

Q#	Question	Answer
1	Do you think that you or your company could benefit from the services that will be made possible by the implementation of NGN networks? If yes, please explain by means of examples.	<p>Migration to NGN architecture is considered an important step in evolving to and ALL-IP network,</p> <p>Some of the key benefits can be stated as follows:</p> <ul style="list-style-type: none"> <li>• Cost Optimization <ul style="list-style-type: none"> <li>○ NGN has significant cost optimization advantages for the development and deployment of services;</li> <li>○ NGN is expected to reduce operating expenses. For example reduced power requirement for NGN operation and air conditioning.</li> <li>○ Reduces the space requirement compared to legacy systems.</li> <li>○ Since a common platform can be used for large number of services, unlike in the legacy network era, the investment required for hardware can be minimized thereby reducing CAPEX.</li> <li>○ Also, the NGN core network can be deployed in a decentralized architecture by distributing the media gateways in remote sites. The remote MGWs will handle the local switching and this will result in trunking efficiency. This will reduce the requirement of transmission capacity requirement. This is very essential in times of increasing transmission bandwidth requirement for new services such as broadband.</li> <li>○ The reduction in transmission bandwidth requirement will optimize the CAPEX requirements in a great way.</li> </ul> </li> <li>• Service Enablers <ul style="list-style-type: none"> <li>○ Operators are leveraging NGN infrastructure to integrate multiple technology based</li> </ul> </li> </ul>

		<p>services into a single IP architecture which can offer enhanced services based on IP.</p> <ul style="list-style-type: none"> <li>○ NGN access is expected to reinforce the capabilities of the network to manage the growing broadband demand</li> <li>● In addition, NGN will support a wide range of legacy services while enabling new ones, for example, bandwidth on demand, support for rich multimedia services, m-commerce, remote monitoring, Live IPTV, and enhanced video conferencing content delivery networks . Finally, with NGN a common OSS is possible which allows seamless end-to-end services and system management processes</li> </ul> <p>The specific benefits for a mobile operator are largely in the use of an ALL-IP architecture in the mobile core network (core NGN); combining transport of both circuit and packet core networks. As the mobile radio access network evolves towards higher speed HPSA+ and LTE mobile radio access network architectures will better utilise IP architecture for all services including transmission and transport. Migration to NGN is considered an important step in evolving to an ALL-IP mobile network.</p> <p>In particular, wholesale-priced connectivity solutions with significant flexibility, scalability, configuration, control and speed; can be provided by core NGN networks.</p>
2	<p>Do you think that the incentives available in the private sector for operators to begin to migrate to NGN are sufficient to promote adoption, or do you believe that the broader social benefits warrant additional steps being taken by the government to promote this migration? If so, what steps would you recommend the TRCSL investigate to</p>	<p>With the benefits and capabilities that NGNs offer provides a great mechanism to ensure that market enabling operators to offer greater service differentiation.</p> <p>Another factor is that the use of broadband applications is on the rise and many private as well as public sector organizations are increasingly adopting IT technologies in order to perform the work more efficiently. Also, the government has also taken steps to increase IT literacy in the country by huge margins in the coming five years. In this situation it can be expected that the demand for broadband and other mobile based services will increase exponentially. Hence, this provides an opportunity for operators to migrate towards NGN architectures.</p> <p>A Broadband Backhaul Fund with the purpose of encouraging building additional backhaul capacity would be a good government initiative. For this the government in consultation with the TRCSL and operators can deploy a national fiber network that would provide adequate</p>

