Nortel response to Ofcom consultation - Strategic Review of Telecommunications Phase Two

Introduction

Nortel welcomes this opportunity to respond to the Phase Two consultation document issued by Ofcom as part of the Strategic Review of Telecommunications. In what follows, we build on our response to the Phase One consultation, on that to the 'New Voice Services' consultation, and particularly on that to the 'Next Generation Networks - Future arrangements for access and interconnection' consultation. This is because we believe that a consideration of the issues surrounding the roll-out of Next Generation Networks (NGNs) is central to the development of any new regulatory regime and to ensuring that it is future proof. The imminent introduction of such networks presents an excellent opportunity to develop a service independent approach to regulation capable, over time, of leading to the withdrawal of the requirements for many of today's regulatory products.

Phase 2 Questions

We have found it convenient to address the questions in appropriately themed groups.

Principles of Regulation

1. Do you agree with Ofcom's proposed principles for regulation of telecoms markets?
1 a) What regulatory role should Ofcom play in the wider telecoms value chain?
1 b) How should Ofcom reflect differences in competitive characteristics in different geographic areas?
1c) What factors need to be taken into account when considering the scope of demand and supply-side substitution in telecoms markets on a geographical basis?
1d) To what extent would it be appropriate in the future to take into account differences in competitive conditions in different areas through (i) the aggregation of similar geographic areas or (ii) through different remedies?
1e) Would you support a requirement to provide Ofcom with data on particular products on a geographic basis as part of the regular reporting requirements? What is the correct level of disaggregation?

2. Where and to what extent should Ofcom rely on ex post competition law rather than ex ante regulatory conditions?

3. In what circumstances would it be appropriate for Ofcom to make a reference under Section 131 of the Enterprise Act?

4. Should Ofcom adopt a broad approach of focusing regulation on enduring economic bottlenecks while tackling the problem of inequality of access head-on?

Nortel supports the regulatory principles described in the consultation document and believes that Option 3, 'real equality of access', is the only viable way forward.

It is imperative that agreement is reached on how NGNs will be regulated before they are deployed, as they are otherwise unlikely to be built with ready access to the interfaces necessary for effective regulation, potentially leading to significant problems down stream. We believe that simply relying on an ex-post approach to the regulation of NGNs, such as the use of the Competition Act to address problems after they have arisen or making reference under the Enterprise Act once an NGN is in place, will not be as effective as an ex ante approach, and would also represent a missed opportunity.

As the architecture of an NGN is fundamentally different from that of any of today's networks, the issue of economic bottlenecks must be reconsidered from first principles. It will not be sufficient simply to seek to ascertain whether or not the bottlenecks consequential on today's architectures will endure or disappear.

As we discuss below, given that the ultimate destination of IP connectivity in an NGN is entirely separable from its geographic origination, the location of 'IP peering points' will be key to whether a particular operator can efficiently utilise another's network to gain access to remote customers.

Equality of Access

5. How can real equality of access be achieved at the product level?
5 a) Do you agree with Ofcom's definitions of the various forms of equivalence?
5 b) Do you agree that equivalence of inputs can deliver more effective equality than application of equivalence of outcomes?
5 c) Do you agree with the principles proposed on where equivalence should be applied and the specific suggestions for individual products?
5 d) How do you suggest the principle of equality is achieved for 'associated products' that BT does not depend on (such as migration products)?

We believe that real 'equality of access' to an NGN entails access to a set of data interfaces, the inter-module and signalling protocols used by the network, and the Application Programming Interfaces (APIs) that control its intelligence. Such access will enable a service independent approach to regulation to be developed, and will lead to the withdrawal of the requirements for many of today's regulatory products.

