IPv6 Status Updates

Presented by: Makito Lay

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MMNOG 8 Conference

About Me

- **Makito Lay**
  - Network Analyst / Technical Trainer @ APNIC
  - Volunteering:
    - TWNOG Multi-Stakeholder Group Member
    - KHNOG Executive Committee Member
  - Experiences:
    - 18 years in ISP and Telecom industry
    - MikroTik Certified Trainer
    - Ex-programmer
  - Certifications: CCIE # 47682, JNCIP-SP, MTCINE…etc.
  - Areas of Interest: BGP, MPLS, IPv6, Coding & Databases

Agenda

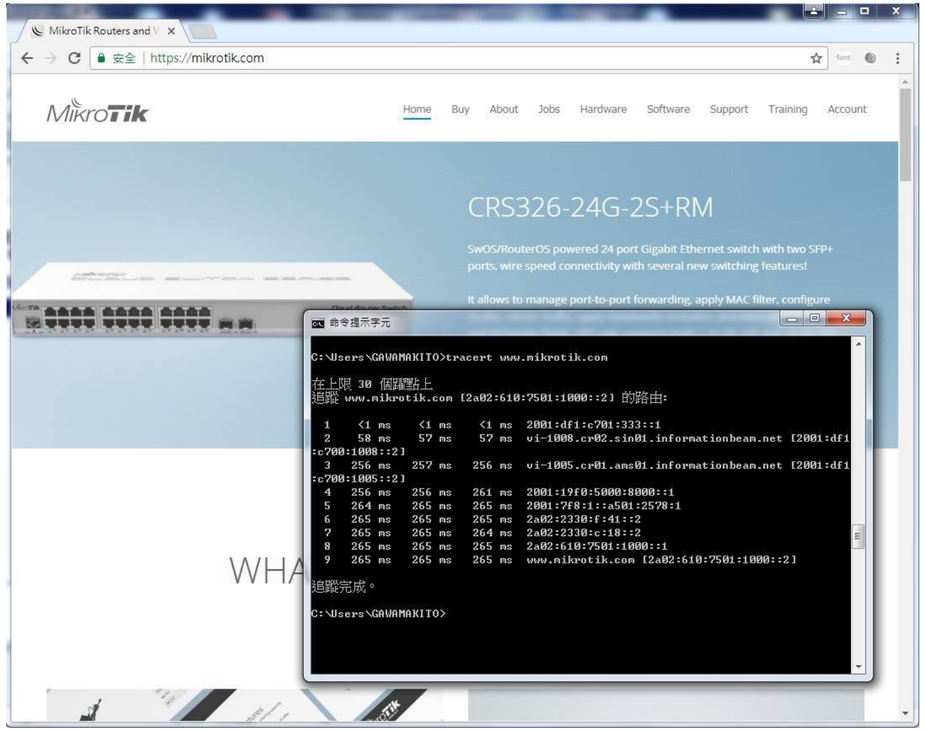
- My IPv6 Experience in Myanmar
- Why IPv6?
- IPv6 Status in Asia / South-Eastern Asia / Myanmar
- Common Challenges
- IPv6 Deployment Planning

