



IPv6 - CÔNG NGHỆ VÀ ỨNG DỤNG VỚI VIỆT NAM
IPv6 - TECHNOLOGY & APPLICATIONS FOR VIETNAM

Melia Hotel, Hanoi 31 MAY - 1 JUNE 2012



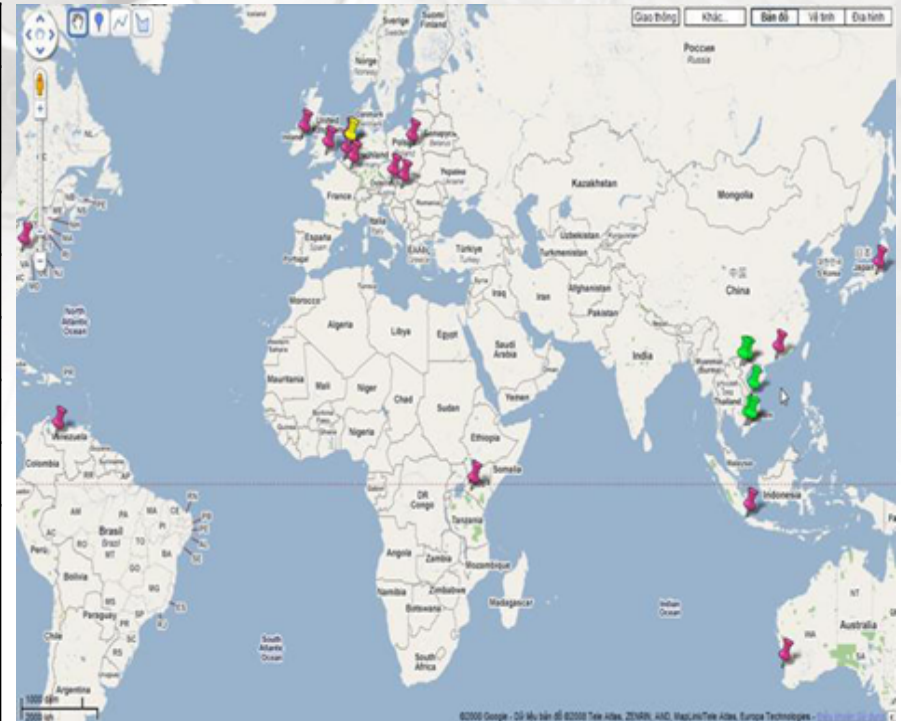
EXPERIENCES IN IPv6 DEPLOYMENT FOR NATIONAL DNS

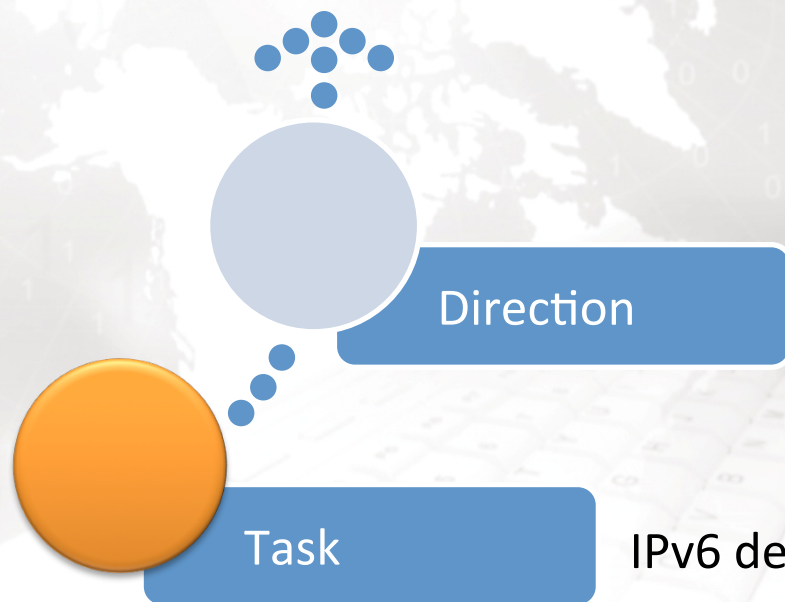
Nguyen Truong Thanh
KTTH-VNNIC

- General Introduction to National DNS
- IPv6 deployment for National DNS
- Experiences in deployment
- Status of National DNS IPv6
- Main Orient

- ❑ 07 groups
- ❑ 02 groups with more than 40 nodes in overseas, 5 groups in domestic (<http://www.vnnic.vn/dns/dnsmap.htm>)
- ❑ 02 groups of DNS Caching: nscache1/nscache2.vnnic.net.vn

