Digital Infrastructure: Traditional and Emerging Challenges

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Content

- New Wave of Digital Infrastructure
- Regional Context
- Egyptian Market Highlights
- Challenges to the Regulatory Landscape

New Wave of Digital Infrastructure =

Networks

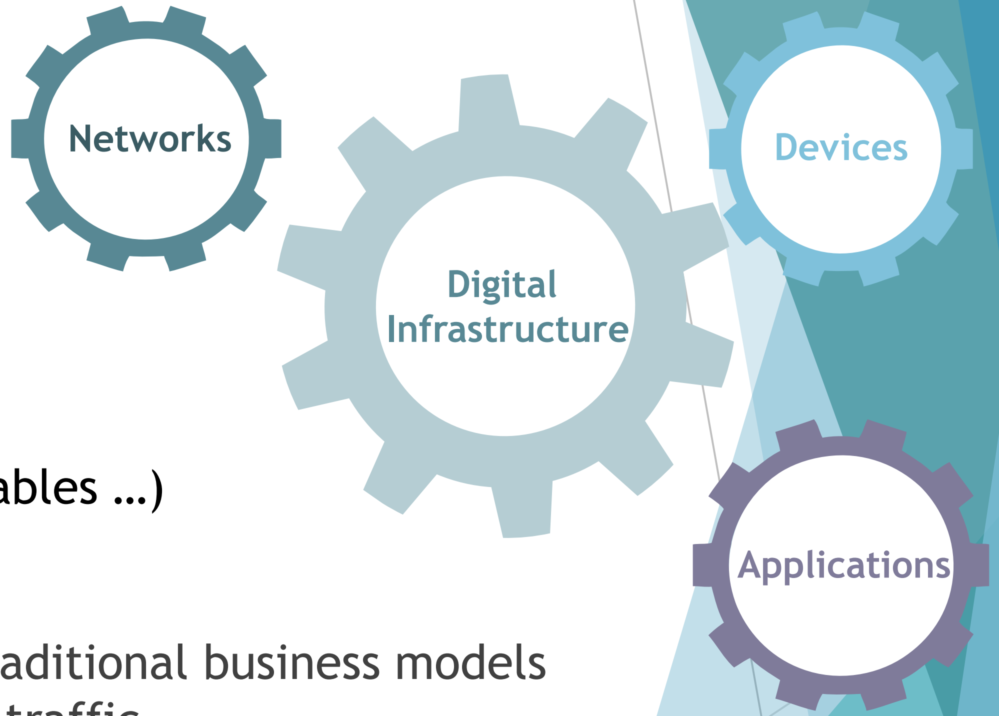
A precondition and underlying enabler
Evolving both on technology level and concepts

Devices

Increased processing capability
Innovation in use cases (smartphones, IoT devices, wearables …)

Applications

Driving demand at unprecedented rates and disrupting traditional business models
Video content prevailingly constituting a bigger chunk of traffic



Immense progress across the whole ecosystem → giving rise to new challenges

= New Wave of Regulatory Challenges

... then

Regulating public monopolies and opening up telecom market

Manage structural and competition aspects of the telecom market

- Public vs. private operators
- Number of operators
- Wholesale and retail remedies
- Mechanisms to manage anti-competitive behavior

