CABLE&WIRELESS RESPONSE TO CONSULTATION : "NEXT GENERATION NETWORKS : RESPONDING TO RECENT DEVELOPMENTS"

24.09.09

SUMMARY

Cable&Wireless is one of the world's leading international communications companies. It operates through two standalone business units – Worldwide and International. The Worldwide business unit (formerly known as the Europe, Asia & US business) provides enterprise and carrier solutions to the largest users of telecoms services across the UK, US, continental Europe and Asia, and wholesale broadband services in the UK. With experience of delivering connectivity to 153 countries - and an intention to be the first customer-defined communications services business - the focus is on delivering customers a service experience that is second to none.

Cable&Wireless has also recently purchased Thus, a provider of Internet, data and telecoms services which focuses on serving the SME market.

Cable&Wireless has actively participated in industry fora targeted at agreeing common policies for issues arising from NGN deployments, notably NGNuk, NICC Standards and Consult21. We are therefore well placed to provide observations on the issues raised by Ofcom.

Cable&Wireless has engaged substantively with BT regards the deployment of 21CN. While it is understood that plans evolve over time, we are dismayed that following the thousands of man-hours which we have dedicated to working with BT to refine their plans, we are now in the situation that as at the end of 2011 when 21CN deployment was originally intended to be completed, in reality implementation will have proceeded barely beyond the Pathfinder Cardiff trials. Whatever the rights and wrongs of whether the original plan was overly optimistic, the initiative represents a colossal waste of effort on the part of industry as a whole.

Moving forward, with 21CN deployment now seemingly focussed around BT's Next Generation Access ambitions, Cable&Wireless is anxious that we see a holistic plan, rather than having to piece together snippets of information from the various lines of business within the BT Group.

Cable&Wireless believes that NICC has delivered timely standards to support the deployment of NGNs. While there are some areas that we believe require further standardisation as outlined in the responses to Ofcom's questions, we are concerned that the delays to NGN deployment may see a lull in the work required of NICC which may threaten the active participation of CPs and vendors. It is important that even if the work required of NICC does diminish, the organisation continues to function to be ready to react to demand for future standardisation activity that will inevitably arise.

ANSWERS TO CONSULTATION QUESTIONS

Question 1: How do you envisage the model of competition changing over the next 3-5 years, and what sort of input products will be needed to support this competition?

The advent of NGA and, to some extent, 21CN is likely to have a considerable effect on the structure of the market, the workability of the Undertakings and the regulated product set.

BT's 21CN voice strategy review means that BT is unlikely now to consume MPF in large volumes. We are therefore concerned that BT will have little incentive to improve and maintain service levels on this product. This concern is mitigated, to some extent, by the forthcoming Service Harmonisation programme, which seeks to replicate SLAs across all Openreach product sets. However it is important that MPF does not become a second rate product as a result of change of direction.

In the medium term, CPs will continue to rely on BT's input products (WLR and IP Stream/WBC) in geographic markets 1 and 2. Despite the success of MPF in geographic market 3, WLR should continue to be regulated in this market to enable customers to choose between voice and broadband providers and not be required to purchase a bundled package.

Cable&Wireless believes that NGA is likely to have a bigger and more rapid impact on the Undertakings and on market structure than 21CN. BT's decision to deploy FTTH using a PON architecture, along with the scale required to make sub-loop unbundling a viable proposition, mean that competitors are likely to be forced away from passive, infrastructure-based products to services which incorporate at least some electronics. If this is to be the case, it is vital that Ofcom ensures that those active input products are as raw as possible. For example, Openreach is currently proposing a GEA/ALA product which will be supplied with BT ONT only. Moreover, the proposed wholesale voice product on FTTP ("VoNGA") will require service providers to take BT ONT and ATA. This will be a real step backwards for CPs that have been taking MPF and offering product differentiation through controlling the call servers.

Openreach must be required to offer a "wires only" GEA/ALA service, so that CPs can deploy their own "one box" CPE solution, are able to innovate and differentiate and so that BT does not regain a monopoly on voice termination.

WLR and WBC should, however, continue to be available alongside fibre-based products, because a degree of scale will be needed to invest in active services and we envisage an ongoing demand for these products.

The deployment of fibre to the home could lead to a change in the way in which the cost of line maintenance is recovered. At the moment, the voice service bears the burden of the cost of the line - all the common cost of the copper access network is recovered through the WLR charge. In future, there is no reason why the cost of line maintenance need not be apportioned more equally between voice, data and, potentially, other services and applications. Indeed, it could in future make sense for the data service to take the full cost of the line. This would obviously have a dramatic effect on the wholesale line rental business and consumers could find that service providers include the cost of line rental in the service provision, rather than charging for it separately. Alternatively, consumers could pay separately for their "connectivity" and for their "applications".

