DELIVERING SUPER-FAST BROADBAND IN THE UK

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INTRODUCTION

Cable&Wireless welcomes this further consultation from Ofcom. Concrete plans for investments in NGA are gathering momentum, with recent notable examples including BT's announcement in July this year that it plans to roll out fibre to the cabinet to serve 10 million homes by 2012, and Virgin Media's plan to launch its 50Mb service by the end of 2008. It is, therefore, important that Ofcom attempts to provide some clarity regarding the regulatory policy that will be applied to next generation access networks.

Cable&Wireless has invested in access infrastructure in the form of 802 unbundled exchanges and is now in the process of upgrading some of these to enable the pick-up of WES and PPC circuits. We have also upgraded our core infrastructure to next generation IP. We have a number of business users connected to our network with direct fibre connections.

EXECUTIVE SUMMARY

NGA products for business users: It is vital that BT makes available fit for purpose, business-grade active products, both on the G-PON architecture and over VDSL. This would enable UK businesses, particularly SMEs, to lower their costs and increase their productivity.

Anchor product pricing will not ensure that business users reap the benefits of NGA investments unless a separate anchor product is specified that offers business-grade features such as premium service wrap, high QoS and greater upstream speeds.

Transition from copper to fibre: Communications providers will require maximum notice of withdrawal of LLU and copper-based broadband products in order to minimise stranding of investments. Ofcom should continue to encourage investment at the deepest level that is effective and sustainable. Migration to, from and within NGA products should be planned from the outset to minimise consumer harm.

Transition to FTTP: FTTC should be used as a stepping stone to the provision of fibre to the

premises for business users (and potentially residential customers) and it should be installed with
this capability built in.

WHAT WILL SUPER-FAST BROADBAND MEAN FOR CONSUMERS AND BUSINESSES?

QUESTION1 - IS THERE FURTHER EVIDENCE AVAILABLE ON THE APPLICATIONS AND SERVICES OR CONSUMER BENEFITS THAT MAY BE SUPPORTED BY NEXT GENERATION ACCESS?

Since broadband service was first offered at 512 Kbit/s, consumers have always been keen to
upgrade to higher speeds as they became available. A headline speed has not yet been launched
that has not been met with demand from consumers. For example, the number of users on Virgin
Media’s 20 Mb service has increased 78% in the last twelve months.

Admittedly, consumers have, until now, been offered “more for less”, i.e. faster speeds at a lower price. The question is: will they be prepared to pay “more for more”? The answer probably lies in the fact that high speed broadband is already changing the way we live. It is becoming common place to use a PC to watch TV content either live (for example news broadcasts or sports events) or on services such as the BBC’s iPlayer. Precedents for consumers being willing to pay more to receive more include BSkyB’s satellite television service. It is unlikely that the prevalence of satellite TV in the UK will dampen demand for super-fast broadband because the two are likely to be complementary, rather than mutually exclusive.

As the cost of computer hardware comes down (or is included in a broadband service offering), it is likely that each home will contain multiple users, all downloading or watching streamed content at the same time.

In addition to the benefits to consumers, we believe that there will be significant demand for Super-fast broadband from SMEs, who may indeed be more willing to pay “more for more” than residential consumers. We welcome Ofcom’s acknowledgement that high-speed broadband is an essential tool for small and medium sized businesses . SMEs have yet to unlock the full potential of fast broadband, and if Britain is to become a world leading knowledge-based economy, SMEs will need to lower their costs and increase their productivity. To date, SMEs have had to choose between expensive fibre and poor quality broadband, and this situation needs to change.

It should also be noted that FTTC could and should be used as a springboard to the provision of fibre to the premises for corporate customers and it should be designed with this capability in mind.

QUESTION 2 – WHO SHOULD LEAD ON DEFINING AND IMPLEMENTING A PROCESS FOR MIGRATIONS TO AND FROM NEXT GENERATION ACCESS NETWORKS? WHAT ROLES SHOULD INDUSTRY, OFCOM AND OTHER BODIES PLAY?

The Office of the Telecommunications Adjudicator should be involved from the start, as they have the most experience in dealing with migration issues. It is probably best dealt with as an off-shoot of the forum to discuss product development, as discussed in Question 9 below. It would be helpful if the OTA would organise some industry workshops at an appropriate point in the future.

OFCOM'S VISION FOR THE FUTURE AND THE ROLE REGULATION SHOULD PLAY

QUESTION 3- WHAT ROLE IS THERE FOR OFCOM IN THE ONGOING DEBATE ON NEXT GENERATION ACCESS VERSUS INDUSTRY'S ROLE IN PROGRESSING THIS DEBATE THROUGH MULTI-LATERAL AND BI-LATERAL DISCUSSION?

