Next Generation Networks

Responding to recent developments to protect consumers, promote effective competition and secure efficient investment

Sky Response

Summary

1. NGNs have the potential to offer considerable benefits to consumers though, to be fully realised, those benefits require ubiquity of NGNs.

2. Therefore, Sky concurs with the regulatory priorities on NGNs set out by Ofcom i.e. to provide efficient incentives for investment, promote effective competition based on NGN infrastructure and protect consumers from disruption during the transition to NGNs.

3. However, Ofcom’s regulatory decision-making to date has not properly adhered to those principles:
   - Ofcom’s approach to the Network Charge Control (NCC) for 2009-13 does not incentivise BT to invest in an NGN;
   - Other operators are effectively penalised for investing in NGNs before BT because of the way the current interconnection regime works.

4. Current regulation allows BT, which has decided not to deploy an NGN for voice, to use its market power in the wholesale local access market to penalise those operators who have. Ofcom’s regulatory approach needs to address BT’s ability to act on incentives to favour its own downstream businesses, in particular:
   - The principle of equivalence in practice no longer applies to the product stack that BT’s larger competitors buy.
   - BT’s voice over NGA (VoNGA) proposals do not allow operators to utilise their NGNs fully and, instead, uses BT’s SMP in wholesale local access to force operators to purchase wholesale calls or Carrier pre-selection (CPS) from BT.
   - The design of BT’s Generic Ethernet Access (GEA) product restricts the ability of operators to use their own NGNs to offer innovative access products.
   - The case for xMPF may need to be looked at again, especially as BT’s Fibre-to-the-cabinet (FTTC) plans evolve.

5. Further, it is disproportionate to deny consumer benefits stemming from technological progress for the sake of a very small number of legacy devices.
NGNs have the potential to offer considerable benefits to consumers though, to be fully realised, those benefits require ubiquity of NGNs.

6. NGNs are more cost efficient because, by running a single converged IP network instead of multiple ones for different services, operators can lower their equipment costs. Further, NGN costs rise less steeply with distance compared to traditional SDH networks. These static efficiencies feed through to lower prices for consumers and enable NGN operators to deliver the dynamic benefits that the newer technology affords.1

7. Moreover, NGNs open up the possibility of networks extending the control of media streams on other networks which, in turn, could drive new competitive models. These capabilities are important given BT’s continued SMP in wholesale markets such as call origination, and could provide new sources of wholesale competition and service innovation.

8. However, slow, piecemeal migration from PSTN to NGNs will limit the extent to which efficiencies available from the new technology can be fully realised. This concern is demonstrated in three ways.

9. Firstly, the conversion of IP to TDM2 and vice versa (the so-called “interworking” that is required for NGNs to communicate with legacy networks) introduces inefficiency:
   - Not only does interworking introduce additional delay to media streams, but more interconnection capacity is required to meet the busy hour channel requirement compared to IP-IP interconnection.
   - Further, for interworking, an NGN operator is required to deploy a costly Media Gateway (MGW). Once IP-TDM conversion is no longer required, the MGWs are effectively redundant. MGWs would not be the preferred technology choice for IP-IP interconnection. Here, slightly cheaper Session Border Controllers (SBCs) would be used and, in the longer term, for trusted network-to-network interfaces (NNIs), SBCs are likely to be replaced by considerably cheaper Border Gateways (BGWs).

10. Secondly, there are significant network externalities that may be realised as more consumers are connected to NGNs. With ubiquitous NGN deployment, control can occur from outside of the network that hosts the media stream.3 This allows new IP-based services to be extended to end-users irrespective of the NGN to which they are connected. For example, a raft of new services that could be offered to consumers, such as “presentity” or nomadic services, HD voice and video telephony, are only likely to be deployed once there is ubiquity of NGNs.

11. Finally, more widespread up-take of NGNs opens up the possibility of further competition for truly duplex voice services whereby CPs have complete control over both inbound and outbound calls, and are able to offer their own suite of features. Today, this can only be achieved through full LLU.

