The Terabit Incentive Scheme,
BBBritain.co.uk response to the Pension Deficit consultation.

BBBritain.co.uk is a small website resource where a number of enthusiasts and interested experts share their knowledge on the nature of the UKs connectivity and its potential. Our primary aim is to enable our friends and neighbours get connected and get the most from the connectivity available.

We are not pension specialists, but contributions have been made to the Digital Britain and BIS consultations on spectrum modernisation, each pointing to a need to re-define how communications is defined. The resolution of the pension millstone will be of a similar impact to the creation of the next generation fund in terms of investment in UK connectivity. It is in this context we have outlined a Terabit Incentive Scheme, a scheme to permit any operator to recover incremental costs in exchange for releasing or increasing peak hour capacity for the UK bit commons.

The outline concept is outside the current legal framework, and indeed beyond the immediate scope of this consultation, but a significant review of that framework is needed if Digital Britons are to get the connectivity they need. Incentives are needed for operators to invest in capacity for Digital Britain. This incentive will permit will additional or profits to be made, as operators create the peak hour bits capacity.

The concept is in draft form and is meant for discussion. It is hoped it is of use to those seeking a good outcome for UK connectivity, for which the pension deficit is a barrier.

Q2.1 - Do you agree with the stated scope of the review? If not, please provide your reasons.

The scope as outlined is clear but the telephony focused legal framework makes any settlement a challenge as customers need better connectivity not more telephony services. Rather than question Ofcoms approach, BBBritain.co.uk wish to put forward an outline solution which it is hoped will be considered for assessment further in the process. A process ought to have some foresight as to what a good outcome looks like. A scenario is presented where users get the connectivity they need and a transparent framework is created so appropriate incentives can be put in place to re-cover costs /profit.

The following factors have a bearing on the approach to address the problem.

The current legal framework, including the updated EU Telecoms package is written around sustaining a network defined around delivering a telephone service. In contrast most UK users are principally seeking to connect their computing resources to permit high speed connectivity using a mixture of fixed and mobile access. Thus the existing legal framework upon which any settlement might be based would translate into increased call conveyance charges tending to sustain a legacy telephone service rather than facilitating its replacement. This is not in line with the goals of Digital Britain and it is inconsistent with Ofcoms proposed duties to secure further infrastructure investment.

The notion of 'efficiently incurred costs' on legacy services and pension deficits while crucial to BT Group is of little interest to users who wish 24x7 connectivity for their computing resources. Users and indeed Digital Britain need a near 16[1] times increase in the availability of peak hour resources.

1 Current peak hour resources are approximately 30Kbps for each user for the peak period if all were logged on simultaniously. Quality home working, telecare will need users to access approximately two-way 480kbps. These projections are conservative compared with those outlined here http://www.ofcom.org.uk/research/technology/research/emer_tech/hqvs/ - see discourse on p10/12 of report. The factor of 16 is useful is so far as provides a good peak hour number and it matches the expected reduction in bandwidth charges. We also need a factor of 10 improvement in quality for key applications that's a .1% packet for

Thus the recovery of even more costs on a diminishing number of calls does not support the need to invest to improve capacity.

Rather than examining the nature, of any obligations Ofcom might or might not have to assist in this pension millstone, perhaps the issue should be; given the need to increase peak hour resources by a factor of 16 times so NGA can be used effectively, then what incentive scheme can be put in place to transform existing resources or make new resources available?

The successful execution of Ofcom's investment duties would be helped by a fully healthy and functional Openreach operating independently of, and free from, the wider concerns of BT Groups 3G license debts, and its mis-reporting of its Global deals.

Reducing the nations reliance on Openreach must also be a consideration. Having only one supplier of last resort is not strategically sound from a critical services national planning perspective. Thus from a policy perspective, creating even some limited option to Openreach means consistency is needed across the workings of the proposed next generation fund, the final design of the Digital Dividend spectrum modernisation programme and any proposals to address future cost recovery, in which pension liabilities might feature.

The existing legal framework creates many problems for users and Digital Britain. These include;

a) a call conveyance regime where 'calls' and supporting infrastructure need replacing with bits as industry's new unit of currency.

b)the historical kilobit per second cost which provides a reference point for all UK Bandwidth pricing was based on peak Erlang costs for PSTN voice services.[2]

c) the quality of the current UK data transport infrastructure is impacted negatively by the 'need' to keep a legacy services in place to recover the related efficiently incurred costs. By quality is meant packet loss rates and their impact on the end user experience for time sensitive applications.

d) the concept of efficiently incurred costs are on a 1970's designed integrated telephone network and service rather than a multi-purpose, high performance and low loss data transport network.