If the cost of line rental were to be the same for the service provider irrespective of whether they took voice, data, or both, then this would likely encourage the trend towards bundling that has begun as a result of the fact that MPF costs less than buying WLR and SMPF together.

The economies of scale that are linked to deployment of fibre in the access network and unbundling copper sub-loops, could lead to further consolidation amongst network operators (a trend recently demonstrated by the acquisition of Tiscali by Carphone Warehouse). Moreover, if Ofcom were to

encourage co-operative investment in fibre, in return for more relaxed regulation, then we may see a move to a more oligopolistic environment.

The emergence of independent local access networks will also impact the current market structure. Service providers will be faced with a multitude of infrastructure providers from which to take service, which may result in a new approach to aggregation and backhaul. There will be a trend towards "open access" to networks. This (potentially) poses issues with buyers of these services having to parallel run a multitude of interfaces and underlying processes in order to access customers on these different networks, or alternatively choose to offer their services only on one network due to the cost of these multiple interfaces. A degree of commonality would minimise this issue and ensure robust service competition across all new networks : see our answer to Question 3 regarding the importance of Active Line Access (ALA) in this context. Over the longer term, these local networks may well be combined and amalgamated in the same way in which the cable companies were.

Cable&Wireless envisages a steady creep of converged services. For voice, this will increasingly mean that it is just another application running over converged access (NGA) and core (NGN). However, this will be a gradual evolution rather than revolution : for example in the enterprise marketplace, the economics can make it such that even where IPBXs are deployed, the network interface commonly remains as ISDN. The distinction between fixed and mobile will become more blurred, for example by capabilities such as our FMC product which allows phones to roam from fixed to mobile according to whether the end user is in the customer's office.

Question 2: Do you agree with our analysis of the requirement for xMPF?

We agree with Ofcom that there are potential advantages in the introduction of an xMPF product. It could help CPs to compete more effectively with BT in the provision of line rental. We also agree that this is best dealt with through the SOR process at this stage.

Question 3: What additional technical standardisation work is required to support NGN deployment?

Whilst there are sufficient technical standards available to launch NGNs, Cable&Wireless believes there is merit in considering the following areas for standardisation:

SIP-UNI interface. The SIP protocol is, of course, standardised at an international level. However, there are a plethora of options within these standards. Cable&Wireless recognises the tension between the desire to leave things as open as possible to allow individual CPs to innovate, versus providing customer confidence that equipment that works when connected to one CP's NGN will also work should they opt to switch provider or dual source network provision. Nevertheless, it should be possible to find a middle ground whereby a minimum configuration / profile of the international standards is agreed, and individual CPs can expand upon this as they see fit. We foresee two distinct user interfaces that require consideration, which could be fulfilled by an all encompassing standard, or by separate profiles;

- In the enterprise market, connecting IP-PBXs to NGNs and
- In the home/SME market where NGA has been rolled out, probably using the Active Line Access (ALA) standards, meaning that voice merely acts as an application on an NGN with customer equipment performing terminal adaption functionality.

Cable&Wireless believes that the SIPconnect initiative will likely provide the basis for the above activity.

Basic SIP interface. UK standardisation thus far has focussed on national profiles of SIP-I to provide full suite PSTN capability, and subsequently on interconnection of IMS networks. While Cable&Wireless sees that there is a place for such architectures, we are aware that smaller VoIP CPs are focussing on more basic SIP call set-up and tear down. As mentioned above, there are international standards for this, but options are left and there is no agreed UK-specific profile for SIP in absence of encapsulated C7 ISUP signalling. The type of areas that need consideration are carriage of national specific routeing codes such as number portability prefixes, treatment of Calling Line Identity (e.g. when a call inbound from a SIP trunk interworks to a C7 network, should the interworking bit in C7 be set?), provision of announcements, prioritisation of 999/112 calls and location information for 999/112.

Related to the above two areas is the issue of treatment of calls that come from sources other than a CP NGN, for example calls from an internet telephony provider, or calls from an enterprise IP network. Technical standardisation is required as to how to deal with issues such as CLI, impaired quality of service and interworking of codecs to those accepted across NGN interconnection. However, the wider issue is a commercial and regulatory one, namely who should have the responsibility for carrying out these technical activities.

