PEOPLE'S COMMITTEE OF DONG THAP PROVINCE
DEPARTMENT OF SCIENCE AND TECHNOLOGY

IPv6 DEPLOYMENT IN DONG THAP PROVINCE

Khanh Hoa, October 17, 2025

PEOPLE'S COMMITTEE OF DONG THAP PROVINCE
DEPARTMENT OF SCIENCE AND TECHNOLOGY

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1. Introduction to the Department of Science and Technology of Dong Thap province.

The Department of Science and Technology of Dong Thap province on the basis of merging the Department of Science and Technology of Tien Giang province and the Department of Science and Technology of Dong Thap province.

The Department of Science and Technology of Dong Thap province was established under Decision No. 04/2025/QD-UBND dated July 8, 2025 of the People's Committee of Dong Thap province regulating the functions, tasks and powers of the Department of Science and Technology of Dong Thap province:

- Administrative organizations: (1) Office of the Department; (2) Science Division; (3) Department of Technology and Innovation; (4) Digital Transformation Department; (5) Division of Standards, Metrology and Quality.
- Public non-business units: (1) Center for Applied Research and Science and Technology Services; (2) Digital Transformation Center.
- Total number of civil servants, public employees and employees: Civil servants: 91, Public employees: 142 (assigned payroll 49). Employees: 47. Labor contracts at administrative organizations: 05.

2. The province's IPv6 conversion plan for the 2021-2025 period.

Roadmap and follow 3 stages of 10 steps:

Anonymous		Content	Task	Documents/Documents	Implementation Time
I		**Stage 1 - Preparation**			
1	1	Train	Training, training and preparation of personnel.	Plan No. 140/KH-UBND dated 28/4/2021 of the Provincial People's Committee	Annually
	2	Communication	Communication, awareness raising		Annually
2	3	Inspection and assessment of the current situation	Review and evaluate the overall network and services;		2021
3	4	Digital Resource Preparation	- IP address planning for:		2021
			+ IDC service system;		2021
			+ Management system;		2021
			+ Internal IT system;		2021
			+ WAN system.		2021
			- Supplementing devices to ensure IPv6 conversion at provincial departments, departments, branches, and district-level People's Committees.		2021 - 2022

2. Provincial IPv6 conversion modernization plan.

Roadmap and follow 3 stages of 10 steps:

Anonymous		Content	Task	Documents/Documents	Implementation Time	
II		Phase 2 - Connection, testing				
4	1	Make connections and routing via IPv4/IPv6	It is proposed that the Department of Planning and Planning support the connection of the TSLCD network using IPv4/IPv6.	Plan No. 140/KH-UBND dated 28/4/2021 of the Provincial People's Committee	2021	
5	2	Upgrading software and applications that support IPv4/IPv6	Request software providers, applications, solutions, and outsource IT services to support IPv4/IPv6 simultaneously		2021	
6	3	Test applications and services with IPv6.	IPv6 configuration (operating in parallel with IPv4) for the provincial web portal, the provincial online public service portal, the provincial official email system, the document management and administration system		2021	
7	4	Post-test evaluation	- Evaluate the results after the test.		2022	
			- Further implementation of the plan		2022	

