



Vodafone non confidential version

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Response to Ofcom's Consultation:
BCMR 2015
Supplemental 3



Dark fibre innovation

Active equipment is being developed continuously resulting in the potential for wide ranging choice. We use the word potential because it is inevitable that BT could not offer active services based on each of the equipment options available and consequently active services will be confined to a subset of options reflecting the technology, design and service feature choices which BT Group makes for itself.

Historically we have lamented the irritation it causes us when BT only makes available a limited feature set from equipment even though the equipment has far wider capabilities. As we move into the future this becomes far greater than an irritation and the cause of inefficiency (eg feature limitation for monitoring requires us to add alternative monitoring). Ongoing reliance on a sub set of active services simply straightjackets our choices and restricts the benefits from the innovation in equipment by vendors and also limits our subsequent innovation in packaging up service features and service design choices.

The potential to innovate can occur in many places in the building of customer or service networks and creation of feature rich services:

An innovative future

We find that at the network layer, innovation can be found in the choice of network topology, configuration and mix between fixed and mobile handoff, the availability and capacity of backhaul – all of these have impacts upon levels of service which can be experienced and the CPs cost base for delivering a range of services.

Our competitor and the SMP operator should not make our choice for us

BT has made clear that it faces significant costs and timescales to make available even the blandest of services – dark fibre. It is evident that going forward it would not be economically viable for BT to offer a great variety of choice given the different business cases that might be required in the market. BT would have to select on the basis it considers best meets its and other needs. It is undoubtable that BT would put first its desires and that availability would centre around its own plans for market development. Where competitors services and networks do not match BT's exact needs it is clear that competitors will not be well served in such an environment.

The following link discusses the issue for acquiring the necessary network growth that CPs require. It is clear that the manner in which this is achieved will depend upon the product set sold, and the choices made by individual CPs will determine the success overall. http://www.osa-opn.org/home/articles/volume_26/march_2015/features/scaling_optical_fiber_networks_challenges_and_solu/

Mobile Backhaul

Backhaul for Mobile Networks is often cited. This is because the networks need to evolve in order to increase capacity and coverage whilst remaining affordable. There is great potential for innovation in the design of the networks, the active equipment and the interaction with the wider operator network.



Historically there has been little choice and variation in the market. It is clear that it is inappropriate and impossible for BT to make the section on behalf its competitor to whom it is also a supplier.

Fibre based network requirements for mobile backhaul are really only being tested as a result of 4G network roll out. Prior to this, copper and low speed fibre with timing were adequate solutions, however 4G requires much higher bandwidth and will result in different, data based, network topologies.

Fronthaul is a solution to improving mobile backhaul capacity of which innovation can allow earlier adoption and choice of configuration. The following links provides discussion on the options and choices a CP may innovate around:

<https://kar.kent.ac.uk/50278/1/Fronthaul%20Evolution%20and%20CPRI%20-OFT-prepub.pdf>

<http://www.transmode.com/en/solutions/mobile-transport/mobile-fronthaul>

<http://www.slideshare.net/ADVAOpticalNetworking/wdm-pon-forum-workshop>

At the service layer: innovation can be found via the equipment used and importantly the number of open features and use of the features within the equipment. For example for fixed broadband Vodafone (see <https://www.vodafone.co.uk/broadband/choices>) has developed an App which enables unique control of the router and broadband functions. If Vodafone was restricted to BT's router this would not be possible. If Vodafone has to add supplementary equipment rather than substituting BT's equipment this may not have been cost effective and feasible. We wish to be free to innovate for fixed enterprise customers in the same way that we are able to do for mobile and fixed broadband, without incurring additional and incremental costs.