

## Introduction

On August 19, 2008, Premier Election Solutions informed the Secretary of State's office that a programming error in the GEMS server software is the cause for sharing violations and dropped votes seen in nine Ohio counties. The finding confirms Secretary of State testing that ruled out antivirus software as the root cause of the problem.

As we prepare for a successful November election, Secretary of State Brunner is finalizing clear guidance to help Ohio election officials identify and correct this GEMS software error.

Secretary Brunner is also partnering with local elections officials to implement best practices like post-election audits, backup paper ballots, and security and risk mitigation plans to further assure voter confidence in Ohio's voting process.

## Background

After the March primary, the Secretary of State's office responded to a request from the Butler County Board of Elections to support and assist with its investigation of a problem it uncovered in the tabulation of votes by the Premier voting system. The system dropped votes in the March primary. Subsequent investigation by Secretary of State IT professionals, working in conjunction with local election officials, revealed that nine (eleven?) of the 44 potentially-affected Ohio counties had evidence of the same failure to properly process memory cards and tabulate votes.

On August 6-7, 2008, Butler County election officials, working in coordination with the Secretary of State's office and with Premier observers present, conducted a simulation of the vote-counting portion of an election. The simulation sought to test circumstances as near as possible to those of what occur in a real election, disabling antivirus for some test runs and enabling it for others. Eight tests were conducted over two days.

The goals of the testing were to replicate "sharing violations" that resulted in dropped votes during the count that occurred during the March primary and to determine what role, if any, antivirus software may have in causing those errors.

### **The testing revealed the following:**

- Sharing violations occurred during multiple memory card upload tests, leading to dropped votes.
- Sharing violations occurred *with and without* antivirus software enabled, leading to dropped votes.

-- Following strict processing protocols allowed users to identify and correct the errors, recovering the dropped votes.

## **New findings**

Since this testing, Premier Election Solutions has admitted that the apparent root cause for the problem is an error with the company's GEMS server software source code. Premier arrived at this conclusion after additional testing of their GEMS server software. According to a letter from Premier, the GEMS source code contains a "logic error" that causes dropped votes when two cards are simultaneously uploaded, but the first card takes longer to process than the second card.

On August 19, 2008, Premier issued a new product advisory notice alerting its users nationwide to the GEMS software programming error and offering suggested steps to remedy the problem. In releasing this new advisory, Premier has rescinded its previous advisory, which had blamed antivirus software for the problem and had recommended disabling antivirus software during the uploading of votes from memory cards.

## **A Message from Ohio Secretary of State Jennifer Brunner**

*"Now that what appears to be the root cause for this voting tabulation error has been identified, we will prepare Ohio's counties using the Premier voting system software with instructions for following strict protocols needed to identify and correct this error if it occurs.*

*"The Butler County Board of Elections and its staff are to be commended for identifying the problem and working in partnership with the Secretary of State's office and other boards of elections to resolve this issue. We appreciate the forthrightness of David Byrd, Premier's recent president, in continuing to investigate and make known the facts underlying this problem. We will continue to monitor the situation and provide boards of elections with the instruction and support they need to ensure an orderly and efficient election and an accurate count of Ohioans' votes.*

*"It is the dedication of board officials such as those at the Butler County Board of Elections, who went above and beyond the call of duty, that gives me confidence that preparation with our local partners will lead to a successful November election." – Jennifer Brunner, Ohio Secretary of State.*