Association of Competitive Telecom Operators (ACTO)

Presentation to Working Group
on
'New Technology'

Inputs for formulation of National Telecom Policy (NTP-2018)

Department of Telecommunications
New Delhi
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Scope of Discussion

- **What are the future / emerging technologies that should find mention in NTP-2018**
  - Software Defined Networks (SDNs) and Network Function Virtualization (NFV)
  - Software Defined Wide Area Network (SD-WAN)
  - Unified Communications
  - Internet of Things
  - Machine to Machine Communications
  - Cloud Computing
  - Artificial Intelligence
  - Augment and Virtual Reality
  - Satellite Technology
- **How are these technologies going to impact the society / enterprises / Governance**
- **What are the policy and regulatory interventions expected from Government to foster the development and growth of these technologies**
- **Global scenario in terms of roll out and regulation for these emerging technologies**
- **The vision / policy statement for inclusion in NTP-2018**

Current Trend

- Almost every sector (including telecom) is witnessing a wave of digital and technological transformation.
- Presently nearly 43% of the world is connected to the internet, enabling it to communicate and conduct business halfway across the globe.
- The past 10 years have witnessed more technological advancements than ever. In the next five years, we'll be witnessing more technological advancements.
- Today the internet and technology is integrated into every aspect of our lives. Now emerging technologies have started drastically altering the landscape in which we live.
- Digitization is driving rapid technological progress and growth, generating tremendous benefits for consumers.
- Widening gap between policy and pace of technological innovation. Raising question as to how policy makers will manage or adapt to the explosion of technological innovations.

The Road Ahead

- Both developed and developing world face different types of changes and possess different resources to address.
- In order to be a relevant and critical player in the future, policy makers need to rethink their design, strategy, operations, and processes in fundamental ways to ensure significant technological developments.
- The challenge is to seize the opportunity and respond in the form of a policy framework which embraces technological innovation for overall growth.
- Rapid innovation, in terms of technology and business models, together with the growing importance of economies of scale and scope, is blurring the boundaries between once-distinct markets and policy regimes.
- Result is a complex and dynamic digital ecosystem in which both consumers and businesses face policy uncertainty. This fast pace of change means policies can quickly become obsolete or irrelevant.
- Fast digital convergence and technological innovations result in certain policy challenges.

Enterprise Data Services Market in India

- The Indian enterprise data services market is on a growth trajectory and is set to see a CAGR of about 11% between 2015 and 2021(As per various industry estimates).
- The enterprise data services market is a major contributor to the growth of the telecom with its innovative and technology centric service offerings bringing about digital transformation.
- Enterprise data services are a key enabler for the overall growth of the telecom sector in India including the digital India.
- Urgent need for robust policy framework and policy thrust from Government of India for bringing next generation telecom revolution in the form of data for the growth of the Indian economy.

Software Defined Network (SDN) and Network Function Virtualization(NFV)

- Globally, an increasing rate of transition is being noticed from traditional specialty (brick and mortar) hardware based networks to Software Defined based Network and, Network Functions Virtualization techniques (SDN/NFV) and Cloud based platforms.
- SDN/NFV aims at reduction of a network's complexity and provides scalability with reduced operational costs by using standardized hardware and virtualization -SDN and Cloud computing technologies.
- The most relevant usage scenarios for SDN and NFV appear to be
  - Virtualization of Core Network.,
  - Virtualization of Content Delivery Network, ,(servers will move to Software Define – Data Centres)
  - Virtual Network Platform as a Service (VNPaaS), (NaaS)
  - Virtualization of support infrastructure (network management, monitoring tools, billing, service creation, *etc*.).

Software Defined Network (SDN) and Network Function Virtualization(NFV)

- Beyond the traditional telecommunications landscape, SDN and NFV are likely to be instrumental in the development and roll-out of innovative services, applications, and products These trends include connected cars, augmented reality, virtual reality, and universal communications.
- SDN/NFV will have a positive effect on network resiliency as this technology enables a quick and continuous relocation of network functions in the network in disaster situations by the inherent resilience and load balancing nature of SDN/NFV-enabled networks. Virtualization in itself is likely to improve continuity of network performance even under difficult (disaster) conditions.
- Deployment of SDN/NFV will open the competition for more actors such as equipment manufacturers, software companies, application service providers etc.
- NTP-2018 should emphasis early and substantial support for technological innovation.
- Pro-investment approach that reflects in the revised telecommunications regulatory framework can be considered a driver for SDN and NFV deployment.
- SDN/NFV technology is in its nascent stages and governing standards are still in flux. Policy makers should avoid regulations which could stifle the natural growth of these new technologies.