	<p>promote such migration?</p>	<p>capacity to deliver broadband services to all parts of the island.</p> <p>In this situation, the government would run an open tender process for parties interested in building additional backhaul capacity. Successful participants would then be required to offer this backhaul capacity at regulated rates for a set period of time</p>
<p>3</p>	<p>Do you foresee any negative consequences of the migration to NGN for the telecoms sector or broader society? If so, please describe them, along with any steps that the TRCSL could investigate to mitigate or avoid those consequences.</p>	<p>Migration to NGN architecture would no doubt bring many benefits to the respective operator as explained in the first question.</p> <p>All players in the market should be able to migrate or build their own NGN networks if there is a commercial rationale to do so. However, each operator should have the right to build and operate their own NGN network.</p> <p>Only a single NGN platform for all operators would not benefit because this would limit the flexibility of operators to build and manage their own network capabilities according to specific needs and for their customer's specific preferences.</p> <p>Differentiation is the heart of the strategy of an organization. A single NGN for all would also limit the ability of operators to differentiate their services.</p> <p>If an operator wishes to invest more and offer new services that others do not offer, there is no reason to restrict them. In such a case a single NGN would limit this possibility.</p> <p>A single NGN would also retard the ability of operators to optimize the network and also do changes to the network as required.</p>
<p>4</p>	<p>Do you see any issues or opportunities relating to access to, and use of spectrum now? Will issues and opportunities potentially emerge from telecommunications and</p>	<p>Ideally the TRCSL should encourage future technologies that would emerge and allocate spectrum to all operators in a fair manner. When operators wish to go into a new technology then they would know in advance what frequencies they have access to.</p> <p>A long term spectrum roadmap should be released by the TRCSL such that the mobile industry can plan network deployment and technology well in advance of future consumer demand.</p>

	broadcast convergence?	<p>Spectrum decisions taken by TRCSL must be harmonised with international standards (e.g. in terms of location of spectrum bands, i.e. IMT-2000) and best practices (e.g. in terms of technology standards etc)</p> <p>Spectrum licensing should be technology neutral in line with contemporary best practice. Ultimately, the market and technology decides what is the best use of a particular frequency band</p>
5	<p>Do you believe that innovative voice services such as Skype and Google represent a threat or an opportunity for the Sri Lankan telecoms market? What are the roadblocks to realising benefits from such services?</p>	<p>The use of VoIP over mobile services will continue to be adopted more and more in time to come. With increased usage of broadband, users will increasingly use the mobile to make calls using VoIP.</p> <p>Therefore, operators should also be allowed to introduce similar IP based voice services such as Skype and Google rather than just offering voice or video calls on 2G/3G. This will enable operators to recover some of the revenue that will be lost due to others offering such services. The markets will continuously test new technologies, applications and services. Ultimately the consumer will decide what the best service is.</p>
6	<p>Do you believe that the range of TV content available is an important or primary basis for customers' decision to purchase telecoms services? Do you believe that a merger between the media regulator and the TRCSL would provide an environment which promotes competition and increases user choice?</p>	<p>In several markets around the world, TV content is becoming an important factor in consumer's buying decision for both mobile and fixed telecommunications services.</p> <p>In order to ensure that Sri Lanka is able to keep up with these global trends the TRCSL should manage both telecommunications and media regulation; ensuring that a holistic approach is adopted to take full advantage of convergence.</p> <p>Converged regulatory operations must be fully functional and resourced prior to any further developments on NGN. This is important to ensure that the migration to NGN architecture is well thought through and regulated</p>