Ofcom's role should be to ensure that competition is allowed to flourish on next generation networks. We believe that Ofcom should continue to encourage competition at the deepest level that is effective and sustainable.

We trust that Ofcom will consider its duty to promote competition in the provision of networks and services and will take into account the needs of different kinds of consumers, from residential customers, to home workers, small and medium-sized businesses and large corporate customers.

Next generation access networks should not be designed with only the needs of the residential customer in mind.

Ofcom is also likely to have a role in ensuring that spectrum is made available and traded fairly.

QUESTION 4 - HOW FAR DOES CURRENT REGULATION, INCLUDING MARKET DEFINITIONS, EQUIVALENCE AND BT'S UNDERTAKINGS, NEED TO EVOLVE AS RESULT OF NEXT GENERATION ACCESS DEPLOYMENT?

The wholesale local access market was defined by Ofcom in 2004 as referring to copper networks only, rather than including fibre access networks. We believe that any future market review should encompass fibre local loops, in light of the fact that the Commission recommendation on relevant markets has now removed the reference to access to "metallic" paths and is now technology neutral.
Access to dark fibre is crucial to the ability of CPs to offer more bandwidth at lower prices to British businesses.

Ofcom will need to conduct market reviews as and when market conditions change significantly and the competitive landscape alters. For example, if there is a move away from LLU towards Active Line Access, this may have an impact on the levels of competition (and findings of SMP) in wholesale broadband access in "Market 3" areas, particularly as FTTC is likely to be rolled out in Market 3 areas before the rest of the country.

As for whether alternative technologies in the access network (such as wireless networks) will amount to enough of an alternative to fixed access to lead to a finding of competition in the access network, this would require empirical studies of demand- and supply-side substitution once such networks have been established. We agree with Ofcom's belief that wireless networks are more likely to be complementary to fixed access networks than pure alternatives.

We agree with Ofcom that the principle of Equivalence should endure on next generation networks to prevent leverage of dominance in access markets into downstream retail markets.

COMPETITION REMAINS KEY TO DELIVERING THE BENEFITS OF NEXT GENERATION ACCESS

QUESTION 5 - HOW IMPORTANT ARE PASSIVE PRODUCTS SUCH AS FORMS OF SUB-LOOP UNBUNDLING AND DUCT ACCESS? CAN THE ECONOMICS OF THESE PRODUCTS SUPPORT THE PROMOTION OF EFFECTIVE AND SUSTAINABLE COMPETITION AT THIS LEVEL? WHICH PASSIVE PRODUCTS SHOULD OFCOM PURSUE?

Access to copper sub-loops only needs to be made available if the largest LLU operators believe they can make a business out of its use. We consider this to be unlikely. That said, the Commission's draft Recommendation on access to NGA networks suggests that SMP operators should be required to offer a regulated sub-loop unbundling product, and indeed BT is already required to offer it. If such is offered in the UK, it should be offered by Openreach on an EOI basis, in order to create a level playing field for the provision of NGA-based services. We see no reason why remedies in the Wholesale Local Access market (Market 4) should not exist alongside remedies in the Wholesale Broadband Access market (Market 5).

FTTC infrastructure should be developed with access to unbundled dark fibre in mind. As distance limitations are less important for fibre services, unbundled fibre should be available from the local exchange by default, rather than on a sub loop basis.

We do not believe that duct access is a practical solution in established locations and have doubts about its attractiveness even in Greenfield locations. We await the results of Ofcom's survey of BT's ducts.

QUESTION 6 - WHAT ARE THE CHARACTERISTICS OF HIGH QUALITY, FIT FOR PURPOSE ACTIVE WHOLESALE PRODUCTS? HOW FAR CAN ACTIVE PRODUCTS WITH THESE CHARACTERISTICS SUPPORT EFFECTIVE AND SUSTAINABLE COMPETITION?

Ethernet is more flexible than ATM since the layer 2 connectivity can be provisioned independently from QoS. So in that respect it does allow CPs to differentiate their products in a way that today's bitstream products do not. We agree with Ofcom that the use of Ethernet in backhaul enables CPs to benefit from economies of scale and scope.

One option would be for Openreach to offer GEA at the highest speed for VDSL and allow CPs to control the bandwidth in the backhaul, thus enabling differentiation at the retail level. We would support such an approach, with the proviso that:

• Openreach include the Broadband Forum Intermediate Agent (IA) capability ("TR-101") to communicate Sync rate to CPs and possibly use WT-147 in future in addition to IA.

