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Merit Network

**Statewide Disaster Recovery
For Ohio Higher Education Institutions
June 19, 2007**



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Introduction

The Ohio State University and the University of Cincinnati have collaborated to provide reciprocal disaster preparedness resources to our respective institutions and have subsequently expanded the capability and now offer similar capabilities to other institutions in the state of Ohio.



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How The Relationship Began

OSU and UC happened to sit across from each other at a Microsoft briefing asking each other “what do you do for DR for your mainframe?”

This led to:

- What size is your mainframe?
 - Do you have spare capacity?
 - What’s your storage environment look like?
 - What kind of staff do you have?
 - What skills do they have?
 - What are you doing for open systems?
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What We Had Going For Us

- Both data center facilities meet Tier 3 standards for DR operability
 - Each has sufficient space to accommodate additional systems in the event of a disaster
 - Our facilities are 105 miles apart, neither is in a flood plane or earthquake zone
 - Columbus and Cincinnati have separate utility, transportation and telecommunications infrastructures
 - We were fairly close technically & determined we could put something basic in place without too much difficulty or expense
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Other Factors That We Considered

The 'state' of Ohio in June 2003

- The two Only 2 of 15 public universities had a disaster recovery plan or option in place
- Institutions paid for third party DR options at a cost of over \$300,000 per year
- None of the Universities shared services – even if they were just down the road

Our schools represent combined assets of:

- \$8 billion total revenues
 - 320,000 students
 - \$625 Million in net assets
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Third Frontier Network

OHIO LIGHTS THE WAY



As of August 5, 2006



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The Common Needs Were Obvious

- Both organizations had a need for a functioning DR capability
 - Neither had unlimited funding so cost was a major consideration
 - We saw the opportunity to be able to start basic and improve our capabilities over time
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Result - A Decision to Collaborate

OSU and UC determined that enough motivation and synergies existed to make a mutual DRP endeavor practical and desirable.

There was also a reasonable expectation that other institutions in the state would be interested in playing in this space. In addition, we believed that between us we would have the capability to support these institutions.



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Our Initial Strategy

Embark on a phased approach that targeted:

- 1st Meeting the short term goal to put a working solution in place, then add sophistication while addressing the long term needs of our institutions.
 - 2nd Develop a flexible solution that could be made available to other institutions in the state
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Our Goals - Mainframe

- Target Mission Critical mainframe systems using a tape based recovery approach.
 - Be capable of having a recovery environment operational and ready to accept application recovery efforts within 4 hours of an emergency being declared.
 - Implement an electronic data exchange so that data could be copied in near real time, virtually reducing data loss to zero by the end of 2006.
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Our Goals – Non-mainframe

- Support a drop ship, tape recovery strategy
 - Allow for hosting skeleton infrastructure
 - Allow for hosting cold, warm or hot systems
 - Allow for real time data synchronization
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Challenges

- Obtaining funding
 - Hardware compatibility
 - Software compatibility
 - Defining the basic technical processes and procedures
 - University policies & politics
 - Getting the legal agreements in place
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Tackling Funding

Creatively obtain funding by:

- Ohio Board of Regents Award - \$257,000
 - To fund Phase 1 of mainframe DR for UC, OSU, UT and OU.
 - Ohio Third Frontier Project fiber network – provides access for all public higher education institutions
 - Beg, borrow & steal
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Resolving Hardware And Software Compatibility

- Build on commonalities
 - Compromise where incompatible conditions exist
 - Acquire common foundational tools
 - Collaborate on new purchases
 - Ensure CPU & storage capacity availability
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Working Through The Development & Testing Of Technical Processes And Procedures

- Overcome personal preferences
 - Start simple and add sophistication/complexity over time
 - Address tape backup availability
 - Iterate, iterate, iterate – no test is a failure
 - Set up a common documentation repository
 - Set up redundant security procedures (OSU backs up UC, UC backs up OSU)
 - Establish a emergency command center at each site
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Resolving Political & Legal Issues

- Get the CIOs on board
 - Establish explicit service level agreements
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Start Involving Other Institutions

- University of Toledo
- Ohio University
- University of Akron*
- Kent State University
- Bowling Green State University*

* - have a SunGard contract for their Mainframe



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Strategy For Including Other Institutions

- Follow the same basic strategy we developed to meet our own needs
 - Put formal service level agreements in place
 - Initially target mainframe systems
 - Provide for non-mainframe requirements
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Our Approach With Them

- Build on what we learned
 - Leverage tools like IBM's Backup on Demand feature to provide a 'warm' disaster recovery site for each school
 - Expand the emergency command center as new schools come on board
 - Share the cost (\$20,000 per institution initiation fee & \$12,000 per year)
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Tackling Non-Mainframe Systems On A Bigger Scale

- Preparing to support either a cold, warm, or hot DR site approach
 - Have the physical site and infrastructure ready to support schools by the end of 2006
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Open Systems - Cold Site

- Recovery sites will serve as a prepared facility only
 - No running systems will be available
 - Primary sites will be responsible for maintaining off-site backups of Intel and Open Systems based data and applications
 - Schools are responsible for maintaining emergency-lease contracts with hardware and software vendors
 - Reserved floor/rack space
 - Cost \$2,200 retaining fee (minimum) per year
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Open Systems – Warm/Hot Site

- Schools can install their own racks, servers and storage to support a core infrastructure
 - Expecting a drop ship approach for the bulk of their equipment needs
 - Reserved floor / rack space
 - Cost \$2200 retaining fee (minimum) per year
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Operations During A Disaster

- Operational changes will occur
 - Mission critical systems only
 - Development freeze
 - Performance reductions
 - Some services not available
 - The focus of the systems administrators and application developers will be on resuming operations at the home site
 - To fully recover from a disaster all dependant systems must also be recovered
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Technologies That Help

- Enterprise Tape System
 - By centralizing on a single backup medium and system, recovery will be simplified by limiting variations of hardware and software that must be supported during a disaster
 - Storage Area Network
 - Facilitates high performance and fault tolerant storage that is not system dependant
 - Can be used to replicate data without impacting performance on host systems
 - Facilitates additional backup opportunities that limit exposure to data loss
 - Network Based Systems
 - By eliminating system dependencies for things like printing, operations during a disaster at a remote site are simplified
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Where Are We Today?

- OSU & UC have working, tested mainframe capabilities in place
 - UC has installed a skeleton non-mainframe infrastructure at OSU
 - 12 of 15 public universities have a disaster recovery plan or option in place
 - 2006 will be the last year the two institutions pay for third party DR options
 - 10 of the 15 Universities share at least two services with another university
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Questions?
