



# 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**



## Tonia Williams

*CIO, IT Director*

## Housing Authority of the Cherokee Nation (HACN)

*Tahlequah, OK*

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

- ▶ 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

- 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<sup>st</sup> rent run had to printed by October 1
    - › 1<sup>st</sup> payroll had to run November 1
  - ◆ HR dept. started October 15

- 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

- ◆ 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

- 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%)



**NOBODY MOVE!  
I Just Lost My Damn Mind**



# The Plan

Phase A	Phase B	Phase C
Electricity	SAN/BU/DR	Mailroom
Server Racks	Emphasys Migration	VPN Solution
AT&T ISP (11/20/12)	FICS migration (?)	VNC Solution
Rebuild DC	Office 365	SharePoint
AD	1) Email	1) Content Management
HACN.ORG	2) LYNC	2) Inventory tracking
Inventory (make, mod, etc.)	3) Web Site	Emphasys additions
1) Workstations	HACN Workstation Orders	1) Home Ownership
2) WAN Printer	Desktop Phone service	2) Rental Assistance (sec.8)
3) Peripherals	Printer purchases/leases	3) Neighborhood Revitalization
4) Network equipment	Network tool purchases	Financials
5) Phones	1) Equipment	1) Employee Self Service
6) etc.	2) Tools	2) Payroll user security
Cell Phone (Admin)	3) Cabling	Network rewiring
Phone numbers/bills (Admin)	ID Badge System	Conference room setups
Server/MSDN Licenses	1) Security doors	1) Wireless
Printer contracts/leases (Admin)	2) Timecard stamper	2) Projectors
Temp Web site	Inventory Tagging System	3) Conference Phones
Firewall	IT Office Furniture	Systems Management
Circuite (LPMS)		1) VM Monitoring/setup
		2) Workstation group policy
Additional	Daily	Brainstorm
Re-org IT group & descriptions	Server monitoring & updates	Tribal ID Card integration
Evaluate staff needs	Backup & Periodic Restore test	
Tribal Vehicle		
IT Training		
HACN Staff training		
IT Policy		
PA System		

