

Observations by Rakesh Kumar Bhatnagar, Retired Advisor(Technology), DoT on TRAI Consultation Paper 15/2014 “Delinking of the license for networks from delivery of services by way of Virtual Network Operators”

I am providing details on a new Licensing Regime with **three set of Licensees**

a) Converged Unified License with Network & Service

b) Unified License (Network Service) and

c) Unified License (Service Delivery)

that would address all Networks and delivery of Services as envisaged in NTP2012 with sharing of network resources, sharing of active / passive infrastructure, sharing of spectrum, resale of services etc. It may be noted that TRAI Consultation Paper had not covered my Model though many other options through MVNOs were covered. Details are provided below:

1.1 New Licensing regime structure should be consistent with key important features of NTP 2012 and at the same time enhance the quality of service, optimize investments in telecom sector, help address the issues on digital divide, address the requirements of level playing field, rollout obligations, policy on merger & acquisition, non-discriminatory interconnection including interconnection at IP level etc. and ensure adequate competition.

1.2 NTP 2012 Preamble states “Telecommunications is no longer limited to voice. The evolution from analog to digital technology has facilitated the conversion of voice, data and video to the digital form. Increasingly, these are now being rendered through **single networks** bringing about a **convergence in networks, services** and also devices. Hence, it is now imperative to move towards **convergence between telecom, broadcast and IT services, networks, platforms, technologies** and overcome the existing segregation of **licensing, registration and regulatory mechanisms** in these areas to enhance affordability, increase access, delivery of multiple services and reduce cost.”

1.3 NTP 2012 vision statement states “To provide secure, reliable, affordable and high quality **converged telecommunication services anytime, anywhere** for an accelerated inclusive socio-economic development.”

1.4 The objectives of National Telecom Policy-2012 states “**Strive to create One Nation - One License across services and service areas.**” Further the NTP 2012 states ‘to move towards Unified Licensing Regime in order to exploit the attendant benefits of convergence, spectrum liberalization and facilitate **delinking of the licensing of Networks from the delivery of Services** to the end users in order to **enable operators to optimally and efficiently utilize their networks and spectrum by sharing active and passive infrastructure**’.

2. Unified Licensing Model

2.1 Countries such as Malaysia, Hongkong, Kenya, Bangladesh, Singapore etc, have de-linked the licenses for networks service and delivery of service. In most of the countries, the entire Network including CORE network, GMSC, BSC, BTS, Radio spectrum, Transmission Systems belongs to the Network Service Licensee, which are also termed as Facility Based Operators (FBO).

2.2 In accordance with NTP 2012 requirements, there could be a National Level Unified License (UL) meeting the NTP 2012 objective of one Nation One integrated License providing convergence of Networks and Services.

2.3 This Unified License (UL) can further have two sub-set of licenses in the form of

- UL (Network Service) and
- UL (Service Delivery).

2.4 Unified License (UL) as such would provide convergence of Networks and Services and most of the existing Pan India operators should be eligible for migrating to this type of license.

2.5 Annex I demonstrate as to how most of the NTP 2012 expectations would be met through Unified License (UL) along with supporting UL (Network Service) and UL (Service Delivery) licenses.

2.6 There may be scenarios wherein existing IP1 Registered operators may not like to opt for UL license as they do not want to provide all set of services at the national level and are quite satisfied to just provide network infrastructure to other licensees.

2.7 Further UL (Service Delivery) licensees should support all type of MVNO and reseller options ranging from

- whole of the Service Area or
- any part of Service Area including restricted to District level services.

2.8 Service Delivery Licensee could deal with the provisioning of array of services to the end users through the facilities obtained from Unified Licensees (UL) or UL (Network Service) Licensees. In this scenario, the UL (Service Delivery) Licensee need not create its own full infrastructure and at the same time can deliver the services to the end user on a single platform. The end user should be able to interact with only one operator for all his needs such as Fixed Telephone, Mobile Phone, Broadband Access through Fixed line, Wireless Broadband Access, Cable Television, Satellite Television, IPTV for residential users and the entire array of Enterprise Data Services for Enterprise customers. Further a single point billing should be available.

