

# *Are Vote Centers* Cyber-SECURE and Cost-EFFECTIVE ?

Brown County Commissioners' Meeting  
January 22, 2025

## Progress in Technology Does Not Ensure Security

- Example: Progress of Locks
- Skeleton key lock
- Tumble lock
- Keypad lock
- Wireless lock

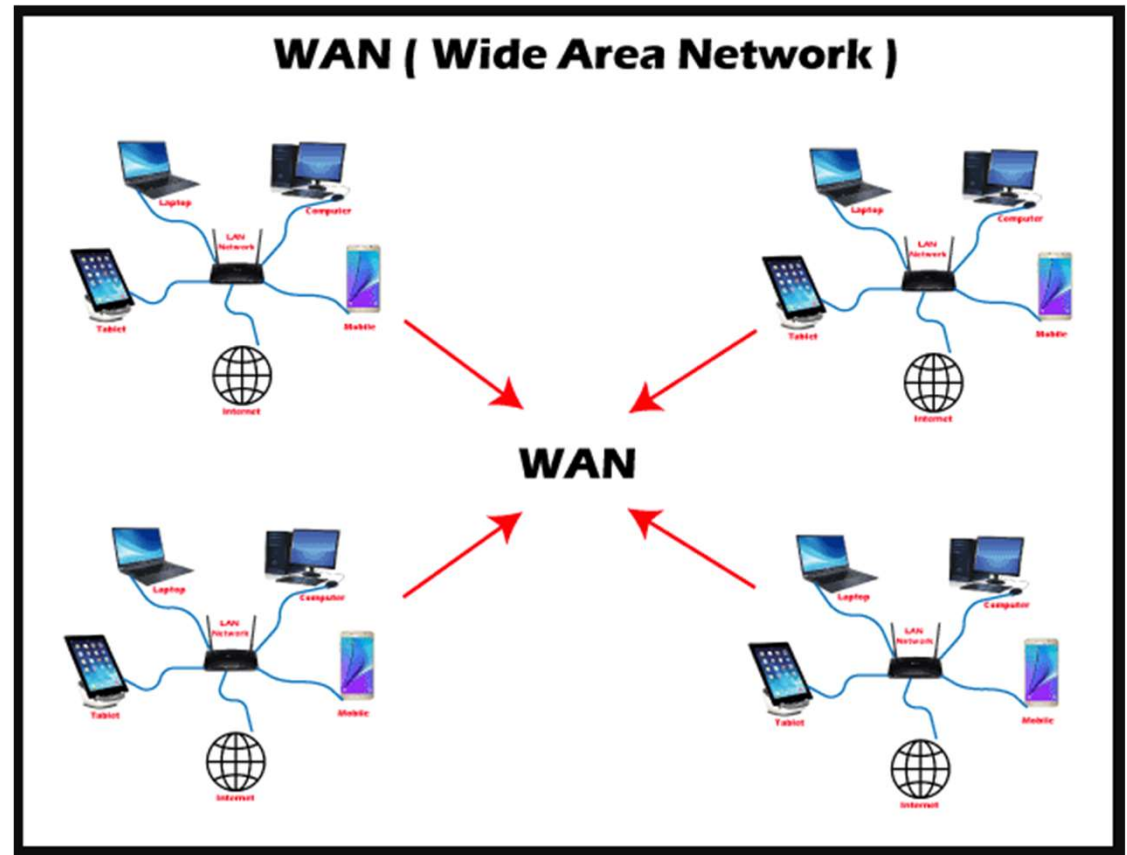



# *Some* Notable Cyber Incursions in 2024

Source: <https://tech.co/news/data-breaches-updated-list>

- Dec 19 -Richmond University **Medical** Center - *data breach*
- Dec 16 – Rhode Island (the **state** of) - *cyberattack*
- Dec 6 – Michigan Township **Civic Center** - *hack*
- Dec 5 – PIH Health **Hospitals** - *data breach*
- Nov 19 – **Library of Congress** - *data breach*
- Nov 11, 2024 – **China-backed** hackers breach **multiple telecom providers** -*law enforcement wire-tapping software*
- Oct 6 – Cisco - *data breach of* **Cisco's IT network**
- Aug 16 – National Public Data – *data breach* **affecting 2.9 billion individuals** – *names, birthdays, social security numbers*
- July 14 – **AT&T** - *data breach*
- June 1 – Ticketmaster - *data breach*
- May 10 – JPMorgan Chase **Bank** - *data breach*
- April 17 – **US Gov** - *data breach of* DOJ, DHS, ... agencies, and **Armed Forces teams**
- ...