- 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

- › Single file
- › Single server
- › Entire cluster

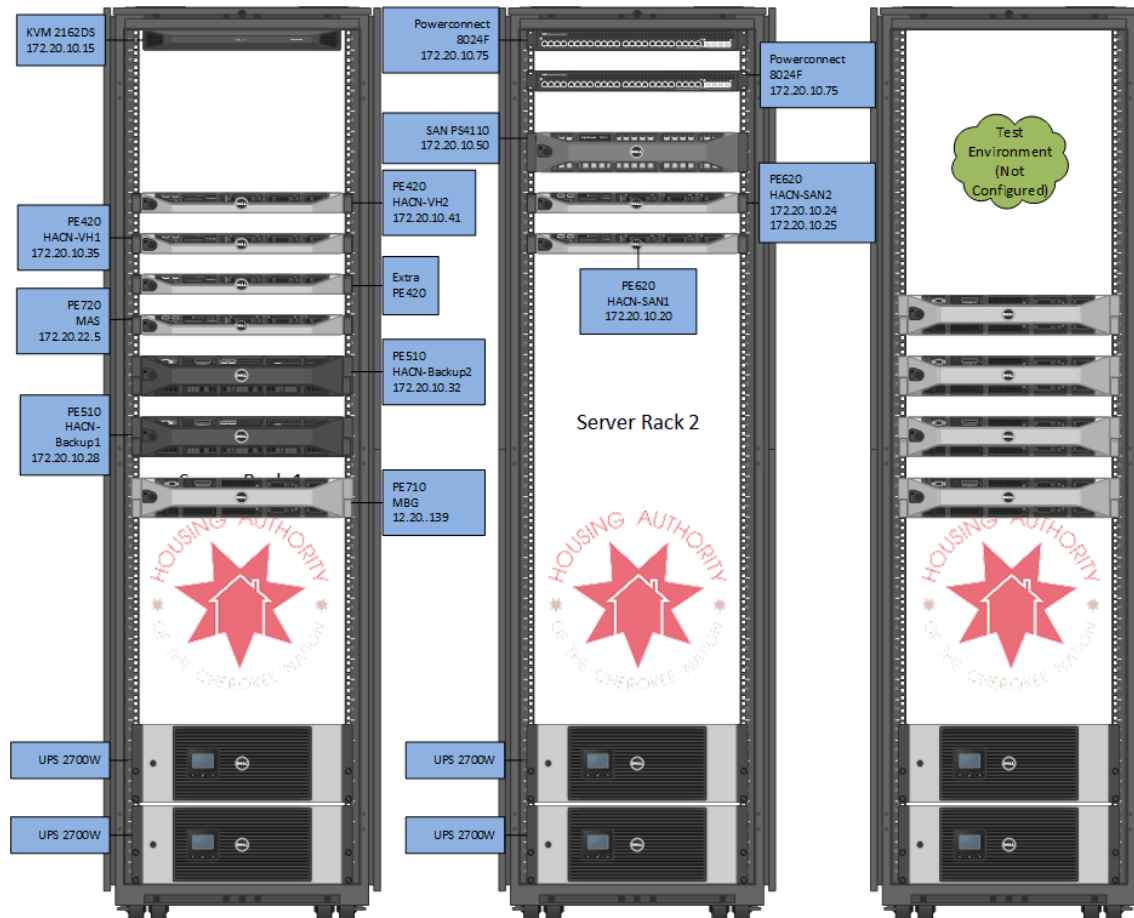
## ➤ Recovery

- › Flexible recovery time objective (RTO)

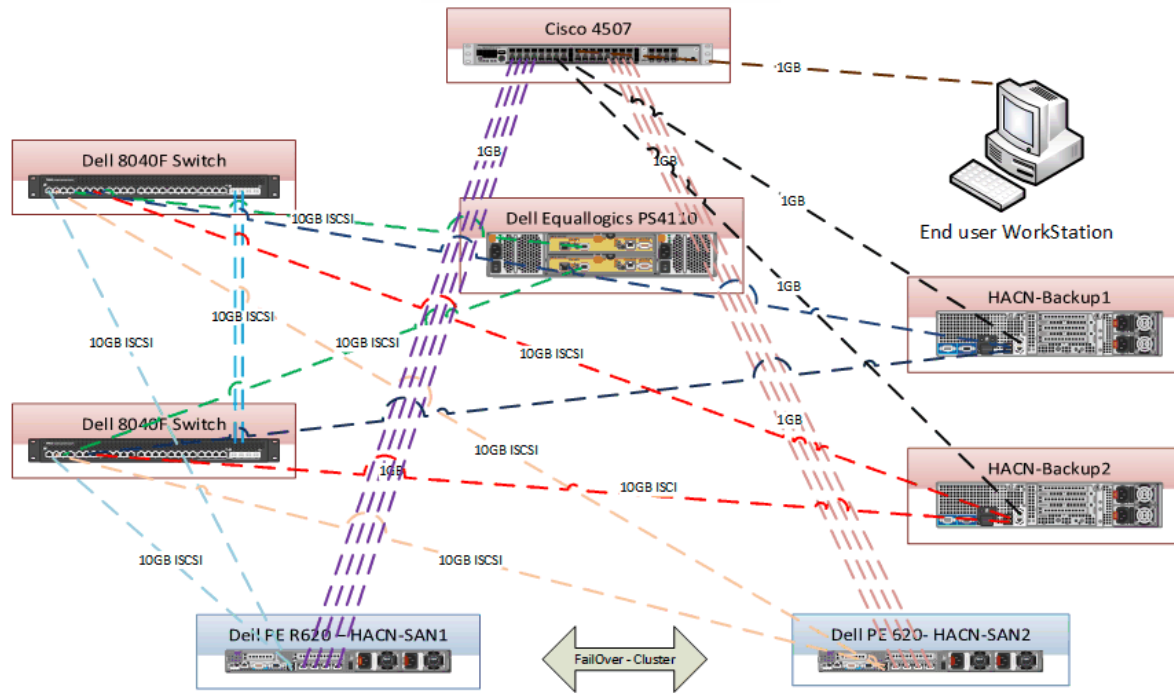
## ➤ Strategy Summary (Need)