2.9 Further, it should be permissible for part of the network being owned by Service Delivery Licensee. In this case, the network operated by UL (Network Service) Licensee may include CORE network, GMSC and Transmission Systems, whereas, Service Delivery Licensee shall have option for example to have its own Access Network consisting of BSC, BTS, Radio spectrum and Backhaul Transmission Systems etc. The services to the customers could be delivered by Unified Licensee (UL) or UL (Service Delivery) Licensee by using its own resources as well as resources / facilities of the UL or UL (Network Service) Licensee.

2.10 The countries who have adopted similar models are geographically smaller and therefore the concept of Service area level licenses may not have relevance in such countries, whereas in India there are 22 Service areas through which the access licenses are administered.

2.11 Whereas by adopting the model mentioned in preceding paras, substantial responsibility is entrusted to UL (Service Delivery) licensee and the access network is established by the Service Delivery licensee supplementing the existing pan India licensees who should be migrating to Unified License (UL). This model above has got the inherent advantage that the implementation of converged network and services will become easier with freedom to the Service Delivery licensee to offer innovative / converged services.

2.12 Accordingly, there should be a Main Unified License supported by Unified License (Network Service) and Unified License (Service Delivery)

2.13 Unified License (UL) and Unified License (Network Service) should permit the Licensees to establish all types of Telecommunication Networks using any technology as per prescribed standards at National level and provide access to the same, on non-discriminatory terms, to the UL(Service Delivery) Licensees in accordance with the terms and conditions of the licenses and regulations /directions /orders as prescribed by LICENSOR / TRAI from time to time, so that the telecommunication services are delivered to the subscribers by UL (SD) Licensee.

2.14 UL (Service Delivery) should permit the Licensee to provide all types of access services and other services like internet, internet telephony, IPTV, leased circuits to the customers in the licensed service area by using the telecom resources obtained from one or more UL (Network Service) Licensees.

2.15 **Three set of Licensees**

a) Converged Unified License with Network & Service

b) UL (Network Service) and

c) UL (Service Delivery)

would address all Networks and delivery of Services as envisaged in NTP2012 with sharing of network resources, sharing of active / passive infrastructure, sharing of spectrum, resale of services etc.

2.16 This should be achieved through Reference Offers on Active/ Passive network elements, spectrum sharing etc on lines to the existing practice of Reference Interconnect Offers in the matter of interconnection amongst the networks.

2.17 Agreements between licensees should be based on mutual agreements based on Reference offers filed with TRAI and based on Regulations/ orders/ directions/ guidelines from TRA/ Licensor as issued from time to time.

2.18 Reference Offers on network resources should include the following

- (i) Infrastructure
- (ii) Network Elements (Integrated / Distributed)
- (iii) Resale of Services
- (iv) Spectrum (Sharing)

2.19 The following issues are also required to be addressed for implementation of the new regime:

- (i) Migration Path for Existing Licensees – Most of the pan India UAS/ CMTS/ GSM/ UL(AS) licensees have already paid much higher Entry Fees, no additional Entry Fees may be required. However, it should be examined on case by case basis and in all cases where higher Entry Fees are already paid and pro rata Entry Fee for the balance period of existing license exceeds UL proposed entry fees, no additional Entry Fee should be payable. In case the pro rata value is lower, difference should be payable. However, no refund should be payable. Same principle should be applicable for NLD/ ILD migrating to Unified License.
- (ii) For IP1 and ISPs, full Entry Fees shall be payable.

- (iii) Quality of Service – The UL(Service Delivery) Licensee would be dependent on the QoS of the UL and UL(NS) licensees. TRAI may have to work out an end-to-end QoS integrated approach for the UL(NS) and UL(SD) licensees.

2.20 The bouquet of services for UL (SD) license along with corresponding entry fee should be worked out and same can be issued through an administrative orders from time to time in accordance with addition of new / additional services in the bouquet of services. The concept of class license and licensing through authorization can also be examined along with the concept of bouquet of services.

2.21 Other **Migration/ Licensing issues**

Following issues can be considered for the Migration Guidelines that would be required to be issued.