Testing standards for CPE. An issue that has arisen during NGN deployment is that some CPE has been manufactured to meet perceived/experienced network metrics, rather than those laid down in the relevant network interface publications. NICC has already carried out some very useful work in the field of providing guidance to CPE manufacturers regarding the characteristics of networks having an NGN core (note : this applies to CPE connecting using traditional interfaces, as well as those interfacing using NGN technologies). Further, Cable&Wireless is aware that BT has devised test plans that could be used by CPE manufacturers to validate that their kit is compliant with 21CN, both for calls only involving 21CN, and for calls involving multiple NGNs. This will ensure that, for example, the operation of adaptive jitter buffers will not disrupt the operation of modems. Cable&Wireless is supportive of this, but we feel that individual CPs providing testing standards for connection to their networks is not the best way forward : there is merit in having an agreed CPE compliance standard for all UK NGNs.

Guidelines for the usage of adaptive jitter buffers. Adaptive jitter buffers will be an essential tool, both within CP NGNs and also in private customer networks that must interwork with them. However, ill-considered usage of adaptive jitter buffers could cause problems, for example with modems and faxes that use baseband voice channels, and with carriage of ISDN clear channel services. Cable&Wireless believes that it would be advantageous if industry could agree a common policy for the deployment and configuration of adaptive jitter buffers in CP networks, and guidance to customers about the usage within their private networks.

Enhanced range of codecs. The current NICC standards are formulated around the usage of G.711 codecs. This was a sensible first step where NGNs are seeking to emulate PSTN networks. However, where end-users are using other codec types, and also for the situation of mobile networks that use lower bit-rate codecs, it seems nonsensical to have to transcode to G.711 at both ends of the NGN "cloud". Cable&Wireless believes that consideration should be given to expanding

the supported codec suite, taking into account the implications for bandwidth management and, in the case of codecs incorporating encryption, national security.

Numbering database. Cable&Wireless remains supportive of the need for an industry common numbering database for usage in NGNs. The delay to NGN rollout means that such a database is not cost-effective in the short term while legacy technologies prevail. However, we feel it important that Ofcom set a clear policy direction that the introduction of NGNs should be in a manner which facilitates usage of a common numbering database to optimise numbering efficiency. The cost of such a solution "designed-in" from the outset will be considerably lower than retrofitting. Although no new standards are required per se because NICC completed much of the necessary activity, it will be necessary to ensure that the standards don't go "stale" in the meantime.

Active Line Access. Cable&Wireless believes that the future migration to 21CN will be dictated as much by BT's NGA ambitions as by the obsolescence of TDM equipment. To avoid CPs being forced away from close proximity to their customer base, it is essential that a fit-for-purpose ALA standards suite is devised, as a substitute for existing LLU deployments. As with other standardisation areas, we do not believe that NICC should be creating new material, rather that the focus should be on profiling relevant standards from the Broadband Forum and MEF. As we highlight in our response to Question 1, Openreach will not be the only provider of access, and community broadband initiatives clearly have a role to play. However, for there to be a thriving market in this field, usage of common standards must be encouraged.

Question 4: What policy positions do you believe Ofcom ought to adopt in relation to interconnection between IP and TDM networks?

Cable&Wireless recognises this is a complex issue, with potentially huge commercial and technical ramifications. We sympathise with those CPs that made investment based upon BT's declared 21CN deployment plans, but at the same time recognise that during the Consult21 process BT were liberal in the usage of warnings that their plans were subject to change. If BT were to be penalised in any way for announcing plans (with warnings) and subsequently having to change them, we believe that this would act as a disincentive to BT sharing their thinking at the earliest possible opportunity. Indeed, our view is that BT have not provided sufficient timely information as their thinking evolved, so we would be very cautious about anything which made the situation worse.

Cable&Wireless agrees that the future technology choice for interconnection of CP networks will be IP, and that clearly the current technology of choice is TDM/C7 : the issue is how the transitional arrangements should be handled. We support Ofcom's analysis that interconnect costings be based upon the most efficient proven technology, and also the conclusion that this cannot be said to be IP at present (as we are unaware of any CP that is offering a SIP-I interconnect capability).

We divide our thinking into two topics, firstly when IP interconnection should be provided, and secondly when interconnect charges should be based upon IP technology.

Introduction of IP (SIP-I) interconnection. Ofcom notes that although the long term plan is for BT to offer SIP-I interconnection via a regulated NGN Call Conveyance (NGN-CC) product, CPs that already utilise NGN technology have the opportunity for interim arrangements using the unregulated IP-Exchange capability. Indeed, we understand that BT are developing a SIP-I capability for IP-Exchange.

