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**WHITE PAPER ON
VIRTUAL NETWORK OPERATORS
(VNOs) In India**

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Executive Summary

The time is opportune for VNO model to become a business reality in the Indian telecom landscape given the market conditions as well as regulatory environment. The last two years have seen massive consolidation in the telecom market with the number of operators coming down to about 5-6 in various circles and ushering in of a data revolution and huge uptake in data based services. In such a scenario, VNOs will be essential for ensuring existence of adequate competition in the market as well as making telecom service more affordable. The VNOs are capable of unleashing a new telecom revolution in the Indian telecom industry and taking it to the next level of growth, catalyzing government's digital initiatives.

A Virtual Network Operator (VNO) including Mobile Virtual Network Operator (MVNO) is a Service Delivery Operator who does not necessarily own the underlying network(s) but relies on the network

and support of the infrastructure providers, telecommunication suppliers/operators for providing telecom services to end users/customers. VNOs/MVNOs have a lot of potential in terms of providing customized products for highly penetrated markets, improving penetration in rural areas and Tier2 and Tier 3 cities, M2M and Cloud play and a pivotal role in Digital India and Smart Cities.

The Department of Telecommunications (DoT) has opened up the sector for VNOs and issued guidelines for the grant of UL (VNO) vide its letter dated 31st May 2016. There are several clauses in the Unified License- VNO which are directly taken from the Unified license awarded to TSPs. Most of such license clauses are either not applicable or not relevant to VNOs at that magnitude. Some of the license clauses which entail review and modification urgently for take-off of VNO model in the telecom space are pertaining to:

S.No.	Guideline/License Condition	Proposed Change
1.	VNOs parenting to multiple NSOs: VNOs are allowed to have agreements with more than one NSO for all services other than Access services and such services which need numbering and unique identity of the customers. In UL(VNO) the provision for restriction of 10% or more equity cross holding will be applicable between (i) a VNO and another NSO(other than VNO's parent NSO) and (ii) between a VNO and another VNO authorized to provide access services using the access spectrum of NSO(s) in the same service area.	VNOs should be allowed to have agreements with more than one NSO for Access Services. This restriction of 10% or more equity cross holding will not be applicable in case of VNOs parented to multiple NSO and same should be left to the market dynamics to prevent cartelization and distort the competition.

<p>2.</p>	<p>Mutual Agreement between NSO and VNO for offering Access Services:</p> <p>Clause 1.3 It would not be mandatory for a NSO to provide time bound access to its VNO, rather, it would be left to the mutual agreement between a NSO and a VNO.</p> <p>Clause 27.1 The Licensee shall operate and maintain the licensed Network conforming to Quality of Service standards to be mutually agreed with NSO in respect of Network.</p> <p>Clause 27.2. The network resources including the cost of upgrading/ modifying interconnecting networks to meet the service requirements of the LICENSEE will be mutually negotiated with NSO keeping in view the orders and regulations issued by the TRAI from time to time.</p> <p>Clause 32.1 The terms and conditions of sharing of infrastructure between the NSO(s) and VNO shall be left to the market i.e. on the basis of mutually accepted terms and conditions between the NSO(s) and the VNO.</p> <p>Clause 32.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted.</p> <p>Clause 33.2 The Acceptance Testing for each and every interface with any NSO may be carried out by mutual arrangements between the LICENSEE and the NSO involved.</p>	<p>The commercially driven agreement between VNO and NSO should come under the ambit of licensing framework to avoid any kind of delay in access of network and protect VNOs from NSOs misusing their economic powers by way of seeking unaffordable wholesale rates and / or unwilling to provide necessary Infrastructure resources essential of VNOs to offer their services to the customers.</p> <p>For this purpose, Licensor should mandate NSOs to provide time bound access of network at a regulated wholesale rate.</p> <p>The wholesale rate should have ceiling akin to the IUC charges regulated under the IUC regulations by TRAI. The ceiling can be fixed by TRAI basis public consultation.</p> <p>In view of above, the introduction of suitable clause in the agreement between VNO and NSO may have to be mandated for safeguarding the subscribers in the event of failure of the agreement.</p>
<p>3.</p>	<p>Duration of the License: Clause 3.1 The duration of the License of a VNO shall be fixed as 10 years extendable further for 10 years at a time by the licensor unless revoked earlier for reasons as specified elsewhere in the document. The agreement of a VNO with a NSO will terminate with the expiry of the license of either party.</p>	<p>The License validity period of UL – VNO should be of 20 years as prescribed in UL independent to validity period of parented NSO(s).</p>
<p>4.</p>	<p>Financial Penalty: Clause</p> <p>10.1 (i) The Licensor may impose a financial penalty not exceeding the amount shown in Annexure-V for each service as per applicable service area per occasion for violation of terms and conditions of license agreement.</p>	<p>The financial penalty for UL – VNO applicable for the violation which are their beyond the control should be removed.</p>
<p>5.</p>	<p>Exit from Business by VNO: Clause 10.3(ii) For the services other than mobile, all customers of VNO will be migrated to any of the tariff plan of the parent NSO without any extra charges e.g. upfront/activation charges. The mobile services customers of the VNO can port their mobile numbers, using MNP facility, to the service providers of their choice.</p>	<p>An option should be available for VNO to migrate its mobile consumers to parented NSO(s) on the same tariff plan and terms & conditions under intimation to the consumers.</p>
<p>6.</p>	<p>Way Leave: Clause 14.1 The Licensee Company shall make, if required, its own arrangements for Right of Way (ROW). However, non-availability of the ROW or delay in getting permission / clearance from any agency shall not be construed or taken as a reason for non-fulfilment of the Roll-out obligations, if any and shall not be taken as a valid excuse for not carrying any obligations imposed by the terms of this License or conditions of spectrum allotment.</p>	<p>The below portion should be deleted from clause 14.1 –</p> <p>“However, non-availability of the ROW or delay in getting permission... this License or conditions of spectrum allotment”.</p>