Software Defined WAN(SD-WAN)
A specific use case of SDN

- SD-WAN offers the ability to centrally configure and manage branch connectivity as well as prioritize application traffic based on policy and link performance with software, rather than hardware and do it all with integrated security.
- It promises flexibility agility, cost-savings, automation, and a better user experience than traditional WAN.
- It uses public internet for non-critical services and uses private VPN / MPLS for critical services in hybrid mode along with automation.
- Policy perspective, it should allow hybrid mode of operation for the roll out of SD-WAN. In a manner which increases customer choice and enhances the OTT eco-system .
- Regulatory framework to support such emerging technologies with the right policy push including a robust encryption policy to protect privacy of communication.

Internet of Things (IOT) and Machine-2-Machine Communications (M2M)

- **Permissibility of global SIM**- Any restriction to the use of foreign SIMs / numbers for roaming will impede the growth of M2M applications / services and also have adverse impact as a reciprocal action from other countries.
- **International roaming -** International roaming is necessary to facilitate the deployment and development of M2M services and the IoT at large being service is global in nature.
- **Cross border data flow -** In order to promote global innovation and investment throughout the digital economy, Regulators/ Government should adopt light-touch and flexible regulatory frameworks to facilitate faster and efficient deployment and adoption of M2M in the country including allowing the leveraging of data centers and management system investments made by global service providers outside of India to enable faster rollout of services and also for analyzing and managing the M2M/IoT infrastructure in more cost effective and secure manner.
- **Data / server localization-** IOT/M2M is inherently a global business which requires regulatory policies to reflect the global essence and recognize as well as facilitate cross border data flow amongst many other requirements.

Emergence of Unified Communication Systems(UCS)

- One of the benefits of collaborative enterprise, which goes a long way in reaping the benefits of innovation is brought in by converged architecture in the form of unified communications (UC) architecture being widely deployed by other economies.
- UC is the integration of real-time enterprise communication services such as instant messaging, presence information, voice, mobility features audio, web & video conferencing, fixed-mobile convergence (FMC), desktop sharing, data sharing, call control and speech recognition with non-real-time communication services such as unified messaging.
- Need to rework with policy framework to realize the full benefits of the innovative products such as UC services. A few issues that need to be addressed urgently are:
- Need not localize remote management to specific physical locations. In a virtualized world, providers need freedom to move management capabilities to sites with available capacity to deal with congestion and equipment failures.

The inevitable

- Current regulatory policies are largely written with a focus on consumer/retail markets and do not necessarily serve the needs of enterprise customer networks and services very well especially data.
- Evolving enterprise networks are becoming very flexible on the use of available access types –blurring lines between internet and private networks, even being able to use wireless access as needed.
- Technology and services are evolving at a rapid pace and service providers are going to be forced to move to a cloud based SDN architecture to remain competitive.
- The inevitable move to SDN/NFV will make the concept of deploying physical assets in a brick and mortar location obsolete as everything becomes part of a Cloud.
- Consequently, the idea of managing these assets from a physical location, hitherto always designated as a NOC, will also become impossible to achieve.

The inevitable

- Management of such advanced virtual network infrastructure should not be tied to a physical NOC location - in a building with fixed IP addresses or country boundaries. RA policy will need to be reviewed to keep pace with the emerging technological requirements.
- The deployment of these SDN/NFV enabled advanced networks will require flexibility on deployment of a distributed or virtual NOC architecture that have automated remote management systems not tied to a physical location.
- Regulations with end goal, rather than technology / protocol specific regulations would allow service providers to comply without being burdened/forced to use a specific solution.
- DoT to promote light touch regulatory framework with no onerous Licensing requirements being imposed on providers to help the services grow.

What Next

- Digital and technological ecosystem is dynamic and complex.
- Policy framework needs to be flexible to accommodate rapid changes in technologies.
- In doing so, policy framework should consider following principles:
  - Policy should achieve its objective in the most efficient way regardless of the technologies, industry structures or legacy regimes.
  - Policy should be technology-agnostic: it should consider all technological means for achieving the desired objective.
  - Policy needs to be realistic based on market conditions to support technological innovation rather than a prescriptive set of rules oblivious to market dynamics.
  - Policy reforms to follow a bottom-up approach that takes entirely new approaches into consideration, and is willing – where appropriate – to reject old ones.
- Digital and technological ecosystem is dynamic and complex. Policy framework needs to be flexible to accommodate rapid changes in markets, technologies and business models, while ensuring certainty and confidence for stakeholders to take risk.
  - Recognition to Global Standards
  - Security and Integrity of the networks and services

Expectation from a Policy Framework

- Facilitating Technological Innovation
- Provides an institutional framework for ensuring orderly growth in the sector
- Provides a vision / roadmap for growth
- Helps in measuring success vis-à-vis objectives
- Policy framework implements reforms to enhance competition and protect consumer interest without impeding social and economic progress.
- Policy and regulatory environment to be flexible for embracing technological innovation and deployments of diverse and emerging technologies.

Thank you !!

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