The need for interconnection using Layer 1 transmission and Layer 2 data link services will persist with NGNs. However, for the reasons we have presented in our response to the recent Ofcom consultation on 'Next Generation Networks – Future arrangements for access and interconnection', there will additionally be the need to define an IP interface with control of QoS. True equivalence dictates that the 'hooks' that control such QoS, and other intelligence capabilities such as 'mobility', 'location', 'profile', 'presence status' and 'connection characteristics', should be as deep as the deepest API that does not compromise network security. Given that we are advocating the definition of a new set of interfaces, there is no reason why they should not be made available under a regime that provides full 'equivalence of inputs'. This is the only approach that can truly guarantee 'equality of access' to an NGN's capabilities by other service providers.

The requirement that protocols defined by recognized standards bodies should be used by a dominant NGN operator, whenever these are available, would ensure that connecting service providers will not be restricted in their choice of equipment supplier, and hence suffer consequential cost implications. Care must also be taken to ensure that an NGN deployed ahead of the final agreement on such 'open' protocols does not disadvantage operators seeking to inter-work with it, by persisting to use proprietary pre-standardisation versions of the protocols once the 'open' ones have become the established norm.

In those cases were there is no alternative to deploying a proprietary protocol or API in the long term, it will be necessary to ensure that the necessary interconnection equipment can be multi-sourced and is readily available on the open market. It will also be important to prevent a dominant operator from seeking to gain an unfair advantage by bundling processes, thereby denying access to otherwise ‘open’ interfaces that, whilst of marginal value if one controls the entire NGN, might disadvantage service providers wishing to inter-work utilising only a sub-set of its functionality.

Investment

7. How should Ofcom reflect the competing considerations of efficient investment and consumer protection in determining the regulated returns that BT may earn from its network?

Although NGNs offer operators the potential of substantial cost savings, as with any new technology their deployment inevitably involves significant risk. It is important that this is recognized and that regulation does not deny an appropriate risk adjusted return on investment. Regulating for the short term gain may well deter future investment.

Current Generation Broadband

8. Do you agree with Ofcom’s proposed approach to current generation broadband?
8 a) What should Ofcom’s approach be to naked DSL?
8 c) How should the potential lack of equivalence faced by LLU operators in a 21st Century network environment be addressed?

As we outline below, the ability to extend connectivity all the way to customers through another operator’s NGN will enable a third party service provider to offer voice and multimedia services with a range of qualities and grades of service. If such connectivity is in part bundled with any other offerings, such as legacy voice, that are not central to the delivery of such services, it will adversely affect the price at which these can be offered. It will also put the third party at a disadvantage in supplying equivalents to such bundled offerings in an NGN context. As Digital Subscriber Loop (DSL) is likely to continue as a key broadband access technology for some considerable time, third party service providers will need access to it in its ‘naked’ form in order to compete. As the transition to NGNs progresses, the need for any other form of regulated access to the legacy local loop will fall away.

Voice Services

9. Do you agree with Ofcom’s proposed approach to deregulation of voice services?
9 a) Do you agree that Ofcom should review regulation of retail voice markets in 2005?
9 b) Do you agree with Ofcom’s proposals for deregulating call conveyance markets and wholesale IDD?
9 c) When would it be appropriate to remove the requirement on BT to provide indirect access?
9 d) How should PSTN-specific regulation evolve under NGNs? What should next generation CPS and WLR products look like?

9 e) What are the prospects for increased competition for voice services provided using broadband access products (such as LLU and the evolution of DataStream)? What conditions and transitional arrangements would need to be in place to allow service providers to secure access on the basis of commercial terms rather than PSTN-specific regulated products?
9 f) How should Ofcom ensure competition in areas where alternative platforms were not in place?
9 g) When do you expect fixed-mobile substitution to result in a single economic market for voice call origination?

