MINISTRY OF INFORMATION AND COMMUNICATIONS
VIETNAM INTERNET NETWORK INFORMATION CENTER

IPv6 and RPKI deployment in Vietnam

APNIC58| NIR SIG |5th Sep 2024

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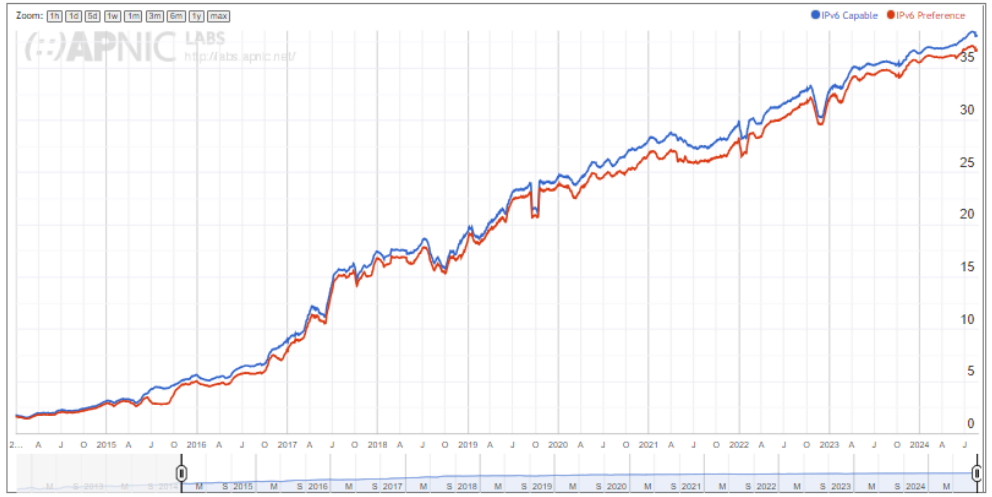
IPv6 measurements in the world

Rank	Economy	IPv6 Capable
1	India	80.79%
2	Malaysia	72.36%
3	Belgium	67.29%
4	Saudi Arabia	66.83%
5	France	65.85%
6	Vietnam	63.33%
7	Germany	61.12%
8	Nepal	60.50%
9	Sri Lanka	60.03%
10	Japan	59.17%

Top 10 countries in IPv6 adoption rate
(Source: Aug 2024, APNIC Lab)

Use of IPv6 for World (XA)



The use of IPv6 for World
(Source: Aug 2024, APNIC Lab)

IPv6 deployment over the world

- The use of IPv6 >50%: **22** economies
- The use of IPv6 > 20% and <50%: **52** economies

IPv6 measurements in the world (cont.)

India

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS55836	RELIANCEJIO-IN Reliance Jio Infocomm Limited	96.86%	95.43%	61,112,662
AS45609	BHARTI-MOBILITY-AS-AP Bharti Airtel Ltd. AS for GPRS Service	92.99%	92.18%	30,684,663
AS38266	VIL-AS-AP Vodafone Idea Ltd	89.06%	88.26%	8,353,334
AS24560	AIRTELBROADBAND-AS-AP Bharti Airtel Ltd., Telemedia Services	70.47%	69.33%	5,685,795
AS45271	ICLNET-AS-AP Idea Cellular Limited	90.62%	89.59%	5,416,854

- 05 biggest ISP/Mobile operators reached >70%
- 3 of 5 ones reached >90% IPv6 adoption rate

Malaysia

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS4788	TTSSB-MY TM TECHNOLOGY SERVICES SDN. BHD.	61.01%	59.91%	2,304,580
AS9534	MAXIS-AS1-AP Binariang Berhad	83.65%	82.35%	1,468,107
AS4818	DIGIIX-AP DiGi Telecommunications Sdn. Bhd.	84.77%	80.90%	1,103,489
AS10030	CELCOMNET-AP Celcom Axiata Berhad	79.96%	75.63%	1,063,900
AS38466	UMOBILE-AS-AP U Mobile Sdn Bhd	73.07%	66.73%	844,682
AS9930	TTNET-MY TIME dotCom Berhad No. 14, Jalan Majistret U126 Hicom Glenmarie Industrial Park 40150 Shah Alam Selangor, Malaysia	75.04%	73.51%	264,621

- 06 biggest ISP/Mobile operators reached >60%
- 2 of 6 ones reached >80% IPv6 adoption rate

IPv6 measurements in Viet Nam

Use of IPv6 for Vietnam (VN)

Up to Aug 2024

- The use of IPv6 for Viet Nam: 63.33%, ranked 6th in the world.

