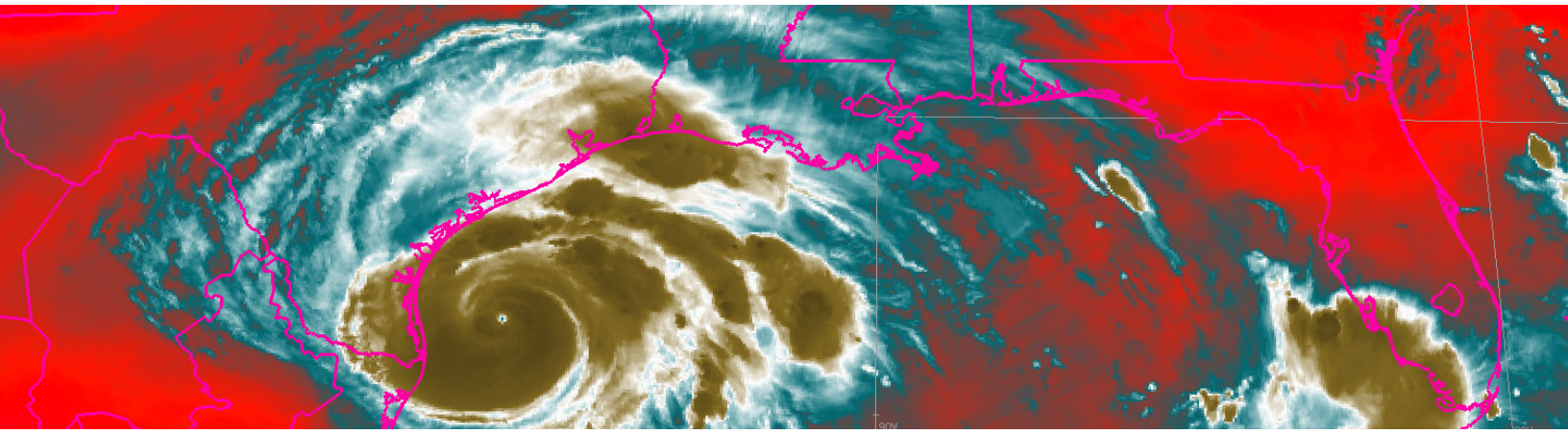
DATA FOUNDRY

CASE STUDY

HURRICANE HARVEY



Weathering Hurricane Harvey with 100% Uptime

THE 1,000-YEAR STORM

Harvey was a devastating and record-breaking hurricane that dumped rain on the Houston area for five long days. The storm made landfall as a Category 4 hurricane around Rockport, Texas early on the morning of August 26 with winds of 130 mph and a diameter of 280 miles. The storm was reduced to a Category 1 hurricane by Saturday morning, however it lingered over and around the Houston area for five long days, dumping up to 60 inches of rain in some places. Hurricane Harvey broke the U.S. record for the greatest amount of rainfall observed from a tropical cyclone, dumping an estimated 33 trillion gallons of water. Over 300,000 structures were reported flooded in southeast Texas, and the total cost of damages from Hurricane Harvey are estimated to be $125 billion. Many small businesses lost power. Some lost their places of business entirely. Many families lost their homes.

Data Foundry kept all of their Houston customers' mission critical systems dry and online throughout this 1,000-year storm. Here's how they did it.

HOUSTON 2 WAS BUILT FOR CATEGORY 5 STORMS

When Data Foundry's stakeholders began searching for a site for a new premium data center in the Houston area, the first objective was to find land that was outside the FEMA 500-year flood plain. Other location criteria included proximity to Bush Intercontinental Airport and easy access to freeways. Even though stakeholders chose a building site outside flood plains, they decided to take further precautions and elevate Houston 2's foundation slab an additional three feet above ground.

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Houston 2's Hurricane-Resistant Features

- Built outside FEMA's 500-year flood plain
- Foundation elevated an additional 3 feet
- 185-mph wind-rated structure
- Dual underground power, water and network feeds
- Multiple backup generators
- Underground fuel storage
- 10-inch thick concrete walls and concrete roof
- Concrete foundation piers inserted 25-30 feet into the ground

Data Foundry built Houston 2 not only with mission critical equipment in mind, but also with people in mind. The facility was designed with showers, lockers, a break room and dedicated office space to keep staff going throughout disasters like Harvey.

Houston 2 backup generators

PREPARING FOR HARVEY

In preparation for the massive storm approaching the Texas coast, Data Foundry's team constantly monitored weather conditions from their Network Operations Center (NOC) in Houston 2. Generator fuel tanks were topped off to ensure the data center could run at full load for several days on generator power. Data Foundry's operations team evaluated emergency procedures and drilled data center staff to manually take control of the facility in special scenarios, such as failure of particular power or cooling system components. This is extremely important.

