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*50 Years of Growth, Innovation and Leadership*

## Impact of Draft National Telecom Policy (NTP) On The Indian Telecom Industry

A White Paper by  
Frost & Sullivan

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## INTRODUCTION

**National Telecom Policy (NTP) of India 2011: Ushering in an Era of Inclusive Accelerated Growth**

A new chapter was written in the 'Great Indian Telecom Story' on Monday, October 10, 2011, when Mr. Kapil Sibal, Hon'ble Minister of Science, Technology and Earth Sciences, unveiled the Indian National Telecom Policy of 2011. With a subscriber reach of 866 million and growing, India is the fastest growing and second largest telecom industry in the world. The contribution of the telecom sector to the overall GDP grew from 1.5% to 3% during the last decade. It has become the third-largest sector in attracting FDI inflows, accounting for more than 8% of cumulative FDI inflows during the period. ICT has always been a major catalyst for the socio economic growth of India. Increasing penetration of Mobile and Internet services and proliferation of utility services like e-governance, mobile education, health etc have actively helped bridge the divide between rural and urban India. Also, the advent of mobile banking solutions will help in financial inclusion and also eliminate economic disparity.

Recognizing the need of the hour, the National Telecom Policy 2011 is all set to propel the Indian Telecommunication sector to the next level. Its main focus is to develop a decentralized telecommunication network that offers seamless convergence of devices, technologies and networks for everyone. It aims to promote indigenous development and manufacture of content, services and electronic equipments to satisfy domestic as well as global market. The onus is to create **Brand India** - a global force to reckon with in the ICT sector.

At a macro level, the industry is headed towards consolidation, and the policy announcement is a step towards achieving the same. While the ground work in terms of rules and regulations is being laid out, an environment is being created that would put the sector on the consolidation trajectory. The Government's intention to develop a framework to facilitate the consolidation, which looks inevitable and help struggling operators to exit and return their spectrum would help weaker telecom companies.

Moreover, certain key clauses in the policy are expected to increase the cost to the operator and thus, that of the services provided to consumers.

The draft lacks clear cut guidelines on how most of the objectives would be met and also fails to allot timelines to a few of them.

IMPACT OF SPECTRUM AND LICENSING ON THE TELECOM ECOSYSTEM

<p>Availability of additional spectrum</p>	<ul style="list-style-type: none"> <li>• As per the policy, an additional 300 MHz spectrum and another 200 MHz will be made available by 2017 and 2020, respectively</li> <li>• This will provide relief to the congested and overstretched networks of the operators. Also, this will further drive the usage of data services in the country</li> </ul>
<p>Approval of Spectrum Pooling, Sharing and Trading</p>	<ul style="list-style-type: none"> <li>• NTP proposes spectrum pooling, sharing as well as trading and promises a spectrum roadmap for every 5 years, which will include details of additional spectrum. There is a mention of providing additional spectrum in both the prime, below 12 GHz band and the other global frequency bands.</li> <li>• New revenue stream for operators and also help in the emergence of Mobile Virtual Network Operators (MVNO) in the country. Many steps have been proposed to enable optimized utilization of spectrum including spectrum audits</li> </ul>
<p>Spectrum Pricing</p>	<ul style="list-style-type: none"> <li>• Spectrum pricing has been delinked from licenses and would be decided on the basis of current market factors. Few bands of low frequency will be utilized for government entities and will be de licensed.</li> <li>• Though, this brings clear differentiation in terms of license fee and spectrum charges, operators would need to pay extra price for every 1.8 MHz of 2G spectrum, questioning the financial viability of the business</li> </ul>
<p>Spectrum Act</p>	<ul style="list-style-type: none"> <li>• A separate Spectrum Act proposed to take care of the Spectrum pricing, allocation and sharing needs</li> <li>• Not much clarity regarding the above mentioned act in terms of allocation, frequency bands, pricing and spectrum refarming. There has been no mention of the timeline for the next round of license auction and the frequencies to be sold</li> </ul>
<p>Unified License Regime</p>	<ul style="list-style-type: none"> <li>• Unified License regime that covers all the services from voice to data and video thereby setting the stage for seamless convergence of services, networks and devices. Content development is exempt from licensing</li> <li>• Delinking of delivery of services from networks would enable MVNOs to enter the market</li> </ul>
<p>Mobile License tenure</p>	<ul style="list-style-type: none"> <li>• Mobile License tenure halved</li> <li>• This policy would increase the cost of service providers in addition to CAPEX for infrastructure and network set up</li> </ul>

**IMPACT ON THE MOBILE MARKET**

As of July 2011, India had 858.37 million mobile subscribers, with a wireless teledensity of 72 percent. The urban and rural teledensities were 156.7 and 35 percent, respectively. Wireline growth has been declining for the past few years, with a teledensity of 2.9 percent. Rural wireline penetration is a meager 1 percent.

