

Initiative in Preparation for Emergencies

Policy and System

Business Continuity Plan (BCP) Initiatives

Following our experiences in the March 2011 Great East Japan Earthquake, we established a Companywide Disaster Response Project, and in October 2011 we formulated a Business Continuity Plan (BCP) for Large-Scale Disasters. We are pursuing a host of measures to address the plan's objectives of "ensuring the safety of employees and their families" and "fulfilling our responsibilities to continue providing telecommunications services as a designated public institution." Specifically, we have established detailed rules for each phase of response to disaster, from initial action through to full restoration. We are also creating satellite network links to principal bases throughout Japan in preparation for a scenario in which all fixed-line and mobile circuits cease to function. We have identified personnel who will, in the event of a disaster, be dispatched quickly to provide support at emergency shelters, and have stockpiled the equipment necessary for this eventuality. In addition with these measures to shore up our structure, we are proactively conducting disaster response training throughout Japan that focuses on initial disaster response.

In March 2016, the Disaster Response Office spearheaded efforts by countermeasure offices to link communications equipment from all divisions and branches throughout Japan as part of disaster response training in anticipation of an earthquake directly underneath the Tokyo metropolitan area. As well as employing a "blind" method of training in which participants are not told what sort of disaster to expect until just before the training begins, training was conducted assuming total disruption of communications immediately after the disaster, with the disaster response meeting held under a communication environment

consisting of satellite network only.

The training was held for approximately 300 emergency participants. At the start of the training, they responded as information about the disaster began to unravel and considered new damage assumptions that were disclosed as time went on, lending the training a sense of reality.

We will reflect in future BCP the issues and areas for improvement that became apparent as a result of this training, building the foundations for more robust disaster response going forward.

Based on the "Guidelines for Taking Action against an Influenza Pandemic" (February 2009 Council on Countermeasures Related to a New Strain of Influenza and Avian Influenza), we formulated the "Plan for Maintaining Companywide Operations in the Event of an Outbreak of a New Strain of Influenza" to ensure employee health and accurate responses so that we can continue to provide our customers with communications services in the event of an outbreak of a new strain of influenza.



Disaster response training connecting the communications equipment of all branches throughout Japan

Activity and Results

Participation in Nationwide Disaster Response Training

As a designated public institution under the Basic Act on Disaster Countermeasures, KDDI participates in comprehensive disaster response training held by the national and local governments, and as a provider of information communications infrastructure we cooperate with relevant authorities to ensure rapid and effective recovery activities.

In Disaster Preparedness Week in 2015, the week that included Disaster Preparedness Day, September 1, we took an active part in disaster response training held by local governments in different areas throughout Japan to increase awareness and knowledge of what to do if a disaster takes place.

System

au Disaster Recovery Support System

KDDI has implemented an au Disaster Recovery Support System in 10 technical centers nationwide to quickly grasp the situation and draw up precise recovery plans if a large-scale disaster takes place.

The au Disaster Recovery Support System comprehensively manages the overall area situation based on equipment malfunction information, the situation in key locations based on data traffic, and information related to emergency shelters and evacuation routes. By plotting this data on a map, it is possible to understand priority recovery areas visually and in real time. Even if a disaster affects a wide area, the system makes possible effective recovery activity.

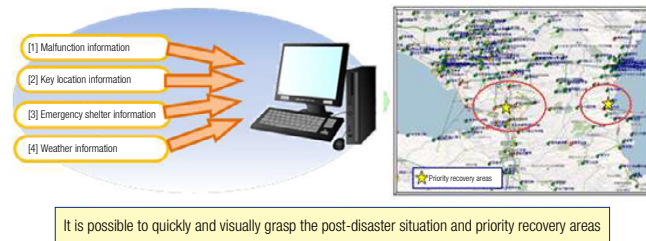
Also, by using it as a means to exchange information with government institutions and internal departments, it can be used not

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only to restore communications infrastructure but also as a useful tool for supporting general disaster recovery. We are also making efforts to further speed up recovery by making it possible for the system to link to weather information.