7.	Entry Fee: Clause 18.1 - A one-time non-refundable Entry Fee for each authorized Service shall be paid as per Annexure-II. The total amount of Entry fee shall be the cumulative Entry Fee of each authorization subject to a maximum of Rs. 7.5 Crore (Rupees Seven crores and fifty lakh only)	For the UL (VNO-All Services), entry fee should be minimal.
8.	SUC & LF: Clause 18.2.1 An annual License fee & Spectrum Usage charges (SUC) as a percentage of Adjusted Gross Revenue (AGR) shall be paid by the Licensee service-area wise, for each authorized service separately as per the procedure prescribed in applicable chapter of UL (VNO) from the effective date of the respective authorization.	The network sharing charges, LF and SUC paid by MVNO to MNO should be allowed under pass through charges to avoid double levy. Further, SUC incl. USOF should be reduced to 3% with a glide path to 1%.
9.	Deployment of RET: Clause 24.2 - The Licensee shall adopt Renewable Energy Technologies (RETs) for powering the Telecom Network, deploy energy efficient equipment and reduce the carbon footprint as per prevailing directions.	Energy efficiency (rather than RET) should be the focus to achieve reduction in carbon emission. This clause should be removed from the UL-VNO license.
10.	FDI under the Automatic Route: Only 49% is allowed under the automatic FDI approval route	As part of ease of doing business, automatic route FDI approval should be up to 100%.

In order to facilitate growth for VNOs in Indian telecom market, Government should ensure that the suggested amendments in the existing licensing and regulatory framework should be carried out at the earliest in a transparent, non-

discriminatory and competitively neutral manner. The new revolutionary VNO business model will induce fresh kind of enthusiasm in the industry as it will remove the barriers operators face in many of the telecom circles.

BACKGROUND

Virtual Network Operators (VNOs) have evolved globally to create flexible, technology-neutral innovative services and applications providing value addition and differentiation using the basic and bearer services provided by traditional telcos. And now, the time is opportune for VNO model to become a business reality in the Indian telecom landscape given the market conditions as well as regulatory environment.

India has so far been able to keep pace with the rapid evolution of telecom technologies and we believe the market conditions are conducive for the entry of VNOs. Till about 3 years ago, there was hyper-competition in the telecom market with upto 13 operators in some circles leaving no room for entry of VNOs.

The entry of Reliance Jio Infocomm Ltd triggered the long-awaited consolidation in the telecom sector and caused disruption in the world's second largest telecom market. The last two years have seen massive consolidation in the telecom market with the number of operators coming down to about 5-6 in various circles and significantly reducing competitive pressures. The last two years have also witnessed ushering in of a data revolution in the country and huge uptake in data based services. With the reduction in number of core telecom operators, VNOs will be essential for ensuring existence of adequate competition in the market as well as making telecom service more affordable. This has become more important in the context of penetration and adoption of broadband services which is imperative to achieve goals of social inclusion. The entry of VNOs in the telecom market will also enable faster proliferation of innovative and newer services (IoT/M2M) at more competitive tariffs.

The VNOs are capable of unleashing a new telecom revolution in the Indian telecommunications industry and taking it to the next level of growth, catalyzing government's digital initiatives. With infrastructure sharing being central feature in VNO model, the service is likely to address some of the major concerns faced by the telecom industry in India. A quick analysis of this business model reveals that benefits are three fold or higher. The Network Service Operator (NSO) can optimize its resources by letting a new VNO utilize them to deliver services in new markets. The NSO will earn a recurring income from the VNO for utilizing these resources. Second, the reseller model creates opportunities for entrants or helps widen the scope of services offered by existing players. Third, delivery of new telecom services under the infrastructure sharing model will effectively reduce the cost of service delivery. The immediate benefit of this will go to end customers who will be able to enjoy services at the most competitive price.



Who is a VNO?

A Virtual Network Operator (VNO) including Mobile Virtual Network Operator (MVNO) is a Service Delivery Operator who does not necessarily own the underlying network(s) but relies on the network and support of the infrastructure providers, telecommunication suppliers/operators for providing telecom services to end users / customers . As these operators do not necessarily have their own networks, they are termed 'Virtual Network Operators'. In other words, VNOs are simply a reseller of network services from other telecommunications suppliers that do not own the telecommunication infrastructure.

The VNO concept has gained a lot of traction in the telecommunications industry as the cost of creation of core infrastructure is very huge and beyond the

reach of small, innovative new entrants. A VNO typically leases telecom services at commercially agreed terms and conditions from various telecom operators/infrastructure providers in order to provide telecommunication solutions to the end customers.

VNOs can provide any telecom service being provided by the network providers' viz. teleservices (voice, data and video), internet/broadband, IPTV, Value Added Services, content delivery services, etc.