# *What Are* the Network Points of Cyber Incursion?





# *How Does AI Facilitate Cyber Incursion?*

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Merriam Webster

<https://www.merriam-webster.com> > dictionary > artificial intelligence

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## Artificial intelligence Definition & Meaning - Merriam-Webster

The meaning of ARTIFICIAL INTELLIGENCE is the capability of computer systems or algorithms to imitate intelligent human behavior; also, pluralartificial intelligences : a computer, computer system, or set of algorithms having this capability. How to use artificial intelligence in a sentence.

A nefarious group can train an AI model to do the work of **THOUSANDS** of hackers to identify and penetrate a vulnerability in any targeted electronic system.

➤ Only paper is cyber-secure.

# *Which* System Is Cyber-Secure?

## Vote Centers & Electronic Voting Systems

- ☐ Computer, Tabulator/scanner, e-poll book, ballot printer
- ☐ Anti-virus and malware updates
- ☐ Software and firmware updates
- ☐ Electronic file storage
- ☐ Networks
- ☐ Hardware and software upgrades
- ☐ Physical equipment storage and transportation

## Paper All the Way

- ✓ Paper ballots
- ✓ Paper poll books
- ✓ Paper tally sheets

➤ **Only paper is cyber-secure.**

## Which System Is More Cost-Effective?

Election Item	5 Vote Centers	11 Precincts	11 Precincts
	Receipt Printout Electronic Voting Systems	Paper Ballots Electronic Voting Systems	Paper Ballots Hand-Tallied
Voting Location Rental	\$0	\$0	\$0
Voting Equipment			
Tabulator, Poll Books, FVM Lease	\$29,523	\$29,523	\$0
Poll Book Licensing	\$5,376	\$5,376	\$0
Tabulator, FVM Licensing	\$46,255	\$46,255	\$0
4 additional FVM	\$15,960	\$0	\$0
Ballot Printing			
Election Day	\$0	\$9,660	\$9,660
Absentee/Early	\$1,740	\$1,740	\$1,740
Paper Poll Book Printing	\$0	\$0	?
Election Personnel			
1 Inspector, 2 Judges, 2 Clerks			?
Election Day & Training Fee	\$3,700	\$9,390	?
Election Day Meals	\$750	\$8,250	?
	<b>\$103,304</b>	<b>\$110,194</b>	<b>???</b>

- *Vote Center* and existing electronic voting system costs were presented by the BC Council Chair at the February 2024 Election Board meeting.
- **Note:** Software licenses and hardware leases fees must be paid even in non-election years.
- The *Paper All the Way*, hand-tally method costs come down to determining how many poll workers are needed, shown next.

## *How Do We Calculate* the Number of Poll Workers and Hours to Tally?

Tallying Teams Example					
How long will it take to tally 1500 ballots using 3 teams, 5 teams, or 7 teams at a rate of 100 ballots per hour?					
Note: Tallying teams are made up of two poll workers each: 1 Caller + 1 Tallier.					
Ballot Tallying Formula: Use this formula to calculate hours needed to tally.				$\frac{\text{\# of ballots}}{(\text{ballot tally rate})(\text{\# of teams})}$	
Precinct	Ballots to Tally	Tally Rate Ballots/Hour/Team	# of Tallying Teams	Ballot Tallying Formula: Calculate the Time to Tally	Total Hours to Tally
Precinct example	1500	100	3	$\frac{1500 \text{ ballots}}{(100 \text{ ballots/hour})(3 \text{ teams})}$	5.0
Precinct example	1500	100	5	$\frac{1500 \text{ ballots}}{(100 \text{ ballots/hour})(5 \text{ Teams})}$	3.0
Precinct example	1500	100	7	$\frac{1500 \text{ ballots}}{(100 \text{ ballots/hour})(7 \text{ Teams})}$	2.1

- The above method can be used to establish a desired completion time for tallying ballots across all precincts.
- Note: By statute, the maximum number of registered voters by precinct is 1500.



