



# VIETNAM DIGITAL INFRASTRUCTURE LANDSCAPE

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Peering Asia 4.0

Bangkok | Nov 2022

# Self-introduction

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- Full time: DCEO CMC TELECOM
- Volunteer: Vice President - Vietnam Internet Association and Vietnam DC & Cloud Club
- Submarine cable projects: TGN-IA, APG







# AGENDA

- VIETNAM OVERVIEW
- VIETNAM INTERNET LANDSCAPE
- VIETNAM CLOUD & DC LANDSCAPE





# VIETNAM OVERVIEW

- Area: 331,699 km<sup>2</sup>
  - Population: 99,165,952 people (15<sup>th</sup> and 1.24% world population)
  - Male: 49.8%, Females: 50.2%
  - Average age: 33.3 old
  - Households: 27,546,097
  - Urbanization rate: 38%
  - Official languages: Vietnamese
- 
- GDP 2022e: 7.2%,
  - FDI: continuously maintained to rank the 3rd in the 10th of countries attracting the most FDI inflows in ASEAN.

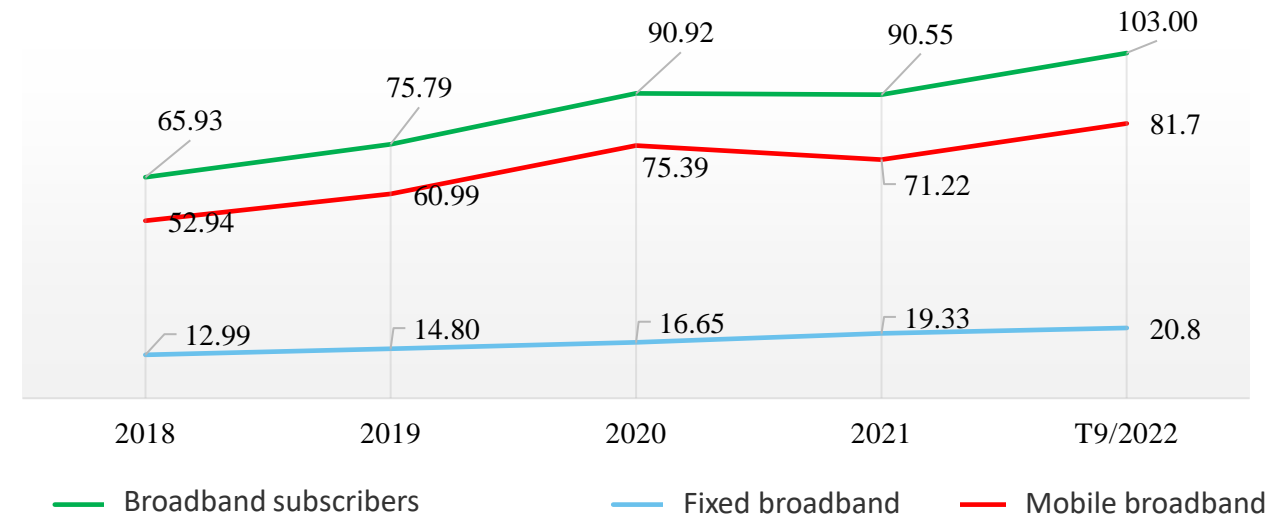


# INTERNET OVERVIEW



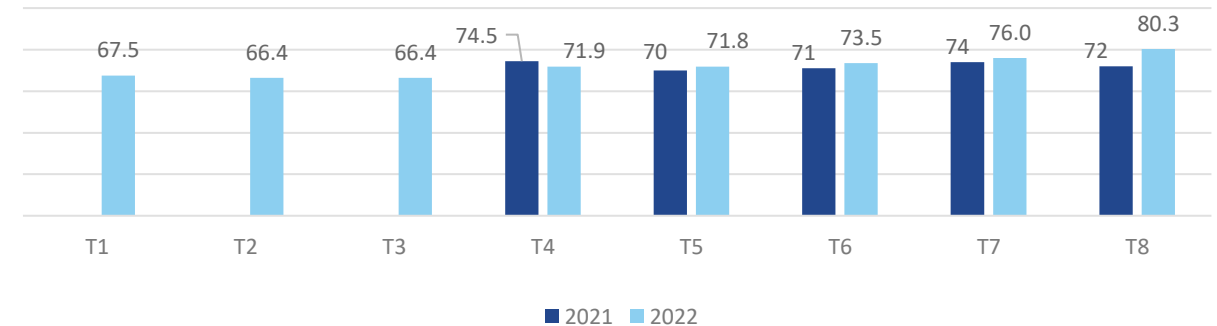
- Total Internet Users: 72.1mil (Feb 2022, 5% yoy)
- Fixed broadband subscribers: 20.73mil (Sept 2022 11.1% yoy); 72.2% households (yoy 13.9%)
- Mobile broadband subscribers: 81.8mil (Sept 2022 20.6% yoy)