The existing legal framework does not account for the need for;

a) a cost recovery mechanism which promotes and rewards bits transported,
b) rewards investment in both releasing or transforming existing capacity or making new bit transport capacity available.
c) quality data transport where key applications need .1% packet loss.
d) the need to treat fixed and mobile connectivity as a single bit transport resource.

The current legal framework is not a Digital Britain legal framework but one which is dominated by the delivery of a tightly defined telephone service. Unfortunately the recently approved EU telecomms package remains focused on the preservation of telephony service definitions.

The BBBritain suggestion to create an incentive scheme to create capacity begins with the premise

key applications.

2 This relationship was broken in January 2010 with the reduction in WBC bandwidth charges from ~£80 to £40 Mbps.

that users will in one shape or form have to pay for the pension deficit either in higher prices or higher taxes. However, users also wish for and need better connectivity options which are not defined by or restricted by the existing telephony structured legal framework. Thus the following principles are the beginnings of an approach which should be examined further.

a) Any contribution to additional costs should arise from supporting enhancements to the UK data transport infrastructure, not a reward for sustaining a legacy service that needs replacing.

b) Openreach and all of industry accept a new cost recovery mechanism which involves replacing the regime of 'efficiently incurred costs' for a telephony network provider with incentive based interconnect where the more data transported the bigger the rewards available to all those upgrading or transforming local infrastructure whatever the medium.

c) The objectives as stated in the Next Generation fund imply an up to 16 times increase in peak hour data transport resources per customer[3] is needed. The combined resources of the UK Internet traffic, mobile traffic (voice and messaging) and fixed voice traffic added together creates a UK busy hour resource of 1 tera**bit** per second. A tera**bit** is a 1 followed by 12 zeros. It sounds a lot, but per premises (27m) it is just 37Kbps . It is the capacity per premises per second if every premise was connected at the same moment. It is enough to download a Facebook page, but little more.

Translating todays per second capacity into a monthly download limit provides a number of 10-12GB – Gigabytes a month or about 18 hours worth of regular iPlayer TV downloads (652MB per 60 minutes of viewing) per premises. This works as long as the data is downloaded but not streamed.

One working interpretation of Digital Britain would be to deliver a 16 times increase in peak hour capacity per premises from circa 30Kbps to 480Kbps (bits per second) and this would for marketing purposes translate into a package supporting downloads and uploads of approximately 200GB a month.

Research supported by Ofcom in the autumn of 2008 showed the cost of backhaul bandwidth dropping from an indicative £80 per megabit for peak hour capacity to £5[4].

What we are actually describing is the need to increase the UK peak hour bit transport from 1 Terabit to circa 16 Terabits as soon as is feasible. This transforms our broadband packages from 30Kbps peak hour limit to a synchronous service of ~480Kbps, and download limits from 20GB to 200GB. The latter are just reference points. The 'market' does not reference its peak hour planning rules, but it is this factor that has the biggest influence on the end user experience. The downloads limits have little impact on cost. It is the peak hour capacity which determines the end user experience and creates an undeclared limit around the volume that can be downloaded.

There is no guarantee that the market will invest to deliver this outcome. There is are many indications that the market would prefer to recover any cost it can from the telephony based call conveyance regime keeping legacy revenues flowing while limiting the scope of the Internet to a browsing and downloading experience, and treating any upgrade to peak usage as the basis for a chargeable value added service.

3 Quality home working, tele-medicine need to be supported by live two-way video – circa 480Kbps per user. This number can be reduced by making assumptions on the number of active sessions at any one time. The number is for indicative purposes.

4 http://www.ofcom.org.uk/research/technology/research/emer_tech/hqvs/ - This research shows the busy hour calculations used in this document are modest.

Permitting Openreach and others local access providers[5] by encouraging them to unlock the full potential of our connectivity at the scale outlined is perhaps a price worth paying. This process would also trigger additional efficiency gains as the £1bn in operational costs that BT 21C originally promised would emerge from the consequential re-writing of the regulations governing our connectivity.

For illustrative purposes the following Terabit Incentive Scheme is outlined. It would be an industry scheme rather than a Openreach scheme and provides a picture as to what Digital Britain needs.

