

Proposed guidance consultation

Question	Your response
<p>Question 1: Do you consider the measures in the proposed guidance relating to the resilience of the physical infrastructure domains to be appropriate and proportionate?</p>	<p>In answer to CFI Q1, we point out that the mobile networks are increasingly used for ‘emergency services’ by the public and this should be reflected in the Guidance. In addition, one of the four MNOs, namely EE, will, actually, be providing the RAN for the Emergency Services Network (ESN) in the future. It is appropriate that those parts of the EE network involved in the ESN are subject to higher levels of availability and reliability where and when used by the Emergency Services. It is assumed that this is addressed elsewhere. The Guidance might make a reference to that .</p> <p>Automatic fail-over of individual sites (to an alternative parent site/route) mentioned in Para 4.26 would not be practical in the case of mobile network base stations .</p> <p>Rather than a fixed 4-hour standby for all street cabinets, the Guidance could specify a graduated range, for example, 2-6 hours depending on the number and capacity of dependent end-user equipment .</p> <p>Para 4.34 mentions 5-day battery backup for Core/large sites. It may be worth noting that these sites normally have generators which could keep going for as long as required.</p>
<p>Question 2: Do you consider the measures in the proposed guidance relating to the resilience at the Control Plane to be appropriate and proportionate?</p>	<p>In the guidance notes there is a commentary about ‘cloud native’. In our experience many of the vendors do not have cloud native implementations at this point, they have on prem solutions that have been ported to be able to run using some cloud principles. However, this means that the normal assumptions of the benefits of a cloud native deployment can often not be fully realised.</p>

Question

Your response

Question 3: Do you consider the measures in the proposed guidance relating to the resilience of the Management Plane to be appropriate and proportionate?

Whilst not strictly a Management Plane aspect but related to it is the issue of provision of "Back-up NMC" as part of an operators DR plans, which should include regular and realistic exercising of the DR facilities. We feel the guidance should mention these facilities and processes.

Question 4: Do you consider the measures in the proposed guidance relating to communications providers' own managed services to be appropriate and proportionate?

We consider the emphasis placed on voice service to be appropriate in the context of emergency services. This aligns with our thinking expressed in answer to CFI Q1

Question 5: Do you consider the measures in the proposed guidance relating to communications providers' arrangements for preparing for adequate process, skills and training to be appropriate and proportionate?

We have noted two issues in this area of operation:

Firstly, the networks appear to be developing ever greater levels of complexity driven primarily by new generation of technology having to be operated alongside a suite of technologies dating back 40 years (2G), all designed with different technology bases, and all of which have to continue to be operated and co-exist. We note that this is a fundamentally different skill challenge to the internet world which is far more able to retire older technologies and focus skills training and retention on a single current technology.

At the same time the cost pressures introduced on the operational activities of the MNO partly through normal business activity and partly through the regulatory regime, force pressure on the operational teams and processes. We have noted that this has caused a reduction in the level of testing of new features. We also note that automated testing helps in this regard however the level of interaction and complexity is not particularly well suited to automated testing alone.

We believe that all of these issues have led to significant core network failures caused by subtle interactions between differing components that can rapidly escalate and cause cascade failures across multiple systems. Our experience has been that the major outage over the last 24 months in the UK have been caused by core network element failures, because of a combination of the above root causes.

Secondly we have noted, an increased tendency for a failure on one network to be able to infect another network via a combination of direct interconnect, and customer/terminal behaviours. We believe that whilst there may be resilience planning in MNOs there is inadequate failure mode planning in the MNOs, resilience in some cases is the cause of the propagation of software errors around a whole network and so is a double edged sword.

Call for Input

Question

CFI question 1: Does this framework accurately capture the factors relevant to assessing what is an appropriate and proportionate measure for MNOs to take with regards to power resilience for RAN cell sites?

Your response

Not fully,

1. the analysis should consider what is the de facto emergency service access method used by the public. We believe that this is moving from the fixed line to the mobile service because of reduced penetration of landlines year on year, and the move to digital voice increasing the number of landlines that are vulnerable to a power outage. Today, we believe that the de facto emergency services access network is in fact the mobile network.

2. The cost to the MNOs of a power outage causing loss of service is substantial, and we believe that this aspect should be covered by analysis within the MNO, in terms of providing resiliency. However, there is a secondary aspect which is the consequential loss to UK industry and commerce of a mobile network outage, and this is a concern for the government.

In summary we believe that the 2 items listed above may well drive a requirement of enhanced availability and reliability at individual cell sites, they are however issues that should be defined and funded by the government, as government requirements.

Question

Your response

CFI question 2: Do you agree that at a minimum MNO's networks should be able to operationally withstand short term power-related incidents?

If the arguments in our response to question 1 are accepted, then we believe that this is in principle correct. However, there are 2 additional factors that should be considered and these are :

1. A single '1 hour' standard is rather coarse and we believe a better measure would be to assess the power outage rates area by area which would yield differing outage durations that should be protected against on a geographical basis.