Need for VNOs

Changing Indian telecom landscape

With over one billion mobile subscribers, the Indian telecom market is the second largest in the world

1. TRAI Consultation Paper on 'Delinking of the license for networks from delivery of services by way of Virtual Network Operators' dt. 05 December 2014. <http://www.trai.gov.in/sites/default/files/CP-VNO-5.12.2014.pdf>

but presently it is reeling under unprecedented financial stress. Intense competition and below cost offerings have put severe pressure on the revenue of telecom service providers (TSPs) leading to consolidation of the market from upto 13 players to 5-6 players in each telecom service area. The consumer usage is moving towards higher data consumption, from streaming videos to using social media or chat-driven apps, data is expected to be the key driver for the telecommunications industry growth in the years to come. Factors driving growing data consumption include: fast-paced smart phone adoption, high speed data networks, changing user behavior - text to videos and disruptive pricing strategies. Also, in addition to the data services, application services, devices and access combined are growing into a utility i.e. inelastic need for all government services, commerce, health and education apart from simple person to person communications. This fast changing market trends in India have paved the way for VNOs to cater to the varied need of consumers especially in semi urban and rural areas.

VNOs are likely to be a significant contributor in Digital India by supporting Government in bridging Urban – Rural divide

In India, TSPs are providing integrated telecom services including access, long distance and internet/broadband services either by using their own infrastructure or by sharing infrastructure of other Telecom Service Providers/ Infrastructure Service Providers. Despite availability of telecom infrastructure at such a large magnitude in terms of mobile towers, OFCs etc., there is still a wide digital divide between urban and rural India. As per TRAI's subscriber data as on 31st October 2017, only about 340 Mn broadband connections have been achieved and that too with the current broadband speed (download) definition of 512 kbps. The monthly broadband subscription addition rate is merely ~5 percent which depicts a sluggish growth of broadband services in India despite of faster evolution of high speed data networks.

Therefore, VNOs will also be instrumental in serving niche segments and narrowing the digital divide gap between urban and rural areas by offering services

mainly in unconnected / underserved areas. The introduction of VNOs will increase broadband penetration & adoption of broadband services and rural teledensity substantially thereby contributing significantly to the Digital India program.

Promoting Healthy Competition and enabling newer & innovative services

VNOs will be essential for ensuring existence of adequate competition in the market as well as making telecom service more affordable. This has become more important in the context of penetration and adoption of broadband services which is imperative to achieve goals of social inclusion. The entry of VNOs in the telecom market will also enable faster proliferation of innovative and newer services (IOT/ M2M) at more competitive tariffs.

VNOs are best to serve niche segments, underserved and unconnected areas

The matured Indian telecom market is ready for the entry of VNOs for providing differentiated, value added and customized services for which competition was practically non-existent. VNOs are best to serve where basic telecom connectivity, internet and broadband services are needed to be provided. VNOs are capable to serve niche segments, underserved and unconnected areas with the support of their parent Network Service Operators (NSOs) and become one of the key revenue streams for the NSO. Internationally also, MVNOs are successful only when they served the niche segment and added to the revenue of the MNOs (Mobile Network Operators)

Introduction of VNOs will keep a check on the level of competition for the benefit of end customers. It has emerged that VNOs are likely to invest in less competitive areas (like 'C' class towns / villages) where TSPs have not yet ventured due to perceived lack of a business case. Once the basic infrastructure based on fiber is put in place through BharatNet project, introduction of VNO would help in quick and efficient utilization of the OFC network. Also, VNOs would have the ability to resell the services of existing TSPs which was beyond their marketing reach or was unviable for them to serve.

VNOs are additional revenue stream for the Government

The VNOs with their ability of faster rollout of services in a differentiated manner will have great opportunity to open additional revenue streams for the exchequer. Therefore, it is imperative for the Government to have a true light touch licensing and regulatory framework for the faster growth of the VNOs.

Business Potential for VNOs in Indian Telecom Market

The Indian telecom market offers a lot of opportunities to VNOs/MVNOs:

1. Customized products for highly penetrated markets: Highly penetrated markets, such as Metros and A circles, may have customer segments that are “underserved” in specific
2. Rural penetration: Rural India offers promising growth for data usage as there is low focus of existing players. This could offer potential opportunities for subscriber acquisition.
3. Tier 2 and Tier 3 cities: Tier 2 and Tier 3 cities are upcoming hubs of business and academic activities. A focused approach can create a formidable market for an entrant.
4. M2M and Cloud play: Specialized needs for Machine-to-Machine (M2M) and Internet of Things (IoT) may be targeted over the next one to two years to offer potential for rapid device additions and growth of connected devices.
5. Digital India and Smart Cities: With the government’s emphasis on creating smart cities, providing better rural access and connectivity, mobile data is slowly enabling

aspects of their service experience. Such clusters can be targeted by an MVNO.





the enterprise segment. Key aspects such as mobile payments and IoT will take precedence in the near future, thereby creating opportunities for players to offer services for the niche.

Is VNO a Competitor to Network Operator or Not?