Cable&Wireless agrees with these conclusions, but would highlight that the pricing for IP-Exchange is considerably higher than that available for a well-interconnected CP using TDM technology. As such, for these CPs (we acknowledge that other CPs such as VoIP CPs without extensive network estates may have differing needs), IP-Exchange can only be regarded as a sandbox to trial the technology in an interconnect environment rather than a viable commercial proposition.

For early adoption of SIP-I interconnection, we believe it unreasonable to require a CP with TDM lines to provide interworking for an IP interconnection of calls to and from those TDM lines. As such, until IP is the prevalent technology, it is reasonable to require that calls delivered over an IP interconnect only be for numbers hosted on an NGN, although this doesn't preclude the terminating CP providing a capability to optionally interwork to their TDM lines, should they wish to do so.

Applying this logic to BT, this would imply that any regulated NGN-CC product would only apply for calls to and from lines migrated to 21CN. Where first movers have migrated their networks to NGN technologies, they should have the responsibility of interworking TDM-originated calls to/from IP, rather than CPs using the prevalent TDM technology. It is for this reason that Cable&Wireless agrees with Ofcom's conclusions in the recent draft Determination to resolve the Dispute regarding BT's termination payments to Opal, if not entirely agreeing with some of the logic.

With these assumptions, the question is therefore when it is reasonable to expect BT to introduce NGN-CC, based upon when CPs are likely to make use of it. For CPs to make use of it, there would have to be sufficient scale to make it worthwhile. Cable&Wireless believes there needs to be an industry debate on this matter, but on the face of it a breakpoint of c10% of BT lines migrated to 21CN seems a realistic level : anything less would mean that traffic levels don't justify the development/support costs.

However, because there would need to be a period of testing prior to mass usage of NGN-CC, it may be appropriate to specify launch timing around "X months prior to e.g. 10% of lines migrated to 21CN". Whilst availability of IP-Exchange may negate the need for this advance testing period, this will very much depend upon the price premium that CPs need to pay for using an unregulated versus eventual regulated product.

Interconnect charges based upon IP technology. Cable&Wireless agrees with Ofcom's analysis that charges should not be based upon IP technology until it is proven.

We do, however, have some reservations about the use of the term "proven" : IP technology is clearly used successfully by significant volumes of customers, and SIP interconnection via products such as IP-Exchange referred to in the consultation is commonplace. Although SIP-I interconnection encompassing the full suite of PSTN capabilities is not yet in place, we have some concerns that if "proven" is the descriptor, the first two CPs to successfully interconnect using SIP-I could claim that evidently the technology is now proven so everyone else should be compelled to implement it or face commercial penalties. Cable&Wireless believes that "prevalent" is probably a better metric to determine when interconnect charges should be based upon IP technology.

However, this of itself causes issues because of the dominance of BT and also the mismatch of TDM versus IP interconnection in the context of number of interconnections, bandwidth utilised etc. For example, if a hurdle was set that IP interconnection be considered prevalent when the majority of interconnects were IP, this hurdle may never be crossed because (i) if BT favoured TDM, then even if every other CP-CP interconnection was migrated to IP, overall TDM would likely prevail due to the sheer volume of BT interconnection and (ii) as universal TDM interconnection necessitates >700 connections into BT's network versus 27 physical handovers for IP, the two cannot be directly compared in terms of number of interconnects.

Cable&Wireless believes a way forward could be formulated on this aspect. We believe that the tipping point to change the basis of accounting to be IP technology could be established as when, for example, two thirds of the interconnect relationships between CPs have the majority of interconnect traffic carried using IP.

For ease of administration, consideration could be restricted to the top ten fixed CPs (who in any case represent the vast majority of traffic). This would mean that when six or seven of these CPs declared that the majority technology for the majority of their interconnect relationships was IP, TDM would no longer be used as the basis of cost causation in formulating interconnect charges for all CPs. On current migration trajectories, Ofcom's conclusion that this will not be within the next NCC appears reasonable (indeed the timescale could be considerably longer than the next NCC), but the situation should be monitored in the meantime.