- › Inexpensive, reliable, ease of use

# Our Server Rack Today



# Our SAN Network

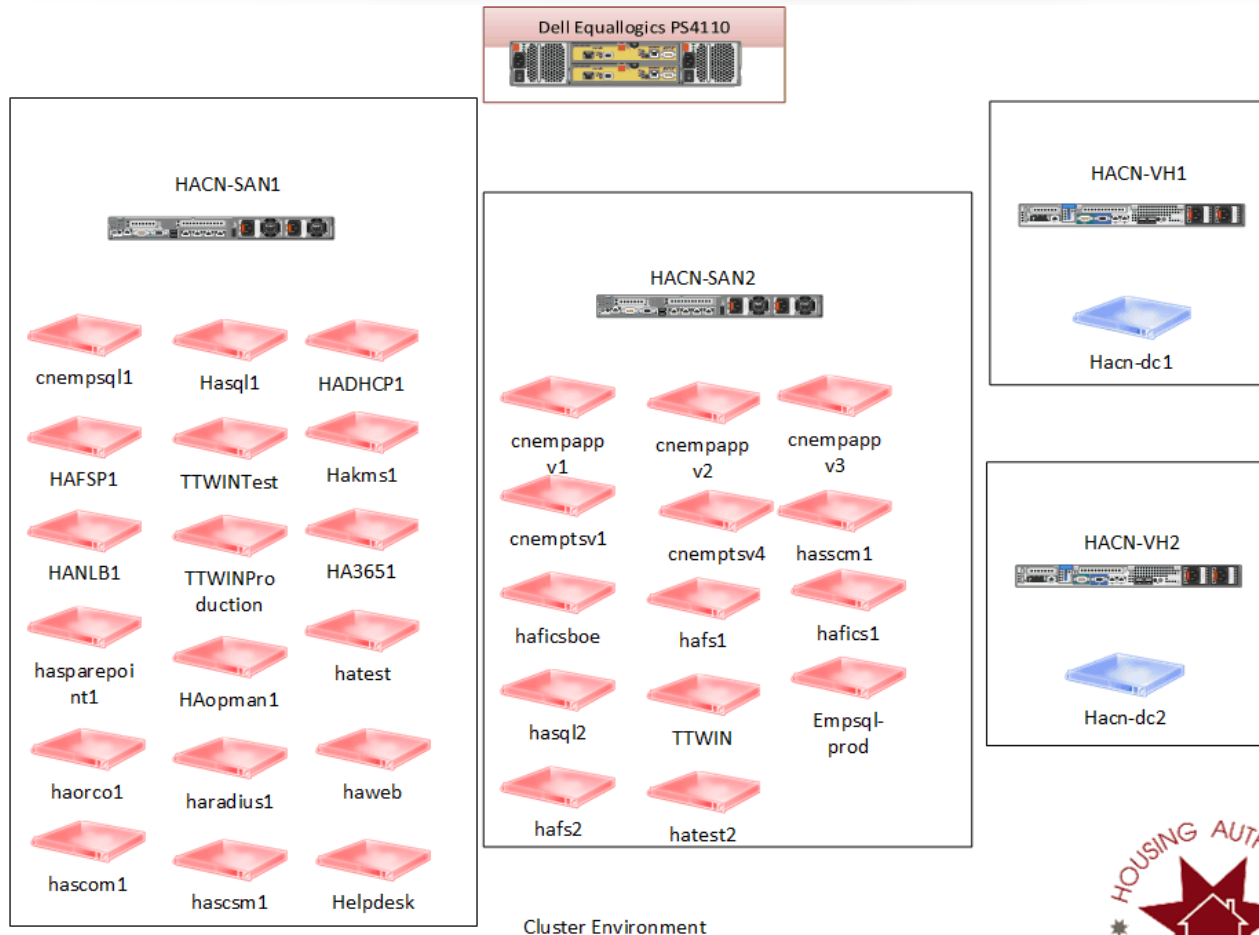


SAN Environment