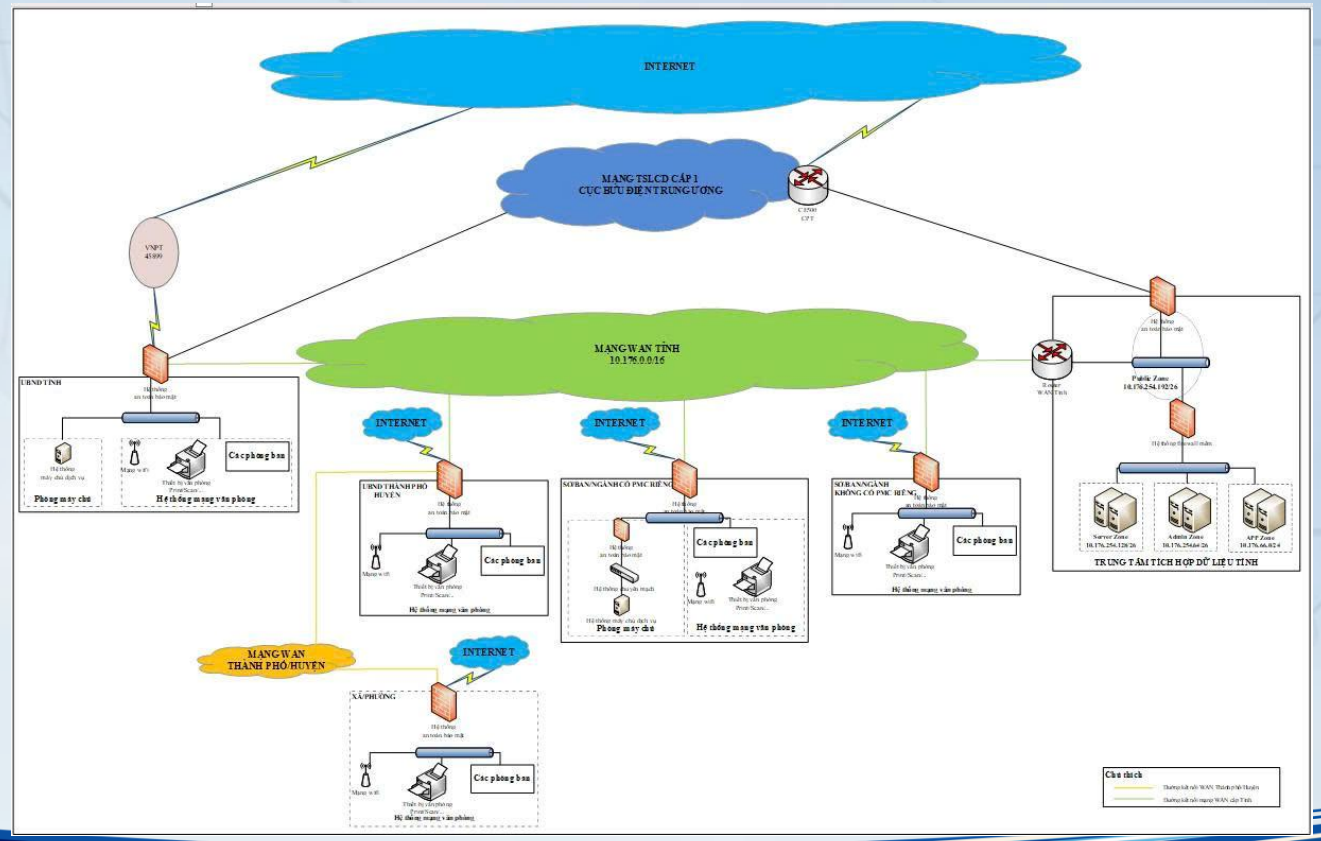
2. Provincial IPv6 conversion modernization plan.

Roadmap and follow 3 stages of 10 steps:

Anonymous		Content	Task	Documents/Documents	Implementation Time	
III		Stage 3 - Conversion				
8	1	IPv6 Migration for Data Integration Center	- Core network system, Internet connection;	1361/QD-UBND-HC dated 12/12/2022	2022	
			- DNS system;		2022	
			- Configure all information systems of the province to operate on IPv6	42/KH-STTTT dated 29/3/2023	2022	
9	2	IPv6 Conversion for WAN Connections to Units	- Expand the deployment of LAN networks of provincial departments, departments, branches and district-level People's Committees;	42/KH-STTTT dated 29/3/2023	2023 - 2024	
			- Implement the conversion of simultaneous IPv4/IPv6 support for the province's wide area network (WAN).	39/KH-STTTT dated 05/4/2024	2024 - 2025	
10	3	Complete IPv6 conversion, IPv6-only testing	- Transform the entire internal information technology (IT) system.	859/KH-SKH&CN dated 07/08/2025	2025	
			- Switch services with remaining internet connections.		2025	
			- IPv6 pure service testing.	626/KH-SKH&CN dated 01/08/2025 Plan for trial deployment of IPv6 only access network at the Department of Science and Technology of Dong	2025	