ASN	AS Name	IPv6 Capable	IPv6 Preferred	Samples
AS7552	VIETEL-AS-AP Viettel Group	68.70%	64.36%	4,905,366
AS45899	VNPT-AS-VN VNPT Corp	54.47%	51.87%	3,961,225
AS18403	FPT-AS-AP FPT Telecom Company	69.12%	66.88%	2,083,811
AS131429	MOBIFONE-AS-VN MOBIFONE Corporation	81.26%	78.84%	623,439
AS24086	VIETTEL-AS-VN Viettel Corporation	65.12%	60.98%	280,811

The use of IPv6 For Viet Nam and Top 4 big ISP/Mobile (Source: APNIC Lab)

IPv6 measurements in Viet Nam (cont.)

ISP, IXP, Mobile operators

- **FTTH:** 76% FTTH subs with IPv6
- **Mobile:** 70% of all Internet mobile subs), 3G, 4G, 5G
- **National IPv6 Network:** VNIX with 100% peers via IPv6; 100% National DNS IPv6

Government agencies

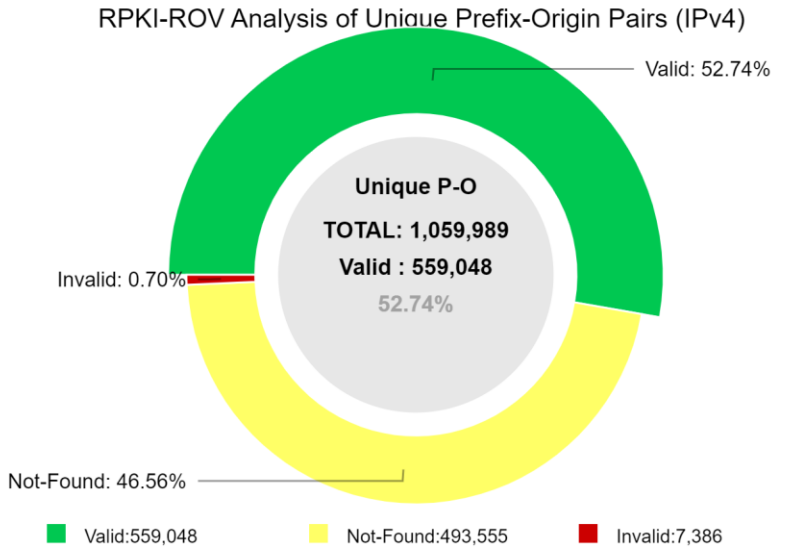
- 96% Ministries, Branches and Provinces having IPv6 Plan
- 88% Ministries, Branches and Provinces having Portals enabled IPv6

IDC, Cloud, Hosting Providers

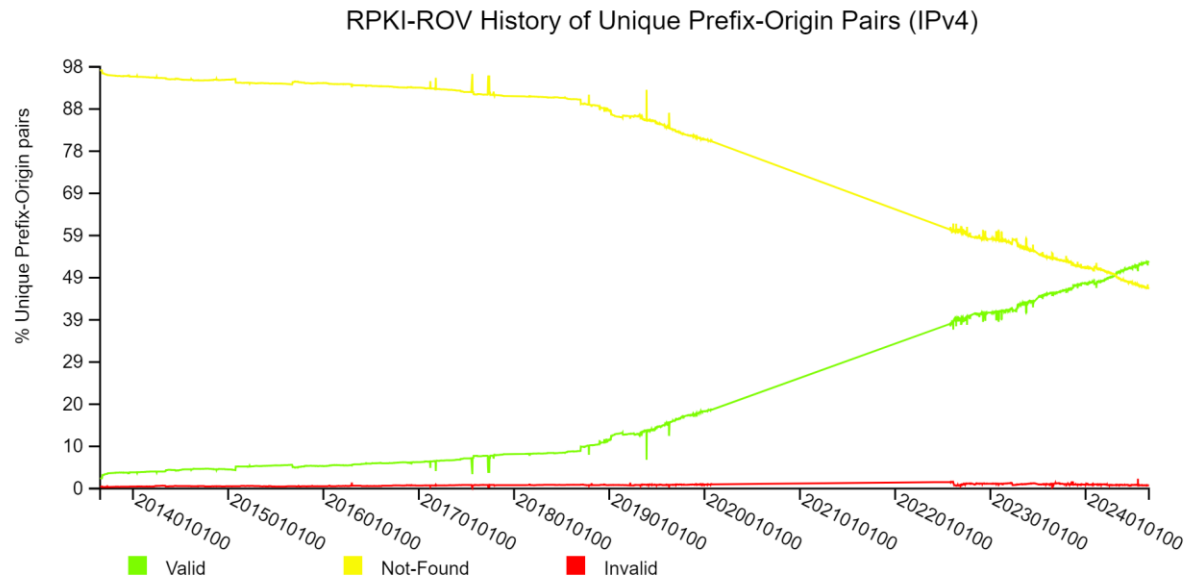
No.	ASN	Net Name	The use of IPv6
1	AS150880	FASTBYTE-VN	82.14%
2	AS140810	MEGACORE-VN	66.52%
3	AS149094	THMREFRIGERATION-VN	31.70%
4	AS135967	BKNS-VN	29.96%
5	AS135921	MAXSERVER-VN	22.09%
6	AS63739	VIETPN-VN	21.43%
7	AS135932	VNDATA-VN	21.23%
8	AS151893	SUCCESS-VN	16.73%
9	AS56150	VHOST-VN	12.70%
10	AS140825	HOSTINGVIET-VN	10.41%