Vietnam Internet subscribers (million)



- Major fixed broadband providers: Viettel, VNPT, FPT Telecom, CMC Telecom
- Average fixed broadband speed: 80.3Mbps (yoy 11.5%)
- Broadband packages: distinction between International and Domestic; up to 500Mbps
- Major local loop providers/Metro: Viettel, VNPT, FPT Telecom, CMC Telecom, Hanoi Telecom, Netnam

Average fixed broadband speed (Mbps by Speedtest)



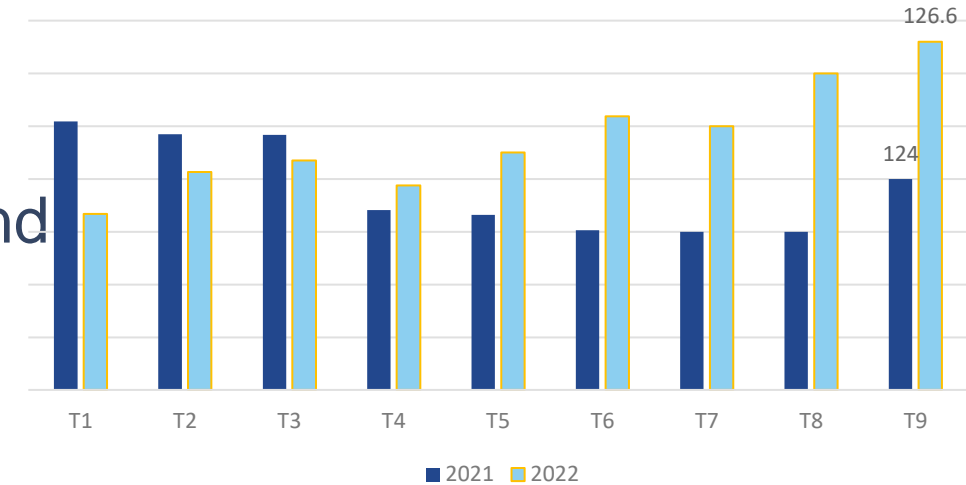
(Source: MIC Q3 2022 report)

# MOBILE OVERVIEW

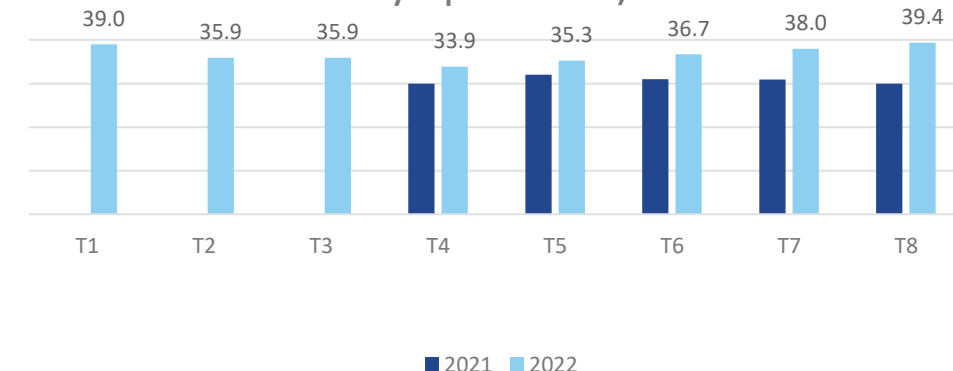


- Mobile subscribers: 126.6mil
- Smartphone: 93.7mil (74%)
- 4 MNOs: Viettel, VNPT (Vinaphone), Mobifone and Vietnamobile
- Mobile number portability (MNP) since 2018
- 4 MVNO: 1.3% market share
- 4G commercial launched in 2016
- 2G shut down roadmap in Sept 2024
- 5G: commercial pilots since 2020, frequency allocation in 2023
- Average fixed broadband speed: 39.4Mbps (yoy 23.2%)
- Mobile Money: 2022, 2mil subs

Mobile subscribers



Average mobile broadband speed (Mbps by Speedtest)



FEB  
2022

## DAILY TIME SPENT USING THE INTERNET

AMOUNT OF TIME THAT INTERNET USERS AGED 16 TO 64 SPEND USING THE INTERNET EACH DAY

DAILY TIME SPENT USING THE  
INTERNET ACROSS ALL DEVICES

6H 38M

GWI.

