

**Legislative Council
Panel on Information Technology and Broadcasting
Telephone Traffic Congestion on 11 September 2002**

Background

From noon to 2 pm on 11 September 2002, after the public announcement from the Hong Kong Observatory of the imminent hoisting of the No. 8 typhoon signal, all fixed and mobile telecommunications networks experienced serious congestion. A significant proportion of telephone calls could not be connected on both the mobile and the fixed networks. This paper aims at briefing Members on the Government's current requirements for fixed and mobile telecommunications operators on their network capacities, existing emergency arrangements and measures to be taken to improve the situation in future.

Current Requirements

2. All telecommunication networks in Hong Kong are designed to a very high quality comparable to the best practice in the world. The fixed networks are allowed only a maximum of one lost call per 100 in the busiest hour of the day and mobile networks a maximum of 5 lost calls per 100. In normal situations, all networks in Hong Kong are operating well below these limits.

3. In practice, all networks are also equipped with a spare capacity of 10% to 20% of their peak hour traffic volumes to alleviate to some extent unexpected peaks of traffic.

4. All network operators are required to adopt a network protection mechanism during territory-wide emergencies such as the occurrence of typhoon, rainstorm and natural disaster which lead to significant increase in telephone traffic. This mechanism regulates and restricts calls which are out of the maximum capacity of a network, thus protecting the network from overloading and failure while maintaining the network operational at its peak capacity. Under these circumstances, traffic over and above the peak capacity will overflow and unsuccessful

callers will not be able to get line connections, i.e., no dial tone on fixed lines or no signal on mobile phones.

5. As regards the access to the telephone networks of important and emergency services under network congestions, the 999 emergency service is served by dedicated lines and priority connections over all fixed and mobile networks. Most financial institutions and large corporations also use dedicated circuits for their essential telecommunications. These organisations will not be seriously affected in the event of public network congestions.

6. In accordance with the procedures given in the “Guideline for the Dissemination of Telecommunications Network Congestion Warning”, the Office of the Telecommunications Authority (OFTA) is required to coordinate and inform the fixed and mobile network operators about the possible network congestion and request them to take necessary precautionary actions.

Network Congestion on 11 September 2002

7. A pre-warning of the issue of the No. 8 typhoon signal was made before noon on 11 September 2002. Upon receipt of the notification from the Information Services Department, OFTA informed the fixed and mobile network operators and requested them to take necessary precautionary actions. During the two hours from noon to 2 pm, many people tried to make telephone calls to make necessary arrangements for business or to contact family members, resulting in a sudden increase of telephone traffic over all fixed and mobile telephone networks.

8. The average increase of telephone traffic during these two hours was more than 6 times the normal peak hour traffic, peaking over to 10-20 times. During the single hour between noon and 1 pm, there were over 26 million calls made on the fixed networks and over 14 million calls on the mobile networks. In a normal peak hour, the traffic is 4 million calls for the fixed networks and roughly the same for the mobile networks. The sudden surge in the number of telephone calls could not be handled by any reasonable network design. Moreover, many people would have difficulty getting a line connection to their friends and relatives when the latter were making outgoing calls themselves. And the snowball effect caused by constant redialling worsened the situation. As reported by the network operators, the access problem was due to network congestion but their networks and systems were still functioning.

9. On that day, emergency call services functioned normally as they were served by dedicated lines and priority connections. However, some 999 calls might have been delayed because the callers might not be able to get the dial tone instantly during the severe network congestion.

10. After 2 pm, the congestion was gradually alleviated. Telephone traffic resumed to normal in most areas after 3 pm.

Improvement Measures

11. The Telecommunications Authority is concerned about the operation of our telecommunications network in situations involving sudden surge in demand and will conduct a review to look for areas for improvement to ensure that the telecommunications system of Hong Kong is well equipped to cope with the existing and future demands of our community which is increasingly relying on our telecommunication systems. OFTA will work with network operators and other relevant Government departments on the following areas:

- To look into possibilities for network operators to further expand their network capacities and enhance their call handling capabilities in times of emergencies without significant increase in costs to consumers;
- To explore ways to improve existing modes of communication by Government departments to members of the public with a view to enhancing efficiency and reducing possible congestions to the telephone networks;
- To allocate priority use of the telephone networks to Government departments and other organisations which have to deal with emergency situations;
- To devise a plan on broadcasting public announcements on telephone network congestions; and
- To consider the use of alternative advanced networks such as the broadband networks and the future third-generation (3G) mobile networks for communications during emergency situations.

Office of the Telecommunications Authority
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