Faced with new challenges and the need to redefine legacy mandates

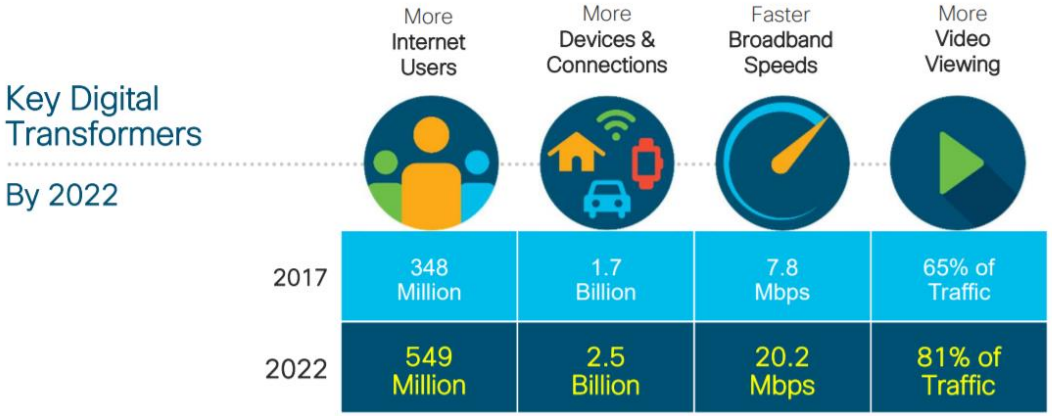
Continued growth in infrastructure required despite increased investment challenges

- OTTs
- Network neutrality
- New/blurry market boundaries
- Data privacy and security
- Issues of taxation
- Cross sector regulation

now ...

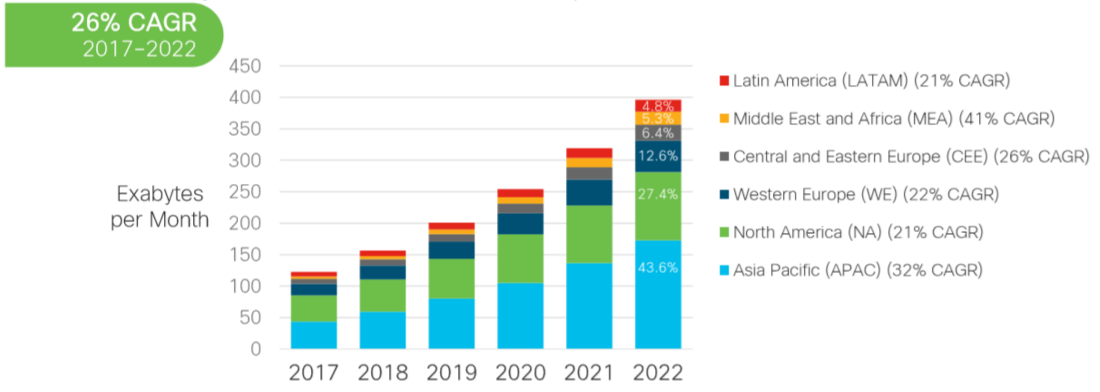
Regional Context: Demand Trends

[Source: Cisco Visual Networking Index (VNI) Complete Forecast Update, 2017–2022]



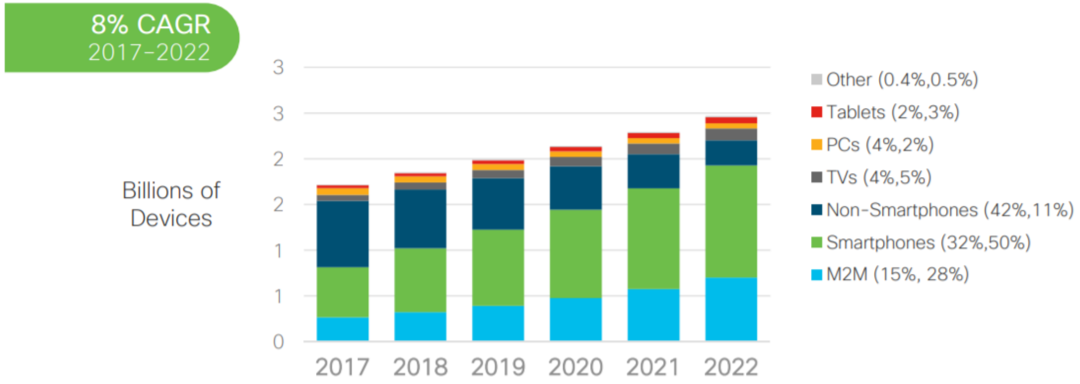
Global IP Traffic Growth by Region

MEA has the highest growth rate (41%) from 2017 to 2022
APAC will generate 44% of all IP traffic by 2022



