Japanese Meteorological Agency Detects Earthquakes and Saves Lives

Earthquake Early Warning System

The Japan Meteorological Agency (JMA) is working with NTT Communications to use IPv6 as part of an earthquake early warning system that will give advance earthquake warnings to people in Japan.

The system provides a warning via an IPv6 multicast. Some 1,000 sensors that detect early tremors will communicate with a JMA server, where the data is analyzed to determine the origin of the tremor, current location and direction of the seismic wave front, and where the earthquake may be headed.

Ten or twenty seconds after an earthquake is detected, the JMA server hands off the resulting data to an NTT IPv6 multicast server, which distributes the data across NTT's IPv6 multicast network to consumers and businesses that subscribe to the service.

Subscribers get a warning, with an estimated intensity and a countdown in seconds, on their computer screens. The JMA, meanwhile, also issues its own warnings over TV and radio. Even a few seconds of advance warning can be crucial and that's what the system provides, given that warning data travels faster than the earthquake tremor. It could buy enough time to take impor-

tant countermeasures, such as closing gas valves, alerting first responders and schools, stopping trains and elevators, extinguishing flames and taking cover.

How They Got There

Following a one-year beta phase, JMA's earthquake early detection system was commercially launched in Japan on July 1, 2007. A partnership of NTT Communications with Halex Corp. and VAL Lab in Japan, connects NTT's IPv6 network, information distribution server and receipt software to JMA's server so that the earthquake warning information can be distributed before the massive energy hits the people, buildings and city/community infrastructure.

Where Will They Go Next?

Though it hasn't necessarily been a driver of IPv6, this earthquake applica-

tion has enhanced awareness of IPv6 in Japan, has led to the development of other IPv6 applications, and has sparked interest in some of the possibilities.

Japan's Ministry of Public Management, Home Affairs, Posts and Telecommunications is able to identify disease and contamination in cattle with IPv6. Since 2002, they've been using IPv6 to monitor the location and health of cattle. Each cow is outfitted with a sensor that can detect its temperature. The sensor, equipped with an IPv6 address and wireless LAN adapter, communicates to wireless LAN access points located at various points around a large ranch. The temperature sensors help monitor for disease, while the location information derived from the access point that the sensor com-

municates with alerts ranchers to any stray cows. The system is also intended to improve the traceability of beef throughout the growth and distribution process. Such information can help pinpoint the source of any diseases or contamination and improve overall consumer confidence in the industry. And it's only possible with IPv6 technology.
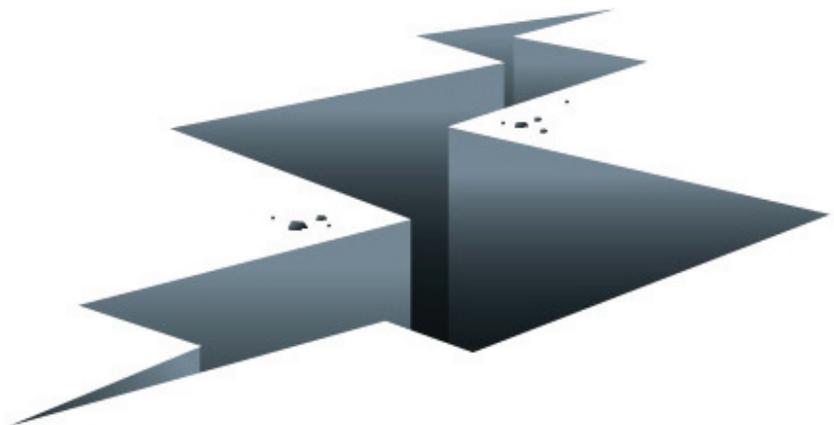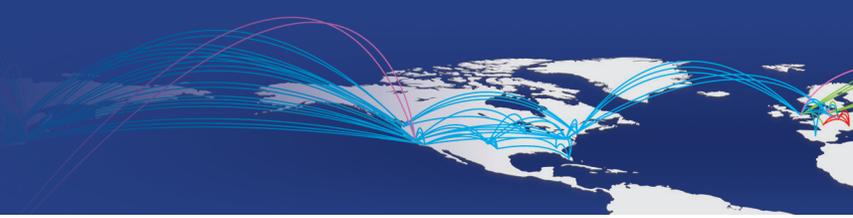
Similar to the way earthquakes are handled, IPv6 might also help to detect other emergencies, such as tsunamis or volcanoes. It's also possible to track the scheduled regulation of transportation systems, such as trains, airports, cruise liners, and even traffic signaling systems with IPv6. Data acquisition of electric and water meters, and medical regulation of blood pressure, blood sugar, and heart rate can all be monitored with IPv6 because of the number of addresses it provides. The possibilities are near endless.

Get There With NTT Communications

NTT Communications has been directly involved with the development and deployment of IPv6 technology since 1996, and our IPv6 technology was the first available globally, and available at speeds up to 10GigE. Our Tier-1 Global IP Network runs IPv4/Ipv6 Dual Stack, and we've helped implement v6 in companies small and large and for applications that run the gamut. The shift to IPv6 is inevitable. It's the future of the Internet as we know it. Let us help you get there.

Information regarding the NTT Communications Global IP Network may be found at http://us.ntt.net, by calling 877-8NTT-NET (868-8638), or by emailing sales@us.ntt.net.

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