TIME SPENT USING THE  
INTERNET ON MOBILE PHONES

3H 32M

TIME SPENT USING THE INTERNET  
ON COMPUTERS AND TABLETS

3H 06M

MOBILE'S SHARE OF TOTAL  
DAILY INTERNET TIME

53.2%

FEB  
2022

## OVERVIEW OF SOCIAL MEDIA USE

HEADLINES FOR SOCIAL MEDIA ADOPTION AND USE [NOTE: USERS MAY NOT REPRESENT UNIQUE INDIVIDUALS]

NUMBER OF SOCIAL  
MEDIA USERS76.95  
MILLIONYEAR-ON-YEAR CHANGE  
IN SOCIAL MEDIA USERS+6.9%  
+5.0 MILLIONAVERAGE DAILY TIME SPENT  
USING SOCIAL MEDIA

2H 28M

YEAR-ON-YEAR CHANGE IN TIME  
SPENT USING SOCIAL MEDIA+5.0%  
+7 MINSAVERAGE NUMBER OF SOC  
PLATFORMS USED EACH MON

7.4

GWI.

SOCIAL MEDIA USERS  
vs. TOTAL POPULATION

78.1%

SOCIAL MEDIA USERS  
vs. POPULATION AGE 13+

97.8%

SOCIAL MEDIA USERS  
vs. TOTAL INTERNET USERS

106.7%

FEMALE SOCIAL MEDIA USERS  
vs. TOTAL SOCIAL MEDIA USERS

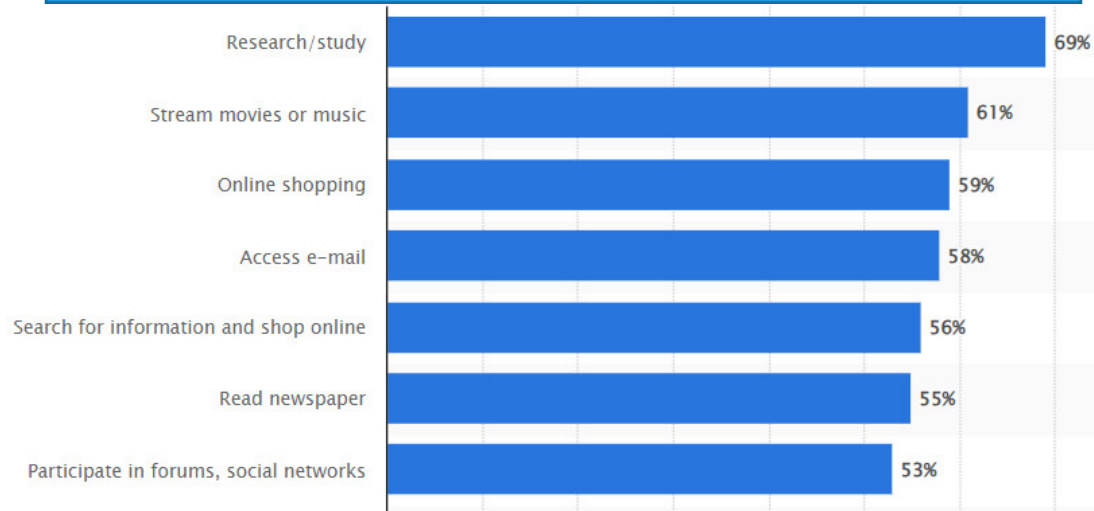
51.4%

GWI.