The bits sent and delivered would be counted at the appropriate aggregation points. The table overleaf transcends fixed and mobile, voice, messaging and only counts bits

It provides an incentive for increasing capacity and moving to an economy based on bits.

Should Openreach outsource local exchange areas to be upgraded, then this mechanism, plus any incentives from the next generation fund would be transferable to the new provider.

It can be used by any local exchange area, including all bits arising from fixed lines with attached radios, macrocell, or picocell traffic. The tablebelow is represents a simplistic national view.

UK Peak Hour Terabit Capacity Incentive Scheme for local exchange carriers - (based on the peak per second capacity) -capacity is synchronous.

Indicative numbers for illustration[6]	2009[7]	2012	2014	2016
UK peak hour capacity needed- bits per sec	10^{12}	40^{12}	80^{12}	160^{12}
Peak capacity allocated per Broadband user	30Kbps	120Kbps	240Kbps	480Kbps
Indicative bandwidth cost per Mbps for back haul, core Internet and peering.	£140[8]	£50	£25	£15
Cost of peak hour bandwidth allocated per typical Broadband package	£4	£6	£6	£7
Capacity incentive – per peak incremental bit of capacity released and used to nominated points of handover.	0	£0.0000021	£0.0000021 (+3Tbps) £0.0000031 for (+4Tbps)	£0.0000021 £0.0000031 as before+ £0.0000035
Max monthly cost recovery if capacity is used.		£6.25m[9]	£18.75m	£32.6m
Incremental annual amount recovered		£75m	£225m	£391.7m
Impact on Users Broadband package per month		0.25p	0.63p	£1.46
Implied cost per Gbyte uploaded/downloaded	£0.21p	£0.08	£0.02	£0.02
Per GB equivalent to peak hour incentive		£0.00313[10]	£0.00391[11]	£0.00456[12]

5 In the response to the consultation on Next Generation Fund, an outline was provided where Openreach would lease out facilities which they were unwilling to upgrade. Available from submission page at www.bbbritain.co.uk .
6 Indicative numbers, the format is more important than the numbers, although every attempt has been made to be consistent with published numbers on volumes , usage and cost projections.
7 Typical values for todays Broadband services, the 1 Tbps includes estimates for all traffic types, voice and SMS, beginning with Internet data based on LINX daily volumes in January 2010..
8 Note that from January 2010 Openreach have reduced one component the backhaul charges from ~£80 to £40 Mbps and this represents costs for national delivery.
9 Recovered on the incremental 3Tbps peak hour capacity measured at the point of handover.
10 Implies a package of 80GB – with peak hour resources of 120Kbps
11 Implies a package of 160GB – with peak hour resources of 240Kbps

This table is for discussion only. The numbers are consistent with information available in the public domain but should be used are early workings.

Q2.2 - Do you agree with the proposed objectives for this review? If not, please provide your reasons.

The objectives as they stand limit the scope to some partial settlement based on call conveyance. Additional options need to be considered to achieve some breakthrough for settlement system suited to a economy based on bits.

Q 2.3 – Do you have any comments which you think are relevant to our equality impact assessment?

No

Q3.1 –Do you consider that the general issues facing all UK defined benefit schemes are relevant for Ofcom's treatment of BT's pension costs?

The short answer is no, but in practical terms given the problem needs solving and if a fix can be found to bolster Digital Britain and reduce the reliance on Openreach, the that would be a good thing to achieve.

Q3.2 - Are there any other issues affecting UK defined benefit pension schemes that are relevant to this consultation?

No comment.

Q4.1 – Are there any other issues, relating to accounting for pensions, which are appropriate for us to consider in this consultation?

No comment.

Q5.1 - To what extent should our assessment of BT's pension scheme to date inform our final decisions for the future treatment?

To protect the future of Digital Britain from further liabilities of this sort, any settlement needs to allow entities other than Openreach to emerge, so some basis for calculating future efficiently incurred costs can be assessed.

Q5.2 – Are there any other facts relating to BT's defined benefit scheme which are relevant to this consultation?

No comment

Q6.1 - Do you think any of the decisions made by the other regulators, discussed above, are relevant to our treatment of BT's pension scheme? If so, which decisions and what are the reasons for this?

12 Implies a package of 320 GB – with peak hour resources of 480kbps

The nature of communications makes it appropriate to examine different solutions. Other regulators are managing what are scarce resources. The nature of communications means the issue is about releasing resources as opposed to rationing them. In the context of Digital Britain the option exists is to create incentives so existing capacity can be transformed or new capacity added.