3. Technical solution model for deploying IPv6 conversion.

3.1. Model at the provincial data center



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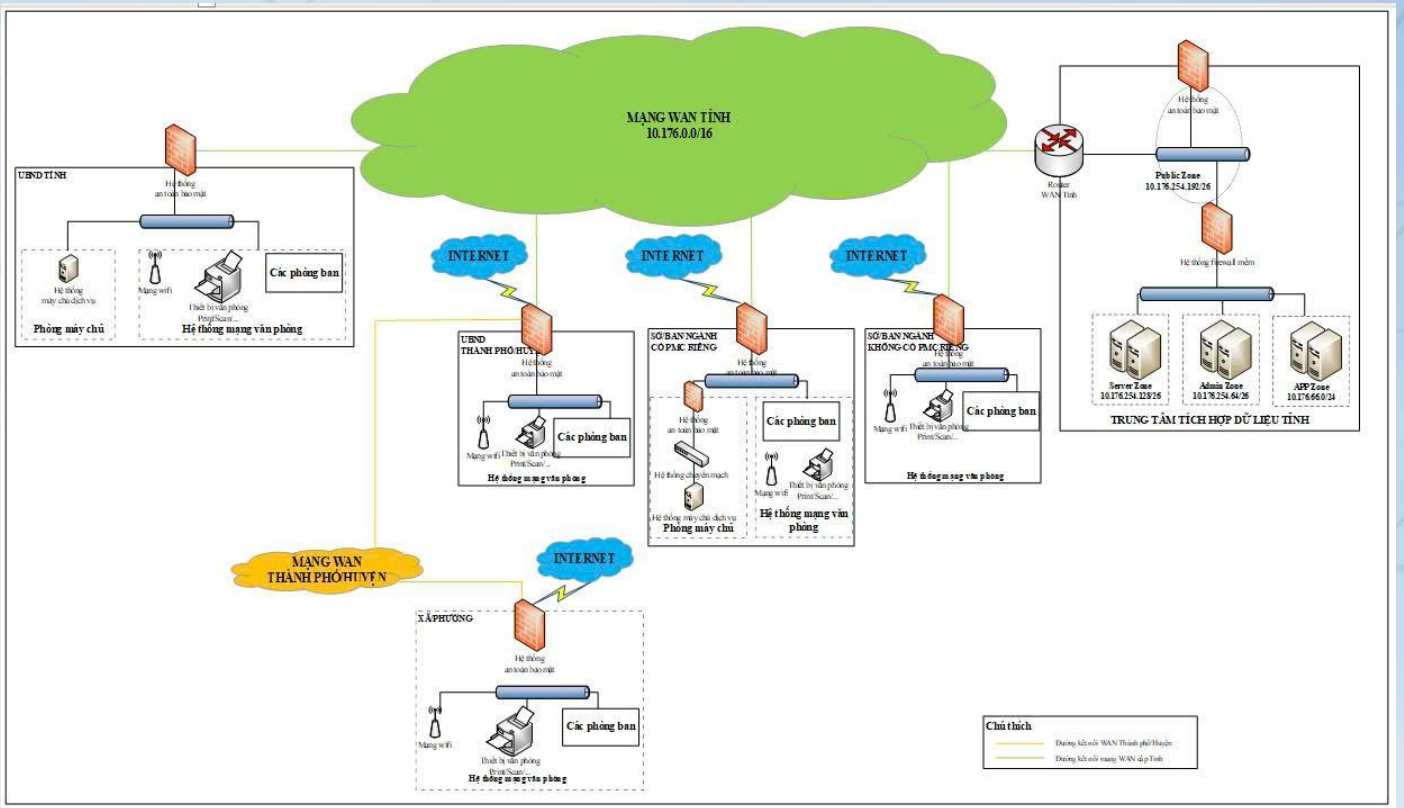
3.1. Model at the provincial da



