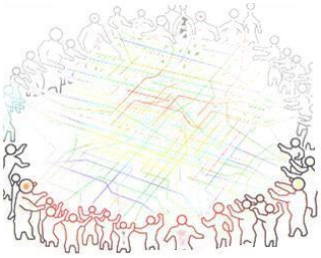
THE BIT COMMONS REPSONSE TO OFCOM'S CONSULTATION ON BROADBAND SPEEDS CODE OF PRACTICE – NOVEMBER 2017.

Moving from a Broadband 'Speed' Code to a Connectivity Code.



The BiT Commons

The BiT Commons is grateful for the opportunity to respond to Ofcom's latest attempt to reduce the mis-selling of Broadband services.

The shift in the Digital Communications Review (DCR) to call for more full fibre suggests it is becoming more important to address the art of communicating what is being sold.

Ofcom's approach, including the latest proposals suggest a gradualist approach to reducing the amount of mis-selling. While The BiT Commons appreciates what Ofcom has done so far, the shift in the DCR suggests Ofcom's framework for addressing this problem ought to reflect what is a more fundamental change. The good news is that change is not that hard and will make the guidelines easier to manage going forward.

The Communications industry including Ofcom has got in the habit of using a nomenclature which is at odds with the service sold. Terms such as standard, superfast and ultrafast broadband, are being used to describe what is a service limited by distance. The tendency towards mis-use goes deeper, as the limits being used in the proposed Broadband -Universal Service Obligation are defined unconsciously by the limits of copper gain technology. The limits of copper gain technology are extended by overlaying optical fibre deeper into the access network. This solves problems for some but not all. The mis-use of terms like 'speed' ,'superfast', 'standard', 'normally' even 'broadband' should now be addressed as part of the process to support the switch to all fibre networks. The latter will be undermined if the limits of existing services are not explained.

In this latest Ofcom consultation, the term 'speed' or speeds is used over **300** times, excluding the headers in a 43-page document. The very basics of the physics of broadband show that speed is a near constant while 'throughput' varies depending on the quality and distance of the copper connection. The end to end performance of the Service Providers (SP) delivered service is a function of the capacity of the access network and the peak hour resources engineered in the planning rules for each customer package. This much is under the SP's control. The total end user experience is a function of the latter, the devices being connected to the service, the medium used in the premise and the quality and location of the hosting service being accessed.

Given that Ofcom are more pro-actively promoting more full fibre networks including providing BT the opportunity to recover costs on a replacement basis, there is room to review the level to which the limitations of copper access are being accommodated, if not excused, in the industry's nomenclature. Toleration of the limitations of copper gain technology developed when the option of full fibre networks was not considered a realistic goal. The learnings from the subsidised BDUK programme suggest overlaying fibre on existing infrastructure is much cheaper than originally portrayed by BSG/Analysis Mason in 2009. Thus 'full fibre' may not be the pipe dream once supposed by BT Group, but something realistic and achievable overtime should Openreach have sufficient operating freedom and the motivation consistent with the funds collected from the existing cost recovery processes. The latter are the most part based on replacement cost, while BT investment can be described to be based on a make do and mend allowing much of the funds for the network to be deployed to other BT Group functions. The transition to full fibre will be facilitated by

an independent Openreach if Openreach have first call on the cost being recovered on all access networks.

If we remove from industry nomenclature our toleration of the language which accepts or excuses the limitations of copper gain technology, what would the code look like?

If the ultimate goal is the provision of full fibre access services where needed, this should be kept in mind when describing solutions with an inbuilt distance limitation.

Improving the Code

Some thought should be given to the notion that term Broadband itself should be replaced with the term 'Connectivity'. Broadband refers to the use of a broad range of frequencies used to established more connectivity over copper. Connectivity reflects the more generic desire of connecting devices to the public internet and can encompass all mediums radio, copper, fibre. The term Connectivity is a better starting point as it lends itself to be extended into the realms of convergence and mobility, where our devices are connecting to many networks, fixed, mobile and nomadic.

Ofcom should consider also switch from using the term 'Speed' to 'Throughput', so the new code is a Connectivity Code or Data Connectivity Code describing the resources available, not a 'Broadband' 'speed' code. This would be the first step in improving the Broadband speed code. Our bits being transported do not speed up. Einstein's special law of relativity applies to all the electromagnetic spectrum. Why does the industry wish to ignore the latters existence in maintaining the current Broadband 'speed' code? 'Bits' can appear to slow down as individual components get overloaded, but this is a capacity issue not a speed issue. ADSL, VDSL and Lr-VDSL radiate signals over copper, and it is the attenuation of these signals over distance that reduce 'throughput', while the 'speed' is constant. Increased throughput occurs if the data carrying capacity of the medium used is increased.