(Note that this could be measured in terms of call volumes to overcome the structural issues of IP versus TDM. The "double majority" aspect is needed to negate the impact if BT remained TDM. If the hurdle for an individual CP to declare IP as prevalent was simply the majority of traffic was interconnected as IP, then this test would always fail because the BT component would be TDM and this represents the majority of traffic. By triggering based upon the "majority of majority", it would mean that if the individual CP's interconnections to >5 of the big CPs were mainly IP, the test would be passed for that CP)

An issue regarding the most efficient proven/prevalent technology relates to the definition of "IP interconnection". Ofcom refers to NICC's Green Release, which provides standards for interconnection using SIP-I. In our text above, we refer to SIP-I generically, but there is complication in that there are [at least] two distinct derivatives of SIP-I : the Green/Purple Release variant focussed on PSTN support, but also a 3GPP R8 variant which will be standardised via NICC Orange Release, which focuses on certain mobile requirements. This raises the spectre of a regulatory decision being required as to who will have the responsibility to interwork where CPs are using differing variants of SIP-I. Cable&Wireless's view is that this should initially be left to market forces to determine, with Ofcom intervening only if agreement cannot be reached.

Whatever the timing of a move to accounting based upon IP technology, it is important that interconnect charges do not allow migrating CPs to recover the costs of the inefficiencies of the "intermax" period where it is inevitably necessary to operate two networks in parallel.

The above considerations clearly leave the question of the charging regime to be used for calls delivered over an IP interconnection, in the interim period where BT is expected to provide a regulated NGN-CC capability, but industry is not yet at a stage when charges are based upon IP technology.

- Cable&Wireless believes that for delivery of calls to lines migrated to 21CN, the pricing should mimic that of TDM : we note that the congruent/blended rate approach met widespread approval by industry, albeit under differing timescales, and feel that this would be an appropriate way forward. However, this should be regarded as a price ceiling for NGN-CC rather than a regulated price : should BT wish to encourage IP interconnection by pricing call termination more cheaply to reflect any lower cost base they may have for 21CN, Cable&Wireless does not believe this should be precluded, but would note that as a monopoly service non-discrimination/price-publication principles should apply.
- For delivery of calls to lines not migrated to 21CN, Cable&Wireless views that the
 originating NGN CP has a choice whether to send the calls via a TDM interconnect (hence
 incur a cost of gatewaying the traffic themselves), or, should BT offer the capability, to send
 as IP (hence meaning BT incurs a cost of gatewaying the traffic). Therefore, it is our view
 that BT and, in the reciprocal case, other CPs should be allowed to price such calls as it
 sees fit.

Cable&Wireless also believes that in order to provide a degree of certainty and not lead to illconceived interconnect architecture strategies, industry should agree in the short-term the longer term *structure* of IP interconnection charges.

Per the agreements at NGNuk, our view is that for now, interconnection should remain on a priceper-call/price-per-minute basis. We reject any concept of differential charging for termination of calls to rural versus urban areas, as it runs totally counter to the long standing principle of [retail] call charges being uniform, regardless of the cost of provision of an individual citizen's line. We believe the introduction of a new digital divide for basic voice calls would be a very poor result.

Cable&Wireless does, however, believe that certain NGN costs may have been blurred together. NGN architectures necessarily mean that the path taken by the voice (media) channel itself is quite independent from the call control path : this is different to TDM architectures, where the call control and voice channels are largely linked together. Cable&Wireless believes that this distinction should be reflected in separation of the two in interconnect charging. In brief, there should be incentives to deliver media to the correct handover (27 in the case of BT), but also in the context of call control to communicate with the correct callserver/session control function – i.e. if the originating CP communicates directly with the callserver controlling the terminating line, then a lower charge should apply than if the control has to traverse multiple callservers.

In practical terms, this would mean that interconnect charges would include a pence-per-call element (encompassing call control) and a pence-per-minute element (encompassing media costs). Depending upon the architecture adopted by individual CPs, this could mean multiple virtual routes across a physical handover, each under the control of individual callserver pairs : this is analogous to TDM, where for example there may be 700+ relationships with individual TDM switches, but these are across a dramatically lower number of physical handovers. We consider that in the case

of IP interconnection to BT, the implication may be perhaps four or five callserver relationships across each of 27 physical handovers.

We note that in Ofcom's draft Determination to resolve Dispute between BT and Opal about their geographic termination rates, there is consideration of whether a callserver is a switch. Although Cable&Wireless agrees the conclusions reached in Ofcom's analysis as applied to the narrow scope of the TDM BT SIA, it is important that this is not considered to set a precedent in the context of devising the future NGN interconnect charging regime.

Question 5: Do you have agree with our analysis of investment uncertainty in relation to BT's 21CN plan?

There is nothing we fundamentally disagree with in terms of Ofcom's discussion of this issue, although it is disappointingly limited in both breadth and depth.