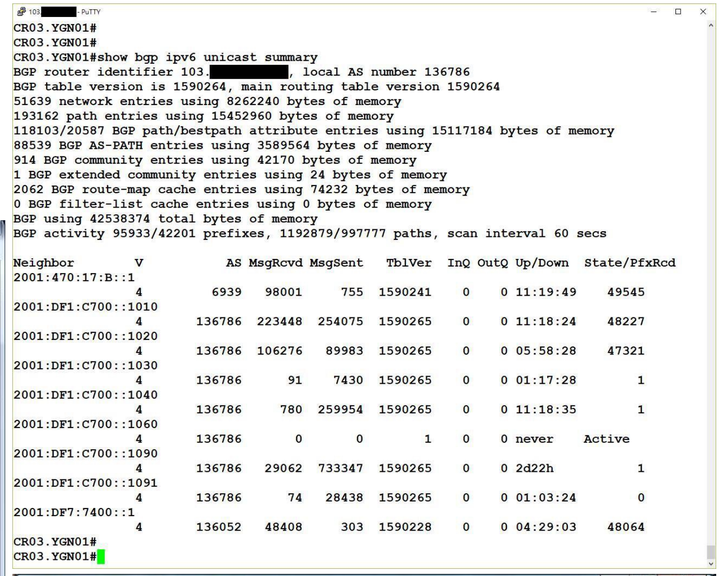
My IPv6 Experience in Myanmar

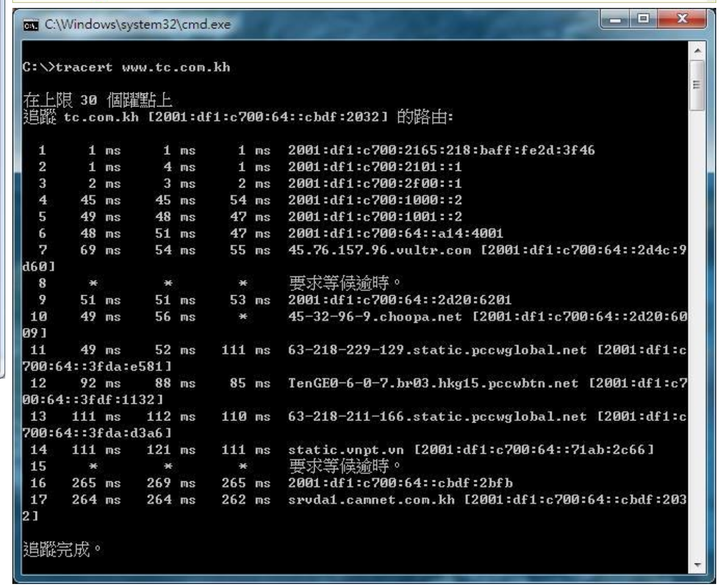
- I lived in Myanmar from 2015 to 2021.
- Until I left the country in March 2021, there was no proper IPv6 FTTH service available.
  - Only Mytel offered IPv6 for mobile users
- I deployed my first IPv6 network in Myanmar back in 2017.
  - As part of my job, we needed to have IPv6
    - My organisation provides ISP solutions and technology training
  - As a network engineer, I was enthusiastic about running IPv6
  - As a long-time friend of APNIC, I knew they would welcome IPv6 deployment in Myanmar

My IPv6 Experience in Myanmar

- Solutions I used back then:
  - Upstream Providers:
    - Vultr
    - Hurricane Electric
  - Peering:
    - CNX (Cambodia)
    - SeattleIX (U.S.)
  - Backbone:
    - 6in4
    - MikroTik EoIP
  - LANs:
    - Dual-Stack
    - IPv6-Only with NAT64 + DNS64