- i. All the existing telecom licensees should have the option of migrating to new Unified License Regime.
- ii. Roll out obligations, if any, linked with the existing service providers should remain applicable even after migration to Unified License Regime and shall be subject to changes/ modifications from time to time.
- iii. The Unified License should be for a period of 20 years including all cases of migration. However the right to use the already allotted spectrum should be co-terminus with the spectrum License already granted and the right to use the spectrum for UL should be governed by the terms and conditions of the Wireless Operating License.
- iv. The Unified License should be without spectrum. The spectrum shall be obtained separately as per prevailing policy of the Government. However, in case of migration, the spectrum bundled with preceding Licenses or obtained through

market driven process should continue to be governed by validity period as per earlier frequency authorisation.

- v. The new Unified License should not have any new Roll Out Obligations though existing licensees' Roll out shall still be required to be respected even after migration to UL.

vi.

The spectrum already allotted through auction for specific service under existing license shall continue to be governed under the terms of the existing license while migrating to Unified License, unless otherwise migration path should provide change of usage of Spectrum.

2.22 IP-I shall also be covered under Unified License (UL) or UL (NS). The existing IP-I providers should be required to take the Unified License as soon as the same comes into being and the conditions in the Unified License (UL) or UL(NS) will apply to IP-I provider too. IP-I should pay the prescribed entry fee to take the Unified License. Only those IP-I companies who either want to provide telecom services themselves or are in the business of selling/ leasing/ renting their passive/ active infrastructure to other telecom licensees should be required to take the Unified License or UL(NS). IP-I companies, who are not engaged in activities relating to commercial telecom services, would be required to take 'License through Authorisation'.

2.23 In case of existing Mobile licensees having spectrum, obtains a Unified License (UL) or UL (SD), it will continue to retain the spectrum assigned for the remaining validity period of the existing License. In case of 3G /BWA spectrum holders, the spectrum assigned should be retained for the period for which the spectrum blocks have been assigned. In both the above cases, the Unified Licensees should be allowed to provide all services permitted under the Unified License without changing the channel plan of the allocated spectrum.

3. EXAMPLE OF UNIFIED LICENSE (SERVICE DELIVERY)

There are still 1089 villages in Arunachal Pradesh (part of North East Licensing Area) which are yet to be covered by basic telephone service through Village Public Telephone (VPT) and 70 out of 188 sub-divisional headquarters and 2886 out of 5260 villages are yet to be covered with mobile service as in mid-2014. Internet service in the form of Broadband, Wimax and 3G/EVDO are yet to be provided even in district headquarters like Seppa, Anini, Koloriang, Hawaii and many other places.

Licensed North East's SERVICE PROVIDERS are:

- Reliance Telecom
- BSNL
- Bharti Airtel
- Aircel
- Vodafone
- IDEA
- STel
- Loop Mobile
- Reliance Jio

The Service Providers under new proposed licensing regime on the strength of their **a) Converged Unified License with Network & Service or b) Unified License (Network Service)**, would be in a position of offer their active network elements (like STM64/ STM16/ STM4 /34 Mb/ 2 Mb OFC systems, microwave backhaul systems, BSCs, MSCs) and passive infrastructure network elements (OFC cables, towers etc) through Reference Offers with quantity and tariffs for offers to a new set of players who would like to have Unified License (Service Delivery).

A new Licensee in Arunachal Pradesh, **for example** can get Active Network elements like one STM16 system from BSNL, n1 STM4 systems and n2 BSCs from Reliance Telecom based on Reference Offers of BSNL & Reliance Telecom respectively. 2 pairs of OFC cable can be arranged through passive infrastructure sharing with say Idea Cellular based on Reference Offer. Billing System and Customer Service support services could for example be coming through Vodafone reference offers. Aircel

could be in a position to offer sharing of Spectrum, again based on reference offer. Reference Offers could be on the basis of Cost Plus or any principle as may be mandated by TRAI/ Licensor.

New licensee could add incremental equipment requirements including BTSs etc and set up the network through further active & passive network Sharings and spectrum sharing obtained from multiple infrastructure providers. Equipment/ Capex of a) Converged Unified Licensees with Network & Service or b) Unified Licensees (Network Service), lying unutilized in the rural/ uncovered regions can be tapped for provision of telecom services by a new set of players through Unified License (with minimum capex addition and main expenses being on operating expenses.