Hình 2: Mô hình mạng kết nối các CQNN Tỉnh

THE IMPLEMENTATION OF IPV6 IN DEPARTMENTS, DEPARTMENTS AND BRANCHES OF DONG THAP PROVINCE

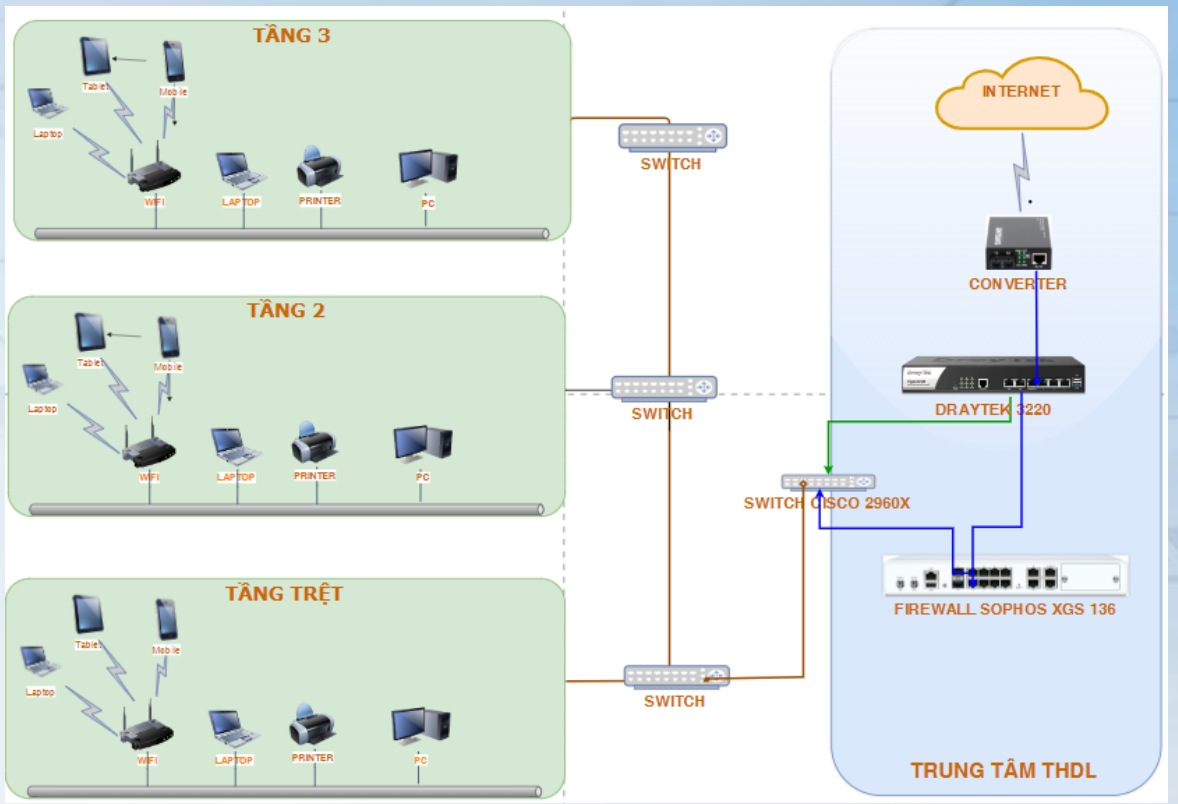
3. Technical solution model for deploying IPv6 conversion.

3.2. Implementation model at provincial departments and departments

3.2.1 Connection Model:

3.2.2 Devices:

- Converter;
- Draytek Vigor 3220 Load Balancer (Modem);
- Firewall Sophos XGS 136;
- Cisco 2960X Switch and the system of Switches going to the floors;
- Wifi system;
- Terminals (PC, Laptop, Mobile, Printer,....).

