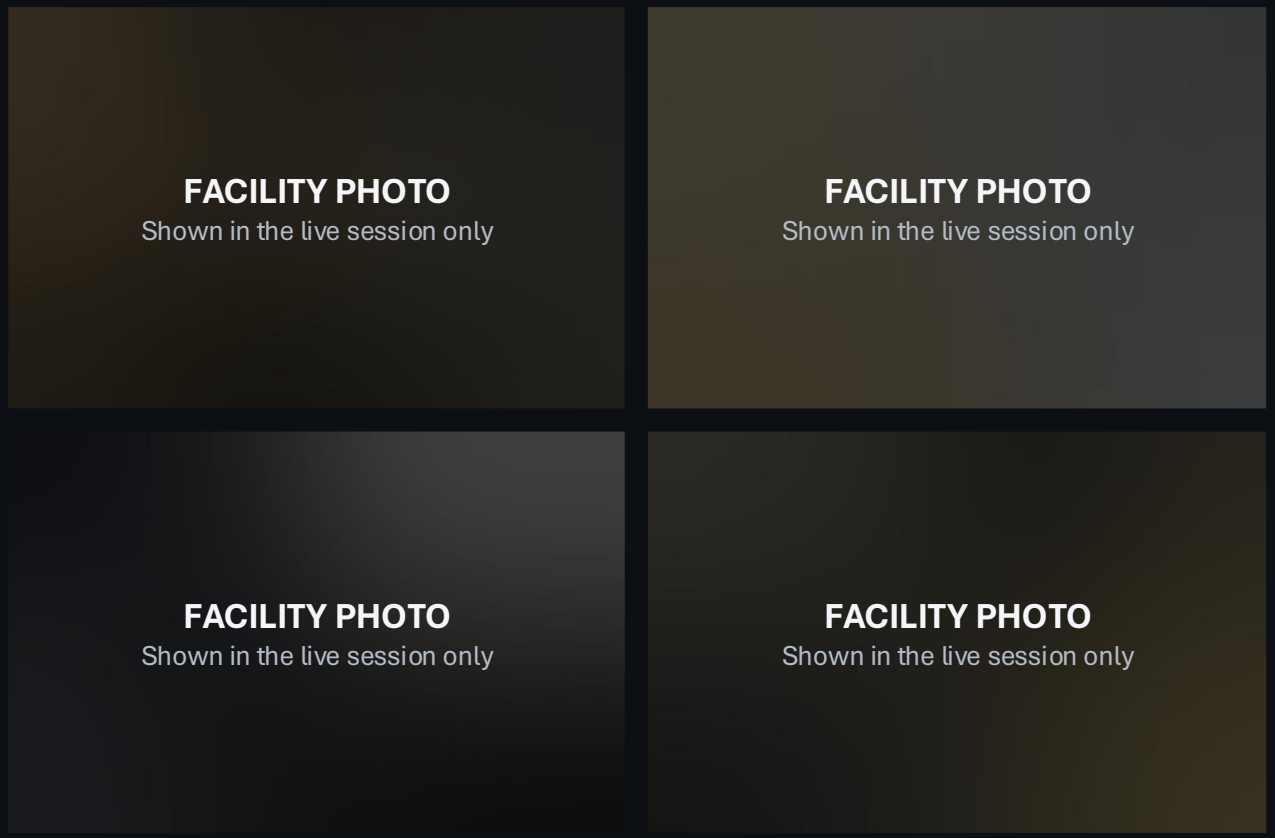
THE CROSS-CONNECT GRAVEYARD.

FREE TO INSTALL.

EASY TO FORGET.

An expanding network of shared fiber connections requires active inventory and decommissioning.

Dense cabling is visible. Individual inactive circuits cannot be identified from photos alone.