2. The UK, in moving to net zero carbon emissions will fundamentally alter the amount of electrical power needed, and the way that it is generated over the next 25 years. The government is defining this policy and also how it will be managed, and consequently has a superior view on what effect this will have on power supply availability. If the MNOs are to respond in a sensible fashion to this question they need to have visibility of the governments predictions of power availability year on year, rather than relying on historical data alone.

CFI question 3: What mobile services should consumers be able to expect during a power outage, what consumer harms should power backup up focus on mitigating and does this vary depending on the type or duration of the outage?

We believe that the MNOs should use commercial considerations to meet their consumer needs, including during a power outage, this includes what level of power backup should be used to mitigate these issues and maintain their revenues and their customer satisfaction at an affordable cost. However, as we have outlined in question 1, there are two non-commercial considerations that we believe are government concerns which should be layered on top of the commercial considerations of the operators and by inference funded by the government.

Question

Your response

CFI question 4: What technical choices are available to MNOs to reduce power consumption, and should be considered as part of assessment of appropriate and proportionate measures?

Choices that occur to us as worthy of consideration are:

1. Use of the most efficient technology e.g. 5G not 3G or 2G, including dynamic power assignment where feasible.
2. In the limit, support of emergency services only
3. Powering down of sites that can be adequately covered by other sites allowing only limited sites to be equipped with enhanced power back up.

We note the 3GPP work in this area including ability to collect detailed energy efficiency statistics (NG-RAN data Energy Efficiency KPI).

CFI question 5: How many sites would it be feasible to upgrade and maintain and why?

No Comment

CFI question 6: Do you consider that providing a minimum of 1 hr backup to all RAN cell sites would be proportionate to meet the security duties under s.105A to D of the Communications Act 2003?

Please see our answers to question CFI 1-3 which cover our opinions on this issue. Our overarching view is that an MNO is acting proportionately if it enacts procedures and designs that lead to commercial success, since commercial success is considered to be a statement by the UK public at large that the service level and cost compromises to deliver it are acceptable.

We also suggest that as s.105A-D refers to the security obligations of the CPs, tightening such requirements retrospectively does not seem reasonable in a commercial environment. It would be more sensible if such standards were set at the time spectrum is auctioned and licences are issued.

Question

Your response

CFI question 7: What cost effective solutions do you consider could meet consumers' needs during a power outage?

The MNOs already take decisions on the level of back up to mitigate power outages based on their own business plans.

We note that Ofcom has reviewed the use of national roaming for coverage improvements and largely felt it to be inappropriate for economic reasons. It may be worth reconsidering the limited application of national roaming in the event of an extended outage of one operator in a locality.

CFI question 8:

a) Is it more cost efficient to increase power backup up to any space, weight, or planning limitations, i.e., increasing power backup as much as is feasible provides the lowest £ per hour?

No comment

b) do the benefits of any power backup solution have diminishing returns, i.e., the benefit per hour decreases as you increase the amount of power backup?

CFI question 9: Does the mobile market fail to capture the value or importance of power backup, and if so, why?

We do not believe the market does fail to capture the value or importance of power backup. The MNOs are skilled in defining what it makes sense to spend their available funds on, that leads to an optimised power back up strategy which will differ between each MNO and which is viewed by each individual MNO, as being the right balance between service availability and cost. Since the MNOs receive little feedback from customers on the impacts of power outages, compared for instance to coverage, we surmise that they are meeting the current needs of the market as a whole.

Please also note our comments in CFI 1-3

CFI question 10: Should improvements in power backup be focused on solutions at sites which are identified as higher risk of outages?

That's would seem a sensible approach, however it should be tempered by the number of customers served by the site in question.

Question

Your response

CFI question 11: Why would any requirement lower than a minimum of 1 hour be sufficient in future? What duration do you consider would be sufficient and why?

Please note our answer to question 1-3 where we outline that consequential loss to the UK as a whole is not a specific and direct concern of the MNOs. Also please note our answer to question 2 where we note that the government has a far better view on the likely future profile of power outages than the MNOs do. Currently the MNOs have already implemented what they believe to be the required back up during a power outage and this ranges across a wide diversity of values based on the MNOs service ambition and consequent investment in this area. We therefore believe the 1 hour figure is derived by the government for other reasons that pure commercial considerations of MNOs and so should be defined and funded by the government where it requires additional investment.

CFI question 12: Over what time period could industry make upgrades to provide a minimum of 1 hour at every cell site or other cost-effective solutions to address potential consumer harm?

a) We would expect 3G to be phased out over the next 3-5 years and 2G minimised, if not also replaced. Hence, one would expect de facto improvements in power consumption of cell sites over the same time frame.

b) Government might consider incentives for faster adoption of solar and wind energy at cell sites. There are innovative solutions on the market as evidenced by numerous trials and limited-scale deployments of both types of technologies.

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