Ofcom have begun to use the part fibre-part copper nomenclature, but this could be improved further by replacing superficial terms like standard, superfast and ultrafast by a more accurate description to reflect the limitations imposed by distance.

Before we discuss throughput, the customer should be informed of the fibre/copper/wireless mix as an indication as to how his service is delivered. This could be supported graphically if needs be. Crucial to stop mis-selling is to understand the limits within which the service is constructed.

ADSL variants could be described as service subject to the limitations of copper served from the exchange building.

'Superfast' variants can be described as a service subject to the limitations of copper service from a street cabinet, offering services up to 30Mbps -1 km from the street cabinet fed with fibre optical cable.

Ultrafast services using copper (e,g G,Fast), will be begin to see limitations 500m from the street cabinet.

Ultrafast services or services based on optical fibre only, will not have throughput limitation based on a technical limit but by how much the customer is likely to pay, where it is available.

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a) Do you agree that the codes should require the provision of speed estimates that reflect peak-time network congestion?

The BiT Commons believes the term 'speed' should be replaced by 'throughput'. The 'Throughput' (upload and download) estimates for the peak hour should not be a statistical estimate for the peak hour, but the allocation of bandwidth per user based on the ISPs planning rules for the service. This ought to provide a more accurate worst-case scenario should everybody be online simultaneously. It would also stop any practice of overbooking bandwidth, while reinforcing the notion that connectivity services are a shared best efforts service. The founders of the internet wrote down some principles. These have not changed. They include the best efforts nature of the service, the shared nature of the service and the users responsibility not to abuse its use. The latter is important as it assumes we need to understand the limits of what is possible. This aspect needs to be reflected fully in the guidelines if the nature and limits of the service is to be understood.

This practice would begin to aid a change in industry practice of selling extra download volume by selling x number of Gigabytes a month. Selling extra download capacity without increasing peak hour capacity, means the Ofcom sponsored code is supporting a practice which bears little relationship to the underlying cost of provision.

b) Do you agree that the minimum guaranteed speed should always be given to customers at point of sale?

An estimate of the 'Throughput' should be provided with a lower guaranteed threshold. This should be supported by the 'fibre' content of the service be it fibre to the exchange, fibre to the cabinet, full fibre. The operator can name the exchange and name fibre enabled cabinet. They can even advise the customer where Fibre on Demand supporting direct fibre connections is available.

The customer ought to be informed of any distance based limitations of the service. This is not anybody's fault, just a function of the service.

A clear statement of all the limitations of the service would be more helpful. The throughput limitation imposed by distance, the busy hour traffic planning rule and any download limit.

c) Do you agree that, where a customer's speed falls below the minimum guaranteed level, there should be a limit on the length of time providers have to fix the problem before offering the right to exit? Do you agree that the limit should be 30 calendar days?

The 'throughput' possible is related to distance of the copper access and the backhaul resources provisioned by the ISP. Understanding and the explaining the distance limitations means the customer can become an informed decision maker.

The problem of lower than expected throughout is mostly reliant on Openreach to fix. If distance from cabinet to premise is > 1,000m for instance then the possibility of any fix is limited unless the customer can order a direct fibre connection. Here Fibre on demand markers ought to be visible thus permitting customers to work with others to request a FTTP-GPON service if the customer needs more.

Operators should now be able to accommodate the latter into industry processes.

More honesty is needed. The right to cancel can be reduced to when the line checker is used and subsequently proven incorrect.

The 30-day limit could be enhanced by information on planned builds and upgrades and a capacity to order Fibre on Demand (FTTP-GPON variant). BT/BDUK are planning work 12 months ahead and some of the work is being notified on sites like https://www.telecom-tariffs.co.uk/codelook.htm

d) Do you agree that the right to exit should also apply to a landline service sold over the same line, and to pay-TV services purchased at the same time, as the broadband service?

This is a complex issue. How do you balance what a customer needs and wants and the distance/performance of the line from an exchange, street cabinet, or other fibre node.

If the distance limitations are clearly stated, then the SP will have met their obligations. It may be appropriate to highlight the following.

Where download throughputs are less than 10Mbps, then live streaming will be problematic. However, if you download and then view the content, you will have a functioning service. Perhaps, low throughput lines have a health warning such as, 'Unlikely to support live streaming of content', or 'Unlikely to support more than x live steams of content simultaneously'. However, you can schedule downloads and then stream from your PC or other internet enabled device.

Furthermore, if there is less than 2mbps uploading possible, some notification is needed on the number of VOIP or Skype Video sessions supported.