To quickly restore communications to service areas in case of outage, such as due to a disaster, we are pursuing equipment-based measures including increases in vehicle-mounted base stations, portable base stations, and wireless entrance facilities. We are also bolstering personnel-based measures to ensure this equipment is used effectively.

au Disaster Recovery Support System



System

Robust Network Construction

■ Introducing 4G LTE-Compatible Wide-Zone Base Station for Disasters

In preparation for an earthquake occurring directly beneath the Tokyo metropolitan area, KDDI is reviewing its disaster measures from various perspectives, and as a backup for the time between when an earthquake strikes and recovery, we have introduced and began operations on a “wide-zone base station for disasters.” The base station supports voice communication (1x), 3G communication (EVDO) and LTE communication (4G LTE), allowing provision of mobile phone services such as voice calls and data transmission should an earthquake directly hit the capital. It is the first 4G LTE-compatible wide-zone base station in Japan.



One of the wide-zone base station antennas on the roof of KDDI Office Building Shinjuku



Radio Transmission Path Relay Station

Currently, ten base stations have been constructed, covering an area from Chiba in Chiba Prefecture to the east to Kawaguchi in Saitama Prefecture to the north, Tachikawa in Tokyo to the west and Kawasaki in Kanagawa Prefecture. Furthermore, learning from the experience of the Great East Japan Earthquake, the backhaul line (connected to the core network) in the wide-zone base station has a dual structure of microwave radio and optical fiber cable.

We will continue considering the expansion of wide-zone base stations based on damage assumptions in each region of Japan in the event of disaster, not just in the Tokyo area.

■ Chikura No.2 Cable Landing Station Safe from Effects of Tsunami

To enhance the continuity of communication services in readiness for a major disaster, in April 2014 KDDI established the Chikura No.2 Cable Landing Station in Minamiboso City, Chiba Prefecture, which will serve as an international communications hub for the U.S. and Asia.

Chikura No.2 Cable Landing Station is an elevated station located 28m above sea level where it will not be affected by tsunami in the event of a large-scale disaster.

In addition to optical fiber submarine cables linking Japan with the U.S. and Asia, as part of our international communications network BCP, KDDI will utilize cable routes to Europe via Russia and satellite networks. In this way, KDDI will continue to strive to provide safe and secure communications services by ensuring the continuity of international communications in times of disaster.

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■ Signing a Disaster Agreement with Each Regional Army of the Japan Ground Self-Defense Force and the Japan Coast Guard

KDDI signs an agreement of mutual cooperation to secure telecommunications in times of disaster (referred to below as "Disaster Agreement") with each regional army of the Japan Ground Self-Defense Forces nationwide and with the Japan Coast Guard. The aim of these Disaster Agreements is to ensure mutual cooperation in securing telecommunications across a wide area, so that quick recovery can be achieved in times of disaster, such as a major earthquake that is expected to occur directly underneath the Tokyo metropolitan area or in the Nankai Trough.

KDDI will continue working closely with all stakeholders in the full pursuit of measures to facilitate recovery after large-scale disasters.

■ Conducting Demonstration Experiments for Installing Mobile Phone Base Stations Aboard Ships

A ship-mounted base station is a wireless base station for recovery of mobile phone service area in the event of a disaster. Undertaking service area recovery from the sea which will not be affected by the extent of the disaster on the land will further speed up recovery of the service area and contribute to securing a means of contact for rescue and recovery operations in the event of a disaster.

Learning from the experience of the Great East Japan Earthquake in 2011 when recovery of the base stations from land routes was difficult due to severed roads and broken optical fiber cables, since 2012 KDDI has developed and conducted various demonstrations of dedicated communications equipment in collaboration with the Japan Coast Guard and relevant organizations toward practical operation of ship-mounted base stations for recovery of service area coverage from the sea. In March 2016, the Radio Act was revised toward utilization of ship-mounted base stations, enabling training using

commercial mobile phone radio waves based on the assumption of an actual disaster.

From FY2016 onward KDDI will work with relevant organizations to implement training in ship-mounted base stations as well as existing training in vehicle-mounted base stations on land.



The experimental mobile phone base station is installed on the bridge of the patrol vessel Satsuma.

■ Reinforcement of Equipment for Reconstruction of Network and Quick Recovery

KDDI is targeting improved network reliability and implementing various initiatives to prepare for the kind of large-scale disaster it is feared may take place, such as an earthquake directly underneath the Tokyo metropolitan area or a massive earthquake in the Nankai Trough (Tokai, Tonankai, Nankai).