Since the business case of VNOs revolves around a reseller concept, Network Service operators (NSOs) are likely to continue their dominance in their respective telecom markets and the question that VNOs will be a competitor perhaps does not arise. NSOs have built their own infrastructure and are providing services using either their own infrastructure or shared infrastructure. In contrast, VNOs will synergize their operations and add to their parented NSOs revenue stream and reach. Actually the VNOs complement the NSOs in the areas where they are either not interested or don't see a business case, and hence VNOs are their Value Added resellers. The VNO model will work in tandem with

the operating model of the NSO and is expected to follow certain guidelines that will help the industry sustain a competitive environment. Internationally it is seen that MVNOs are successful only when they served the niche segment and added to the revenue of the MNOs. Some of the examples of these kind of partnerships which are Win-Win are the "Managed Hotspot Service Providers" of BSNL, who are providing Wi-Fi based broadband access in rural areas, by using the existing backhaul infra of the main TSP.

The debate on whether a VNO should be allowed to work under more than one NSO is, however, genuine. The multiple NSO model will be more beneficial as it will provide customers with more choice of services and this in turn will help improve competition and reduce price. For VNO, this would mean better business opportunities and negotiation power for commercial decisions. An ideal model will be to allow multiple NSOs for a single VNO under strict guidelines on quality of service and revenue sharing among other factors. A VNO should be able to apply for license at the national level or local level so that he can join hands with respective NSOs depending on the feasibility of the business.

The present licensing regime in India permits operators to both lay the network and provide services. Because of technological developments, namely Convergence, IP networks, and Voice-over-IP etc., there could be a case for delinking the underlying networks from the provision of services. A VNO is fit to serve a niche and untapped market thus enabling proliferation of services beyond what is currently provided by existing service providers, acting as a complement to parented NSOs and not as their competitor.

Regulatory and Licensing Framework of VNOs in India

Three national telecom policies have been enunciated by the Government so far, starting with



the National Telecom Policy (NTP) 1994 followed by NTP 1999 and NTP 2012. NTP 2012 was issued with a vision to transform the country into an empowered and inclusive knowledge-based society, using telecom as a platform. One of the objectives of NTP-2012 was to deliver high-quality seamless voice, data, multimedia and broadcasting services on converged networks for enhanced service delivery to provide a superior experience to users.

One of the strategies envisaged in the NTP-2012 is to move towards a Unified License (UL) regime to reap the benefits of convergence, spectrum liberalization and facilitate delinking of the licensing of networks from the delivery of services so as to enable the Telecom Service Providers (TSPs) to optimally and efficiently utilize their networks and spectrum resources by sharing active and passive infrastructure. Another strategy is to facilitate resale at the service level, both wholesale and retail, for example, by introduction of virtual operators – in tune with the need for promoting robust competition while ensuring due compliance with security and other license-related obligations.

NTP-2012 also aimed to achieve rural tele-density of 100% by the year 2020.

Over the last two decades, the licensing regime for access services also underwent periodic transformations to accommodate technological evolution and changing market requirements. The evolution of the licensing framework starting from the separate licensing framework for various services to the UL regime in 2013 was brought in with the objective of providing a single license for all types of telecom services. In this regime spectrum allocation was delinked from the License. Further it was mandated to obtain a UL for any one or more services and for one or more licensed service areas (LSAs).

While introducing the UL regime (in its first phase), the Department of Telecommunications (DoT) decided that this regime may be introduced over two phases with the delinking of licensing for networks from the delivery of services be taken up in a second phase. With this as the backdrop, the DoT sought TRAI's recommendations for delinking of licenses for networks from the delivery of services by way

of Virtual Network Operators (VNOs) including associated issues of definition of Adjusted Gross Revenue (AGR) under the UL regime. This reference from DoT had the potential to change the entire licensing framework in India.

However, TRAI being acutely conscious that the telecom sector being highly capital intensive and pay-offs are realized over a long period of time; chose to exercise caution with a view that the continuity of predictable and stable regulatory policies would be good for the sector. Therefore, while formulating their recommendations, TRAI took a pragmatic view and adopted a futuristic approach, keeping in mind various Government policies and programs, and without introducing any major or disruptive changes to the existing licensing regime for the TSPs. Pursuant to these recommendations DoT issued guidelines and license agreement for the grant of Unified License on 31st May, 2016. Further, vide its notification No. 20-507/2016-AS-I dated 05th July 2016, DoT separately issued guidelines and application form for grant of UL (VNO) for authorization for category 'B' license with districts of a State as a service area for existing telecom entrepreneurs like Direct Inward Dialing (DID) franchisees. This circular was amended through another circular of even no. on 30th July, 2016. As per the letter, the DoT gave option to DID Franchisees to migrate to UL (VNO) Cat-B license till 31st October, 2016.

Accordingly, DoT issued Letter of Intent (LoI) to the DID franchises who opted to migrate to UL (VNO) Cat 'B'. The validity of license issued in pursuance to the interim guidelines dated 5th July, 2016 and amendment dated 30th July, 2016 was kept as one year from the effective date of license. The guidelines issued by DoT on 5th July, 2016 were for authorization of Access service in Secondary Switching Areas (SSAs) as service area. These guidelines were meant to introduce UL (VNO) Cat-B with Access Service authorization in a District of a State/UT.

