ES&S 6040

The Election Systems and Software (ES&S) release of the EVS 6.0.4.0 election system was examined in Austin on June 26 and 27 2019. This release was certified by the federal Elections Assistance Commission (EAC) in May 2019.

This release is a modification to the 6.0.2.0 release which was previously certified in Texas. This release required updating the server and workstation operating system software, and some voting machine component parts due to end-of-line. The voting system (Electionware and voting machines) were exercised to validate that its effectiveness and security were not compromised by the upgrade.

The focus was to review the new functional changes to Electionware, the new MXB voting booth, and the minor changes to the voting machines and the voter experience.

The following table lists the modified 6.0.4.0 components used for the examination.

Table 1 - Releases for new Proprietary Hardware/Software Components

Hardware/Software	Version/Firmware #	Location
Software		
Electionware (EMS)	5.0.4.0	Central office
Event Log Service	1.6.0.0	Central office
Removable Media Service	1.5.1.0	Central office
Hardware		
ExpressVote HW1.0 (BMD)	1.5.2.0	Precinct
ExpressVote HW2.1 (BMD or tabulator)	2.4.5.0	Precinct
DS200 precinct scanner	2.17.4.0	Precinct or central
ExpressTouch (DRE)	1.0.3.0	
ExpressVote - XL (BMD)	1.0.3.0	Precinct
DS450 scanner	3.1.1.0	Central office
DS850 scanner	3.1.1.0	Central office
MXB ExpressVote Voting Booth	95000	Precinct

For a detailed explanation of all the hardware components and applications of the 6.0.4.0 system please refer to the EAC's certification test report.

Findings

- The responses provided on Form-101 are acceptable.

- The Technical Data Package (TDP) documentation appears to be accurate and

complete.

- The system software was successfully built and a sample of the hash values were verified to match the values of the executables that were used in the EAC testing.

- The pre-marked and the manually voted test ballots were recorded and tallied correctly.

- This release has a "marker only" (BMD) mode for the ExpressVote XL. After a voter completes their selections, the voted paper ballot is returned to the voter to be inserted into a scanner for tabulation. An ES&S representative said that the XL will only be sold as a BMD in Texas; it will not be sold for use as a DRE.

- This release added the ability to recognize and load media burned from an election restored on any instance of Electionware when loading results. This allows multiple workstations to be used to set up an election definition so multiple people can do different tasks simultaneously. In the previous release, only one instance/workstation could be used.

- When the election definition is finalized, the unique election id is assigned. When the election definition is loaded onto a voting machine, that machine gets assigned a unique ID for the election.

- I recommend that wire seals be used for all devices. Plastic seals can be 'unlocked' and re-sealed. Additionally, residual paper seals should be used.

- The Removable Media Service (RMS) was improved to make the media packaging consistent for all the voting devices.

- There is a hard-coded Admin password (*admin01*) which is used to access a menu for certain functions on the voting machines. The password and menu are not required by the precinct workers, but hopefully the password will not be hard-coded in a future release.

- To verify the software/firmware releases are correct, the jurisdiction must export the executable files to a thumb drive. The thumb drive is loaded onto a machine booted using a Linux Ubuntu operating system CD. A program on the Ubuntu CD generates the hashes for the executable files. The hashes should then be compared to the hashes provided by the testing lab (VSTL) or the EAC.

- Bitlocker (provides full volume encryption) is now used on the workstations/servers. It required an upgrade to the Windows operating system (either Windows 7 Enterprise for workstations; and Windows Server 2008 R2 with Bitlocker). All workstations/servers must be using Bitlocker.

- USB sticks that were used in a previous election can be "cleansed" with a utility developed by the Delkin corporation. The tool, Media Restore, is one of the tools in Toolbox utilities. It will restore a thumb drive to blank ESS thumb drive. The drive will have a proprietary bit set. Only ESS thumb drives provisioned with this bit set, will work in the voting devices.

- ExpressVote 1.0: removed DS200 Status from ExpressVote HW1.0 System Readiness Report since "tethered mode" is no longer supported.

- All ExpressVotes: modified the user interface to properly handle manual candidate selection(s) in a contest after the selections made by the straight party selection are automatically deselected in that contest. If a voter selects a candidate not in the party of their straight-party selection, all candidates auto-selected because of the straight-party, are de-selected.

- An ES&S representative said that the ExpressVoteXL will only be sold in Texas for use as BMD. Therefore, it will not have a ballot box.

- The ExpressVote XL makes a beep and has blinking indicator light if the media door on top and/or the printer door is opened.

- The ports on the back of the ExpressVotes should be sealed if not being used with a kiosk. The ports are used for kiosk printer and barcode scanner.

- The MXB voting booth allows multiple ExpressVotes to share power via a daisy chain of the power cord. A MXB booth can supply power for up to 6 devices.

- The ExpressTouch is DRE. An ES&S representative said the ExpressTouch will only be sold in Texas for curbside voting.

- I recommend that check boxes are **not** designed for the ExpressVote XL and Express Touch ballot layout because it may be confusing to a voter. The voter can click anywhere in the box that has the candidate's name to select that candidate. If there the additional small check box, a voter may accidentally select a candidate in the adjacent race.

  The ExpressVote XL layout used for this examination was better than the layout used for the 6.0.2.0 examination, but still not as clear as it should be. I think that the software should automatically use thicker lines, double lines or more space between the races than are used between the candidates within a race.

- Media can be burned for one precinct style, or multiple precinct styles, or all (county wide).

- There is no report in Electionware for get the results from a specific device. The CVR's from a device would have to be exported from Electionware and counted in a different tool (i.e. database or spreadsheet). This should be provided in a future release of Electionware since the data is available.

- The voting devices and DS200 precinct scanner gave appropriate messages to aid the voter. For instance, a pop-up to indicate that there was an undervote. Overvoting is not possible on ExpressVotes or ExpressTouch.

- Provisional ballots for the ExpressVotes can be created with a small box printed on the top right of the ballot stock. The poll worker must initial or scribble in the square to prevent the scanners from reading it. If the box is not initialed, the scanners will tabulate the ballot.

  An election definition can be configured to prevent provisional ballots from being scanned on any of the scanners. This will prevent an accidental scan of a ballot that has not be reviewed and approved.

  I recommend that all provisional ballots be put in an envelope and adjudicated manually before being tabulated by a central office scanner.

  There is no adjudication program for provisional ballots in Electionware. Write-in ballots are still adjudicated in Electionware.

- The optional ExpressLink application can be used to interface with a jurisdiction's voter registration (VR) system to activate the correct ballot style for the ExpressVotes and ExpressTouch. Without ExpressLink the voting sessions are activated by a poll worker.

- All audit logs are automatically brought in to Electionware along with the voting results. Logs can be reviewed in Electionware. To search the log for a specific word, the logs would have to be exported and search with a 3rd party tool.

  The logs report the activity on each the voting machines and Electionware. The text is clear and each line has a date/time stamp. They appear to be a comprehensive recording the voting system activity .

- There are a couple errors in the EAC's Scope of Certification document:

  - Local Area Network – The use of TCP/IP is incorrect. The 450 and 850 scanners and EMS servers and workstations **can** be networked.

  - The document lists only the Bic Grip Roller pen as the approved marking device*.* ES&S tests and supports multiple pens. Contact them for the supported pens.

- The unique polling place ID limit could prevent Harris county from being able to use this system.

Conclusion

I believe the system examined meets the requirements of the Texas Election Code. The modifications to the EMS were minor and presented no loss of functionality or security. The voting machines and scanners worked well and were easy to use.

I recommend certification of the EVS 6.0.4.0 system.

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Examiner