Youngstown State University

Distributed Disaster Recovery For Ohio Higher Education Institutions

Technology Collaboration

- The Ohio State University and the University of Cincinnati are establishing data centers with the necessary infrastructure to support redundant disaster recovery for any higher education institution.

Grants

- Ohio Board of Regents Award - $216,000
- Ohio Board of Regents Supplemental Grant - $69,000
- Third Frontier Project fiber network

Facility Qualifications

- UC and OSU operate and maintain data center facilities meeting minimum requirements for operability
- Each institution has sufficient space to accommodate additional systems in the event of a disaster
- Facilities are 105 miles apart
- Columbus and Cincinnati have well developed, and separate utility, transportation and telecommunications infrastructures

Additional Considerations

- Peripheral devices required to run batch and online operations are available
  - Hardware based Virtual Tape Systems – EMC Copy Cross or VTS/VSAM
  - Physical tape mounts
  - The recovery centers currently support IBM 3480 / 3490, STK 9840 and IBM 3590 / Magstar technologies
  - Printing facility support – Xerox 6109 or 75
  - OARnet and Third Frontier connections

Open or Intel Systems

- One goal is to provide a “cold” disaster recovery site and emergency command center for all open or Intel systems – capable of a 96 hour response time with minimal loss of data
- Cost: $1850 one time and $2,200 annually

Open Systems - Cold Site

- Recovery sites will serve as a prepared facility
- No running systems will be available
- Youngstown State University will be responsible for maintaining off-site backups of Intel and Open Systems based data and applications
- Youngstown State University will also maintain emergency-lease contracts with hardware and software vendors

Declaring a Disaster

- Youngstown State University declares an emergency and facilitates shipment of leased equipment to recovery site
- Youngstown State University has off-site backup media delivered to recovery site
- Upon arrival, systems are installed and initially configured by Recovery site staff
- Backup media is loaded onto systems
- Operations resume once systems are activated

Complementary Facilities

- In addition to the data center and systems facilities at the recovery site facilities will be incorporated to accommodate a declared disaster
  - An emergency command center will be available for up to eight staff from the affected institution to relocate and operate their systems through a disaster
  - Command center facilities will be maintained to support up to two simultaneous declared disasters

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 to resume normal operations at Youngstown State University
- To fully recover from a disaster all dependant systems must also be recovered

Mission Critical Systems

- Infrastructure Systems
  - Domain Name Servers or other name services
  - Networking and address space
  - Firewall and Security Systems
  - Authentication System
  - Identity Systems (Data Warehouse)
  - Messaging Systems
  - Microsoft Active Directory or Novell Directory

Mission Critical Systems

- Enterprise Resource Planning Systems
  - Human Resources
  - Payroll
  - Fiscal Systems
  - Facility Management
  - Asset Management

Mission Critical Systems

- Academic Support Systems
  - Student Information System
  - Registrar's Systems
  - Treasurer / Bursar's systems
  - Course Management System

Mission Critical Systems

- Other Critical Systems
  - Corporate Web presence
  - Staff LAN
  - Alumni Relations
  - Others

Open Systems -Optional Warm Site

- Recovery site will have active systems in operation
- Systems will have a general configuration applied, but no specific application data
- Backup application data may or may not be on-site
- Backup application data may or may not be available on accessible disk

Open Systems -Optional Warm Site

- In the event of a declared disaster
  - Systems delivery time and initial set-up time will be eliminated
  - Dependence on off-site backup remains
- Systems will be available for use during non-disaster periods
  - No mission critical use since systems must be available for disaster use at all times
  - Identifying additional uses increases return on investment for disaster systems
  - Examples of additional uses include disaster recovery testing and process development, load testing, product evaluation, system demonstrations

Open Systems -Optional Hot Site

- Recovery site will have active systems in operation
- Systems will have synchronous or asynchronous copies of applications and data on recovery systems
- Hot site arrangement reduces to near zero time to recover and opportunity for data loss
- In hot site arrangement systems are dedicated to a particular disaster use, and are not available for other purposes in non-disaster periods

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

Conclusion

- By creating disaster recovery facilities at Ohio State University and University of Cincinnati, the disaster recovery needs of the higher education institutions of the State of Ohio can be served at greatly reduced cost, while maintaining a high level of preparedness for any natural or manmade disaster

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