Department of Telecommunications (DoT) awarded the first VNO Unified License in May 2017. Plintron, the world's Largest Multi-country Virtual Network Enabler/ Aggregator (MVNE/MVNA) announced

its commercial entry into the US\$ 37 Billion Indian Telecom market. To commence operations, Plintron is investing in building capacity, radio coverage and infrastructure in India, and is in talks with Network Service Operators (NSOs) to access their network on a VNO model, especially for rural Indian markets. Once wholesale network access is provided to the MVNO - the entire cost of sales, marketing and customer acquisition is borne completely by the MVNO making such a partnership attractive to NSOs.

The Virtual Network Operators Association of India (VNOAI), as an industry body, offers the convergence of Virtual Network Operators (VNOs) and VNO industry participants to build a healthy ecosystem that facilitates the growth of a thriving VNO industry in India. With many legal, technology, regulatory and network operator challenges prevalent among the growing VNO sector in India, VNOAI has been created to give VNOs in India a united and stronger voice in the evolving mobile fixed line franchise, NLD, ILD, VSAT, and ISP landscape.

Need for review of existing VNO Licensing Framework

As mentioned above, the Department of Telecommunications (DoT) has opened up the sector for VNOs and issued guidelines for the grant of UL (VNO) vide its letter dated 31st May 2016. There are several clauses in the Unified License - VNO which are directly taken from the Unified license awarded to TSPs. Most of such license clauses are either not applicable or not relevant to VNOs at that magnitude hence require immediate review to help proliferation of VNOs in the country allowing consumers to have more options and considerable contribution in the exchequer's revenue.

The Government also needs to review these proposed changes from the perspective that the VNOs are going to work on a very light asset and lean cost business model and thus any clause which attract high compliance cost will be a deterrent for this nascent industry.

Some of the license clauses are mentioned below which entail review and modification urgently for take-off of VNO model in the telecom space:

S.No.	Guideline/License Condition	Proposed Change	Justification
1.	<p><u>VNOs parenting to multiple NSOs:</u></p> <p>Clause 1.3 (ii) There would not be any restriction on the number of VNO licensees per service area. VNOs are allowed to have agreements with more than one NSO for all services other than Access services and such services which need numbering and unique identity of the customers. In UL(VNO) the provision for restriction of 10% or more equity cross holding will be applicable between (i) a VNO and another NSO (other than VNO's parent NSO) and (ii) between a VNO and another VNO authorized to provide access services using the access spectrum of NSO(s) in the same service area.</p>	<p>VNOs should be allowed to have agreements with more than one NSO for Access Services.</p> <p>This restriction of 10% or more equity cross holding will not be applicable in case of VNOs parented to multiple NSO and same should be left to the market dynamics to prevent cartelization and distort the competition.</p>	<p>VNOs should be permitted to parent with more than one NSO per LSA for ensuring optimum utilization of resources by way of commercially negotiated agreements on mutual basis for Mobile services. VNOs will complement the operations of NSOs by increasing their revenue and will also offer more choices to the customers. This move will expand the market and ultimately benefit the end consumer in terms of more affordable tariff and innovative services.</p> <p>TRAI in its recommendation dated 01/05/2015 had raised the issue of operational complexities like calculation of Spectrum Usage Charges and License Fee. We are of the view that with the consolidation of the market with 3-4 TSPs having majority of their spectrum as technology neutral spectrum, will going to pay flat SUC in near future. Moreover, VNOs are likely to offer high speed data services coupled with voice services riding on high speed data networks. GSMA intelligence has estimated that by 2020 over 50% of total mobile connections in India will be running on mobile broadband (3G and 4G) networks.</p> <p>VNOs are to provide localized services in small towns and rural areas using the networks of existing NSOs or by laying last mile connectivity mainly to cater structurally defined geographic areas like airports or smart cities. Thus, to serve the varied needs of consumers, it is pertinent for VNOs to have option for parenting with more than one NSO for wireless services due to the fact that the one NSO may not have adequate network coverage / availability of adequate bandwidth especially for newer technologies – IOT/M2M.</p> <p>Indian Telecom market being capital intensive and highly competitive market, even building a part of network infrastructure may not be commercially viable for VNO for connecting to the external world and they still need the infrastructure of the existing TSPs. Thus, by sharing infrastructure of multiple NSOs, they stand to benefit as they get an additional revenue stream and a higher Return on Investment (RoI). This will also further increase the exchequer's revenue.</p>