The use of IPv6 for ICD, Cloud, Hosting Providers in Viet Nam (Source: APNIC Lab)

RPKI in the world



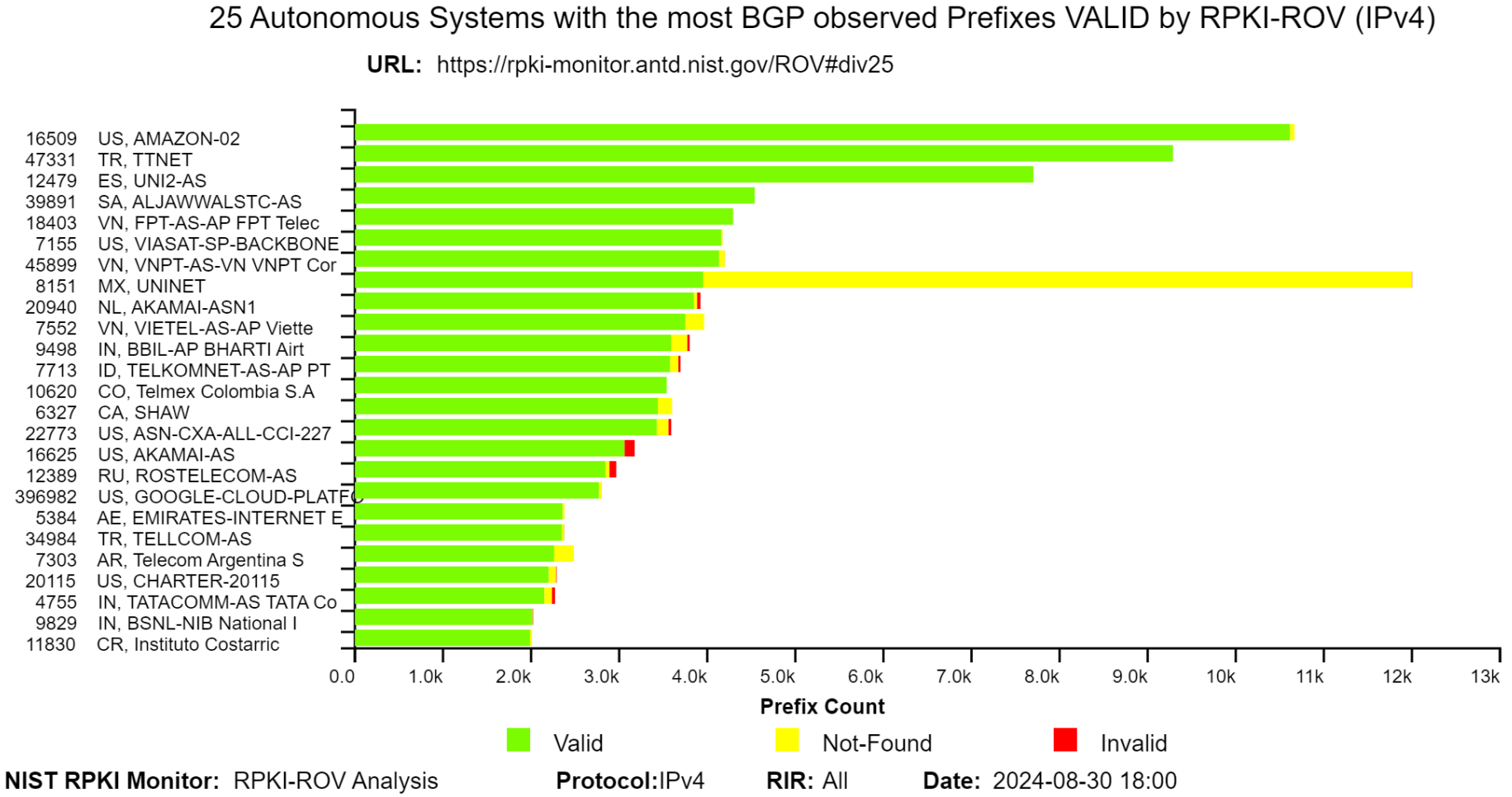
NIST RPKI Monitor: RPKI-ROV Analysis **Protocol:** IPv4 **RIR:** All **Date:** 2024-08-30 18:00
URL: https://rpki-monitor.antd.nist.gov/ROV#div1