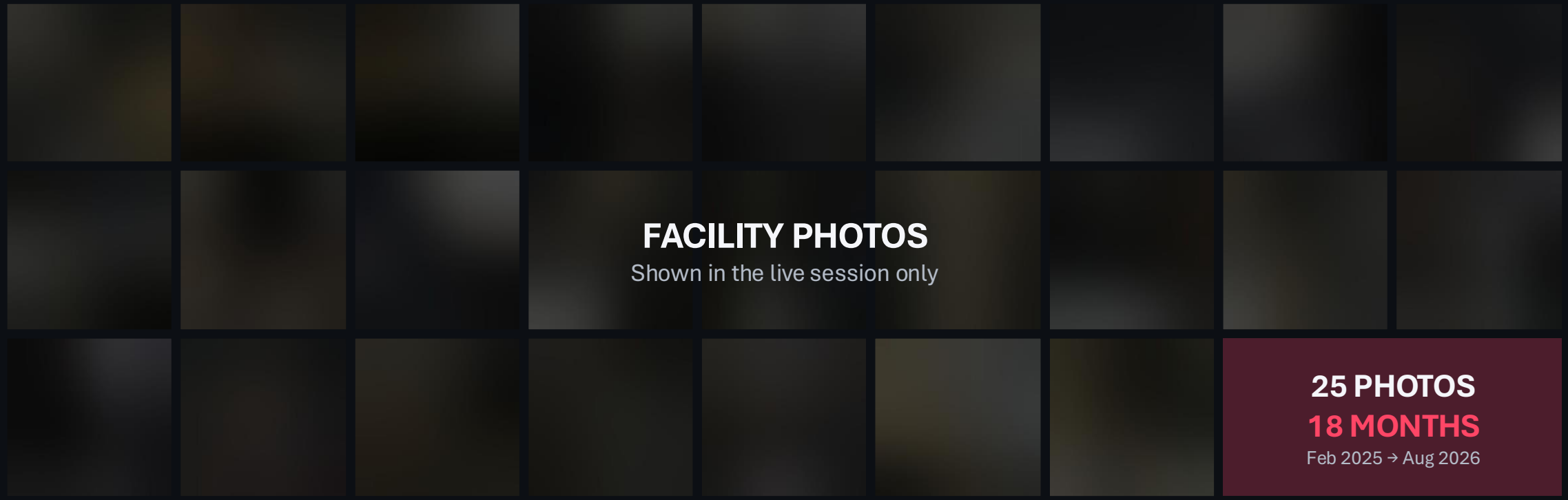


FACILITY PHOTOS REDACTED IN THIS PUBLISHED VERSION · SHOWN IN THE LIVE SESSION ONLY

PART 4 · THE HIDDEN COST / NOT A ONE-OFF

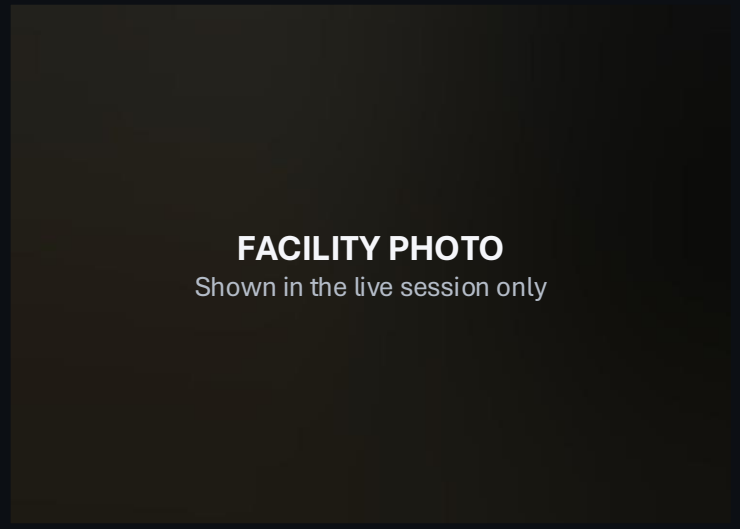
NOT ONE BAD CORNER.
EVERYWHERE.

25 photos from our own facilities, taken between February 2025 and August 2026.