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1 NGN operators are able to introduce new products and services more quickly and flexibly than is possible under a multiple, legacy network model. This is because software-based enhancements are propagated more readily across an all IP network.
2 Time division multiplexing – the method of transmitting voice on SDH networks
3 BT’s shelved Wholesale Voice Connect (WVC) product is just one example of the type of application that is possible when control of media is extended into another network. In this case, NGN operators with their own call servers could have taken full control of a voice line connected to BT’s network.
Whilst Sky concurs with the regulatory priorities on NGNs set out by Ofcom, its regulatory decision-making to date has not properly adhered them

12. In light of the inefficiencies that arise while some operators have NGNs and others do not, it is important that investment incentives are set in a manner that properly encourages PSTN operators to migrate to more efficient technology and that does not disadvantage operators who have chosen to invest in NGNs.

13. In a fully competitive market, transition to NGNs would be likely to take place relatively efficiently as PSTN operators would be expected to respond to market entry from new, lower cost operators utilising the new technology. However, BT’s enduring SMP in fixed narrowband wholesale and wholesale local access markets, and the regulatory price-setting that follows, means that Ofcom has an important role to play in setting the right incentives.

14. We agree that Ofcom has set the right regulatory priorities for NGNs:
   - to provide efficient incentives for investment
   - to promote effective competition based on NGN infrastructure; and
   - to protect consumers from disruption during the transition to NGNs.

15. However, we note that Ofcom’s regulatory decision-making to date is not consistent with these principles. We highlight two examples in particular.

   Ofcom’s decision on Network Charge Controls

16. Ofcom has chosen to base the NCC on BT’s PSTN technology, which is no longer the most efficient available today. Ofcom appears to believe that its hypothetical ongoing network model will provide an incentive on BT to invest in an NGN, because BT is able to earn temporarily higher profits during the control period by making cost-reducing investments.

17. It is important to note that within any charge control period, BT’s incentive to invest in cost-reducing investments does not depend on the price that it is charging. When a cheaper technology becomes available to deliver a particular service, BT would have an incentive to adopt it irrespective of the price it is permitted to charge.

18. Yet on a dynamic basis, Ofcom wishes to avoid the situation where as soon as BT adopts a cost-reducing technology, the benefits of that cost reduction are captured by regulation – removing the incentive on BT to invest.

19. However, Ofcom’s approach actually generates an incentive on BT not to invest in an NGN. So long as the NCC model provides BT with ongoing revenues based on the current replacement costs of its PSTN, BT’s actual cash operating costs will be substantially lower than those estimated in Ofcom’s model. BT plans little ongoing capital investment in its voice network and can extract maximum value by extending the lifetime of its legacy network. Therefore, on a true cash-flow basis, BT’s network operation will be strongly profitable, at little risk, if it retains its PSTN, under Ofcom’s approach to network charge-setting and, therefore, will have little incentive to invest in NGN.

20. We also note that Ofcom’s approach is contrary to the European Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU. Specifically, the Commission states:
Historic cost figures therefore need to be adjusted into current cost figures to reflect the costs of an efficient operator employing modern technology.” (Recital 9) (Emphasis added)

Interconnection

21. Because interconnection with BT is in TDM (i.e. the legacy PSTN technology), the current regulated interconnection regime effectively requires adopters of NGNs to pay for IP-TDM conversion. As a result of BT’s enduring SMP in certain wholesale calls markets, NGN operators are obliged to buy interconnection services from BT and, as such, cannot avoid these conversion costs.

22. Yet requiring an NGN operator to bear conversion costs sets the wrong investment incentives. Clearly even if the aggregate costs of the NGN and conversion remain lower than the costs of the PSTN, any diminution of the cost differential between legacy and new technologies will reduce the incentive to invest.

23. As the costs of conversion stem from BT’s failure to invest in the more efficient technology now used by most of the large networks interconnecting with it, they should be borne by BT. As mentioned earlier, the Commission recommends that that wholesale call termination rates should be based on those of an efficient network operator i.e. the costs of an NGN. Therefore, the inference is that efficient interconnection costs should be based on IP-IP interconnection and, as such, NGN operators should not be obliged to pay for inefficiency in the incumbent’s network.