100% rural tele density by 2020

- NTP 2011 aims at achieving 100 percent tele density by 2020
- Can be achieved only by the widespread growth of wireless connectivity in the rural areas. Increase in rural penetration is fraught with many difficulties such as low ARPU, difficulties in setting up the necessary telecom infrastructure due to inaccessibility, hostile topography, lack of electrical grid connectivity, power thefts and others. Increase in rural penetration to bridge the knowledge gap between the rural and urban residents. Mobile phone would transcend from a simple communication tool to an all powerful end point wherein services like education, Health etc can be delivered at a press of a button. This will drive the uptake of utility applications and also enable services like E/M governance, emergency or disaster alerts .

Mobile Banking

- NTP 2011 recognises the importance of providing a framework to ensure secure and authenticated transactions over mobile phones
- Enabling mobile banking will help in realising the dream of financial inclusion in a country with a low banking penetration

VAS

- NTP 2011 focused to help the transition of Indian VAS segment to become a global leader and development of vernacular content and services that can break the linguistic barriers existing in the nation. Special attention given to GIS and location based services which can be used to provide information on services and POIs based on the location of the user
- Value Added Services Sector pegged at INR 13000 crore industry in India. Focus on VAS would help in increasing the ARPU of the telecom operators and increase the proportion of VAS revenues from 15 percent in 2010 to 33 percent by 2017, to overall revenues.

Abolishing Roaming

- NTP 2011 draft proposes abolishing Inter Circle roaming and extending MNP to national level
- This appears to be detrimental to the growth of operators in a high churn low ARPU scenario. National MNP will further increase churn and will unleash yet another tariff war in the country which will impact the operator's margins, thereby negatively affecting their investment on infrastructure. Abolition of roaming charges would negatively impact the incumbents as they have roaming revenue contribution to the tune of 8.3 percent / 5 percent for GSM/CDMA operators. Profitability would be negatively impacted for Bharti, Idea and Rcom which might pave way for further tariff hike making local calls expensive. This policy threatens to favour the incumbent players as increased tariff would negatively impact players like unicolor, aircel and docomo which survive the competition keeping tariffs low.

**IMPACT ON THE BROADBAND MARKET**

Recognition of Broadband as a basic necessity just like education and healthcare will drive the growth of the Telecom sector.

600 Million  
Broadband users  
by 2020

- NTP 2011 targets to provide affordable and reliable broadband on demand by the year 2015 and to achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020. As of July 2011, India had around 12.50 broadband subscribers. Additionally we had around 12.5 million 3G subscribers
- Telecom operators, broadband service providers and equipment players – all of them stand to gain with increasing broadband penetration. Large population and low broadband penetration presents a huge opportunity waiting to be tapped. Under served broadband market not only puts the sector on unprecedented growth trajectory but also provides the service providers and equipment players with immense expansion opportunities. Growth in wireless broadband will help non voice revenues for telcos with increased VAS uptake. Increased market accessibility bodes well for further innovation and manufacturing in the sector. Increased broadband penetration will help embrace new technologies faster and keep pace with worldwide technology standards.

100 Mbps by  
2020

- The move to revise the existing broadband download speed of 256 Kbps to 2 Mbps by 2015 and higher speeds of atleast 100 Mbps
- The policy will help in enhancing the end user experience especially on mediums like mobile phones. The move will call for investments to be made in the sector for upgradation of existing networks to cater to the increased speed making network equipment vendors participation critical. It would also help develop the entire ICT ecosystem and have a bearing on MVAS market with content, applications and devices suited to thrive in the changed environment. Technology enablers to focus on platforms with enhanced user experience to support data intensive, mass market and rural VAS applications with widespread reach

OFC in villages  
and FTTH in  
cities and towns

- NTP 2011 aims to connect all the village panchayats via optical fibre network by 2014 and then consecutively to the village residents. Also intends to promote Fibre To The Home (FTTH) in cities and towns
- Looking at the increasing costs of optical fibre and copper cables, wireless access will be the preferred last mile connectivity solution in the future. Policy framework addressing Right of Way concerns would help make deployment of FTTH feasible. The policy bodes well for cable manufacturers as rural connectivity is extremely poor in India as far as far backbone is concerned and any attempt to wards greater connectivity would demand a lot of investment. BSNL remains the only player with an extensive rural optical fiber infrastructure with its network covering 28,000 Gram Panchayats in India

