

**RESPONSE TO CONSULTATION PAPER BY TELECOM REGULATORY
AUTHORITY OF INDIA**

Consultation Topic:	Inputs for Formulation of National Telecom Policy – 2018
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INTRODUCTION

1. Indian telecom sector has witnessed immense growth in the recent past. India is currently the second largest telecommunication market and has the third highest number of internet users in the world¹. As has happened across the globe, Indian telecom industry has seen paradigm shift from a voice centric to data centric market which has also resulted surge in mobility, cloud computing and data centers.
2. The policies of the Government of India (“**GOI**”) have been instrumental along with strong consumer demand for the rapid growth in the Indian telecom sector. Mobility, Internet/Broadband, cloud services and Internet of Things (“**IoT**”) are changing the way we live and communicate. Technology changes and investments in 5G networks, machine to machine communications, artificial intelligence, would further enrich the ‘Digital India’ initiative.
3. The growth in any economy is closely linked with the rise of the telecommunication sector. A liberal and dynamic sector telecom which is in line with technological advancements is key to attracting further investments for expansion that will propel growth for the India economy. Accordingly, it is imperative for GOI to deliberate and devise strategies and solutions to ensure continued growth and access to telecommunication to all. Therefore, Microsoft Corporation India Private Limited (“**Microsoft**”) applauds the efforts of the Telecom Regulatory Authority of India (“**TRAI**”) for issuing the present consultation in order to ensure accelerated growth and a robust policy framework for the Indian telecom sector.
4. One of the major challenges in a dynamic market for a free, fair and innovative development of products and services is the creation of a robust regulatory and enabling framework. This is specifically challenging in the telecommunication sector due to the constant technological advancements. India cannot afford to allow its regulations to block or slow down the deployment of technological advancements which are capable of providing services at a faster pace and at a fraction of cost.
5. Today, in India, for example, truly unified communications services are not achievable because India’s regulatory framework do not fully accommodate Internet Protocol (“**IP**”) based technologies. Emergence of Voice over Internet Protocol (“**VoIP**”) as means of communications has revolutionized the methods of communications across the world. NTP of 1994 and 1999 kick started not just telecom but also IT revolution in India. OSP policy gave a great momentum to ITeS and BPO industry. It had a positive impact on the socio-economic outlook of India’s educated youth and sub-urban cities. However, much has changed from 1999 to 2018 whether it be in technology, delivery of services or the utilization of telecom resources.

¹ <https://www.ibef.org/industry/telecommunications.aspx> last visited on 3 January 2017;

6. In order to remain relevant to the current realities it is important for GOI to adopt a policy framework which accommodate such technologies/services/business models; otherwise there will be a failure to bring 21st century technological benefits to India. Also, adoption of modern technologies coupled with ease of doing business will immensely help 'make in India' initiative. These objectives can be achieved by as explained below:

A. A Regime That Embraces and Enables New Technologies:

7. The proposed policy should encourage the use of not just latest, but emerging technologies. Though, the present consultation paper proposes to absorb new technologies by including 5G, IoT, machine to machine communication, TRAI should make sure that IP based technologies that are foundational to India's digital transformation such as VoIP, and other communications applications delivered to users via the internet are also accommodated.
8. Currently, the global communication industry is witnessing an innovation revolution driven by IP technology and internet penetration. Indian entrepreneurs have contributed significantly to this innovation resolution via the internet. However, the lack of clarity in many telecom rules and regulations is driving these entrepreneurs out of India. Therefore, it becomes critical for GOI to enact policies so that service development and deployment occurs in India.
9. GOI should therefore take a fresh look at the proper rules of the road rather than simply extending yesterday's rules to new technologies and business models. Among other things, Microsoft believes that the GOI should look to current VoIP/Internet Telephony frameworks around the world, many of which have been updated to accommodate the dynamic changes taking place in the voice communications.
10. It is important for the TRAI to distinguish between VoIP applications that are little more than a software application reached *via* a global internet and those VoIP services that are used as substitutes for traditional telecom services. As in much of the rest of the world, VoIP applications that do not connect to telephone numbers should remain unregulated. Moreover, it is not appropriate to impose conventional/PSTN regulations to VoIP/Internet Telephony because there are important distinctions across these types of services that justify differing regulatory treatment. Currently regulatory framework is silent on modern technologies like Cloud PBX, converged services, software based communications etc.