NIST RPKI Monitor: RPKI-ROV Analysis **Protocol:** IPv4 **RIR:** All **URL:** https://rpki-monitor.antd.nist.gov/ROV#div2

RPKI deployment in the word: 52% ROA IPv4 valid
Source: https://rpki-monitor.antd.nist.gov/ROV

RPKI in the world (Cont.)



Top 25 ASNs with the most BGP observed Prefixes valid by RPKI-ROV (IPv4)
Source: https://rpki-monitor.antd.nist.gov/ROV

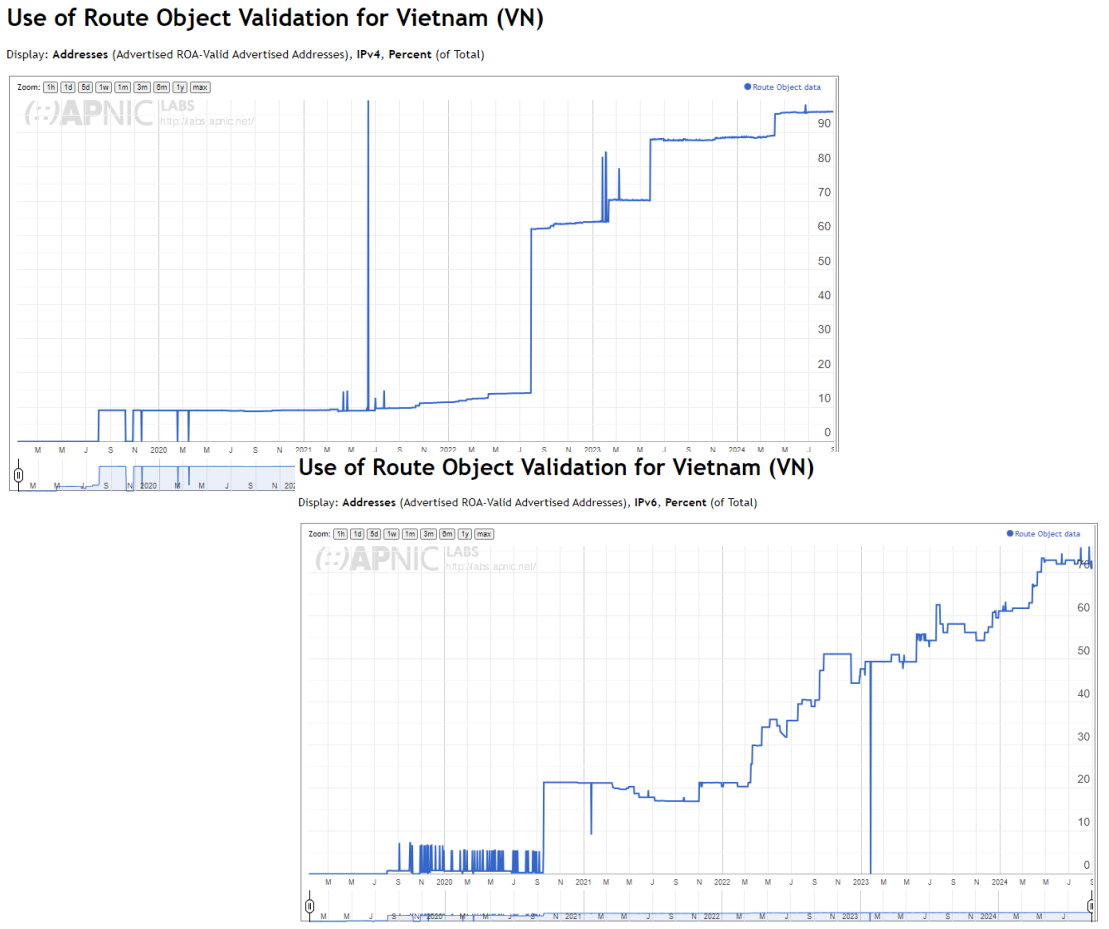
RPKI in Viet Nam

ROA

- ROA-IPv4: 96%
- ROA-IPv6: 73%
- All ISP: 95% - 100% valid ROA.
- IP members: 70% members creating ROA.

ROV

- Big ISPs deployed ROV: FPT, VNPT, Viettel, …



Use of Route object validation for Viet Nam (Source: APNIC Lab)

CONTENTS

Vietnam IPv6 policies

- 2008: Directive No. 03/2008/CT-BTTTT of the Minister on promoting the use of new generation IPv6 Internet addresses.
- 2011: Viet Nam National IPv6 Action Plan (2011 - 2019) (the Decision of Ministry of Information and Communications)
- 2020: The Decision No. 749/QD-TTg of The Prime Minister of Government dated June 3rd, 2020 on introducing Program for National Digital Transformation by 2025: ***The entire of Viet Nam Internet transited to IPv6 by 2025***
- 2021: IPv6 For Gov Program (The Decision No. 38/QD-BTTTT dated 14th January 2021 of Ministry of Information and Communications)
  - ***1st stage (2021-2022): 50% Government Websites enabled IPv6.***
  - ***2nd stage (2023-2025): 100% Government Websites enabled IPv6/ Readiness to deploy IPv6-only***

IPv6 For Gov Program Launch

Vietnam IPv6 policies (cont.)

- 2022, 2023: The Directive No. 2/CT-TTg in 2022 of The Prime Minister of Government and the Directive No. 3/CT-TTg in 2023:
  - Ministries, Branches, Provinces deploy IPv6; priority: Portals and E-public services enabled IPv6