The new set of Unified License (Service Delivery) operators could be set of last mile operators and even cable service providers who could provide a helping hand in boosting Broadband Tele-density targets for year 2017 and 2020.

ANNEXURE I: EXTRACTS FROM NTP 2012

Preamble

6. Telecommunications is no longer limited to voice. The evolution from analog to digital technology has facilitated the conversion of voice, data and video to the digital form. Increasingly, these are now being rendered through **single networks bringing about a convergence in networks, services and also devices**. Hence, it is now imperative to move towards **convergence between telecom, broadcast and IT services, networks, platforms, technologies** and overcome the existing segregation of **licensing**, registration and regulatory mechanisms in these areas to enhance affordability, increase access, delivery of multiple services and reduce cost. [Unified License (UL)]

I. VISION

To provide secure, reliable, affordable and high quality **converged telecommunication services anytime, anywhere** for an accelerated inclusive socio-economic development. [UL, UL(SD)]

III. OBJECTIVES

11. **Simplify the licensing framework** to further extend converged high quality services across the nation including rural and remote areas. [UL(SD) at District level]

12. **Strive to create One Nation - One License across services and service areas.** [UL]

13. Achieve **One Nation - Full Mobile Number Portability** and work towards **One Nation - Free Roaming**. [UL, UL(SD)]

16. Deliver high quality seamless **voice, data, multimedia** and broadcasting **services** on **converged networks** for enhanced service delivery to provide superior experience to users. [UL]

18. **Optimize delivery of services** to consumers **irrespective of** their devices or **locations** by **Fixed-Mobile Convergence** thus making available valuable spectrum for other wireless services. [UL, UL(SD)]

3. LICENSING, CONVERGENCE AND VALUE ADDED SERVICES

3.1. To orient, review and harmonise the legal, regulatory and licensing framework in a time bound manner to **enable seamless delivery of converged services** in a **technology and service** neutral environment. Convergence would cover:

3.1.1. **Convergence of services** i.e. convergence of voice, data, video, Internet telephony (VoIP), value added services and broadcasting services. [UL, UL(SD)]

3.1.2. **Convergence of networks i.e. convergence of access network, carriage network (NLD/ILD)** and broadcast network. [UL]

3.1.3. Convergence of devices i.e. telephone, Personal Computer, Television, Radio, set top boxes and other connected devices.

To **move towards Unified Licence regime** in order to exploit the attendant benefits of convergence, spectrum liberalisation and facilitate **delinking of the licensing of Networks from the delivery of Services to the end users** in order to **enable operators to optimally and efficiently utilise their networks and spectrum by sharing active and passive infrastructure**. [UL, UL(NS) & UL(SD) licenses]

This will enhance the quality of service, **optimize investments** and help address the issue of the digital divide. This new licensing regime will address the requirements of level playing field, rollout obligations, policy on merger & acquisition, non-discriminatory interconnection including interconnection at IP level etc. while **ensuring adequate competition**.

3.5 To **delink spectrum in respect of all future licences**. Spectrum shall be made available at a price determined through market related processes. [UL, UL(NS) & UL(SD) licenses]

3.6 New Unified licensing regime will **provide flexibility to operators to operate any or all segment of services of the total basket of services** provided in the scope of licence. [Through Unified License (UL)]

3.7 To promote introduction of **area specific services** and applications. [Supports UL(Service Delivery) License concept after getting required spectrum sharing/ network element resources for any specific area [say district level] based on reference offers from UL/ UL(NS) licensees]

3.8 To **facilitate resale at the service level** under the proposed licensing regime – both wholesale and retail, for example, by introduction of virtual operators – in tune with the need for robust competition at consumer end while ensuring due compliance with security and other license related obligations. [Supports UL(Service Delivery) License concept after getting required spectrum sharing/ network element resources based on reference offers from UL/ UL(NS) licensees]

4. SPECTRUM MANAGEMENT

4.1 To move at the earliest towards liberalisation of spectrum to enable use of spectrum in any band to provide any service in any technology as well as to permit **spectrum pooling, sharing and later, trading** to enable optimal utilisation of spectrum through appropriate regulatory framework. [Supports UL(Service Delivery) License concept after getting required spectrum sharing/ network element resources based on reference offers from UL/ UL(NS) licensees]

ISSUES FOR CONSULTATION

Q1. (a) Is there any need to introduce more competition in service delivery by the way of introduction of VNOs in the sector? If not, why not?