B. Need for Pragmatic Light Touch Regulatory Approach

11. In order to attract more investment and make services available to all low costs it is important that appropriate guidelines maybe issued to address concerns. The light touch regulation with respect to some of these services may be an ideal way.

12. The regime should be in line with government agenda of 'minimum government maximum governance'.

C. Making Spectrum more accessible, affordable and efficient.

13. The NTP-2018 consultation paper clearly recognized that "the gains from increased connectivity have been inequitable, with the full benefits not reaching those who need them most", and that rural tele-density is the only unmet objective among the ones set forth in NTP-2012. Furthermore, the consultation paper emphasized in multiple places that "affordable prices" are key to enable "connectivity for all", and to "spur the socio-economic development up to the bottom of the pyramid".

14. Radio spectrum is a fundamental resource that enables wireless connectivity, which is increasingly the primary form of Internet access by both people and the IoT. It is therefore critical to make spectrum more accessible, affordable and efficient in order to bring more affordable connectivity for all, both in urban cities and in rural and remote areas.

15. However, at the same time it is important to note that radio spectrum is a scarce resource and should be used in the most optimum and efficient manner. Thus, there is a need for efficient utilization of. This can be done by secondary use of the spectrum, which is not being efficiently utilized, without causing interference to the primary user.

16. License-exempt use of spectrum has emerged as complementing alternative to licensed spectrum usage (such as cellular services) and has resulted in innovation and competition. License-exempt spectrum is expected to be an essential ingredient of the 5G ecosystem and a primary form of connectivity for M2M/IoT applications. There's a critical need for TRAI and Department of Telecommunications ("DoT") to create a greater balance between licensed and license-exempt spectrum by making available more spectrum for license-exempt usage across low, mid, and high frequency bands, accessible to more market players.

17. Spectrum sharing is a global trend and an effective way to dramatically increase spectrum efficiency. Sharing has become a successful business model in 21st century globally. Companies are increasingly adopting to sharing model as it results in efficient utilization of limited resources available by sharing the expenditure. One of the successful examples of sharing model today in India are the cab aggregator companies such as Ola and Uber due to their ridesharing services or telcos sharing their mobile towers. Such models have attracted large number of customers as it has not only resulted in efficient allocation of resources but has also decreased the cost for customers and increased the revenues for companies. Therefore, this has become win-win model for both companies and customers. As part of the proposed efforts in promoting sharing of telecom infrastructure, TRAI and DoT should encourage spectrum sharing. However, it is important to note that radio spectrum is a scarce national resource and should be used in the most optimum and efficient manner.

18. It is highly recommended that, as part of an overall effort to delicense more spectrum for unlicensed usage, TRAI and DoT make good and efficient use of unused TV channels to offer broadband and IoT connectivity services. This can be also considered as part of the effort to converge the broadband and broadcast networks.
19. Microsoft also encourages TRAI and DoT to expand the availability of license-exempt spectrum in the 5 GHz and 6 GHz mid-band, as well as in 60 GHz, 70 GHz, and 80 GHz mm Wave bands, in alignment with global trends.
20. While TRAI has recommended delicensing of spectrum, its recommendations have not been implemented by the DoT. This has led to a significant lag of India, compared with the rest of the world, in areas such as public Wi-Fi infrastructure, mobile offloading, and applications and services innovation that could have been spurred by greater availability of delicensed spectrum. To achieve the audacious goals of “increasing rural tele-density to 100%” and offering “high-quality wireless broadband services at affordable prices to 90% of population”, we urge that TRAI make concrete recommendations on delicensing additional spectrum resources across low, mid, and high-frequency bands and DoT take swift actions in implementing these recommendations.

COMMENTS ON TRAI's CONSULTATION PAPER

1. Stakeholders are requested to give their comments on structure and contents of the proposed inputs for National Telecom Policy, 2018, clearly outlining the specifics along with justification.

