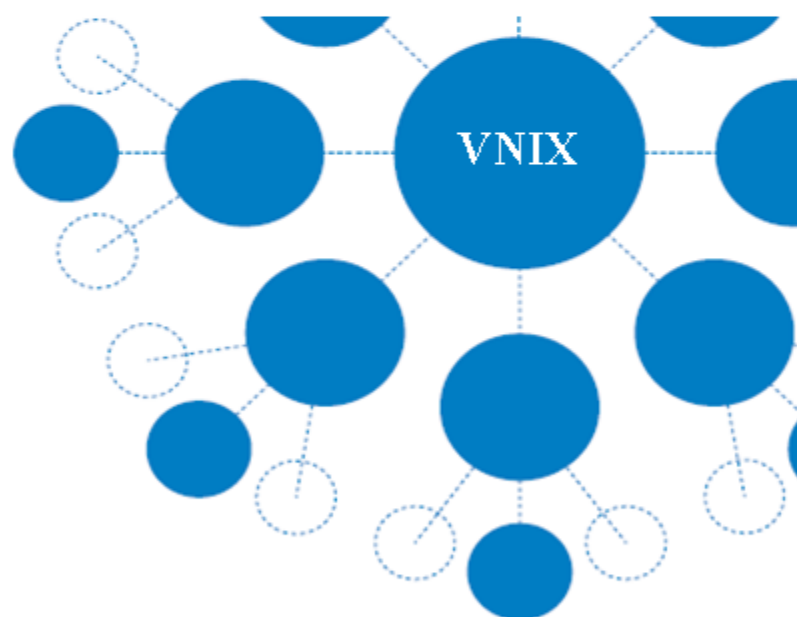## Vietnam National Internet eXchange
VNIX

INTRODUCE

- More than 30 years ago, the Internet was formed on the basis of independent networks connected together to share information via TCP / IP. Consensus connect between the network, user of different networks can communicate information with lower cost and faster

- At the larger conference in the world showed Internet eXchange (IX) very important in Internet, necessary to establish, promote the development of Internet exchange (IX) at the country, the region, linking together IX. From there, IX help resolve connection issues, enhanced service quality, preventive and rescue, reduce costs when connect in the country and internationally. Expand IX is also expand services and applications of technology, new service such as IPv6, CDN, Anycast, Cloud Computing, anti DDOS attack (DDOS mitigation) .

- In the early 2000s, Vietnam Internet in the early stages of the integration process and development with a lot of difficulties, high fees and limited access speed. Partly because of international Internet bandwidth in Vietnam is still low, direct connections between businesses providing Internet services unrealized. Then in 2003s, Ministry of Information and Communications has established Vietnam National Internet eXchange (VNIX) ,a system of transferring domestic Internet traffic between Internet service providers, works on the principle of non-profit, managed and operated by VIETNAM INTERNET NETWORK INFORMATION CENTER (VNNIC).

- Experiencing 13 years construction and development,VNIX has contributed significantly in the development of Internet in Vietnam, connect Internet service providers in many points,, Guaranteed Internet safety, enhance service quality, reduce connection, service costs. VNIX also been rated as one of the National Internet eXchange operate effectively in the region. 15/07/2013, Government issued Decree 72/2013 / ND-CP about management, provided, use of Internet services and information, created a legal framework to promote the development of VNIX, then VNIX continue to be identified as the critical infrastructure of Vietnam Internet, is a management tool, promote IPv6 deployment, forming national IPv6 network.

MILESTONES

2003
- VNIX formally established, the first connection point in Hanoi.
- Two members connected: VNPT (VDC) and Viettel, with connection capacity is 2 Mbps.

2004
- VNIX inaugurates the second connection in Ho Chi Minh City
- FPT was third member connected with 1 Gbps port.

2005
- The members upgraded connection with Bandwidth reached to 1 Gbps.
- Enhance internet quality in Viet Nam

2007
- All of 7 ISP have infrastructure (IXP) connected to VNIX
- Internet infrastructure in Viet Nam are enhanced

2008
- VNIX support high-speed connection port up to 10Gbps
- VNPT (VDC), VTC, Viettel, VTN upgrade to 10Gbps connectivity.

2009
- 11 ISP connected to VNIX
- VNIX can connect more ISP under Decree No. 97/2008 / ND-CP

2010
- VNIX officially deployed, support IPv6
- Along with the ISP formed IPv6 trial network in Viet Nam.

2012
- Set up 2 more connection point at Da Nang and Hoa Lac Hi-tech Park – Ha Noi
- To promote Internet development in Middle of Vietnam and prevention connection points

2013
- National IPv6 network is formed, under the plan IPv6 transition.
- The basic service with IPv6 platform is provided to user.

2015
- In an effort to promote national IPv6, VNIX had 10 member IPv6.
- VNIX made a new policy, fit with Decree 72/2013 / ND-CP

2016
- Upgrade new center switching systems, virtualization, high-speed 10/40/100GbE.
- Deploy intelligent optical switching systems, improve the quality of the connection.