My IPv6 Experience in Myanmar

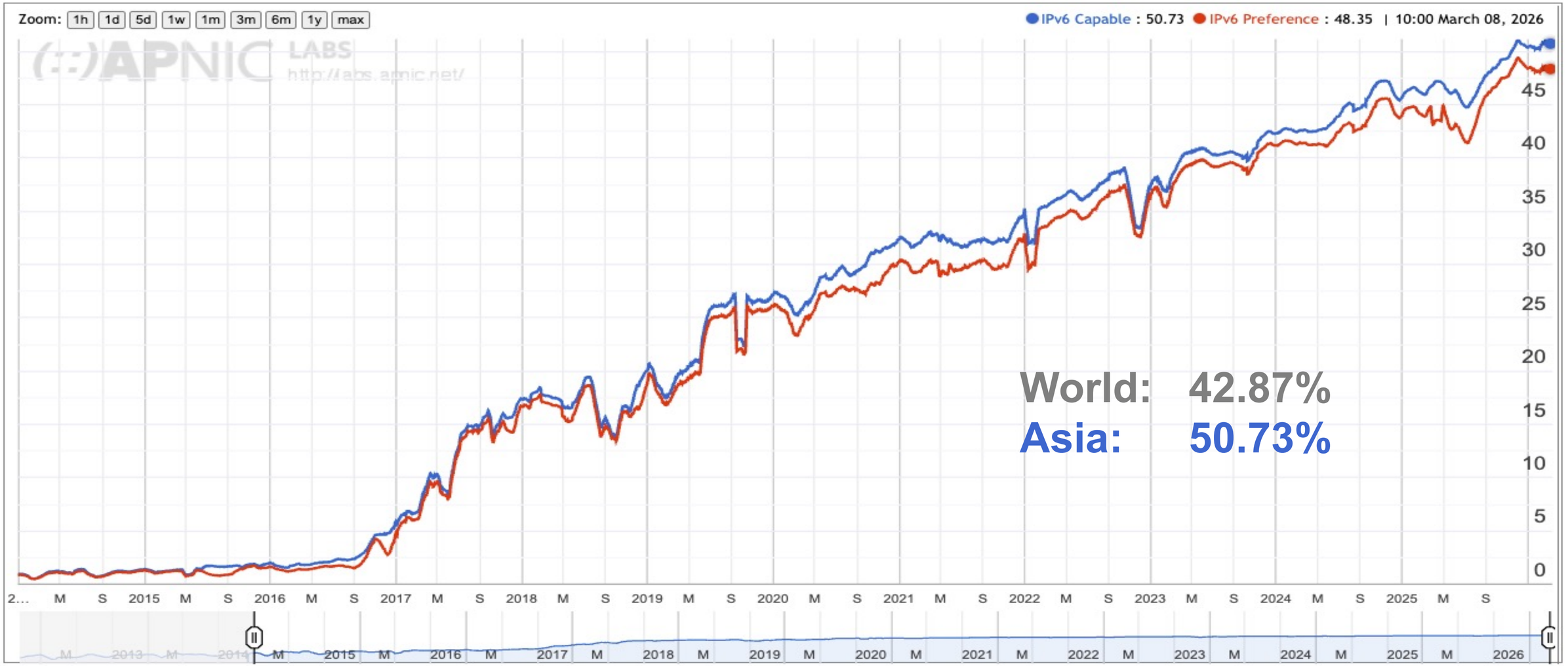
- The IPv6 network was usable, but its performance lagged behind IPv4.
  - Lack of native IPv6 transit and peering locally
  - While our transit and peering were native IPv6, the backbone was tunnelled over IPv4
    - Lower path MTU
    - Latency varied depending on international routing
    - CDNs were not optimised for Myanmar
- Called by Posts and Telecommunications Department (PTD) to explain why our network has peering with foreign ASNs.
  - Myanmar has strict control on international peering

Why IPv6?

- ~~*Have a business case that requires IPv6 (like me).*~~

- Not enough IPv4 to support growing demands.
  - More people on the planet than IPv4 addresses
  - Each person may have multiple devices
- IPv4 is running out.
  - Organisations will soon be unable to apply for new IPv4 addresses
  - Need to lease or buy (USD 40–60 per address) from others
- For routers, it is more efficient to forward IPv6 than IPv4.
- IPv6 provides end-to-end connectivity.
  - No Network Address Translation (NAT)