The present consultation paper envisages to have twin goals for National Telecom Policy – 2018 (“**NTP-2018**”) which is”

- i) to facilitate development of communication infrastructure and services to achieve inclusive socio-economic growth in the country; and
- ii) to propel India to become the front-runner in the Fourth Industrial Revolution.

However, in order to achieve these goals, Microsoft believes that the following issues will be required to be addressed:

A. Use of IP based Technology/Services

Currently, the global telecommunication industry is witnessing innovation which is primarily facilitated due to the growth of the internet and IP based technology/networks. One of the primary factors contributing towards this growth is the increased data consumption, which is driven by consumer and business demand for innovative applications and services that are available via the internet. As a result, people across the globe have changed the way they communicate.

As rightly stated by TRAI, during the last few years, Indian telecommunication sector has seen a massive transformation. With the networks getting upgraded to 4G and smart phones as well as broadband getting affordable, the consumption of data has increased multifold. This growth in data communication has spurred new businesses by enabling access to markets to a large number of small and medium enterprises.

However, the lack of clarity with respect to the regulatory regime and the onerous licensing regime that is not proportionate to the type of services provided has deprived these small and medium entrepreneurs' services which may be offered using IP based networks, including the global internet. Specifically, India's regulations currently hinder – or, in some cases, completely lock out – features such as VoIP to VoIP calling, real time video communications; VoIP to PSTN calling, and conferencing/bridging services that allow participants to join the conference call via PSTN or IP enabled devices connected to internet or conferencing using cloud based technologies.

The current uncertainty about, and restrictions on, the provision of VoIP in India discourages technological advancement, shifts investments out of India and has resulted in grey market activities. All this uncertainty has led to failure of optimum utilization of services/applications, as the consumers and business in India are being denied these services (as available to consumers and business in international market).

Thus, there is an urgent need to remove the current roadblocks and uncertainty so that benefits of VoIP can be extended to companies and businesses. In doing so, TRAI should promote a policy framework that is consistent with the realities of 21st century and the technology it has generated.

Key Challenges to accomplish the above objectives with respect to IP based technology/services:

- The Unified License – Internet Services permits the licensee to offer “Internet Telephony”, where such term is expressly defined, only 3 modes of internet telephony, which excludes PC to PSTN calling within India.
- In terms of the Unified License, unrestricted internet telephony is allowed to be provided to the license holder:
 - “2. Scope of Access Service: Scope of this authorization covers the following:
2.1(a)(i) *The Access Service under this authorization covers collection, carriage, transmission and delivery of voice and/or non-voice MESSAGES over Licensee’s network in the designated Service Area. The Licensee can also provide Internet Telephony, Internet Services including IPTV, Broadband Services and triple play i.e voice, video and data. While providing Internet Telephony service, the Licensee may interconnect Internet Telephony network with PSTN/PLMN/GMPCS network. The Licensee may provide access service, which could be on wireline and / or wireless media with full mobility, limited mobility and fixed wireless access.*”
- Accordingly, it is important to address inherent contradiction between Unified License – Internet Services and Unified License – Access Services. While Unified License-Internet Service license specifically states the three modes of internet telephony that can be provided excluding the PC to PSTN calling features, the Unified License-Access Service permits license holder to provide unrestricted internet telephony Unified License – Access Services prohibits interconnection between leased line and PSTN network i.e. between public and private networks.
- Unified License suggests that only Unified License-Internet Service and Unified License-Access Service licensee holders can offer PC to PC calling.
- Therefore, the present regulatory regime prohibits provision of IP to PSTN calling seamlessly within India. Further, the present regime does not permit unrestricted Internet Telephony throughout India without regard for the traditional telecom network circles which are not relevant to the IP based networks. Thus, the users cannot use network of any service provider from anywhere.
- Due to these regulations, traditional telephone network follow geographic boundaries, businesses using Cloud PBX are also required to ensure logical partitioning /location based routing to limit calls to Indian phone numbers and

ensure yesterday's domestic toll charges apply to today's IP based technology and services. This also creates unnecessary complexity and cost for software companies as they develop products for call centre and enterprises that must include location based routing and logical partitioning. In Microsoft's case, we are prohibited from using in our India call centers the very technology (VoIP calling) and services with which our agents are helping customers worldwide.