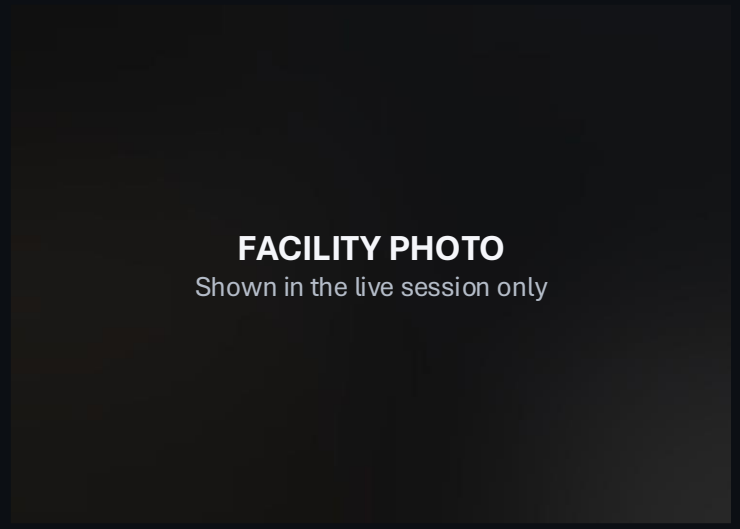
FACILITY PHOTOS REDACTED IN THIS PUBLISHED VERSION · SHOWN IN THE LIVE SESSION ONLY

FREE CABLES.
REAL CONSEQUENCES.



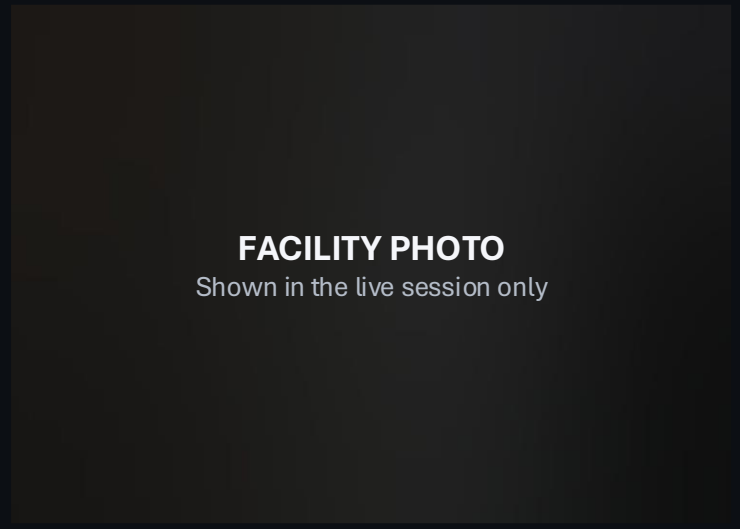
01 INVENTORY DRIFT

Harder to reconcile cable records with physical connections.



02 CROWDED PATHWAYS

Dense trays and patching increase maintenance complexity.



03 SLOWER TROUBLESHOOTING

Every individual fiber may need to be traced and verified.

FACILITY PHOTOS REDACTED IN THIS PUBLISHED VERSION · SHOWN IN THE LIVE SESSION ONLY

SOMEONE STILL HAS TO PAY.

Zero-cost access does not mean zero-cost infrastructure.

SWITCHING FABRIC
Switches, line cards & refresh

OPTICS & FIBER
Transceivers, patching & repair

SPACE & POWER
Rack, cooling & electricity

OPERATIONS
NOC, maintenance & on-call

FREE FOR THE MEMBER ≠ FREE TO OPERATE

Case study: IIX-APJII • Cost categories are illustrative, not an audited breakdown.

WHEN FREE BECOMES THE EXPECTATION.

Over time, a benefit can start to feel like the default.

01
ACCESS
Free or subsidized ports

02
CAPACITY
Upgrade by utilization

03
CONNECTIVITY
Some cross-connects at no fee

04
EXPECTATION
“Why should we pay now?”

THE CULTURE WAS BUILT OVER DECADES. THE COSTS NEVER DISAPPEARED.

Community-funded access is not the same as cost-free infrastructure.