Current regulation allows BT, which has decided not to deploy an NGN for voice, to use its SMP in wholesale local access to disadvantage those operators who have. Ofcom’s regulatory approach needs to address BT’s ability to act on incentives to favour its own businesses

24. The fact that BT has decided not to invest in an NGN for voice, yet its principal competitors have, creates incentives and opportunities on BT to discriminate against its competitors. While this situation persists, if Ofcom is to create conditions for fair and effective competition, its regulatory approach urgently needs to recognise and address these incentives. We give four examples below.

The principle of equivalence no longer applies to the product stacks that BT and its larger retail competitors buy

25. The outcome of BT’s re-planning of 21CN means that most of its downstream retail customers will continue to be serviced by WLR and SMPF. At the same time, its larger retail competitors have moved to, or are moving to, MPF in order to realise the benefits from the NGNs that they have invested in.

26. The principle of equivalence is that BT should provide exactly the same access products on the exactly the same terms to all CPs (including BT Retail). As a result, BT would be unable to discriminate in favour of its downstream divisions. Incentives would also be aligned: BT would have an incentive to make its wholesale products as good as possible. This was the central principle behind the Undertakings that BT agreed to in 2005 under the Enterprise Act 2002.

27. The outcome of BT’s decision not to move to an NGN, while its competitors have, is effectively to render irrelevant this key principle around which the Undertakings were built. The entire product stack that NGN operators buy, based on MPF, is different to the product stack that BT’s downstream divisions are buying, based on WLR and SMPF. Therefore, as
long as BT has chosen not to invest in an NGN for voice, there is a clear incentive on BT to
discriminate against MPF-based operators through the price and non-price characteristics
of the MPF product.

28. What this means for Ofcom and the OTA is that there will have to be a shift in focus onto
ensuring equivalence of outcomes between each of the different access variants. Ofcom
will no longer be able to focus its remedies on pricing and obligations to supply, and rely
on equivalence to ensure that non-price aspects of wholesale products do not discriminate
against BT’s downstream competitors. In practice, this will entail increased emphasis on
service levels, key performance indicators, fair Statement of Requirement (SoR) processes,
symmetrical migration processes between different access products and so on. This will be
an important consideration during the forthcoming Wholesale Local Access Market Review.

BT’s VoNGA product forces operators to buy wholesale calls or Carrier Pre-Selection

29. Openreach has recently finished consulting on a set of proposals for Voice over NGA
(VoNGA) which does not allow operators to utilise their NGNs fully and, instead, uses BT’s
market power in wholesale local access to force operators to purchase wholesale calls or
Carrier pre-selection (CPS) from BT.

30. BT’s VoNGA proposals oblige wholesale customers purchasing BT’s fibre-to-the-premise
(FTTP) access product also to buy wholesale calls or carrier pre-selection from BT. As such,
VoNGA aims to replicate WLR functionality on BT’s FTTP infrastructure. Such an approach
maybe helpful to WLR service providers, and there is no reason why BT should not offer
such a product to such operators. Yet, by doing this, the large LLU operators, who have
invested in their own NGNs, are effectively prevented from using their co-mingling and
backhaul facilities to convey their customers’ voice traffic (as they can today with full LLU).
Further, they will not be able to fully utilise their NGN feature-set and numbering, nor will
they be able to receive wholesale call termination revenues for calls to their customers.

31. Openreach’s proposed approach risks stifling competition by leveraging BT’s SMP in the
wholesale local access market to reinforce its downstream market power in wholesale
voice markets. It risks frustrating the scope for cost efficiencies, innovation and service
differentiation that would otherwise result from the NGNs that BT’s competitors have
invested in.

32. There is an alternative product design which eliminates these problems. For FTTP, MPF-
based LLU operators need a GEA VLAN for voice that they can pick up at the same location
as they avail themselves of the broadband VLAN. The current design of the GEA product
instead effectively ties the analogue port on Openreach’s Analogue Telephone Adaptor
(ATA) to BT’s wholesale calls products.

33. An open ATA model whereby any CP, albeit through Openreach systems, can reach in and
provision an end user’s telephone service and take control of all inbound and outbound
calls is clearly preferable in that it replicates, as far as GEA allows, MPF functionality in an
NGA world. Under such a model, the operator is able to utilise its local and backhaul
infrastructure for both broadband and voice.

