



MINISTRY OF SCIENCE AND TECHNOLOGY
VIETNAM INTERNET NETWORK INFORMATION CENTER

PROMOTING AND DEPLOYING IPV6, IPV6-ONLY OF VIETNAM

DaNang, September 2025

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PART 1

Background & Achievements

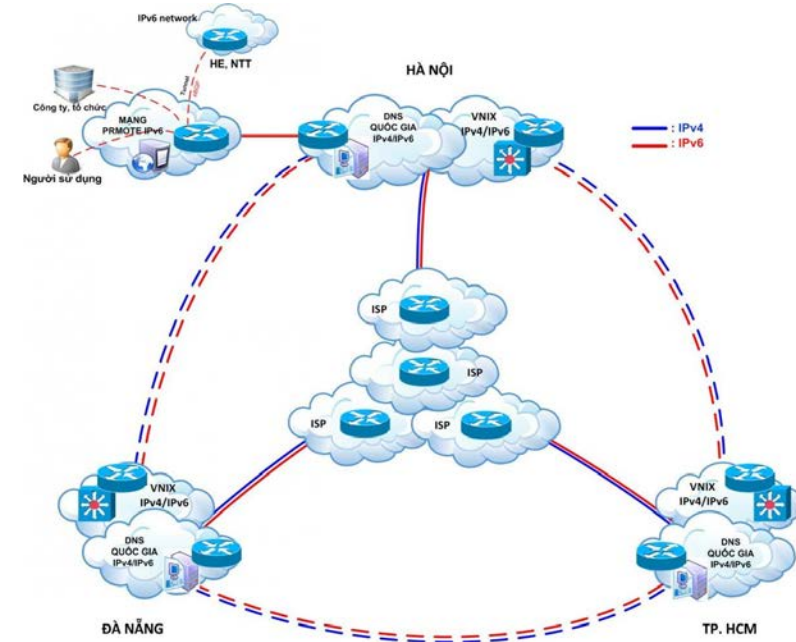
Introduction to VNNIC

- **National Internet Registry (NIR)** of Vietnam (est. 2000): allocation and management of national Internet resources (IP addresses, ASNs).
- **.VN Registry**: administration and operation of the country code top-level domain “.vn”.
- **VNIX Operator**: built and has operated the **Vietnam National Internet Exchange (VNIX)** since 2003, interconnecting major ISPs.
- **National DNS Infrastructure**: operation of the authoritative “.vn” **DNS system** (Anycast, fully IPv6-ready).
- **IPv6 Leadership**: **national focal point** for policy, research, training, and pilot deployment of IPv6 and IPv6-Only.



Vietnam IPv6 Adoption – Key Results

- **65.5% of Internet users on IPv6:** Vietnam ranks **Top 7** worldwide, **Top 2** in ASEAN, and has remained consistently in the global Top 10 (APNIC Labs).
- **Core infrastructure:** **VNIX** and the national **“.vn” DNS** system are fully 100% IPv6-ready, ensuring stability and resilience at the root of Vietnam’s Internet.
- **Fixed broadband (FTTH):** **80%** IPv6 adoption – 17.4 million out of 21.6 million subscribers.
- **Mobile networks:** **88%** IPv6 adoption – 95 million out of 96 million subscribers.
- **Government services:** Nearly all government websites (**95%**) are IPv6-enabled.



PART 2

Policies, Context & Roadmap

National IPv6 Policies & Strategies

2011–2019: “National IPv6 Action Plan” (*Decision 896/QĐ-BTTTT, Decision 2276/QĐ-BTTTT*)

Objective: Establish **nationwide IPv6 readiness** and dual-stack transition across networks, services, and content.

Key results:

- **World IPv6 Day** (2011): Vietnam joined the first global IPv6 trial.
- **Vietnam IPv6 Launch** (6 May 2013): official launch of the national IPv6 network over **VNIX** and **.vn DNS** with ISPs.
- By end-2020: **~34M** IPv6 users (**~46%**), Top 10 worldwide, Top 2 ASEAN, Top 4 Asia.

2021–2025: “IPv6 For Gov” Program (*Decision 38/QĐ-BTTTT*)

Objective: **Full IPv6** adoption across **government** networks and services.

Key results:

- By 2024: **95%** of government websites enabled IPv6.
- IPv6 became the default standard for e-Government and public digital services.

2026–2030: Next Phase – To Be Defined (?)