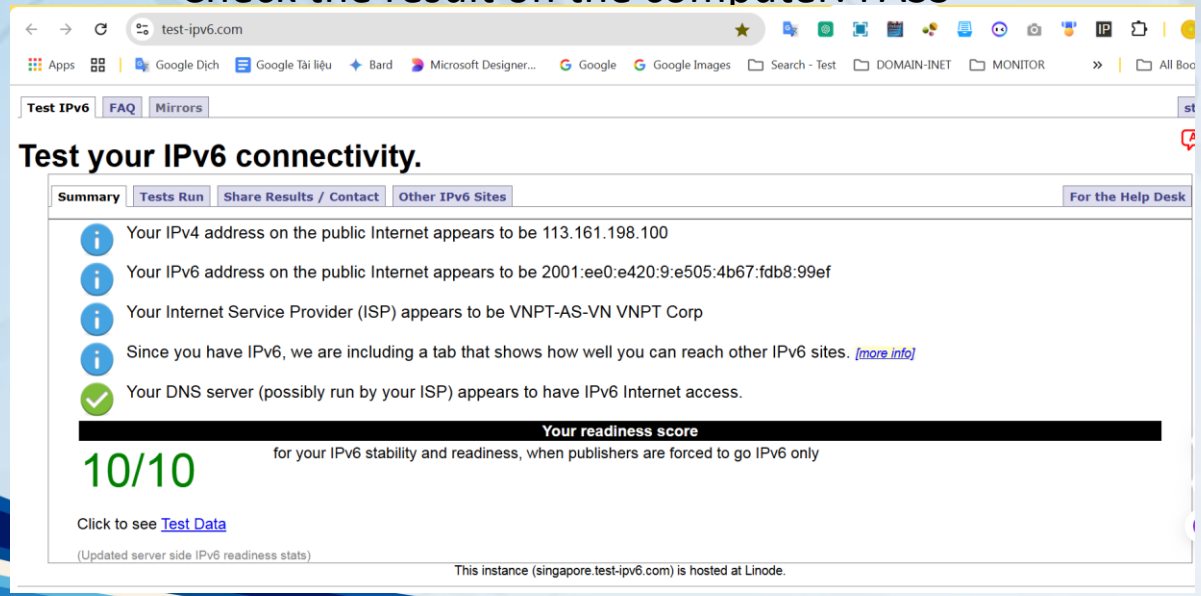


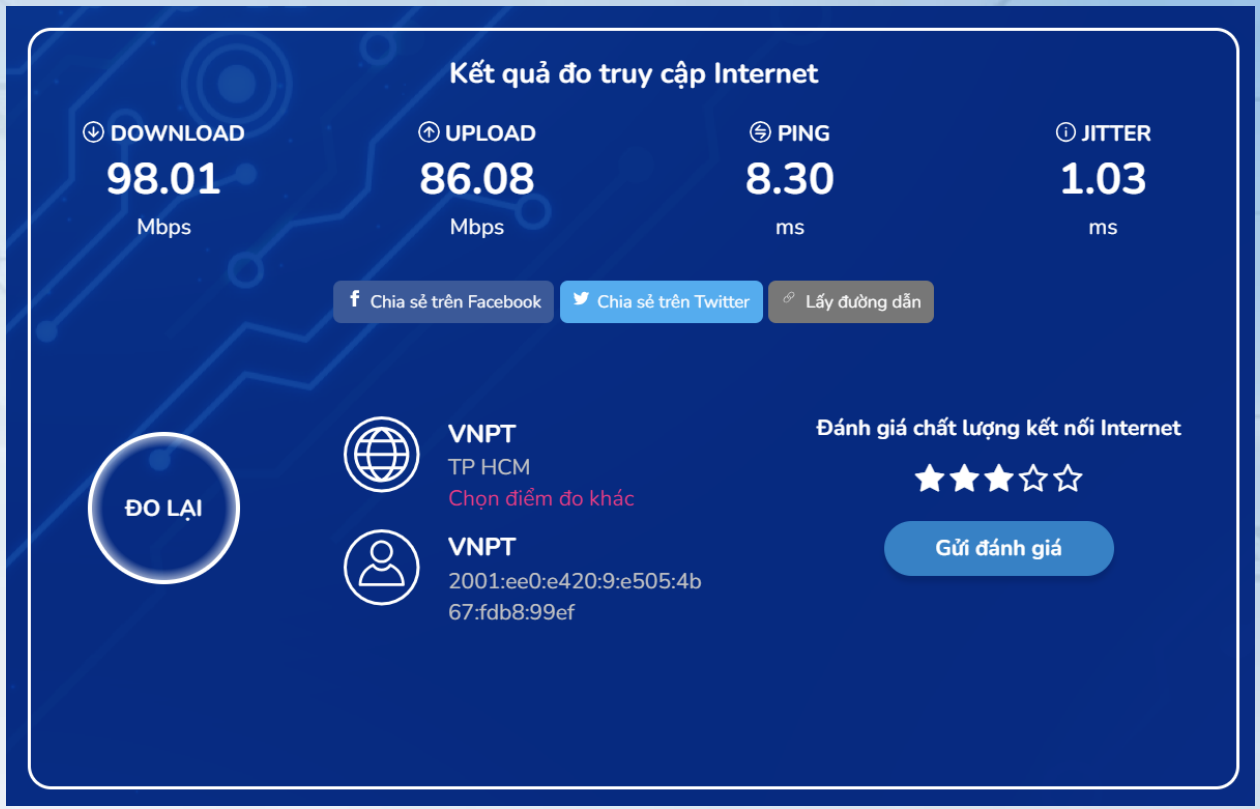
3. Technical solution model for deploying IPv6 conversion.

