ES&S - EVS Release 4.5.0.0, Version 4 (Revision 1)

~EVS Release 4.5.0.0, Version 4-Test Report Addendum~

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Florida Department of State
Division of Elections
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Executive Summary

On May 1, 2015, the Florida Department of State (DOS) certified Election Systems & Software, LLC (ES&S)-EVS, Release 4.5.0.0, Version 4 for all counties and municipalities in Florida to purchase or use this version for any election.[1]

On May 5, 2015, ES&S submitted to the DOS' Division of Elections' Bureau of Voting System Certification (BVSC) an Engineering Change Order (ECO #920) requesting that BVSC accept a modification to the EVS Release 4.5.0.0, Version 4 certification (#150501) to include the Multitech MTSMC-C2-N3-R. 1 (Verizon C2 wireless modem), which is an updated version of the currently approved Verizon C1 wireless modem. The request was restricted to use with DS200 Hardware versions 1.2 and 1.3.

The testing conducted for this request was limited in scope to only regression testing of the Verizon C2 modem configuration. The results of the testing confirm that the Verizon C2 modem, for use with ES&S-EVS 4.5.0.0, Version 4 voting system and DS200 meets the requirements of the Florida Statutes and Rules, including the Florida Voting System Standards. Therefore, BVSC recommends an addendum to the ES&S-EVS 4.5.0.0, Version 4 certification #150501-ES&S to include the approval of the Verizon C2 modem for the DS200 with Hardware Revision 1.2 or 1.3.

Background

On May 1, 2015, DOS certified Election Systems & Software, LLC (ES&S)-EVS, Release 4.5.0.0, Version 4 for all counties and municipalities in Florida to purchase or use this version for any election. The ExpressVote precinct ballot marking device was provisionally approved for use by persons with disabilities for any election through May 1, 2017.

On May 5, 2015, ES&S submitted an Engineering Change Order (ECO #920) requesting that BVSC accept a modification to the EVS Release 4.5.0.0, Version 4 certification (#150501) to include a Verizon C2 wireless modem (Multitech MTSMC-C2-N3-R. 1), which is an updated version of the currently approved Verizon C1 wireless modem. The request was limited to DS200 Hardware versions 1.2 and 1.3. It is important to note that the DS200 digital scanner is already approved for use with the AT&T, Sprint, and Verizon C1 Series wireless modems, which were tested as components of the EVS Release 4.5.0.0, Version 4 certification (#150501) events.

ES&S provided the updated DS200 with the Verizon C2 modem, as well as an election definition to verify the modeming process, the modem configuration file that is required to be imported into ElectionWare and included as part of the election definition, and the user documentation explaining how to perform this modification activity.

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[1] DOS granted approval for the EVS, Release 4.5.0.0, Version 4 voting system, with provisional approval of the use of the ExpressVote marking device for any election through May 1, 2017, pending modifications to address items identified and reported in the EVS, Release 4.5.0.0, Version 4 certification test process.

Scope

The DS200 digital scanner is already approved for use with the AT&T, Sprint, and Verizon C1 Series wireless modems, which were tested as components of the EVS Release 4.5.0.0, Version 4 certification (#150501) events. The current test effort included a rudimentary evaluation of the Multitech MTSMC-C2-N3-R. 1 (Verizon C2 series modem), as installed in the DS200 digital scanner, as an option to correctly/accurately wirelessly transmit election results from the DS200 digital scan tabulator into the EVS Release 4.5.0.0, Version 4 Election Reporting Manager (ERM) application.

The examination included BVSC using: 1) a DS200 that contained ES&S created election results to modem election results to the vendor's home location in Omaha, Nebraska; and 2) a copy of a Primary Election from the certification activities to do the following:

- Burn new media, insert it into the DS200, and complete the verification/validation steps.
- Open polls, print/verify zero DS200 tabulator tape.
- Scan marksense ballots into the prepared DS200 tabulator with the optional Verizon C2 modem.
- Close polls, print/verify election results DS200 tabulator tape.
- Modem election results to the ERM application in BVSC's EVS 4.5.0.0, Version 4 certified voting system.
- Verify uploaded ERM results for successful upload and for accuracy.

Conduct of Tests / Findings

The objective was to verify that the voting system is capable of receiving accurate election results transmitted electronically via the DS200 with the Verizon C2 modem.