- The upcoming national IPv6-Only roadmap will be **announced** by the end of 2025.
- This will mark a turning point toward an **IPv6-Only** Internet in Vietnam.

Context & Motivation for IPv6-Only in Vietnam

Context

- **IPv4 exhaustion:** No more IPv4 addresses available worldwide.
- **5G commercialization:** Vietnam among the first in ASEAN to commercialize 5G SA, requiring native IPv6 for massive device & ultra-low latency connectivity.
- **Strong IPv6 adoption:** 65.5% users, Top 7 globally, Top 2 ASEAN, consistently in Top 10.
- **National strategies:** IPv6 mandated as essential infrastructure for Digital Government and Digital Transformation.

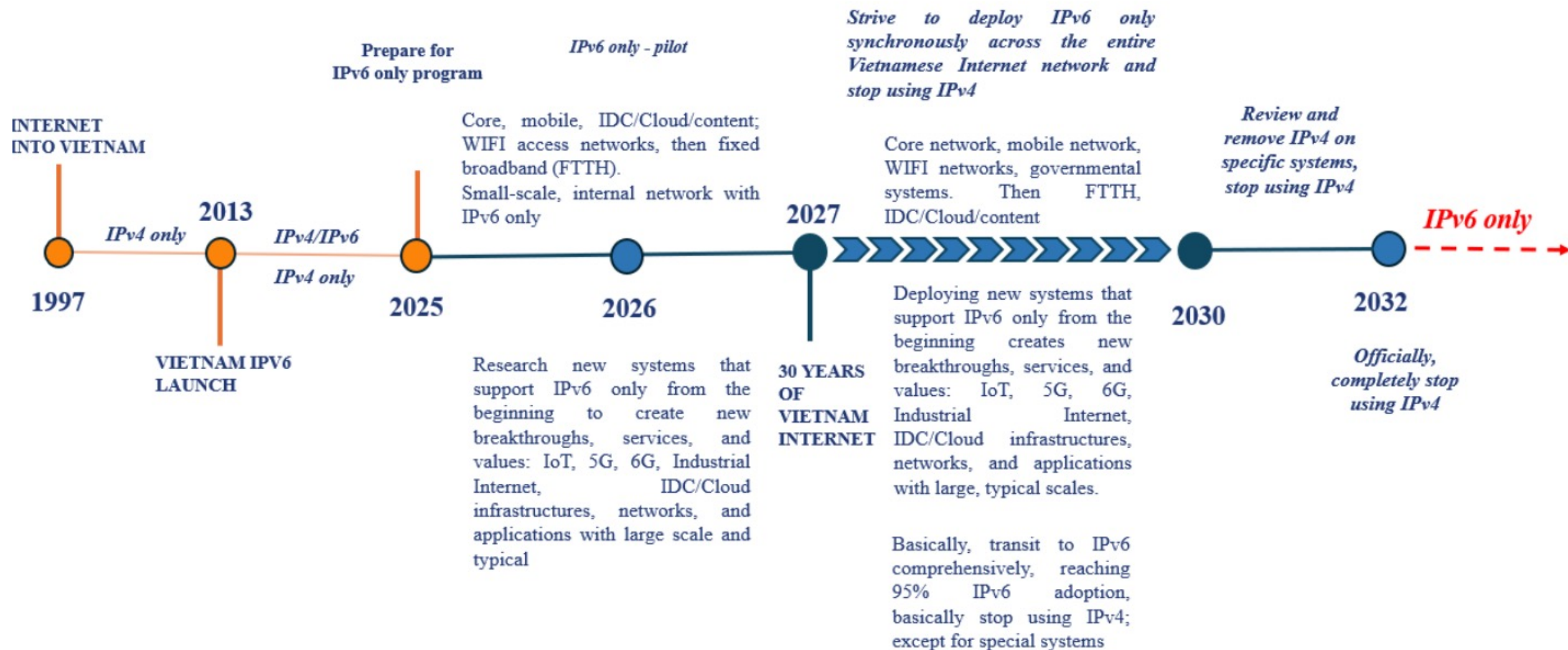
Motivations

- **Scaling connectivity:** Billions of sensors and devices require end-to-end addressing.
- **Future technologies:** AI, Cloud, Blockchain, Smart Cities require global reachability and seamless interoperability.
- **Network performance:** Simpler networks, no dual-stack/NAT, better latency & stability.
- **Strategic momentum:** Vietnam's IPv6 consistent leadership paves the way for IPv6-Only.