> If your staff isn't prepared to manually take control of the facility in the event of an emergency, all the hard work and investment poured into building a redundant, resilient infrastructure is for naught.
>
> **Edward Henigin, *CTO, Data Foundry***

Amenities at Houston 2

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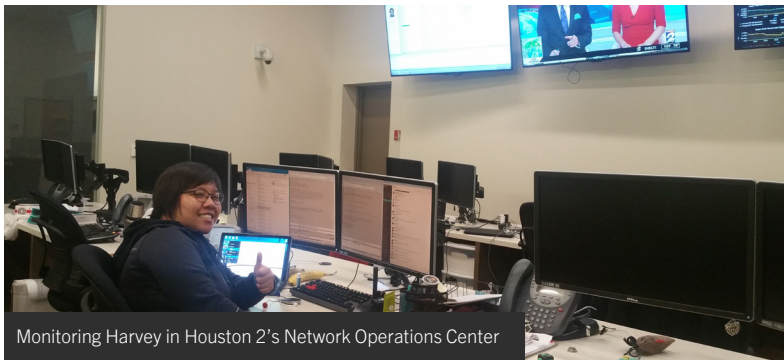
RIDING OUT THE STORM

When the storm hit, work on site consisted of the monitoring of network, power and cooling systems around the clock. Houston 2's facility manager, James O'Brien, relays some of the details of the experience:

"The team did constant walk-throughs and monitored power coming in for dips, lags and spikes. Power was solid the entire time. Monitoring of power didn't stop when the storm ended. Many surrounding neighborhoods lost power, and when these neighborhoods come back online, it can cause spikes or dips in power. We were always aware of the power status in surrounding neighborhoods and were on standby for any changes in our power status as a result of outages and repairs in the surrounding areas."

To make it through high-pressure situations like these where staff must not only take on responsibility for the data center and all its customers, they are also thinking about how their homes are faring throughout the storm, it requires a certain level of camaraderie and support between team members. O'Brien comments, "The staff remained on site for five days – Friday through Tuesday. You would think we would get tired of each other after being together for 24 hours straight for five days, but that didn't happen. We were always checking on someone when they took a break or a nap, asking if they needed anything – Are you good on supplies? Can I make you dinner? We actually missed each other after we left."



Monitoring Harvey in Houston 2's Network Operations Center

KEEPING THE NETWORK STEADY

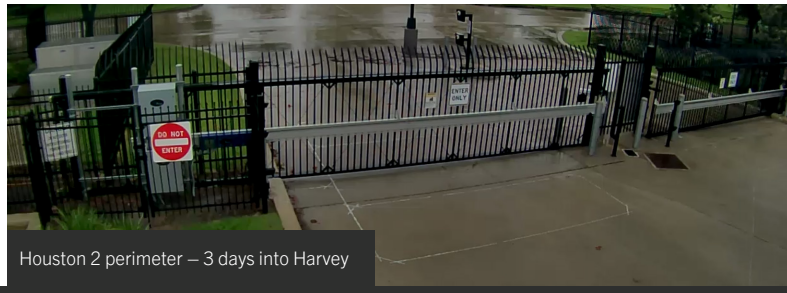
Data Foundry invested in redundant network infrastructure to keep customers online during unlikely events. Houston 2 has two underground, concrete-encased network feeds. Data Foundry also maintains diverse network paths to ensure one transit provider does not travel over the same physical fiber bundle as another. However, path diversity isn't the only thing that keeps a network steady during events like Harvey. It's also about having visibility into the state of the Internet at any given moment. Data Foundry's network engineer II, William Knobles, explains more:

"Having visibility into the current state of the Internet allows us to proactively respond to issues and/or network events before they impact our customers. In the case of an event such as Hurricane Harvey, our network engineers actively monitor each of our varied transit providers and shift traffic as necessary to ensure a seamless end-user experience. Maintaining diverse transit connections ensures that our engineers are able to 'route' around potential traffic jams, accidents, and/or construction on the highways and byways of the Internet. This attention to detail is what has allowed Data Foundry to stand out during Hurricane Harvey."

> "Excellent work my friends! Our Houston network did not miss a beat throughout this entire storm. What a fantastically designed facility!!!
>
> **Eric Sengbusch, *CEO, Root Level Technology***

Throughout Harvey, Data Foundry:

- Kept all Houston customers online throughout the storm
- 24x7 staff monitored systems, kept customers informed and responded to customer requests
- Never lost power, cooling, or network access
- Maintained 100% uptime
- Never experienced flooding in or near the facility
- Provided amenities to keep staff and customers going: cots, showers, food, water and other supplies
- Provided complimentary virtual hands services



Houston 2 perimeter – 3 days into Harvey

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THE AFTERMATH

The sun made its first appearance in Houston on late Tuesday afternoon. After the storm subsided, Data Foundry's Austin staff drove down to Houston with supplies and reinforcements. Unfortunately, several staff members suffered severe damage to their homes, as so many did during Harvey. Several of Data Foundry's employees in Houston and Austin volunteered their time to go to Houston and the surrounding areas to help those who were in trouble. Following the storm, Houston 2 was set up as a supply distribution center where staff-donated supplies such as food, games, clothing and cleaning supplies could be obtained by staff, data center customers and anyone else in need of them.

> Should another Harvey strike again in the following years, we are ready for it. . .Our data centers are built for Category 5 storms, and our staff is thoroughly trained to manage extraordinary situations. We hope to protect many more businesses from what the climate has in store for us over the years.
>
> **Cameron Wynne, *COO, Data Foundry***

ABOUT DATA FOUNDRY

Data Foundry is a privately held company headquartered in Austin, Texas that provides data center colocation, disaster recovery and managed services for enterprise customers across a variety of industries including energy, healthcare and financial services. The company's premier data centers are supported by experienced onsite technicians, security staff and customer support 24x7x365. Founded in 1994, Data Foundry was one of the first 50 Internet Service Providers in the United States. Today, Data Foundry owns and operates purpose-built, carrier-neutral data centers in Texas and operates a global network with colocation presences for deployments worldwide.

SCHEDULE A TOUR OF HOUSTON 2

Visit datafoundry.com/data-centers/Houston-2 or call 1.888.839.2794.

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