- 2024: The Decision No. 36/QD-TTg of The Prime Minister of Government dated January 11, 2024 on approving the information and communications infrastructure master plan for the period of 2021-2030, with a vision toward 2050
  - The entire of Viet Nam Internet transited to IPv6
  - Deploying IPv6 for IoT, mobile IoT, smart home IPv6

IPV6, IPV6 FOR GOV PLAN IN 2024

Internet Address

Decision No. 377/QD-BTTTT dated March 25th, 2024 on approving the **'The Plan of Vietnam IPv6 Transition and IPv6 For Gov in 2024'**

RPKI promotion policies

- 2023, 2024: The Directive of Ministry of Information and Communications on development of information and communication industry
  - Promoting RPKI Deployment in Viet Nam Internet
  - Stage 1 – ROA and Stage 2 – ROV
- 2022: Official letter of Ministry on promoting ISPs deploying RPKI.
- 2024: Official letter of VNNIC on promote all IP members deploying RPKI (firstly, creating ROA for all routing prefixes).

Promotion activities

Training

- IPv6/RPKI training courses per year
- From basic to advanced/ Onsite and online

5 course in 2024 (Total: **308** attendees)

- 01 IPv6 Security for enterprises
- 04 courses for Government agencies (Ministries, Branches, Cities/ provinces) – Network, Lan, WiFi, Wan, IT services, …

Consultation meetings

- Large ISPs, Mobile operators and ICPs (yearly)
- Government Agencies.

2024

- 8 working meetings with 8 biggest ISP, Mobile operators, IDC in Vietnam
- 5 meetings with 5 departments of Information and communications

Promotion activities

Communications/ official letter

- Online News, Internet Report.
- Conferences:
  - VIC, IPv6 Forum
  - IP member meeting, VNIX-NOG
- Official letters from VNNIC/ MIC

IPv6 Conference: Deploying the IPv6 plan in 2024

- Chairman: Deputy Minister of Information and Communications
- Attendees: Leader of big ISP, Mobile operators, CP, IDC, Ministries/Branches (onsite) and 63 cities/provinces (online).

