

# One Voter—One Vote

**Cogent Systems facilitates democracy in Venezuela**

The ability to cast a vote is the cornerstone of democracy. For countries without the infrastructure needed to ensure proper voting procedures, however, the democratic process is often challenged by corruption. Venezuela, for one, had grappled with a voting system that enabled a single individual to vote multiple times using different names. The checks and balances needed to ensure that each citizen cast a single vote simply wasn't there.

As the country approached its next referendum, the National Electoral Council (CNE) of the Bolivarian Republic of Venezuela sought a solution that would guarantee a single vote for each citizen. The council's motto for the upcoming elections was "One Voter—One Vote." The council sent a request to the entire identification vendor community for a system that could capture, search, and enroll 10 million people in 10 hours, from 3,000 locations throughout the country, using satellite communications.

After an exhaustive search that put them a mere six weeks away from the referendum, only one vendor proposed a solution that was technologically robust enough to meet the requirements and could be implemented within the short timeframe. That vendor was Cogent Systems.

Based in South Pasadena, California, Cogent Systems is a leading provider of automated fingerprint identification system (AFIS) and additional fingerprint biometric solutions serving governments, law enforcement agencies and other organizations worldwide. Cogent Systems combines proprietary software algorithms with optimized hardware from IBM to deliver industry-leading accuracy rates and performance. Cogent proposed an Automated Fingerprint

Identification and Voter Authentication System. It would enable authorities in Venezuela to verify the identification of each individual voting and prevent citizens from doing so more than once.

The task at hand was not an easy one. As Wally Briefs, vice president of international business at Cogent explains, "No one had ever built a system that could capture, search, and enroll 10 million people in 10 hours. It had to be configured to handle the single worst case scenario—searching and matching 1.5 million people in one hour. Plus, we needed to locate, configure, test, ship, install, and re-test the necessary equipment, which included 12,000 laptops, 12,000 finger scanners, hubs, and Ethernet cables. Finally, we had to build the data center and configure, program, and test more than 400 servers in 18 racks. There was a tremendous amount of work and only five weeks in which to do it."

## **Teaming for success**

Luckily, Cogent wasn't alone. IBM and Avnet Partner Solutions worked closely with the company to meet its deadlines. Avnet was instrumental in locating, configuring, and testing all data center components. Avnet also provided the staging center at its facility in Tempe, Arizona. Cogent engineers flew to Tempe to build and test the system, which was shipped by chartered jet to Venezuela.

IBM moved quickly, locating and guaranteeing availability of 12,000 laptops, plus the servers needed for the data center. Cogent Systems leverages IBM technology because it is highly reliable, easy to configure, and feature-rich. And, as a company, IBM has been consistently responsive to the company's requests. "This was a system that was impossible to build and impossible to implement," stated Briefs. "With IBM, we were able to take the 'im' out of impossible."

### **Assembling local resources and building the infrastructure**

At the same time the technology was being configured and tested, Cogent Systems turned its attention to building the system's infrastructure in Venezuela. To that end, Cogent Systems established a Central Service Center in Caracas and hired and trained 140 technicians to test the 12,000 IBM laptops with single fingerprint scanners. The laptops were configured, tested, repackaged, distributed, and installed and tested in 2,990 voting stations throughout the country by 500 technicians in three days. Cogent Systems also trained 500 instructors who then trained 16,000 operators to operate the Authentication Stations, perform the fingerprint capture, transmit the images, and receive the results.

Moreover, Cogent Systems established a call center to provide support for the field technicians during the setup of the voting stations. And, they enlisted 70 of the trained specialists to handle the calls and troubleshoot problems.

Each authentication station is connected via satellite dish to the Central Service Center, where fingerprint matching is processed and communications are powered. The Center is capable of making 160 million comparisons per second. To prepare for worst-case scenarios, Cogent Systems installed an IBM-based storage and tape backup solution that ensured redundancy. Using IBM Tivoli Storage Manager (TSM) and IBM LTO tape drive, the company designed the system so that if one rack of equipment failed, another rack would absorb the workload. And, the failover could continue until a single rack remained.

"The system performed perfectly," offered Briefs. "Although we built redundancies into the design, we didn't need them. There were no hardware failures."

### **Venezuelans vote**

On the day of the referendum, approximately 5.5 million Venezuelans voted. As part of the process, each citizen's fingerprints were captured, searched,

and enrolled in the nationwide system, making it impossible to vote multiple times. The system performed better than expected. Designed to return results for every transaction in less than 30 seconds, actual performance was 2.16 seconds per transaction—even during peak times—where 400,000 searches were completed in an hour.

The CNE continues to use the Cogent system on a local and nationwide basis. In addition, they intend to roll it out to every voting center in the country—more than 8,000 centers.

The Automated Fingerprint Identification and Voter Authentication System that Cogent Systems implemented for Venezuela is the largest and fastest biometric system in the world, installed in the shortest amount of time. The task was daunting. But with Avnet and IBM in its corner, Cogent Systems was able to help Venezuela protect the integrity of the referendum and ensure fair voting for many elections to come.



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