- Audiotex license does not permit point to point conferencing.
- Dial out facility cannot be provided to customers under audiotex license if telecom resources taken from more than one telecom operator.
- Since audiotex license is on the basis of SDCA, license for each SDCA (where licensee wants to provide service) is required to be procured, resulting in an outcome that is wholly at odds with the very essence of the internet, which knows no geographic boundaries.

In light of the above, it is evident that protecting older business models in light of cheaper and better technology is not serving the purpose of public good. On the contrary, it is blocking the entry of innovative products and services. The better/cheaper technology should be allowed to prevail in the interest of the consumers and businesses throughout India. Thus, establishing an appropriate, forward looking regulatory framework will be a key component of India's move into 'Digital India'.

Microsoft believes that the GOI can accomplish these objectives through following key changes/clarifications:

- DoT should allow unrestricted internet telephony/ VoIP by any provider over any network i.e. whether the network is owned by the service provider or network is owned by any other provider.
- DoT should change the VoIP rules and permit all Unified License-Assess Service and Unified License -Internet Service licensees to provide unrestricted Internet Telephony and interconnection between IP and PSTN networks:
 - a) Whether on their managed IP networks, public internet and their traditional voice network;
 - b) Whether provided by the licensees themselves or by third party application providers.

Accordingly, DoT should change the regulations in India to clearly eliminate the prohibition on intra-India IP to PSTN calling.

- Thus, DoT should further clarify :
 - a) The definition of Internet Telephony so that no license/registration is required for providing PC to PC.
 - b) The definition of Internet Telephony in order to expressly allow PC to PSTN calling to and from both India numbers and international numbers.

- DoT should permit unrestricted Internet Telephony to customers who have deployed IP PBX on their premises or in the cloud, and allow them to route PC-initiated calls to Indian PSTN numbers, without logical partitioning/location based routing.
- DoT should permit unrestricted Internet Telephony throughout India without regard for the traditional telecom network circles so that users can use network of any service provider from anywhere, without the need for logical partitioning/location based routing. Until Internet Telephony calls can be made from and to any endpoint within India, without regard for location based routing, Internet Telephony will not flourish.
- DoT should allow point to point conferencing under Audiotex license.
- Restriction on providing dial out facility under Audiotex license should be removed even if resources taken from more than one telecom provider.
- Given the nature of Audiotex services, particularly those that enable a “click to join” feature via the internet or IP networks, the license should be provided on pan-India basis.

In light of the above, it is evident that use of the IP based technology/services will help not only make India a front-runner in the fourth industrial revolution but will also facilitate development of infrastructure and socio-economic growth by giving access to data connectivity at affordable price to every person, enterprise, and industry.

B. Making spectrum more accessible, affordable and efficient.

Radio spectrum is a fundamental resource that enables wireless connectivity, which is increasingly the primary form of Internet access by both people and the IoT. It is therefore critical to make spectrum more accessible, affordable and efficient in order to bring more affordable connectivity for all, both in urban cities and in rural and remote areas.

Provisioning of sufficient facilities to deliver high performance broadband to all citizens entails deployment of several complementary technologies, including both wireline/fibre and wireless, together, to address backhaul, middle mile, and last mile needs.

Facilitating access to sufficient wireless spectrum in low, mid, and high-frequency bands under a mix of licensing models is required. No single technology, nor licensing model is sufficient to enable connecting all Indian citizens. Accordingly, the GOI should systematically adapt its spectrum licensing regime with the explicit goal of facilitating the rapid closure of the connectivity gap. Today, more than half of the world’s data traffic transits an unlicensed wireless connection and data volumes are ever expanding. For India to take full advantage of the opportunities provided by the digital transformation occurring across all sectors, it must ensure sufficient wireless capacity at sufficiently low cost. In order to cope up with these challenges there is a need for reform of the spectrum licensing practice in India.

