100% mobile coverage is a pipe dream – even with national roaming

June 24 2014, by Andrew Smith

Keeping dream of reception in the remotest areas. Credit: Subbotina Anna

Mobile phone providers should introduce national roaming, Britain's Culture Secretary, Sajid Javid, has announced. The purpose: to enable full mobile phone coverage across the UK, bringing signal to those black spots where you lose it.

In the same way that you can switch provider when you travel abroad,

you would be able to switch to an alternative network when yours is not available. This sounds great, but it won't bring 100% mobile coverage across the UK.

Free roam?

Our phones coupled with the technology provided by mobile networks are continually working to establish which mobile mast offers the best signal, as well as the network availability of each mast (for example, how many other people are using it). If your mobile phone is using a mast that has fewer connections and you travel closer to one with more connections, your phone will remain connected to the original mast, so long as the original signal remains within reasonable bounds, in terms of strength. So, roaming between the masts of your own provider takes place all the time.

When you travel abroad and have your phone's roaming function switched on, you can then switch between the mobile masts of different providers. By flicking the roaming switch on your phone, this informs your phone that it can connect to other networks. But, you must also have this agreed with your mobile phone provider so that they can use their network routing method to find you a network that they have an agreement with.

An interesting example can be found within England, in the idyllic and remote Lake District. If you are on the western side of this geographical area and at a suitable height, your mobile phone, if it has international roaming, may connect to the mobile network on the Isle of Man, which is a separate political entity within the British Isles. Therefore, in principle, the idea of national roaming is sound. Without any technical knowledge you could envisage a system where all mobile telecommunications networks interconnect.

The reality

At many levels all the telecommunications companies do work well together. But they also compete and will not be jumping for joy at the notion that the network they have invested considerable millions in infrastructure in to reach prime customer locations now has to be shared. The call for national roaming requires them to share each others' technology and undermines the competitive nature of their business.

Technologically speaking, it may be possible to connect to other providers, but when connected to an unknown providers network, the network rules are not always in place to make sure we get the best connection or the best deal.

It's possible to control the volume and bandwidth of traffic in any networked system. This means that one provider can limit the service quality available to a customer from another network roaming into their system. So, even if they are forced to cooperate with this measure, companies can maintain their competitive edge this way.

Putting aside the technological and competition issues, what about hills, mountains, valleys and the terrain? Geography remains a barrier to full network coverage. In my car – I use hands free – I have come to know the areas where passing from mast to mast while driving and talking is going to disconnect any call.

Even if no new infrastructure was acquired and all networks joined together without any commercial issues, there would still be unreachable areas. This would then add the next problem of trying to establish who is actually going to pay for a mast to be erected in these areas and which network will own this.

We may eventually get 99.5% coverage, just by selecting two well-

known providers (O2 and EE), which have comprehensive coverage of the UK between them. Yet you can see where they still have common gaps. You can also see where they only have 2G, which has very limited mobile data capacity.

The reality is that there will always be areas that cannot be reached. All networks being under government guidance will improve what is available, but 100%? Now that is a pipe-dream.

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