Disaster Recovery

Practical Applications

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Presentation Outline

• Importance of a plan
• Disaster Recovery Scenarios
• Disaster Recovery Basics
• Lake County Clerk of Courts - Disaster Recovery Solutions
• Activating your Disaster Recovery Plan
• Summary
Importance of a Plan

• Why have a Disaster Recovery Plan?
  o Protect your data
  o Mitigate risks and costs
  o Protect the organization’s reputation
Disaster Recovery Scenarios

- What scenarios should an organization plan for?
  - Weather events
    - Hurricanes
    - Tornadoes
    - Flooding
    - Lightning Strikes
  - Extended power outages
  - Network disruption
  - Facility failures/destruction
  - Ransomware
Disaster Recovery Basics – What you must have

- Multiple player involvement
  - Executives
  - IT Staff
  - Application Owners
- Multiple layers of protection
- Multiple iterations of testing
## Disaster Recovery Basics - Who are the players?

<table>
<thead>
<tr>
<th>Executives</th>
<th>IT Staff</th>
<th>Application Owners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensures Funding</td>
<td>Develops, tests and evaluates the plan</td>
<td>Develops testing outline &amp; goals</td>
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<tr>
<td>Sets realistic expectations &amp; acceptable down-time</td>
<td>Proposes disaster recovery site(s)</td>
<td>Identify participants for testing</td>
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<td>Approves data backup locations</td>
<td>Establishes budget &amp; technology needs</td>
<td>Performs actual testing</td>
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<td>If needed, implements the plan</td>
<td>Approves the testing outcome</td>
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Disaster Recovery Basics – DR Site

• What is a disaster recovery site?
  o A place to continue operations when your primary site fails

• Where is it?
  o On-campus
  o Private/Public Cloud
  o Co-location
  o Other end of the building
  o Motel 6

• Why do you need it?
  o Because putting all your eggs in one basket....
Disaster Recovery Basics – DR Site

• Ensuring Accessibility
  o Can employees connect to the data from a remote location?
    ▪ Internet and electricity available?
    ▪ Did they take their equipment home with them?
  o Physical location
    ▪ Is there internet and electricity available?
    ▪ Can employees drive there?
      ➢ Inclement weather
      ➢ Non-passable roads
      ➢ Gas shortages
Disaster Recovery Basics – Cloud Solutions

• What is Private/Public Cloud?
  o Cloud almost always refers to virtual server or applications
  o Private Cloud:
    ▪ You most likely already own one
    ▪ If you have a virtual server and own and maintain hardware
  o Public Cloud:
    ▪ You manage the application
    ▪ Someone else manages and owns the hardware
    ▪ Open to anyone
    ▪ You cannot point to a server and say “my data lives here”
    ▪ Who owns the data?
    ▪ Security
Lake County Clerk of Courts - Where we were

- Lake County Clerk’s Office - 15 Years Ago:
  - Single, non-hardened server room
  - Backed-up physical servers to tape media
  - Sent tapes offsite to a vault in a building down the street
  - Tested restores of a few servers yearly
  - Had only IT staff do the testing and approval of the results
Lake County Clerk of Courts – Where we are today

• Lake County Clerk’s Office - Last Eight Years:
  o Multi-site server rooms, with the primary being hardened
  o Replicated data storage between server rooms
  o Backup data to disk arrays
  o Backup disk arrays to an onsite and offsite tape copy
  o Send tapes offsite weekly
  o Continuously send encrypted backups of select data to online backup vendor (CrashPlan)
  o Conduct annual disaster recovery testing with users at disaster recovery site
Lake County Clerk of Courts – Where we are going

- **Starting this year:**
  - Dedicated backup appliance
    - High speed
    - Able to mount virtual machines directly from appliance
  - Moving beyond tape
    - 208 annual work hours saved; or 5.5 weeks a year
  - Semi-private cloud storage vendor (Hayes Computing)
  - VMWare Site Recovery Manager
    - Automate DR testing and reduce recovery
  - Virtual server storage snapshots
    - Can roll back to previous versions quickly
  - Quarterly disaster recovery testing with users
Lake County Clerk of Courts – Layers of Protection

• Current Layers of Protection:
  o Documented policies and procedures
  o Documented equipment configurations
  o Trained staff
  o Server rooms at multiple sites
  o Redundant networking
  o Replicated data storage
  o Onsite backup, offsite backup
  o Online backup
  o Multiple work locations/DR carts
Lake County Clerk of Courts - Testing

• Prerequisites:
  o Work with application owners to determine testing priorities and goals
    ▪ First year typically focuses on core processes
    ▪ Expand test goals each year
  o Discuss potential limitations of the test environment
  o Develop a testing sign-off sheet with agreed-to testing functionality
  o Agree on what a successful test looks like
  o Determine a testing schedule
Lake County Clerk of Courts - Testing

• Setup:
  o Testing is performed at the actual Disaster Recovery site, using the actual Disaster Recovery hardware
  o Setup DR site:
    ▪ Testing setup is diagrammed for easy setup by IT staff
    ▪ 20 laptops, four Disaster Recovery carts, two printers
  o Testers bring their own specific equipment and supplies
  o IT staff is scheduled to be available to assist testers
Lake County Clerk of Courts - Testing

• Actual Testing:
  o Conducted prior to hurricane season
    ▪ First week – Administrative services and financial system
    ▪ Second week – courts
  o Testing in a bubble
    ▪ Simulates, as best we can, an actual disaster scenario in a virtual environment
    ▪ In a real event, the only difference is, the bubble layer will be popped.
Testing Outcomes:
- Have participants provide feedback on the disaster recovery testing before leaving the test
- Follow up on the feedback by meeting with application owners

Evaluate and Improve the plan:
- Technology and business processes are continually evolving, so your plan must also
- Ensure the application owners update their processes if needed, based on the test
Activating Your Disaster Recovery Plan

• When do you implement the Disaster Recovery Plan?
  o Not just for hurricanes
    ▪ Power outages
    ▪ Temporary loss of connectivity
    ▪ Ransomware
  o How long do you wait to take action?
    ▪ May be different for each scenario
    ▪ Ransomware – Immediate action
    ▪ Power and connectivity outages – Immediate action
    ▪ Alternate site activation after 24 hours
Summary

✓ Make sure you have a well thought-out plan
✓ Ensure everyone in the organization understands the importance of having and testing a plan
✓ Disaster recovery testing often reveals weaknesses in processes or the plan itself, so continually test your plan to ensure you learn from it, and evolve it as necessary
✓ Set the conditions for when you have to activate it, and be ready to activate it!
Thank you