

IPv6 Deployment in ISP

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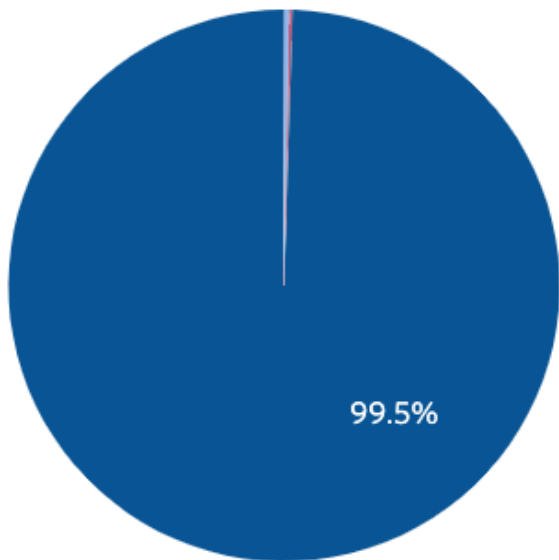
Network Trainer, Development

Agenda

- Introduction
- IPv4 Depletion
- Why IPv6 for Internet
- IPv6 deployment status
- Why ISPs need IPv6
- IPv6 Deployment roadmap
- Strategies for Successful Deployment
- Challenges and considerations
- Q&A

IPv4 Depletion

IPv4 free pool chart



■ available ■ reserved ■ delegated

- **Delegated – 99.5%**
- **Reserved – 0.2%**
- **Available – 0.3%**

With **IPv4** being close to depletion, the way forward is to transition to **IPv6**.

Why IPv6 for Internet

- Address Space Exhaustion
- Support for Internet of Things (IoT)
- Future-Proofing
- Embrace Direct Connectivity
- Built-in Security and Privacy support

IPv6 End User Readiness - APNIC stats

IPv6: Deployment in South-Eastern Asia

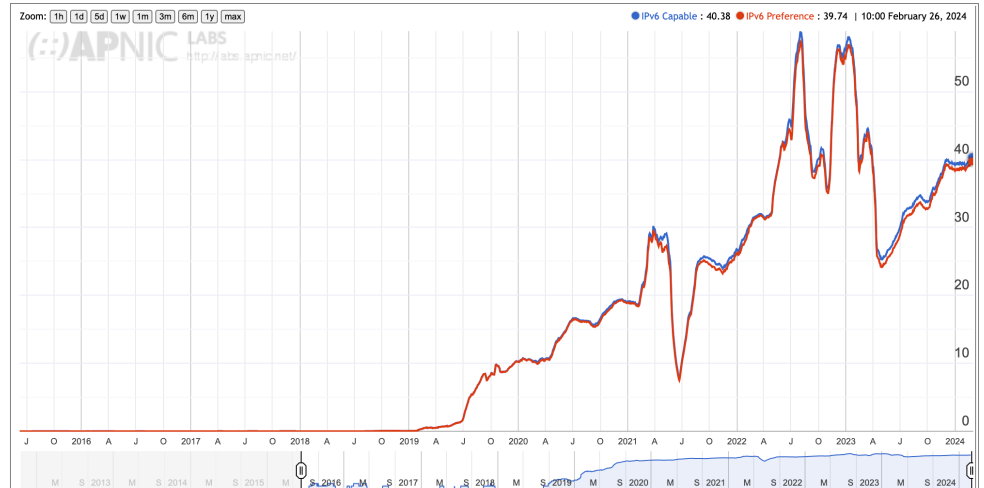


Country	IPv6 Capable
Malaysia	70.02%
Vietnam	62.10%
Thailand	46.61%
Myanmar	40.38%
Singapore	20.37%
Philippines	16.91%
Indonesia	13.66%

NOTE: Economies with less than 10% IPv6 Capability are not shown above

Myanmar: Statistics

IPv6 deployment:
40.3%



IPv6 delegations:
126

IPv4 delegations:
237

ASNs delegated:
174

/48 prefixes:
4,980,786

/24 prefixes:
959

Why ISP need to deploy IPv6

- Future-Proofing
- Improvement in performance
- IPv6 Adoption by Tech Giants/CSP/CDN
- Customer retention
- Operational Savings and Benefits
- Competitive Advantage
- Get Ready for IPv4 shutdown

Deployment Plan

- **Build Your IPv6 squad**
- **Develop the plan**
 - Assess Current Network Infrastructure
 - Hardware
 - Software
 - Services
 - Staff Training and Awareness
 - Obtain management approval
 - Get sign off
 - Secure funding