Modem Vendor Provided Election

On May 8, 2015, BVSC received a DS200 from ES&S configured with the Verizon C2 modem installed, as well as an election with zero votes cast. During the initial setup of the DS200 using the election definition provided by ES&S, BVSC staff did not encounter any problems. However, during the staff's first attempt to modem the results from the BVSC laboratory (Tallahassee) to the vendor's home location (Omaha) a 'Failed to Transmit' error occurred. It was determined that the vendor provided an incorrect phone number. Once the correct phone number was in place, BVSC was able to successfully modem to the vendor's home location.

Modem BVSC Test Election

During this test, BVSC imported the vendor supplied modem configuration file into an EVS 4.5.0.0, Version 4 certification Primary Election. The election included partisan and non-partisan contests, as well as a Universal Primary race. The election also had split precincts.

BVSC produced the election media for the DS200 and then followed the vendor's instructions to prepare the SFTP server. Before scanning ballots, a simple modem test with zero results was conducted to verify the connection and successful transfer. Following are more specific details of the issues BVSC staff encountered when attempting to examine the modem's ability to successfully transmit data:

A.   On May 11, 2015, BVSC followed the instructions and documentation provided by the vendor to verify that the upgraded Verizon C2 modem accurately transmitted election results from the DS200 digital scanner to the voting system's EMS. When the modem process started, a 'Modem Error – Connection Refused by Host' occurred. BVSC notified the vendor who suggested that BVSC staff confirm the IP address on the provided DS200 settings. BVSC determined that the IP address was incorrect. BVSC staff solicited the assistance of in-house technical staff to ascertain the correct IP address to use for this process and, using the provided address, attempted the modem process twice. Both attempts resulted in a 'SFTP Error Login Fail' error message. BVSC again notified the vendor and at this point, the vendor determined that the problem was due to the fact that the configuration script in the firewall being used by BVSC was configured for the C1 modem used during the certification and needed to be updated or replaced to accommodate the new C2 modem under test.

B.   On May 14, 2015, BVSC received the new firewall. Staff connected the given firewall to the SFTP server, and again followed the steps to reproduce the DS200 election media and attempted to conduct a preliminary 'connection test' of the modem with zero results. This attempt again produced the 'SFTP Error Login Fail' error message. After further reviewing the Primary Election that was being used for testing and also verifying the connection to BVSC's SFTP server from the vendor's home office, BVSC again notified the vendor that there was a problem existing with transmission. This resulted in the vendor discovering that a typo existed in the configuration scripts[2] that were provided with the new firewall.

C.   On May 18, 2015, BVSC received the updated firewall from ES&S. Staff connected the given firewall to the SFTP server, again followed the steps to reproduce the election media for the DS200 and attempted to modem zero results. The modem transmission went through successfully with no errors.

BVSC then used a small sample of marked Primary Election ballots from the EVS 4.5.0.0, Version 4 certification testing and scanned them into the DS200. These results were successfully modemed to the SFTP server and ERM with no errors. As a final step, staff verified that the modemed election results yielded the expected counts.

Test Results Summary

BVSC examined the Multitech MTSMC-C2-N3-R. 1 (Verizon C2 series modem), as installed in the DS200 digital scanner, for use with ESS-EVS 4.5.0.0, Version 4 voting system and determined that the upgraded modem successfully and accurately transmitted election results. BVSC also verified that the results were accurate and were correctly transferred from the SFTP server and into ERM.

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[2] BVSC could have reconfigured the scripts in the firewall to be compatible for the DS200s with the C2 modems instead of the C1 modems. However, BVSC decided to preserve the firewall script for the C1 modem in the event that configuration would be needed for future testing. Instead BVSC requested that ES&S provide another firewall configured with the DS200s in which the C2 modem were installed and configured accordingly.

Recommendations

The only issues encountered during this test activity were due to the fact that the instructions provided by ES&S did not contain sufficient detail. Therefore, BVSC requested that the vendor provide updated documentation with enhanced instructions specifying the additional procedures that are required after the modem configuration file has been imported into the election definition, as well as documentation that details the required SFTP server procedures necessary to successfully modem results from the DS200. BVSC has received and reviewed ES&S's documentation updates and considers them to be a satisfactory remedy to mitigate similar issues from occurring in a Florida county wishing to employ Verizon C2 modem functionality.

Conclusion

Examination results affirm that the Multitech MTSMC-C2-N3-R. 1 (Verizon C2 series modem), as installed in the DS200 digital scanner, for use with ES&S-EVS 4.5.0.0, Version 4 voting system and DS200 Hardware Revisions 1.2 or 1.3 meets the requirements of the Florida Statutes and Rules, including the Florida Voting System Standards. BVSC recommends the addendum to the ES&S-EVS 4.5.0.0, Version 4 certification #150501-ES&S include the approval of the Verizon C2 modem.