Illustrative pattern based on IIX-APJII operational history; policies vary by exchange, participant, and period.

THE DAY FREE BECAME A FEE.

2025: a new milestone in IIX-APJII's port and cross-connect charging framework.

BEFORE

Community Access

Eligible members historically received free exchange ports and in-facility cross-connects.

2025

Policy Evolution

SK No. 133/2025 addresses charges for IIX ports and cross-connect facilities.

A PRICING FRAMEWORK CAN CHANGE WITHOUT EVERYTHING BECOMING PAID.

Source: APJII OPM decisions, SK No. 133/2025. Effective terms vary by service, site and member category.

THE FEE WAS TINY.
THE PUSHBACK WASN'T.

When the 2025 fees took effect, some members asked for a discount on a fee cheaper than dinner.

THE MEMBER-DRIVEN PROCESS

Member proposals → OPM voting → Formal policy

THE OPERATIONAL REALITY

The published fee is small. Yet operators still ask for discounts.

THE PRICE WAS AGREED COLLECTIVELY. WHY IS IT STILL A NEGOTIATION?

Based on speaker's operational experience. OPM decisions are formally implemented through APJII policy instruments.

SAME COMMUNITY.
DIFFERENT RESPONSIBILITIES.

As the Internet became essential, expectations became more formal.

THEN · 1990s

INFORMAL COLLABORATION

Peer meetups • Phone calls
Mailing lists • Personal trust

NOW · 2020s

FORMAL ACCOUNTABILITY

Official tickets • Escalations
Incident updates • RFO / RCA

INFORMAL ROOTS. PROFESSIONAL RESPONSIBILITIES.

The shift is about societal dependence—not a claim that community-based operations were irresponsible.

EVERYONE LOVES FREE.
UNTIL IT GOES DOWN.

As interconnection becomes critical, expectations for operational accountability rise.

RFO / RCA

EXPLAIN THE INCIDENT

Transparency and lessons learned

INCIDENT UPDATES

KEEP US INFORMED

Clear status and escalation

FORMAL SLA

GUARANTEE THE SERVICE

Defined commitments and remedies

REQUESTING AN RFO IS REASONABLE. AN SLA IS A DIFFERENT COMMITMENT.

Context: operational experience at IIX-APJII; not a claim about every participant.

CAN YOU SELL WHAT OTHERS GIVE AWAY?

Same interconnection goal. Different economics and service propositions.

COMMUNITY-DRIVEN IXP

Shared infrastructure model

- Member access / eligibility
- Collective funding & governance
- Best-effort or defined service scope

COMMERCIAL IXP

Customer-funded service model

- Published port / service pricing
- Contractual service options
- Differentiated facilities & support

FREE AND PAID ARE NOT NECESSARILY THE SAME PRODUCT.

Conceptual comparison, not a claim about every IXP operator in Indonesia.

EVERY MODEL HAS A PAYER.
THE QUESTION IS WHO.

No model is free of cost. The difference is who carries it, and how.

HKIX · HONG KONG

FREE → PAID

"A free service" from April 1995. Port charges since 1 Jan 2013; financially sustainable about 2–3 years later.

Source: CUHK/HKIX (PHNOG, Jun 2015) · Internet Society (Apr 2025)

NAPAFRICA · S. AFRICA

FREE

Not-for-profit, neutral IXP: "no cross connect, membership, or port fees".

Source: napafrica.net · Internet Society (Jul 2021)

LINX · LONDON

MEMBER-OWNED

"Member-owned, not-for-profit": "all members pay a monthly membership fee".

Source: LINX announcement, 8 Jan 2026

SIX · SEATTLE

ONE-TIME FEE

Non-profit, 501(c)(6). One-time port fees, "no MRC". "The SIX exists because of donations."

Source: seattleix.net (About, Join pages)

FREE CAN WORK WHEN SOMEONE FUNDS IT. PAID MUST PROVE ITS VALUE.