The following are the key challenges being faced by companies in India with respect to spectrum:

- The existing regime with respect to spectrum in India is based on the traditional telecom services primarily for licensed spectrum usage by means of spectrum auction. This limits the access to spectrum to major telecom service providers.
- The high costs of spectrum in India make it challenging for companies to provide services as the costs gets passed on to the consumers and enterprise customers. This reduces the incentives for service providers to invest in India.
- There is no proper quantitative assessment undertaken by DoT with respect to the utilization of available spectrum. DoT's role is not only to allocate the spectrum through efficient auction but is also to ensure that the spectrum allocated by DoT is efficiently utilized and services reach the customers.
- Given the increasing demand for spectrum, a policy for more efficient and more affordable use of radio waves need to be adopted.

Microsoft believes that the GOI can deal with these challenges with respect to spectrum through following key changes/clarifications:

- Accessible – Current spectrum management framework in India was designed primarily for licensed spectrum usage by means of spectrum auction. This limits spectrum access to major telecom service providers who are capable of participating in the auctions, and therefore limits market participation, competition and innovation. As exemplified by the Wi-Fi ecosystem, license-exempt use of spectrum provides an invaluable, complementing alternative to licensed spectrum usage (such as cellular services), spurs innovation and competition, and has become a major on-ramp to the Internet for most people, carrying over half of the total Internet traffic globally. License-exempt spectrum is also expected to be an essential ingredient of the 5G ecosystem and a primary form of connectivity for M2M/IoT applications. Therefore, there's a critical need for TRAI and DoT to create a greater balance between licensed and license-exempt spectrum by making available more spectrum for license-exempt usage across low, mid, and high frequency bands, accessible to more market players. It is laudable that the consultation paper considers both licensed and unlicensed spectrum for M2M and IoT, although we suggest that such balanced approach should be applied across all spectrum bands for all services and applications, as there is no need to earmark specific spectrum (be it licensed or unlicensed) for specific M2M and IoT usage.
- Affordable – The cost of spectrum ultimately gets passed on to consumers and enterprise customers. Therefore, to enable affordable connectivity to all, the GOI needs to first make spectrum more affordable. The current spectrum management practices yielded prohibitively high spectrum cost and license fees, sometimes outside of the international norm. High spectrum costs

reduce the service providers' ability to invest more in infrastructure build-out, resulting in a concentration to urban markets and greater reluctance to serve the rural and remote areas. Besides reducing spectrum fees to be in line with international norms, making available more license-exempt spectrum is another key measure to make spectrum more affordable and lowering the barrier to entry for more market participants. As evidenced by the global trend of mobile offloading using Wi-Fi, license-exempt spectrum clearly benefits incumbent carriers as well as the consumers. TRAI and DoT's recent effort in promoting public Wi-Fi hotspots is another great example of using licensed-exempt spectrum to enable affordable Internet access for all.

- Regular spectrum audit: DoT needs to create a framework, where regular comprehensive audit (i.e. twice in a year) of spectrum is done in order to assess efficient utilization of spectrum. This would help to demarcate the spectrum which is not being efficiently utilized by the spectrum holder. This may especially be true in case of rural and sparsely populated areas, where the spectrum holder might not have critical mass of subscribers for investing in the infrastructure.
- Secondary use of Spectrum: Given that the spectrum is a scarce national resource, DoT should ensure that it is used in the most efficient and optimal manner. This can be achieved by secondary use spectrum without causing interference of the primary user. Thus, DoT should permit secondary use spectrum where the spectrum has not been efficiently utilized. However, this secondary use may be subject to the primary user having first right to use and clear non-interference. For example in In the US and the UK, regulators (FCC and Ofcom, respectively) have permitted devices to make use of "white spaces" as a "secondary user" without causing interference to the "primary", i.e., the TV broadcasting on a "license-exempt" basis.
- Efficient – Radio spectrum is a finite natural resource, but the demand for it is infinite, driven by the unbounded growth of wireless data traffic. As such, the only way to ensure sufficient spectrum supply to fuel the growth is to dramatically increase the efficiency of spectrum utilization. Current spectrum allocation and usage model is largely static and exclusive, resulting in large swath of spectrum laying fallow, even though allocated, therefore extremely low utilization. For example, studies carried out by IIT-Bombay showed that over 100 MHz of UHF TV band is unoccupied across India. Spectrum sharing is a global trend and an effective way to dramatically increase spectrum efficiency. In US, UK, Canada, Singapore, South Korea and a number of other countries, regulators have adopted dynamic spectrum sharing mechanisms to allow license-exempt and shared access to unused TV channels, or TV White Space (TVWS), for broadband services including rural Internet access, urban hotspots, and IoT connectivity. The IIT-Bombay study concluded that "in almost all cases at least 12 out of the 15 channels (80%) are available as TV white space in 100% of the areas in India."