No	DNS Server	IP Address
1	A.DNS-SERVERS.vn (ANYCAST/IPv6)	194.0.1.18 2001:678:4::12
2	B.DNS-SERVERS.vn	203.119.10.105
3	C.DNS-SERVERS.vn	203.119.38.105
4	D.DNS-SERVERS.vn	203.119.44.105
5	E.DNS-SERVERS.vn	203.119.60.105
6	F.DNS-SERVERS.vn	203.119.68.105
7	VN.cctld.authdns.ripe.net (ANYCAST/IPv6)	193.0.12.241 2001:67c:e0::126



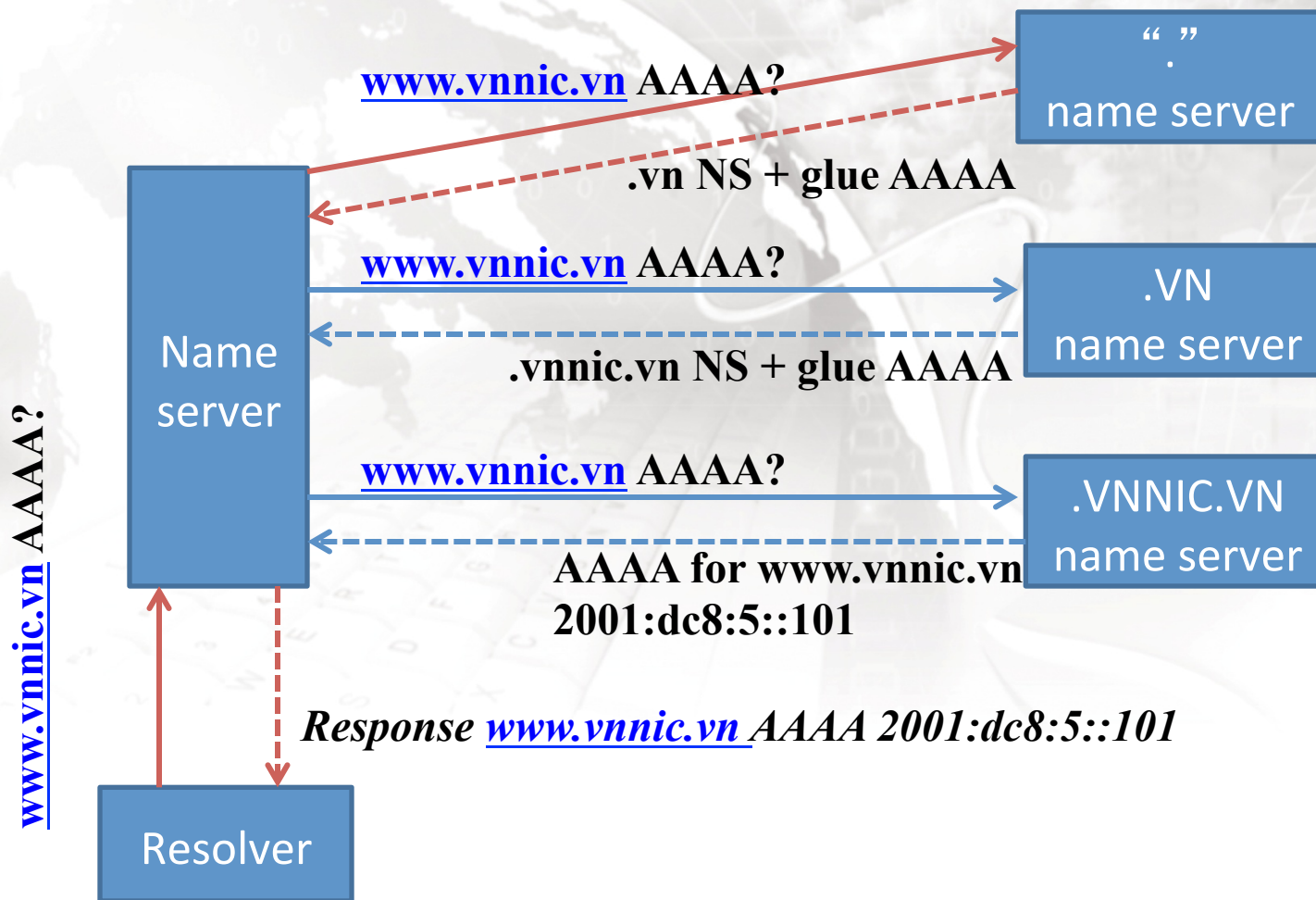