Shared with respect, based on each exchange's own public material. Not a ranking or endorsement. Accessed 22 Oct 2026.

cuhk.edu.hk/hkix/Presentation/PHNOG2015.pdf · pulse.internetsociety.org (Apr 2025) · napafrica.net · internetsociety.org/blog (Jul 2021) · linx.net/news/2026-service-fees · seattleix.net/about · seattleix.net/join

HELP THEM START.
LET THEM SCALE.

Free entry-level access. Cost-sharing for higher capacity and excess physical connections.

IXP PORT

10G / FREE

For eligible member networks

IXP PORT

100G / PAID

Very affordable port fee

CROSS-CONNECT

FIRST 24 / FREE

Per company; from #25: nominal annual fee

THE XCON FEE IS NOT JUST REVENUE — IT ENCOURAGES CLEANUP.

Based on the speaker's description of IIX-APJII policy; verify applicable terms and current tariff before public use.

FROM FREE
TO SUSTAINABLE.

Set by the community: keep entry free, price the scale, price the waste.

01

KEEP ENTRY FREE

Price should never stop a new network from peering. (IIX: free 10G port)

02

PRICE THE SCALE

Those who need more capacity share more of its cost. (IIX: 100G port fee)

03

PRICE THE WASTE

A small fee turns forgotten cables into a cleanup list. (IIX: XCON #25 onward)

THE GOAL WAS NEVER TO CHARGE MORE. IT WAS TO MAKE THE MODEL LAST.

IIX-APJII case study · Current fee examples supplied from operational experience; eligibility and terms apply.

BEFORE WE CLOSE / ATLAS PEERING · JUNE 2026

695 NETWORKS.
#1 WORLDWIDE.

APJII-Cyber, Jakarta — highest listed network presence among PeeringDB facilities.

#1	#2	#3
695	608	584
APJII-CYBER · JAKARTA	DIGITAL REALTY · FRANKFURT	EQUINIX SP4 · SÃO PAULO

FROM A COMMUNITY IDEA TO A GLOBAL INTERCONNECTION MILESTONE.

Atlas Peering (June 2026), PeeringDB snapshot May 2026. Self-reported network presence — not traffic, direct peering links or service quality.

BORN TO CONNECT.
BUILT TO LAST.

An idea that began in a conversation. An ecosystem built through collaboration.

WE SHOULD NEVER LOSE THE COMMUNITY SPIRIT.

BUT WE MUST KEEP EVOLVING HOW WE SUSTAIN IT.

KEEP THE CONVERSATION GOING. KEEP THE INTERNET CONNECTED.

OPEN DISCUSSION / LET'S LEARN FROM EACH OTHER

YOUR IXP STORY
MIGHT TEACH US SOMETHING.

Do other regions face the same free-versus-fee paradox?

LET'S TALK.

Share your experience. Challenge our model. Teach us what works elsewhere.

michael.takeuchi@apjii.or.id

VISITING JAKARTA? LET'S CONNECT AND ARRANGE A VISIT.

APPENDIX / REFERENCE POINTS

THE STORY BEHIND THE NUMBERS

The primary references behind Indonesia’s IXP evolution and the IIX-APJII case study.

01 HISTORY

APNIC: An Open Exchange — History of Indonesia’s IXP

blog.apnic.net/2015/08/26/an-open-exchange-history-of-indonesias-ixp/

02 IXP COUNTS

Internet Society Pulse: Indonesia IXP Tracker

pulse.internetsociety.org/en/ixp-tracker/country/ID/

03 GOVERNANCE

APJII: IIX-APJII Open Policy Meeting decisions

apjii.or.id • official OPM resolutions

04 OPERATIONS

IIX-APJII FAQ: membership, ports and cross-connects

iix.net.id/faq-data-center-iix-apjii/

05 GLOBAL FACILITY RANKING — Atlas Peering, “Mapping the World’s Most Interconnected Facilities” (June 2026)

SCOPE: Funding and fee policies are IIX-APJII-specific. PeeringDB listings do not prove dormancy.

Presenter experience supplements public records; operational anecdotes are not population-wide findings.