ES&S EVS 5.4.0.0

The Election Systems and Software release of the EVS 5.4.0.0 election system was examined in Austin on 4/20/17. This release is a modification to the EVS 5.2.2.0 system which is also currently being examined. The EVS 5.4.0.0 system was certified by the EAC in February 2017.

The main new feature of the EVS 5400 is the ExpressVote Tabulator. The other significant changes from the 5.2.2.0 system are 1) implementation write-in snippets on the DS200 for review in ElectionWare; 2) Ability to generate a single ExpressVote CVR card for a multi-page election election; and 3) The ability of the DS850 to support a single CVR from ExpressVote cards in multi-page elections.

The other changes to the system are cosmetic, minor bug fixes, and minor performance enhancements.

The following table lists the 5.4.0.0 applications components used during the examination.

Table 1 - Proprietary Hardware/Software Components

Application	Version/Firmware #
AutoMARK	1.8.7.0
Event Log Service	1.5.6.0
DS200	2.14.0.0
DS850	2.11.0.0
ElectionWare (EMS)	4.8.0.0
Election Reporting Manager (ERM)	8.13.0.0
ExpressLink	1.2.0.0
ExpressVote - HW Rev 2.1	2.1.0.0
ExpressVote Previewer	2.1.0.0
PaperBallot	4.7.0.0
Removable Media Service	1.4.6.0
Toolbox	2.4.0.0
VAT Previewer	1.8.7.0
ExpressVote Activation Card Printer	N/A

For a detailed explanation of the hardware components and applications of the 5.2.20 system please refer to the EAC certification test report ____

ES&S EVS 5.4.0.0

Note: since this release shares most of what is in the EVS 5.2.2.0 system, some of the findings below will be redundant from the 5.2.2.0 report. They are included in this report so that this report stands on its own.

Findings

- The responses provided for Form-101 are acceptable.

- The system software was built without incident, however the hashes of the software modules were not verified. A jurisdiction should do this before each election cycle to verify that the modules have not been modified.

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

- ExpressVote Activation Card Printer does not have a version number, but it should.

- The less expensive DS450 central-count scanner is not supported in this release.

- Each ExpressVote has a unique serial number that is stamped onto its internal EPROM. The serial number is indicated on the machines zeros-report.

- The ExpressVote can a be ballot marking device (BMD). As a BMD, no record of the votes are stored on the machine. It can also be used as a voting device and precinct tabulator.

  In both configurations, the ExpressVote produces a printed CVR card with the voter's selections only, not the entire ballot. The paper CVR can then scanned by the DS200 or DS850 when the ExpressVote is configured as a BMD. There is also a bar code printed on the paper representing the voter's selections.

  When the ExpressVote is configured as a tabulator, the paper CVR can either be presented to the voter for review, or auto-cast to the imbedded scanner. This is a configurable option in the election setup. If the setup is configured to give the paper to the voter for review, the voter has an on-screen option to auto-cast without reviewing the paper CVR.

  If a ExpressVote is configured in the election setup to be a BMD, it cannot be changed to a tabulator on election day. The reverse is also true. However, the ExpressVote hardware is "agnostic". It is the election setup on the USB stick that contains which determines the ExpressVote mode of operation. Therefore, an ExpressVote could be used for early voting and then be re-deployed on election day in a precinct location with a different (election day) USB stick.

- When and ExpressVote is configured as a tabulator, the results, CVR's, images, and log are

stored on USB stick. The results are brought to election central and uploaded to the EMS via the USB stick. If a problem occurs with the tabulator or USB stick, the paper CVR's can be scanned into another ExpressVote or either the DS200 or DS850 scanners.

- The ExpressVote should only be used as a tabulator in an polling location for a small precinct since its card bin's (ballot box) capacity is only 300.

  Currently, there is only a place for 1 lock on the ballot box. A solution to the 2 lock requirement on its ballot box could be developed. That would allow the card bin (ballot box) to be changed out each night, and therefore used in early-voting polling locations with higher turnout.