IPv6 Status in Asia



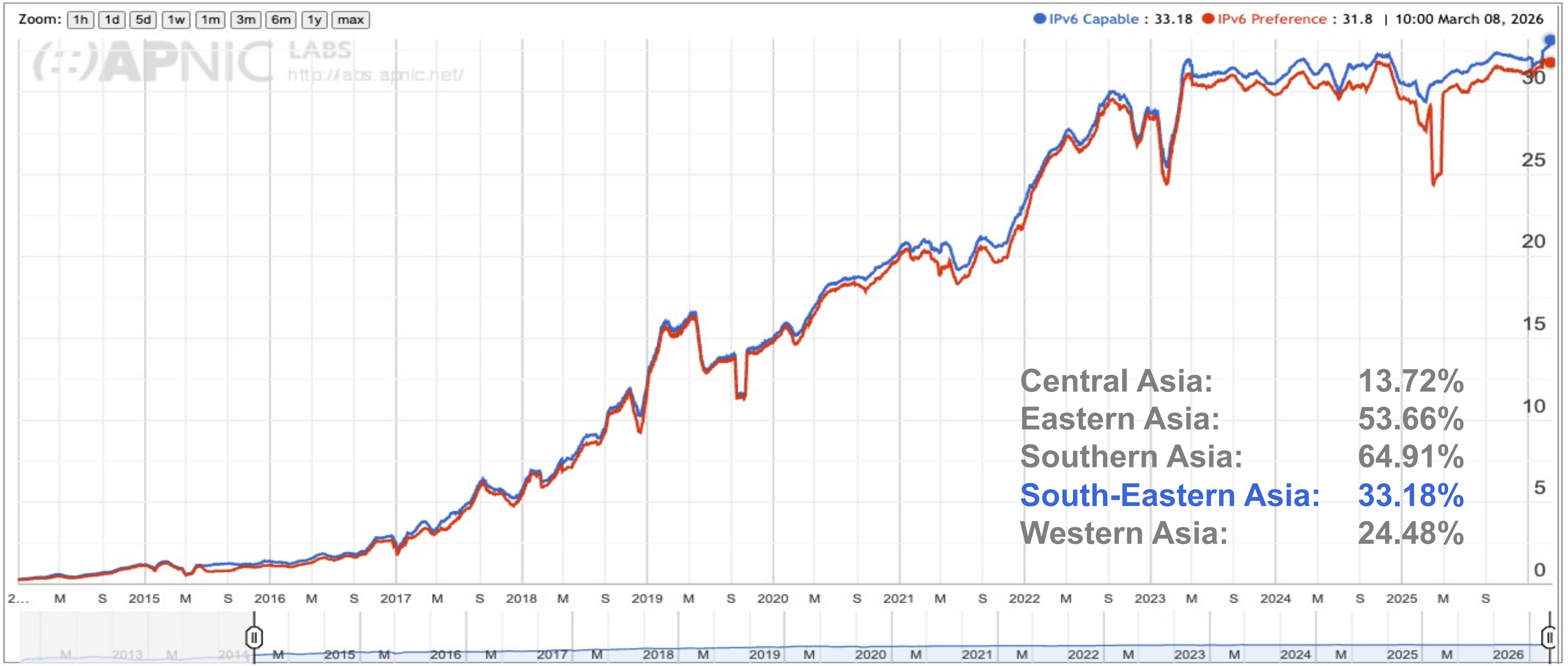
Source: https://stats.labs.apnic.net/ipv6/XD (09 Mar 2026)

IPv6 Status in Asia

CC	Country	IPv6 Capable	IPv6 Preferred	Samples	Weight	Weighted Samples
IN	India, Southern Asia, Asia	77.84%	76.69%	137,002,859	1.05	144,501,526
SA	Saudi Arabia, Western Asia, Asia	71.53%	70.23%	7,081,764	1.13	8,024,331
MY	Malaysia, South-Eastern Asia, Asia	70.27%	67.52%	8,186,729	0.84	6,844,156
VN	Vietnam, South-Eastern Asia, Asia	62.13%	59.15%	24,659,726	0.53	13,158,879
IL	Israel, Western Asia, Asia	61.76%	57.94%	3,697,094	0.49	1,807,398
TW	Taiwan, Eastern Asia, Asia	61.14%	57.62%	11,497,114	0.56	6,406,799
NP	Nepal, Southern Asia, Asia	59.09%	58.64%	3,355,476	0.53	1,766,525
JP	Japan, Eastern Asia, Asia	57.80%	54.78%	54,913,335	0.5	27,651,868
LK	Sri Lanka, Southern Asia, Asia	54.43%	52.25%	1,863,905	1.06	1,982,918
CN	China, Eastern Asia, Asia	53.60%	49.70%	26,489,165	7.64	202,252,308
MO	Macao Special Administrative Region of China, Eastern Asia, Asia	48.89%	47.72%	548,938	0.25	139,206
TH	Thailand, South-Eastern Asia, Asia	48.74%	46.88%	8,854,864	1.25	11,028,387
AE	United Arab Emirates, Western Asia, Asia	48.25%	46.22%	1,733,876	1.4	2,420,364
MN	Mongolia, Eastern Asia, Asia	42.87%	41.03%	1,003,725	0.2	203,892
QA	Qatar, Western Asia, Asia	40.26%	32.85%	1,134,600	0.61	695,901
KR	Republic of Korea, Eastern Asia, Asia	29.34%	28.24%	17,015,578	0.74	12,507,038
KW	Kuwait, Western Asia, Asia	27.01%	25.92%	1,397,452	0.92	1,281,491
BT	Bhutan, Southern Asia, Asia	26.93%	26.81%	143,726	0.75	107,746
KZ	Kazakhstan, Central Asia, Asia	24.98%	23.69%	9,682,806	0.38	3,718,676
PK	Pakistan, Southern Asia, Asia	23.17%	21.86%	17,924,087	0.5	8,874,965