Whether we like it or not, BT's plans, as the incumbent fixed-network provider in the UK, have a major knock-on effect on the rest of the industry. As Ofcom identifies, BT's original 21CN plan proposed a fundamental shift to IP over a 3-5 year timeline. For CPs such as Cable&Wireless, this provided a clear target for our own investment planning. Now we have lost this certainty. Whilst there may be incentives for us to move to IP irrespective of BT's own plans, there is a significant commercial risk in this approach (as we have seen with other CPs who made the move early).

The current lack of clarity and certainty over the timing of any 21CN transition also hinders our ability to manage our customers' needs and expectations. When the project was first launched, Cable&Wirelesss invested in a major communications programme with its customers. As part of this, we advised customers that we would keep them informed of when the changes were likely to impact them, informed by BT's 5-year plan. Where customers needed to change out 21CN incompatible CPE, this forward view was vital. This is particularly true for our utility customers, who are subject to long planning and investment cycles as a result of the regulation they work under. Without certainty of when changes are likely to happen they can struggle to get the funding commitment they need. This certainty is no longer there.

The issue also affects replacement of telecare and alarm equipment that is incompatible with 21CN. In the current economic climate, there will inevitably be a reluctance by any manufacturer to invest in changing out non-compatible equipment sooner than necessary. Whilst the delays to the programme may offer some opportunity to only change out equipment that has reached its natural end of life, we would expect that the manufacturers are also struggling with making investment decisions without any clarity over the timeframes involved.

We recognize that there is no clear means to address the delicate balance between providing certainty whilst maintaining flexibility, but Ofcom's suggestion of a commercial negotiation between BT and CPs is unlikely to lead to any meaningful outcome unless Ofcom set some expectations at the outset, with a clear mandate to intervene. These expectations might need to include, for example, the minimum notification period for any changes, management of increased capacity requirements in the short-medium term and the value of the compensation for sunk investment, but there are other elements that could also usefully be included in any guidance from Ofcom, which will need to be agreed up front. Given that BT and CPs' needs will be diametrically opposed, with BT wanting to retain maximum flexibility and minimum commitment and CPs needing as much notice as

9

possible and full compensation for the costs of system changes, it seems clear that some form of framework is required to guide the debate.

The alternative is for Ofcom to set the criteria by which BT will roll-out its 21CN network and establish a compensation regime where BT fails to meet this criteria. Ofcom's consultation doesn't acknowledge this option and we would be interested to understand why this wasn't included. Clearly any mandate from Ofcom would require consultation and in reality, may have the same outcome as a 'negotiated' settlement, albeit with different remedies for any breach.

Ofcom comments that the obligation it previously imposed on BT to publish its 21CN roll-out plans has done little to alleviate the uncertainty for the rest of industry. We would agree. It is unfortunate that the published quarterly plans are also somewhat oblique, further exacerbating the difficulty of aligning our own investment plans against BT's view of the world at any given point in time. This obliqueness also engenders a level of mis-trust, which is unhelpful.

However, what has changed significantly over more recent months is the interplay between NGA roll-out and 21CN and it is the respective plans of both projects that now need to be considered in tandem in order to inform any investment decision-making. We are currently struggling to piece together a consolidated view of the plans of the different BT Lines of Business and the sub-plans and trials that are in train. Whilst publication of these plans doesn't necessarily alleviate investment uncertainty, a consolidated view would at least enable us to understand the interplay between the two and make a more informed judgement about our own future developments. We would urge Ofcom to extend the current publication requirements to BT's NGA plans as well as 21CN, into one consolidated view and require BT to state their confidence level against each element of the plan. By including a level of confidence, we are better able to make the risk/reward decision. It would also be valuable to review the format of this publication to overcome our issues around the lack of clarity and Cable&Wireless would welcome the opportunity to participate in that review.

Question 6: How do you think Ofcom should take forward considerations relating to switching involving next generation access and core networks, and which areas should we focus on?

Ofcom has been running a migrations project for a number of years, with a key focus on the issue of harmonisation of switching processes across a range of products. Cable&Wireless believes this is the right place for consideration of the general principles to be applied to end-user migrations in an NGN or NGA environment. However, work is going on now to define the NGA products that will be supported by BT's own FTTC and FTTP roll-out and if Ofcom doesn't reach a conclusion on this issue quickly, there is significant potential for these new products to be designed, developed and deployed before Ofcom has finalised its thinking on 'what good looks like'. Experience shows us the difficulty in retrofitting fundamental changes to products once they are in common use, so it would be frustrating if industry missed the opportunity to take full account of Ofcom's thinking when designing these emerging next-generation products. To this end, Cable&Wireless urges Ofcom to conclude its migrations work quickly.