(b) If yes, is it the right time to introduce VNOs?

In my Model, I am not in agreement with terminology Virtual Network Operator (VNO). I would like to use term Unified License (Service Delivery) Operators who should be without any Roll out obligations and as such could be free to provide services just for a cluster of villages, rural pockets on the basis of shared resources from multiple infrastructure providers (Unified Licensees).

Unified License (Service Delivery) Operators using shared Active and Passive network elements from one or more unified licensees and unified license (network services) providers along with spectrum sharing of unified licensees along with incremental capex and full opex are very much required if ambitious broadband targets of NTP2012 are to be achieved by 2017 and 2020. Rural telecom markets through this route can achieve much better results and unutilized capex of multiple operators would also be used for economic growth and prosperity in new market areas.

Q2. Will VNOs pose a threat to NSOs or will they complement their operations? Justify your answer.

Unified License (Service Delivery) Operators using shared Active and Passive network elements from one or more unified licensees and unified license (network services) providers along with spectrum sharing of unified licensees along with incremental capex and full opex, will not pose a threat but would rather complement the unified licensees with infrastructure offerings. They will get cost plus returns on their CAPEX even in areas where they are not providing services.

Q3. How can effective utilization of existing infrastructure be improved?

Can VNOs be a solution to achieve targets defined in NTP-2012 for rural density?

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New licensee could add incremental equipment requirements including BTSs etc and set up the network through further active & passive network Sharings and spectrum sharing obtained from multiple infrastructure providers. Equipment/ Capex of a) Converged Unified Licensees with Network & Service or b) Unified Licensees (Network Service), lying unutilized in the rural/ uncovered regions can be tapped for provision of telecom services by a new set of players through Unified License (with minimum capex addition and main expenses being on operating expenses).

The new set of Unified License (Service Delivery) operators could be set of last mile operators, cable service providers who could provide a helping hand in boosting Broadband Tele-density targets for year 2017 and 2020.

Q4. Does there exist a business case for introduction of VNOs in all segments of Voice, Data and Videos?

The new set of Unified License (Service Delivery) operators have a business case covering all segments of Voice, Data and Videos.

Q5. Whether VNOs be introduced in all or some of the services notified in the UL? Please name the services and the justification.

The new set of Unified License (Service Delivery) operators could cover one, some or all services notified in the UL and it shall be upto the operator to decide on the number of services. No Roll out should be applicable for this category of license.

Q6. Is there sufficient infrastructure (active and passive including access spectrum) available with a TSP to meet its own requirements? Can TSPs spare available infrastructure for VNOs?

It shall not be mandatory for Unified Licensees to offer their infrastructure to new set of players through Reference Offers. If they want Cost Plus returns in areas where their CAPEX is not giving any returns to them, infrastructure providers would like to offer their spare infrastructure.

Q7. If any TSP is able to share its infrastructure with VNOs, what should be the broad terms and conditions for sharing the infrastructure?

It should be on Cost Plus Reference Offer principles as may be mandated by TRAI/ Licensor.

Q8. Should VNOs be allowed to create their own infrastructure to reach out to niche markets? If yes, to what extent?

New licensee could add incremental equipment requirements including BTSs etc and set up the network through further active & passive network Sharings and spectrum sharing obtained from multiple infrastructure providers. Equipment/ Capex of a) Converged Unified Licensees with Network & Service or b) Unified Licensees (Network Service), lying unutilized in the rural/ uncovered regions can be tapped for provision of telecom services by a new set of players through Unified License (with minimum capex addition and main expenses being on operating expenses.

Q9. Should Local Cable Operators (LCOs) or Multi System Operators(MSOs) with cable networks be permitted to share infrastructure with VNOs to provide last mile connectivity?