MALE SOCIAL MEDIA USER  
vs. TOTAL SOCIAL MEDIA USER

48.6%

## Most popular online activities in Vietnam in 2021

FEB  
2022

## MOST-USED SOCIAL MEDIA PLATFORMS

PERCENTAGE OF INTERNET USERS AGED 16 TO 64 WHO USE EACH PLATFORM EACH MONTH



FACEBOOK

93.8%

ZALO

91.3%

FACEBOOK MESSENGER

82.2%

TIKTOK

75.6%

INSTAGRAM

59.7%

TWITTER

34.4%

TELEGRAM

27.4%

PINTEREST

25.8%

IMESSAGE

22.4%

SKYPE

17.4%

VIBER

16.2%

LINE

12.4%

WHATSAPP

12.4%

LINKEDIN

11.2%

OTHER

11.0%

# GOVERNANCE, REGULATION, POLICY



- Ministry of Information and Communication and its important divisions regulating the policy: VNTA (Vietnam Telecommunications Authority), RFD (Radio Frequency Division), AITA (Authority of Information Technology Application), AIS (Authority of Information Security), VNNIC (Vietnam Internet Network Information Center)
- FBO (Facilities Based Operator) licenses: 65 (by service/coverage)
- SBO (Services Based Operator) licenses: 75 (including MNO, ISP...)
- Decision 749 of Prime Minister 03Jun2020: National Digital Transformation Program
- Cybersecurity Law (Jan 2019) and Decree 53 (Oct 2022) and draft of Vietnam “GDPR”

## Regulation transformation:

- Telecommunications infrastructure → Digital infrastructure, including Broadband telecommunication & IoT Infrastructure (Role of connectivity) and Data Center/Cloud Infrastructure (Role of data infrastructure serving big data storage and computing)
- Post infrastructure → Logistics + E-commerce
- IT Infrastructure → Digital Transformation
- Make in Vietnam vision and roadmap





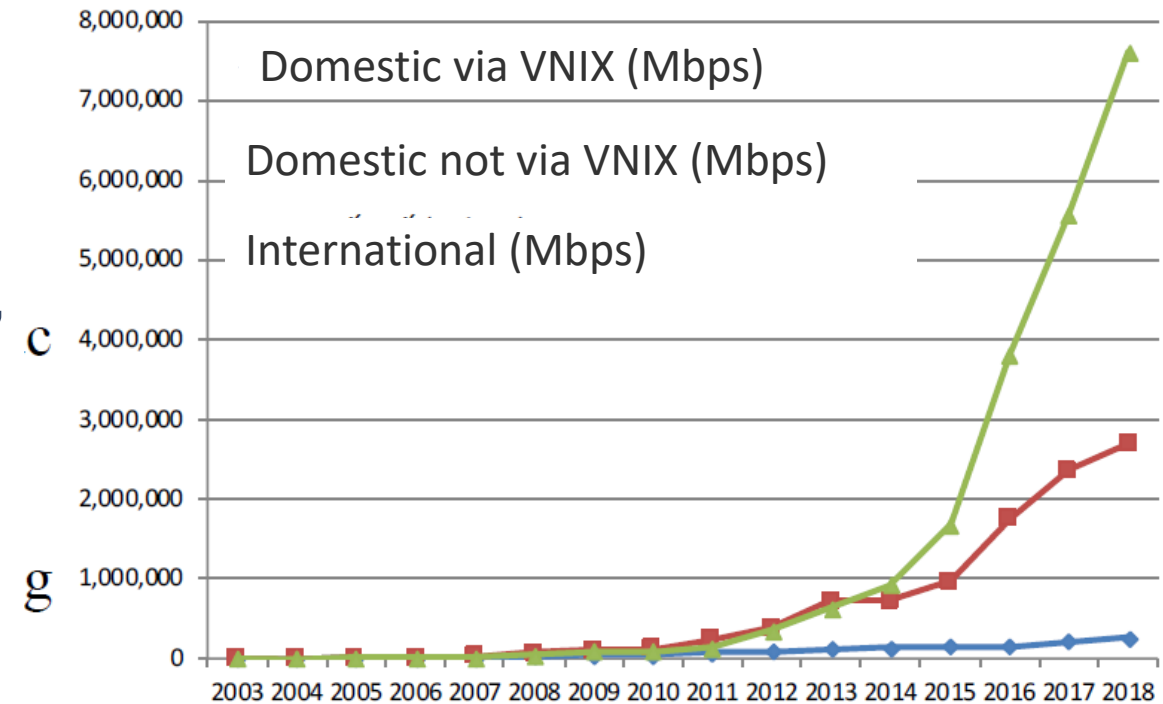
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# TRAFFIC OVERVIEW