As well as the generic design of the emerging products to enable customer to migrate easily, it is also important that network compatibility is taken into account, such that Customer Premise Equipment (CPE) that works on one network also works on another without substantive redesign or reconfiguration. To ensure this, a standardized SIP-UNI interface is required.

Question 7: Do you agree that the consumer protection principles and our approach to addressing consumer protection issues are still valid?

We agree that Ofcom's consumer protection principles and proposed approach are still valid. It is important that the transition to any new technology has no detrimental effect on the services consumers receive (whether directly impacted by the transition or not), nor provides an opportunity for 'land-grab' by any CPs as a result of that transition. We are content that BT's proposal's to date are consistent with Ofcom's principles. However, Cable&Wireless would highlight the need in particular to address the interests of the SME market : all too often consumer interests are addressed by Ofcom and lobby groups ensure large business/utility issues are addressed, but those small companies in the middle are forgotten.

Question 8: Do you agree with our assessment of how the alarm equipment incompatibility problem should be addressed?

Cable&Wireless agrees, but notes that the consideration is largely 21CN-centric. Alarm equipment is both connected to other CP NGNs, and also communicates across call paths which encompass other CPs' NGNs. In this context, as outlined in our earlier responses, we believe that a pan-industry response is required.

Question 9: What will be the impact on vulnerable consumers of replacing telecare and other alarm equipment?

As we discuss in our response to question 5, the delay to BT's plans for 21CN roll-out could have some benefits in terms of allowing a more organic replacement of incompatible equipment that results in no incremental cost for either manufacturers or their customers. However, the lack of clarity and certainty could also raise those costs in some circumstances.

Cable&Wireless would envisage that the costs of any replacement are borne by the equipment manufacturers. In the main, the problems with incompatible telecare and alarm systems stems from the manufacturers' decision to deviate from published technical standards for their equipment. It would seem reasonable therefore that they bear the cost of any replacement.

Question 10: Would it be appropriate to agree a common set of terminal equipment compatibility tests? What would be the most appropriate forum to develop these tests?

As outlined in our response to Question 3, Cable&Wireless agrees that it would be appropriate to develop such agreed compatibility tests, and that NICC is the appropriate forum.

Question 11: What other steps could be taken to help manufacturers ensure terminal equipment is compatible with the QoS parameters of NGNs?

and

Question 12: Do you have any other comments about compatibility of terminal equipment with NGNs and how they should be addressed?

Cable&Wireless has little to add on this issue, other than to note that few CPE manufacturers are NICC members and that Ofcom has a role to play in encouraging their participation.

The situation could be remedied via the re-introduction of a national CPE interoperability laboratory which would accredit CPE as NGN-capable, however Cable&Wireless believes that such costly/draconian measures are disproportionate.

Question 13: Do you think there is risk of terminal equipment incompatibility that warrants further SIP UNI standardisation? How should this be progressed?

and

Question 14: Do you have any other comments about compatibility of terminal equipment with NGNs and how they should be addressed?

As outlined in our response to Question 3, there is a risk of such incompatibility, albeit it should be weighed against standardisation not stifling innovation on the part of CPs. Cable&Wireless believes that there is scope for a baseline SIP-UNI standard, which CPs could augment where needed. The correct forum to consider these issues is NICC, albeit the activity should consist of profiling international standards rather than the creation of new material.

Question 15: Will a slower transition from TDM to NGN networks pose a risk to voice quality of service? How should such risks be addressed?

Cable&Wireless believes that there are two quite separate issues here, namely the usage of telemetry by utilities, and wider QoS issues relating to voice service.

Telemetry applications

Telemetry applications utilised by the utility sector tend to use low bit rate modems, either via point to point or dial-up links. For such applications, the key thing is timely information to the utility customer base. Cable&Wireless has been working with the utility sector to understand their needs and the implications of NGN deployment.

Regulated utility industries typically must submit their capital plans well in advance of the planning horizons which are now expected in the telecoms industry. They require certainty that the telecoms services they rely on will continue, and if not, information of when they'll be ceased in order that capital expenditure submissions can be made to the relevant regulatory agency. Our perception is that this is something that BT is beginning to understand and support, but we would welcome Ofcom's oversight to ensure that this remains the case.

Voice Quality of Service

It is inescapable that the demise of the common numbering database could cause an issue as it means there'll be potentially more networks in a call path than has been assumed in the NICC QoS standards. Whilst the standards make an assumption of six networks, the onward routeing solution that prevails for portability means that for a minority of calls this will be exceeded, potentially involving ten networks. Although this represents a QoS "tail" by which most customers will be unaffected, regrettably it will be the same combinations of originating and terminating customers that consistently experience poor call quality.