CONNECTION POINTS

Ha Noi:
- Internet station house (VNNIC): Hoa Lac Hi-tech Park.
- MITEC building: Duong Dinh Nghe Street, Cau Giay District.

Da Nang:
- Internet station house (VNNIC): An Don Industrial Zone

HCM:
- Ministry of Information and Communications building: 27 Nguyen Binh Khiem Street, District 1

BENEFITS of CONNECTING VNIX

- Just one connection to VNIX, you're connected with all members of VNIX (the largest ISP in Vietnam)
- Using direct connections to other ISPs increases a lot of connections. To reduce the number of the connections just connects to VNIX, to be able to connect to the others.
- Domestic Internet traffic goes directly to other ISPs via VNIX (do not go through international).
- Increased safety, preventive connections, easily regulate the flow while the other connections have problems (international connections, ...)
- Connecting VNIX reduce latency, increasing the efficiency of using the ISPs' connections.
- Support the development of new technology services such as IPv6, CDN, Anycast, Cloud Computing, DDOS mitigation ...…
- Save operation cost and investment for the other connections.

GROWTH

Since inception, VNIX constantly evolving and has brought huge benefits for Vietnam Internet businesses such as reduced costs, increased quality of service, ...

• 4 connection points • 19 members	• 25 port 1Gps • 13 port 10Gps	• 10 members of IPv6	• 412.636 Tbytes traffic

2016, the bandwidth connections reach 155Gbps: 1/12 VNIX total broadband connections in the country, increasing 1.06 times compared with 2015 and increased 77,500 times compared when begin
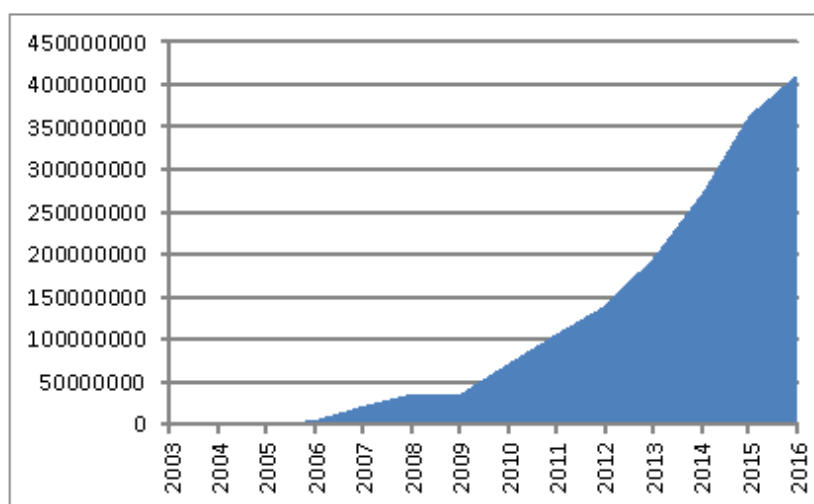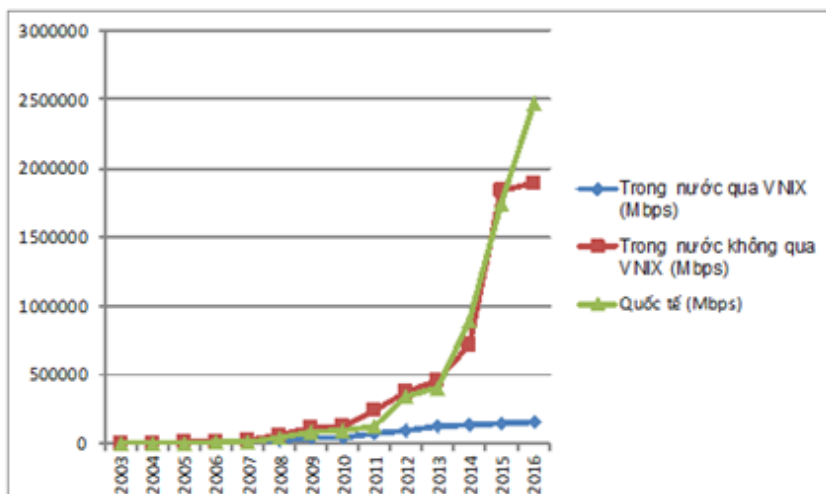
Traffic exchanges through VNIX is growing over the years. 19 large connected, exchange 412.636 Tbytes traffic via VNIX.