• This should not be made available at a higher price, since arguably it makes Openreach's pre-qualification easier, as it is only needed for fixed/tiered speeds.

It is important that ALA products (both GEA and DEA) are designed to be fit for purpose for business customers. So the products must include:

• Resilience options

• Uncontended capacity

• Symmetric bandwidth options

• Transparency to Layer 2 & Layer 3 VPNs (allows CPs to select C-VLAN a number to be used on a user's connection)

• The ability to support or transport synchronization (for TDM emulation) e.g. 1588v2,
EtherSync

• OAM

• Fast fault propagation so that the failure of any component of the systems is immediately
notified to CPs’ network devices.

The handoff to CPs at Gigabit Ethernet or 10 Gigabit Ethernet at the handoff location will need to be
resilient at the physical layer to avoid a simple fibre break cutting all service.

In new build areas, CPs who serve business providers may wish to use GEA for the schools,
supermarkets and other businesses in those areas. On the other hand, DEA might be preferable as
it would not be susceptible to spikes in demand caused by residential users.

C&W has provided Ofcom with its requirements for ALA product design in detail (in particular as input to the “ALA Technical Requirements” document) and we refer Ofcom to that work in answer to this question. We have also provided detailed feedback to Openreach on both the GEA and DEA products.

QUESTION 7 - ARE THERE OTHER OPTIONS FOR PROMOTING COMPETITION THROUGH REGULATED ACCESS THAT HAVE NOT BEEN CONSIDERED HERE?

QUESTION 8 - HOW FAR MAY OPTIONS FOR JOINT INVESTMENT PROVIDE GREATER OPPORTUNITIES FOR COMPETITION BASED ON PASSIVE INPUTS? ARE THERE LESSONS THAT CAN BE LEARNED FROM SIMILAR VENTURES IN OTHER INDUSTRIES? WHAT ARE THE RISKS AND ADVANTAGES OF SUCH APPROACHES?

Joint investment in FTTC upgrades (including ducting, backhaul and multi-CP cabinets) would obviously make the economics of sub-loop unbundling a lot more attractive. Moreover, there are plenty of precedents within the telecoms industry for joint ventures, such as the installation of pan-European fibre-optic cables, and trench sharing arrangements in various European countries.
However, it would have to be agreed very early on in BT’s roll-out plans (i.e. in the very near future) and the parties would have to agree to invest on some considerable scale, geographically speaking, right at the outset. Whether interest in such a venture can be galvanised before it is too late remains to be seen.

QUESTION 9 - WHAT SHOULD BE THE RESPECTIVE ROLES OF OFCOM AND INDUSTRY IN DEFINING AND IMPLEMENTING PRODUCT STANDARDS?

Industry should be given an appropriate forum in which to get involved with product development and we would hope that BT will consult openly on product specifications. Something akin to Consult 21 would be appropriate. It would be helpful if CPs could be asked their views early on in product development, rather than after the products have already been designed, as happened with the Ebbsfleet GEA product.

If ALA/GEA is to be sold by Openreach, then we would hope that Openreach would adopt the

consultative style of Consult 21, as they have not, to date, been as open in their product design processes as BT Wholesale and have seemed less willing to take into account the views of other CPs. The “FTTC hot house” event at Martlesham in October was good, our experience was of expressing our product requirements in bi-laterals and via presentations to the Openreach NGA Forum without having these formally captured as requirements and put into a roadmap. It is essential that products are developed in a way that does not simply favour BT’s own retail divisions, particularly if the products are offered on an EoI basis.

We believe that Ofcom should sit on any forums where product development is being discussed. However, Ofcom should not take too pro-active a role. There has been a tendency, in the Consult 21 arena, for Ofcom to veto or mandate certain product specifications that BT wish to offer and industry wishes to buy. Ofcom should intervene only where developments are clearly against Ofcom’s regulatory policy, or where there is a clear impasse between industry parties.

KEY TO DELIVERING EFFECTIVE COMPETITION AND INVESTMENT IS PRICING

QUESTIONS 10, 11, 12 AND 13 - HOW FAR DO STAKEHOLDERS CONSIDER THE PRICING APPROACH OUTLINED HERE OF PRICING FLEXIBILITY FOR ACTIVE PRODUCTS AND COST ORIENTATION PLUS CONSIDERATIONS FOR RISK IS APPROPRIATE AT THIS STAGE OF MARKET DEVELOPMENT?

