

Toward robust network design learning from the Great Eastern Japan Earthquake

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SUMMARY

The Great East Japan Earthquake caused the destruction of communication facilities, the failure of communications equipment and the depletion of emergency power resources. The impact on the telecommunications services is more extensive than ever due to the earthquake, following tsunami and the nuclear plant trouble. NTT Group has been making concerted efforts to restore the damaged facilities and services, e.g. renewal of power supplies and equipment, repair of relay transmission lines, area remedies for mobile phones using large zone schemes. However, there are certain areas where restoration is physically difficult, such as areas surrounding the nuclear power plant and areas with physically damaged exchange offices, roads, and tunnels. In the case of the NTT East Shichigahama exchange office, the whole building was taken out by the tsunami. These are things that we never experienced before.

In the immediate aftermath of the earthquake, communication means is one of the most important issues. The communication means are varied from fixed and mobile phones to Internet services in recent years. Most of people used fixed or mobile phones to confirm the safety of their family and friends because they are useful for people of all ages. Some people used the Internet services such as Twitter. One of the problems is the congestion of the fixed and mobile networks. For many hours after the earthquake, a situation continued where it is difficult to make connection. On the other hand, the Internet services worked well. Although the disaster emergency message service (dial 171) helped to make contact, we need to rethink communication means during a disaster.

After the earthquake, NTT Group provided special phones using portable satellite equipment, free satellite mobile phones, free internet booths in order to secure means of communication at the affected area.

In light of the above status, we need to rethink the network design to realize the robust network. The actions may include the redefine of the requirement of the network and the installation of the mechanisms for the rapid restoration. NTT Group officially announced to make efforts of the development of disaster-resistant networks and prompt recovery methods, the prompt reconnection for local relief sites, the means of information distribution after disasters, and the services and solutions useful during a disaster and during recovery.