34. Ideally, however, this GEA VLAN for voice would be an equivalence of input based product
that BT in turn uses as an input into its downstream VoNGA products. In this case,
equivalence could be expected to work: BT would be incentivised to make the GEA VLAN for
voice work effectively as it would form part of BT’s internal product stack.

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4 Call origination, call termination and narrowband access
The design of BT’s Generic Ethernet Access (GEA) product also restricts the ability of operators to use their own NGNs to offer innovative non-voice access products.

35. NGNs’ significant potential for innovation is in many cases reliant on access products supporting these services. Ethernet access products, such as GEA, offer greater scope for innovation than current generation access products such as IPStream. Yet BT’s current proposals are significantly more inflexible than they need be, in two ways:

- **Wires only.** GEA as currently specified and road-mapped includes no wires-only capability. This presents a significant omission. Wires-only operation has been a lynchpin in the success of DSL-based broadband globally and we envisage considerable benefits for both consumers and industry in replicating this model in NGA. Benefits include: cost and power reduction resulting from a single box combining NTE and home networking functionality, CP branded CPE, service innovation (e.g. in approach to fixed-mobile convergence), reduced operational cost (fewer single points of failure) and enhanced provisioning process (single installer visit only).

- **Virtualisation.** This refers to the concept of allowing CPs control of the full range of parameters on the network (DSLAM/MSAN/ONT) port. It is particularly applicable to FTTC-based GEA and will allow CPs to differentiate on improved diagnostic techniques and service assurance policies, deriving from LLU operators’ experience in running mature DLM systems. This will in turn result in fewer escalations to Openreach and more rapid fault resolution for the consumer. Lastly, it allows the CP flexibility to differentiate on speed and latency, by allowing the CP to quickly add or amend available line profiles within the parameters set by the ANFP.

The case for xMPF

36. We think it is too early to reach any firm decisions on the case for xMPF at this stage. Instead, it is an issue that should be kept under review.

37. The case for xMPF is dependent on a variety of factors. Clearly its likely pricing point is a key factor, and therefore the resource required to develop the product needs properly to be quantified. As importantly, likely demand is uncertain. It depends in particular upon:

- **Volumes of voice-only customers.** xMPF allows full MPF operators to offer voice-only services where a customer has no broadband, or consumes broadband from an SMPF operator. Such customers may continue to be a very significant feature of the market. If however demand evolves towards taking product bundles, where customers almost always consume voice, broadband and line rental from the same supplier, demand for xMPF will be lesser. Quite how the market will in fact evolve is uncertain.

- **Precise design, and uptake of BT’s FTTC wholesale products.** It remains unclear quite how voice will be carried where MPF operators purchase BT’s FTTC GEA product. In Sky’s view, it is important that MPF operators have a choice. They may wish to develop derived voice, running over the GEA product. Alternatively, and for the reasons set out in the section above on VoNGA, they may wish to use their MPF infrastructure to carry voice traffic. If the latter, this will require xMPF.

38. Sky will be submitting a subsequent document to Ofcom looking further at the issues relating to xMPF development. In the meantime, it appears premature for Ofcom to reach any decisions on xMPF.
It is disproportionate to deny consumer benefits stemming from technological progress for the sake of a very small number of legacy devices.

39. Though NGNs can be configured so that the vast majority of existing consumer devices will be compatible, it is disproportionate to deny consumers the benefits stemming from technological progress for the sake of a very small number of legacy devices. As such, greater coordination is required between network operators and device suppliers to ensure that end-users of critical safety-of-life equipment are protected during the transition to NGNs.

39. NGNs have proved to be compatible with the vast majority of customers’ existing CPE. However, there remain some services or devices for which it is either not possible or not cost effective to ensure correct operation over NGNs. It would clearly be disproportionate to deny the very significant benefits of NGNs to all customers, for the sake of a very small number of legacy devices.

40. Equally, it is important that the interests of these consumers are properly protected. Where there are material functional differences between NGN services and a legacy service, consumers should be clearly informed at point of sale or migration to the NGN. Consumers should be given the option to opt out where a PSTN network continues to operate in parallel and clear instructions on how to upgrade their device or service should they prefer to do that.

41. We think there is more that can be done to coordinate the dissemination of information between CPE manufacturers and NGN operators on known issues and remedial action plans for CPE non-conformance.

Sky 

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