Preparation

- **Prepare for deployment**
 - Fill gaps in knowledge
 - Obtain IPv6 Prefix
 - Build a test bed
 - Document the whole project
 - Develop an addressing plan
 - IPAM) tool
 - Sparse allocation
 - Develop a Transition Strategy
 - Select a migration strategy
 - Test the migration strategy

Deployment

- **Deployment phase**

- Phased deployment
- Enable IPv6 with Upstream/Peers/IX
- Enable IPv6 on Gateway and Core
 - Enable control plane protection for IPv6 along with IPv4
 - Enable the IPv6 on IGP & iBGP
- Enable IPv6 on server platform
 - Enable IPv6 on Firewall / load balancer
 - Update policies/rules for IPv6
 - Enable IPv6 on different services like DNS, Mail, NMS etc.
 - Enable IPv6 on VPN server/Firewall/Load balancer

Deployment Plan

- **Deployment phase**
 - Monitoring and Maintenance
 - Enable IPv6 on the access network
 - Enable IPv6 on the CPE
 - Get feedback from customer
 - In case of any issue resolve it or rollback.
 - Monitoring and Maintenance (continuous)
 - Switch off IPv4 (Long term goal)
 - Once everyone is on IPv6 and World has agreed on it.
 - Keep documenting all stages
 - Share the stories and knowledge with community

Key Considerations and Challenges

■ Considerations:

- Address space Management
- Hardware and software compatibilities
- Regulatory compliance
- Customer Education and support
- Quality of services

■ Challenges

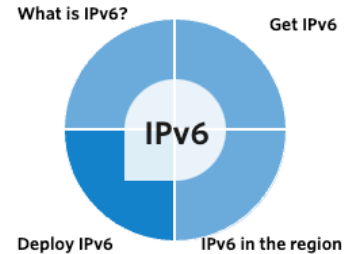
- Limited IPv6 Awareness
- Hardware and software upgrades
- Technical Expertise
- Interoperability issues
- Infrastructure Limitations

Technical Support

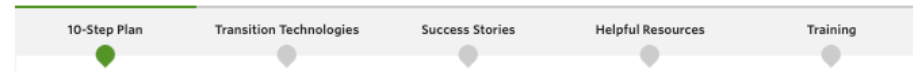
APNIC is ready to provide technical training and technical assistance for IPv6 deployment.

- Operational trainings
 - Direct country assistance (Gov)
 - Standalone workshops
 - Training at NOGs
- Technical Assistance
 - Remote or F2F
- Visit academy.apnic.net for upcoming training and workshops

Deploy IPv6



Deploying IPv6 can be a challenge but many organizations around the world have made the transition successfully. Here's some of the elements you'll need to consider for your organization's deployment of IPv6.



- Plan, prepare, deploy. Find your 10 step plan here:
apnic.net/community/ipv6/

Financial Support

The graphic features the ISIF Asia logo at the top left, with the text '2023 funding opportunities' and the website 'www.isif.asia' below it. Three icons represent the funding areas: 'INCLUSION' (a cluster of red circles), 'INFRASTRUCTURE' (a red antenna tower), and 'KNOWLEDGE' (a red lightbulb). A red banner states 'USD 2.035m to be allocated'. Below this, a blue triangle labeled 'FUNDING TYPES' points to four categories: 'USD 30k Small grants', 'USD 85k Scale-up grants', 'USD 150k Impact grants', and 'USD 30k - 250k IPv6 Deployment'. A green banner at the bottom reads 'Ian Peter Grants for Internet and the Environment'.

isif asia
2023 funding opportunities
www.isif.asia

INCLUSION INFRASTRUCTURE KNOWLEDGE

USD 2.035m to be allocated

USD 30k Small grants
USD 85k Scale-up grants
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USD 30k - 250k IPv6 Deployment

FUNDING TYPES

Ian Peter Grants for Internet and the Environment

More information on the 2023 ISIF Asia grants are available on the ISIF Asia site.

<https://isif.asia/>

- APNIC Foundation and the Information Society Innovation Fund (ISIF Asia) provides financial support.
- Recipients of 2022 IPv6 Deployment grants
 - BOOM! Inc., Micronesia: USD 250,000
 - Tonga Communication Corporation, Tonga: USD 250,000
 - National Institute of Technology Karnataka, Surathkal, India: USD 240,000
 - Yayasan Badan Wakaf Universitas Islam Indonesia, Indonesia: USD 60,000
- ISIF Asia is accepting applications for the 2024.
- Applications close on 28 March.

THANK YOU