**IMPACT ON TELECOM MANUFACTURING**

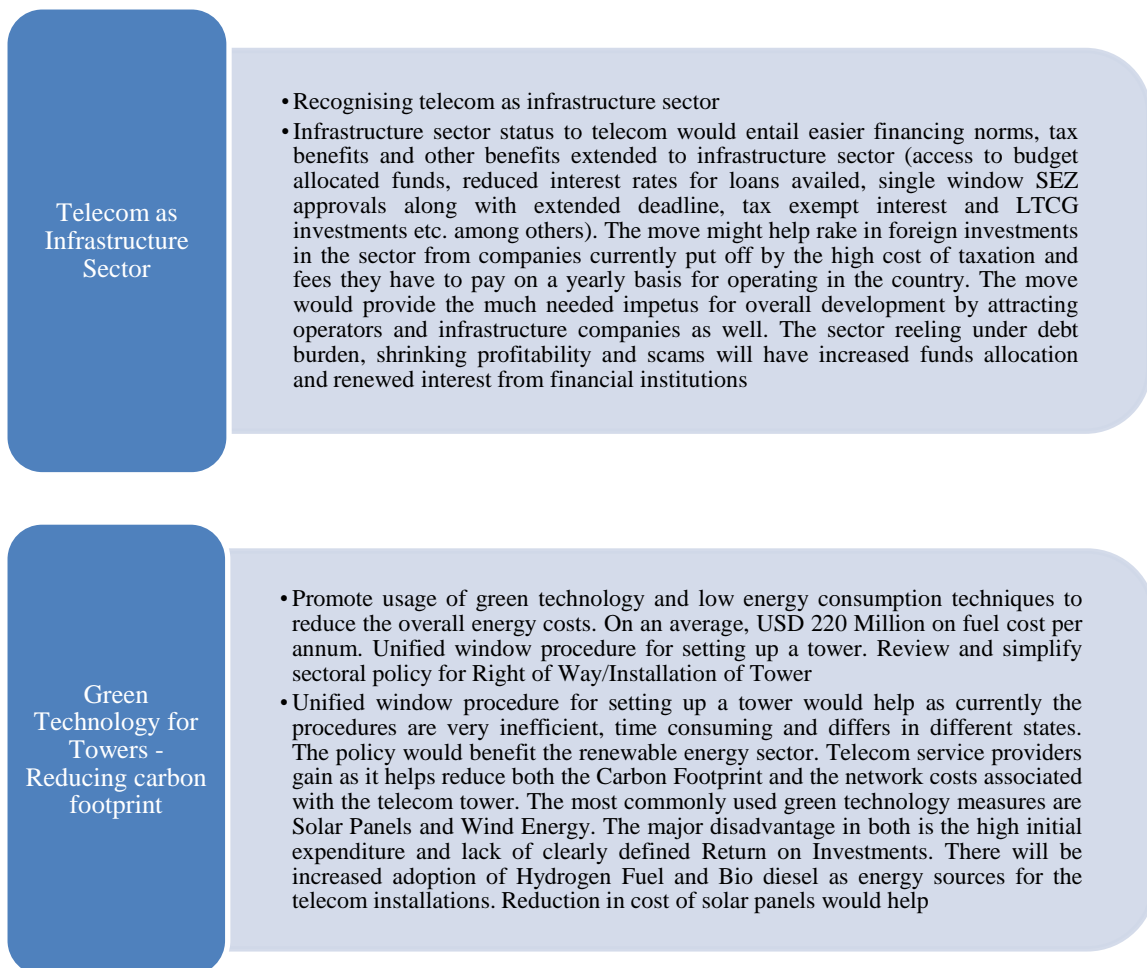
With growing adoption of ICT services, there is an increasing demand for telecom equipment and associated electronics in the country. Today most equipment, be it network components, CPEs or handhels are sourced out from other countries. The equipment demand in India is likely to reach \$300 billion in the next few years. Incentives for indigenous development of products and services in terms of funding, tax benefits, etc. will go a long way to augment growth of the sector.

**India - Global  
Manufacturing  
hub for Telecom  
Equipment**

- To make India a global hub for telecom equipment manufacturing. 80% of telecom networks to be domestically manufactured by 2020 with a value addition of 65%. The government also proposes to develop Special Electronic Zones (SEZs) or Clusters which will focus on indigenous manufacture of telecom goods and services. The proposal should be converted and the SEZs should be developed to boost the domestic manufacturing. The policy also proposes to develop indigenous R&D, patents etc which can now be used in the global arena. To enable this, there will be increase academic industry interaction and pools of knowledge existing in institutes like IIT etc across the country will be leveraged
- Policy would immensely benefit domestic players like ITI and Kavveri Telecom while the foreign equipment vendors like NSN, Ericsson, Alcatel-Lucent, ZTE and Huawei stand to lose. The foreign vendors renewed their focus on India with setting up R&D facilities and expanding their India presence recently, but are bound to be disappointed. With the equipment demand likely to reach US\$ 300 billion in the next few years, they are set to miss out on a lucrative opportunity

**IMPACT OF RECOGNIZING TELECOM AS AN INFRASTRUCTURE SECTOR**

Draft NTP 2011 has proposed to recognize Telecom as an Infrastructure Sector. Benefits of the same are enumerated below:





IMPACT OF ENTERPRISE TELECOM

**ENTERPRISE DATA SERVICES AND WHOLESALE BANDWIDTH**

Focus on  
Broadband

- Achieve 600 Million broadband subscribers at 100 Mbps by 2020. Provide high speed and high quality broadband access to all village panchayats through optical fibre by the year 2014 and progressively to all villages and habitations
- This would lead to increased demand for Internet bandwidth from Government vertical as connecting 6 lakh panchayats across the country would need bulk bandwidth with last mile reach. BSNL with the largest network in the country is the preferred bandwidth provider for Government vertical. Since it does not have its own IP capabilities, it is expected to buy it from other major ISPs like Airtel, Reliance and Tata Comm in the wholesale market.