- 2022 International capacity: 15.6Tbps, 35% growth yoy
- 2022 Domestic capacity 5.5Tbps, 30% growth yoy
- Major international POPs: Hong Kong and Singapore, US; but traffic switching to Singapore
- Peering vs IP Transit: 80% : 20%
- International OTT/CDN local cache: mostly done
- Issue: big gap between International and Domestic traffic
- Only one IX (VNIX), operated by MIC by Decision
- Domestic traffic: mostly via direct paid peering by major ISPs, less than 5% via VNIX. ISP tier 2,3...70% traffic via VNIX





# INTERNATIONAL BACKBONE

## Submarine cables:

- Vietnam 07 subsea/06 CLS: **SMW3**, **AAG**, private cable **IA** (+12 years), **APG**, **AAE-1**, **SJC2**, **ADC(2023-2024)**
- 06 CLS located in 3 provinces/coast (Danang (APG/SMW3), Quynhon (SJC2, ADC), Vungtau(AAG, IA, AAE1)
- 2021: peak outages (15+, multiple) & long repair time
- **2025 Government plan: 2-4 new subsea cables; vision to 2030: 4-6 new subsea cables;**

## Terrestrial cables:

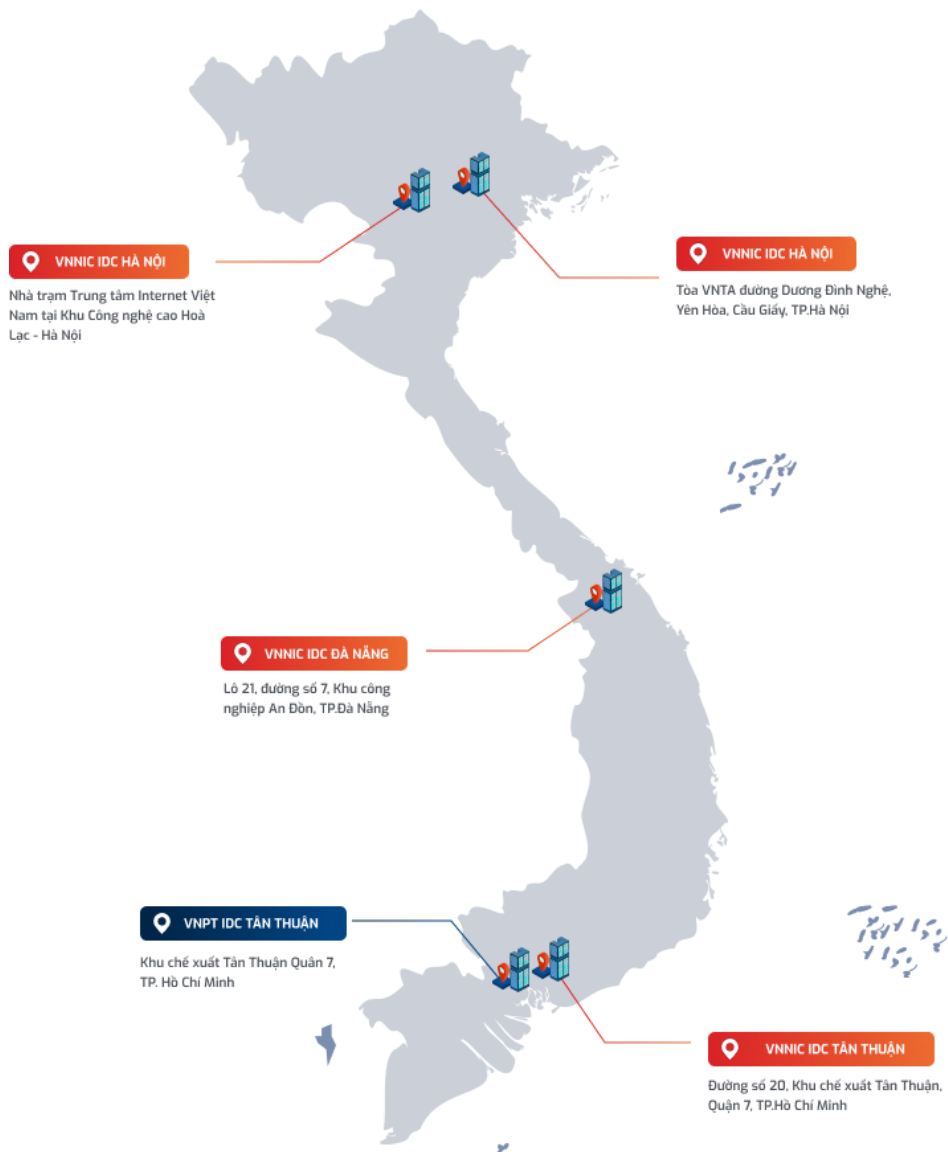
- Gateway to HK via China: CT/CU/CMI at border
- Laos/Cambodia
- New terrestrial cable for Diversity/Redundancy to Singapore via Cambodia