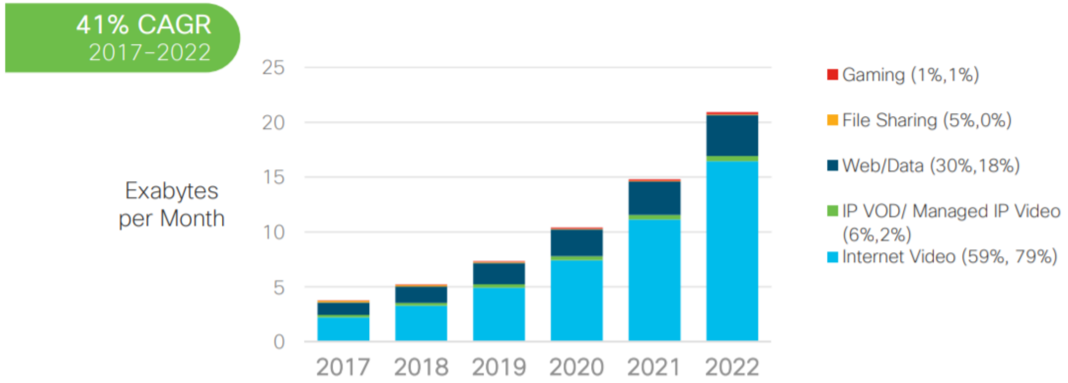
MEA Device/Connection Growth by Type

By 2022, M2M connections will be nearly a third of total connections



MEA IP Traffic by Application Type

By 2022, video will account for 81% of MEA IP traffic



Regional Context: Infrastructure Upgrade Imperatives

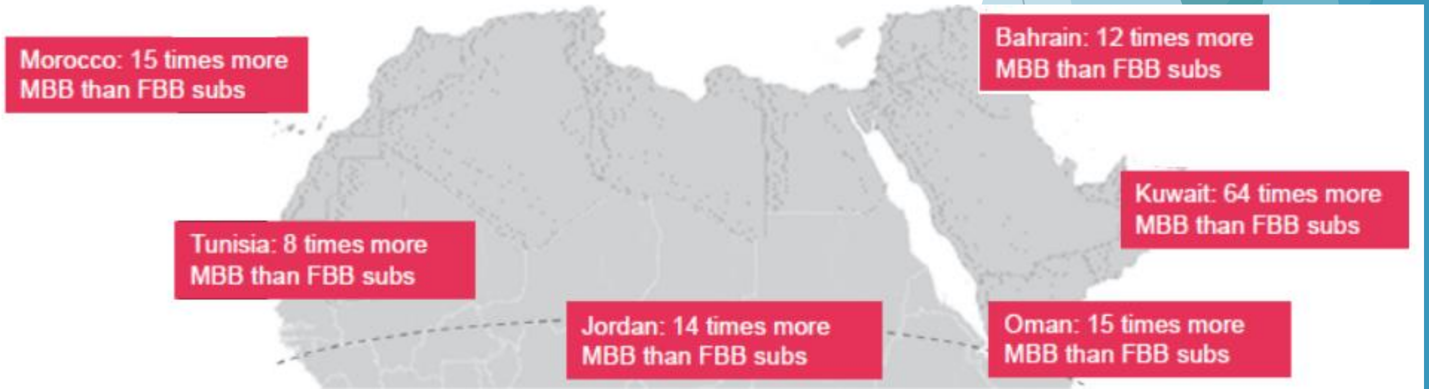
Surge in demand patterns driven by hyper connectivity, OTTs

Maximizing digital transformation opportunities

A driver for realizing socio-economic welfare

Regional Context: Broadband Infrastructure

- Over 31.8 million fixed BB subscribers and 299 million mobile BB subscribers in MENA
- ADSL access technology still leading the fixed BB market
- FTTH/B subscribers represent ~19% of total fixed BB subscribers with a take-up rate of 46%
- Large intra-regional divergence in terms of FTTH/B subscribers and coverage growth
- Coverage and take-up divergence also within the same country
- Mobile BB is the leading choice for many end user
- Region has extended the deployment of 4G networks
- 5G deployment agreements & trials a few countries (mainly in GCC)