Consistent with the switch to Throughput nomenclature is the notion that the service purchases is part of a shared system, where limits apply. The balance between the user's needs and rights and the commercial needs and rights of the SP is determined by how well these limits are communicated and understood.

To that end terminology like 'speed', standard, superfast and ultrafast are unhelpful as they describe the upper limits as opposed to the actual limits we should be working within. The latter better reveals the underlying value of the service and will increase customer satisfaction. The current code assumes there is only copper gain technology and is tries in some circumstances to support blagging over the shortcomings rather than explaining the limitations.

Some simple guide on the performance of the router provided should also be referenced. The milli-wattage of the router supporting wifi, and even its clock speed supported by the routers chip set could be referenced.

e) Do you agree that the codes should be capable of being applied in full to all standard fixed broadband technologies, including cable and FTTP?

Ideally yes, but in order to do so terminology like 'standard' need to be changed.

The code should not be subject to the limitations of 'standard fixed broadband technologies' as the so called 'standard' imposes a distance limitation and is the source of all the confusion. The code needs to be abandon the term 'standard' and explain as above the distance limitations of copper gain technology from the exchange, from the cabinet, or remote node attached to a pole.

FTTP or full fibre is different as the limit for all practical purposes is down too how much you pay. Copper gain kit imposes a distance limitation on throughput and this is distinct from full fibre where the limitation is a function of what a customer pays.

The following table summarises some suggested changes. This is for discussion only.

Current nomenclature (to be removed from the Code)	Recommended change (for discussion)	Rationale
Broadband service	1.Connectivity service, or 2. Data Transport Service	Simpler and permits a mix of mediums and convergence
'Speed'	Throughput	More accurate, speed is constant, the volume changes.
Standard Broadband	Service using Copper from the exchange	Reflect distance limitation reliant on copper from the exchange
Superfast Broadband Ultrafast (G.Fast)	Service using Copper from the street cabinet	Distance limitations need to be explained.
Ultrafast	Direct fibre connection	Restrictions a function of the tariff and package.
'Up to'	Provide actual estimate based on Line Checker for number.	We should know the length of the copper loop and therefore the performance.
'Unlimited'	Peak Hour bandwidth allocation per user based on SP's planning rule.	There are always limits. It is a shared system. They need to be communicated and understood.
'Normally'	Publish planning rules which apply to the service being sold.	There is no normal, all services have planning rules which create the user experience.
	Service statistically sufficient to support X live streams or X skype calls (two way data streams) simultaneously in busy period.	Customers need to know what will work, and whether they need adjust how they use the service. E,g, Download instead of live streaming, Messaging as opposed to live Video calling.

f) How long do you consider that signatories should be given to implement the proposed changes following publication of the final version of the codes?

The BiT Commons proposals are not a major change but they too take a little getting used too. A period of 6 months is needed to introduce the changes.

Other Comments

A1.4 Under the current codes, signatories have to provide an estimate of the access line speed of the lines of similar customers at point of sale. This reflects the impact of the customers' line length on the speed they are likely to receive.

This could be improved by inserting perhaps length of copper loop as opposed to line length which is traditionally distance from the exchange. It is time that OR publishes the GPS locations of their FTTC cabinets, so these distances can be calculated. Each BT FTTC cabinet has an alarm which contains the standard feature of communicating the GPS location of the cabinet.

A1.5 The Bit Commons suggests the customer is informed of the planned peak hour allocation of bandwidth per user, not some estimate of the user experience. The code should support, as close as possible the physics of how the service is built and managed. Guessing how busy other users should not feature in the code. 'Normally' available is worse than 'Standard' in nomenclature terms. There is no 'standard' as distances vary, and establishing or declaring 'normal' is statistically inadvisable when you can get SP to reveal their planning rules for each package supported.

A1.6 The peak hour allocation dictates the resources available per user. Why should Ofcom tolerate an estimate when the underlying intent of the planning rule in terms of resource allocation can be revealed, and thus the limits of the system is understood and made available to the end user? Dispute resolution is then a function of the SP demonstrating how its dimensioning rules are being maintained as customer volumes increase.

A1.7 The proposal to create some average should be resisted. It would serve Ofcom well or better to outline the statistical limitations and discrete nature of copper gain based services based on distance served. This provides a means to draw attention to the benefits of full fibre, rather than Ofcom working to accommodate or justify the limitations of copper gain technology.

Minimum guaranteed 'speed'.

A1.12 – It might be better to outline, copper line length, and a derived minimum throughput.

A1.13 – OR ADSL checker means you do not need to offer averages but display the options and the technologies available. Creating averages looks out of date.

