

Thursday, February 17, 2011

Workshop Session I

Time of Session: 11:00-12:00pm

Session Title: Design and Implementation of Highly Available Information Systems

Speaker: **Ken D'Aquin**, Manager of Data and Applications, University Computing Center,
University of New Orleans

Room: 204

Head Count: 16

Note Taker: K. Brad Ott

Notes:

Please contact me if you have any questions or consultation

This talk is about strategy and planning

The spectrum of System Failure

- Server loss
- Power/cooling failure
- Isolated Fire
- Facility Failure

Overview

Environmental Preparation

- Power
- Cooling
 - Fire Suppression
 - Physical Security

•Monitoring

POWER – referenced gas flares coming out of the floodwaters during Hurricane Katrina – gave him the idea that UNO's generators could be powered by natural gas

When we got a generator for the roof of University Computing Center (UCC) – powered by natural gas

Make sure to have Cyclonic generators to prevent “drowning” of system – winds do blow rain sideways!

COOLING – we only need two of three cooling units to run our computer systems ... challenge of dealing with heat differential – redistribution of chilled air (have box fans ready!) If you loose your own air conditioning – The impact is indistinguishable to your customers (your building might have as well burned down!)

FIRE SUPPRESSION – challenges ... a good system can turn what would be a major incident into a relatively minor annoyance ... backup tapes should not be stored on site

PHYSICAL SECURITY – Our relatively high geography left UNO to be a repository of evacuees from flooded areas ... breaking into buildings by throwing rocks/chairs thru plate glass windows ... UNO was an island – areas around the campus were flooded ... irrational behavior of displaced people ... the normal rules broke down with their desperation ...

MONITORING – key to keep systems going ... do we get alerts when things happen? (we're on battery power / temperature changes) most equipment today is set to go into thermal shutdown – but not always ... data back-up key ... how do we manage to do this with funding cuts (response to prepare – UNO part of the ring of national high-speed computing earned UCC adequate generator backup) –

Hardware Redundancy

The foundation of being ready is to be disaster resistant

- RAID
 - Redundant Memory
 - Redundant Processors
 - SAN Storage – Storage Area Network
- System living outside of core – key to networking ... leveraging this geographically for backup
- Redundant Paths
 - Redundant Controllers
 - Advanced RAID

Software Redundancy

- OS Clusters – esoteric
 - Application Clusters – referenced email systems to replicate ... system handled elsewhere (BR-NO link) ... overtime Microsoft has compressed bandwidth needed
- Virtualization – MS / BM ware – way of running 20-50 servers per machine ... any two of them could hold up all the running servers ... once you virtualized a server – you can replicate it to an entirely different location ... Ken D'Aquin referenced UNO during Katrina

Geographic Redundancy

- Remote sites – referenced pre-Katrina planning to offsite from UCC building – Katrina taught us to be redundant in Baton Rouge ... fear of aftermath without faculty – we frantically tried to get out payroll – success! – B.R. Is 20+ feet above sea level ... Hurricane Gustav – LSU-BR generator went out – lack of fuel (top people should monitoring everything ... SINGLE-POINT OF FAILURE – two people must follow-up ... aftermath of Gustav in B.R. – Think about your own geography
- WANs and VPNs – remote sites depend on this ... remote staffing needed (utilize a sister establishment / university)
- Remote Staffing
- Collateral Relationships (importance thereof)

Outsourcing

- Hosted services – Hurricane Katrina experience – Blackboard host in Wash. DC ... email servers – we had to drag our servers up to BR under risk of theft
- Cloud computing (fancy term for outsourced servers) – email servers hosted ... experience of cell phone collapse ... be prepared to communicate ... alternate website ... outsource Facebook and Twitter – geographic redundancy built in ... helped get UNO back in operation ... log-in required ... question of outsource faculty and staff email – FBI claim of access ... one of the biggest losses we had during Katrina – our domain controllers ... we now have two here, two in B.R. And two in Ruston (north Louisiana) – no good plan for restoration when they fail ... don't do anything that would compromise your primary mission
- Consulting
- Support Agreements

Other Resources

Need for back-up tapes – reference again experience of Hurricane Katrina ... UCC made back-up tapes and took them downtown – only to find them unavailable right after Katrina ... new plans have our data evacuating just like we are ... during a regional disaster – don't think you would be able to return – we were barred from doing so – New Orleans was closed to visitors (even residents) ... I don't know how we

[link to ppt – http://www.box.net/shared/5b1ct717bx.](http://www.box.net/shared/5b1ct717bx)

Questions and observations –

Unidentified male / Generators – need testing / cut the electrical power ... transfer switch needs to also be tested

Ken D'Aquin told a tale of testing go awry ...testing stored data / back-ups / restores New Orleans' Real Estate encryption key lost – recent incident with disastrous results