Draft Roadmap to IPv6-Only

- 2025 -2026: Start IPv6-Only **pilots**
- 2027–2029 – Large-scale **expansion**

- 2030 – **Consolidation**
- 2032 – **Discontinue** IPv4 nationwide



PART 3

Preparing for IPv6-Only Transition

Capacity Building

- **academy.vnnic.vn**: Vietnam's national e-learning platform on Internet resources.
- **Specialized training**: Online courses on IPv6 & IPv6-Only, plus in-depth articles and technical publications., open and free for the community.
- **Broad outreach**: Designed for government agencies, ISPs, enterprises, universities, and the technical community.
- **Impact**: Hundreds certified, contributing directly to nationwide IPv6 readiness.

The screenshot displays the homepage of the VNNIC Internet Academy. At the top, a navigation bar includes links for 'Tất cả khóa học', 'Dns/DnsSec', 'Triển khai IPv6', 'Định tuyến/Peering', 'Internet Security', 'Tài Nguyên Internet', 'For Kids', and 'Chung'. Below this, a grid of eight course cards is shown, each with a 'Miễn phí' (Free) tag. The courses are:

- IPv6 ONLY**: Xu hướng IPv6 Only và giải pháp chuyển đổi. Author: Nguyễn Văn Bình. (0 reviews)
- IPv6 FOR GOV**: Hướng dẫn khai báo chuyển đổi IPv6 cho hạ tầng mạng... Author: VNNIC Internet Academy. (0 reviews)
- IPv6 Over MPLS 6PE/6VPE**: Hướng dẫn chuyển đổi IPv6 cho mạng MPLS. Author: Nguyễn Văn Bình. (0 reviews)
- Internet of Things IPv6**: Kiến trúc, công nghệ IoT và giải pháp tích hợp IPv6. Author: Nguyễn Văn Bình. (0 reviews)
- VNNIC v6CNA IPv6 Certified Network Associate**: Chuyên viên mạng IPv6 căn bản - VNNIC v6CNA. Author: Nguyễn Văn Bình. (0 reviews)
- ICMP**: Làm chủ ICMPv4, ICMPv6 và các giao thức liên quan. Author: Nguyễn Văn Bình. (0 reviews)
- IPv4 to IPv6 Migration**: Tổng quan một số kỹ thuật chuyển đổi từ IPv4 sang IPv6. Author: Nguyễn Văn Bình. (0 reviews)
- IPv6 Address Planning**: Hướng dẫn quy hoạch địa chỉ IPv6 cho các tổ chức &... Author: Nguyễn Văn Bình. (0 reviews)

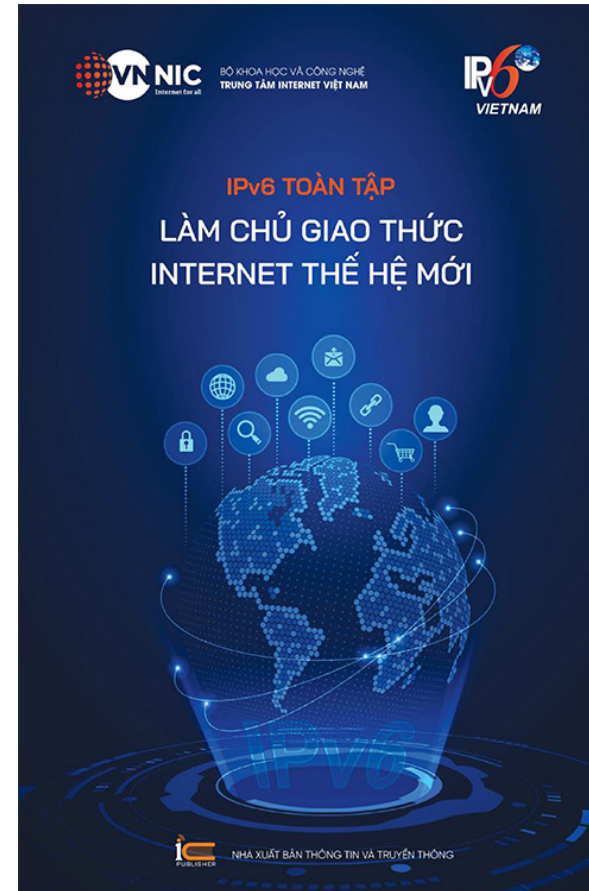
The screenshot shows a list of articles from the VNNIC website. Each article has a thumbnail image, a title, a date, and a brief description.

