Amphibian Consulting
Evolving Communications

Ofcom's Consultation on Next Generation New Build
25th June 2008

Amphibian Consulting welcomes the opportunity to respond to Ofcom's consultation on Next Generation New Build. We make the following generalised comments, with specific responses to Ofcom's questions provided at the end of the document.

Executive Summary

This response concentrates on the high-level principles which we believe should be followed in NGA – whether new-build or upgrade:

1. Investment must be efficient and non-duplicative.

2. A single provider of NGA is feasible with appropriate ownership and regulation.

3. NGA technology should provide the lowest-possible layer of transport service to CPs, allowing them to provide higher-level services over the basic transport mechanism.

4. PON architectures with ALA should be the basis of NGA, with PtP (preferably ALA, not dark fibre) as a "thin" overlay.

5. The UK should avoid "ploughing its own furrow" on NGA standards, and adopt international ones.

6. Passive infrastructure access should not be necessary if the NGA provider is appropriately constituted, regulated and incentivised to serve its CP peers.

The Competitive Environment

The introduction of Next Generation Access is a critical milestone in the development of the UK's national communications infrastructure, offering the opportunity to deliver a step-change in the scope and scale of services available to customers, thus driving innovation and GDP growth. However, the competitive framework in which NGA develops will be absolutely critical to its success, if the industry is to avoid perpetuating the problems encountered over 25 years of telecoms competition, which have required a succession of regulatory distortions and sticking-plasters to even approximate a competitive marketplace.

"New Build" NGA is perhaps viewed as the "low-hanging fruit" which Ofcom seeks to harvest as a pre-cursor to the potentially more-complex question of upgrading existing infrastructure. While this is a pragmatic approach, Ofcom must be cautious in potentially creating a regulatory framework which cannot equally be applied to "upgrade" NGA. Parallel but asymmetrical regulatory frameworks will only extend "legacy baggage" into the future.

The history of competition in UK telecoms provides two important lessons for the future of NGA:

Infrastructure competition is not necessarily a pre-requisite for effective competition at the customer level – consider the massive investments by a host of UK cable operators in duplicative infrastructure and their subsequent consolidation into a single (still heavily indebted) operator, against the success of ubiquitous CPS services, many offered by fully virtual operators. Infrastructure duplication is economically inefficient, and has generally been driven by the inability of competitors to acquire access services from an incumbent with the appropriate price/performance parameters.

Incumbents, even when subject to refined, "3rd generation" regulatory frameworks, still fail to deliver, at the wholesale level, the services and products which their customers (CPs) want. While the BT Undertakings which flowed from the Telecommunications Strategic Review have generally been viewed as "successful", relative to the preceding arrangements, they represent only a "least worst" solution to an ongoing failure of the market to deliver the desired competitive outcomes. Even now BT is proposing an NGA approach that much of the rest of the industry does not want. This underlines the difficulty of encouraging vertically-integrated incumbents to develop a truly customer-focused wholesale-mindset.

In our view, duplicative investment in NGA infrastructure, as a driver for efficient competition, is economically irrational, and would represent a failure of the industry to find a suitable commercial and regulatory structure which could deliver that outcome at a much lower cost to UK plc. We therefore lean towards a single provider of New Build NGA infrastructure providing wholesale access services to CPs under suitably regulated conditions.

While this argument would appear to support the status quo of Openreach and EoI, our view is that the owner of the NGA infrastructure (new build and replacement) must be prohibited from participation in retail activities either organically or through related companies. In short, the full *structural* separation of Openreach from BT, and strict caps placed on the equity ownership of this "UK Access Co" by any single retail operator.

Structural Separation is not a new argument; indeed, referral to the Competition Commission was the most likely path until the TSR applied another band-aid to the problem of a perpetually-dominant BT. However it would require a step-change in the level of courage and determination from regulators and the industry alike to tackle the hard problems of dismembering an incumbent. Implementing the TSR Undertakings will have provided good training for that challenge.