Promote  
Domestic  
Production and  
Protect  
Consumer  
Interest

- Promote the domestic production of telecommunication equipment to meet 80% Indian telecom sector demand through domestic manufacturing with a value addition of 65% by the year 2020. Protect consumer interest by promoting informed consent, transparency and accountability in quality of service, tariff, usage etc
- Domestic production of telecom equipments would enable TSPs to offer managed data services at a lower cost as they would save on the heavy taxes and duties being levied on the import of these equipments. Also stringent checks and measures to be put on tariffs and the quality of service would lead to better usage experience for the enterprises who often complain about various loopholes in their SLA's and how TSPs breach them within the legalities causing severe business losses for them.

Interconnection  
Charges

- Mandate an ecosystem to ensure setting up of a common platform for interconnection of various networks for providing non-exclusive and non-discriminatory access.
- Interconnection charges are paid a telecom operator to another for completing a call on its PSTN network. This will impact BSNL's revenue as it has the largest PSTN network in the country and generates a significant portion of its Wholesale Bandwidth revenue from Interconnection charges collected from various private operators.

e-governance  
Initiatives

- To make efforts to recognise telecom and broadband connectivity as a basic necessity like education and health and work towards 'Right to Broadband'. To build synergies between existing, on-going and future Government programs viz e-governance, e-panchayat, NREGA, NKN, AADHAR, AAKASH tablet etc. and roll-out of broadband.
- E-Governance and emerging sectors like Education and Healthcare will continue to be the growth driver for data services market in India as such projects would require huge bandwidth and connectivity through MPLS, Internet, Ethernet, VSAT and DLC in some cases.

Digitalization,  
Cloud and M2M  
and  
Convergence

- To encourage digitalization of the local cable networks..To take new policy initiatives to ensure rapid expansion of cloud services and technologies at globally competitive prices by addressing the concerns of cloud users and other stakeholders including specific steps that need to be taken for lowering the cost of service delivery. To recognize the role of new technologies in furthering public welfare and enhanced customer choices through affordable access and efficient service delivery. The emergence of new service formats such as Machine-to-Machine (M2M) communications (e.g. remotely operated irrigation pumps, smart grid etc.) represent tremendous opportunities, especially as their roll-out becomes more widespread.To put in place legal, regulatory and licensing framework for convergence of services, networks and devices.
- The digitalisation of local cable networks would need high bandwidth data transfer for which Domestic Leased Circuits (DLC) is expected to be the preferred mode of connectivity. By making Cloud and M2M services affordable to the enterprises, the demand connectivity through MPLS and Internet is also expected to rise as bandwidth is the basic requirement for adoption of these services

Exit Policy for  
Licensees

- To frame an appropriate Exit Policy for the licencees through which they can surrender their licenses and the spectrum gained for the circles in which they operates.
- With 15 telecom operators and declining ARPU's staying competitive in this market is a key challenge for many of the new entrants. Some of them like Etisalat, Videocon, Loop have failed to even meet their roll out obligations. Whereas other like Uninor, MTS and Aircel havemade some inroads in terms of subscribers, but the margins are not sustainable. These operators have leased infrastructure (active and passive) from other bigger operators in order to save on the CAPEX and minimize the roll out time for their services. As a result we expect some of these new operators to exit this market by giving up on license and spectrum, which would result in a cutdown on their bandwidth requirements and hence a dip in the wholesale bandwidth revenues of operators providing them the necessary bandwidth.