VNPT - NET   VIETTEL   mobifone GLOBAL   CMC   SPT   VTC   GDS   NETN@M   FPT   NEWLIFE

DIGINET   TPcoms   VTVCab   Hanoi telecom   Vinadata   SCTV   VNTT   DTS TELECOM   ODS

TECHNICAL TOPOLOGY

Topology:
- VNIX works on Layer 2 switching topology..
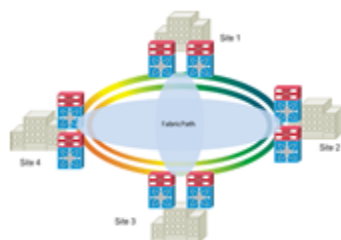- Support multilateral, bilateral connection

Manage routing:
- Route Server (RS) management and implementation exchange of routing information with the border routers of the connection member.

Switching center:
- Flow of business exchange through the switching center of VNIX, not go through Router Server

Preventive safety:
- The system ensures high security, preventive 1 + 1 and connected at many points ...

- Supports high-speed fiber optic connections: 10/40/100Gbps; connection multiplexing; supports multiple connectivity standard: SFP,

IPv6 support:
- VNIX parallel support IPv4 /v6

INFRASTRUCTURE

- IDC infrastructure ensures high safety with international standards.

- Power is provided from two transformer stations with two different power.
- Generator system large capacity

- Cooling systems, bringing cool air to each equipment rack.
- Outdoor: water-cooled; Indoor: use smart conditioning

- Fire protection system by using FM200 air.
- Monitoring environmental system dedicated

- Monitoring system In/Out via camera, magnetic card

MANAGEMENT - SUPPORT

- Managed according to international standards, ITIL V3, ISO 27000, ISO 9001: 2008

- Updates in http://vnix.vn and http://vnnic.vn/vnix

- Routing lookup information system Looking Glass http://lg.vnnic.vn

- Support online via Help Desk (https://helpdesk.vnnic.vn) and email (vnix-support@vnnic.vn)

- Monitoring, operation 24/24 at Network operation center (NOC)

| NOC – Ha Noi:	NOC – Da Nang:	NOC - HCM:
• 04.35565335	• 0511.3843043	• 08.39110449
• 04.35564944-600	• 04.35564944-900	• 08.35564944-800

ABOUT VNNIC

- Vietnam Internet Network Information Center (VNNIC) is an affiliation to the Ministry of Information and Communications, founded on 28th April 2000
- Carries out the functions of managing, allocating, supervising and promoting the use of Internet domain name, address (IP), Autonomous System Number (ASN) in Vietnam (collectively called as "Internet resources"); providing Internet-related guidance, statistics on Internet; joining international activities on Internet.

- Since going into operation, VNNIC has an important contribution in promoting, putting Vietnam Internet integration with the world, a focal point of information, guiding Internet users in Vietnam.
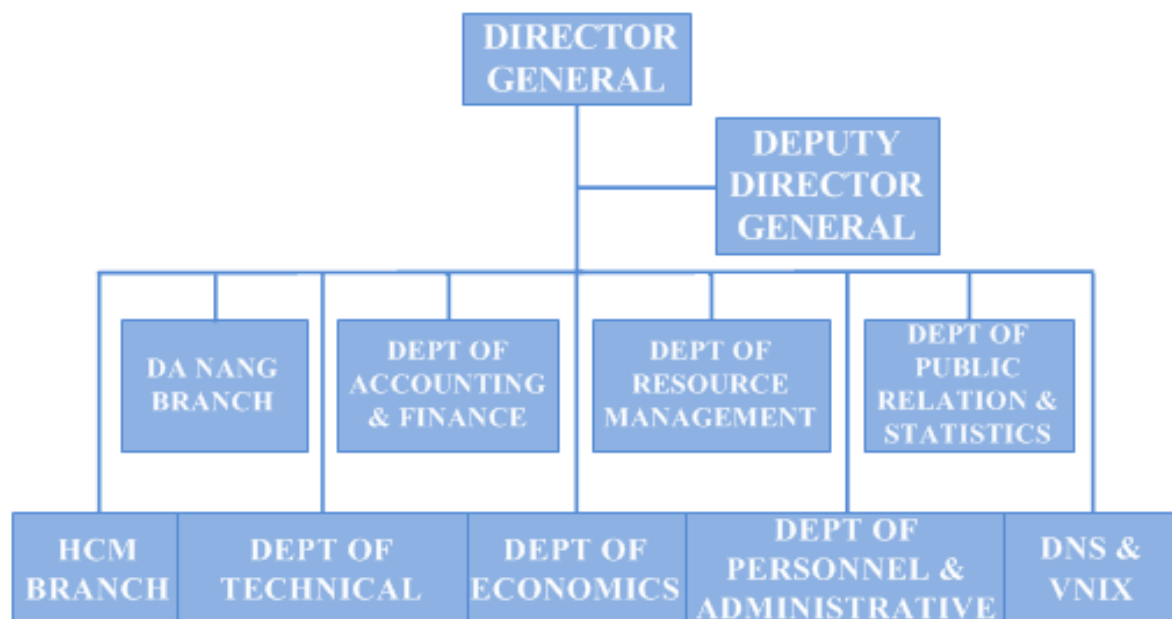
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