Therefore, where the spectrum is not being optimally utilized, for instance by Doordarshan, the spectrum holder should be allowed to use the same by secondary use of spectrum. Countries like USA, UK & Singapore have already

put a regulatory framework in place for the operation of TV white space devices. All these countries have gone for license exempt regime for the operation of TV White Space and restricted the regulation to certification of the TV White Space databases and TVWS devices. This has been a welcome move from the authorities for the industry and can act as a huge facilitator for pervasive communication infrastructure with the use of TV White Space. The countries have put some protection requirements that the TV White Space operator needs to adhere to so that the incumbent services are free from any kind of interference from TV White Space devices. For instance in United States In 2010, FCC adopted a license-exempted regulatory framework for TV White Space devices, with the management of TV White Space devices through on-line databases. FCC has granted approval to a number of companies to operate their database systems to provide service to certified unlicensed devices that operate in the TV band. All TV White Space devices require certification from FCC. Under Singapore's framework, the operation of TV White Space devices is on a license-exempted basis, subject to certain technical specifications and prescribed operational parameters. In addition, TV White Space equipment is also subject to certification and registration. In order to prevent interference, spectrum not used for supporting television broadcasting in Singapore is made available for TV white space applications.

The long-range propagation characteristics of TV band signals makes it extremely suitable for rural broadband coverage as well as for wide-area IoT connectivity (such as agriculture IoT applications), both are high-priority objectives for the NTP-2018. As such, it is highly recommended that, as part of an overall effort to delicense more spectrum for unlicensed usage, TRAI and DoT make available unused TV channels for unlicensed and shared access via Dynamic Spectrum Access (DSA) mechanisms that offer protection to incumbents, similar to those adopted by leading countries such as US, UK and Canada.

Alternatively, TRAI and DoT could also consider allocating a portion of the unused TV bands for unlicensed open access, just like the wi-fi bands, if there's no expected terrestrial broadcast activities in those channels. A third approach, aligning with the desire for converged broadband and broadcast networks, TRAI and DoT could consider authorizing broadcasters to offer broadband services using its broadcast spectrum resources as the incumbent licensees. In either way, the objective is to make good and efficient use of unused TV channels to offer broadband and IoT connectivity services.

In addition to the sub-1 Ghz TV band, Microsoft also encourages TRAI and DoT to expand the availability of license-exempt spectrum in the 5 GHz and 6 GHz mid-band, as well as in 60 GHz, 70 GHz, and 80 GHz mmWave bands, in alignment with global trends. As India works towards facilitating the development of infrastructure and services for new technologies including 5G, Internet of Things (IoT), and machine-to-machine (M2M) communication devices, the TVWS and other licensed-exempt bands will play a key role in supporting the demand for increased wireless connectivity and bandwidth.

Need for balanced Approach: DoT needs to evolve an appropriate model considering that the dense urban area requires more “capacity” spectrum typically at mid and high bands, while the vast rural areas require more coverage spectrum typically the low bands. Accordingly, DoT may consider auctioning some part of the TV bands while delicensing unused TV channels so as to make good and efficient use of unused TV channels.

Therefore, by making spectrum more accessible, affordable and efficient in order to bring more affordable connectivity for all, both in urban cities and in rural and remote areas will not only help creating more employment opportunities but will also help small enterprises to take advantage of cheap telecommunications.

C. Dark Fibre

Infrastructure is the backbone not only of the entire telecom network, but also of all online and cloud services specifically and the internet generally. With the advent of new technologies and expansion driven business strategies, network infrastructure is expected to play a pivotal role in the growth story.

India is home to an infrastructure network comprising over 1.25 million kilometers² of fibre. However, there is a need to further strengthen this infrastructure.