**ENTERPRISE FIXED AND MOBILE SERVICES**

<p>Abolition of Roaming Charges and Full MNP</p>	<ul style="list-style-type: none"> <li>• Customer favourable policy by abolishing all India roaming charges and allowing country wide Mobile Number portability</li> <li>• Roaming charges are one main source of revenues for mobile operators especially in case of enterprise customers due to their extensive travel pattern</li> <li>• With abolition of these charges and availability of nation-wide MNP, the enterprise revenue potential for these operators could witness a downturn</li> </ul>
<p>Focus on convergence and broadband offering</p>	<ul style="list-style-type: none"> <li>• Convergence of services becoming the focal point to boost usage of fixed services and also to increasing the availability of wireless spectrum</li> <li>• Increased focus on fixed mobile convergence can aid the operators to leverage their fixed infrastructure to realise more revenues and optimize wireless spectrum for seamless service offering and better quality of service</li> <li>• Revising broadband speeds and enhancing service availability could step-up the adoption rate of broadband services as primary data connectivity in SMB segment</li> </ul>
<p>Promotion of VAS ecosystem</p>	<ul style="list-style-type: none"> <li>• Plans to make India a global hub for Value Added Services by promoting a favourable ecosystem for all the value chain participants</li> <li>• Creating such an environment could stimulate the service initiatives and innovations of these participants and raise VAS standards in our country especially in enterprise segment where adoption of niche VAS offerings is higher.</li> </ul>
<p>Spectrum Sharing and Relaxed M&amp;A norms</p>	<ul style="list-style-type: none"> <li>• Plans to allow sharing of networks and relaxed M&amp;A norms across operators to facilitate faster roll out of services, improved quality of service and reduced investment requirements.</li> <li>• Allowing spectrum sharing between operators could bring down the operational cost of the service providers which in turn could translate to low cost service offerings</li> <li>• Relaxed M&amp;A norms can ease out the competition in the industry and could improve the profit margins of the players</li> </ul>

**ENTERPRISE CONFERENCING SERVICES**

**AUDIO CONFERENCING**

Unrestricted Net Telephony

- One of the trendline indicators that can be drawn from the draft policy is the 'Unrestricted Net Telephony'
- This is expected to promote the usage of audio conferencing over IP which is primarily happening over PSTN by means of circuit switching and also expected to save some costs incurred by end user as they use the IP network to connect to the bridge
- However, the conferencing service providers would be required to upgrade their legacy TDM infrastructure to an IP/ Hybrid audio infrastructure in this regard
- The telcos would take a hit due to a dip in inter-connect revenues that they would generate otherwise from a circuit-switching based communication model

Rapid expansion of cloud services

- Draft policy mentions the initiatives to be taken to expand the usage of cloud services by alleviating the concerns around the same
- The SaaS based web conferencing offering along with the audio conferencing solution is expected to be promoted well at a very competitive price offering

**VIDEO CONFERENCING**

Reliable Broadband connectivity

- Draft policy indicates provision of affordable and reliable broadband on demand by the year 2015 and to achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020 at minimum 2 Mbps download speed
- A good network connectivity is expected to supplement the penetration of video conferencing in emerging applications like Tele-medicine and Tele-education

Transition to IPV6

- As per the policy, transition to IPV6 is expected to be achieved by 2020 in the country
- This is largely expected to promote the usage of SIP based video conferencing systems and the associated gateways and Multi-point Control Units

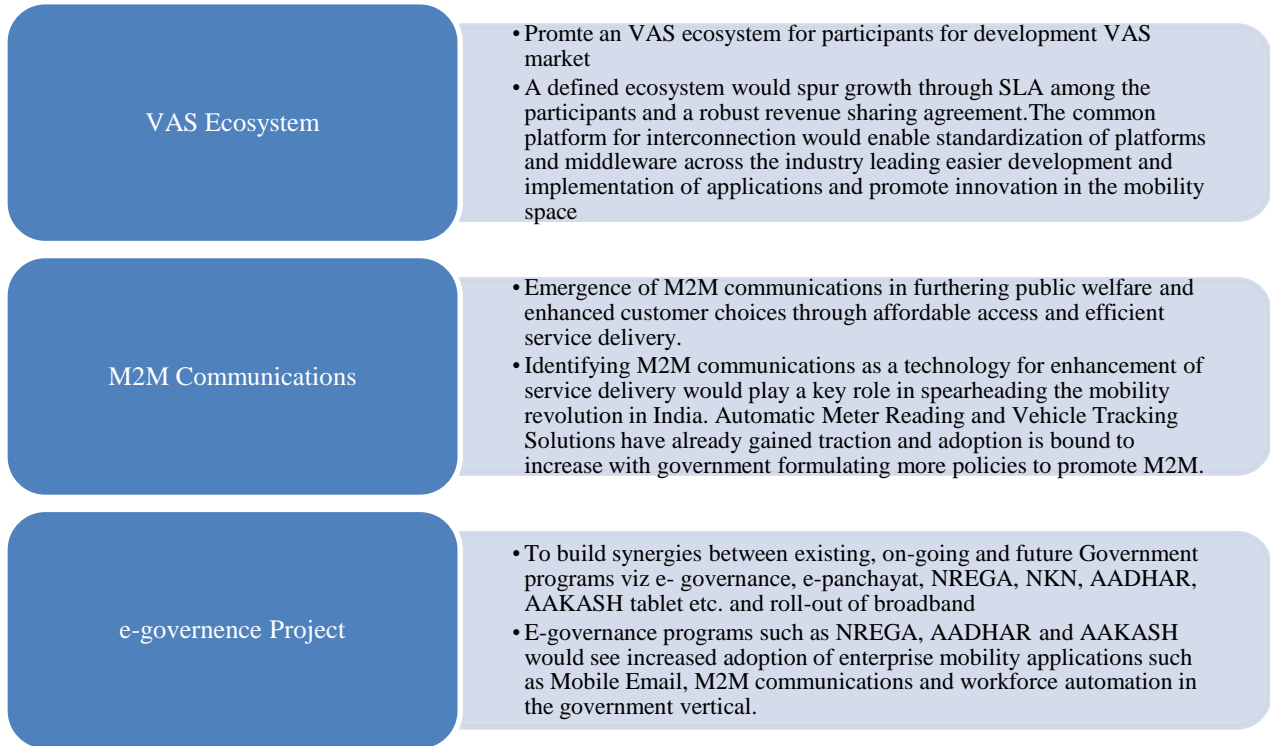
Convergence of services, network and devices