In justifying our position that a single NGA infrastructure provider can operate as an honest broker between a multiplicity of CPs, we look to the example of the electricity industry which functions efficiently with a single national backbone network serving all generators and local distributors. The distinction between backbone and access networks in this example is not an issue – what is being supplied is *a basic transport mechanism between suppliers and their customers, subject to standards which assure the integrity of the services*.

Standards

In an NGA environment, where functionality, security and innovative services are provided from centralised servers and edge devices rather than the network itself, the access infrastructure should exist as a set of dumb pipes of varying size and capability based on lower-layer common standards (ie Ethernet). Adoption of a "lowest common denominator" approach will diminish technology risk and provide maximum scope for higher-layer protocols and services to be transported over the NGA infrastructure.

In this respect the UK should avoid at all costs diverging from international standards, a route which would add costs, complexity and risk to what should be a basic transport service.

NGA Architecture and CP Access

Clearly, many technical solutions exist for NGA, ranging from PON to solutions requiring intermediate, active devices (eg FTTC). BT's early design criteria for 21CN provide clues to an appropriate solution. BT correctly recognised that its future success lay in the simplicity of a uniform network architecture that drastically reduced the number of physical nodes and active devices in the network. Any network device requiring power, accommodation or operative visits (and is susceptible to collateral damage and flooding) adds to the costs of providing NGA, and may also reduce the speed and flexibility with which services can be provided.

While the industry must be in charge of its own destiny in terms of the technological choices it makes, its starting point for NGA should be a PON architecture that requires a minimal number of active devices and minimal operative-intervention between the exchange and the customer's premises. Wholesale access to this infrastructure should be by ALA at the exchange.

If the chosen ALA standards are sufficiently open and flexible for a wide range of services to be delivered over it by competing providers, then there is little or no case for duplication of the underlying infrastructure to deliver a competitive market. The demand for duplicated infrastructures for resilience is likely to be very small in the residential and SME market, and additional measures can be found to address those needs.

Cases will arise where a PON architecture is unable to deliver all required services; in these cases, dedicated Point to Point fibre should be available to fulfil the customer/CP requirements without requiring intermediate active devices or infrastructure access. Again, ALA would be the preferred method of wholesale access at this level, although "dark" fibre access might be appropriate in exceptional circumstances. Distribution duct networks which have historically accommodated a copper pair from the exchange to each customer premises, should have little difficulty accommodating a dedicated PtP fibre per home, where required.

Providing unbundled access to fibres at intermediate points between the exchange and customer premises would require investment in management processes and operatives to implement and operate. This would be sub-scale, duplicative and economically inefficient and should not be necessary if the NGA provider is reasonably efficient, interested in serving CP needs, and subject to appropriate price regulation.

These principles should ensure that CPs do not have to interconnect inefficiently at intermediate points between the exchange and the customer premises, as the functionality and cost-efficiency objectives should be achievable by connection at a higher level to a low cost-profile network.

Duct/Trench Access and Sharing

Access to an incumbent's duct network by CPs to lay their own fibre is theoretically feasible (and has been applied in various jurisdictions), but it is again an inefficient process requiring the superimposition of the costs of additional infrastructure (CP fibre, duct and manholes) systems (agreements, records, enquiries, quotes, co-ordination), security and supervision on top of the NGA provider's own costs of placing fibre in their own ducts. Why would this appear more commercially attractive to CPs if the NGA provider is reasonably efficient and minded to provide an unbundled fibre product or ALA to CPs?

Additionally, operators "over-provide" when installing cables, leading to a scenario where a new CP wishes to install a fibre cable in a shared duct-run, but is unable to because the ducts are congested by existing cables (owned by various CPs) in which only a small overall percentage of the fibres are lit or utilised. A single provider can manage duct and fibre-utilisation more efficiently.

Allowing competing operators to place their own ducts in shared (new build) trenches is also feasible, but again raises the issue of duplicative investment and the ongoing costs of the shared management and maintenance of a duct-route. Rather than encouraging this method of access, emphasis should be placed on ensuring that the incumbent NGA provider delivers the services which are demanded by CPs at prices which obviate the need for own-infrastructure build.