[Source: FTTH MENA Panorama 2018, Sep'18)

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NATIONAL TELECOM REGULATORY AUTHORITY

Egyptian Market Factsheet

8.6 Million
Fixed Line subscriber

6.9 Million
Fixed BB Subscriber

700 Thousand
Fixed BB Subs. Yearly Add

VDSL
Main Access Technology

FTTC
85 % HH
100% by 2020

FTTH
1 Million HH by 2020
2 million by 2021

Egyptian Market Factsheet

94 Million
Mobile Subs.

2.34 Gbps
International Bandwidth

40 %
Population Coverage

14 Submarine Cable
Systems Transiting through Egypt

Av. Speed

10 Mbps Fixed BB
17 Mbps Mobile BB

4 Landing Stations

Egyptian Broadband Market Development

- National strategy to upgrade access network nationwide using FTTC architecture (2014 - 2022)
  - 85% completed in Q4 2019
  - Project to be concluded in 2020 (two years ahead)
  - Reaching 100% primary copper replacement
- Large scale FTTH projects to commence end of 2019
  - Collaboration with New Urban Communities Authority (NUCA) to connect new communities with FTTH
  - New compound licenses awarded in 2019 to encourage infrastructure competition and induce FTTH/FTTB rollout

Egyptian Broadband Market Development

- Upgrade in national core network to reach 100 Tbps by June 2020
- International gateway capacity doubled to 3 Tbps by June 2020
- Retail offering revamped in 2018 and 2019
  - Offers for higher speeds up to 100 Mbps
  - Average Broadband speeds doubled from 5 Mbps by 2017 to 10 Mbps by 2019
  - Minimum speed being raised to 30 Mbps
- In terms of affordability, Egypt features one of the lowest Broadband prices in the region (less than 1 EGP/GB/month)

Legacy Regulatory Challenges

- Shared access to infrastructure
- Wholesale pricing (Transmission, colocation, power, etc..)
- Regulating and managing transition from the legacy networks to FTTX (open access regulations, bitstream …)
- International gateway liberalization (data / voice)
- Submarine cross connect market regulation
- Using the universal service funds for broadband development
- Quality of service
- Fraud, authentication and security

Emerging Infrastructure Challenges: What to do …

Governance:

- Stimulate national infrastructure upgrade through graded government support or PPP
- Choose the right model for financing and execution
- Use USF mechanisms to support uneconomic areas to maintain ubiquitous coverage
- Avoid market distortion
- Build a complimentary infrastructure footprint
- Invest in future proof technology

Regulatory:

- Choose adequate regulation intensity with graded regulations in selected areas
  - Keep lucrative areas open to competition
  - Controlled support in less financially attractive areas (rollout/coverage parameters)
- Coordinate sharing of essential infrastructure (utilities and municipalities)
- Consider the wider perspectives of regulations (not just telecom)

Emerging Infrastructure Challenges: What to do …

Affordability:

- IP transit costs
  - Establish IXPs to reduce infrastructure costs by increasing local peering and traffic localization
  - Devise national policies to localize content and attract CDNs
- Right of way
  - Work closely with municipalities and relevant authorities to expedite and coordinate civil work approval
- Infrastructure sharing
  - Encourage sharing between operators to leverage investment

Demand:

- Stimulate demand from government and verticals
  - Consider the broader national digital agenda
  - Adopt initiatives to connect government and avail public services through high speed networks
- Enable demand aggregation
- Consider tax incentives to encourage private sector adoption

Rise of Apps & Services

- Rise of technology-driven companies operating internationally is disrupting business models of traditional services providers (telcos, banks, accommodation, transportation, …) and causing revenue/power shifts
- Regulatory imbalances are making it worse for traditional service providers:
  - Applicable laws
  - Taxes
  - Licensing
  - QoS
  - Interconnection
  - Price regulations
  - Privacy
  - Lawful interception