- The draft policy prescribes the seamless delivery of converged network and devices by reviewing the legal and regulatory framework
- The convergence of voice , video and data networks and associated devices is expected to drive the usage of single high bandwidth networks for all applications in an enterprise. This could also lead way to the development of managed video conferencing market that is at a nascent stage currently

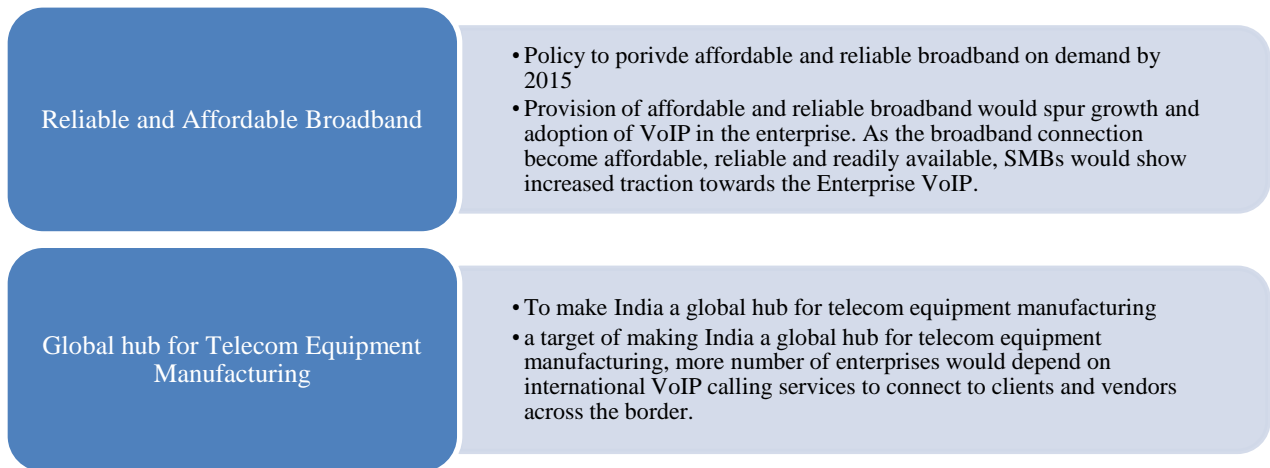
**ENTERPRISE MANAGED SERVICES AND NETWORK INTEGRATION**

<p>Impetus on Broadband</p>	<ul style="list-style-type: none"><li>• The policy’s emphasis on increased proliferation of broadband network in India will act as an impetus to the revenues of domestic Managed Services market</li><li>• Broadband reach will enable tier 3 cities and villages to be connected. This will indirectly facilitate the growth of cloud services which basically relies on “on-demand” services accessible from anywhere</li><li>• Increased broadband penetration will also produce price dips which will indirectly lower prices for third party data centre services</li></ul>
<p>Security</p>	<ul style="list-style-type: none"><li>• The development of systems for lawful assistance will have a direct impact on the network integration market which subsumes network security devices and its related services</li><li>• Emphasis on security measures to be deployed by the telecommunication players will create a demand for regulatory compliance services which is a sub-segment of managed security services</li></ul>
<p>Skill Development</p>	<ul style="list-style-type: none"><li>• The policy’s aim to enhance ICT skill development throughout India in partnership with IITs and other prestigious institutions will further improve the skilled resource pool in the country</li><li>• India has long been viewed as an IT outsourcing hub for both s/w development and h/w management. Such a move will further improve India’s managed services offerings to neighbouring SAARC and other countries</li></ul>
<p>New Technology and Data Use</p>	<ul style="list-style-type: none"><li>• The evident favouring of cloud computing concept is bound to reap rich dividends for the government, consumers and private companies</li><li>• The policy aims at formulating policies on cloud services hereby diminishing the ambiguities which plagued it and acted as a chief restraint for the market</li><li>• In the same effect, MSME has already announced plans to provide substantial subsidy for cloud computing to the SMĒs, in association with service providers</li></ul>