7	<p>Please describe your planned migration to NGN. (a) What is your technical strategy to migrate to NGN, if any? (b) What will be the key phases in your migration to NGN, and what phase are you currently in? (c) What is your anticipated timescale for each of these phases? What technical issues need to be resolved to allow you to offer the services you would like to be able to offer today, and over the next four years?</p>	<p>Mobile core network is all-IP capable.</p> <ul style="list-style-type: none"> <li>a) Currently we are in the process of migrating the core network to a total NGN architecture. The 3G radio network that will be rolled out in the near future is an all IP network. This will be followed by migration of other network elements to IP.</li> <li>b) Core network migration, 3G deployment with IP, migration of transmission from TDM to IP (This will happen along with the other phases. The existing 2G BSS migration will also happen in parallel.</li> <li>c) It is expected to convert the whole network to NGN by end of 2012.</li> </ul> <p>Security will be a main concern when the networks evolve towards all IP networks. Therefore adequate measures have to be implemented by operators in order to protect the network from unauthorized access and virus attacks. Also, the migration from TDM to IP should be handled in a smooth manner. Several intermediate network configurations will have to be managed during the migration process.</p> <p>Especially the transmission migration will be a tedious task which would require time and effort.</p>
8	<p>What is the impact of NGN on existing telecommunications networks and services revenues, in light of the overall benefit that may be derived from the introduction of NGN? Do you think the TRCSL should play an active role in the migration to NGN? If yes, what measures should the TRCSL take during the</p>	<p>Impact of NGN on existing networks is generally in terms of reduced cost to deliver a service or a megabyte of data to a consumer.</p> <p>The cost reductions are mainly in the OPEX because a common network infrastructure will be used to offer different services and applications.</p> <p>Since, the concept of NGN enables operators to offer many diverse services through a single platform, operators can make several business propositions.</p> <p>However, without defining the services and architecture one cannot guess the exact revenue impacts. But, in summary it can be said that NGN enables the operators to offer new services.</p>

	<p>migration and in the course of the long-term adoption of NGN technologies and services?</p>	
9	<p>What are your preferred protocols, architecture and interfaces for inter-connection with the PSTN, other NGNs, and with international networks (voice and Internet)? Please describe Public Consultation on Policy &amp; Regulatory Framework for Next Generation Networks (NGN) in detail the associated timeframe for each of your choices, in relation to your overall migration roadmap described above.</p>	<p>It is required to comply with ITU and industry standards. It is expected to connect to other networks through SIP. The protocol will migrate from pure SIP to SIP-I in future.</p>
10	<p>Do you envisage any general issues in relation to NGN interconnect? In particular, do you envisage any issues in relation to current peering arrangements?</p>	<p>NGN interconnection should be done by operators by making sure that NGN is secure from any outside attacks.</p> <p>However, a more detailed discussion on interconnect and peering will be possible after the NGN architecture (e.g. and location and number of PoP/PoIs) has been defined by respective operators.</p>
11	<p>Please describe any experiences that your company has of an Internet</p>	<p>This does not need to be associated with implementing of NGN.</p>

	<p>exchange point in Sri Lanka or elsewhere. Do you foresee that your company will have an increased reliance on an IXP in the future, for Internet applications including voice? If so, are there any roadblocks to such usage in Sri Lanka today? If so, please describe those roadblocks and the means to overcome them.</p>	
12	<p>Do you believe that the establishment of a national body to standardize interconnection between NGNs is required in Sri Lanka? If so, what do you think would be the best governance model for it?</p>	<p>Interconnection standardization is not required to be considered separately for NGN. All service offering will be guided by ITU, 3GPP standards.</p>
13	<p>Do you believe that the TRCSL should mandate that operator should put in place equipment to monitor its network performance in terms of delay, jitter, packet loss and bit error rate for different classes of service?</p>	<p>As it is in the best interests of a carrier to provide a reliable and secure services there is no reason the operators themselves will definitely monitor their network quality in terms of delay, jitter, packet loss and bit error rate for different classes of services.</p> <p>With the highly competitive mobile market prevailing in the country customers will not stay in network that has lower quality. Therefore, operators will be compelled to maintain a good quality network.</p> <p>The monitoring of network monitoring is a daily process for carriers covering a vast range of parameters.</p>

