

News and analysis about data centers, managed hosting and disaster recovery. Data Center Knowledge is written and edited by veteran technology journalist Rich Miller. [Read more about this site](#) and [how to contact us](#)

Earthquake-Proofing the Data Center

Tuesday's magnitude 6.2 earthquake in central Japan was only the most recent in a series of strong earthquakes to hit the country, one of the most seismically active regions on earth. This presents an engineering challenge for data center managers, whose facilities must be prepared to ride out quakes of magnitude 7.0 or greater.

Nearly 1,000 Japanese companies have turned to [WorkSafe Technologies](#) to protect their equipment. The Valencia, Calif. company's ISO-BASE earthquake mitigation products allow racks and cabinets to ride out even major quakes with minimal vibrations.

"Our real success stories have been in Japan," said Dylan Mason, who has also helped implement ISO-BASE at the largest companies in the Seattle area, including Boeing, Microsoft, Starbucks, Nintendo and Qwest. Mason said yesterday that WorkSafe hadn't received many performance reports from Japan, which usually means there were no problems, but also likely reflects the focus on other impacts of the quake, which killed nine people and damaged a nuclear power plant.

But Mason said ISO-BASE has compiled a strong track record in protecting equipment at Japanese data centers through more than 10 significant earthquakes in the past seven years.

ISO-BASE uses a patented Ball-N-Cone [seismic isolation system](#) consisting of two load plates with cone-shaped recesses sandwiched over a steel ball bearing. The design allows the platform to roll smoothly and evenly through earthquakes. "It's not a new technology," said Mason. "The technique is very familiar to people. We've just adapted it to a smaller base." The technology can be seen in [videos](#) on the WorkSafe web site, and typically costs between \$1,000 and \$1,500 per cabinet to install, Mason said.

Disasters are a major focus of the data center industry, guiding the location and design of facilities. But Mason said rack-level earthquake protection is not a front-of-mind issue.

"The demand is interesting, because a lot of the people I talk to have never really thought about earthquake mitigation for their data centers," he said. "The client rarely asks about earthquake mitigation. That's because there aren't many earthquakes on the East Coast, and on the West Coast the standard is to rigid bolt the equipment, so there's not much discussion on the subject. We provided an alternative to rigid bolting."

WorkSafe says that while rigid bolting keeps the equipment in place, it results in vibration that can damage racks and equipment. It also makes it much easier to move equipment. "You don't have to drill into a raised floor or place anchor bolts into the subfloor," said Mason.

While it has had clients in Japan for years, WorkSafe's U.S. business was boosted by a deal with Boeing, which installed ISO-BASE on 1,000 racks in 1999. When a magnitude 6.8 earthquake hit Seattle on Feb. 28, 2001, Boeing found that the racks on ISO-BASE fared better than surrounding racks.

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