True 'equality of access' to Layer 1 transmission, Layer 2 data link and QoS controlled IP connectivity to customers, and to the APIs controlling network intelligence, will enable the delivery of IP based voice services with characteristics stretching all the way from a very basic Public Electronic Communications Service (PECS) to the more rigorously defined Publicly Available Telephone Service (PATS) augmented with advanced 'location' and 'presence' based services. The end-to-end Session Initiation Protocol (SIP) architecture for multimedia services delivered through NGNs, based on the IP Multimedia Subsystem (IMS) that has been defined for the General Packet Radio Service (GPRS) and 3rd Generation (3G) mobile networks by the 3G Partnership Project (3GPP), is set to become the signalling interface of choice between such networks. Coupled with QoS controlled IP connectivity, it will enable multimedia calls to be transferred from one service provider to another. Where a customer continues to use a legacy terminal, some form of Line Media Gateway will be required, with a device protocol such as H.248 providing the link between that Gateway and an NGN server. Whilst we believe that it is a 'given' that SIP signalling between NGNs must be agreed and supported, it is debateable whether H.248 has the potential to become an inter-operator interface. Appropriately controlled IP access to the NGN incorporating the Media Gateway will enable third-party operator interconnection of multimedia call streams and direct SIP connections to the NGN operator's servers. Although this will not provide as granular control of services as an H.248 interface, it may well satisfy the NGN multimedia generalisation of today's Carrier Pre-select (CPS).

The above approaches will increasingly become the preferred choices for the provision of new voice services to both individuals and businesses. With transmission, data link and QoS controlled IP connectivity extending all the way to end customers, the need for regulatory products such as Wholesale Line Rental (WLR) will fall away. Given that the deployment of NGNs is imminent, the imperative is that agreement is reached on the nature and regulation of such interfaces without delay.

NGNs remove many of today's requirements on 'who does what' and 'where'. They enable services to be provided from anywhere in the network, indeed anywhere in the world. For new voice services to be successful in the UK and the EU it is imperative that regulation be harmonised across all Member States to the largest extent possible, to allow for economies of scale throughout the supply chain, and to ensure that unnecessary requirements to locate functionality within national borders do not lead to inefficient network structures and hence increased costs to users.

Narrowband

11. How should regulation of narrowband internet evolve as networks migrate to NGNs, and how will functional, low bandwidth internet access be provided in future?

Nortel believes that as networks migrate to NGNs, the need for narrowband access will fall away.

Ofcom's approach to NGNs and IP Interconnection

12. How can the arrangements for access and interconnection to next generation networks best address our proposed regulatory principles?

14. What set of wholesale access services should BT be required to provide in order to promote competition in the business Market*?*

15. What can be done to facilitate the migration of complex corporate services (e.g. VPNs) between suppliers?

16. Are any alternative structures for call termination appropriate? Could evolution to IP interconnection introduce market mechanisms that make intrusive regulation unnecessary?

As we have argued, given the imminent introduction of NGNs, the definition of a generic IP interface with QoS control will be fundamental to the establishment of any new regulatory regime. Coupled with API control of other network intelligence, it will enable the provision of leased connectivity across NGNs and provide direct IP access to personal and business customers. With the ability to provide point-to-point and any-to-any connections, it will enable the implementation of voice, IP and Ethernet Virtual Private Networks (VPNs). Legacy services such as Asynchronous Transfer Mode (ATM), ISDN and Frame Relay connectivity can be provided via such an interface using circuit emulation techniques. Such an interface will also enable the exchange of SIP signalling messages and associated data, so that multimedia calls can be passed from one operator to another.

The need for Layer 2 data link services and even Layer 1 transmission services will nevertheless persist with NGNs. An operator seeking to exploit another's NGN network may find its ability to offer services compromised by the latter's IP architecture. Stringent delay requirements, for example, could dictate data link or transmission layer connectivity. Even when mature QoS controlled IP connectivity becomes available, with tightly controlled delay and loss characteristics, data link layer connectivity will remain as a pre-requisite for the most secure of services. However not all services currently using transmission and data link infrastructure will need to continue to do so. Over time we envisage that a significant number of these services will migrate to using a QoS controlled IP interface.

