ES&S EVS 6.0.0.0

The Election Systems and Software (ES&S) release of the EVS 6.0.0.0 election system was examined in Austin on 9/6/18. The system was presented by Brooke Thernes, State Certification Manager for ES&S. This release was certified by the Federal Elections Assistance Commission (EAC) in July 2018. Since it is a new system, it was subjected to a full testing campaign as required by the EAC. This means all the proprietary source code, hardware, and software was reviewed and/or tested by an accredited testing laboratory (SLI Compliance of Wheat Ridge, CO.). This is the first time the system has been examined in Texas, but many of the components have been examined before in previous releases.

The main focus of this examination was to review the new ExpressTouch DRE and the functional changes to Electionware.

The following table lists the 6.0.0.0 components used for the examination.

Table 1 - Releases for new Proprietary Hardware/Software Components

Hardware/Software	Version/Firmware #
ExpressTouch (DRE)	1.0.0.0
DS200 (small precinct ballot scanner)	2.17.0.0
DS450 (central count ballot scanner)	3.1.0.0
DS850 (central count ballot scanner)	3.1.0.0
ExpressLink	1.4.0.0
Electionware (EMS)	5.0.0.0
ExpressVote - HW 1.0 (ballot marker)	1.5.0.0
ExpressVote - HW 2.1 (ballot marker/tabulator)	2.4.0.0
ExpressVote Previewer	1.5.0.0 and 2.4.0.0
PaperBallot (ballot layout editor)	5.0.0.0
Removable Media Service	1.5.0.0
Toolbox (Utilities)	3.2.0.0
Event Log Service	1.6.0.0
Universal Voting Console (ADA device pad)	

For a detailed explanation of all the hardware components and applications of the 6.0.0.0 system please refer to the EAC certification test report. Note: the EAC's test report and scope of certification documents had not been posted to its website at the time of this writing.

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Findings

- The responses provided on Form-101 are acceptable.
- The Technical Data Package (TDP) documentation provided appears to be accurate and complete.
- The system software was successfully built on the first day and the hash values were verified to match the values of the executables that were used in the EAC testing.

  The ExpressVotes have a function to generate and display the hash values of the executables. For the other devices it is not as easy to verify the hash codes, but it can be done. Hopefully, this will be corrected in future releases. A best practice would be for a jurisdiction to verify the hash values before each election cycle to assure that the executables have not been modified.
- The pre-marked and the manually voted test ballots were recorded and tallied correctly.
- An ES&S security expert present at the examinatin said that only apps required to run the election are on the machines. All unnecessary programs are removed as part of the system harding.

  Passwords automatically expire after 60 days and are reset in Electionware. This is good because it means that new passwords are required before most elections.
- Regardless of the device, all ballots are converted to a common CVR (cast vote record) format. This allows for a post election audit using a 3rd-party or home-grown program.
- There are exclusions for Texas for the 6.0.0.0 release although they were approved as part of the certification of the 6.0.0.0 system by the EAC.

  The ExpressVote XL (a full-face ballot voting machine) was not included in the Texas examination.

  The ExpressVote tabulator functionality will not be available in Texas through a "license" control. The ExpressVote will be used for selecting candidates, etc.; ballot marking only.
- The ability to review and adjudicate ballot images to determine the voter's intent was added to Electionware. In the past, adjudication was done on the scanners. Adjudicated ballots can only be committed to the tally by a user with the admin role. Other Electionware roles can only review and disposition ballots, but not commit.

Write-in management (declaring and adjudicating), and reporting capabilities were also added to Electionware.

There is a new Reporting module within Electionware. It has the ability to import election results from all the EVS 6.0.0.0 tabulators. It is a rewrite of the reporting program, and eliminates the last of the COBAL language code in the system.

The Electionware database is not encrypted in this release, but ES&S plans to add encryption in the future.

- ExpressTouch is the new DRE. Votes are written to two mirrored (raid 1) cfast cards. The election definition is loaded the same way as the other precinct devices (i.e. thumb drive). It is recommended to leave thumb drive in ExpressTouch so it can be used as another redundant memory for the CVR's . Electionware can report the results that came from each specific ExpressTouch.

  ES&S stated that the ExpressTouch is intended for be used for curbside voting in Texas. The device is heavier than a typical consumer tablet, but I think most poll workers and voters would be able to handle it for curb-side voting.

  The ExpressTouch can be used for provisional voting. The CVR of provisional ballot is not included in the totals on the device and are not tallied in Electionware until adjudicated. Provisional ballots on the ExpressTouch are coded with a unique 6 character code that a poll worker types in before the voter begins voting. The code allows for the CVR to be adjudicated in Electionware. During the examination, it appeared that the code was removed from the CVR after a provisional ballot was adjudicated.

  When switching a ExpressTouch from England to Spanish a candidate's name typo was discovered. Candidates' names come from different files for each language. Therefore, ballots need to be thoroughly checked in <u>all</u> languages.

  Another examiner reported that there was a problem with the Universal Voting Console's paddle when using it on the ExpressTouch. I was not able to recreate the problem.

- Early voting centers will use ExpressVotes. The voted ballots are scanned on a DS200. Vote totals are not available until the DS200 is "closed" at the end of the early voting period. The ExpressVote and DS200 can be shut off and locked up each night. The next day the ExpressVote and DS200 can be restarted to resume voting.

  The DS200's have a little red stamp used to stamp write-in ballots. The red mark is needed to identify the ballots with write-ins. There is no out-stacking like on the central scanners.

  Provisional ballots on the ExpressVotes are put in a provisional envelope to be processed later in the central office.

- Device logs can be printed on the devices and are also uploaded into Electionware along with the results. The audit logs are in plain English, and generally it is easy to understand their meaning. The logs can be viewed by a specific date/time range, but there is no search capability. Search is important so that errors can be found easily.

  You can export the logs in a CSV (comma separated values) format and upload them to another PC to search. However, this introduces the possibility that media used to transfer could get infected with a virus or malware on that PC and then infect the Electionware machine. ES&S recommends using the media one time only or reformatting it after each use. Hopefully, search functionality will be added in the next release of Electionware so that this is not necessary.

- Jurisdictions should review the system and component limitations sections of the EAC *Scope of Certification* document before purchasing to verify that it can meet their needs.

  The cost of the special ink, paper, and thumb drives required by the system should considered by a jurisdiction when it negotiates a contract for the system. Off-the-shelf products cannot be used for these consumables.

Conclusion

Overall, the system is easy to use and it performed well. I believe the ES&S EVS 6.0.0.0 election system meets the requirements of the Texas Election Code. I recommend certification.

Tom Watson
Examiner