		<p>Therefore there seems to be no rationale or relevance for a regulator, to mandate monitoring NGN network performance.</p> <p>Also, considering the many bottlenecks and limitations that operators will face if a common NGN is implemented it is unlikely that any operator will build an NGN for use by other operators as well.</p>
14	<p>Do you believe that other network performance parameters such as network availability should also be monitored by the TRCSL? Please use examples to illustrate your answer.</p>	<p>Currently all operators monitor the network performance of their respective networks. The reporting can be differentiated from regulator to regulator.</p> <p>As described in the answer to the previous question, there is no rationale or relevance for a regulator to mandate monitoring NGN network availability.</p>
15	<p>If you answered yes to the previous questions, do you believe that the national standardisation body should take responsibility for specifying what should be monitored?</p>	<p>There will not be any value addition by a national standardization body as all standards will be governed by the institutes such as ITU, FCC, 3GPP which all international operators and vendors comply.</p>
16	<p>What are your views on security in NGN networks? In your view does current technology, such as firewalls, provide adequate security to NGNs? Do you believe that there needs to be national NGN security policies and standards?</p>	<p>It is each operator's responsibility to implement adequate security in order to protect their network from intruders.</p> <p>The TRCSL is not required to intervene in this matter. Therefore, there is no requirement of a national policy or anything of that sort.</p>
17	<p>Please comment on the need</p>	<p>Telephony services provided by carriers are likely to continue to use E.164 numbering and</p>



	<p>for revisions to numbering plans for new services, and the need or otherwise for non-geographic codes recognizing increasing user nomadicity?</p>	<p>warrants that these should be maintained when such services are provided on NGN. Furthermore, number portability is likely to extend to NGN service providers together with the introduction of non-geographic numbers. The issue commonly identified with geographic numbering is the potential shortage of numbers. ENUM allows mapping traditional telephone numbers to IP addresses and will facilitate the use IP numbering (e.g. IP and SIP address) and traditional E.164 numbers, together with non-geographic numbering.</p> <p>With the introduction of NGN there are several numbering issues that need to be managed. However, it should be up to the operator to implement a suitable system for number management. The regulators intervention is not required in this case.</p>
18	<p>How do you think the harmonisation of naming and numbering of different networks should be addressed? At what stage of your migration plan will the harmonisation of naming and numbering be required? Do you think a national standardisation authority (mentioned in Section 3.5.2) should be in charge of implementing the harmonisation of the naming and numbering across the country? Do you see a future need for international coordination for any or all of Sri Lanka's naming and numbering</p>	<p>It will be the responsibility of the respective operators to take care of number management.</p> <p>We do not see any requirement for national standardization merely because of NGN. Hence, TRCSL intervention would not be required.</p>

	schemes?	
19	<p>Do you see ENUM as a fundamental stepping stone to true VoIP services? If yes, do you believe that ENUM should be implemented centrally by a third party (e.g. a government agency)? If no, what are your alternative plans to provide IP address look-up services (e.g. implementation of individual databases)?</p> <p>Public Consultation on Policy &amp; Regulatory Framework for Next Generation Networks (NGN)</p>	<p>NGN facilitate ENUM. The ENUM implementation should be with operators in this competitive market.</p>
20	<p>How important is it for you that a subscriber can keep their current phone number when migrating from PSTN to NGN? Do you think that a change in phone number may be a barrier for the adoption of NGN services?</p>	<p>Keeping the same number or changing is based on the subscribers' requirement. This should be supported by the technology transformation and NGN migration do not have a relation to this process.</p>
21	<p>Do you plan to adopt IPv6 in your network? If so, when will you do so in relation to the milestones describe in your transition</p>	<p>Etisalat Lanka expects to adopt IPv6 in the near future. However the migration to IPv6 would require a smooth transition because all the systems working in IP is currently working with IPv4. Also most systems and services provided by third parties do not have a clear plan as yet to migrate towards IPv6.</p>