In order to protect the integrity of the networks on either side of such a QoS controlled IP interface, some form of Border Gateway functionality will be needed which incorporates an appropriate 'firewall' capability. As the ultimate destination of the IP connectivity is entirely separable from its geographic origination, the location of the 'IP peering points' incorporating this functionality will be key to whether a particular operator can utilise another's network to gain access to remote customers cost effectively. In an environment where one NGN operator has a dominant market position, the regulation of the location of such 'IP peering points' may well prove to be a useful instrument. This is particularly so given that the location of interconnection points for Layer 1 transmission and Layer 2 data link services are not so easily separable from considerations of geographic origination, being instead dictated to a large extent by the topology of the NGN. There may therefore be value in some form of *quid pro quo* arrangement, in which the connecting operators have a major say in the location of the 'IP peering points' with the dominant operator, in order to relieve existing bottlenecks and prevent the creation of new ones.

If each service provider connecting to a given peering point were to deem it necessary to deploy its own equipment to ensure network integrity, it would lead to equipment duplication, and introduce unnecessary cost. Such duplication would be redundant if all parties were confident that the peering point provided adequate protection, for example by being under the control of a trusted third party. Such issues, together with that of who bears the cost of installing and managing such peering points, will need to be carefully addressed to ensure that the introduction of NGNs does not lead to new economic bottlenecks and hence major regulatory issues in the future.

With transmission, data link and QoS controlled IP connectivity extending all the way to end users through an access network, it matters not whether it is based on fixed, mobile or hot-spot technology. It is simply the means by which service providers gain broadband access to customers, to provide services and to enable them to communicate with one another.

Next Generation Access Networks

13. What should Ofcom's regulatory approach be to next generation access networks?
13 a) In what circumstances should Ofcom forbear from regulating next generation access?
13 b) How important is it that the investment be made contestable; is this achievable?
13 c) How should Ofcom regulate next generation access if market power were to emerge in this market?
13 d) How might structural options help to eliminate the problems of monopoly access assets being owned by vertically integrated operators

There are a number of next generation 'broaderband' technologies that can be utilised to provide the final drop to residential and small business users. These technologies include high speed variants of Digital Subscriber Loop (DSL) operating over short reach twisted pairs, wireless, co-axial cable and fibre itself, either as a dedicated drop to each user or in the form of shared Passive Optical Networks (PONs). In this context the Hybrid Fibre Coax (HFC) Cable Television (CATV) networks already deployed in many countries represent substantial investments in next generation access.

All next generation access deployments have one thing in common. They require a high capacity backhaul from the drop point to the network core that can only be implemented using fibre or wireless technology. As there will never be sufficient spectrum to satisfy the requirement of mass market wireless backhaul, the majority of such new access networks will be dependent on the deployment of further fibre. The very high cost of the civil works required to install the ducting for such fibre is the gating factor in the roll-out of such networks. Only in those countries where there is existing widespread HFC coverage for CATV is there likely to be a sufficient market driven incentive for other operators to invest in costly, and potentially risky, competitive new next generation access deployments. Given that there is no such market driven incentive in the UK, it is imperative that lateral ideas, such as that of establishing Civil Infrastructure Utilities to decouple the cost associated with the deployment of ducting from the cost of the fibre technology itself, are aggressively investigated. Such utilities could be established as private ventures or as public-private partnerships. In either case, they would be prevented from providing communications services, being restricted instead to the role of 'real estate owners' that lease broadband capacity to service providers.

Universal Service Obligation

18. What should be the arrangements for funding the USO in future?

19. How could competition for the delivery of the USO be organised in future?

20. Should mobile technologies be used to help address the existing USO?

A USO provider should be permitted to utilise any appropriate technology, fixed or mobile, wired or wireless. We believe that it is only such details as the nature, quality and reliability of the USO that should be subject to regulation.

Conclusion

The introduction of Next Generation Networks (NGNs) presents an excellent opportunity to develop a new approach to regulation. We believe that real 'equality of access' to an NGN entails access to a set of data interfaces, the inter-module and signalling protocols used by the network, and the interfaces that control its intelligence. Such access will enable a service independent approach to regulation to be developed, and will lead to the withdrawal of the requirements for many of today's regulatory products. Given that the deployment of NGNs is imminent, it is imperative that the nature and regulation of such interfaces are agreed without delay.

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