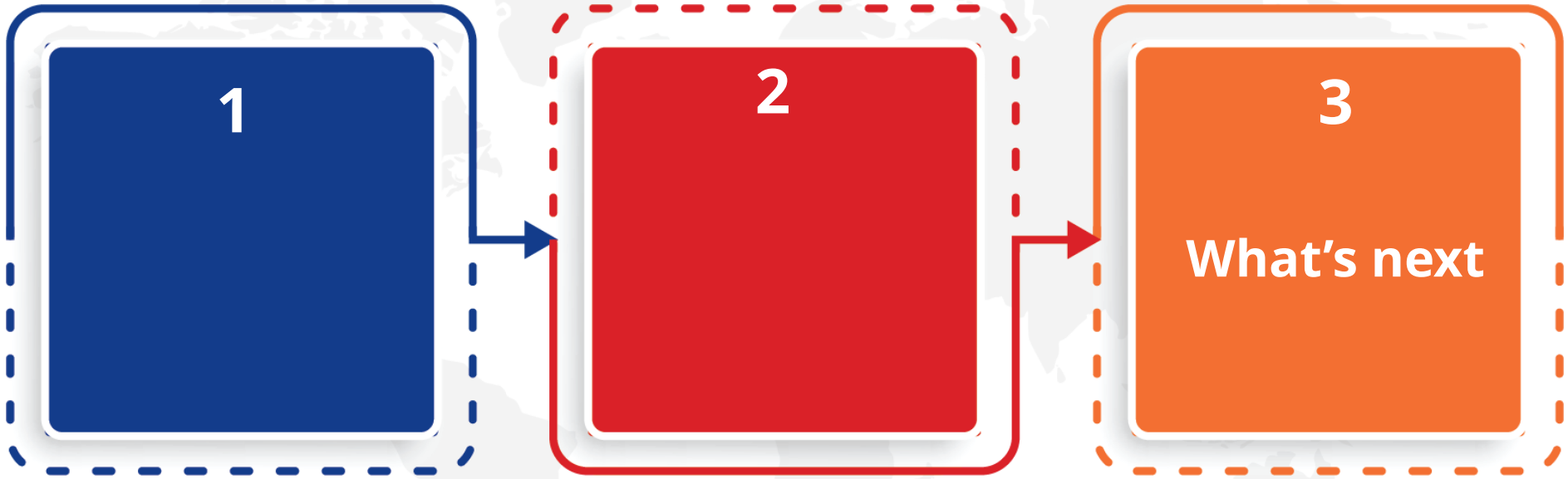
VIC 2024

- > 400 attendees
- IPv6, RPKI is one of the key topics.
- IPv6 Security Workshop

News/Reports:

- Monthly (IPv6, RPKI, …)
- Released IPv6 Magazine

CONTENTS



Upcoming Event/ Activities

86apTLD

17-20 Sep 2024
Da Nang city

VNIXNOG
VietNam National Internet eXchange
Network Operators Group

VNIX-NOG 2024
17-18/10/2024, Hue City

IP v4 v6
Internet Address
ASN
Your Net ID

IP member meeting 2024
11/2024

IPv6 VIETNAM

- Working with ISP, Mobile, Content operators
- Working and supporting Departments of Information and communications
- Report to Ministry by the end of this year
- Preparing for the plan in 2024
- Researching and preparing the plan from 2026 - 2030

RPKI

- Support and promote all IP members creating all routing Prefixes.
- RPKI Workshop

What's next

2024-2025 TOWARD 2030

2024-2025

- **70-80%** the use of IPv6 for Viet Nam
- **100%** IPv6 subscribers (fixed, Mobile)
- **100%** IDC, Cloud, Hosting, Content providing IPv6 to their members
- 100% IP members deploying IPv6
- IPv6-only, IPv6for 5G, Cloud, IoT, …

2026-2030:

- **IPv6-only** (IoT, Cloud, 5G)
- **IPv6+** (AI, 5G/6G, SRv6)

2024-2025 TOWARD 2030

2024-2025

- 98% - 100% ROA.
- Big ISPs deploying ROV.

2026-2030:

- Routing monitoring with RPKI
- Developing the monitoring and operating system (RPKI, Internet Atlas, i-Speed, VNIX, …)

VNNIC
Internet for all

DOMAIN .VN

ELEVATING VIETNAMESE BRANDS

VNIX
Viet Nam National Internet eXchange

DNS
National .VN Domain Name System

ASN
Your Net ID

IP v4 v6
Internet Address

INTERNET SPEED by VNNIC

VNNIC INTERNET ACADEMY

VNNIC INTERNET ATLAS

Thank you !

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