- If the ExpressVote is attached to a voting kiosk and the back door of the kiosk is unlocked, it is possible to stuff ballots into the card bin (ballot box). This can be prevented by use of a seal and proper recording of the seal #.

- When batches of ballots are processed by the DS850 central-count scanner, they must be managed properly so that absentee ballots are not inter-mingled with results from election day or early-voting results. The scanner cannot determine the correct group from the ballots themselves.

- The user screens on the scanners do not go into "sleep mode" after a period of time. Therefore, it is incumbent on the operators of the scanners to not leave the system unattended unless they logout. Ideally, they screens would automatically go into sleep mode after a period of inactivity.

- The DS850, DS200, and the ExpressVote have multiple locks and seals to prevent unauthorized access.

  The DS200 has a portable ballot box with 2 locks, but the keys are the same. The locks would need different keys to meet Texas law. The ballot box also has 2 places for seals.

- The DS200 scanner can be locked up, but left with the polls open for an early voting deployment.

- The election should be coded to out-stack write-in ballots so that they can be manually adjudicated. A report in ElectionWare also allows you to view the write-ins on screen, but not adjudicate them. Therefore, out-stacking on the central scanner is best to make it easier to process the write-in votes.

  The DS200 can be configured in the EMS to have a red circle stamped on the paper ballot to flag over-voted, write-ins, and under-voted ballots. This allows the ballots to be manually sorted for subsequent adjudication.

- The USB media used by the system should be either purchased from ES&S or meet the

minimum specification as certified by the EAC and declared in the EAC Scope of Certification document.

- The AutoMark BMD is slow for voting and printing of the voted ballot. This makes it unsuitable for heavy use. It should be limited for use by voters who are visually or physically impaired and/or need to use ADA devices.

- The ExpressVote has good throughput and as such, may be used by all voters including those who need ADA devices.

- The audit logs are in plain english and do require a manual to cross-reference a code to find the meaning. The logs are brought along with the results from the scanners into the ERM. The logs can also be viewed in ElectionWare which makes it easy to look for errors. But in order to be viewed in ElectionWare, a jurisdiction must purchase a separate program. Since the EVS is purported to be a complete, integrated system, the log program should be part of the package.

- The EVS 5400 system has a feature, Ballot Online - ExpressPass, which may be beyond the scope of a Texas certification. It is the same as when reviewed for the EVS 5210 examination. It allows a voter to make their selections online at home onto a sample ballot. Ballot marking is done using a web browser and an application which is hosted on a web server by an ES&S partner.

  After voting the sample ballot, the voter will print their ballot on their printer to be used on election day in a polling place on the ExpressVote. A QR code on their printed ballot is scanned by the ExpressVote to recall their selections.

  The online voted ballot is only a sample ballot and is not tabulated in the EVS. The voter has a chance to verify their selections when it is read by the ExpressVote before they cast their vote. When they cast, the voter gets a chance to review the printed ballot (CVR) from the ExpressVote just as a voter who did not use the web application.

  There are a few potential issues with this feature:

  1) It's possible an error on the ballot displayed may go undetected. This error might be due to a last minute change to the ballot that was not pushed to the online version. It is less likely a deliberate manipulation of the ballot is made in order to have ballots mis-marked.

  2) Another possibility is that the voter will get the wrong ballot style due to an address change. In this case, their sample ballot will be rejected on the ExpressVote in the polling place if the sample ballot style is different from the style given to them when they check-in to the precinct.

  3) If the sample ballots are stored on the online server, they could be “tabulated” to see voting trends. Ideally, the voter’s selections are only in memory until the voter closes the online session. However, the process has not been specified in detail at the time this report was

written.

4) If the voter's IP address is being monitored by the online system or an operator of the system, there may be voter privacy concerns.

- Jurisdictions should review the system and component limitations sections of the _____ _____