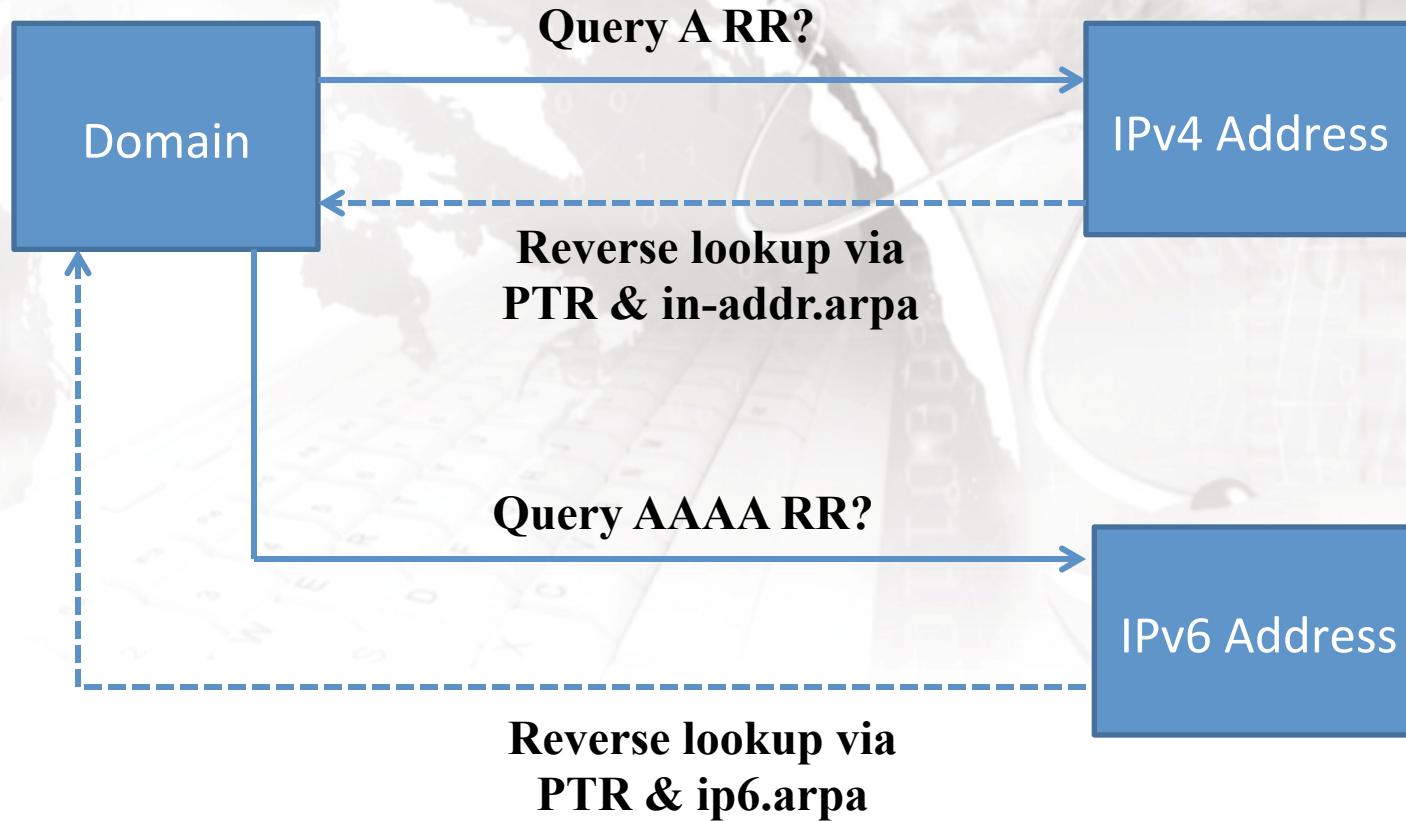
- National IPv6 Network deployment
- Grow up the numbers of national IPv6 DNS in many sites
- National IPv6 DNS Dual-Stack
- Register & delegation from IANA

IPv6 deployment for National DNS

- DNS extensions for IPv6
- DNS resource lookup
- Reverse PTR IPv6 Record
- Increasing DNS message size
- Deployment Model
- DNS IPv6-capable software
- QoS