Set against this, the demise of WVC/WBCC has actually clawed some of this back as it removes a potential network from the terminating end of a call path.

To recast the network delay plan to allow for a greater number of networks would not be technically feasible, as it would require performance on the part of individual NGNs which would be impossible. The best that can be done is to encourage usage of IP interconnection where possible, and to make it clear that direct routeing should be designed-in and supported in the NGN era. Cable&Wireless is disappointed that Ofcom has missed an opportunity to set this direction in the parallel consultation on the future implementation of number portability, and our response to that consultation will expand upon this.

Question 16: Do you have any comments on the long-term trends in the evolution of networks to next-generation architectures?

Cable&Wireless' initial comment on the longer term evolution of networks to next-generation architectures would be to note that, much like a historic edition of Tomorrow's World, any predictions we make for the long term will be both right and wrong in equal measure.

Cable&Wireless already possesses what Ofcom terms a "Phase One" NGN : our high quality MPLS network allows our enterprise customers to interconnect their sites seamlessly, and the applications which run over this are determined as much by them as by ourselves. However, like other CPs our NGN has already gone beyond this, in that the core of our PSTN network runs across our MPLS network, albeit the majority of customer facing equipment remains as traditional TDM/C7 : this demonstrates that the movement to NGN architectures can in the early days be something which is invisible to customers. Where customers wish to use IP technologies directly for their voice service we can facilitate this, but to be clear Cable&Wireless views this evolution as a customer-driven event rather than something to be foisted onto them by their CP. Against this backdrop, even in the longer term, we see that TDM network has a role to play as a collector layer for an NGN core.

As noted in our response to Question 1, Cable&Wireless believes that the advent of NGA will accelerate the treatment of voice as an NGN-application, versus a standalone platform. We believe the economics of this will necessarily mean that bundled services will increasingly become the norm, but must stress that this should be a market-driven exercise rather than something which comes about due to regulatory mandate. Capabilities such as Cable&Wireless' FMC (and the move into the fixed market by mobile network operators) will see the distinction between fixed and mobile become blurred.

Cable&Wireless agrees with the industry consensus that interconnection of NGNs will be at fewer physical handovers, hence arguably reducing competition in the provision of backhaul. However, we believe that care must be taken not to assume too simplistic a view of the situation;

- Although voice interconnection and managed broadband access services (e.g. Wholesale Broadband Connect) may be at a fewer number of physical points of handover, we believe that for access services it will still be advantageous for CP connections to be as close to the customer as technically/commercially feasible. For example, we expect the design of ALAbased services to facilitate handover to CPs in proximity to the customer rather than having to be via a centralised core.
- Even for voice interconnection and managed broadband access services, our belief is that only a very limited number of CPs have physical connectivity to all of the 20 / 27 BT handovers necessary to secure the lowest charges. This implies an ongoing wholesale market for access to these locations.
- As outlined in our response to Question 4, we believe that for voice interconnection, the charging regime should reward connection to both the correct physical handover and minimising the call control effort on the part of the terminating network. If, per discussions at Consult21, each handover encompassed customer lines controlled by four callservers, this could imply perhaps 100 virtual routes across 27 handovers (note : in contrast to the TDM situation of approximately 700 routes across 70 handovers). However, while for TDM connections the "prove-in" point for a route can be as low as 2x2Mbit/s, for various technical reasons for IP technologies it can be perhaps ten times this. As such, it is possible that a situation could develop whereby smaller CPs have the choice of accepting a higher call-control cost from the terminating CP, or to use an aggregation provider possessing sufficient scale to achieve the lowest overall rates from the terminating CP.

Cable&Wireless shares Ofcom's view that the early vision of NGNs being totally service agnostic, with service/application provision being independent from network provision, is unlikely to become the norm : there is little merit in an organisation making considerable capital expenditure simply to become a commodity provider. Further, the cost of deploying NGNs will inevitably mean that there will be a limited number of them implemented. However, the power of the public internet will place some constraints on monopolistic behaviour in the operation of NGN cores – customers will not pay a premium for something that works perfectly well over the internet. We believe that we will see greater collaborative working between NGN infrastructure and application providers, and inevitably there will need to be agreements to exchange characteristics such as location and presence across NGN interconnections. However, work cannot really start on this until the basics of NGN operation are more properly understood, and we expect any activity to be based around solving specific interoperability problems rather than in devising/implementing a grand top-down scheme. In this context we watch the ETSI work on IMS with interest, but question whether there is a role for a complex network, versus the network simply facilitating intelligence at the edge.