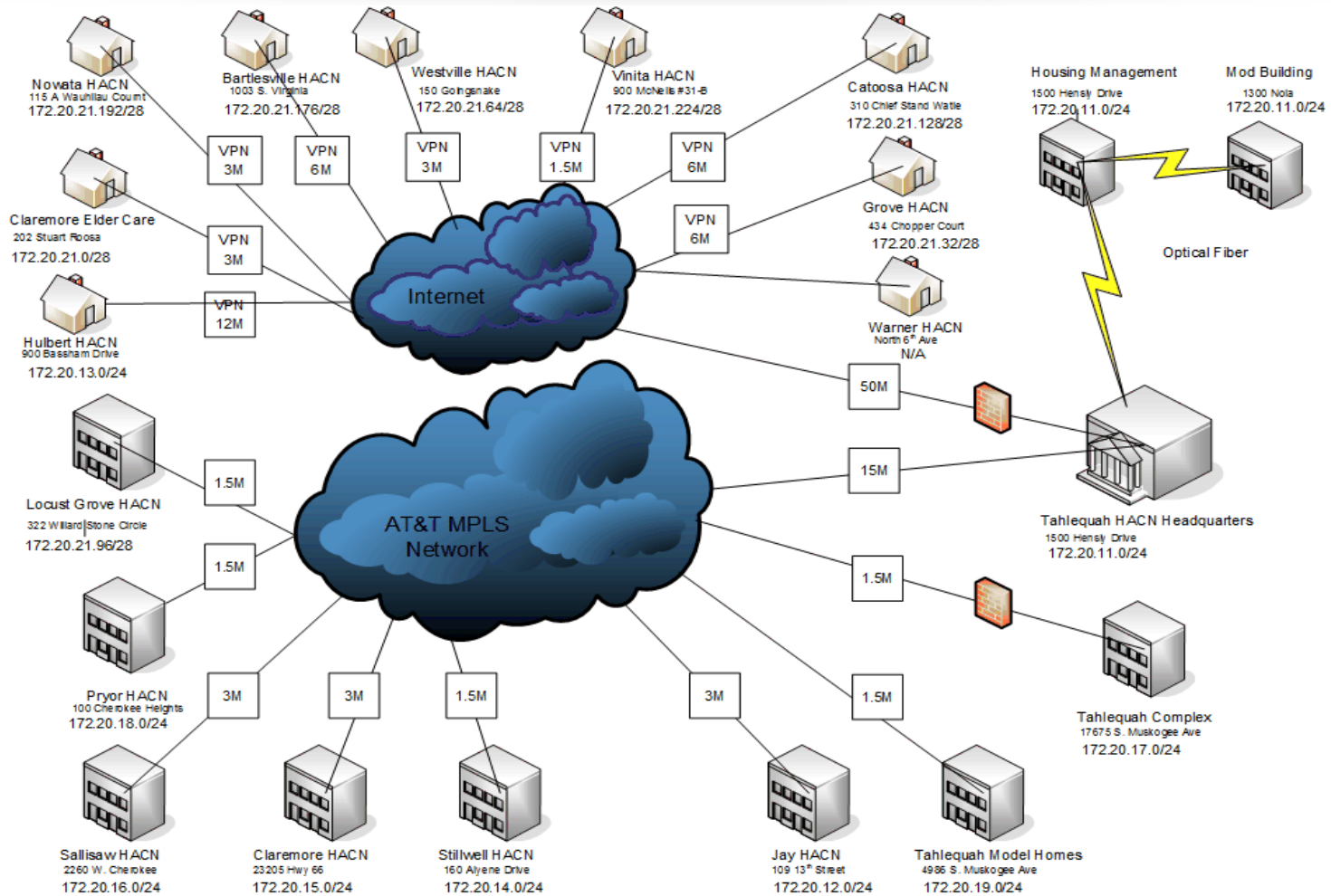


# Our Cluster Environment



- 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



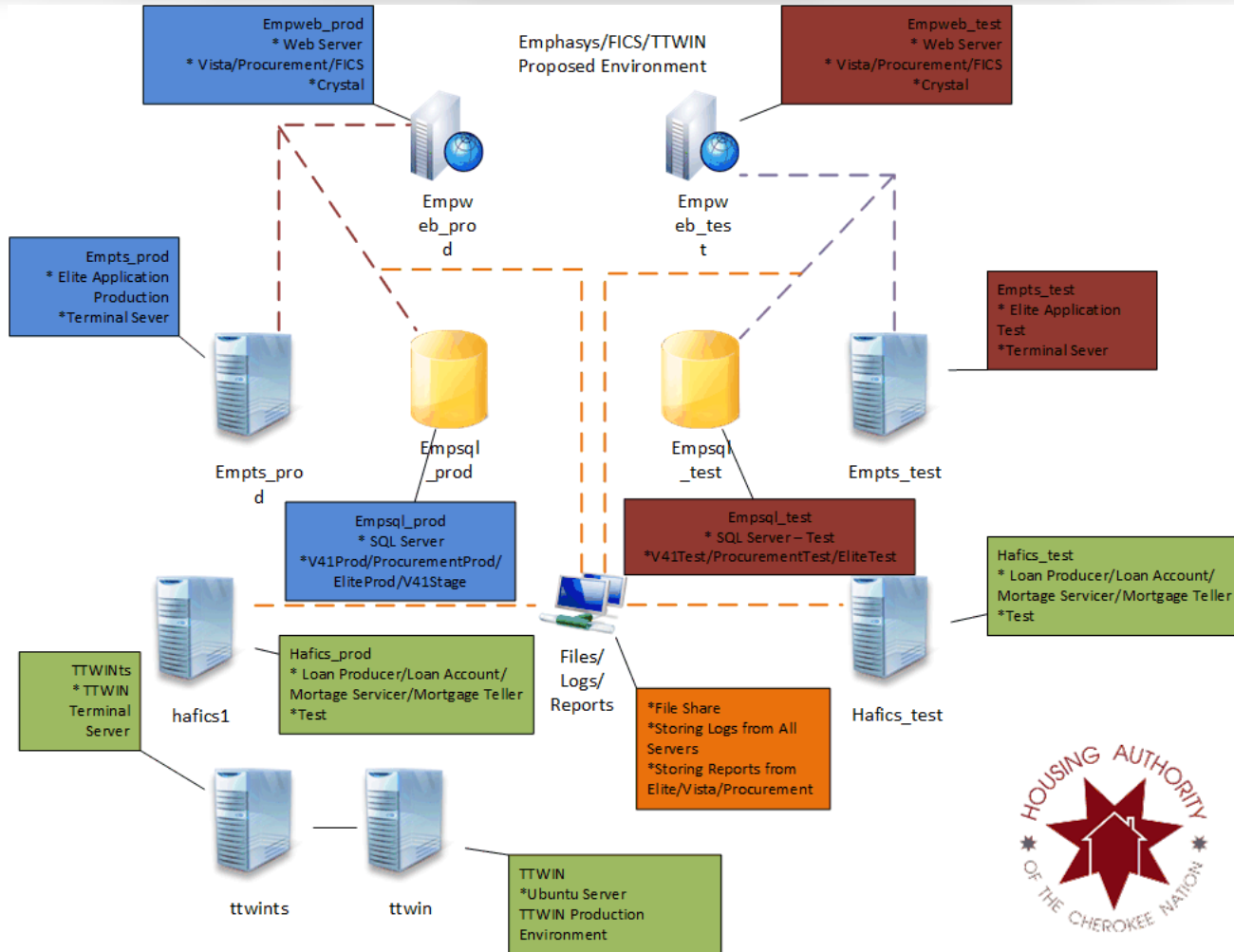
## ➤ Disaster Recovery

- › 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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