3.2. Implementation model at provincial departments and departments

Implementation results:

Check the result on the computer: PASS





3. Technical solution model for deploying IPv6 conversion.

3.2. Implementation model at provincial departments and departments

3.3 Advantages and Limitations:

***Advantage:**

- Parallel deployment of IPv4 and IPv6;
- Widely deployed, fast deployment time.
- Protect and control the internal network system running IPv4 well;

***Restrict:**

- The configuration is quite complicated;
- Deploying IPv6 on DrayTek devices only allows setting up some basic rules, so it also finds hidden risks of information security.

4. IPv6 test model only.

4.1. Current status

a) Current status model

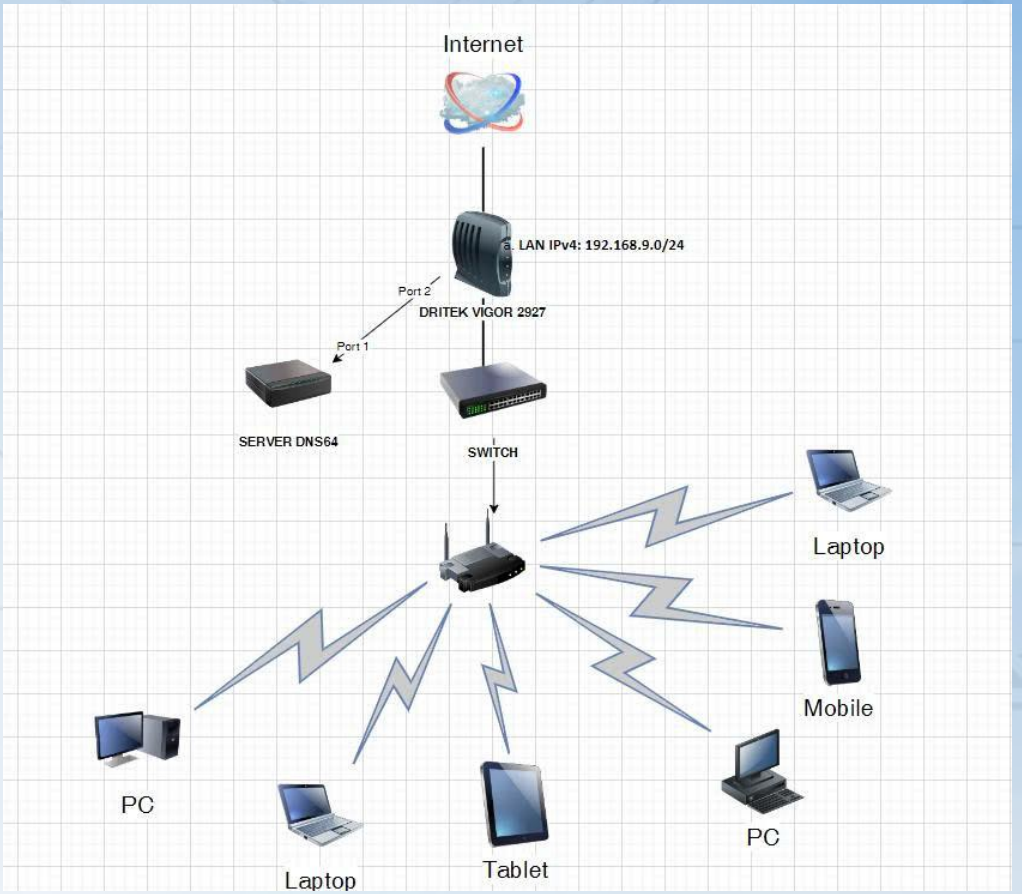
b) Description

- Access network system at the Digital Transformation Center - Department of Science and Technology of Dong Thap province.
- Provides an environment to connect PCs, laptops and mobile devices.
- Network system:

+ Network system using FTTH services of VNPT; using the IP/ASN of VNPT (dependent network).

+ Network system.

+ IPv4/IPv6 network traffic passes through Draytek <-> Internet.