DNS AAAA Lookup





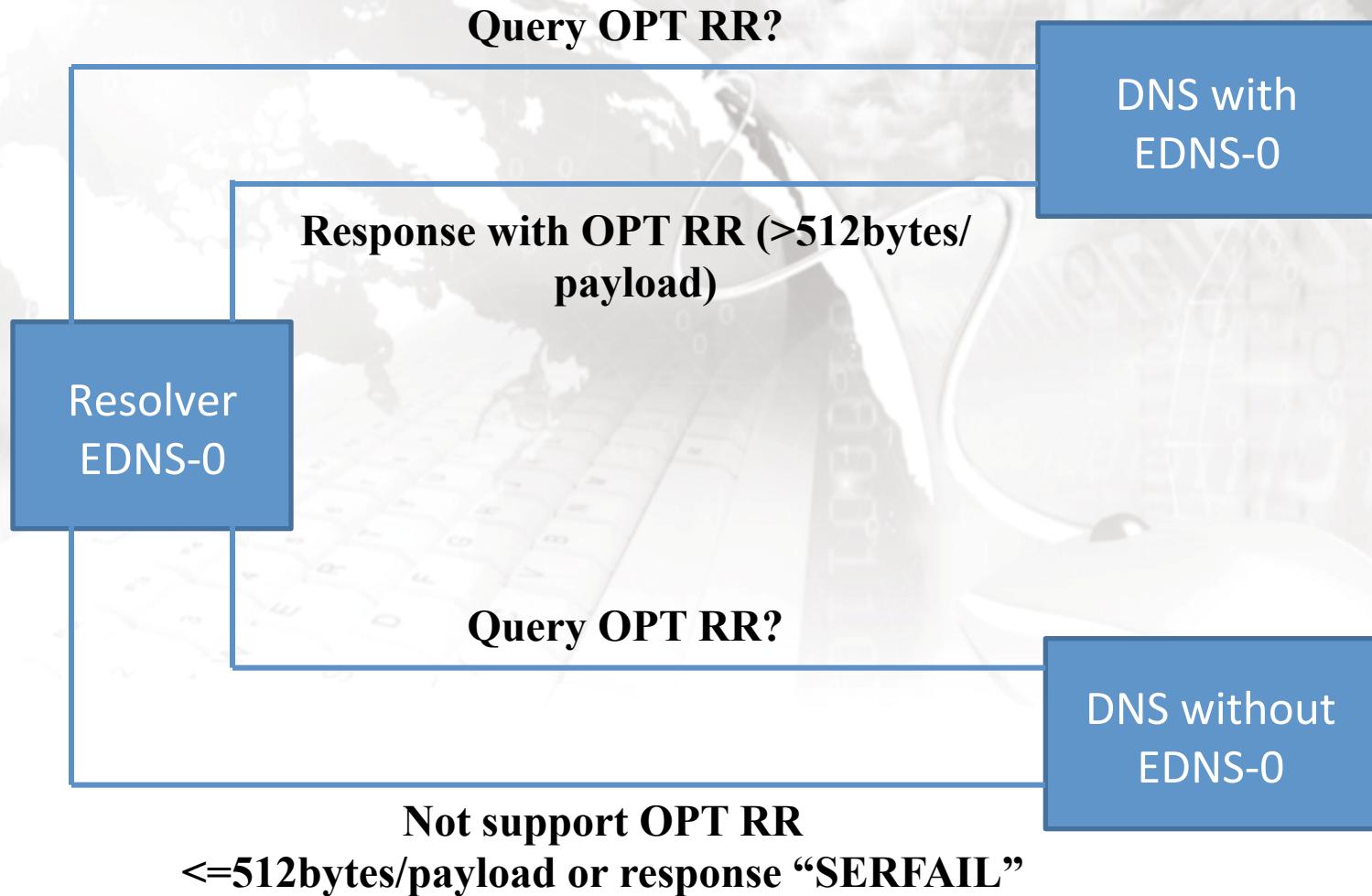
DNS message size

- IPv4: using UDP/53, 512bytes (RFC1035)
- IPv6: some cases > 512 bytes

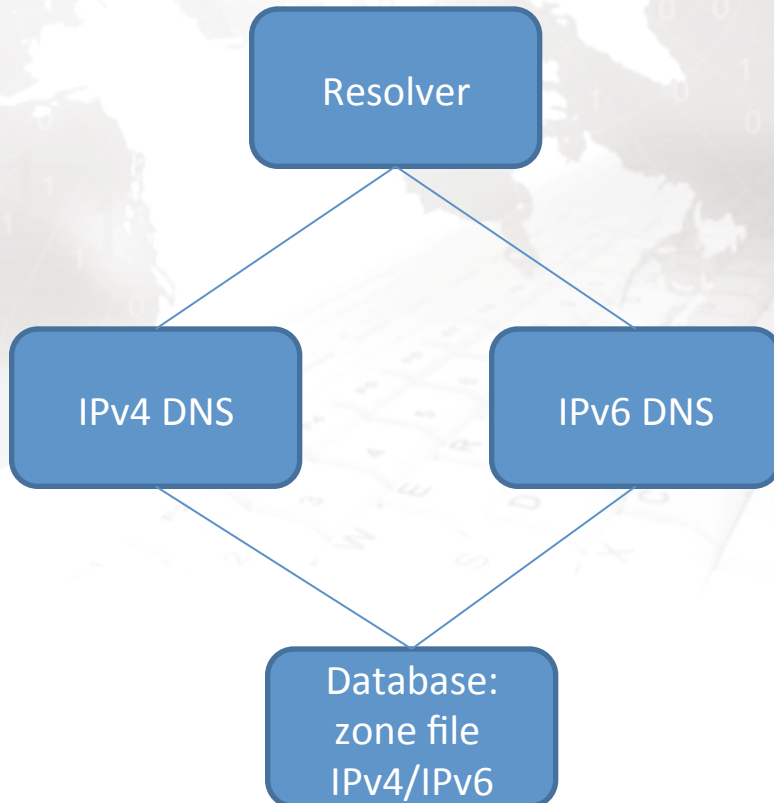


Solution

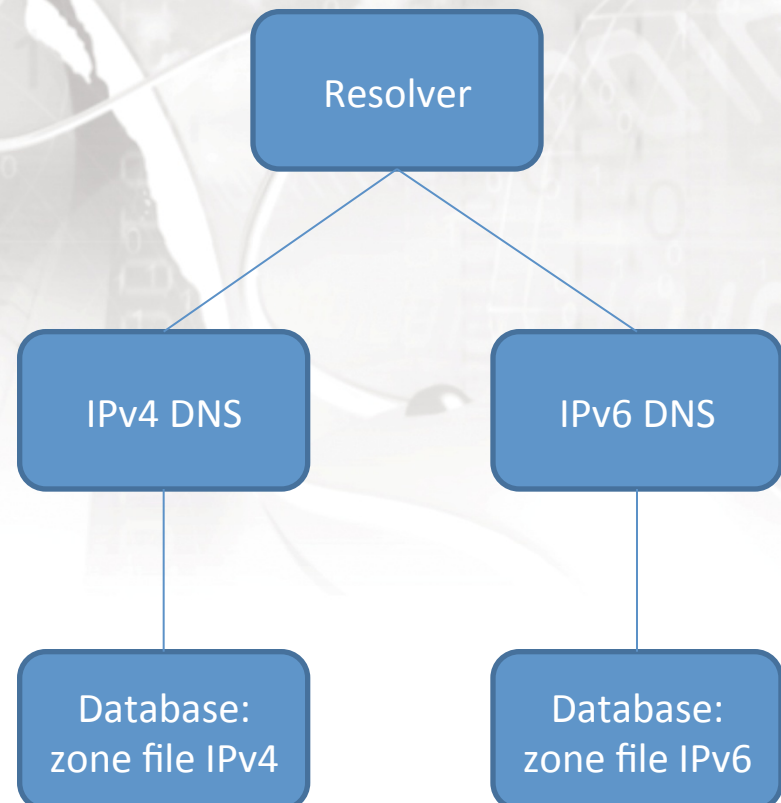
- Using TCP/53
- EDNS-0 (RFC2671)
- Configure on DNS & RT/FW



Dual-stack IPv4/IPv6



Separate IPv4 & IPv6 DNS



Status

- WinXP: can't interact with DNS over IPv6
- WinVista, 2K8: IPv6 enabled by default
- Unix: resolver supports IPv6
- IPv6 resolver: ask for both IPv4/IPv6, IPv6 priority.