Local Cable Operators (LCOs) or Multi System Operators (MSOs) with cable networks themselves could actually be potential Unified License Service Delivery operators who utilize active and passive network elements from unified licensees and unified license (network service) operators. Even Unified License Service Delivery operators should be free to share their passive infrastructure.

Q10. Does the adoption of the VNO model requires an entirely new licensing regime or will a chapter or a separate section for VNOs added to the existing UL suffice?

My Model suggests three set of Licensees

a) Converged Unified License with Network & Service

b) UL (Network Service) and

c) UL (Service Delivery)

would address all Networks and delivery of Services as envisaged in NTP2012 with sharing of network resources, sharing of active / passive infrastructure, sharing of spectrum, resale of services etc. Existing Unified Licensees can be treated as already having a) and b) and c). A new set of c) UL (service Delivery) license will need more drafting efforts.

Q11. Comment on what measures are required to ensure that the existing or new licensing regime takes care of future requirements of technological development and innovation and provides a clear roadmap for migration to existing service providers.

All Licenses should not have any linkage with technological developments. Already Spectrum is delinked from Licenses and UL (Service Delivery) should have flexibility to provide all type of voice, data and video services in any geographical area (sub set of licensees a) and b))with no roll out obligations.

Q12. In view of the complexity in the existing licensing regime as explained in Para 3.16 to 3.18, Should India move towards NSO and VNO based licensing?

My Model suggests three set of Licensees

a) Converged Unified License with Network & Service

b) UL (Network Service) and

c) UL (Service Delivery)

would address all Networks and delivery of Services as envisaged in NTP2012 with sharing of network resources, sharing of active / passive infrastructure, sharing of spectrum, resale of services etc.

Q13. If yes, whether existing licensees may be mandated to migrate to NSO & VNO based new licensing regime? What challenges will arise in the migration to the two types of licensing framework?

As per my Model, existing Unified Licensees can be treated as already having three set of Licensees

a) Converged Unified License with Network & Service

b) UL (Network Service) and

c) UL (Service Delivery)

Q14. Should a VNO be issued a license at the National Level, or for LSAs as in the case of UL or should it be based on the host NSO license areas?

UL (Service Delivery) should have flexibility to provide all type of voice, data and video services in any geographical area (sub set of licensees a) and b) above) with no roll out obligations.

Q15. What should be the duration of a VNO's license? Should it be linked with the license of the NSO or should it be for 20 years, as in the case of UL?

UL (Service Delivery) should also be for 20 years.

Q16. Should there be any cap on the number of VNOs in a service area for a particular service? If yes, what should be the number? Please provide (a) service wise and (b) service area-wise numbers with justification.

In Open market conditions, there should be no cap on UL (Service Delivery) operators.

Q17. Should there be restriction on number of VNOs parented to a NSO? Justify your answer.

In Open market conditions, there should be no cap on number of UL (Service Delivery) operators parented to a) and b) type of UL infrastructure players.

Q18. Alternatively, should one VNO be permitted to parent more than one NSO per LSA?

In Open market conditions, each UL (Service Delivery) operators should be allowed to be parented to more than one a) and b) type of UL infrastructure players.

Q19. What should be the eligibility conditions for becoming a VNO?

There should be no eligibility criteria for becoming UL (Service Delivery) operator.

Q20. Whether an existing Unified Licensee with authorisation to provide all services shall be eligible to become a VNO of another Licensee in the same or other LSA? Or, will it need separate/additional authorisation to work as a VNO for delivering services for which it does not have access spectrum?

Yes, so long as Spectrum Sharing is allowed.

Q21. Should there be any cross-holding restriction between a NSO and VNOs? If yes, please quantify the same with justification.

No cross holding restrictions.

Q22. What should be the financial obligations of VNOs in the form of a) Equity & Networth b)Entry Fee c)PBG and d)FBG etc.? Please quantify the same with justification.

There should be no financial obligations on UL (Service Delivery) operators.

Q23. Should a VNO utilise numbering resources, Network Codes and Locational Routing Number (LRN) of the NSO? Or, should the Licensor allocate separate numbering resource, Network Codes and Locational Routing Number(LRN) directly to a VNO?