Source: https://stats.labs.apnic.net/ipv6/XD (09 Mar 2026)

IPv6 Status in South-Eastern Asia



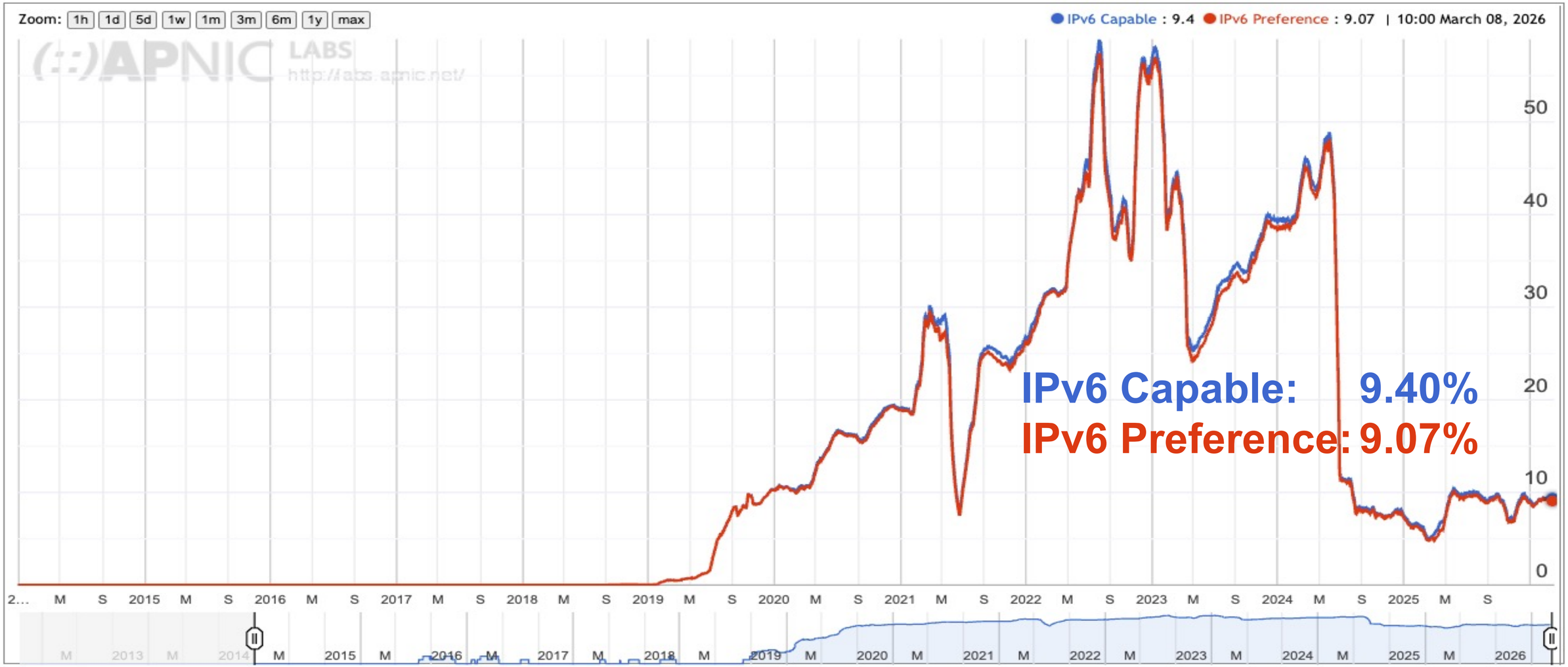
Source: https://stats.labs.apnic.net/ipv6/XU (09 Mar 2026)

