

# Secure elections, Chicago style



## The Board of Election Commissioners for the City of Chicago teamed up with Verizon to help deliver secured elections in the midst of a pandemic.

In 1906, the University of Chicago Press published a small 203-page book that formalized typographical rules already in use at the university. Seventeen editions and 1,146 pages later, the *Chicago Manual of Style* is considered a “guiding light for almost all published writing in America today” (Boston Globe). Like this essential writing guide, Chicago is leading the way toward safer, more secure elections. Here’s how they did it.

On March 11, 2020, the World Health Organization declared Coronavirus a global pandemic, just six days away from Chicago’s scheduled presidential primary. Having to plan for the health and safety of voters and poll workers in such a short amount of time was a hurdle in and of itself. Add to this the debut of a brand new voting system for over 2,000 precincts across 230 squares miles, the bar became that much higher. Here’s the story of how Chicago met this challenge.

Putting aside pandemic factors, being able to provide secure electronic elections across multiple voting sites comes with its own challenges, unique to each state, county, and city. But what do we mean when we say “secure electronic elections?” Simply put, there are three critical factors:

- Protect the integrity of voter choices on a digital ballot
- Guard against hacks and cyberattacks when those choices are electronically transmitted across the network
- Ensure that every vote is accurately counted and accounted for

Proper planning is essential when preparing for something as critical as an election. As early as 2006, when problems with the then-new voting equipment began to surface, the Board of Election Commissioners for the City of Chicago (“Board”) had already initiated preparations for improving network security and efficiency, which included upgrading their electronic poll books

in 2014. When they decided to upgrade their voting systems and network in 2018, they were dealing with an infrastructure that hadn’t been updated since 2006. This meant replacing the old-school voting equipment to more modern equipment featuring robust capabilities and security. Whereas before, the equipment merely performed a tally of votes without preserving the ballot itself, the new system actually scans and saves every single ballot, both electronic and paper.

“The added advantage about these new vote scanners,” begins Jim Allen, former Communications Director, Chicago Board of Election Commissioners, “is that you can see the logic the scanner used to count or not count the vote so that there can be an immediate adjudication if there’s an issue of how the image appeared that reflects the voter’s intent.” But shifting from a purely count-based tally to one that is accompanied by verifiable scans of actual ballots requires not just a massive increase in bandwidth, but also a pipeline that is reliable and scalable.

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## The Chicago challenge

The Board had to outfit more than 2,000 precincts with new voting systems and a secured network to run them on. They needed to ensure the data from the voting equipment could be transmitted on a completely private network due to their security requirements, in addition to ensuring their electronic poll books—devices used to electronically sign-in the voters—were on a separate, VPN-protected network.

In the wake of the 2020 Iowa primaries, where a new technology platform was not properly tested, which caused massive delays in voter results, the Board wanted to ensure that the voting platform they implemented would not fail when it—literally—counted. “With the new voting equipment, the size of the data file has increased tremendously,” begins Matt Lin, IT Manager, Chicago Board of Election Commissioners, “so to prevent the potential data bottleneck, we needed to increase to a higher-bandwidth circuit.” The Board’s election network structure at the time used a dual-carrier model as a redundancy failover, but, as Lin says, “only Verizon could provide us with the bandwidth we needed. So we decided to switch to an all-Verizon redundant circuit model.”

## Secured solution implementation

Once the decision to migrate to a single provider solution was made, the next step was to redesign the various networks that support their polling sites. In the Board's case, they segment their traffic into three distinct data groups:

- Touchscreens and scanners—where the actual votes are stored
- Electronic poll books—where voter registration data is stored and validated
- Employee communication—where employees are able to access their normal network data, such as emails and intranets

The critical requirements for the Board with these networks was that they remain separate from each other. With the new era of cybersecurity threats, election equipment can be particularly vulnerable to attacks like DDoS and unauthorized users attempting access. Having an end-to-end private network solution that can segment different types of traffic can mitigate those threats. In particular, the Board required that the voting equipment and electronic poll book data be on completely separate, private, networks with no access points to or from the public internet.

To this end, Verizon provided a number of wired and wireless solutions to meet the Board's requirements:

- 2,200 activations of 4G LTE Modems
- 1 Private wireless gateway
- 2 Geo diverse 1-Gig burstable IP circuits
- 1 Dedicated VPN circuit
- Partner-based, secured routers & firewalls

For added security, the Board also ensures that, during the day when all the voting equipment is in use, their connectivity is physically turned off. It is only at the end of the day, when the polls close, that they turn on modems to transmit the scanned images of the ballots and results, a process which, thanks to robust bandwidth, now only takes 5-10 minutes. "With Verizon's solution, we are not touching the internet at all," begins Rahul Patel, Elections Information Security Officer, Chicago Board of Election Commissioners, "...so a lot of those boundaries that we had to historically protect are completely eliminated now."

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### The proof is in the votes.

Rolling out a completely overhauled election security network is hard enough all by itself. Add to that a pandemic and the stakes get higher. "We had to find new sites, find replacements for workers who were ill, train the new workers and judges, and [we] had 188 polling places we had to move in the last four days before the primaries," says Allen. Not only were they dealing with new equipment, they were having to swear in new judges on the fly, using emergency training videos they had to put together for workers who couldn't go through in-person training.

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—Rahul Patel, Elections Information Security Officer, Chicago Board of Election Commissioners

So, how did Chicagoland do? The results speak for themselves. By 11:00 pm on election night, there was already 90% reporting, with the remaining 10% completed in subsequent days as polling place equipment and records were verified. Despite state-wide lower voter turnout as a result of the pandemic, the voting turnout in Chicago was 9 percentage points higher than the state average.\*

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### Modeling support

Confirming that a deployment is successful doesn't end the day of deployment. Ongoing professional and managed services are critical to the true success of a solution. Providing managed services in the midst of a global disaster is certainly a challenge. No one could have planned for what eventually became a national quarantine due to the pandemic, but at Verizon we are well-versed in disaster preparedness where the nature of the game entails impromptu adjustment for the unexpected. "We've chosen Verizon for not just their network reliability, but also their level of support," says Lin.

In preparation for the Chicago elections, it was always the plan to provide onsite support directly prior to, during, and post-election when the results are being transmitted. But due to safety concerns, the decision was made to allow for a remote model of support. Not only did the Verizon wireless and wireline team remotely monitor the network to ensure great results, but, "On the day of the election, in the middle of a pandemic," Lin begins, "the Verizon solution architect showed up on the premises. I really appreciate him for that; he took a risk."

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### Remember November.

For a city that literally wrote the book on style, Chicago has and continues to meet and exceed voter safety and security expectations with their own. The Board's next challenge will be the 2020 general elections in November, which, due to expected increase in voter turnout for a general election, will test their on-site election security and pandemic preparations even more than the primaries.

We're confident that the Board will do everything they can to safely and securely handle the challenge in the same manner that saw success on March 17. And they'll do it Chicago style.

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### Learn more.

To learn more about how to make your elections secure, please contact your Verizon Account Representative.

[verizon.com/electionsecurity](https://verizon.com/electionsecurity)



\*Source for the state of Illinois turnout: <http://www.electproject.org/2020p>  
Source for the Chicago voter turnout: <https://bit.ly/20lvsbN>

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