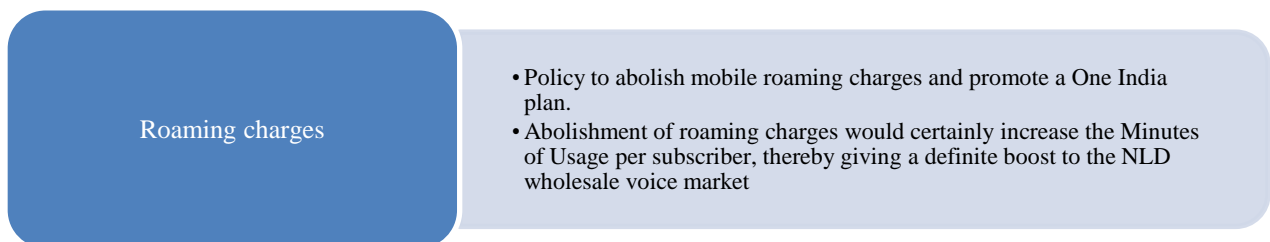
**ENTERPRISE MOBILITY SERVICES**



**VoIP SERVICES**



**WHOLESALE VOICE**



IMPACT ON UNIFIED COMMUNICATIONS MARKET

Increase broadband penetration

- To achieve 175 million broadband connections by the year 2017 and 600 million by the year 2020 at minimum 2 Mbps download speed and making available higher speeds of atleast 100 Mbps on demand
- This is likely to promote growth in the overall enterprise telephony market due an expected increase in IP penetration. The policy might open up new avenues for the OEMs as well as service providers for investments

Promote domestic production of telecom equipment

- Become self reliant in telecom equipment by encouraging manufacturers for domestic production
- The policy aims to strengthen the foothold of domestic manufacturers as well as to provide telecom equipments to end users at economical rates. This will spur demand from the small and medium sized businesses who have so far not been able to invest in IP infrastructure due to the cost attached to it

Unified License Regime

- Move towards Unified License regime that would facilitate seamless convergence of devices, networks and services
- This will act as a respite for all the major Unified Communications vendors who had been struggling to answer end user queries on interoperability and integration issues till date. The vendors had tried to join hands to roll out products and solutions that could work seamlessly across all networks. However, with initiatives taken up through NTP, it will ease away the hiccups and challenges faced by the vendors and service providers in convincing the customers

IP uptake

- To work closely with Department of IT in the promotion of content creation which would enhance the investment in All-Internet Protocol (IP) networks including NGN
- Not much clarity regarding the concerns over IP legalisation. However, the policy mentions some key initiatives that could push internet telephony uptake. So far, the enterprise telephony vendors had adopted a wait and watch approach and were awaiting the NTP for clarifications on the same. It is yet to be seen how the ministry tackles this issue and sheds some more light on the legalisation aspect.

IMPACT ON CONTACT CENTER MARKET

Broadband Penetration and Speed

- Provide affordable and reliable broadband on demand by the year 2015 and 600 million by the year 2020 and minimum 2 Mbps download speed and making available higher speeds of atleast 100 Mbps on demand
- The contact center market has witnessed a high adoption of the Internet protocol (IP) technology due to their desire to consolidate and virtualize multisite contact centers. The new telecom policy will help achieve this with enhanced broadband speed. With high speed bandwidth and spectrum allocation, the contact center will be able to provide advanced technology features to the customers like Video Contact centers, HD video chat, and other integrated unified capabilities to the end customers

Increase Rural Teledensity

- Increase rural tele-density from 35 percent to 60 percent by 2017 and to 100 percent by 2020
- With high internet penetration, it would be easier for providers to set up rural BPOs in smaller Tier II & III cities and towns, thereby increasing their operational and cost efficiency, also providing rural employment

Cloud Services

- To take new policy initiatives to ensure rapid expansion of new services and technologies by addressing the concerns of cloud users and other stakeholders
- The hosted contact center market has the feature of a speedy roll-out and easy scalability, characterised by low cost. More adoption of cloud facility with secured environment will improve awareness and adoption among the customers, leading to a increase in demand of Hosted Contact Center services as well

Integrated Ecosystem

- Deliver seamless voice, data, multimedia and broadcasting services on converged networks for enhanced service delivery to provide superior experience to users
- With provision for seamless integration between platforms, it is expected to drive growth in VOIP and IP telephony market. The contact centers who have recently started using SIP Trunking will be benefited as the implementation of an IP contact center is faster and less expensive than the traditional method of routing and worth the lower communication services cost



**IMPACT OF PROPOSED POLICY ON IPv6 IMPLEMENTATION BY 2020**

The Internet Protocol Version 6 address (IPv6) is the successor to the Internet's first addressing infrastructure, Internet Protocol Version 4 (IPv4). In contrast to IPv4, which defined an IP address as a 32-bit number, IPv6 addresses have a size of 128 bits. Therefore, IPv6 has a vastly enlarged address space compared to IPv4.