- IPv6 Only Deployment Guide**: Cẩm nang "Hướng dẫn triển khai mạng truy cập IPv6 Only cho CQNN, tổ chức và doanh nghiệp". 16/06/2025. Description: Cẩm nang "Hướng dẫn triển khai mạng truy cập IPv6 only" do VNNIC biên soạn nhằm hỗ trợ cơ quan, tổ chức, doanh nghiệp chuyển...
- XU HƯỚNG THỊ TRƯỜNG IPv4 TRƯỚC SỰ BÙNG NỔ CỦA IPv6 & NHỮNG KHUYẾN CÁO CHO DOANH NGHIỆP**: 16/01/2025. Description: Bài viết này sẽ phân tích tình hình thị trường IPv4 hiện nay, giới thiệu sự trỗi dậy mạnh mẽ của IPv6 và những tác...
- LÝ DO NÊN CHUYỂN ĐỔI SANG IPV6-ONLY VÀ GIẢI PHÁP**: 19/07/2024. Description: Để chuẩn bị cho việc thương mại hóa 5G, nghiên cứu phát triển 6G, đẩy mạnh ứng dụng IoT, Cloud Computing ... thì Việt Nam...
- CHUYỂN ĐỔI IPV6 CHO HẠ TẦNG INTERNET VIỆT NAM**: 19/06/2024. Description: Chuyển đổi IPv6 là theo yêu cầu về công nghệ, theo xu thế chung của toàn cầu, là cơ hội phát triển cho mạng Internet...

Knowledge Resources

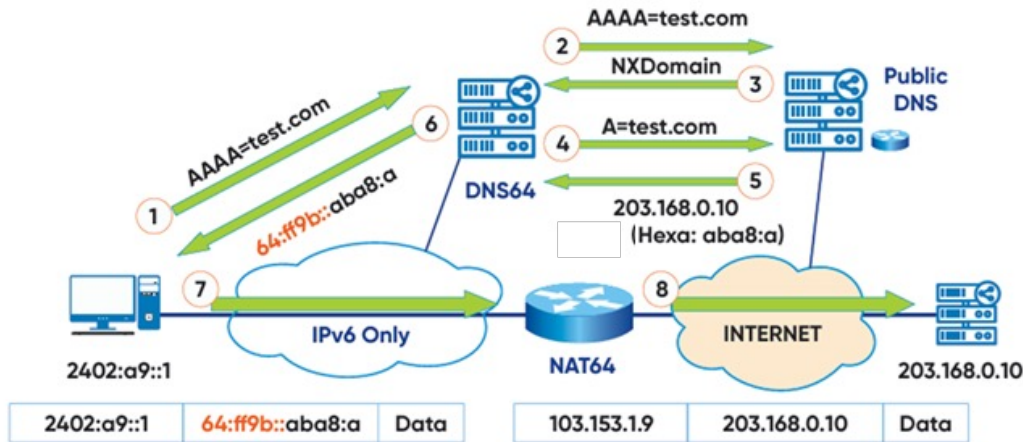
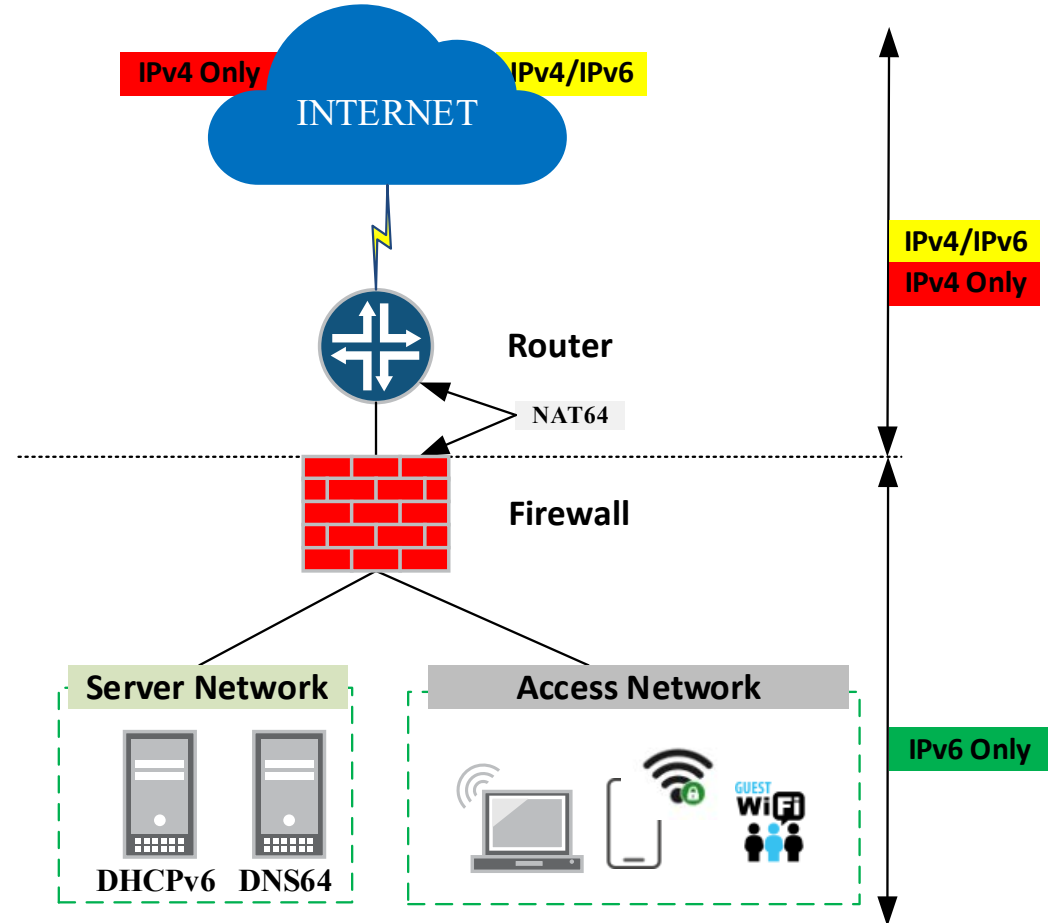
VNNIC published **two free technical handbooks** for the Vietnamese Internet community, widely used in **training, deployment, and policy planning**:

- **“Mastering IPv6”** (*IPv6 Toàn tập*): from fundamentals to advanced, with real-world examples, exercises, and tools — a practical guide for students, engineers, and system administrators.
- **“DNS System: Design, Operations and Security”** (*Hệ thống DNS*): a comprehensive reference on DNS architecture, operations, optimization, security, and emerging applications.



IPv6-Only Pilot at VNNIC

- **Setup:** Office LAN & Wi-Fi operated as IPv6-Only, using Router, Firewall, NAT64/DNS64, DHCPv6.
- **Results:** All core services (web, mail, streaming) worked seamlessly; simpler network with improved performance & security.
- **Meaning:** Early IPv6-Only pilot in Vietnam, providing hands-on experience to refine the national roadmap and support other organizations on their own journey.



PART 4

Outlook & Collaboration

Recommendations & Collaboration

- **IPv6-Only is the future:** the **foundation** for a sustainable, scalable Internet.
- **Early action:** ISPs, content providers, and government agencies **should begin IPv6-Only pilots in 2025–2026.**
- **Collaboration:** strengthen **partnerships** with **APNIC, RIRs, NIRs, and global operators** to share expertise and best practices.
- **Ecosystem building:** jointly develop a complete **IPv6-Only ecosystem** — including IDC, Cloud, IoT platforms, and e-Government services.

Conclusion & key Messages

- **Strategic objective:** IPv6-Only is a **national priority** in Vietnam's digital strategy.
- **Regional pioneer:** Vietnam aims to be at the **forefront** of the IPv6-Only transition in the Asia-Pacific region.
- **VNNIC commitment:** acting as a **hub** of knowledge, training, and support for the Internet community.
- **Closing message:** *"IPv6-Only – turning **vision** into **reality** for the future of the Internet."*



**MINISTRY OF SCIENCE AND TECHNOLOGY
VIETNAM INTERNET NETWORK INFORMATION CENTER**

Headquarters: Floor 24th, VNTA Building, Duong Dinh Nghe st., Yen Hoa Ward, Cau Giay Dist., Hanoi

Da Nang Branch: Lot 21, 7th st., An Don Industry Zone, Son Tra Dist., Da Nang City

HCMC Branch: 20th St., Tan Thuan Manufacturing area, 7 Dist., Ho Chi Minh City

+84 24 3556 4944

facebook.com/myVNNIC/

webmaster@vnnic.vn

https://vnnic.vn/

Thank you !