<p>2.</p>	<p><u>Mutual Agreement between NSO and VNO for offering Access Services</u></p> <p>Clause 1.3 There would not be..... It would not be mandatory for a NSO to provide time bound access to its VNO, rather, it would be left to the mutual agreement between a NSO and a VNO. However, TRAI/ DoT shall have right to intervene in the matter as and when required to protect the interest of consumers and telecom sector.</p> <p>Clause 27.1 The Licensee shall operate and maintain the licensed Network conforming to Quality of Service standards to be mutually agreed with NSO in respect of Network- Network Interface subject to such other directions as Licensor or TRAI may give from time to time.</p> <p>Clause 27.2. The network resources including the cost of upgrading/ modifying interconnecting networks to meet the service requirements of the LICENSEE will be mutually negotiated with NSO keeping in view the orders and regulations issued by the TRAI from time to time.</p> <p>Clause 32.1 The terms and conditions of sharing of infrastructure between the NSO(s) and VNO shall be left to the market i.e. on the basis of mutually accepted terms and conditions between the NSO(s) and the VNO.</p> <p>Clause 32.2 Sharing of Active infrastructure amongst Service Providers based on the mutual agreements entered amongst them is permitted.</p> <p>Clause 33.2 The Acceptance Testing for each and every interface with any NSO may be carried out by mutual arrangements between the LICENSEE and the NSO involved.</p>	<p>The commercially driven agreement between VNO and NSO should come under the ambit of licensing framework to avoid any kind of delay in access of network and protect VNOs from NSOs misusing their economic powers by way of seeking unaffordable wholesale rates and / or unwilling to provide necessary Infrastructure resources essential of VNOs to offer their services to the customers.</p> <p>For this purpose, Licensor should mandate NSOs to provide time bound access of network at a regulated wholesale rate.</p> <p>The wholesale rate should have ceiling akin to the IUC charges regulated under the IUC regulations by TRAI. The ceiling can be fixed by TRAI basis public consultation.</p> <p>In view of above, the introduction of suitable clause in the agreement between VNO and NSO may have to be mandated for safeguarding the subscribers in the event of failure of the agreement.</p>	<p>Globally, several regulators have chosen to keep the commercial arrangement between VNO and NSO under the regulatory framework.</p> <p>Examples –</p> <ol style="list-style-type: none"> a) Hong kong: The MNO is obliged to open 30% of its network capacity to MVNOs who are not affiliated to any MNOs under the Public Non Exclusive Telecommunications Service (PNETS) license b) France: The full MVNO model have control over their interconnection with other operators, and enjoy greater commercial and technical autonomy. Under the terms of 3G1516 (SFR and Orange) and 4G (all four) licences, mobile network operators are required to host MVNOs on their network. The applicants were asked to indicate the level of commitment for MVNO hosting at different levels as suggested in the agreement. c) Pakistan: The MNO that make commercial agreement for MVNO operation in Pakistan have to submit the same to the Authority for approval prior to giving effect to this agreement. d) Chile: The telecom regulator awarded 10 MVNO licenses last year, many have encountered difficulties in negotiations with network operators (MNOs) and to date no MVNO has yet started. e) South Africa: There has been slow response to the MVNOs in South African telecom market. Apart from low ARPU, the regulatory issues and high interconnection charges is also considered a roadblock to the entry of the MVNO f) Botswana: The Licensee shall have right to interconnect its Licensed System with the Licensed System of any other Operator, at any technically feasible point and on fair and reasonable terms. The License shall enter into an agreement with other party and copy of the Interconnection agreement shall be submitted to the Botswana Telecommunications Authority.
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3.	<p><u>Duration of the License: Clause</u></p> <p>3.1 This License shall be valid for a period of 10 years from the effective date of this License. The duration of the License of a VNO shall be fixed as 10 years extendable further for 10 years at a time by the licensor unless revoked earlier for reasons as specified elsewhere in the document. However, depending on techno-logical developments and experience gathered, this duration of license can be reviewed after 3-4 years. The agreement of a VNO with a NSO will terminate with the expiry of the license of either party.</p>	<p>The License validity period of UL – VNO should be of 20 years as prescribed in UL independent to validity period of parented NSO(s).</p>	<p>The VNOs are to be seen as an independent licensed entity and should not be linked with the NSO. TRAI in its recommendation dated 01/05/2015 had admitted that since the licenses for telecom services in India are issued for a period of 20 years through different licensing regimes. With the introduction of UL, spectrum has been delinked from license and all services have been brought under the umbrella of one license. Therefore, parity must be maintained with the prevailing license regime and accordingly duration of the VNO’s license should be 20 years as prescribed in UL.</p> <p>Further, the duration of VNO license and NSO license should not be linked as both would be independently holding a valid telecom service license as VNOs can always have option to move from one NSO to another NSO (s) within the same service area based on their commercial negotiations and mutual understanding for the want of better technology / more capacity.</p>
4.	<p><u>Financial Penalty: Clause</u></p> <p>10.1 (i) The Licensor may impose a financial penalty not exceeding the amount shown in Annexure-V for each service as per applicable service area per occasion for violation of terms and conditions of license agreement.</p>	<p>The financial penalty for UL – VNO applicable for the violation which are their beyond the control should be removed. Refer clause 38.17(iv), which clearly stipulates that violations / penalties which are beyond the control of VNO, shall be borne by NSO as per the existing norms defined for them.</p>	<p>The amount specified for financial penalty for UL VNO Licensee is equal to UL Licensee. Since VNO is parented to NSO for its network infrastructure related requirements, hence any violation towards network related conditions should be removed from UL VNO license such as QoS (clause 10.7, 28.1), EMF (clause 24.1), LBS (Clause 7.5 (i) of Access Services Authorisation)</p> <p>Further, the quantum of penalty should be based on the business operations and financial performance of the VNO.</p>
5.	<p><u>Exit from Business by VNO:</u></p> <p>Clause 10.3(ii) For the services other than mobile, all customers of VNO will be migrated to any of the tariff plan of the parent NSO without any extra charges e.g. upfront/activation charges. The mobile services customers of the VNO can port their mobile numbers, using MNP facility, to the service providers of their choice. These provisions shall be built-in as mandatory provisions in the commercial agreement between the NSO and the VNO.</p>	<p>An option should be available for VNO to migrate its mobile consumers to parented NSO(s) on the same tariff plan and terms & conditions under intimation to the consumers.</p> <p>However, VNO & NSO to ensure that such migration of consumers should not be done in the manner which will be impacting them adversely.</p>	<p>A VNO offering mobile services should have option to migrate its consumer base to parented NSO after serving 30 days notice period to consumers informing them about migration and option of MNP facility.</p> <p>This will enable smooth exit of VNO from the market without any inconvenience / service disruption to its mobile consumers.</p>