WILL INDIRECT CONSTRAINTS ALLOW FOR AN APPROACH BASED ON MORE PRICE FLEXIBILITY FOR ACTIVE PRODUCTS? HOW WILL SUCH AN APPROACH AFFECT THE INCENTIVES OF DIFFERENT OPERATORS TO INVEST AND DELIVER SUPER-FAST BROADBAND SERVICES TO END CUSTOMERS?

WHAT PERIOD OF TIME WOULD BE APPROPRIATE FOR SUCH AN APPROACH TO ENSURE A BALANCE BETWEEN THE NEED FOR LONGER TERM REGULATORY CERTAINTY WITH THE INHERENT DEMAND AND SUPPLY SIDE UNCERTAINTY IN SUPER-FAST BROADBAND AND NEXT GENERATION ACCESS?

WHAT ARE THE KEY FACTORS THAT COULD MAKE A REVIEW OF ANY PRICING APPROACH NECESSARY?

Ofcom proposes to provide greater pricing freedom for new bitstream products and apply a more traditional pricing approach, based on cost orientation, for upstream network access products.

Active Products

While anchor product pricing may appear to be a good approach in the residential end user market, it is not clear how it can ensure that the needs of business customers are best promoted. It has the potential to leave pricing decisions around the premium products (which many businesses would likely require) entirely in BT’s gift.

We have seen an example of this in the pricing of SDSL – the regulation of MPF products led to a reduction in the price of ADSL products, but businesses were not able to reap the benefit of reductions in SDSL pricing. These products remained stubbornly expensive and UK businesses suffered as a result.

If Ofcom were to select as an anchor product a basic residential broadband service offering the sort of quality and speeds as are available today, this would offer no certainty or constraint in the pricing of high quality business products. This problem could be overcome if Ofcom were to define separate anchor products for both business/premium quality and residential products. The business product could reflect the sort of speeds available today, but could have added features such as faster repair times, higher QoS and greater symmetry.

Even for the consumer broadband services, it is not clear at this stage whether sufficient indirect pricing constraints will be present in the market to allow for greater pricing freedom. For example, the availability of sub-loop unbundling on a cost orientated basis would act as a constraint on downstream prices, but at this point it looks unlikely that BT will offer such a product. In the absence of a regulated SLU product, it is questionable whether the existence of LLU-based wholesale broadband and cable broadband retail products would be adequate to constrain the price of wholesale Super-fast broadband. In the absence of a wholesale offering from Virgin Media, Virgin's prices for Super-fast broadband may constrain BT's pricing of its own retail services, but may not provide a constraint against its wholesale prices.

The price of active products may also be constrained by the price of existing wholesale services supported on the copper access network. However, once this old network is withdrawn, this constraint disappears.

We therefore suggest that a degree of pricing flexibility is allowed for a limited period of time. Once the level and elasticity of demand is clear, a more orthodox method of price regulation should be employed, such as cost-orientated charge controls, with an appropriate return on capital.

The period for anchor product pricing may coincide with the period during which both the NGA network and the existing copper access network are in place. Once the NGA products are the only ones available, the constraint from today's products and services is weakened, even if similar products are made available, and it also starts to become clear which of a range of products consumers are choosing to buy.

We welcome Ofcom's assertion that it will remain alert to the possibility of margin squeeze. Clearly, whilst Openreach remains part of BT Group, BT has the ability to adopt low retail prices, whilst still achieving growth in group revenue through Openreach's sales.

We request clarification as to whether Ofcom could specify an anchor price in current "Market 3" areas where BT does not currently have SMP in the provision of wholesale broadband access. We would also like Ofcom to clarify whether it would impose other ex ante remedies (such as obligation to supply) or whether BT's obligations in this respect would flow from the Undertakings.

Passive Products

We agree that Ofcom should set prices for access to passive products, taking into account the risk incurred in investment. Anchor product pricing would not be appropriate to these raw elements that cannot be separated into different products.

Ofcom would like to minimise uncertainty by defining a pricing approach which will last for a reasonable period of time. We see no reason why charge controls could not be set for a period of four years, which could, if necessary, be interrupted by a market review if the competitive landscape changes significantly.

In terms of the evaluation of risk, we believe that the level of demand for Super-fast broadband is perhaps underestimated. One source of demand that may have been overlooked is demand from small and medium-sized businesses, who are likely to welcome super-fast broadband as a way to increase their productivity and lower their costs. These users are likely to begin using the products

as they are rolled out, without the need for any kind of public momentum to develop.

Virgin's offering of four tiers of broadband (2 Mb, 10 Mb, 20 Mb, and 50 Mb) will be a useful testbed of consumer demand and usage patterns and indeed this may have provided us with a better understanding of the future retail environment by the time BT's active line access products are launched. However, we note that Virgin is not currently facing competition in the higher speeds, and the introduction of other suppliers might affect Virgin's pricing strategies.