4. IPv6 test model only.

4.2. Implementation

a) Implementation model

b) Description

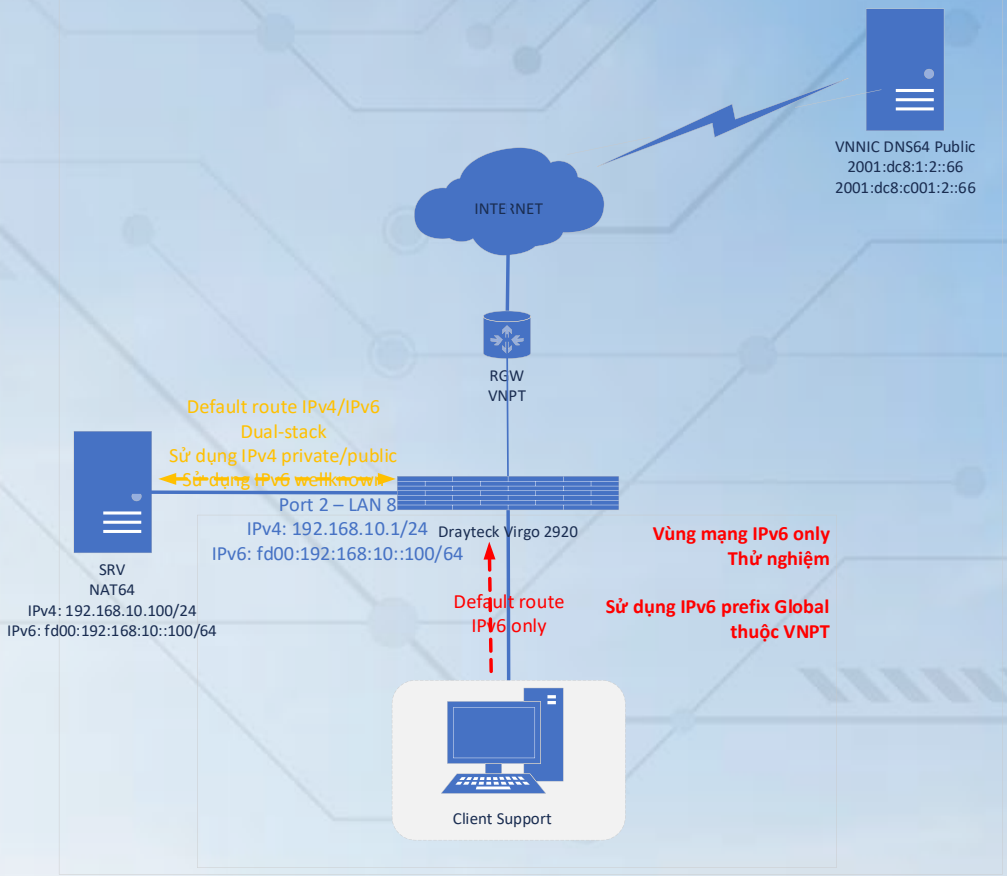
- Immutable access network model architecture
- Deploy a NAT64 server using JOOL software on Ubuntu 20.06 TLS operating system, using IPv4 private and IPv6 wellknow (fd00::/8)
- DNS64 uses the VNNIC Public DNS system (2001:dc8:1:2::66 and 2001:dc8:c001:2::66)
- Client declares DNS64 of VNNIC
- Network traffic:

+ Client IPv6 (IPv6 network only) <-> host/IPv6 service: IPv6 routing goes on IPv6 network

+ IPv6 client (IPv6 network only) <-> IPv4 host/service:

DNS64 resolves over the address range 64:ff9b::/96 returns to the client

Client routing to NAT64 for mapping over IPv4 addresses <-> Internet



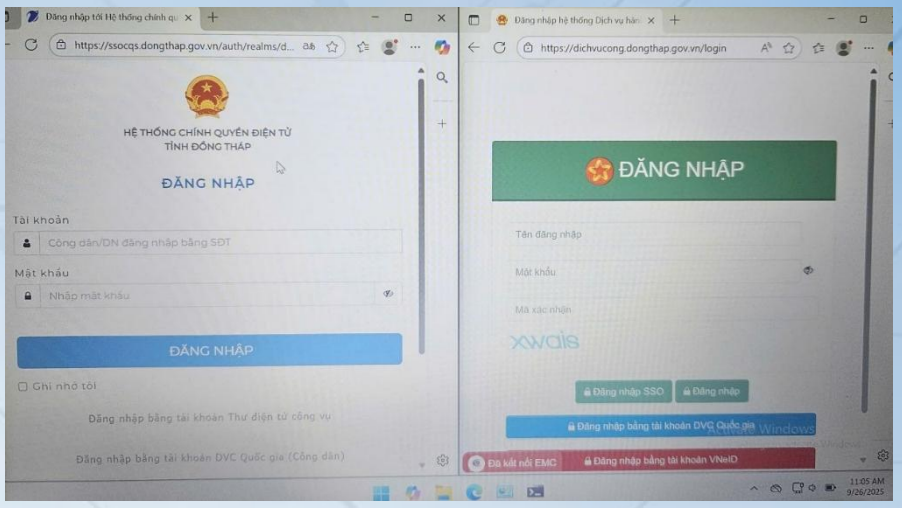
4. IPv6 test model only.