Solution

- Dual-stack Resolver
- Each zone is managed by at least IPv4 DNS
- NAT

Server	<u>BSD</u>	<u>Solaris</u>	<u>Linux</u>	<u>Windows</u>
<u>BIND</u>	Yes	Yes	Yes	Yes
<u>Cisco Network Registrar</u>	No	Yes	Yes	Yes
<u>djbdns</u>	Yes	Yes	Yes	No
<u>Dnsmasq</u>	Yes	Yes	Yes	No
<u>gdnssd</u>	Yes	Yes	Yes	No
<u>Knot DNS</u>	Yes	No	Yes	No
<u>MaraDNS</u>	Yes	Yes	Yes	Partial
<u>Microsoft DNS</u>	No	No	No	Included
<u>Nominum ANS</u>	Yes	Yes	Yes	No
<u>Nominum Vantio</u>	Yes	Yes	Yes	No
<u>PowerDNS</u>	Yes	Yes	Yes	Yes
<u>Simple DNS Plus</u>	No	No	No	Yes

Source: http://en.wikipedia.org/wiki/Comparison_of_DNS_server_software

DNS IPv6 transport operation

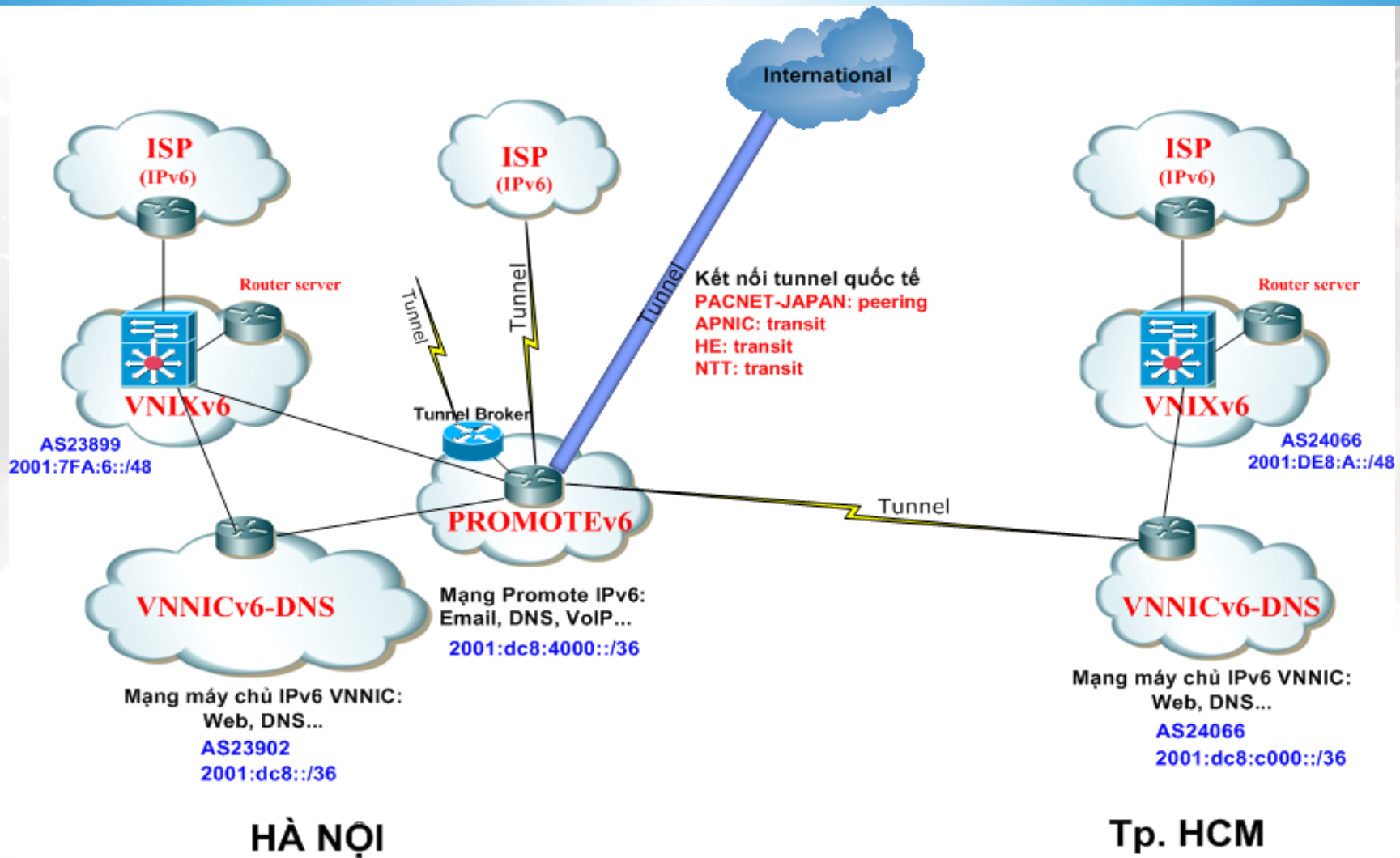
- Increase load
- Reduce performance, increase delay



Solution

- pseudo (OPT)
- EDNS-0 (RFC2671)

