

WHEN DISASTER STRIKES

HOW STACK EXCHANGE SURVIVED HURRICANE
SANDY

FIRST, LETS TALK DR

- DR is not just for Disasters
- Design for degraded performance
 - Unless you can't
- Plan, Document, Test, Repeat
- Communication

NOT JUST FOR DISASTERS?

- Maintenance
- Upgrades
- Human Failure
- Physical Issues

DESIGNING YOUR DR PLAN

- Most people don't need 1-1 parity
- List Human factors
- Must Haves, Nice to Haves, Can do without

DESIGN YOUR DR SITE

- Keep things the Same
 - Network ID's (Name & VLAN #)
- Location, Location, Location

7 P's

- Proper
- Previous
- Planning
- Prevents
- Piss
- Poor
- Performance

COMMUNICATION

- One of the most important parts of DR
- Have a communication Plan
 - Who is in charge (information clearing house)
 - Multiple Channels
 - Phone, IM, IRC, Smoke Signals

WHERE WE STARTED

- Original SO Hardware
 - Ok, maybe a few minor upgrades
- Backup site was unloved
- We couldn't even Build in Oregon

OK, MAYBE A FEW MORE



PRIMARY DC



OUR DR PLAN BEFORE SUMMER 2012

OUR DR PLAN BEFORE SUMMER 2012

- Pray

BUILDING A DR PLAN

- Who needs to be involved?
- What level of service
 - Per service provided
- Communication Plan

CHALLENGES TO MIGRATING SE SERVICES

- 0 Downtime Migration
- Syncing Data

OK, I HAVE A PLAN ... NOW WHAT?

- Walk the plan
- Break it up into testable units
- Test those units
- Test the whole plan

EXPECTED VS. UNEXPECTED

- Unexpected
 - Natural Disaster
 - Fiber Cut
 - UPS Catches Fire
- Expected
 - Upgrades
 - Maintenance

EXPECTED: DATACENTER MOVE



UNEXPECTED: SANDY



WHAT WAS SANDY

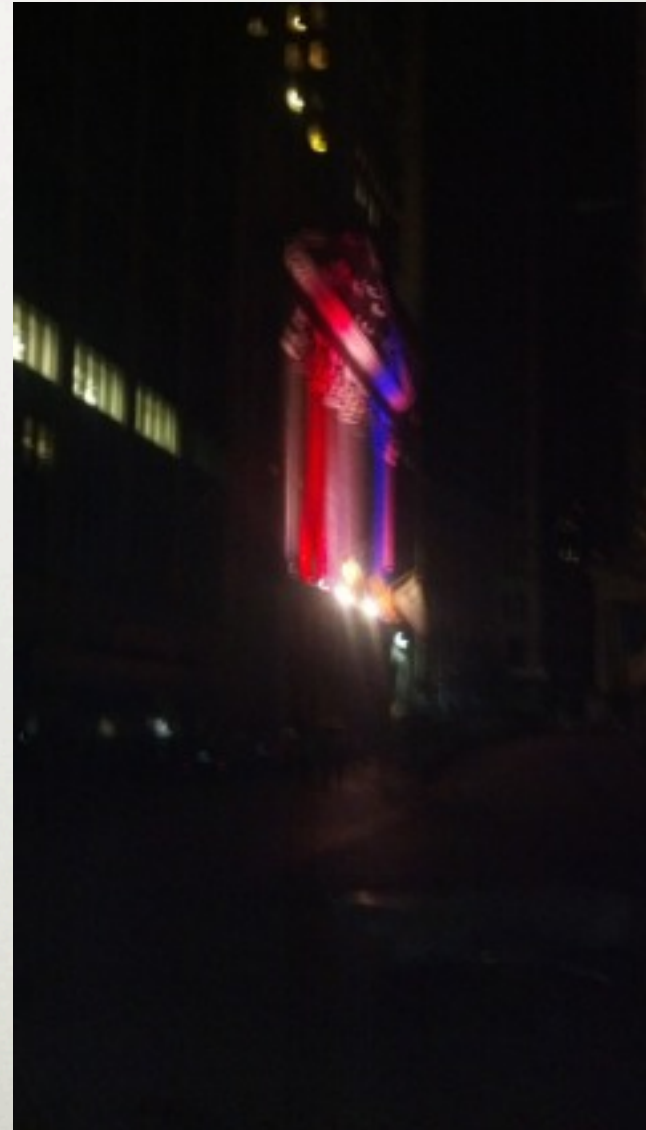
- **Hurricane Sandy** was the deadliest and most destructive [hurricane](#) of the [2012 Atlantic hurricane season](#), as well as the second-costliest hurricane in United States history. Classified as the eighteenth [named storm](#), tenth hurricane and second major hurricane of the year, Sandy was a [Category 3](#) storm at its peak intensity when it made landfall in Cuba. While it was a [Category 2](#) storm off the coast of the Northeastern United States, the storm became the largest [Atlantic hurricane](#) on record (as measured by diameter, with winds spanning 1,100 miles (1,800 km)). Preliminary estimates assess damage at nearly \$75 billion (2012 [USD](#)), a total surpassed only by [Hurricane Katrina](#). At least 285 people were killed along the path of the storm in seven countries. The severe and widespread damage the storm caused in the United States, as well as its unusual merge with a frontal system, resulted in the nicknaming of the hurricane by the media and several organizations of the U.S. government "Superstorm Sandy"
- From Wikipedia (http://en.wikipedia.org/wiki/Hurricane_sandy)

WHERE WAS I WHEN IT STARTED?

- Irene “Called Wolf”



LOWER MANHATTAN



75 BROAD

- Basement and Sub-basement flooded
- 20,000 Gallon Fuel tank ripped off moorings
- Heroic effort by the staff of four companies

75 BROAD PHOTOS



BUCKET BRIGADE

- Kept the 5000 Gallon Feeder tank full



SO, WHAT DID WE DO?

- First, we got really lucky
- Heard from Internap (also in 75 Broad) the Generator was about to fail
- Initiated DR Plan, moved all services to Oregon

WHAT WAS INVOLVED?

- ~10 people working together
- First, Migrate SO, and SE stack
- Move Careers, and blog network

DATABASE

- MSSQL Server
 - “Always”-On (2012)
- ~400GB
- ~200 Databases

WEB

- IIS
 - Web.config
- HAProxy
- HAProxy Logs
- Builds

SUPPORT SERVICES

- Caching Tier
 - Redis
- Search
 - Lucene/ElasticSearch
- Monitoring

DNS MIGRATION

- Failover Strategy was to change DNS records
 - TTLs
- Many Domains and Hundreds of Records

AD DC's

- Long term shutdown
 - What happens when a DC is shutdown for an extended period of time
- FSMO Roles

FAILURES

- Multiple Stop and Starts
- Failures to communicate
- Under estimation of severity of the issue
- Manual Processes where still in place

SUCCESS

- All Critical Services did not experience downtime
- RO Mode for a few mins
- 100% Service restoration within 3 days (in OR)

QUESTIONS?
