closed for an undetermined time. Many roadways and other public transportation systems also remain idle because of damage to building and vehicles. One area that hasn't had much coverage is that of the internet and mobile infrastructure in the affected states.

Oct. 31, 2012

As millions of Americans on the East Coast start to dig out of the destruction and flooding caused by Hurricane Sandy, much of the infrastructure in the region will require significant repairs before being fully returned to service.

Much of the media coverage has focused on the New York City subway system, which will be closed for an undetermined time. Many roadways and other public transportation systems also remain idle because of damage to building and vehicles. One area that hasn't had much coverage is that of the internet and mobile infrastructure in the affected states.

With major transportation systems down, those in the storm who are able to regain electricity may be hoping to return to work virtually, by relying on their home and wireless internet services. Unfortunately, a report by Keynote, a mobile and web cloud testing and monitoring company, notes that many of those people will find their internet and mobile services down.

The company's vice president of operations, Shawn White, said that although the internet's infrastructure is resilient, it can still suffer major outages. "This is definitely the case with Hurricane Sandy's impact in the New York City area."

Keynote's global measurement infrastructure found that almost everyone in and around New York City encountered either full-scale outages with their Internet connectivity or sporadic performance issues. This is true for both Internet users of both land-line high-speed Internet connections or those accessing the Internet

through their mobile phones. Keynote's measurement computers in New York

New Yorkers and others throughout the United States were clamoring online to get the latest weather and news related to the mega storm. Almost every major news outlet was negatively impacted in some way but specifically, CNN, Weather.com, The New York Times, Bloomberg, The Wall Street Journal, and The Los Angeles Times had the most severe slow-downs. For example, Weather.com saw a performance slow-down significantly starting at 1:42pm EDT which lasted until 4:50pm EDT. During this time, the website was either completely unavailable or taking more than 30 seconds to download the home page—much longer than most people are willing to wait for a web page to load.

With the New York Time's website, Keynote found that at 1:38pm EDT and 4:33pm EDT, the site encountered a slow-down, but not due to the servers under direct control of The New York Times, but due to 3rd party content embedded on their home page that was not able to keep up with the traffic load. MarketWatch even posted a notice on their home page saying, "We are experiencing technical difficulties. The full MarketWatch site will return shortly."

Many retail sites appear to have been less effected. The most popular retail sites are veterans of handling flash floods, no pun intended, of online visitors and holiday shopping events and employ technology and techniques to quickly recover should outages occur somewhere in the United States. Keynote's Retail Index data shows no significant performance slow-downs or availability impacts related to Hurricane Sandy.

Overall, the Internet weathered the impact of Hurricane Sandy; however, there are lessons to be learned for anyone relying upon the Internet and mobile web to conduct business, communicate with online users, or get important information to concerned citizens. First, it is critically important to build robust business continuity plans around your online presence. This means having your online

content and websites available from multiple data centers, in different parts of the

Use external load testing and monitoring to ensure your 3rd party content providers, analytics vendors, and others are living up to your Service Level Agreements (SLA) and that you have monitoring in place to quickly alert you when they don't.

Finally, recognize the fragility of the mobile web. In highly dense populations, even a single mobile cellular tower taken offline can wreak havoc for everyone in that area. Voice calls, SMS messaging, social media and news updates put a significant stress on existing infrastructures. Be sure to provide multiple ways for your online visitors/customers to connect with you—be it the web, mobile, phone, and other creative ways."

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