- ❑ DNSv6-related RFCs & Internet Drafts
 - RFC 3596: “DNS Extensions to Support IP Version 6”
 - RFC 3901: “DNS IPv6 Transport Operational Guidelines”
 - RFC 4472: “Operational Considerations and Issues with IPv6”
 - “DNS Response size issues” (A. Kato & P. Vixie, work in progress) draft-ietf-dnsop-respsize-03.txt
- ❑ Other technical documents
 - Adding IPv6 Glue To The Rootzone (R. van der Pol & D. Karren)
<http://www.nlnetlabs.nl/ipv6/publications/v6rootglue.pdf>
 - “DNS Response Size and Name Compression” (M. Souissi, AFN)
<http://w6.nic.fr/dnsv6/resp-size.html>



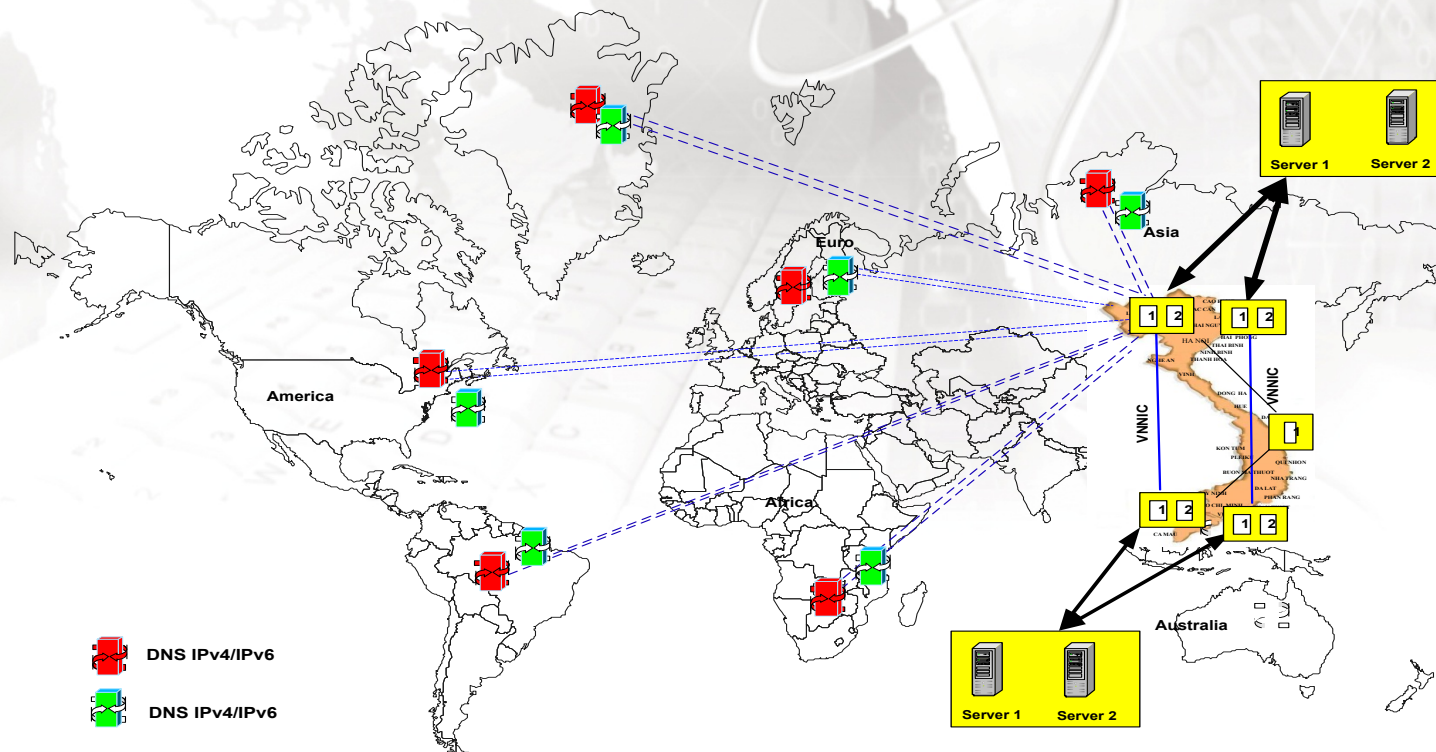
The status of National IPv6 DNS (1)