The Licensor should directly allocate separate numbering resource, Network Codes and Locational Routing Number(LRN) to a UL (Service Delivery) Operator.

Q24. What operational difficulties could arise in the above arrangements?

No technical difficulties are foreseen in suggested arrangement above.

Q25. In case your reply is that the Licensor allocates numbering resource to the VNO, then how can it be ensured that the resources allocated to a VNO are efficiently utilised? Should any obligation be placed on VNOs for efficient utilisation of resources?

Licensor can have necessary allocation guidelines for UL (Service Delivery) operators to ensure reasonable levels of efficient resource utilisation.

Q26. Should the LF and SUC applicable to the VNO be as per stipulated conditions of authorisation in UL? Or, should it be treated differently for VNO? Please quantify your answer with justification.

License Fees should be payable by UL (Service Delivery) Operator directly based on his level of service delivery operations. Spectrum Usage Charge, however could be payable through his parent Unified Licensee of a) and b) types.

Q27. Should an NSO be mandated to provide access to its network to a VNO in a time-bound manner or should it be left to their mutual agreement.

UL Licensees of type a) and b) based on their Reference Offers and mutual agreements should be free to work out relevant details.

Q28. How can MNP be facilitated in the VNO/NSO model? Can the VNO be treated separately for MNP purposes? Or, should MNP be facilitated only through the network of the NSO?

This can be finalized after the new Licensing Regime is actually implemented. The answer can wait for now.

Q29. Who is to be held responsible for CAF verification and number activation, the NSO, the VNO or both?

UL (Service Delivery) operator should be responsible provided my suggestion of allocation of numbering and signaling resources is under direct allocation of licensor.

Q30. Should an NSO or VNO or both be responsible for maintaining QoS standards as per TRAI's regulations?

UL (Service Delivery) operator should be responsible for maintaining QoS provided my Model finds acceptance and further allocation of numbering and signaling resources is under direct allocation of licensor.

Q31. How should Mergers & Acquisitions be dealt with in the VNO/NSO licensing model? Should the recently announced M&A guidelines issued by the Government for existing players be extended to cover VNOs? Or, should their M&A be treated separately?

This can be finalized after the new Licensing Regime is actually implemented. The answer can wait for now.

Q32. Should the VNO be treated equivalent to the NSO/ existing TSPs meeting obligations arising from Tariff orders/regulations /directions etc. issued by TRAI from time to time?

UL (Service Delivery) operators should be treated equivalent to the existing TSPs meeting obligations arising from Tariff orders/regulations /directions etc. issued by TRAI from time to time.

Q33. Please give your comments on any related matter not covered in this Consultation paper.

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EXAMPLE OF UNIFIED LICENSE (SERVICE DELIVERY)

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Licensed North East's SERVICE PROVIDERS are:

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- Reliance Telecom
- BSNL
- Bharti Airtel
- Aircel
- Vodafone
- IDEA
- STel
- Loop Mobile

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A new Licensee in Arunachal Pradesh, for example can get Active Network elements like one STM16 system from BSNL, n1 STM4 systems and n2 BSCs from Reliance Telecom based on Reference Offers of BSNL & Reliance Telecom respectively. 2 pairs of OFC cable can be arranged through passive infrastructure sharing with say Idea Cellular based on Reference Offer. Billing System and Customer Service support services could for example be coming through Vodafone reference offers. Aircel could be in a position to offer sharing of Spectrum, again based on reference offer. Reference Offers could be on the basis of Cost Plus or any principle as may be mandated by TRAI/ Licensor.

New licensee could add incremental equipment requirements including BTSs etc and set up the network through further active & passive network Sharings and spectrum sharing obtained from multiple infrastructure providers. Equipment/ Capex of a) Converged Unified Licensees with Network & Service or b) Unified Licensees (Network Service), lying unutilized in the rural/ uncovered regions can be tapped for

provision of telecom services by a new set of players through Unified License (with minimum capex addition and main expenses being on operating expenses).

The new set of Unified License (Service Delivery) operators could be set of last mile operators and even cable service providers who could provide a helping hand in boosting Broadband Tele-density targets for year 2017 and 2020.