



Internet Society of Australia
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To: Sophie Dunstone
A/g Principal Research Officer
Senate Standing Committee on Environment and Communications
S1.57
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Parliament House
CANBERRA ACT 2600
By email: ec.sen@aph.gov.au

Responses to the written questions on notice for the ISOC-AU from Senator Fisher

1. What is the likelihood of the service of an ISP shutting down in a natural disaster scenario?

Our general response to the question is as follows:

As a packet based mesh network, under which packets can take different routes to reach the same destination, the Internet is capable using different routes to avoid any particular link that may have failed. This capacity is, of course, dependent on the existence of alternative links that are not affected by a particular problem.

Specific regional areas might be affected, but the core network might not necessarily shut down. As well, backhaul links might be cut, but the actual network would be functional, but isolated

For example, in the case of the Brisbane floods, not many, if any ISP's would have 'shut down', but certainly much infrastructure was affected and some data centres shut down, affecting many services in the region. The ISP continued to operate outside the affected areas.

A more detailed response depends on the following criteria:

- Who the ISP is (how big or small)
- The way they have built their network
- the area covered by a natural disaster
- 'Shutting down' would need to be defined more clearly. Specifically, what

was the extent to which the ISP's services were sustained through the period of the natural disaster and, if there were interruptions, what was the cause (e.g. power-outage longer than the UPS could support, flood-damage, rain-damage, etc.), and how long was the outage.

- Is the question meant to cover both
 - the ISP's own facilities;
 - base stations and towers, and private devices,
 - particularly satellite connections, and
 - the IAP operations, i.e. access by subscribers to remote services via the ISP's network.

2. Are ISPs required to have at least two (2) servers operating to reduce the possibility of shutdown occurring, or is it at the discretion of the ISP as to how many servers they are linked to?

Please note that 'Servers' is an undefined term as that is used in many ways, and the many functions of ISPs are run on many, many servers. That said, our response is as follows:

Some critical functions of the Internet are required to have data lodged in escrow, in the event that there is a total failure of one supplier. An example would be information needed to maintain or update the domain name system (Registry data).

ISP's are not, however, 'required' to do anything related to redundancy, and yes, it is at their discretion. It is 'common practice' for ISPs to have redundant (n+1) facilities, which often results in many 'servers' or replicated services being deployed. Most ISPs would deploy facilities in different geographical locations or different datacenters and only the smallest of ISPs would have the possibility of not having redundant facilities.

Note – there are many dozens of components to an ISP, and most of these components have varying levels of redundancy.

3. If the PSTN service is not available as a result of power outage, will the fibre optic NBN connections remain "live"? If not, then presumably mobile phone contact is the alternative source of emergency communication?

While communications fibre operates via transmission of light (as opposed to electrical) signals, the supporting devices to operate the fibre have both electrical and optical functions. Therefore, while NBN Fibre itself will not be affected by a power outage, it is unlikely to remain live during an outage that affected the electricity that powers the transmission and support equipment connected to the fibre. In this sense, NBN fibre would be likely to fail in an similar way to a power

outage that affects telephone exchanges. However, the functioning of NBN fibre will also require a supply of power at the premises end of the connection, which means that, in the absence of any uninterruptible power supply at the premises end, NBN fibre will cease to function for premises affected by a local power outage.

4. Do you consider that wireless infrastructure (towers, etc) is sufficiently protected to minimise the potential damage that could occur in an event such as a bushfire or flood?

Yes and No.

- No. These facilities require power just like anything else, and if this is interrupted, they can also be affected.
- No. Fire will destroy cabling – and depending how it's built - the equipment at the top
- No. Water will interrupt electricity, but not the equipment at the top
- Yes, the tower itself, dishes, antenna, etc are unlikely to be affected by flood

Additional information should be available from the Parliamentary Library and/or from the Internet Industry Association on their experience (including of wireless infrastructure) of their members in other natural disasters including:

- Canberra bushfires in 2003? (including the experience of TransAct)
- North Queensland - Cyclone Larry in 2006?
- Central Victorian bushfires in 2009?
- North Queensland - Cyclone Yasi in 2011?

Additional Information: Information on communications in emergency situations for people with disabilities.

At the Senate hearing, the issue of communications in emergency situations for people with disabilities was raised. Below is our additional response to that issue.

The Attorney-General's Department is developing the Common Alerting Protocol (CAP), an open standard for Australian conditions.

See<http://knowledgeweb.afac.com.au/news/items/Development_of_Common_Alerting_Protocol_-_Australian_Profile_CAP-AP_as_an_Australian_Government_Standard>

CAP enables a single warning message to be prepared for dissemination simultaneously over a wide variety of warning systems that understand and can process CAP-formatted messages. This is important for people with disabilities so that messages can be provided by video in AUSLAN for Deaf people as well as captioned video for people with hearing impairments as well as ensuring that any text information is also made

available in audio for people with vision impairment. Messages can also be transmitted in languages other than English. Using CAP, this is possible and indeed being incorporated in USA where CAP originated.

See also: <<http://jfactivist.typepad.com/jfactivist/2011/02/fema-making-emergency-alerts-accessible.html>>

It is necessary that the Australian protocol for CAP makes provision for messages in these types of formats and that this is incorporated at the outset. This will ensure that people with disabilities have equal access to emergency warnings.

Yours sincerely,

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