National DNS Dual-Stack

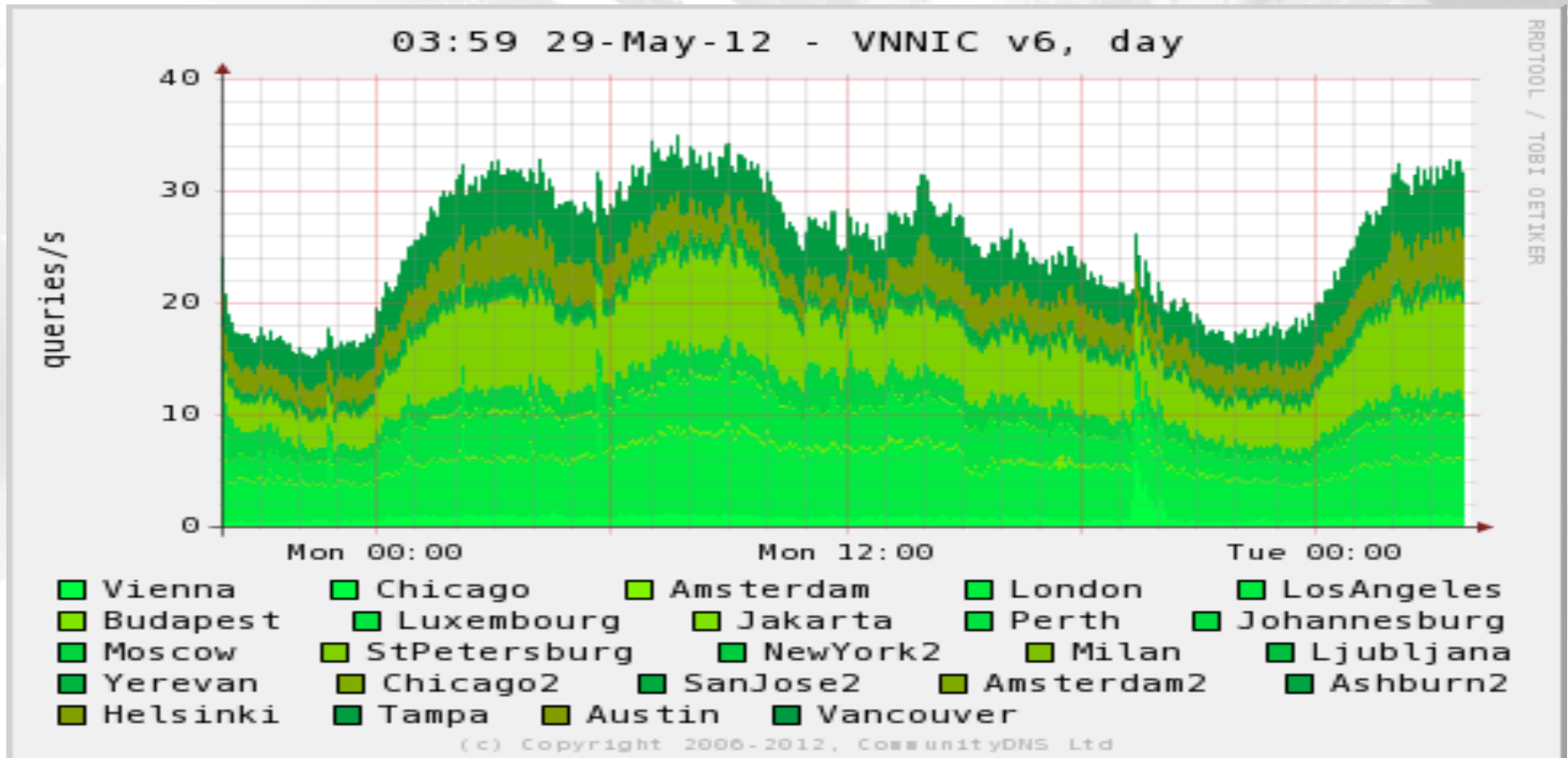
- A.dns-servers.vn/2001:678:4::12
- VN.cctld-authdns.ripe.net/2001:67c:e0::126

DNS Hosting Dual-Stack

- DNS4.vnnic.net.vn/2001:dc8:5::70
- DNS5.vnnic.net.vn/2001:dc8:C005::70



The status of National IPv6 DNS (2)



National DNS IPv6 - traffic



Native IPv6
connection

Increasing
ability of DNS:
grow up IPv6
DNS nodes;
IPv6 Anycast

National IPv6
network &
IPv6 DNS

The background of the slide is a light-colored, semi-transparent image of a computer keyboard and mouse. Overlaid on this is a faint world map and a grid of binary code (0s and 1s).

Thank you!