## How Do We Calculate the Number of Tally Teams for Brown County Precincts?

Hand-Tallying of Brown County Ballots based on 2020 General Election Numbers (Rounded Up)					
The following chart shows the how many teams could be used to tally ballots by precinct in 2 or fewer hours.					
Brown County Precinct	Ballots in 2020 General Election (Rounded Up)	Tally Rate Ballots/Hour/Team	# of Tallying Teams	Ballot Tallying Formula: Calculate the Time to Tally	Total Hours to Tally
Washington 1	1400	100	7	$= (1400)/[(100)(7)]$	2.0
Van Buren 1	1200	100	6	$= (1200)/[(100)(6)]$	2.0
Washington 3	1000	100	5	$= (1000)/[(100)(5)]$	2.0
Hamblen 2	900	100	4	$= (900)/[(100)(4)]$	2.3
Washington 2	800	100	4	$= (800)/[(100)(4)]$	2.0
Hamblen 1	800	100	4	$= (800)/[(100)(4)]$	2.0
Hamblen 3	800	100	4	$= (800)/[(100)(4)]$	2.0
Jackson 1	750	100	4	$= (750)/[(100)(4)]$	1.9
Jackson 3	600	100	3	$= (600)/[(100)(3)]$	2.0
Jackson 4	600	100	3	$= (600)/[(100)(3)]$	2.0
Jackson 2 & Washington 4	550	100	3	$= (550)/[(100)(3)]$	1.8
Totals	9400		47		

- Optimizing for a **two-hour tally window**, this chart shows how many tally teams can be used in each precinct in Brown County.

## How Do We Compare Personnel Costs Between the Vote Center Model vs. Electronic Voting by Precinct?

Vote Location	Election Method	Calculations	Wages	Meals
5 Vote Centers	Electronic Voting Systems		\$3,700	\$750
	Printout Receipt			
		(1 Inspector+2 Judges+2 Clerks)(5 Precints) = 25 Poll Workers		
		(25 Poll Workers)(\$148/Day for Wages) = \$3700		
		(25 Poll Workers)(\$30/Day for Meals) = \$750		
11 Precincts	Electronic Voting Systems		\$9,390	\$8,250
	Paper Ballots			
		(1 Inspector+2 Judges+2 Clerks)(11 Precints) = 55 Poll Workers		
		(55 Poll Workers)(\$148/Day for Wages) = \$8140		
		(55 Poll Workers)(\$30/Day for Meals) = \$1650		

- The only difference in the personnel for the first two methods that use electronic voting systems is the number of voting locations, i.e., 5 *vote centers* vs. 11 *precincts*.
- Note: There was an error in the personnel costs for the *precinct* method. This will be corrected in the chart going forward.

## *How Do We Compare* Personnel Costs in the Election Method, *Paper All the Way*?

Vote Location	Election Method	Calculations	Wages	Meals
11 Precincts	Hand-Tallied Paper Ballots		\$22,052	\$4,470
		(1 Inspector+2 Judges+2 Clerks)(11 Precincts)+(94 Tallying Team Members*) = 149 Poll Workers *See the "Tallying Team Members" analysis for how this is calculated.		
		(149 Poll Workers)(\$148/Day for Wages) = \$22,052		
		(149 Poll Workers)(\$30/Day for Meals) = \$4470		

- In this example, the number of Tally Team Members is taken from the optimization calculation for a two-hour tally-time for 11 precincts.
  - 47 tally teams = 149 tally team members

## Which Method is the Most Cyber-Secure and Cost-Effective: Using the Machines to Tally or **People**?

Election Item	5 Vote Centers	11 Precincts	11 Precincts
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Voting Equipment			
Tabulator, Poll Books, FVM Lease	\$29,523	\$29,523	\$0
Poll Book Licensing	\$5,376	\$5,376	\$0
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4 additional FVM	\$15,960	\$0	\$0
Ballot Printing			
Election Day	\$0	\$9,660	\$9,660
Absentee/Early	\$1,740	\$1,740	\$1,740
Paper Poll Book Printing	\$0	\$0	\$1,100
Election Personnel			
1 Inspector, 2 Judges, 2 Clerks			
Election Day & Training Fee	\$3,700	\$8,140	\$22,052
Election Day Meals	\$750	\$1,650	\$4,470
	<b>\$103,304</b>	<b>\$102,344</b>	<b>\$39,022</b>

- Using **poll workers to tally paper ballots** costs **less than half** the cost of the other methods that use electronic voting systems.
- Clearly, the most cyber-secure and cost-effective method is ...

➤ **Paper All the Way!**



Questions?