4.2. Implementation

c) Implementation results

- IPv6 only information on PC/Laptop
- The client uses DNS64 to resolve services well
- Results of access to websites that do not support IPv4
- vnexpress.net access -> does not support IPv6
- Internet access speed measured by i-Speed

+ Measuring on a laptop
+ Measure on your phone



4. IPv6 test model only.

4.3. Difficultiesand Proposals

- For FTTH services or other services of the network operator (specifically in the case of Dong Thap, VNPT network) when providing IPv6 services, IPv6 is issued from VNPT's system with IPv6 and DNS. However, IPv6 DNS using Google DNS (2001:4860:4860::8888) does not support IPv6 only (DNS64) so it is recommended that service providers:

+ Provide IPv6 DNS of the operator itself (using IPv6 of the operator).

+ It is possible to deploy a separate DNS64 system or DNS IPv6 operator to DNS64 VNNIC to support resolution.

4.4. Next Plan

- The Department of Science and Technology of Dong Thap province continues to replicate in departments of the Department.
- The roadmap will propose to be replicated in departments and branches in the province.
- Research to bring new applications to IPv6 Only deployment.

5. Implementation results for the 2021-2025 period.

- Advise the Provincial People's Committee to promulgate a plan to implement IPv6 conversion for state agencies in Dong Thap province in the period of 2021 – 2025.
- Organize 02 basic and advanced training classes on IPv6, 01 DNSSEC class for 200 people who are specialized information technology teams of provincial departments, departments, branches, localities, telecommunications and internet enterprises.
- Registerindependent IPv4, IPv6, ASN addresses for network planning; work with ISPs that require Internet connections to support IPv4/IPv6 simultaneously, promote independent IPv4, IPv6, ASN address areas on the global Internet.
- Trial deployment of IPv6 applications for Internet connection sub-networking, DNS services and Websites; testing with LAN and Wifi systems connected to the Internet using IPv6 at the Department.
- Completing IPv6 conversion for provincial data centers: Core network system, Internet connection; DNS system; Configure the province's information systems to operate on the basis of IPv6 (web portals; public services; ...).
- To plan and modernize network infrastructure and information technology services in the direction of modernization. Expand the deployment of IPv6 conversion networks for LANs of provincial departments, departments and branches.
- Declare and activate the status for the ROA record that works on RPKI data and synchronize Whois for the Route record of the largest IP zone; deploying digital signing of ROA/RPKI resources for IPv4, IPv6, and ASN regions of the province.
- Test deployment of IPv6 Only access networks.

6. Difficulties

- Due to the consolidation of 02 provinces, the implementation has not been implemented synchronously, it takes time to review and consolidate the contents of IPv6 deployment for the new Dong Thap.
- Awareness and human resource skills: The local IT staff and network administrators have only approached IPv6 at a basic level; there is no deep understanding of configuration, routing, and conversion to IPv6-only is still limited.
- Technical infrastructure is not synchronized: Some network equipment, software, and terminals do not fully support IPv6; specialized transmission lines do not have specific IPv6 deployment guidelines.
- Investment costs: Includes the cost of purchasing equipment, upgrading software, training personnel, commissioning and maintaining IPv4/IPv6 in parallel during the transition period.
- IPv4 compatibility: Many systems and services still need to support IPv4-only users; requires the deployment of intermediate NAT64/DNS64 solutions.
- Technical policies and guidelines: Some processes, technical standards, and separate budget norms for IPv6 are unclear.
- IPv6 traffic is still low: The actual IPv6 usage and number of IPv6-only services are still limited.

THANK YOU!