

Received & Inspected

SEP - 7 2010

FCC Mail Room

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Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.,
Washington, DC 20554

Re: Effects on Broadband Communications Networks of Damage to or Failure of Network Equipment or Severe Overload PS Docket No 10-92

August 31st 2010

Dear Ms.Dortch:

Enclosed are reply comments on above notice of inquiry. It is reply to common issues raised in some comments and the inquiry rather than one single comment.

The paper file includes one original and four copies.

I would like have further discussion with you and FCC if there is any questions.

Sincerely



08/31/2010

Kun Su

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In the Matter of

Effects on Broadband Communications Networks of Damage to or Failure of Network Equipment or Severe Overload

PS Docket No 10-92

RE: Reply Comments on Effects on Broadband Communications Network of Damage to or Failure of Network Equipment or Severe Overload

REPLY COMMENTS ON NOTICE OF INQUIRY

KUN SU

Wireless handsets/terminals have been becoming dominating first accessible personal telecommunication tools. When natural disasters, pandemics, and other disasters or events occur, the wireless networks accessibility, reliability and capability have high impacts to rescue activities, personal messages exchanging and public information releases. The comments will focus on wireless broadband network damage, failure and overload. The edge network connection points and some key helpful technologies are discussed. After read the inquiry notice and some comments, the reply has compiled. It is reply to common issues raised in some comments rather than one single comment.

1. Core Network Pool

Wireless core networks are network switch centers for intra end inter connections. The recent reported switch pool design (<http://www.indiablooms.com/BusinessDetailsPage/businessDetails250810e.php>) has

transformed three existing sets of CDMA mobile soft-switches into one MSC Pool without having to make any modifications to other parts of the network. The MSC pool solution has improved the performance, efficiency, reliability and disaster resilience. If the three MSCs are not in same physical locations, physical damages impact can also be reduced. Something can be learnt from the case. It is important to create cross connection and redundancy between different locations to maintain service during nature disaster. The distance between locations can be miles to over thousand miles depending on different situations.

2. Cell Site Backhaul

Cell sites backhauls are frangible edge network connections. Wireless carriers are suffering cell site backhaul broken daily. The impacts are under control usually, since the disconnected cell sites are unlikely adjacent each other. But the problem can blow up to whole areas or cities if the disaster areas are big. Mesh network backhauls should be encouraged. The last mile loop back will dramatically improve efficiency and reliability by optical fiber, microwave, wireless mesh (WiMax or LTE) , and other alternative. Wireless carriers will be benefited for its daily work by creating backhaul loops too. FCC may request major wireless carriers have 20% cell sites having more than two alternative backhaul connections. Especially, those cell sites are critical either for coverage or capacity reasons.

3. Coverage Overlap

It is important and basic to provide network accessible by adequate coverage. The cell site overlap coverage can increase connection possibility when some cell sites are broken for any reasons. The cell site hierarchy structure can also improve accessibility. For example, in shopping malls or business offices, subscribers may have coverage from a few of macro cell sites, micro/pico sites, DAS/Femto system, and WiFi connections simultaneously. The multiple wireless coverage overlaps give more chances to use handsets when some (not all) possible connection are broken. Carriers should release the overlap coverage availability percentage to public. Subscribers are seldom to put emergency into consideration when they choose carriers. Subscriber awareness could drive carrier pay more attention on emergency network accessibility.

4. Self Organization Network

3GPP promotes Self Organization Network (SON) concept on LTE network. Self-healing technologies are part of SON. When some cell sites are down or downgrade, the surrounding cell sites can automatically adjust their antenna downtilts and beams, and other parameters to try the best to compensate the outage. To better understand outage impact and SON validity, the methodologies should be developed to calculate each single cell site down impacts with/without SON.

5. Traffic Load Balance

The current traffic theories are out of date. Those cannot predict voice and data traffic during natural disasters, pandemics and super events. The explosion theory

and statistics physics could be adapted to study wireless traffic trends in public emergency. Before more accurate traffic theories have been developed, the current network design and optimization methods are too rough to response servers overload. Even though, some traffic load balance ways can be done to serve more subscribers during sudden traffic gathering. The broadband wireless networks have more method to balance traffic than 2G networks. The key is to give voice and simple low bandwidth data service priorities to serve more people. FCC may start considering text message and other data services to report emergency.

6. Public Awareness and Others

Recent study (<http://www.sciencemag.org/cgi/content/abstract/327/5968/1018>) shows that human mobility patterns are very highly predicable. Besides first-aid packages and fire extinguishers, alternative communication tools should be easy accessible to public and persons. It isn't hard if human behaviors and mobility patterns are routine. Social science and practice will be useful to offer some solutions. There is no other tool like handsets which are so personal and 'social'.

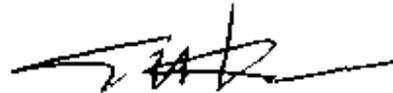
After the tragedy happened in Virginia Tech, a lot of schools have worked with wireless carriers closely. The schools can delivery text message announcement to student in no time during emergency using wireless broadcast channels. The quick public messages delivery also reduce unnecessary network traffic load.

On the other side, it is very helpful to study the traffic pattern changes during disaster associate to geography locations. Besides government agency and journalist reports,

authority agencies should watch real time traffic pattern too. Major carriers have no problem to giving the information based on contemporary Network Operation System. The voice and data traffic patterns are as useful as road traffic information. The professional traffic analysts understand how to use it make judgment.

WHEREFORE, the wireless carriers' efforts are essential in current stages. Public awareness may deduce new solutions. Further research is required before set up rules. The drive from FCC is critical.

Respectfully Submitted,



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