Trigger for review of pricing approach

Attainment of or evidence of any of the following could prompt a review of pricing approaches:

• Roll-out of NGA network in a particular geographic area or to a significant percentage of the population;

• The withdrawal of current products, such as copper LLU;

• Evidence of lack of take-up by users (or certain types of user) of new products;

• Evidence of margin squeeze.

EVENTUALLY THERE WILL BE A TRANSITION
FROM COPPER TO FIBRE

QUESTION 14 - HOW FAR CAN THE GENERIC MODEL FOR TRANSITION OUTLINED HERE DELIVER BOTH INCENTIVES TO INVEST IN NEXT GENERATION ACCESS WHILE ENSURING EXISTING COMPETITION IS NOT UNDERMINED?

This generic model for transition is a sensible one and is unlikely to deter investment in NGA. It is obvious that the owner of a new network would want to minimise its network costs by switching off the old network as soon as possible. It is also clear that operators who have made substantial investments based on previous network architectures will need a considerable period of notice in which to migrate off that old equipment.

In order that CPs' investments in infrastructure (such as fibre to the exchange and co-location) are not stranded by NGA investments, it is important that exchange-based NGA products are made available to CPs. This will enable them to utilise that existing infrastructure.

Other elements of the existing local loop architecture, such as line card and electronics, may or may not be re-useable in an NGA environment. CPs will require as much notice as possible of product developments, so that this can inform their ongoing upgrade and purchasing decisions.

QUESTIONS 15, 16 AND 17 - WHAT TRIGGERS WOULD BE APPROPRIATE FOR THE COMMENCEMENT OF ANY TRANSITION PROCESS? ONCE TRIGGERS OR CIRCUMSTANCES FOR TRANSITION ARE ACHIEVED, WHAT WOULD BE AN APPROPRIATE PERIOD FOR THE VARIOUS PHASES OF TRANSITION (CONSULTATION, NOTICE PERIOD, TRANSITION)? OVER WHAT GEOGRAPHIC AREA SHOULD ANY PROCESS OF TRANSITION BE MANAGED, FOR EXAMPLE REGION BY REGION OR NATIONALLY?

LLU Operators should not be required to start moving to NGA wholesale products until a majority of the population is covered by next generation access. This is because of the cost of developing new ordering and provisioning systems and processes, the length of time it takes to develop and implement such new systems and the cost of ordering additional interconnect links and backhaul

capacity. One would require a degree of scale until the cost of new systems and infrastructure
could be justified.

Operators would then need be given a period of time to migrate their installed bases. One would
also need a period of time to establish that the ordering and provisioning processes of the network
owner could stand up to high volume usage. Moreover, one would need to establish that migration
processes to and between NGA products worked effectively.

The ability of BT to begin decommissioning its existing copper network and withdrawing LLU-based
products should be limited by a number of factors, including the scale and fitness for purpose of
replacement NGA products.

REGULATION CAN PLAY A SMALLER ROLE IN INCREASING REVENUES

QUESTION 18 - WHAT ACTIONS, IF ANY, SHOULD OFCOM UNDERTAKE TO SUPPORT NEW REVENUE MODELS FROM NEXT GENERATION ACCESS?

We believe that it may well be appropriate to explore new revenue models for next generation access, for example by ensuring that revenue is generated from bandwidth-hungry content and applications. However, we do not believe that there is a clear role for Ofcom to play in this debate at this stage, other than by encouraging debate and facilitating dialogue.

WHAT ROLE CAN THE PUBLIC SECTOR PLAY IN NEXT GENERATION ACCESS DEPLOYMENT

QUESTION 19 - WHAT ROLE SHOULD PUBLIC SECTOR INTERVENTION HAVE IN DELIVERING NEXT GENERATION ACCESS?

We expect that most of the UK population will be served by private sector investment in next generation networks. However, there will be parts of the country where there is little or no commercial case for investment and public sector intervention – either in the form of local authority ventures or government-sponsored initiatives – will be required.

We suggest that the government, under the auspices of the BERR Digital Britain project, is probably best placed to consider the options surrounding public sector investment.

A PROPOSED FRAMEWORK FOR ACTION

QUESTION 20 - ARE THESE THE RIGHT ACTIONS FOR OFCOM AND OTHER STAKEHOLDERS TO BE UNDERTAKING AT THIS TIME? WHAT OTHER ACTIONS NEED TO BE TAKEN OR CO-ORDINATED BY OFCOM?