How Modernizing Backup and Recovery Helped the Housing Authority of the Cherokee Nation Rebuild its IT Infrastructure

Tonia Williams
Housing Authority of the Cherokee Nation
Introduction

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HACN was created to provide decent, safe, and sanitary housing within the Cherokee Nation.
Brief History

- HACN created in 1966 but currently...
  - Serves an average of 6,000 families monthly
  - 19 offices across 14 counties
  - HACN staff of 180+
- Merged with Cherokee Nation in 2008
  - CN had a 4K+ employee base
  - HACN had about 200 employees
  - All infrastructure functions moved to CN
Brief History

- **Separated in April 2012**
  - Financial system purchased in June 2012
    - Finance dept. started in September 2012
  - Servers set up by CN August 2012
    - HACN - IT staff started on November 1
  - AP & PR run October-November
    - 1\textsuperscript{st} rent run had to be printed by October 1
    - 1\textsuperscript{st} payroll had to run November 1
  - HR dept. started October 15
IT Intro - Infrastructure

- Room set aside for server room
  - Inadequate electricity (standard 120v wall outlets)
  - 2 borrowed servers from CN
  - No network equipment

- IT offices
  - 1 room shared by 5 new IT staff

- HACN technology equipment
  - 70% more than 5 years old (Mostly XP, few 2000)
  - 5% within 3-year warranty
IT Intro – IT Staff

- 2 HACN staff
  - 1 ‘became IT’ and 1 system Z programmer

- New IT staff
  - (Lead) System Administrator
    - Exp: 2 years IT as computer hardware tech I
  - (Lead) Network Administrator
    - Exp: 3 years IT as network tech I
  - Help Desk Tech
    - Exp: None
  - IT Support Manager
    - Exp: 2 years IT computer hardware tech II
IT - Directives

- Network, firewall, ISP & circuits (21 locations)
- Servers, licensing, system migrations
- Domain, DC’s, AD, email (Office)
- Workstation & inventory, upgrade, move accounts
- Printers, LAN lines, FAX lines, cell phones
- Mailing systems
Executive Director: “What we are currently spending to keep operational is what is available at this time.”

- Current bills to work with
  - Phone & cell phone services
  - Mailing services
  - Internet services

- Other constraints
  - Government budget sequester of 2013 (8%-10%)
My reaction

NOBODY MOVE!
I Just Lost My Damn Mind
## The Plan

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<th>Phase C</th>
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<td>1) Home Ownership</td>
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<td>5) Phones</td>
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<td>Temp Web site</td>
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<td>Additional</td>
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<td>Re-org IT group &amp; descriptions</td>
<td>Server monitoring &amp; updates</td>
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<td>Evaluate staff needs</td>
<td>Backup &amp; Periodic Restore test</td>
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<td>Tribal Vehicle</td>
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The Need

- Fully separate from Cherokee Nation
- Build an (IT) infrastructure from (literally) nothing
- Set up infrastructure in a short period of time
- Solution must accommodate for an inexperienced staff
- Solution must be able to expand as needed (unknown growth rate)
- Money
Milestones

- HACN domain acquired 12/11/2012
- Infrastructure orders made 12/12/2012 (PC’s, monitors, laptops, SAN, BU, network core)
- Server room electricity, air conditioning, and generator completed 01/24/2013
- IT offices with furniture 03/06/2013
- SAN, network (core switch), firewall installs completed 04/29/2013
- P2V’s, BU, HACN Go Live 05/22/2013
- Full separation 08/16/2013 (Email)
Setup & Backup strategy

♦ SAN & Virtualization
  › Speed of setup
  › Costs compared to physical environment
  › Ease of administration

♦ Backup
  › Least amount of overhead required
  › Ease of setup and use (GUI interface)
  › Scalable
  › Storage space reduction (global deduplication & compression)
Restore & Recovery

❖ Restore
  ➢ Single file
  ➢ Single server
  ➢ Entire cluster

❖ Recovery
  ➢ Flexible recovery time objective (RTO)

❖ Strategy Summary (Need)
  ➢ Inexpensive, reliable, ease of use
Our Server Rack Today
Our SAN Network
Our Cluster Environment
Today

- Ultimately, we saved about 50% of staff time that now can be focused proactively on other critical business needs.
- The strategy allowed staff to gain knowledge and experience quickly.
- In the past, IT was always blamed as the problem. Today people think of IT as the ones who can save the day.
- How did we fund it? Reducing operational costs by an estimated 40%!
Locational Network Map
Up Next & Closing

- Disaster Recovery
  - Virtual standby VM (DB Server)
  - Data snapshots (BU rate to be determined)

- Asynchronous secondary site
  - Data replication
Proposed Main Business App Env
Closing

- Q & A
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