**IPv6 Implementation**

- Policy to completely replace IPv4 with IPv6 by 2020
- IPv6 can enable a high growth in the mobile internet market, by service providers offering SMS based information access like news, astrology, sports etc. It would potentially enable convergence with most of the equipments like washing machine, refrigerators, television sets would come into the Ipv6 network and be controlled remotely, creating a potentially large market for India

In India, all telecom and ISP companies must be IPv6 compliant, because of the growing popularity of mobile internet. India currently has 4.3 billion IPv4 addresses and is running out of them, a problem that is likely to get more acute after the 3G and broadband wireless access (BWA) services are successfully implemented. The 3G and broadband wireless access services are likely to prompt the country to switch over to IPv6 as soon as possible. Each mobile phone that supports data services will have its very own IPv6 address, a move that would boost Internet adoption in the country.

A prime area of concern is that, India has limited infrastructure to adopt IPv6 addresses. The current IPv4 networks are incompatible with the IPv6 address system. An IPv6-enabled device, cannot access most of the current content because all of that is written for IPv4. Given the current infrastructure situation, IPv4 will remain the dominant protocol for some more time, until the IPv6 networks are in place.

## OTHER IMPORTANT ASPECTS OF NTP

### **CONVERGENCE**

NTP 2011 promises the ultimate convergence - mobiles, TV and computers - which are now already connected. Soon, we can access internet on television sets while watching soap operas. Also transition of networks from TDM to IP will ensure seamless connectivity with computers and help in adoption of services like Internet Telephony (VoIP) etc.

However convergence of devices means that we need to have end points and CPEs that can support this kind of services. Substantial investments have to be made to ensure the ultimate convergence of all services.

Also the advent of Machine-to-Machine (M2M) communications will help in furthering public welfare.

### **SECURITY**

Security concerns regarding telecom products imported from other countries started arising from the end of 2010. The Government had demanded the source code of all the major equipment vendors to be submitted for security clearance. Also a separate testing facility was introduced in many reputed institutes of the country, like IISc, to test these software and products.

With such security issues, preference has been given to indigenously manufactured SIM cards, mobile devices and other equipment. The Government will encourage use of these domestic products by all.

### **SKILL DEVELOPMENT**

The Policy aims to assess the man-power required to cater to the growing telecom demand and also develop the skill set required by

1. Constantly updating the curriculum
2. Setting up specialized centers for dispersing technical education
3. Collaborating with centers of excellence like IIT and the industry

### **CLOUD SERVICES**

NTP 2011 recognizes cloud as one of the delivery platform of the future that can help in making its broadband and convergence dreams come alive.

It must remove any bottlenecks in setting up cloud infrastructure and rollout of services.

## RECOMMENDATIONS

- Clear timelines should be set for all the proposed steps and their execution should be monitored closely
- Implementation of dual Goods and Service Tax will drive the growth of the Telecommunications industry. A single uniform tax will benefit the entire ecosystem as opposed to the current system of levying indirect taxes over and above the service tax
- Clarity regarding terms of allocation, frequency bands, pricing and spectrum refarming would help. Government needs to develop market incentives and introduce differential pricing of spectrum in congested areas, thereby reinforcing efficient utilization of spectrum. Spectrum trading would provide a good way for efficient utilization of spectrum. A TSP having higher spectrum but lower subs base can mint some money by trading their spectrum with another TSP having lower spectrum and higher subs base, creating a collaborative solution
- There is some ambiguity regarding the exit policy for existing license holders. Many of the new entrants in the telecom sector are struggling to remain viable in the low ARPU market. The 2G spectrum scandal has also adversely affected the space and many operators are eagerly anticipating the exit policy framework to be included in the final version of the policy
- No mention has been made of the Mergers & Acquisition policies for the telecom sector. Consolidation will help in increasing the returns of the operator and will decrease the fragmentation that exists in the market. Mr.Sibal has reiterated on many occasions that there will be no less than six operators per telecom circle at any point. Reduction of the current 15 operators to 6 - 7 will positively impact the industry in the long run
- Lack of a clear set of policies for IP legalization has been deterring the growth of IP telephony market. A transparent and viable policy should be laid for legalization of IP. This will not only boost IP penetration, but also act as a foundation for deployment of Unified Communications (UC) solutions. IP or SIP based telephony act as a platform for UC and thereby will push adoption for the same. With end to end legalization of IP, the transition of enterprises towards MPLS convergence in India is a possibility. With integration of multiple types of communications traffic (voice, data, video, fax or a combination of these signal types) onto a single physical transport MPLS network, enterprises would be able to cut down network costs, and have a flexible, scalable and simplified network which would improve organizations employee productivity and optimizes business processes

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