## Satellite: Vinasat-1 and Vinasat-2 (VNPT)





# VIETNAM INTERNET EXCHANGE/VNIX



**30+**  
Members



**18+**  
Years of operation



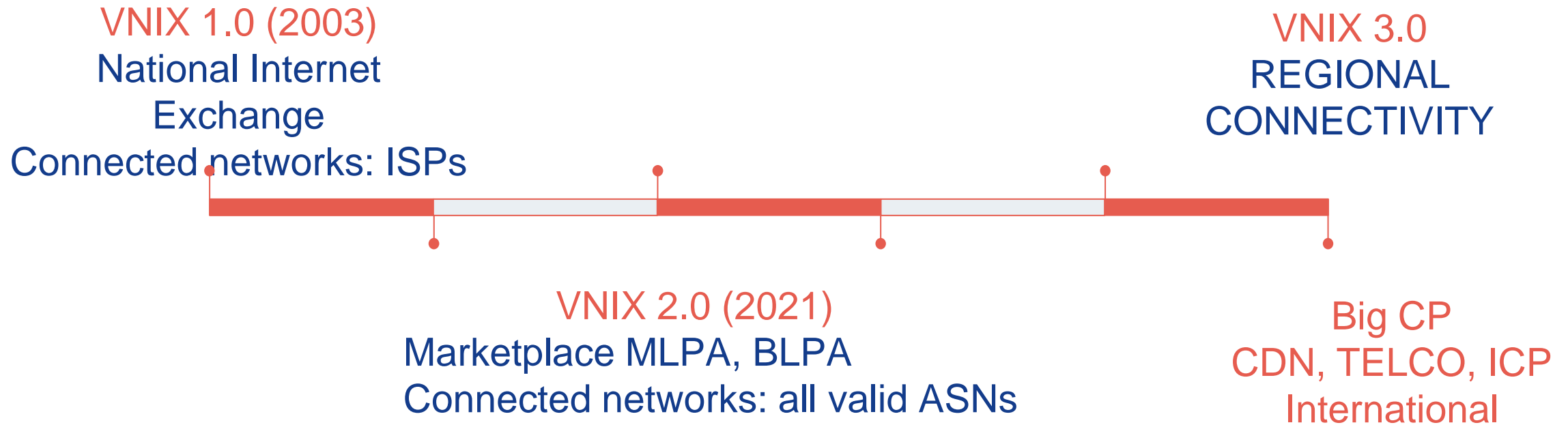
**5**  
Connected locations



**400+**  
Gbps bandwidth

**EDGE VNIX extension in telco DC**  
1G, 10G port connection

# VIETNAM INTERNET EXCHANGE/VNIX

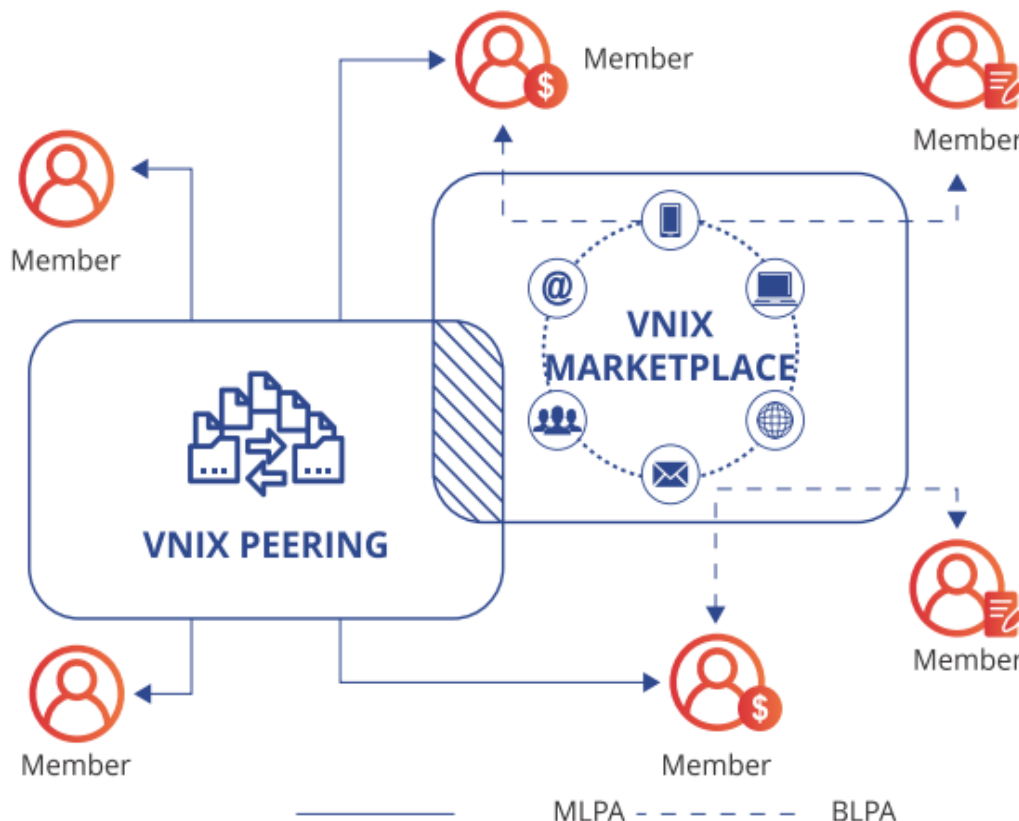


# VIETNAM INTERNET EXCHANGE/VNIX



## VNIX MARKETPLACE

A new feature in VNIX 2.0 allows our members to make arrangement with any of the others to buy or sell services directly using vlangs in the VNIX port.



## VNIX MEMBERS

- Internet Service Provider (ISP)