Under the present regime, any entity registered as Infrastructure Provider-I (“IP-1”) category cannot carry traffic over dark fibre without obtaining relevant telecom license even to transport non-telecommunications services traffic. As a consequence, cloud services and online service providers cannot deploy their own fiber without being subject to traditional telecom regulations, even if they use that fiber to provide non-telecoms services. This acts a substantial barrier not only to fiber deployment in India but more broadly to expansion of cloud services infrastructure such as data centers, which are connected by fiber. These barriers further increases the costs of the cloud service providers/data centers as they are either required to procure telecom license or obtain services from authorized telecom service providers.

The infrastructure provider category was opened to private sector in the year 2000. Since then, registration for infrastructure provider category has been focused on voice traffic and TSPs only.

However, lately, Indian network infrastructure operators have seen paradigm shift from a voice centric to data centric market. By end of 2016, the number of internet subscribers in India was 391.50 million making India globally third highest in terms of internet users.³ Due to the increased internet penetration there has also been surge in mobility, cloud computing and data centers.

Today, companies providing data centre/cloud services carry data which primarily includes non-telecommunications services data. Thus, in the near future the use

² KPMG Report

³ IBEF, Telecom Industry Presentation, available at: <https://www.ibef.org/download/Telecommunication-May-2017.pdf>.

of telecommunications services data would be very insignificant as compared to non-telecommunications services data.

Therefore, given the changing landscape with growing consumer demand for services such as cloud computing/data centers, it is necessary that the policy framework for IP-1 is modernized and is in sync with the technological advancement.

Further, significant investment among the network infrastructure category is by private players.⁴

Therefore, entities that are not telecommunications services providers should be allowed to deploy and own fibre facilities and carry traffic over that fibre without obtaining telecom license. To the extent an entity provides telecom services, including retail telecoms services as well as wholesale telecom services, e.g., transport capacity, those services should be subject to appropriate telecom services regulation, but the deployment and ownership of network infrastructure should not itself be subject to telecoms regulation.

The licensing requirements adds an additional cost burden for infrastructure providers. DoT should consider allowing the deployment and ownership of active fibre infrastructure for their own use without imposing telecom regulation provided that telecom services that are provided over any such dark fibre would be subject to any appropriate and applicable telecom services regulation.

As per global trend, TSPs are disaggregating their operations by outsourcing their infrastructure operations, customer management operations etc. All this is possible only if these services can be provided without telecom license.

With high mobile penetration in India, growth focus of telecom industry is shifting from voice to data. Hence, the infrastructure providers need to quickly evolve their traditional area of expertise to meet the new requirement of consumers.⁵ Accordingly, the present regime should be amended and should allow deployment and ownership of active fiber infrastructure without being subject to telecom regulation for non-telecom services such as cloud computing/data center services.

- 2. Stakeholders may also suggest any other issue related to Policy Framework which stakeholders feel is important for growth of telecom sector, along with justification.***

Other Related Issues

Other Service Provider Category

⁴ Deloitte, Indian Tower Industry The Future is Data, Pg. 7;

⁵ Deloitte, Indian Tower Industry The Future is Data, Pg. 11;

With the advent of technological revolution, information technology has become founding block of business worldwide. Other Service Providers, commonly known as Business Process Outsourcing (“BPO”) simply takes business to another era of efficiency by harnessing the power of IT. GOI has pursued programs of economic reforms since 1990 making it a truly irreversible process.

The New Telecom Policy 1999 opened up the era for BPO industry which ushered a breed of inbound/outbound call centers. During the initial days only the basic non-core activities were outsourced to India. This trend surfaced in with the outsourcing of data entry process and voice based services for customer support.

Today companies are outsourcing critical functions to BPOs. BPO industry has grown so much that it has now become very important part of the export oriented IT software and services environment in India. Something that had originally started off as support service to multinational companies by their subsidiaries has branched into a broad based business platform. Today, BPO sector in India is identified as catalyst to economic growth and a key area towards higher foreign investment into the country.

The guidelines for Other Service Provider was last revised by DoT in 2008. Since then there have been emergence of numerous new technologies including the penetration of the internet. Therefore, to continue this growth story, it is imperative for the DoT to take fresh look at Other Service Provider guidelines.