Enterprises will require diversity arrangements to secure their networks, but this is unlikely to be achieved by an alternate provider placing a separate duct in a common trench, which is clearly vulnerable to construction-related BYD damage. To meet these requirements a separately-routed duct and building-entry is necessary. Again, this could be provided by a single NGA provider, who should be able to diversely route an additional fibre all the way to the serving (probably alternate) exchange.

Copper Pairs in NGA

Clearly, the provision of a copper network in parallel with NGA fibre is not consistent with our view on the essential economic efficiency of future access networks, either to support the current LLU obligation or customers' emergency communications in power-fail scenarios. These requirements may be served by other mechanisms.

Reiterating our view that a common approach must be taken to both new build and "upgrade" NGA, maintaining parallel copper connectivity in NGA would dramatically increase the cost of "upgrade" NGA by requiring that an entirely new duct network be constructed alongside the existing plant, due to congestion in the duct network. Conversely, allowing copper substitution by fibre allows the managed removal and replacement of copper by fibre, which would be assisted by the considerable scrap value of the recovered copper.

Responses to Ofcom's Consultation Questions

Question 1: What can Ofcom do to encourage timely standards development for new build NGA wholesale access products and interfaces? Which industry body is best placed to undertake the standardisation of these products and interfaces? What action should Ofcom take if these standards fail to materialise?

Ofcom can encourage the agreement of standards amongst UK CPs by supporting bodies such as NICC in tracking and contributing to the development of international standards, and subsequently agreeing which of those standards the UK industry will adopt. Ofcom must also assist in soliciting funding for this activity, as resource constraints mean that active participation in these fora is often skewed towards a very small number of industry players.

Question 2: Do you agree with Ofcom's approach to promoting competition and consumer choice in new build fibre access deployments?

See main body of response. "Consumer Choice" does not need to equate to a choice between two or more infrastructures.

Question 3: Do you
(a) believe that the existing obligations must be met by replicating the existing copper products, or that an alternative approach could be satisfactory? What are the implications of replicating existing products on fibre?

No, alternative approaches could be satisfactory. Products may not be functionally identical, but should still be able to fulfil their user requirements and competitive market purpose.

(b): Do you agree that SMP holders rolling out fibre do not need to roll out a copper network in parallel solely to meet their LLU obligation?

Yes, a copper network would represent economically inefficient investment.

(c): Do you agree with Ofcom's approach in relation to WBA and new build areas?

Ofcom should treat new build areas in exactly the same way as it considers all other areas, in terms of availability of competitive access.

(d) Do you believe that the WLR obligation must be met by replicating the existing copper product, or that an alternative approach based on an ALA-type product would be satisfactory?

No, an ALA-type substitute would be satisfactory.

(e): Do you believe that the CPS obligation must be met by replicating the existing copper product or that an alternative approach based on an ALA type product would be satisfactory?

No, an ALA-type substitute would be satisfactory.

(f): Do you believe that the IA obligation must be met by replicating the existing

copper product or that an alternative approach based on an ALA type product would be satisfactory?

No, an ALA-type substitute would be satisfactory.

(g): Do you agree with our proposal to interpret GC 3.1 (c) as being met through the provision and use of a battery backup facility to maintain uninterrupted access to emergency services in new build developments?

Yes. A standard would need to be developed and this would require funding; Ofcom could take a lead in soliciting funding for this activity.

Question 4: Do you think access to the duct network, including non telecoms duct, is a potentially feasible means of promoting competition in new build? If so what types of commercial and operational models could successfully support such access arrangements in the UK?

We consider that duplicative infrastructure is economically inefficient, provided that individual access networks embrace an appropriate level of redundancy and diversity. If alternative operators wish to provide competing infrastructure alongside a "UK Access Co" (UKAC), then that should be their choice; however the regulatory model applied to UKAC should incentivise it to be a "lowest-cost" operator.