<p>6.</p>	<p><u>Way Leave:</u></p> <p>Clause 14.1 The Licensee Company shall make, if required, its own arrangements for Right of Way (ROW). In exercise of the provisions of the Section 19 B of the Indian Telegraph Act, 1885, the Central Government, vide Notification dated 24.5.1999, has conferred the powers upon the duly authorized Licensee(s), licensed under Section 4 of the said Act, to seek way-leave from any person including public authority, in connection with providing the services, as per details mentioned in the said Notification. However, non-availability of the ROW or delay in getting permission / clearance from any agency shall not be construed or taken as a reason for non-fulfilment of the Roll-out obligations, if any and shall not be taken as a valid excuse for not carrying any obligations imposed by the terms of this License or conditions of spectrum allotment.</p>	<p>The below portion should be deleted from clause 14.1 –</p> <p>“However, non-availability of the ROW or delay in getting permission... this License or conditions of spectrum allotment”.</p>	<p>As per clause 21.1 of UL – VNO license, no rollout obligation has been casted upon the VNO which confirms that the suggested portion is not relevant to VNO Licensee hence should be deleted.</p>
<p>7.</p>	<p><u>Entry Fee:</u></p> <p>Clause 18.1 - A one-time non-refundable Entry Fee for each authorized Service shall be paid as per Annexure-II. The total amount of Entry fee shall be the cumulative Entry Fee of each authorization subject to a maximum of Rs. 7.5 Crore (Rupees Seven crores and fifty lakh only)</p>	<p>For the UL (VNO-All Services), entry fee should be minimal.</p>	<p>The current entry fee is very high for the VNO Licensee. It should be kept at optimal level (max. INR 1.0 Crs) so that the new entrant is able to invest more in CAPEX/OPEX for setting up the network and managing operations smoothly. The suggested amount is sufficient entry barrier to filter non-serious fly-by-night companies. Otherwise also, as the tenure of VNO licence is only 10 years, the current fee becomes equal to the full TSP licence for that category of service.</p> <p>The international scenario also indicates that in many countries, the barriers to entry including entry fees, financial conditions etc for MVNOs are kept fairly low, which may otherwise be a deterrent for a potential MVNO.</p>

8.	<p><u>SUC & LF:</u></p> <p>Clause 18.2.1 In addition to the Entry Fee, an annual License fee & Spectrum Usage charges (SUC) as a percentage of Adjusted Gross Revenue (AGR) shall be paid by the Licensee service-area wise, for each authorized service separately as per the procedure prescribed in applicable chapter of UL (VNO) from the effective date of the respective authorization. The License Fee is at present 8% of AGR, inclusive of USO levy, which is presently 5% of AGR. SUC shall be applicable as per rates applicable for NSO and can be amended from time to time.</p>	<p>The network sharing charges, LF and SUC paid by MVNO to MNO should be allowed under pass through charges.</p> <p>This is to avoid double levy.</p> <p>Further, SUC incl. USOF should be reduced in line with TRAI recommendations at uniform rate of 3% with a glide path to 1%.</p>	<p>While a VNO is not allowed to hold access spectrum, it would use the spectral resources of MNOs and would earn revenue from the services using their spectrum. Thus, VNO should pay licence fee and SUC to the government. However, based on the principle of deduction of pass through revenues followed for IUC charges for arriving at the AGR, the charges payable to MNO by VNO/MVNO should be allowed as deduction from the total revenues of the VNO/MVNO for arriving at the AGR, so as to avoid double taxation.</p>
9.	<p><u>Deployment of RET:</u></p> <p>Clause 24.2 - The Licensee shall adopt Renewable Energy Technologies (RETs) for powering the Telecom Network, deploy energy efficient equipment and reduce the carbon footprint as per prevailing directions/ instructions and shall abide by further directions / instructions as may be issued in this regard by Licensor/ TRAI from time to time.</p>	<p>Energy efficiency (rather than RET) should be the focus to achieve reduction in carbon emission.</p> <p>This clause should be removed from the UL-VNO license.</p>	<p>In case of VNO, the network infrastructure is being taken from the parented NSO. Thus, it is the responsibility of NSO to ensure compliance to this clause.</p> <p>Moreover, the contribution of telecom sector in overall carbon emissions is negligible. Presently, significant progress has been made towards increasing the share of renewable sources in power generation capacity and better availability of grid power. VNOs / NSOs should have only one target for overall reduction in carbon emission and the choice for selection of technology / methodology should be left to the NSOs to achieve the same.</p>
10.	<p><u>FDI under the Automatic Route:</u></p> <p>only 49% is allowed under the automatic FDI approval route</p>	<p>As part of ease of doing business, automatic route FDI approval should be up to 100%.</p>	<p>There are hundreds of successful VNOs across the globe who would have been looking expectantly at entering the Indian market. They will bring Capital and expertise in the field.</p>



VNOs Experience in Other Global Markets

Many countries across the world permit Virtual Network Operators within the existing licensing framework itself. They are present in many sub-sectors like basic connectivity, voice services, data services, content services etc. The VNO model has been found highly successful in many developed regions like Europe. The most popular model here is Mobile VNOs (MVNOs). Europe, which is home to more than two thirds of global MVNOs, has surpassed more than 100 percent penetration (based on number of connections). The MVNO concept is gaining popularity in Americas as well. VNOs are called differently in different regions/countries across the world; in Saudi Arabia they are called Service Based Provider (SBP) while in Singapore they are known as Services-Based Operator (SBO).