The App Economy and OTTs are driving the demand for infrastructure even higher

Competing directly with traditional providers and Telcos

Undermining consumer demand for core telecom services

Constraining capacity of Telcos for investment

The Need for New Regulatory Approaches

- Find a balance between maximizing benefits of the new digital economy while balancing its disruptive effect to sector specific market regulation

Regulated public monopolies / No independent regulator

Basic reform / Separate regulatory body / Partial liberalization and privatization

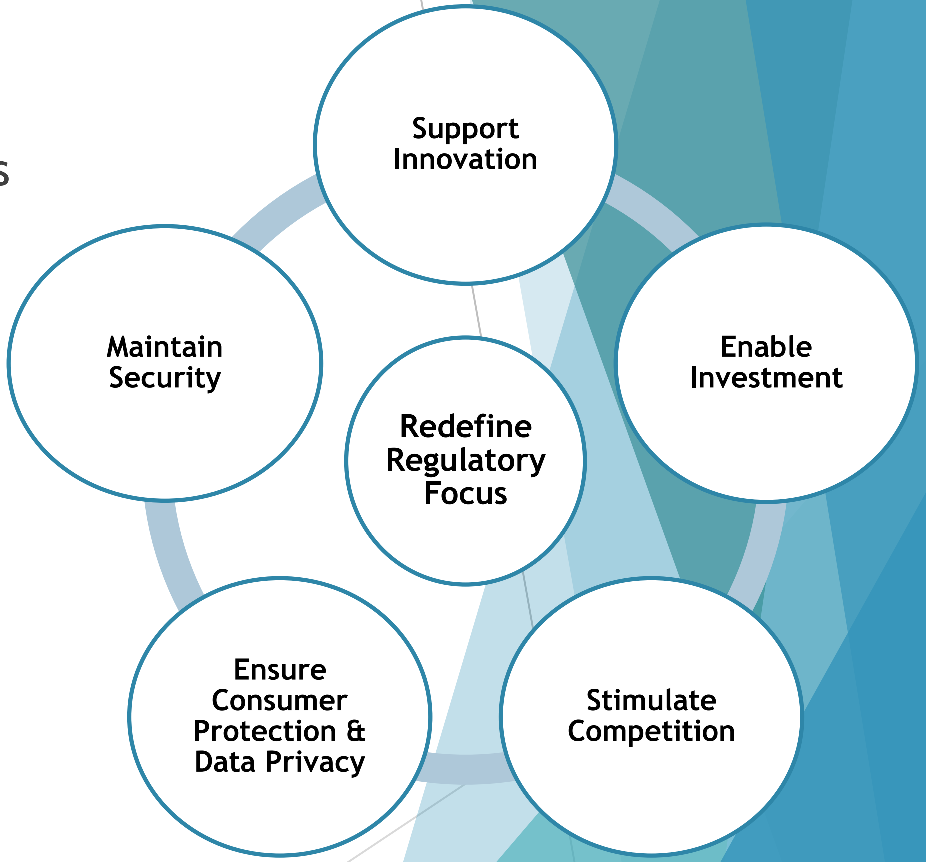
Regulation for enabling investment, innovation and access / Stimulating competition

Regulate across verticals / Define mechanisms for working with other sector regulators

Increased need for collaborative regulations

Shifting Paradigms

- Work to harmonize regulations for legacy and new service providers
- Review market definitions
- Re-think motives for regulation and deploy innovative regulatory tools
- Collaborate across multiple sectors and various economy dimensions
  - Hold inclusive dialogue across the different sectors and various authorities (competition, customer protection, etc.…)
  - Share guiding principles and best practices with other sectors where digital infrastructure may be leveraged
  - Define mechanisms for effective coordination and accountability across the sectors
  - Create working synergies – ongoing dialogue and regulatory cooperation



Thank you

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