- Internet Content Provider (ICP)
- Content Delivery Network (CDN)
- Internet Data Center (IDC)
- Education, Research and Development organization (EDU, RnD)
- Government agency
- Internet Exchange Point

## ADD-ON SERVICES

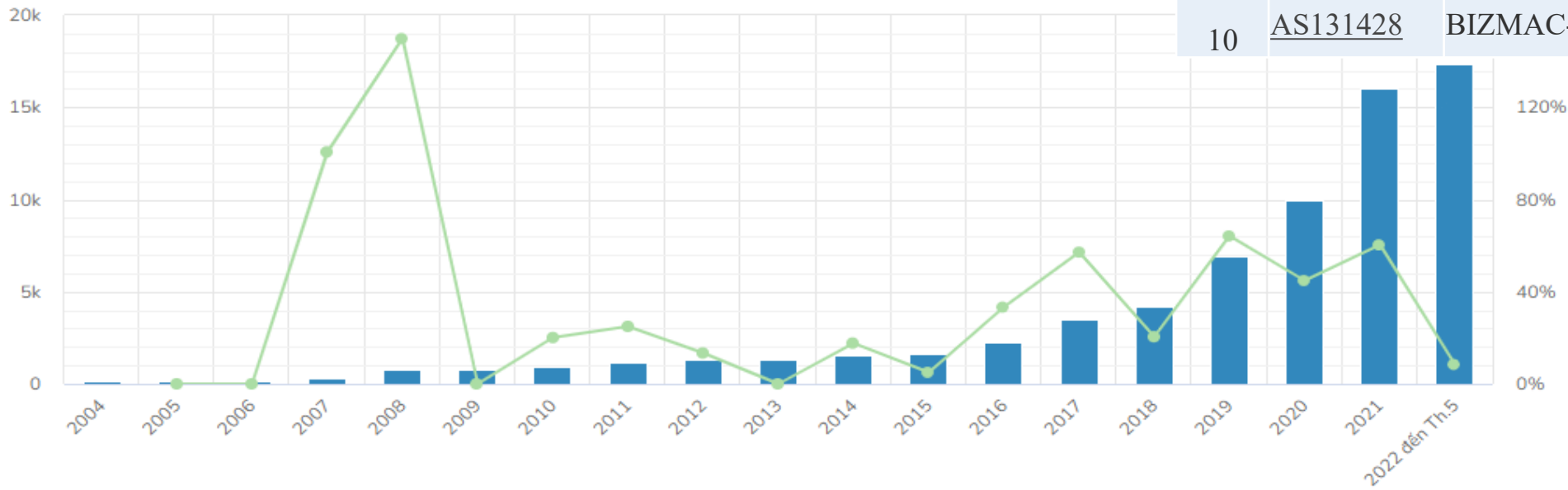
- Member Portal
- DNS.VN query
- DNS root – Root domain query
- VNNIC Internet Speed test
- DDos Mitigation
- NTP – Network Time Protocol
- Looking Glass



# IPv6 READY

- IPv6 Viet Nam adoption rate: 52.66%
- FTTH/Mobile: ~50 Bil subscriber IPv6.
- Web: 22.000 Web .vn IPv6 (increase 200%).
- VNIX/DNS: 92% connected VNIX by IPv6; 100% DNS Root .VN support IPv6; 78% DNS hosting IPv6.