Internationally, VNOs have focused mainly for provisioning of mobile access services; and are known as Mobile Virtual Network Operators (MVNOs); however, there are other services also where VNOs can be useful to increase their penetration. For example, VSAT operators like Telstra Global (Australia), Orbit Research (UK) and VSAT Systems (USA) are providing satellite based VSAT services by leasing hub space to VNOs in some of the countries. The VNO needs to purchase only a line card to establish a High Throughput Satellite

(HTS) service and has full control of its own network and end users. This is an attractive model for VNOs for getting quick access to the HTS market at low investment and expansion of their network based on demand.

According to GSMA Intelligence report published in August 2015, the number of MVNOs worldwide increased by 70% between June 2010 and June 2015, crossing the 1,000 mark. As of June 2015, 1,017 MVNOs were in operation across 75 countries, while 210 players have either merged or ceased business over the past 15 years. Research shows that MVNOs are a developed world phenomenon; almost four out of five MVNOs globally are located in the developed world. MVNOs' presence has more than doubled in the developing world over the past five years, but presence remains limited. As of June 2015, MVNOs are in over 30 countries across the developing region, up from 13 countries in June 2010. The ten countries with the largest number of MVNOs in the developed region are Germany (129), the US (108), the UK (76), the Netherlands (56), France (49), Australia (43), Denmark (43), Spain (35), Belgium (26) and Japan (23). Within the developing region, the five countries with the greatest number of MVNOs are Poland (27), Russia (16), Malaysia (13), China (11) and Chile (8). In contrast, the MVNO sector is in its infancy in African markets with just eight MVNOs across the continent.

In the USA, there are about 300 MVNOs operating and they are estimated to make up about 1 in 10 wireless

1. <https://www.gsmainelligence.com/research/?file=69440fbc827652b34132e46b5c116a27&download>

subscriptions, or about 36 million. That number has roughly doubled since 2009, thanks to a trend of the big networks allowing customers to more easily switch networks and a significant decrease in the cost of wholesale network capacity rates. MVNOs have tended to receive better customer service marks in the U.S. than the big carriers, with Consumer Cellular, Ting, and Republic Wireless topping Consumer Reports' industry customer service satisfaction rankings. To better compete with MVNOs, which often tend to offer service at lower rates than those offered by major US wireless networks directly, some major US carriers also market wireless service using their own captive MVNOs or alternative brands such as Boost Mobile (Sprint), Cricket Wireless (AT&T) and MetroPCS (T-Mobile US). Other notable MVNOs offering lower rates are ChatSIM, US Mobile, RedPocket and TracFone.

The UK has over 20 MVNOs but all use one of the four coverage providers: EE, O2, Three and Vodafone.

Regulation

In 2003, the European Commission issued a recommendation to national telecom regulators (NRAs) to examine the competitiveness of the market for wholesale access and call origination on public mobile telephone networks. The study resulted in new regulations from NRAs in several countries, including Ireland and France forcing operators to open up their network to MVNOs.

Jordan's TRC issued its first MVNO regulations in 2008 facilitating the entrance of the first MVNO in the Arab world in 2010.

The Saudi government is making preparations to permit MVNO services in the country, and local mobile network operator, Mobily has awarded an MVNE management contract to India's XIUS.

In Brazil, the MVNO was regulated by Anatel, the Brazilian Agency of Telecommunications, in November 2010. As of September 2014 the combined market share of all Brazilian MVNOs was just 0.04%.

In Thailand, five MVNOs were given a Type II license to operate as MVNOs on the 2100 MHz 3G network of state telecom operator TOT Public Company Limited (TOT) in 2009. As of December 2014 three of the original five MVNOs are still in service.

The Oman telecom market consists of five Mobile Virtual Network Operators (MVNOs) and two Mobile Network Operators (MNOs). MVNOs have also sealed their deals with MNOs, technology providers, advertising and marketing agencies, SIM and re-charge coupon distribution channels. All the five MVNOs in Oman have already launched their operations and are providing services.

Way Forward

In order to facilitate growth for VNOs in Indian telecom market, Government should ensure that the suggested amendments in the existing licensing and regulatory framework should be carried out at the earliest in a transparent, non-discriminatory and competitively neutral manner. Government needs to keep updating the licensing and regulatory framework with the structural changes taking place in the market. Such action(s) of the Government will assure new entrants in the market that the investment which is being made will be duly protected and VNOs can compete on a fair and equitable basis with competition.

The new revolutionary VNO business model will induce fresh kind of enthusiasm in the industry as it will remove the barriers operators face in many of the telecom circles. While the proliferation of virtual networks will help the Government of India address the connectivity concerns in rural areas and add much muscle to its march towards its goal of Digital India. Hence, the time is opportune to welcome the VNOs to the India market and unleash a new revolution that will change the face of Indian telecom landscape.



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