	<p>to NGN? What are the key transformation phases involved in migrating your IP network to IPv6?</p>	<p>Therefore, the adoption would be a step by step process. There will have to be converters of IPv4 to IPv6 and vice versa deployed during the migration process. Some of them will have to be continued for some more time until all third parties adopt IPv6.</p> <p>Etisalat Lanka expects to begin the migration by 2011. The equipment purchased especially the BSS, Core, Transmission, and IT equipment for network expansions in 2010 was already IPv6 compatible.</p> <p>There will be some equipment which may not comply with IPv6. Also some of the existing equipment would not be required to be upgraded due to change of topology with the new network architectures that will evolve. Hence, this will be considered at the time of detailed analysis of the network evolution to IPv6.</p>
22	<p>Please describe your views on the competitiveness of the markets for voice and data services today, including both domestic and international leased lines. What are the current roadblocks to increasing the competitiveness of these markets, if any? What regulations, if any, would you recommend to overcome these roadblocks?</p>	<p>Mobile voice markets have space to increase although the overall market penetration is over 75%. Dual SIM mobile phones and one person owning multiple connections are another factor for voice market improvements.</p> <p>Data services are yet to be increased. Still the market penetration of broadband services is very low. Therefore, there exists a clear opportunity for operators if they deploy broadband technologies. At present little demand with 2G services.</p> <p>Domestic leased lines market could be regulated to give better cost benefits to all operators and avoid building monopoly approach.</p> <p>As at now we do not see any major road blocks to migrate to an NGN architecture.</p>
23	<p>Please describe your current network architecture. What are your current plans to implement NGN networks and/or offer VoIP or other IP services? What are the</p>	<p>Currently we are in the process of migrating to NGN architecture. The existing legacy core network is being converted to an NGN core.</p> <p>All the network elements will be converted to All IP in the coming years.</p>

	roadblocks that you perceive to that migration? What regulations, if any, would you recommend to overcome these roadblocks?	
24	Do you see asymmetric regulation as appropriate for regulating NGN in Sri Lanka? If so, what obligations should be imposed on the dominant operator(s) and the non-dominant operators? What do you see as the most significant advantages and disadvantages of such an approach in Sri Lanka, and what roadblocks do you see to its implementation?	<p>Regulation should address market failure and/or bottlenecks only. Once market failure has subsided then regulation must be removed.</p> <p>Advantages Less costs to companies on growth to focus on NGN technologies. High capacity growth models on existing infrastructure.</p> <p>Currently we do not see any bottlenecks in migrating towards NGN</p>
25	Do you see value in maintaining a two-tier regulatory structure (facilities-based and service-based licensing) to accelerate growth of the Sri Lankan telecoms industry particularly in light of NGN? What do you see as the most significant advantages and disadvantages of such an	<p>With the implementation of NGN there should not be any limitations in providing access to facilities.</p> <p>There should not be a restriction imposed on providing legal services.</p> <p>Advantages More businesses in the market.</p> <p>Currently we do not see any road blocks in implementing this.</p>

	<p>approach in Sri Lanka, and what roadblocks do you see to its implementation?</p>	
26	<p>Please propose any other specific amendments to the licensing framework to promote the growth of service-based competition for NGN. In particular, please identify any regulatory obligations that ought to be excluded from a service-based licence (i.e. Class Licence), citing detailed justifications.</p>	<p>Adoption of NGN is not a reason to change the licensing schemes.</p> <p>NGN enables operators to provide a wide range of services efficiently at a lower cost. Therefore, this should not be a reason to change the licensing.</p>
27	<p>Do you agree with the above proposal to sub-divide service-based licences into two tiers, i.e. 'standard' and 'simplified' Class Licences, based on the service offered? If so, which services should be subject to the light-touch 'simplified' licence, and why?</p>	<p>There should not be any requirement for changing licensing.</p>
28	<p>What are your views on how USO should be implemented for NGN technologies. How should the funds be raised, and how should they be</p>	<p>USO should always require justification supported by rigorous evidenced-based analysis before being applied.</p>