IPv6 Status in South-Eastern Asia

CC	Country	IPv6 Capable	IPv6 Preferred	Samples	Weight	Weighted Samples
MY	Malaysia, South-Eastern Asia, Asia	70.27%	67.52%	8,186,729	0.84	6,844,156
VN	Vietnam, South-Eastern Asia, Asia	62.13%	59.15%	24,659,726	0.53	13,158,879
TH	Thailand, South-Eastern Asia, Asia	48.74%	46.88%	8,854,864	1.25	11,028,387
ID	Indonesia, South-Eastern Asia, Asia	21.74%	21.02%	42,804,288	0.67	28,649,683
SG	Singapore, South-Eastern Asia, Asia	21.51%	17.79%	2,433,006	0.52	1,254,672
PH	Philippines, South-Eastern Asia, Asia	18.65%	17.84%	15,506,691	1.16	17,925,585
MM	Myanmar, South-Eastern Asia, Asia	9.40%	9.07%	753,972	7	5,281,472
TL	Timor-Leste, South-Eastern Asia, Asia	4.22%	4.06%	100,629	1.02	102,189
KH	Cambodia, South-Eastern Asia, Asia	0.22%	0.21%	1,517,493	1.14	1,725,176
BN	Brunei Darussalam, South-Eastern Asia, Asia	0.18%	0.17%	224,159	0.54	120,391
LA	Lao People's Democratic Republic, South-Eastern Asia, Asia	0.09%	0.08%	674,117	0.85	573,178

Source: https://stats.labs.apnic.net/ipv6/XU (09 Mar 2026)

IPv6 Status in Myanmar



Source: https://stats.labs.apnic.net/ipv6/MM (09 Mar 2025)

IPv6 Status in Myanmar

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS13335	CLOUDFLARENET - Cloudflare, Inc.	96.35%	94.17%	12,230
AS137259	ILINK-AS-AP i-Link	53.59%	51.66%	2,594
AS138167	TRUENET-AS-AP TrueNET	48.87%	47.21%	2,040
AS136255	TIMCL-AS-AP Telecom International Myanmar Co., Ltd	35.39%	33.92%	43,734
AS14593	SPACEX-STARLINK - Space Exploration Technologies Corporation	28.88%	27.91%	128,432
AS136229	TCLC-AS-AP Treasure Chindwin Land Co.,Ltd	18.99%	18.48%	395
AS133385	ATOMMYANMAR-AS-AP Atom Myanmar Limited	10.06%	9.51%	37,275
AS153044	MSCNC-AS-AP MYANMAR SKY CITY NETWORK COMMUNICATION Co.,Ltd	1.58%	1.58%	380
AS152634	WCCCOMPANYLIMITED-AS-AP Goal Link ISP	1.15%	0.13%	786
AS137891	BETHEFIRST-AS-AP Be The First	0.57%	0.57%	1,567
AS137567	CGPL-AS-AP Campana Group Pte. Ltd.	0.44%	0.44%	227
AS141199	CLPC-AS-AP Century Link Plus	0.30%	0.30%	338
AS150797	GCL-AS-AP GIGA-NET	0.19%	0.19%	1,053
AS150310	TMC-AS-AP Trustforce Myanmar Company Limited trading as Nationet	0.18%	0.18%	1,104
AS134528	MPTCL-AS-AP MYANMAR PI TECHNOLOGY CO., LTD	0.16%	0.16%	1,271
AS137424	ISMC-AS-AP Integral Solutions Myanmar Co.,Ltd.	0.14%	0.12%	4,953
AS152329	AKNCL-AS-AP Aon Kham Network Company Limited	0.14%	0.14%	703
AS141015	MYANMARLINK-AS-AP Myanmar Link Telecommunication Ltd	0.13%	0.13%	2,971
AS139692	CHEN-AS-AP CHEN GUANG COMPANY LIMITED	0.12%	0.12%	4,153
AS136780	MIHL-AS-AP MYANMAR INFORMATION HIGHWAY LIMITED	0.11%	0.05%	1,860