It is worth noting that the UK communications industry is in breech of Moore's Law. As our computing doubles in processing capability every 18 months, our communications services tend to plan platform upgrades every 8-10 years. This need not be the case.

Q7.1 – Do you agree that a large defined benefit scheme may distort a company's cost of capital, as set out in paragraph 7.8?

No comment.

Q7.2 – Do you have any comments on how material the impact of a DB pension fund on the cost of capital would be?

No comment

Q7.3 – Do you have any comments on how accurately the impact of a DB pension fund on the cost of capital can be measured?

No comment.

Q8.1 – Does the '6 principles' framework provide a suitable framework for assessing alternative options for the treatment of pension costs?

A particular emphasis should be placed on accruing benefits for customers and the future needs of Digital Britain.

Q8.2 – To what extent should we consider the effect of previous regulatory decisions when assessing the various options?

There is a particular need to look to the future and what users need. UK industry must not be permitted to sustain an out of date legal framework so additional costs can be recovered on legacy assets.

Q8.3 – Our framework does not currently provide for assessment of the impact on BT. How far, if at all, should our assessment framework take specific account of the impact on BT's financial position, both in the short and long-term?

Every penny off the pension deficit is a penny added to shareholder value. Any future settlement should reward customers directly, or reward BT if they accept additional risk in making available the resources Digital Britain requires.

Q8.5 – To what extent should Ofcom take into consideration BT's future investment plans when considering the impact of the options?

BT will decide to invest where BT believe a return is possible. An incentive framework for increased peak hour capacity should be considered. The change from a call conveyance cost

recovery regime to one based based on bandwidth and bits needs to occur as part of a Digital economy. In this context Ofcom decisions are key in order to incite additional investment in the UK.

Q8.4 – Do you have any comments on what you consider to be Ofcom's overriding policy objective in this review?

The overriding policy objective must be to what extent any deal contributes to improving the nations connectivity. If a settlement makes a positive contribution to the following it is worth considering.

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- at least a 5 times increase in average speed over todays average urban speed for both fixed (15Mbits ps) and roam from home (600Kbits pa). Speeds are synchronous.
- a 10 times improvement (.1% packet loss) in quality for applications that need it.
- a factor of 16 times increase in peak hour resources -to circa 480Kbps per user.
- Unlimited usage for all local networking.
- coverage of more than 99%
- a settlement system based on bits carried to replace the existing call conveyance regime.

Q9.1 – Do you think that Ofcom's current approach, to disallow deficit repair payments when making regulatory decisions, remains appropriate? If you think deficit repair payments should be allowed in part or in full, please provide evidence to support your answer.

No specific comments, over and above what has already been stated.

Q9.2 – Do you agree with Ofcom's initial comments in applying the above principles?

The current legal framework provides very limited options. It is not clear how a customer centric solution could be created.

Q9.3 - Do you think the accounting charge remains an appropriate measure of the ongoing pension cost incurred in the year? Please provide explanations to support your answer.

Given the accounting charge finds its way into call conveyance charges, there is thus no link to improving the nations connectivity. We suggest the cost recovery regime is replaced with incentives to increase the nations connectivity with incentives for increasing capacity rather than continuing support for the notion of efficiently incurred costs.

Q9.4 – How should pension liabilities relating to ongoing service costs be discounted in order to arrive at an economic cost for provision of new pension accruals?

It is suggested here, an incentive is created to substantial costs /profits to be made in exchange for making additional capacity available.

Q9.5 - Do you think a figure derived from actual cash payments would be an appropriate basis on which to establish the pension costs for the year? Please provide explanations to support your answer.

It is important to provide an opportunity to recover additional costs rather than attempting to fix a particular number.

Q9.6 - Do you think that the cost of capital should be adjusted to reflect the impact of a defined benefit pension scheme? If so, how should we reflect this? Please provide reasons and evidence to support your answer?

No Comment.

Q9.7 - Please detail any other options for the treatment of pension costs which you think we should consider in this consultation.

A idea termed the Terabit incentive scheme is outlined above. It is focused on providing incentives to invest in peak hour capacity for bit transport.

Q10.1 – Do you have any comments on how we intend to take this Review forward?

The existing legal infrastructure needs to be re-written for Digital Britain to support an communication industry based on bits. This provides a much better environment to create incentives for industry to recover additional costs.

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