It may be noted that in terms of the Other Service Provider guidelines, any connectivity to a data center has to be disclosed to the Department of Telecommunications and the connectivity between data center and OSP is only for data traffic. Further, the present telecom regulations prohibit interconnection between private and public networks and has restricted internet telephony options.

These present restrictions create huge regulatory expense on BPOs to check logical partitioning /location based routing for any communication software deployed especially VoIP based communication solutions.

Microsoft believes that the GOI can deal with these challenges by following key changes/clarifications:

- By permitting IP to PSTN interconnection to Other Service Providers using telecom resources taken from authorized telecom service provider for providing OSP related activities.
- Permitting Other Service Providers using bandwidth obtained from licensed telecom service provider to allow PC to PC calling for OSP related activates.
- Permitting the use cloud based solutions/ EPABX.

High monitory and regulatory barriers

Existing players enjoy certain degrees of economies of scale that help them offer lower unit pricing to customers. However, the high investment costs and regulatory barriers have made it difficult for any new player to enter into the Indian market. These factors which act as barriers are as follows:

Spectrum Availability:

Despite technological changes that reduce the demand for spectrum, availability of spectrum continues to be a constraint. In order to allocate spectrum amongst competing service providers, auctions are used. The spectrum auction policy, with its astronomically high reserve price, have attracted only muted participation.

Licensing:

License also acts as a major barrier to entry as sometimes it becomes very difficult for the new entrants to obtain license due to the monetary as well as regulatory obligations. Huge entry fees, license fees are required to be paid to obtain license. This makes it difficult for new players to enter into the market. Further, regulatory as well as compliance requirement further adds to the burden of service providers.

Therefore, the burden of levies and duties on this industry is way too high. The regulatory framework is too complicated. Therefore, there is a need of light-touch regulatory approach. The regime should be in line with government agenda of 'minimum government maximum governance'

In light of the comments given in Question 1 and above, the following issues may be incorporated in the policy framework:

1. In the consultation paper, in Part B ("**Mission**") the following issues may be added:
 - a) To ensure that inflow of technology is made easy and India does not lag behind in getting full advantage of emerging new technologies.
 - b) To ensure that internet as a resource remains accessible to all without any discrimination and a level playing field is maintained;
 - c) To attract investment both domestic and foreign;

2. In the consultation paper, in Part C ("**Objectives**") the following issues may be added:
 - a) To enable access and enforce Internet Telephony/VoIP facilities such as VoIP to VoIP calling, real time video communications; VoIP to PSTN calling, conferencing/bridging via PSTN or IP enabled devices connected to internet or conferencing using cloud based technologies;

- b) To enable access to value added services such as audio conferencing, video conferencing at affordable price so as to fuel growth in entrepreneurship and innovation especially among rural areas;
 - c) To identify additional frequency bands including white spaces and exempt them from licensing requirements for providing affordable data connectivity;
3. In the consultation paper, in Part D, the following issues may be added:
- a) By restructuring legal, licensing and regulatory frameworks to ensure flow of emerging technologies such as VoIP facilities and Internet Telephony;
 - b) By restructuring the legal, licensing and regulatory framework for creating telecommunication infrastructure by allowing infrastructure providers to carry traffic over dark fibre without obtaining telecom license for their own use;
 - c) To allow secondary use of the spectrum, which is not being efficiently utilized, without causing interference to the primary user.
 - d) Facilitating access to sufficient wireless spectrum in low, mid, and high-frequency bands under a mix of licensing models is required by reforming spectrum licensing regime;
4. In the consultation paper, in Part E, the following issues may be added:
- a) By promoting use of shared access to unused TV channels for providing data connectivity;
 - b) By promoting access to Internet Telephony/VoIP facilities at affordable prices.
5. In the consultation paper, in Part E, the following issues may be added:
- a) By reviewing the policy/guidelines for Other Service providers in light of emerging technologies such as VoIP facilities/Internet Telephony, cloud PBX etc.
 - b) By ensuring fair competition and level playing field to ensure that regularity regime is proportionate to the type of services provided.