Source: https://stats.labs.apnic.net/ipv6/MM (09 Mar 2025)

IPv6 Status in Myanmar

- Used to be relatively high in the past but has dropped significantly in recent years.
  - Went above 10% at the end of 2019
  - Peaked at 58.85% in August 2022
  - Fell below 10% after mid-2024
- Mytel and Starlink are key contributors, with IPv6 Capable rates of 35.39% and 28.88%, respectively.
  - Other major networks show little to no IPv6 adoption
  - BTW, is Starlink even legal in Myanmar? 🤔

IPv6 Adoption Decline

- IPv6 adoption rate has significantly dropped since July 2024.

Date	IPv6 Capable %	IPv6 Preferred %	Note
01 Aug 2022	**58.85**	**57.41**	**Peak**
01 Jun 2024	48.33	47.55	
01 Jul 2024	**11.58**	**11.37**	**Decline**
01 Jan 2025	7.52	7.23	
01 Jan 2026	9.20	8.91	
08 Mar 2026	**9.40**	**9.07**	**Latest**

Source: https://stats.labs.apnic.net/ipv6/MM (09 Mar 2026)

Possible Reasons of Decline

- Deep Packet Inspection (DPI) was implemented at International Gateway (IGW) networks around July 2024.
  - Content filtering became stricter and more granular
  - Major social networks using IPv6 were banned
- Users tend to use VPN for accessing restricted content.
  - Most VPN services primarily operate over IPv4

Feedback from Network Operators

- Services were impacted by the implementation of DPI.
  - High latency, unstable bandwidth, blocking legitimate services
- ISPs were encouraged to provide IPv4 instead of IPv6.
- IPv4 content filtering is “easier to manage”.
  - Better equipment support and less configuration complexity
- IPv6 users were targeted by botnet attacks.
  - Unable to purchase suitable equipment for mitigation due to sanctions
  - Turning off IPv6 became their solution
- Scamming businesses mainly rely on IPv4.

Common Challenges

- Legacy network upgrade?
  - Equipment may not support IPv6
- New skills required?
  - Not sure how to do
- Concerns on security?
  - Users will be using public addresses
- Policies and services still prefer IPv4?
- Still have enough IPv4 addresses? 🙂
- Have money to lease or buy IPv4 addresses? 🙂

IPv6 Deployment Planning

- IPv4 is running out and getting more expensive to operate.
  - IPv4 address prices
  - Carrier Grade NAT (CGN) equipment costs
- Steps for IPv6 deployment:

Strategy & Preparation

1. Planning & governance
2. Conduct network assessment
3. Optimise the existing network
4. Select IPv6 transition strategy

Capability & Design

5. Build skills & knowledge
6. Apply for IPv6 address space
7. Develop IPv6 addressing plan
8. Build test & pilot environment

Deployment & Operations

9. Implement IPv6 deployment
10. Choose IPv6 transit services
11. Enable IPv6 for customers
12. Operations, monitoring & optimisation

Need Help in IPv6?

IPv6@APNIC
https://www.apnic.net/community/ipv6/

APNIC Help Centre
https://help.apnic.net/s

Information Society Innovation Fund (ISIF Asia) Grants
https://apnic.foundation/grants/isif-asia/

Thank you for your attention!

Contact Me

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