	disbursed? Should they target basic voice services or advanced data services?	
29	Please comment on whether a new set of interconnection rules should be promulgated, or whether the existing Interconnection Rules 2003 should be amended to provide for interconnection in IP-based networks. Public Consultation on Policy & Regulatory Framework for Next Generation Networks (NGN)	<p>Interconnection for service is required for users in two different networks. This should be operators' responsibility to maintain adequate capacity and quality to serve their subscribers.</p> <p>So there should not be a requirement to change the existing interconnection rules.</p>
30	Is there a need for a RIO to be offered by a dominant operator? Please identify the terms and conditions you would require in a dominant operator's RIO. Is there any need to change the regulatory approval process for RIOs?	Since interconnection is regulated now, we don't see any need for this.
31	Do you think that further regulatory measures should be taken to promote competition in the core network in Sri Lanka? If so, which parts of the core	No evidence "that core networks" are, at present, bottlenecks to competition or show evidence of market failure.

	<p>network are most important to promote entry and competition in retail markets? Will these measures have an impact on NGN network investments?</p>	
32	<p>Do you think the introduction of wholesale access to the access network would benefit the consumer? What type of wholesale access would be most beneficial for Sri Lanka? Will these measures have an impact on NGN investments?</p>	<p>We don't see any relationship with whole sale access and NGN. They should be treated independently.</p>
33	<p>Do you agree with the principles of net neutrality and technology neutrality for promoting service-based competition under NGN? If so, please provide suggestions for how to implement each principle. If not, please explain and provide any alternative or supplemental principles to consider. What impact, if any, will your suggestions have on incentives to invest and the ability to compete</p>	<p>Sri Lanka should align to global momentum for net neutrality rules as set out in ITU. Principles of net neutrality do not need to be codified in Sri Lanka.</p>

	using NGN networks?	
34	Do you believe that new charging arrangements should be imposed for NGN interconnection? Do you believe that interoperability standards need to be imposed for NGN networks? Should these new regulations be imposed on all operators, or only dominant operators?	Implementing NGN should not have any relation to interconnecting rules. So there is no rationale for changing the current arrangements.
35	Would it be appropriate to apply tariff control only to dominant operators? Please explain, and provide relevant examples where tariff review may be needed, or where it is not needed and imposes unnecessary regulatory burdens.	This does not have a relevance to NGN implementation.
36	What kinds of consumer protection do you see being necessary to serve the needs of consumers in the NGN environment? For instance, are there any limitations to the provision of emergency services by IP-based telecom services provided	NGN technology does not have a relationship with implementing consumer protection standards and safeguards regulations.  Therefore, this should be treated separately regardless of NGN or legacy.



	<p>over the NGN? Please list these, providing details and examples where possible. Do you foresee any specific difficulties/challenges in complying with consumer protection requirements in the NGN environment? From the consumer protection perspective, what additional obligations should be imposed on a dominant operator in the NGN environment?</p>	
37	<p>Do you foresee any particular competition issues arising between NGN networks and services and legacy telecommunications networks and service? Are current regulations sufficient to restrain merger/acquisitions activities which may have an anti-competitive impact?</p>	<p>We do not see an impact from competition on the decision of migrating towards NGN technology.</p>
38	<p>Do you agree that a change in the current licensing regime needs to be introduced to realise the full benefits of NGN? If so, what licence changes need to be</p>	<p>NGN technology is governed by the ITU regulations. So we do not see any value of TRCSL intervention for changing licenses.</p>

	<p>introduced in the transitional period to NGN? Do you have a view as to what changes in licences you would favour at each milestone of the transformation to NGN? Public Consultation on Policy &amp; Regulatory Framework for Next Generation Networks (NGN)</p>	
39	<p>Do you agree that the TRCSL should take the lead in requiring all licensees in the NGN to adopt compatible/similar technical standards? Or should this be left to the determination of market forces?</p>	<p>NGN technology is governed by the ITU regulations. So we do not see any value of TRCSL intervention in standardization of licenses.</p>
40	<p>What consumer protection measures do you consider to be important for the migration period from PSTN to NGN? Public Consultation on Policy &amp; Regulatory Framework for Next Generation Networks (NGN)</p>	<p>Implementation of NGN technology does not have any relationship with consumer protection measures.</p>