A1.14 and A1.15 Where the technology effectively removes the distance limitation then this can be made clear and the customer purchases a 'non up to' service with the peak hour resource limitations outlined.

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'Normally' available upload speed.

Ofcom need to consider dropping nomenclature such as 'normally' and 'speed' where a new 'normal' and new 'standard' can be pointed to in the form of full fibre.

It would take very little to merge the residential and business codes and this should be considered. Increasingly residential customers use Skype and other video conferencing apps dependent on having enough upload capability with low packet loss, low jitter and low delay characteristics. This is likely to expand as telehealth services are extended to support online appointments.

The switch from copper gain technology to full fibre is likely to be driven by whether Broadband services using legacy copper can support such services and the quantity of people using them in a premise.

It is therefore important that words like Normal, or standard are not used loosely. It is better to avoid them altogether. There is nothing Normal or Standard when family or work Skype calls fail to work. Either the application works or the customer does not have a functioning service in terms of what they have paid for and an expectation that it will work. Expectations will rise and so using terminology like normal and standard need to be removed from use in the code and replaced with the actual estimates and line lengths, not proxies for them.

A1.22 Figure 2 illustration based on post code.

When an BT Broadband checker is available it difficult to understand why a post code might be used as the information available is so much greater. This ought to be the minimum expected. Some consideration should be given to switching from using 'Broadband' to Connectivity.

BT BROADBAND AVAILABILITY CHECKER

Telephone Number [redacted] on Exchange ARMAGH is served by Cabinet 38

Featured Products	Downstream Line Rate (Mbps)		Upstream Line Rate (Mbps)		Downstream Handback Threshold (Mbps)	WBC FTTC Availability Date	WBC SOGEA Availability Date	WBC FTTC 18x2 Provide Availability	WBC FTTC 18x2 Sim Availability	Left in Jumper
	High	Low	High	Low						
VDSL Range A (Clean)	18	12.9	1.3	0.8	10	Available	--	--	Yes	--
VDSL Range B (Impacted)	16.2	5.8	1.3	0.6	3.6	Available	--	--	Yes	--
ADSL Products	**Downstream Line Rate (Mbps)**		**Upstream Line Rate (Mbps)**		**Downstream Range (Mbps)**	**Availability Date**				**Left in Jumper**
WBC ADSL 2+	Up to 2		--		1.5 to 3	Available	--	--	--	--
ADSL Max	Up to 2		--		0.75 to 3	Available	--	--	--	--
WBC Fixed Rate	0.5		--		--	Available	--	--	--	--
Fixed Rate	0.5		--		--	Available	--	--	--	--
BET	Up to 2		--		--	Available	--	--	--	--
Other Offerings						**Availability Date**				
VDSL Multicast	--		--		--	Available	--	--	--	--
ADSL Multicast	--		--		--	Available	--	--	--	--
Premise environment	**Status**									
Bridge Tap	U									
VRI	--									
NTEFaceplate	--									
Last Test Date	--									

This should be improved further if the estimated distance of the copper loop was included so the estimate could be checked.

The equivalent for mobile Broadband needs to be also made available where a GPS location can be input and a internal and external signal -dBM measure and Throughput estimate provided, based on the 'link budget' available.

Improving after sales information and the Right to Exit

The above protections can be still be used but the need for them will be reduced as customer are making decisions based on a truer picture of the services available.

Other -Wifi.

The code has not referenced the public wifi access available. This is probably one of the best features and the code should include a description of the volumes of devices available to connect.

This option could be developed further to outline calling over wifi.

Other – Mobile Broadband

Some work is needed to show how the code could be applied to selling a converged fixed and mobile service. The switch to a Connectivity Code and dropping notions of 'speed' are pre-cursors to such a change.

Other – The Users responsibilities.

This seems missing from the code. Internet access, the network of networks is not centrally managed. Its successful working assumes certain things and expects certain things of the users connecting their computing devices to the network.

The internet is only 30 years old and the technical ingredients of the service all had humble beginnings, none of which assumed 2bn people would be accessing and uploading information on a regular basis. It is a work in progress, and just about all aspects of the service will need to be re-invented to create a more secure and robust service.

The current generation of service assumes 'responsible' users who understand the limits of a 'best efforts' system which is engineered with a statistically predictable service with variations in the end user experience. The code should outline these responsibilities and highlight how traffic management policies are needed to protect the resources available for all users.

Responsible usage works within the limits set, however the limits need to be explained clearly by explaining the underlying planning rules for the package sold.

The BiT Commons is grateful for the opportunity to respond to this consultation.

End. The BiT Commons, November 2017.

Thanks to David Barr, Belfast for peer review.