As part of efforts to build disaster-resistant networks, we have augmented our backbone networks from three routes to four, and furthermore, we have installed a new facility monitoring system in Kansai to decentralize our monitoring functions.

Also, as a facilities measure to allow quick recovery in disaster-hit areas, we augmented deployment of mobile power supply vehicles and emergency power generators to make possible quick power supply to telecommunications facilities in the disaster area. Furthermore, we are implementing various initiatives to ensure

communications services in the disaster-hit areas, such as increasing deployment of wireless entrance facilities* as well as vehicle-mounted and portable base stations and equipping around 2,000 mobile phone base stations with batteries capable of operation for more than 24 hours.

In 2015, faster deployment to disaster areas was enabled by mounting red lamps on vehicle-mounted base stations registered as emergency vehicles.

KDDI has also improved vehicle-mounted base stations by adding Carrier Aggregation (CA), which is supported by next-generation high-speed LTE Advanced technology. In addition to ensuring the availability of voice and data communication services for mobile phones in disaster-hit areas, this equipment can be used to provide reliable service in high-traffic areas where large numbers of customers gather, such as fireworks displays or outdoor events.



Vehicle-mounted base station

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System

Providing Services in Times of Disaster

■ Ensuring the Ability to Communicate and Check the Safety of Loved Ones

When a disaster happens, many people try to use their phones simultaneously, making voice communications difficult. For this reason, we have begun offering a variety of new services that people can use to communicate or check the safety of loved ones after a disaster. We are also enhancing our Emergency Rapid Mail to provide tsunami warnings as well as useful information in times of disaster.

To ensure use in times of disaster, “au Disaster Countermeasures App” is preset on au smartphones (Android™) currently on the market. An iPhone version is also available from the App Store.

“au Disaster Countermeasures App” combines a variety of services that can be used when a disaster occurs, including the Disaster Message Board for registering and confirming safety in the event of disaster, Emergency Rapid Mail for directly sending disaster-related information such as emergency earthquake early warnings, tsunami warnings and disaster/evacuation information,* and the Disaster Voice Messaging Service for conveying “spoken” confirmation of safety through use of the packet communications network in times of disaster. Furthermore, pre-initialization

The screenshot shows the 'Disaster Message Board' registration screen. It includes a title bar with '災害用伝言板' and 'Disaster Message Board'. Below the title, it says '-Register Messages-'. There are four radio button options for 'Condition': 'I am safe.', 'I am injured.', 'I am at home.', and 'I am at the evacuation center.'. There is also a checkbox for 'See the comments.'. Below the options is a text input field labeled 'Enter comments (up to 100 characters)'. A note states: '* Your mobile phone number and the date of registration will be displayed on the confirmation screen for registered message.' At the bottom, there is a 'Register' button and a 'Back to Top' link. The footer shows '(C)KDDI'.

au Disaster Countermeasures App

enables registration of safety information and sending of voice files from Wi-Fi, and use of mobile phone data transmission lines when voice transmission is interrupted.

We have also begun an arrangement allowing mutual usage of the Disaster Message Board and Disaster Voice Messaging Service between all mobile phone providers that transcends company fences.

* A service which sends evacuation advisories, instructions, various warnings, and other citizen safety information from national and local governments simultaneously to all au mobile phones in the target area

■ Video Introducing Useful Services in Times of Disaster

KDDI provides the Disaster Message Board Service and Disaster Voice Messaging Service, which ensure that customers can communicate or check the safety of loved ones in times of disaster. KDDI released “Moshi Moshi Keitai, Moshimo No Keitai,” an easy-to-understand video that introduces these services, and offered a trial period for customers to experience the Disaster Message Board Service and Disaster Voice Messaging Service for the following periods.

- 1st and 15th of every month (0:00-24:00)
- 3 days at New Year (12:00 on January 1-24:00 on January 3)
- Disaster Preparedness Week (August 30-September 5)
- Disaster Preparedness and Volunteer Week (January 15-21)

In addition, the au Disaster Countermeasures App is loaded with useful disaster-related information that can help customers prepare for disasters before they occur.