Index	ASN	Providers	IPv6 rate
1	<a href="#">AS131429</a>	MOBIFONE-AS-VN	69.27%
2	<a href="#">AS24086</a>	VIETTEL-AS-VN	63.01%
3	<a href="#">AS7552</a>	VIETEL-AS-AP	58.12%
4	<a href="#">AS18403</a>	FPT-AS-AP FPT	45.22%
5	<a href="#">AS45899</a>	VNPT-AS-VN	39.52%
6	<a href="#">AS140799</a>	VNCLOUDTECH-AS-VN	8.22%
7	<a href="#">AS63734</a>	GREENCLOUDVPS-AS-VN	6.15%
8	<a href="#">AS45543</a>	SCTV-AS-VN	5.13%
9	<a href="#">AS55308</a>	MPI-AS-VN	3.33%
10	<a href="#">AS131428</a>	BIZMAC-VN-AS	2.82%





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# DATA CENTER LANDSCAPE

- 27 small and medium size Data Center, IT load 40MW
- Location: centralized in HNI/HCM (+Binh Duong)
- Standards: UP TIME preferable
- Growth rate: 18%, driven by BFSI, E-commerce and increasing SMB adoption
- Major Data Center Provider: Viettel, VNPT, CMC Telecom, FPT Telecom
- International presence: NTT Communications (VNPT-GDS), Chungwa Telecom (Viettel) and Telehouse KDDI (FIS)
- Connectivity challenge: Not yet neutral connectivity and cable access;
- Early presence of Hyperscaler: cache/edge node; AWS local zone (2023)





# CLOUD LANDSCAPE

- Global cloud providers account for 80,32% IaaS market share (AWS, GCP, Microsoft...), Domestic cloud providers account for 19,68%.
- 40+ domestic cloud providers, major one: Viettel, CMC Telecom, VNG, VCCorp, FPT, VNPT
- Growth Velocity: The average Vietnam cloud market growth is 26% YoY
- Trend – internal/external forces to motivate the cloud growth
- Covid accelerate cloud market from early stage to expanding stage; target to be mature stage in 2025
- Government's strategies & action plans to boost the market share of domestic cloud up to 70%
- “Make in Viet Nam” Cloud infrastructure
- Hyperscalers presence to Vietnam
- Education / IT labour forces from Hyperscalers/Vietnamese ICT Group



5 domestic cloud platform approved by MIC to provide service for E-GOV projects: Viettel, CMC Telecom, VNPT, VCCorp, VNG

# DATA CENTER & CLOUD: DEVELOPMENT PLANNING



Delivering and hosting data of Vietnamese in Vietnam, Establishing **Digital Hub** –  
Regional/National/Edge Data Centers

The government's pioneering strategy in developing “Make in Viet Nam” Cloud infrastructure

## 2021 Landscape:

- 27 small and medium size Data Center – 40MW, centralize in HNI/HCM, yoy 18%
- Connectivity challenge: Not yet neutral connectivity and cable access; peering issues;
- Early presence of Hyperscaler
- Cloud market: 80% by Hyperscaler, 20% by Domestic Cloud providers; yoy 26%



Source: VNCDG/VIA

2025

- 02 National Data Center serving digital government
- 01 National Data Center Monitoring Center
- 03 clusters of Edge/Sub-regional Data Center serving digital economy and digital society
- 01-02 Regional Data Center to serve financial services demand for Vietnam and regional
- 70% Vietnamese enterprise using Cloud computing services
- 100% government authorities using cloud services by domestic Cloud providers

2030

- Vietnam to become **new Digital Hub in the region**
- 100% government authorities, enterprises and 50% inhabitant using cloud services by domestic Cloud providers

Source: draft of Government Decision - Information and Communication Infrastructure  
Planning 2021-2030, vision to 2050



**Thank you!**

Bangkok | Nov 2022